

Modification 13 of Dunmore Quarry Expansion Project

State Significant Development Modification Assessment Report (DA470-11-2003-Mod-13)

June 2024





Acknowledgement of Country

The Department of Planning, Housing and Infrastructure acknowledges that it stands on Aboriginal land. We acknowledge the Traditional Custodians of the land and show our respect for Elders past, present and emerging through thoughtful and collaborative approaches to our work, seeking to demonstrate our ongoing commitment to providing places in which Aboriginal people are included socially, culturally and economically.

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Preface

This assessment report provides a record of the Department of Planning, Housing and Infrastructure's (the Department) assessment and evaluation of modification 13 of the State significant development (SSD) application for the Dunmore Quarry Expansion Project, located approximately 20 kilometres (km) south of Wollongong, lodged by Boral Resources (NSW) Pty Ltd. The report includes:

- an assessment of the modification against government policy and statutory requirements, including mandatory considerations;
- a demonstration of how matters raised by the community and other stakeholders have been considered;
- an explanation of any changes made to the modification during the assessment process;
- an assessment of the likely environmental, social and economic impacts of the modification;
- an evaluation which weighs up the likely impacts and benefits of the modification, having regard to the proposed mitigations, offsets, community views and expert advice; and provides a view on whether the impacts are on balance, acceptable; and
- a recommendation to the decision-maker, along with the reasons for the recommendation, to assist them in making an informed decision about whether the consent should be modified and any conditions that should be imposed.

Executive Summary

Boral Resources (NSW) Pty Ltd (Boral) operates Dunmore Quarry, an existing hard rock quarry located on Tabbita Road, approximately 20 kilometres (km) south of Wollongong, in the Shellharbour City local government area.

Quarrying operations are permitted under the development consent (DA470-11-2003) issued in 2004 by the then Minister Assisting the Minister for Infrastructure and Planning (Planning Administration).

Modification

Boral proposes to modify the development consent to increase the approved extraction area to the north of the existing pit by approximately 7.8 hectares (ha) and extend the quarry's operational life by nine years to 2043 (the proposed modification). The proposed modification would not change the approved production or transportation rates, methods of extraction or processing, number of employees, infrastructure requirements or hours of operations.

Statutory context

The modification application was lodged under Section 4.55(2) of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The Minister for Planning and Public Spaces (the Minister) is the consent authority for the modification application. However, under the Minister's delegation dated 9 March 2022, the Director Energy and Resource Assessments, may determine the application because no political disclosure was made by Boral, there were less than 15 submissions objecting to the proposed modification and Shellharbour City Council (Council) did not object to the proposed modification.

The proposed modification has been declared a "controlled action" under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), due to its potential impacts on threatened species and communities. The Department has undertaken the impact assessment on behalf of the Commonwealth government in accordance with the bilateral agreement between the Commonwealth and NSW governments.

Strategic context

To meet demands for asphalt at the existing Sydney Airport and the future Western Sydney Airport, as well as at other major infrastructure projects across NSW, Boral requires high yield aggregate that can be manufactured for high strength uses. Boral has identified that aggregate from the proposed modification disturbance area is of a quality that would meet the current high strength asphalt demands and allow security of supply for infrastructure projects in Sydney and across NSW.

Engagement

The Department exhibited the proposed modification from 11 April 2023 until 11 May 2023. During the exhibition period, the Department received four submissions, two of these objecting to the proposed modification and two in support. The key concerns raised related to impacts on biodiversity values and the ability for Boral to adequately offset these impacts.

Assessment

The Department considers the key assessment issue for the proposed modification is the potential impact on biodiversity values within the proposed modification disturbance area. The Department has considered biodiversity impacts and other potential impacts during its assessment of the proposed modification. The Department also considered the advice received from relevant government agencies and Shellharbour City Council.

Biodiversity

Boral's proposed modification has the smallest disturbance area of the alternative quarry designs considered. Boral's selection of this design avoided biodiversity impacts, however, approximately 7.8 ha of land would still be disturbed, directly impacting two threatened flora species (*Zieria granulata* and *Irenepharsus tryphurus*) and one threatened ecological community, *Melaleuca armillaris* Tall Shrubland in the Sydney Basin Bioregion (*Melaleuca armillaris* Tall Shrubland). As a critically endangered ecological community, *Melaleuca armillaris* Tall Shrubland is also an entity listed at risk of serious and irreversible impacts (SAIL).

Boral has committed to retire double the calculated number of biodiversity credits for the proposed modification, with at least 50% of the credits retired via a proposed biodiversity stewardship site on Boral landholdings.

To mitigate the risk of SAIL on *Melaleuca armillaris* Tall Shrubland, Boral has also committed to retire an additional 111 *Melaleuca armillaris* Tall Shrubland credits using the credits generated by the proposed biodiversity stewardship site.

Boral also committed to a vegetation translocation plan for both threatened flora species and *Melaleuca armillaris* Tall Shrubland. Biodiversity Conservation Sciences Group's advice provided in-principle support for the proposed mitigations and offset strategy.

The Department considered the proposed modification's impacts on the relevant Biodiversity Matters of National Environmental Significance (MNES) and found that the proposed modification has the potential to result in significant impacts the Illawarra Irene (*Irenepharsus tryphurus*) under the EPBC Act.

Other issues

The Department has carefully considered the potential impacts of the proposed modification on a range of other issues including air quality, noise and vibration, visual, heritage, water resources, greenhouse gas emissions, rehabilitation and final landform. The Department considers that the existing conditions remain appropriate to manage any incremental impacts associated the proposed modification, with some revisions, such as updating the rehabilitation management requirements and including an unexpected finds protocol for heritage items to reflect contemporary conditions.

Conclusion

The Department has carried out a detailed assessment of the merits of the modification, in accordance with the relevant requirements of the EP&A Act. The Department considered the issues raised in public submissions and the advice provided by relevant government agencies.

The Department considers that the proposed modification would not result in significant impacts and that Boral has demonstrated the proposed modification has minimal risk beyond what has been previously assessed and approved for the existing project. The proposed modification would also provide access to additional hard rock resources required to support major infrastructure projects across NSW and has been designed in a manner that achieves a reasonable balance between the recovery of a State significance resource and minimising its potential environmental and social impacts.

In summary, the Department considers that the benefits of the proposed modification outweigh its residual impacts and that the modification application be approved, subject to the recommended conditions of consent.

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1 Introduction

1.1 Background

Dunmore Quarry is an existing hard rock quarry located on Tabbita Road, approximately 20 kilometres (km) south of Wollongong, in the Shellharbour City local government area (see Figure 1). The quarry is owned and operated by Boral Resources (NSW) Pty Ltd (Boral).

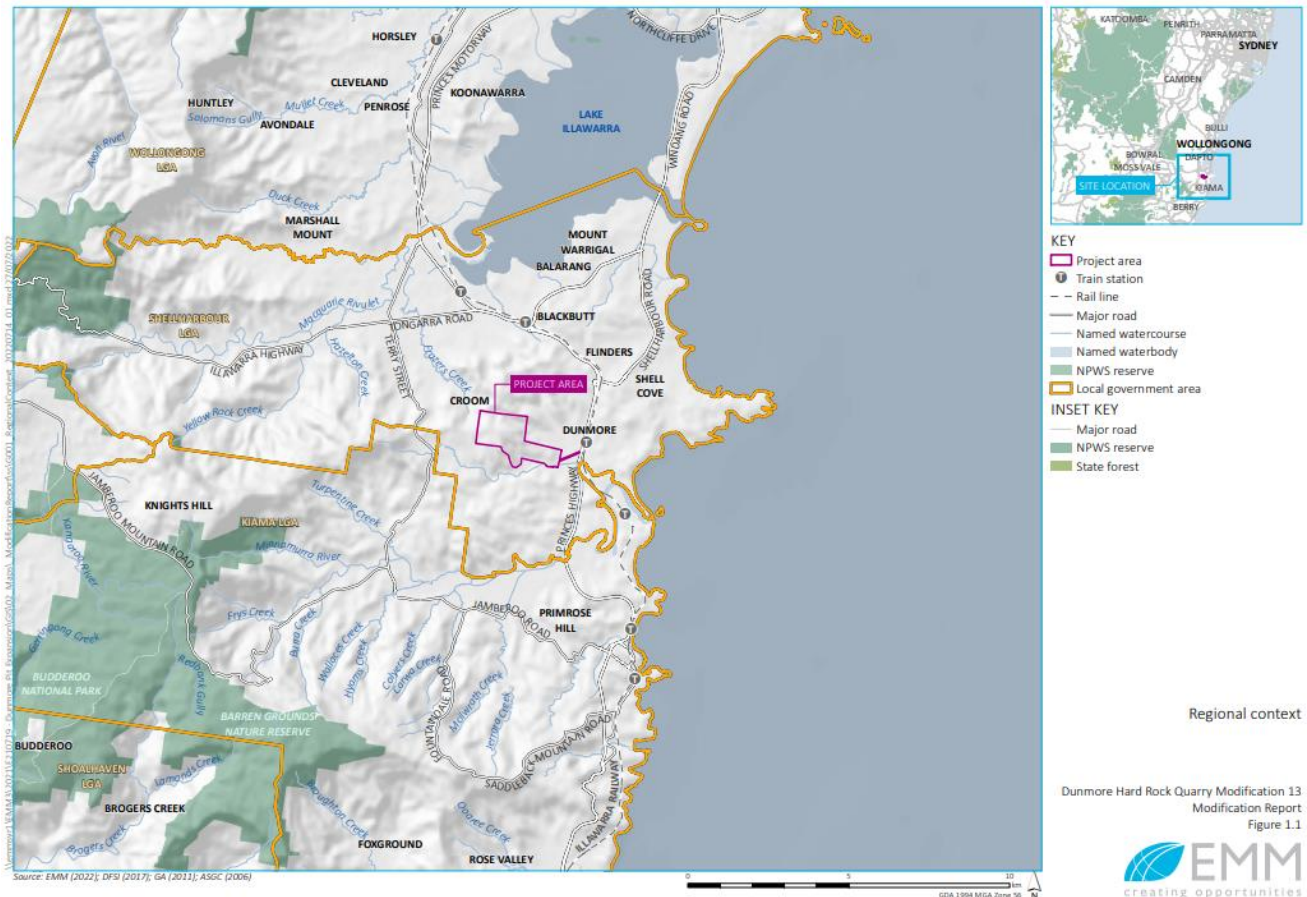


Figure 1 | Regional context map

1.2 Current approval

Quarrying operations have been undertaken on the site for over 100 years under a series of historical development consents issued by Shellharbour City Council. On 30 September 2004, the Dunmore Quarry Expansion Project (the project) (DA470-11-2003) was approved by the then Minister Assisting the Minister for Infrastructure and Planning (Planning Administration) and all prior development consents were surrendered.

The current consent has been previously modified on 12 occasions (see Table 1), and allows Boral to extract, process and transport up to 2.5 million tonnes per annum (Mtpa) of quarry product until 30 September 2034.

Table 1 | Summary of previous modifications

Modification	Description	Decision maker	Type	Date
MOD 1	Relocation of amenities block	Deputy Director General	96 (1A) (now repealed)	12 December 2005
MOD 2	Minor changes to the water management system, vegetation offset strategy and road transport arrangements	Executive Director	96 (1A) (now repealed)	25 June 2006
MOD 3	Construction of a workshop, demountable office building and 16 space carpark	Executive Director	96(1A) (now repealed)	15 May 2008
MOD 4	Increase extraction area by 2.82 ha, water management and final landform changes, extension of quarry life by 5 years and establishment of biodiversity offset strategy	Executive Director	96(2) (now repealed)	21 November 2008
MOD 5	Relocation of quarry laboratory and construction of two demountable buildings and 30 truck parking spaces	Executive Director	96(1A) (now repealed)	21 November 2008
MOD 6	Increase road transportation limit from 1 to 1.5 Mtpa and extend extraction area by 2.03 ha	Director	75W (now repealed)	7 February 2014
MOD 7	Construction and operation of a blending plant	Director	75W (now repealed)	20 October 2015
MOD 8	Construction of an earthen bund	Director	75W (now repealed)	17 November 2016

Modification	Description	Decision maker	Type	Date
MOD 9	Extension of the Croome Farm Pit by approximately 14.4 ha to the west to form the Croome West Pit	Director	75W (now repealed)	22 September 2017
MOD 10	Administrative changes to conditions	Director	75W (now repealed)	26 June 2017
MOD 11	Allow all 2.5 Mtpa of product to be dispatched by road	Director	75W (now repealed)	15 March 2019
MOD 12	Increase in hourly laden truck dispatch limits	Director	4.55(1A)	10 September 2021

2 Proposed modification

In January 2023, Boral lodged an application to modify the consent (DA470-11-2003) under section 4.55(2) of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The proposed modification includes:

- an increase to the approved extraction area to the north of the existing pit by approximately 7.8 hectares (ha) (herein referred to as the 'RIC pit extension'), resulting in a total extraction area of 84 ha;
- an increase the depth of the approved RIC pit (and including the proposed extension area) by approximately 46 – 64 metres (m) to 43 metres Australian Height Datum (m AHD);
- an increase the depth of the approved Croome Farm Pit by 38 m to 55 m AHD and the Croome West Pit by a maximum of 8 m to 60 m AHD; and
- the extension to the quarry life by 9 years to 2043.

The proposed RIC pit extension is shown in **Figure 2** and described in further detail in the modification report (see **Appendix A**).

2.1 Modification justification

Boral is seeking approval to extend the pit area to ensure the ongoing operation of the quarry. The company has indicated that the higher-than-expected volume of interburden and the reduced volume

of latite required for aggregate production in the currently approved extraction pit (i.e., Croome West Pit) has significantly reduced the expected quarry life. The current reserves of asphalt and concrete aggregate are now expected to be depleted in the near future.

Expansion of the quarry pit to the north would allow access to high quality latite within minimal overburden, as well as allow appropriate benching and increasing the depth of the existing pit to maximise resource extraction to allow continued quarrying operations.

3 Strategic context

Dunmore Quarry is the fourth largest quarry in NSW and Boral's second largest quarry in the state. Aggregate is a key resource produced at the quarry and is an essential material required to produce concrete and asphalt. In particular, the high-quality aggregate produced at the quarry is required for the asphalt mixes at the existing Sydney Airport and the future Western Sydney Airport.

To meet asphalt demands at both airports, as well as at other major infrastructure projects across NSW, Boral requires high yield aggregate that can be manufactured to specific specifications for high strength uses. Boral has identified that aggregate from the RIC pit extension is of a quality that would meet the current high strength asphalt demands and allow security of supply for infrastructure projects in Sydney and across NSW. The quarry is also strategically located on the South Coast of NSW and is the only quarry that supplies aggregate to local and regional markets via both rail and road.

3.1 Project setting

Several land uses surround the quarry, with extractive industry, rural residential and agricultural land uses directly adjacent. The local area is a fast-growing residential location with transport infrastructure, low density residential areas, education facilities and the future Shellharbour hospital approximately 2 to 4 kilometres from the site.

Local and regional planning processes established a buffer zone around extractive industry in the Wentworth Hills and Dunmore Valley. The buffer zone prevented encroaching urban development that would limit the recovery of a significant mineral resource. The buffer zone includes rural residential and agricultural land use.

The Princes Highway divides extractive industry, rural residential and agricultural land use from the residential areas of Shell Cove, Minnamurra, Kiama Downs and Albion Park. The quarry has an ideal transport connection with direct access to the Princes Highway and Illawarra Railway Line.

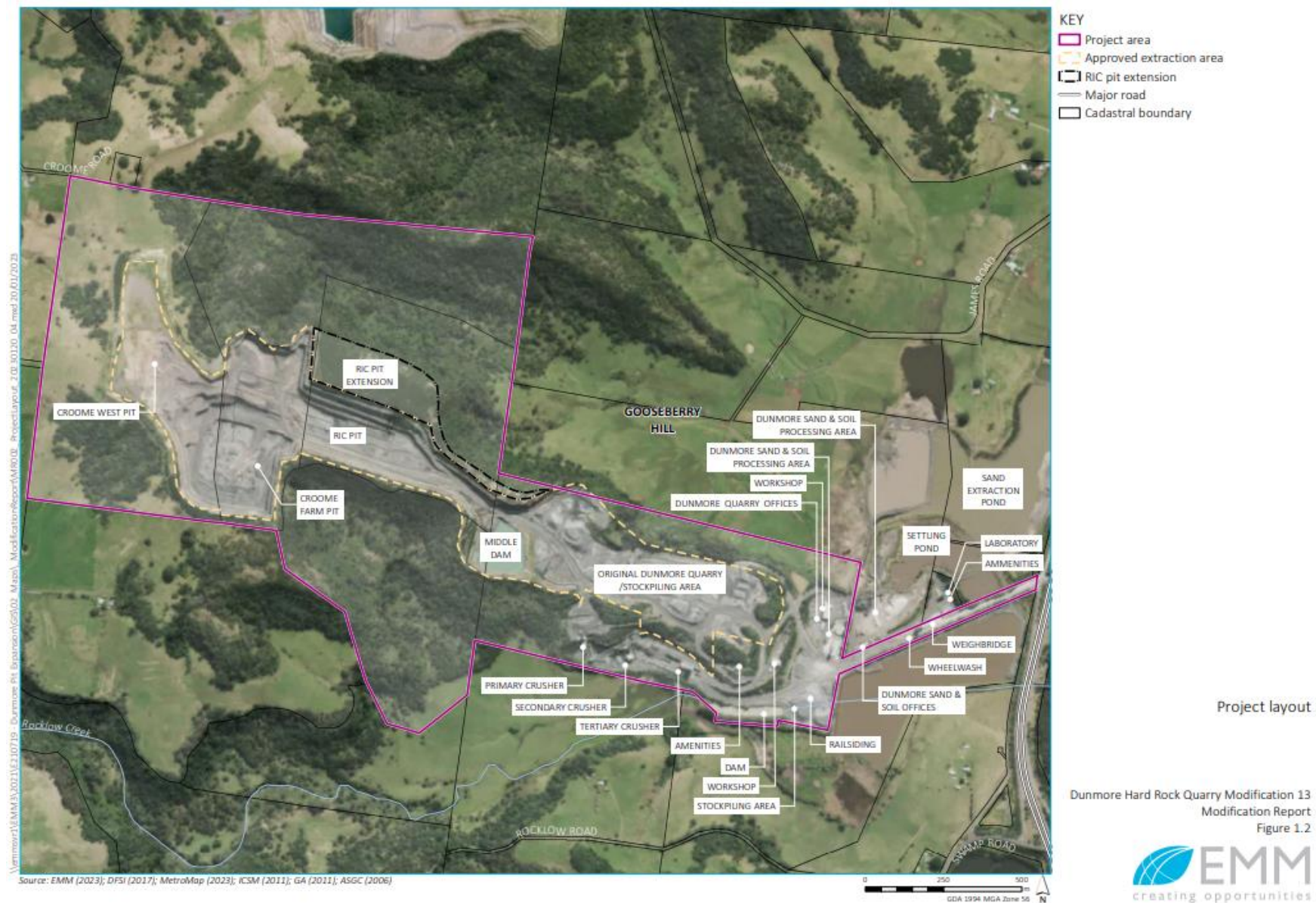


Figure 2 | Proposed project layout

4 Statutory context

4.1 Scope of modification and assessment pathway

Details of the legal pathway under which modification is sought and are provided in Table 2 below.

Table 2 | Permissibility and assessment pathway

Consideration	Description
Scope of modification	<p>The modification application was lodged under Section 4.55(2) of the EP&A Act. The Department has reviewed the scope of the modification application and considers that the proposal would be substantially the same development as authorised by the consent, as last modified under section 75W, as the proposal:</p> <ul style="list-style-type: none">• would not change the approved production or transportation rates, methods of extraction or processing, levels of employment, infrastructure requirements, or hours of operations;• would remain within the current project boundary or the infrastructure on site; and• would not significantly increase the environmental impacts of the development as approved. <p>The Department is satisfied the proposed modification is within the scope of section 4.55(2) of the EP&A Act and does not constitute a new development application.</p> <p>Accordingly, the Department considers that the application should be assessed and determined under section 4.55(2) of the EP&A Act rather than requiring a new development application to be lodged.</p>
Consent Authority	The Minister is the consent authority under section 4.5(a) of the EP&A Act.
Decision maker	Under the Minister's delegation dated 9 March 2022, the Director, Energy and Resource Assessments, may determine the application. This is because Boral has not made any reportable political donations, there were less than 15 community submissions objecting to the proposed modification, and Shellharbour City Council did not object to the proposed modification.

4.2 Other approvals and authorisations

Boral holds an environment protection licence (EPL) for the site issued by the NSW Environment Protection Authority (EPA) under section 42 of the *Protection of the Environment Operations Act 1997*.

If modified, the project would need to continue to operate in accordance with the requirements of that EPL.

4.3 Mandatory matters for consideration

4.3.1 Matters of consideration required by the EP&A Act

In determining the modification, the consent authority must take into consideration such of the matters referred to in section 4.15(1) of the EP&A Act as are of relevance to the development the subject of the application. The consent authority must also take into consideration the reasons given by the consent authority for the grant of the consent that is sought to be modified. The Department's consideration of these matters is shown in Table 3 below.

Table 3 | Matters for consideration

Matter for consideration	Department's assessment
Environmental planning instruments	Appendix B
Likely impacts	Section 6 - Assessment
Suitability of the site	Section 1 - Modification background, Section 4 - Strategic Context and Section 6 - Assessment
Public submissions	Section 5 - Engagement & Section 6 - Assessment
Public interest	Section 5 - Engagement, Section 6 - Assessment and Section 7 - Evaluation

4.3.2 Objects of the EP&A Act

In determining whether or not to modify the consent, the consent authority should consider whether the modified project is consistent with the relevant objects of the EP&A Act (section 1.3) including the principles of ecologically sustainable development. Consideration of those factors is described in Appendix B.

The Department is satisfied that the development is consistent with the objectives of the EP&A Act and the principles of ecologically sustainable development (ESD).

4.3.3 Biodiversity development assessment report

Section 7.17(2) of the *Biodiversity Conservation Act 2016* (BC Act) requires all SSD modifications to be accompanied by a Biodiversity Development Assessment Report (BDAR) unless the authority or person determining the application is satisfied that the proposed modification would not increase the impact on biodiversity values (as identified in the BC Act and in the *Biodiversity Conservation Regulation 2017*)

A BDAR was submitted to the Department with the modification application. The Department has taken the BDAR into account as part of its assessment (see Section 6).

4.4 Matters of National Environmental Significance

Under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), assessment and approval are required from the Australian Government if a project is likely to impact on a Matter of National Environmental Significance (MNES), as it is considered to be a ‘controlled action’.

On 15 December 2022, a delegate of the Commonwealth Minister for the Environment (Commonwealth Minister) determined that the proposed modification was a controlled action under section 75 of the EPBC Act and identified that it is likely to have a significant impact on relevant MNES. Consequently, the proposed modification requires the approval of the Commonwealth Minister for the Environment in addition to any State approvals before the proposed modification may proceed.

Under section 45 of the EPBC Act, the assessment process under the EP&A Act has been accredited under a Bilateral Agreement with the Australian Government. Accordingly, the NSW Government has undertaken the assessment of MNES on behalf of the Australian Government.

The assessment of the proposed modification’s impacts on MNES under the EPBC Act are considered in Section 6 and Appendix C of this report.

In accordance with the Bilateral Agreement the Department has provided the Australian Government with the draft copy of this assessment report and the recommended conditions of consent.

5 Engagement

5.1 Exhibition of the modification

5.1.1 Public exhibition of the modification application

After accepting the modification application, the Department publicly exhibited the modification from 11 April 2023 until 11 May 2023 on the NSW Planning Portal and notified submitters of the original application, as well as relevant government agencies and Shellharbour City Council (Council).

As the proposed modification is a ‘controlled action’ under the EPBC Act, a newspaper advertisement was also placed in The Australian newspaper in accordance with the NSW Assessment Bilateral Agreement.

5.1.2 Summary of advice received from government agencies and Council

The Department received advice from 11 government agencies and Council on the modification report. A summary of the agency advice is provided in Table 4. A link to the full copy of the advice is provided in Appendix A.

Table 4 | Summary of agency advice

Agency	Advice
NSW Department of Climate Change, Energy, the Environment and Water	
Biodiversity, Conservation and Science Group (BCS)	<ul style="list-style-type: none"> Identified that the proposed modification would result in the loss of approximately 8 hectares (ha) of <i>Melaleuca armillaris</i> Tall Shrubland in the Sydney Basin Bioregion, a candidate entity at risk of Serious and Irreversible Impacts (SAII). Noted inadequacy of Boral’s initial proposal to paying into the Biodiversity Conservation Fund for predicted impacts on <i>Melaleuca armillaris</i> Tall Shrubland and provided advice regarding further avoidance, mitigation and offsetting of predicted impacts. Provided in principle support for Boral’s revised offset strategy outlined in the submissions report but recommended the inclusion of the Vegetation Translocation Areas in the biodiversity stewardship site and extending the biodiversity stewardship agreement (BSA) to include additional patches of vegetated land. The offset proposal and the BSA is discussed in further detail in Section 6.1.
Environment Protection Authority (EPA)	<ul style="list-style-type: none"> Initially recommended a condition requiring a revised Air Quality Monitoring System to be submitted to the EPA, but later advised that this requirement has been included as a condition in the quarry’s Environment Protection Licence (EPL No. 77).
Water Group	<ul style="list-style-type: none"> Initially requested an updated site water balance, including all potential water take and clarification on the use of the dam within Croome Pit, which was provided by Boral in the submissions report.

Agency	Advice
	<ul style="list-style-type: none"> Noted that groundwater monitoring should continue and that the existing Water Management Plan is updated. Recommended that a Soil and Water Management Plan and an Erosion and Sediment Control Plan is also prepared. The Department notes these are already requirements in the existing conditions of consent.
Heritage NSW	<ul style="list-style-type: none"> Noted that the Aboriginal Heritage Information Management System (AHIMS) search was undertaken more than 12 months prior to submitting the modification application and requested an updated AHIMS search and the survey track logs, which were provided in the submissions report. Recommended that the current Aboriginal Cultural Heritage Management Plan is revised in consultation with the Registered Aboriginal Parties to include the RIC pit extension.
Heritage Council of NSW	<ul style="list-style-type: none"> Recommended a condition requiring work to stop if unexpected archaeological deposits or relics are discovered. This has been included in the conditions of consent.
NSW Rural Fire Service (RFS)	<ul style="list-style-type: none"> Requested that a Bushfire Emergency Management and Evacuation Plan is prepared and a copy is provided to the Local Emergency Management Committee. The plan is a requirement of the current conditions of consent and will be revised for the proposed modification.
Shellharbour City Council (Council)	<ul style="list-style-type: none"> Initially noted that no mitigation measures had been proposed for noise and vibration and air quality and recommended that relevant management plans (such as rehabilitation, water, heritage and flora and fauna) are updated. Noted that the project would continue to support local employment opportunities for many residents in the Shellharbour LGA. Initially raised concerns over the proposed loss of <i>Melaleuca armillaris</i> Tall Shrubland and the ability to adequately offset this species. However, following review of the submissions report and the advice provided by BCS, Council had no further comments in relation to this issue.

Agency	Advice
Department of Planning, Housing and Infrastructure – Crown Lands	<ul style="list-style-type: none"> No concerns raised.
Department of Regional NSW – Resources Regulator	<ul style="list-style-type: none"> No concerns raised.
Transport for NSW (TfNSW), including Sydney Trains	<ul style="list-style-type: none"> No concerns raised.
Department of Primary Industries	
Agriculture	<ul style="list-style-type: none"> No concerns raised.
Fisheries	<ul style="list-style-type: none"> No concerns raised.

5.1.3 Summary of public submissions

The Department received four submissions¹ during the public exhibition period of the proposed modification, including one submission from the Gerroa Environmental Protection Society and three submissions from the public.

The submission received from the Gerroa Environmental Protection Society objected to the proposed modification on the basis that the RIC pit extension would have impacts on vegetation of both State and national significance and that the offsetting approach initially proposed would not adequately compensate this loss.

Two submissions from the public were in support of the project, with one noting the benefits the project brings to the local community. The third public submission objected to the proposed modification, referencing a previous letter dated 2021 to the then Minister for Energy and Environment, which raised an issue of water discharging from the project to Rocklow Creek and the response taken by the EPA. As this submission only commented on aspects of the project managed under the EPL and did not directly relate to the proposed modification, the Department has not considered it further in this assessment.

¹ Each petition or submission that contains the same or substantially the same text is counted as one submission when applying section 2.7(6) of the Planning System SEPP.

A link to all submissions in full is provided in **Appendix A**.

5.2 Response to submissions

Boral provided a submissions report to the Department on 1 February 2024 (see **Appendix A**). The Department published the submissions report on the NSW planning portal and forwarded the submissions report to relevant government agencies and Council for comment.

5.3 Request for further information

The Department also asked the applicant to provide further information on a range of issues throughout the assessment process. Links to the additional information are provided in **Appendix A**.

6 Assessment

6.1 Biodiversity

The proposed modification would disturb approximately 7.8 ha of land and impact biodiversity values by clearing native vegetation. BCS identified predicted impacts on threatened ecological communities as a critical issue, particularly the predicted impacts on *Melaleuca armillaris* Tall Shrubland in the Sydney Basin Bioregion (*Melaleuca armillaris* Tall Shrubland) and the risk of serious and irreversible impacts.

The Department and BCS are both satisfied that the BDAR has been prepared in accordance with the relevant guidelines and policies and is adequate for assessing the biodiversity impacts and offsetting requirements for the proposed modification.

6.1.1 Biodiversity context

One threatened ecological community, *Melaleuca armillaris* Tall Shrubland, occurs within the proposed modification disturbance area in varying condition. The community also occurs on several areas of Boral's landholdings outside the proposed modification disturbance area, including areas with high condition to the south.

Melaleuca armillaris Tall Shrubland, is listed as a Critically Endangered Ecological Community (CEEC) under the BC Act. The *Biodiversity Conservation Regulation 2017* (BC Regulation 2017) also lists the community as an entity at risk of SAI. The CEEC occurs on shallow volcanic soils dominated by basalt, a key hard rock resource for the construction industry.

The geographic distribution of the CEEC is very limited, only occurring on Bombo latite in the Kiama, Jamberoo, and Albion Park areas. Approximately 164 ha of the community remains (Ecoplanning, 2021), with 132 ha mapped within the Dunmore Hills significant mineral resource area.

Two flora species, *Zieria granulata* (Illawarra Zieria) and *Irenepharsus trypherus* (Illawarra Irene), listed as endangered under the BC Act and EPBC Act, occur within the *Melaleuca armillaris* Tall Shrubland. *Cynanchum elegans* (White-flowered Wax Plant), also listed as endangered under both Acts was recorded within the *Melaleuca armillaris* Tall Shrubland community adjacent to the proposed modification disturbance area.

The vegetation on and around the site also provides a habitat for various fauna species. The native vegetation within the proposed modification disturbance area is predicted habitat for the Little Eagle and the Square-tailed Kite, while vegetation within the 10 m buffer around the proposed modification disturbance area is predicted habitat for four fauna species listed as vulnerable under the BC Act.

6.1.2 Avoidance of biodiversity impacts

Boral considered several alternative quarry designs in the modification report, including a 19 ha footprint that would result in significantly higher impacts on *Melaleuca armillaris* Tall Shrubland. To avoid significant impacts, Boral's proposed modification has a reduced disturbance area of 7.8 ha.

The submissions report also presents a comparison of the threatened ecological communities and threatened species present in a third alternative compared to the reduced 7.8 ha proposed modification disturbance area. However, BCS held the view that these options did not represent avoidance as the alternative areas contain mineral resources and could be impacted in the future if further planning approvals were granted.

In the Department's view, additional avoidance of *Melaleuca armillaris* Tall Shrubland after Boral's project feasibility process has identified the proposed modification as the alternative to avoid other areas of biodiversity is particularly challenging. The *Melaleuca armillaris* Tall Shrubland only occurs on the shallow basalt soils of the Bombo Latite, which is also a critical mineral resource for the State.

Although BCS advice raises the issue of future impacts on areas Boral planned to avoid in this proposed modification, the Department must consider the impact assessment submitted for this proposed modification and subsequently address future impacts if and when Boral submit a new application. Given the location of the hard rock resource and the quarrying constraints, the Department considers that Boral has taken reasonable and feasible measures to avoid impacts to biodiversity.

6.1.3 Predicted biodiversity impacts and proposed mitigation measures

The proposed modification would directly impact an area of 7.8 ha, containing 7.65 ha of native vegetation and a small area of cleared land. Table 5 summarises the direct and indirect biodiversity impacts on vegetation communities requiring offset and the biodiversity credits required to offset this loss.

Table 5 | Biodiversity impacts and associated biodiversity credit requirements

Ecological Feature	Listing status	Area of impact	Number of impact credits generated
<i>Ecosystem credits</i>			
Melaleuca armillaris Tall Shrubland PCT 720 – Bracelet Honey Myrtle – Australian indigo dry shrubland on volcanics southern Sydney Basin Bioregion	Critically endangered under the BC Act	<ul style="list-style-type: none"> 8.63 ha (direct impact of 7.65 ha; indirect impact of 0.98 ha) 	111
Illawarra Subtropical Rainforest PCT 1300 – Whalebone Tree – Native Quince dry subtropical rainforest on dry fertile slopes, southern Sydney Basin Bioregion	Endangered under the BC Act Critically endangered under the EPBC Act	<ul style="list-style-type: none"> 0.05 ha (indirect impact only) 	1
<ul style="list-style-type: none"> Species credits 			
Zieria granulata (Illawarra Zieria)	Endangered under the BC Act and the EPBC Act	<ul style="list-style-type: none"> 6.65 ha of direct clearing of habitat (1,381 mature plants from a total 1566 total plants) 	2,762
Irenepharsus trypherus (Illawarra Irene)	Endangered under the BC Act and the EPBC Act	<ul style="list-style-type: none"> 0.48 ha of direct habitat clearing (54 individuals) 0.26 ha of indirect impact (24 individuals) 	8

Ecological Feature	Listing status	Area of impact	Number of impact credits generated
Cynanchum elegans (White-flowered Wax Plant)	Endangered under the BC Act and the EPBC Act	<ul style="list-style-type: none"> 0.11 ha (0.05 ha of direct impact; 0.06 ha indirect impact) 	1
Gang-gang Cockatoo (<i>Callocephalon fimbriatum</i>)	Vulnerable under the BC Act and Endangered under the EPBC Act	<ul style="list-style-type: none"> 0.05 ha (indirect impact only) 	1
Little Eagle (<i>Hieraaetus morphnoides</i>)	Vulnerable under the BC Act	<ul style="list-style-type: none"> 8.68 ha (direct impact of 7.65 ha; indirect impact of 1.03 ha) 	68
Square-tailed Kite (<i>Lophoictinia isura</i>)	Vulnerable under the BC Act	<ul style="list-style-type: none"> 8.68 ha (direct impact of 7.65 ha; indirect impact of 1.03 ha) 	68
Barking Owl (<i>Ninox connivens</i>)	Vulnerable under the BC Act	<ul style="list-style-type: none"> 0.05 ha (indirect impact only) 	1
Powerful Owl (<i>Ninox strenua</i>)	Vulnerable under the BC Act	<ul style="list-style-type: none"> 0.05 ha (indirect impact only) 	1
Masked Owl (<i>Tyto novaehollandiae</i>)	Vulnerable under the BC Act	<ul style="list-style-type: none"> 0.05 ha (indirect impact only) 	1

The proposed modification is also likely to result in other indirect impacts associated with alteration of hydrology, erosion and sedimentation, removal of habitat resources, increased edge effects, weed invasion and increased human activity within or directly adjacent to sensitive habitat areas.

The BDAR concluded that the proposed modification would result in several changes to surface water flows immediately to the north and east of the proposed modification disturbance area which could have uncertain indirect impacts on biodiversity values. Boral proposes to use an adaptive management process supported by a flora monitoring program to identify if additional biodiversity impacts requiring offset occur.

Boral proposes to update the quarry's existing flora and fauna management plan in consultation with BCS.

Vegetation Translocation Plan

Boral proposes to salvage and translocate topsoil and plant propagules (seeds, rootstock, cuttings) from the proposed modification disturbance area, to a receiving site(s) within their landholdings. Boral proposed the salvage and translocation as an additional mitigation measure for direct impacts to *Melaleuca armillaris* Tall Shrubland, Illawarra Irene and Illawarra Zieria. After BCS raised concerns regarding the mismatch in the volume of salvaged topsoil and the size of Boral's proposed habitat corridor, Boral revised the proposed mitigation in the submissions report. The submissions report included a Vegetation Translocation Plan (VTP) with ten translocation areas in place of the proposed habitat corridor. Boral has successfully translocated topsoil from other areas containing *Melaleuca armillaris* Tall Shrubland and Illawarra Zieria) on their land but have not previously attempted to translocate Illawarra Irene.

BCS supported the proposed VTP as an integral component of the extra measures proposed but recommended the VTP be finalised during the assessment process and conditioned as a final plan. The Commonwealth DCCEEW further recommended that the preparation and implementation of the VTP be included as a condition of consent. The Department acknowledges these recommendations and has included the requirement to prepare and implement a VTP as a condition of consent, prior to undertaking any activities that would impact on biodiversity values within the proposed modification area. Impacts on Matters of National Environmental Significance

6.1.4 Matters of National Environmental Significance (MNES)

The modification report includes an Assessment of Commonwealth Matters (ACM) that considers the impacts of the proposed modification on the relevant MNES. The ACM considers the outcome of biodiversity surveys, quantification and mapping of habitat, impact descriptions and avoidance and mitigation measures, in line with the DCCEEW's assessment requirements relating to biodiversity.

The Department has reviewed the impacts on MNES, in consultation with BCS and in accordance with the requirements of the Bilateral Agreement between the NSW and Commonwealth Governments. The conclusions of this assessment are provided in **Table 5** and **Appendix C** and a summary of the direct impacts of the proposed modification on MNES is provided in **Appendix C**.

The proposed modification has the potential to result in significant impacts to Illawarra Irene. The BDAR did not identify any other significant impacts to MNES. The Department notes that the proposed modification will impact 1,381 mature *Zieria granulata*, however BCS provided advice that with the VTP and offset strategy, the impact is not significant.

It is noted that the Bilateral Agreement endorses the Biodiversity Assessment Method and NSW Biodiversity Offsets Scheme, including the Biodiversity Conservation Fund (BCF). In line with the agreement, the impacts of the proposed modification on MNES can be offset as part of the NSW offsets scheme.

6.1.5 Biodiversity offset strategy

The biodiversity offset strategy for the proposed modification has been the subject of complex consultation between Boral, BCS and the Department. Boral's commitments in their response to BCS's final advice in June 2024 demonstrates that Boral has made a concerted effort to resolve BCS's concerns regarding the inclusion of existing conservation areas and the proposed translocation area.

Retirement of Credits

Boral has committed to offset the biodiversity impacts of the proposed modification by retiring the required credits outlined in Table 5, in accordance with the requirements of the NSW Biodiversity Offsets Scheme.

Biodiversity Stewardship Site

The Department notes that due to the restricted distribution of *Melaleuca armillaris* Tall Shrubland, biodiversity credits on the open market are rare. Other recent approvals for impacts to *Melaleuca armillaris* Tall Shrubland required the establishment of a BSA by the applicant.

Boral has committed to establish a biodiversity stewardship site of at least 130 ha on their land to the south of the quarry (see Figure 3).

The proposed biodiversity stewardship site would contain:

- at least 41 ha of *Melaleuca armillaris* Tall Shrubland in varying condition;
- approximately 31.3 ha of Illawarra Subtropical Rainforest; and
- approximately 33,991 mature *Zieria granulata* (Illawarra Zieria) individuals.

Boral proposes to undertake further survey and assessment of the proposed biodiversity stewardship site to formalise the calculation of the credits generated.

Boral has committed to retire double the calculated number of biodiversity credits outlined in Table 5, with at least 50% retired using the credits generated by the BSA. Boral would also retire an additional 111 *Melaleuca armillaris* Tall Shrubland credits using the credits generated by the proposed BSA.

Boral committed to incorporating an additional small area of *Melaleuca armillaris* Tall Shrubland into the proposed BSA. Boral noted regulatory challenges in implementing BCS's recommendation to include the existing Offset Area and existing Compensatory Habitat Area (required by the existing development consent conditions) in the proposed BSA (see Figure 3). Boral committed to continue investigating a consolidated stewardship site.

The Department agrees with BCS's advice to include the existing offset and conservation areas in the proposed biodiversity stewardship agreement. The Department considers that combining the management of the existing areas and the proposed biodiversity stewardship site would improve in-perpetuity management, funding and enforcement of the required biodiversity conservation outcome.

6.1.6 Serious and irreversible impacts

The BC Regulation 2017 lists Illawarra Subtropical Rainforest and *Melaleuca armillaris* Tall Shrubland as entities potentially at risk of SAIL. It is the view of BCS that, without additional measures, the clearing of 7.65 ha CEEC *Melaleuca armillaris* Tall Shrubland is likely to meet 3 of the 4 principles applicable to determining SAIL on biodiversity values.

Boral is able to use a range of options to retire the credits needed to satisfy their credit obligations including purchasing credits from the market or paying into the Biodiversity Conservation Fund. However, given the risk of SAIL, additional measures are required. Boral developed the proposed offset strategy in consultation with BCS and the Department to achieve this outcome.

BCS advice on the submissions report included in-principle support for:

- the retirement of additional *Melaleuca armillaris* Tall Shrubland credits;
- establishment of the proposed BSA;
- active management of the BSA using the total fund deposit;
- ensuring Boral has no financial gain from purchasing/retiring the BDAR calculated offset obligations;
- the proposed vegetation translocation plan; and
- incorporating existing conservation areas in the proposed BSA (see Section 6.1.5).

BCS highlighted that active conservation in a reasonable timeframe is the key to beneficially improving the condition of the *Melaleuca armillaris* Tall Shrubland within the biodiversity stewardship site.

BCS recommended Boral be required to establish the biodiversity stewardship site within 12 months of commencing the proposed modification, with active management commencing within three months of finalising the agreement.

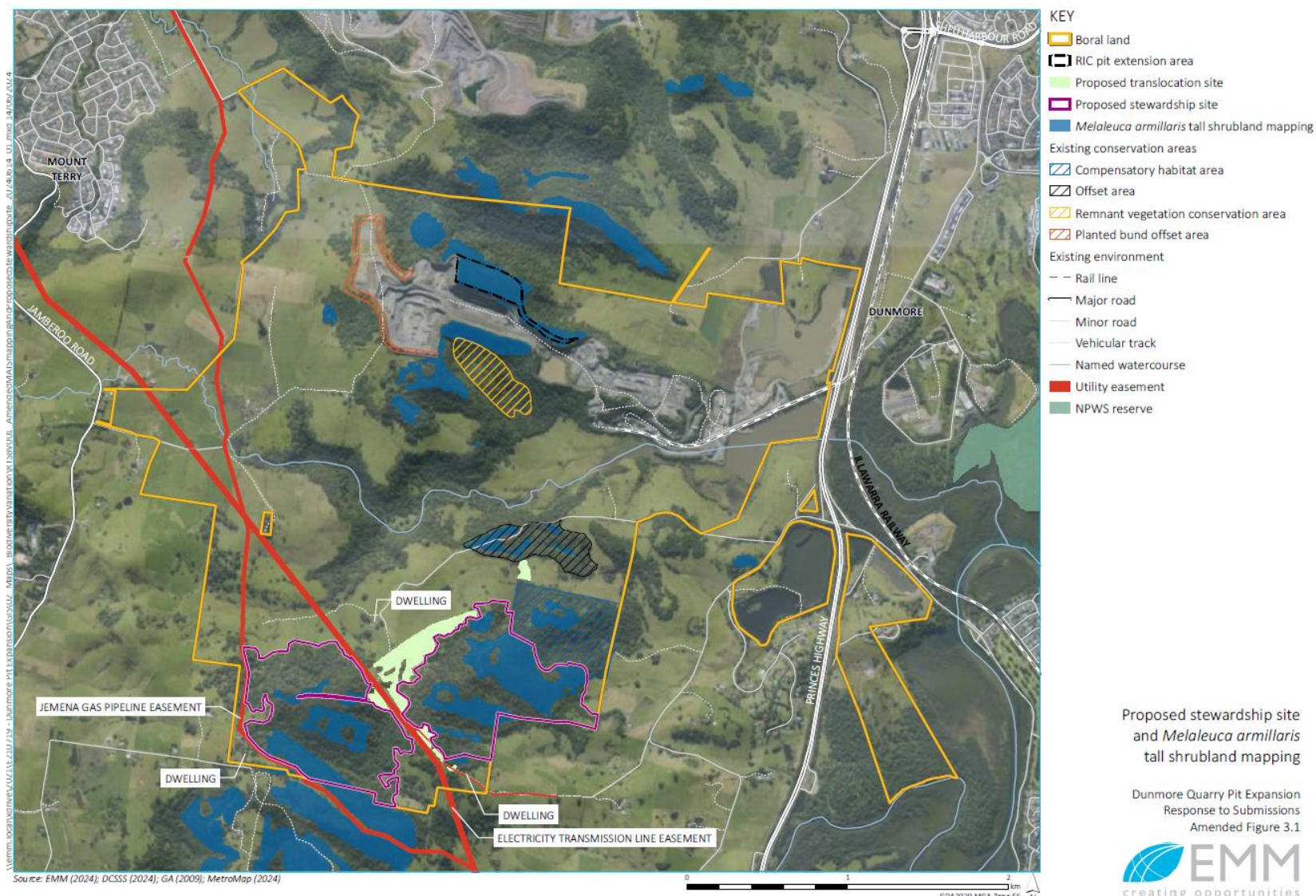


Figure 3 | Proposed biodiversity stewardship site

After consulting with the Nature Markets Office, the Department found Boral would require up to 2 years to complete the necessary surveys and assessment. However, the Department has adopted BCS's recommendation of active management of the biodiversity stewardship site commencing within three months of finalising the agreement.

As an additional and appropriate mitigation measure, Boral would retire an additional 111 credits of *Melaleuca armillaris* Tall Shrubland (PCT 720) (beyond that outlined in Table 5), within three months of finalising the proposed BSA.

6.1.7 Conclusion

The Department considers that the proposed modification's design adequately avoided potential biodiversity impacts. Given the risk of the proposed modification resulting in a SAll on *Melaleuca armillaris* Tall Shrubland, Boral proposes several mitigation measures for *Melaleuca armillaris* Tall Shrubland that also minimise the potential impacts on *Zieria granulata* and Illawarra Irene.

The Department considers Boral's proposed vegetation translocation plan and biodiversity stewardship site, combined with the Department's recommended condition of consent requiring Boral to include existing conservation areas in the stewardship site, to be acceptable measures that adequately reduce the proposed modifications impact on biodiversity values.

In the Department's view, the retirement of biodiversity credits detailed by Table 5 would offset the proposed modification's residual impacts, with the exception of *Melaleuca armillaris* Tall Shrubland.

Boral has committed to retire double the calculated number of biodiversity credits for the proposed modification, with at least 50% of the credits retired via a proposed BSA on Boral landholdings.

To mitigate the risk of SAll on *Melaleuca armillaris* Tall Shrubland, Boral has also committed to retire an additional 111 *Melaleuca armillaris* Tall Shrubland credits using the credits generated by the proposed BSA.

BCS provided in-principle support for the proposed mitigation measures and offset strategy but holds residual concerns regarding the consolidation of existing conservation areas, the timing and enforcement of the BSA implementation, and the finalisation of the vegetation management plan. The Department acknowledges these concerns and has recommended conditions of consent that would provide a practical solution to each of them while providing Boral with sufficient time to plan and undertake the work needed to achieve the best possible long term biodiversity outcomes.

The Department has also recommended consent conditions that require a revised Flora and Fauna management plan and the retirement of biodiversity credits to offset the residual biodiversity impacts.

6.2 Other issues

The Department's consideration of other issues is summarised in Table 6 below.

Table 6 | Assessment of other issues

Issue	Findings and conclusions	Recommended conditions
Air Quality	<ul style="list-style-type: none"> The Modification Report included an Air Quality Impact Assessment (AQIA), prepared by EMM in accordance with the EPA's <i>Approved Methods for the Modelling and Assessment of Air Pollutants in NSW</i>. The AQIA compared the air emission inventories associated with the approved operations in the Croome West Pit (scenario 2 in the AQIA for MOD 9) with the proposed operations in the RIC pit extension. EPA did not provide any specific comments in relation to the AQIA. EMM confirmed that the key changes to the air emissions and impacts associated with the proposed modification are: <ul style="list-style-type: none"> an eastward movement of quarry pit activity emission sources (i.e. further away from the sensitive receptors to the west); a reduction in haulage distance between the pit and processing plant hopper from approximately 2 km to 1.2 km); and an increase in the land area for potential wind erosion emission generation by up to 8 ha. EMM predicted that the proposed modification would result in an overall reduction in annual total suspended particulates (TSP), PM10 and PM2.5 emissions relative to the Croome West Pit operational scenario, primarily due to the reduced length of haulage. EMM also noted that predicted emissions are likely further reduce over time as the quarry operations progress deeper into the RIC pit. EMM confirmed that the predicted cumulative 24-hour average and annual average TSP, PM10 and PM2.5 concentrations from the proposed quarry operations were all below the applicable assessment criteria at sensitive receptors. It is noted that the nearest sensitive receivers (G, Z and D) are located further from the proposed RIC pit extension (i.e. approximately 1.25km) than the current Croome West Pit (i.e. 600 m). 	The Department considers that the existing conditions remain appropriate for the project.

Issue	Findings and conclusions	Recommended conditions
	<ul style="list-style-type: none"> • Further, EMM indicated that analysis of historical monitoring data at the quarry since 2017 confirms that quarry operations are not resulting in exceedances of applicable criteria. • Overall, EMM concluded that the proposed modification would not result in adverse air quality impacts. • The Department accepts these predictions and considers that the existing consent conditions provide for effective management of air quality impacts under the approved Air Quality Management Plan, which requires a real-time dust monitoring network to inform operative practices and air quality management onsite. 	
Noise and vibration	<ul style="list-style-type: none"> • The Modification Report included a Noise and Vibration Impact Assessment (NVIA), prepared by EMM with reference to applicable guidelines and policies to assess the potential noise, vibration and blasting impacts associated with the proposed modification. • The NVIA compared modelled predicted operational noise levels associated with approved operations in the Croome West Pit (in the NVIA for MOD 9) with the proposed operations in the RIC pit extension. • EPA did not provide any specific comments in relation to the NVIA. • EMM confirmed that the key change in noise source emissions associated with the proposed modification is the advance of quarrying in the proposed RIC pit extension in a north-easterly direction. • Boral committed to continue implementing the existing noise mitigation and management measures on site, including locating the crushing plant in topographically shielded locations; enclosing plant and conveyors; operating behind existing noise bunds; and operating a real-time noise monitoring system. The Department supports these measures. • EMM confirmed that noise modelling predictions for the proposed operations are similar or less than those predicted for existing operations (i.e., in-line with the NVIA for Mod 9) at the majority of sensitive receptors. The only exceptions were at three receptor locations to the south-west of the quarry (i.e., assessment locations S, T and AD) where the noise levels are predicted to increase by 1-3 dB(A) during the evening 	The Department considers that the existing conditions remain appropriate for the project.

Issue	Findings and conclusions	Recommended conditions
	<p>and/or morning shoulder periods compared to previous predictions.</p> <ul style="list-style-type: none"> • EMM confirmed that these increases would result in potential exceedances of the existing consent noise limits by 1-2 dB(A) at two of the assessment locations (i.e., S and T) during noise enhancing meteorological conditions. Under the <i>Voluntary Land Acquisition Mitigation Policy</i> (VLAMP) (NSW Government, 2018), exceedances of 1-2 dB(A) are considered negligible and not discernible by the average listener, and therefore would not warrant additional noise mitigation measures. • EMM also completed a maximum noise level assessment to predict potential sleep disturbance associated with the proposed operations. This assessment confirmed that noise levels for the night/morning shoulder periods were below the relevant sleep disturbance trigger levels. • EMM confirmed that as the quarry operations progress deeper into the RIC pit, these impacts are expected to be negated as the surrounding topography would shield the potential 'impact envelope' generated by the proposed modification. • EMM noted that analysis of noise compliance monitoring results has confirmed that noise from historical and current quarrying operations is below the relevant operational noise limits at all noise monitoring locations and is often not audible at most locations. • EMM predicted that vibration and blast overpressure impacts associated with the proposed modification would comply with the relevant approved criteria at all privately-owned sensitive receivers. • Boral committed to manage blast, vibration and noise impacts associated with the proposed modification in accordance with the approved Noise Management Plan and Blast Management Plan. • Overall, the Department considers that noise, blasting and vibration impacts from the proposed modification would be acceptable, generally consistent with the approved project, and able to be managed under existing conditions of consent. 	

Issue	Findings and conclusions	Recommended conditions
Visual amenity	<ul style="list-style-type: none"> • The Visual Impact Assessment prepared by EMM focused on evaluating the level of visual modification and incremental visual impacts associated with the RIC pit extension, and the visual sensitivity of the receptors in the visual catchment. • Although the intervening topography and vegetation would limit most direct views of the proposed modification from surrounding locations, EMM concluded that three sensitive receivers (C01, R07 and R20), located on the Western side of the Princess Highway, are likely to experience moderate visual impacts as a result of the proposed modification. • To mitigate these visual impacts, Boral committed to planting vegetation screening at the impacted receivers and along the perimeter of the RIC pit extension. • With the implementation of the proposed mitigation measures, the Department considers that the visual impacts would be generally consistent with that of the approved project, and that these impacts can be effectively managed through existing conditions of consent. 	The Department considers that the existing conditions remain appropriate for the project.
Aboriginal cultural heritage	<ul style="list-style-type: none"> • An Aboriginal Cultural Heritage Assessment was prepared by EMM, in consultation with 16 Registered Aboriginal Parties, in accordance with the <i>Aboriginal cultural heritage consultation requirements for proponents 2010</i> (DECCW 2010). • While EMM noted that the proposed modification disturbance area may hold cultural and historical significance for the local Aboriginal people, the land has been historically used for logging activities which has resulted in substantial erosion and soil surface disturbances. • EMM concluded that no cultural material or Aboriginal objects were identified within the proposed modification disturbance area. • Given the historical land use of the site and the fact that no surface or subsurface cultural material was found, the Department considers the potential for Aboriginal archaeological significance within the project area to be low. • Potential impacts on Aboriginal cultural heritage would continue to be managed in accordance with the approved Aboriginal Heritage Management Plan which 	The Department considers that the existing conditions remain appropriate for the project.

Issue	Findings and conclusions	Recommended conditions
	<p>includes a framework for reducing impacts and managing unexpected finds, Aboriginal consultation and other heritage related matters.</p> <ul style="list-style-type: none"> Heritage NSW and the Heritage Council did not raise any concerns regarding Aboriginal cultural heritage impacts of the proposed modification and were satisfied that a revised Aboriginal Heritage Management Plan would adequately manage and mitigate potential impacts. Accordingly, the Department considers that the existing conditions of consent and a revised Aboriginal Heritage Management Plan would suitably manage potential Aboriginal cultural heritage impacts for the project as modified. 	
Historic Heritage	<ul style="list-style-type: none"> While no heritage items are located in the proposed modification disturbance area, there are six Shellharbour LEP listed heritage items on adjoining properties surrounding the quarry, with the closest item (I143) being located approximately 500 m south of the RIC pit. The modification report concluded that the RIC pit expansion would not have any direct or indirect impacts to heritage listed items. Council raised no concerns regarding historic heritage. Given there are heritage items on neighbouring properties surrounding the site, Heritage Council of NSW recommended a condition to manage unexpected finds of archaeological deposits or relics. The Department has recommended a condition to this effect. Notwithstanding the above, the Department is satisfied the project would not have any adverse impacts on local or State heritage items in the locality and that historic heritage impacts can be appropriately managed by revised conditions of consent. 	The Department recommends the existing consent conditions are revised to include an unexpected finds protocol for historic heritage items.
Water Resources	<p>Surface Water</p> <ul style="list-style-type: none"> The Surface Water Assessment prepared by EMM indicated that the key surface water impacts of the proposed modification relate to changes in the catchment area and streamflow regimes of Rocklow Creek. 	The Department recommends the existing consent conditions are updated to include management of groundwater inflows as part of the final landform and rehabilitation objectives.

Issue	Findings and conclusions	Recommended conditions
	<ul style="list-style-type: none"> Given the RIC pit extension area is wholly located within the Rocklow Creek catchment, the overall catchment size is expected to be permanently reduced by 7.8 ha. Although the proposed modification would reduce streamflow of minor watercourses within this catchment, EMM concluded that no material changes are expected to occur within the overall streamflow regime of Rocklow Creek and that any changes would be negligible given the overall 21 km² (2,100 ha) Rocklow Creek catchment size. From an operational perspective, surface water runoff from the RIC pit extension would be diverted into the existing approved water management system. This would result in an additional 7.8 ha area of surface water run off (from 95.8 ha to 103.6 ha) to be incorporated into the existing water management system, leading to a higher volume of surface water to be managed. During operations, surface water runoff from the RIC pit extension would drain to Middle Dam and be either: <ul style="list-style-type: none"> stored and recirculated within the quarry for reuse; discharged offsite from Middle Dam via seepage into the underlying Breccia Spring that flows into Rocklow Creek, in accordance with Boral's existing environment protection licence (EPL No. 77); or discharged offsite from Middle Dam overflow to a Rocklow Creek tributary under the existing conditions of EPL No. 77. While the existing water management system is not expected to significantly change as a result of the modification, Middle Dam's catchment area would be increased by 7.8ha (from 13.9 ha to 21.7 ha). This would result in a moderate increase in the amount of water being drained and stored in Middle Dam. Relative to the approved operations, EMM concluded that the frequency of Middle Dam overflows would increase from 'rarely' to occurring 'once every five years'. Given the fact that Middle Dam would generally hold more water, seepage to Breccia Spring would increase by 21 megalitres (ML) during a typical dry year (from 49ML per year to 70ML per year), and 25ML during a 	

Issue	Findings and conclusions	Recommended conditions
	<p>typical wet year (from 235ML per year to 260ML per year).</p> <ul style="list-style-type: none"> • Whilst there would be an increase in the frequency and total volume of controlled discharges into the receiving waters of Rocklow Creek, EMM concluded that the discharges are not expected to materially change the water quality or streamflow of Rocklow Creek. • Given the RIC pit extension is within 30 m from a mapped tributary of Rocklow Creek, the Water Group requested Boral to prepare a Soil and Water Management Plan and Erosion and Sediment Control Plan to manage potential surface water impacts. • In response, Boral committed to preparing an Erosion and Sediment Control Plan in accordance with <i>Managing Urban Stormwater: Soils and Construction</i> (Landcom 2004), which would be included in the Construction Environmental Management Plan for the RIC pit extension. • The Department has carefully assessed the surface water impacts of the modification and considers that any impacts to surface water quality, stream flow and hydrology would be no greater than those currently experienced under the approved operations. • During operations, the capture of surface water would be authorised under exemptions under the <i>Water Management (General) Regulation 2018</i>, stored and recirculated in on site sediment basins, and discharged offsite in accordance with the existing EPL No. 77. • Overall, the Department considers the impacts of the proposed modification on surface water could be suitably managed in accordance with the existing consent conditions as well as a revised Water Management Plan that incorporates the modification and an Erosion and Sediment Control Plan for the RIC pit extension. <p>Groundwater</p> <ul style="list-style-type: none"> • The groundwater assessment prepared by EMM concluded that the modification would result in additional groundwater drawdown of > 2m that would extend approximately 1km from the pit shell into the surrounding groundwater table. 	

Issue	Findings and conclusions	Recommended conditions
	<ul style="list-style-type: none"> While predicted drawdown does not encroach on areas mapped as high priority groundwater dependant ecosystems, it does encroach on three vegetation communities that have a moderate groundwater dependence, including: <ul style="list-style-type: none"> 0.03ha of Forest Red Gum - Thin-leaved Stringybark grassy woodland on coastal lowlands, southern Sydney Basin Bioregion (PCT 838); 12.15 ha of Whalebone Tree - Native Quince dry subtropical rainforest on dry fertile slopes, southern Sydney Basin Bioregion (PCT 1300); and 3.16 ha of Whalebone Tree - Native Quince dry subtropical rainforest on dry fertile slopes, southern Sydney Basin Bioregion/Lilly Pilly - Sassafras - Stinging Tree subtropical/warm temperate rainforest on moist fertile lowlands, southern Sydney Basin Bioregion (PCT 1300/906). EMM predicted that these PCT's are likely to be moderately impacted by groundwater drawdown as they are mapped within the >10m drawdown impact area. While the effect of the modification on these PCTs is predicted to be minimal compared to the approved project, EMM is recommending further sensitivity analysis be undertaken to determine the scale of the incremental impacts directly resulting from the modification. This includes validating the groundwater model using virtual piezometer locations representative of PCTs where drawdown is expected as well as field verification and establishment of vegetation monitoring plots for areas predicted to be impacted. These results would be incorporated into the existing approved Flora and Fauna Management Plan. Should impacts to vegetation health be identified, the Department considers that adaptive management and monitoring of the affected PCTs is required and able to be managed under the existing conditions of consent. As groundwater drawdown is a direct result of the RIC pit intersecting and extending deeper below the water table, increased groundwater inflows into quarrying areas is expected. 	

Issue	Findings and conclusions	Recommended conditions
	<ul style="list-style-type: none"> Relative to the approved operations, the modification report predicts groundwater inflows to gradually increase from 0 ML per year in 2022 to 5.32 ML per year in year 2034, peaking at 7.36 ML per year in 2043. These inflows are due to the low hydraulic conductivity and water storage within the hard rock, which is demonstrated in historically observed low groundwater inflow into the existing operational Croome pits. EMM concluded that the groundwater inflow seepage rate would continue post mining and gradually decrease over time. The rate of decrease would be dependent on surface water management and the overall design of the final landform. While the Department considers the existing consent conditions remain appropriate for managing the changes to groundwater inflows during quarry operations, potential impacts post quarrying would need to be managed. The Department is recommending a condition requiring Boral to proactively manage and reduce groundwater inflows into the quarry as part of the final landform and rehabilitation objectives. The modification is predicted to encounter surplus water as a result of greater supply factors (from groundwater inflows and surface water run off) than demand (for dust suppression and evaporation). The overall predicted peak groundwater take for the project is 147.4 ML per year which would occur during final extraction stage of the deepest area of the RIC pit. Boral currently holds 250 ML of shares within the Sydney Basin South Groundwater Source of the <i>Water Sharing Plan for the Greater Metropolitan Region Groundwater Sources 2011</i>, which would be sufficient to cover the proposed modification's peak water take. A total of 3 landholder bores are located within 2km of the disturbance area, with one of these being registered bore GW026848 (licence number 10WA105904), located approximately 1.5km from the western extent of the RIC pit. 	

Issue	Findings and conclusions	Recommended conditions
	<ul style="list-style-type: none"> The groundwater assessment predicts that registered bore GW026848 would experience between 4 and 6 m of groundwater drawdown, which would exceed the 2 m minimal impact consideration of the Aquifer Interference Policy. If greater than 2 m of groundwater drawdown occurs at this bore as a result of the modification, the make good provisions of the policy would apply. The Water Group considered that there would be an impact risk to this registered bore and therefore the make good provisions would apply if water security is lost. Notwithstanding the above, the Water Group requested Boral continue the existing groundwater monitoring program, including monitoring water levels at registered bore GW026848, as well as revising the existing approved Water Management Plan to include the modification. Boral committed to implementing these mitigation measures. Overall, the Department considers that the impacts to groundwater resources would be generally consistent with the existing approved project, noting that the minimal impact considerations of the Aquifer Interference Policy would be met, and that Boral has sufficient water licences to account for its predicted water take. The Department considers that the existing conditions of consent as well as a revised Water Management Plan would be sufficient for minimising and managing potential impacts to groundwater resources. 	
Rehabilitation and final landform	<ul style="list-style-type: none"> The RIC pit extension would result in changes to the final landform; however, the overall rehabilitation objectives would be consistent with those for the existing approved project. Nevertheless, the Department is recommending the consent conditions be updated to reflect contemporary rehabilitation and closure requirements. This includes more stringent rehabilitation and completion criteria for reducing the final void and catchment areas, minimising visual and environmental impacts and managing progressive rehabilitation. In addition, the Department is recommending a final landform feasibility assessment and a conceptual final landform study as well as rehabilitation objectives to 	<p>The Department recommends the existing consent conditions are updated to reflect contemporary rehabilitation requirements.</p>

Issue	Findings and conclusions	Recommended conditions
	<p>ensure the final landform is hydraulically and geotechnically stable, non-polluting, integrated with the surrounding natural landscape and fit for intended post- quarrying land use.</p> <ul style="list-style-type: none"> Measures to meet the rehabilitation objectives and progressive rehabilitation obligations would continue to be monitored and managed in accordance with the existing Rehabilitation Management Plan requirement. Overall, the Department considers that the proposed modification area could be rehabilitated to achieve a sustainable final landform and appropriate rehabilitation outcomes. 	
Greenhouse Gas Emissions	<ul style="list-style-type: none"> The Department considers that the proposed modification would not result in an increase of greenhouse gas emissions emitted from the site each year as the proposed modification would not change the annual production rate, extraction or processing methods, The proposed modification would, however, extend the timeframe of when emissions would occur. Instead of finishing in 2034 under the existing consent, the proposed modification would result in the generation of emissions for an additional 9 years until 2043. The modification report indicated that the existing operations generate approximately 23,224 tonnes (t) CO_{2-e} of scope 1 and scope 2 emissions per year. Given the predicted scope 1 emissions are less than 100,000 t CO_{2-e} per year, the Dunmore Quarry is not considered a large emitter under the Commonwealth Safeguard Mechanism. Under the <i>Climate Change (Net Zero Future) Act 2023</i> (Net Zero Future Act), NSW greenhouse gas emissions reduction targets are set to achieve at least 50% reduction by 2030, 70% by 2035 and a target of net zero emissions by 2050. Boral has committed to reducing its scope 1 and scope 2 emissions by 18% in 2025, 46% in 2030 and its scope 3 emissions by 22% in 2030, with the goal of net zero carbon emissions by 2050. To provide measurable targets and clear emission reduction commitments, EPA's Climate Change Policy and Climate Change Action Plan 2023-26 requires licensees, under the <i>Protection of the Environment</i> 	The Department considers that the existing conditions remain appropriate for the project.

Issue	Findings and conclusions	Recommended conditions
	<p><i>Operations Act 1997</i>, to prepare and implement a Climate Change Mitigation and Adaptation Plan.</p> <ul style="list-style-type: none"> • EPA's Climate Change Policy would require Boral to reduce greenhouse gas emissions using the mitigation hierarchy (avoid, mitigate, offset). • Overall, the Department has considered the increase in greenhouse gas emissions over the extended period of 9 years in the context of NSW and Commonwealth policies and guidelines, including the emissions reduction targets and principles set out in the Net Zero Future Act. • The Department considers that these measures provide appropriate safeguards to ensure greenhouse gas emissions are reduced and managed accordingly over the life of the development. • The Department considers that the proposed modification is consistent with current NSW and Commonwealth policy settings in regard to greenhouse gas emissions. 	

7 Evaluation

The Department's assessment has considered the relevant matters and objects of the EP&A Act, including the principles of ecologically sustainable development, advice from government agencies, local councils and public submissions, and strategic government policies and plans.

The Department acknowledges the submissions received on the proposed modification and concerns regarding the clearing of *Melaleuca armillaris* Tall Shrubland. In particular, the Department notes that BCS advice identified a risk of a SAll to *Melaleuca armillaris* Tall Shrubland, initially recommending further avoidance measures to reduce this risk.

The Department found that Boral adequately considered alternative quarry designs and selected the proposed modification due to its reduce impact on *Melaleuca armillaris* Tall Shrubland. The Department acknowledges that avoidance of biodiversity impacts is critical and is satisfied with the avoidance achieved during Boral's project design phase.

The Department has carefully evaluated the proposed modification's residual impact on *Melaleuca armillaris* Tall Shrubland and other threatened species. The Department's assessment involved complex consultation with BCS and Boral to achieve a suitable offset approach which would include retiring an additional 111 credits of *Melaleuca armillaris* Tall Shrubland, establishing and actively managing a BSA and undertaking Vegetation Translocation Plan with the aim of re-establishing areas of *Melaleuca armillaris* Tall Shrubland propagules. The Department notes that these mitigations would also benefit *Zieria granulata* and Illawarra Irene.

BCS provided in-principle support for the proposed biodiversity mitigations. The Department has recommended conditions of consent that would require Boral to implement the proposed mitigation measures, and incorporate existing conservation and offset areas into the one biodiversity stewardship site, to ensure that the mitigations benefits are realised and a net gain of *Melaleuca armillaris* Tall Shrubland is achieved.

The Department's assessment of other issues found that the proposed modification would not result in significant impacts and that Boral has demonstrated the proposed modification would have minimal risk beyond what has been previously assessed and approved for the existing project.

The Department considers that potential water, greenhouse gas emissions, noise, vibration, visual, Aboriginal heritage and air quality impacts can be suitably managed through existing conditions of consent and revised management plans that incorporate the proposed modification. The Department has also updated the consent to address current rehabilitation management requirements and included an unexpected finds protocol for heritage items to reflect contemporary conditions.

The proposed modification would provide access to additional hard rock resources required to support major infrastructure projects across NSW and has been designed in a manner that achieves a reasonable balance between the recovery of a State significance resource and minimising its potential environmental and social impacts.

The Department considers that the proposed modification's benefits would outweigh any residual impacts and that the proposed modification is in the public interest, as it would extend employment for a further nine years and provide additional high-quality resources to the construction and infrastructure industry.

Overall, the Department considers that the proposed modification should be approved, subject to the recommended conditions.

The Department has drafted the recommended instrument of modification for DA470-11-2003 (see **Appendix D**) and a consolidated version of the development consent, as it is proposed to be modified (see **Appendix E**).

8 Recommendation

It is recommended that the Director, Energy and Resource Assessments, as delegate of the Minister for Planning and Public Spaces:

- considers the findings and recommendations of this report;
- determines that the application DA470-11-2003 MOD 13 falls within the scope of section 4.55(2) of the EP&A Act;
- accepts and adopts all of the findings and recommendations in this report as the reasons for making the decision to approve the modification;
- modifies the consent DA470-11-2003;
- signs the attached approval of the modification (Appendix D).

Recommended by:

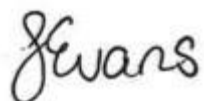


25/06/2024

Melissa Dunlop
Principal Planning Officer
Resource Assessments

9 Determination

The recommendation is adopted by:

A handwritten signature in black ink that reads "Jessie Evans". The signature is written in a cursive, flowing style.

25/06/2024

Jessie Evans

Director

Energy and Resource Assessments

Appendices

Appendix A – List of referenced documents

A1 – Modification Report: Refer to the ‘Modification Application’ folder under the ‘Assessment’ tab on the Department’s website at: <https://www.planningportal.nsw.gov.au/major-projects/projects/modification-13-dunmore-quarry-pit-extension>

A2 – Submissions: Refer to the ‘Submissions’ tab on the Department’s website at: <https://www.planningportal.nsw.gov.au/major-projects/projects/modification-13-dunmore-quarry-pit-extension>

A3 – 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/modification-13-dunmore-quarry-pit-extension>

A4 – 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/modification-13-dunmore-quarry-pit-extension>

A5 – Agency Advice: Summarised in Table A5.1. 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/modification-13-dunmore-quarry-pit-extension>

Table A5.1 | Agency advice

Agency	Advice
Department of Planning, Housing and Infrastructure – Crown Lands	<ul style="list-style-type: none">• Mod Report Advice
NSW Department of Climate Change, Energy, the Environment and Water	
Biodiversity, Conservation and Science Group (BCS)	<ul style="list-style-type: none">• Mod Report Advice• Submissions Report Advice• Additional response June 2024
Environment Protection Authority (EPA)	<ul style="list-style-type: none">• Mod Report Advice• Submissions Report Advice
Water Group	<ul style="list-style-type: none">• Mod Report Advice• Submissions Report Advice
Heritage NSW	<ul style="list-style-type: none">• Mod Report Advice• Submissions Report Advice

Agency	Advice
Heritage Council of NSW	<ul style="list-style-type: none"> • Mod Report Advice • Submissions Report Advice
Department of Regional NSW – Resources Regulator	<ul style="list-style-type: none"> • Mod Report Advice
Department of Primary Industries	
Agriculture	<ul style="list-style-type: none"> • Mod Report Advice
Fisheries	<ul style="list-style-type: none"> • Mod Report Advice
Transport for NSW (TfNSW), including Sydney Trains	<ul style="list-style-type: none"> • Mod Report Advice (TfNSW) • Mod Report Advice (Sydney Trains)
NSW Rural Fire Service (RFS)	<ul style="list-style-type: none"> • Mod Report Advice • Submissions Report Advice
Council	
Shellharbour City Council	<ul style="list-style-type: none"> • Mod Report Comments • Submissions Report Comments

Appendix B – Statutory considerations

Objects of the EP&A Act

A summary of the Department’s consideration of the relevant objects (found in section 1.3 of the EP&A Act) are provided in Table B1 below.

Table B1 | Objects of the EP&A Act and how they have been considered

Object	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,	<ul style="list-style-type: none"> • The modification meets this object because it would facilitate the continued operation of the quarry within the existing project boundary. • The project’s existing infrastructure and workforce would also continue to be utilised.

Object	Consideration
(b) to facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment,	<ul style="list-style-type: none"> • The Department's assessment has sought to integrate all significant environmental, social and economic considerations. The Department considers that the modification could be carried out in a manner that is consistent with the principles of ecologically sustainable development.
(c) to promote the orderly and economic use and development of land,	<ul style="list-style-type: none"> • The modification involves a permissible land use and would be carried out within the existing project area. The modification would result in the continuation of employment of the workforce and a continuation of the economic benefits generated by the quarry for an additional 9 years. The Department considers this represents an orderly and economic use of the land
(d) to promote the delivery and maintenance of affordable housing,	<ul style="list-style-type: none"> • The project would continue to provide critical resources required for the foundation of homes.
(e) to protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats,	<ul style="list-style-type: none"> • The Department has assessed the biodiversity impacts of the modification in accordance with relevant State and Commonwealth legislation, policies and guidelines. • The Department considers that the modification avoids, minimises and offsets (to the greatest extent practicable) impacts on threatened species. • The Department has recommended conditions to ensure that the residual biodiversity impacts of the proposed modification 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),	<ul style="list-style-type: none"> • Due to the existing quarry landscape, the Department considers impacts to Aboriginal heritage from the modification would be negligible.
(g) to promote good design and amenity of the built environment,	<ul style="list-style-type: none"> • The project is located on land historically used for quarrying operations.

Object	Consideration
(h) to promote the proper construction and maintenance of buildings, including the protection of the health and safety of their occupants,	<ul style="list-style-type: none"> The project would continue to provide high quality resources required for high strength foundations in homes, hospitals and other infrastructure.
(i) to promote the sharing of the responsibility for environmental planning and assessment between the different levels of government in the state,	<ul style="list-style-type: none"> The Department has assessed the modification application in consultation with Shellharbour City Council and other relevant NSW government authorities and has given consideration to the issues raised by these agencies in its assessment.
(j) to provide increased opportunity for community participation in environmental planning and assessment.	<ul style="list-style-type: none"> The Department publicly exhibited the modification application and considered all submissions in its assessment.

Environmental Planning Instruments (EPIs)

State Environmental Planning Policy (Resources and Energy) 2021

Compatibility with Other Land Uses (section 2.17)

The modification would not conflict with existing extractive industry in the locality and the Department considers that the modification can be carried out in a manner that is compatible with surrounding land uses.

Natural Resource Management and Environmental Management (section 2.20)

Impacts to biodiversity have been comprehensively addressed in Section 6.1 and the Department has recommended a robust suite of conditions to ensure that the modification is undertaken in an environmentally responsible manner.

Resource Recovery (section 2.21)

The Department considers that the modified project can be carried out in an efficient manner that optimises resource recovery while giving appropriate recognition to and protection for the significant environmental and other values that may be affected.

Rehabilitation (section 2.23)

The Department has recommended strict conditions to ensure that the site is rehabilitated in a progressive and timely manner and that the final landform is safe, stable and non-polluting.

State Environmental Planning Policy (Resilience and Hazards) 2021

The Department is satisfied that the RIC pit extension area does not have a significant risk of existing contamination given its historical and current land uses, and that the project is generally consistent with the aims, objectives and provisions of the SEPP.

Shellharbour Local Environmental Plan 2013

The modification would not change the project boundary, which is located wholly on land owned by Boral and within the area to which the Shellharbour LEP applies. All activities are located within lands zoned for RU1 primary production and RU2 rural landscape use in the Shellharbour LEP, and there would be no changes to the permissibility of the project.

Appendix C – Assessment of Matters of National Environmental Significance

In accordance with the Bilateral Agreement between the Commonwealth and NSW Governments, the Department provides the following additional information required by the Commonwealth Minister, in order to decide whether or not to approve a proposed action (i.e. the proposed modification) under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

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

- Modification Report for the Dunmore Hard Rock Quarry Modification 13;
- Submissions Report for the Dunmore Hard Rock Quarry Modification 13;
- advice received from State agencies and Shellharbour City Council; and
- additional information provided in response to the Department's requests.

It has given particular consideration to the advice provided by BCS regarding biodiversity and the final BDAR, as well as specific advice regarding the proposed action's potential impacts on Biodiversity Matters of National Environmental Significance (MNES) (see Section 4 and 6.1).

This Appendix is supplementary to, and should be read in conjunction with, with main body of the Department's assessment report, particularly Section 6.1, which includes consideration of impacts to listed threatened species and communities (including for MNES) and avoidance, mitigation, and offsetting measures for threatened species and communities.

BCS has undertaken a detailed review of the impacts of the proposed action on threatened communities and species listed under the EPBC Act, in accordance with templates provided by Department of Climate Change, Energy, the Environment and Water (DCCEEW).

C1 – Impacts on EPBC Act listed Species and Communities

The direct and indirect impacts from the proposed modification on EPBC-listed threatened species and communities are summarised in Table C1.1 below.

Table C1.1 | Summary of likely impacts on threatened species listed under the EPBC Act

Ecological feature	EPBC listing status	Disturbance	Biodiversity credits	Significant impact predicted?
Threatened Ecological Communities				
Shoalhaven-Illawarra Subtropical Rainforest in the Sydney Basin Bioregion	Critically Endangered	0.05 ha of indirect impact and a reduction of available water	1	No
Threatened Species				
Illawarra Zieria (<i>Zieria granulata</i>)	Endangered	6.65 ha of direct clearing of habitat containing 1,566 plants, 1,381 mature plants and 185 immature plants. A further 0.86 ha of indirect impact	2,762	No
Illawarra Irene (<i>Irenepharsus trypherus</i>)	Endangered	0.48 ha of direct habitat clearing containing 54 individuals, and 0.26 ha of indirect impact containing 24 individuals	8	Yes

Ecological feature	EPBC listing status	Disturbance	Biodiversity credits	Significant impact predicted?
White-flowered Wax Plant (<i>Cynanchum elegans</i>)	Endangered	0.11 ha of habitat, including 0.05 ha of direct impact, and 0.06 ha indirect impacts	1	No
Gang-gang Cockatoo (<i>Callocephalon fimbriatum</i>)	Endangered	0.05 ha of indirect impacts to foraging habitat	1	No
Orange-bellied Parrot (<i>Neophema chrysogaster</i>)	Critically Endangered	7.65 ha of direct impacts to foraging habitat	Nil	No
Spotted-tailed Quoll (<i>Dasyurus maculatus maculatus</i> (SE mainland population))	Endangered	7.65 of direct impacts and 1.03 ha of indirect impacts to potential habitat	Nil	No
Grey-headed Flying-fox (<i>Pteropus poliocephalus</i>)	Vulnerable	0.05 ha of indirect impacts to foraging habitat	Nil	No
Black-faced Monarch (<i>Monarcha melanopsis</i>)	Migratory	0.05 ha of indirect impact to potential habitat	Nil	No
Rufous Fantail (<i>Rhipidura rufifrons</i>)	Migratory	0.05 ha of indirect impact to potential habitat	Nil	No
Satin Flycatcher (<i>Myiagra cyanoleuca</i>)	Migratory	0.05 ha of indirect impact to potential habitat	Nil	No

Ecological feature	EPBC listing status	Disturbance	Biodiversity credits	Significant impact predicted?
Spectacled Monarch (<i>Symposiachrus trivirgatus</i>)	Migratory	0.05 ha of indirect impact to potential habitat	Nil	No

In addition to proposed clearing and associated loss and/or fragmentation of habitat, the proposed modification has the potential to result in indirect impacts on the threatened species and communities outlined in Table C1. Potential indirect impacts include predation, fragmentation, edge effects from noise, light and traffic, hydrological changes and weed infestation. Boral proposes a range of management strategies to minimise the severity of indirect impacts, see Section 6.1.

C2 - EPBC Species considered to be significantly impacted

Illawarra Irene (*Irenepharsus trypherus*)

The assessment predicts that the proposed modification would clear 0.48 ha of *Irenepharsus trypherus* habitat. The area to be cleared supports an estimated 54 individuals. A further 0.26 ha, containing 24 individuals is likely to be indirectly impacted due to edge effects from adjacent clearing. The habitat affected is moderately to highly degraded due to weed invasion, particularly by Lantana (*Lantana camara*).

The combined number of individuals potentially affected by the proposed modification constitutes 91% of the plants recorded in the survey area.

The assessment of significance undertaken for the proposed modification concluded that the clearing 0.48 ha of *Irenepharsus trypherus* habitat and direct loss of 54 individuals is likely to result in a significant impact.

Boral proposes an offset strategy which includes the retirement of 8 species credits for *Irenepharsus trypherus*. BCS has confirmed that the calculation of offset credits is appropriate.

Boral has also committed to topsoil translocation and propagation of *Irenepharsus trypherus* within a proposed Dunmore Quarry habitat corridor which is 34.38 ha in size.

C3 – EPBC Species not considered to be significantly impacted

Shoalhaven-Illawarra Subtropical Rainforest in the Sydney Basin Bioregion

The assessment predicts that the proposed modification would indirectly impact on 0.05 ha of Shoalhaven-Illawarra Subtropical Rainforest in the Sydney Basin Bioregion (PCT 1300). There would be a reduction in the volume of surface water received by the ecological community, due to the removal of the proposed extraction area reducing the catchment area.

The current geographical extent of Illawarra Sub-tropical rainforest in NSW is estimated as 3,400 ha. The proposed modification would have an indirect impact of 0.00001% to this ecological community.

The assessment concluded that the proposed modification is not likely to result in a significant impact on the ecological community.

Boral proposes an offset strategy which includes the retirement of 1 ecosystem credit for PCT 1300 and a Biodiversity Stewardship site. BCS has confirmed that the calculation of offset credits is appropriate.

The proposed Biodiversity Stewardship site contains approximately 31.3 ha of the ecological community (PCT 1300).

Illawarra Zieria (*Zieria granulata*)

The assessment predicts that the proposed modification would clear 6.5 ha of *Zieria granulata* habitat. The area to be cleared supports an estimated 1,566 individuals, comprising 1,381 mature plants and 185 immature plants. A further 0.86 ha is likely to be indirectly impacted due to edge effects from adjacent clearing. The habitat affected is moderately to highly degraded due to weed invasion, particularly by Lantana (*Lantana camara*).

The assessment assumed a population size estimate of 82,000 mature plants. Accordingly, the proposed modification could impact up to approximately 1.7% of the total population of the species.

The assessment of significance undertaken for the proposed modification concluded that the clearing of 6.5 ha of *Zieria granulata* habitat is not likely to result in a significant impact, following consideration of the offset strategy proposed.

Boral proposes an offset strategy which includes a translocation strategy, Biodiversity Stewardship site and retirement of 2,762 species credits for *Zieria granulata*. BCS has confirmed that the calculation of offset credits is appropriate.

Boral has committed to topsoil translocation and propagation of *Zieria granulata* within a proposed Dunmore Quarry habitat corridor which is 34.38 ha in size. Boral has a proven track record of successfully propagating *Zieria granulata* as documented in the site's Flora and Fauna Management Plan.

The proposed Biodiversity Stewardship site also contains multiple areas with mature *Zieria granulata*. Surveys undertaken for the assessment found that the proposed Biodiversity Stewardship site would contain approximately 33,991 mature *Zieria granulata*.

White-flowered Wax Plant (*Cynanchum elegans*)

The assessment predicts that the proposed modification would clear 0.05 ha of White-flowered wax plant habitat. A further 0.06 ha is likely to be indirectly impacted due to edge effects from adjacent clearing. The habitat affected is already degraded due to Lantana weed invasion.

The proposed modification would modify the existing habitat by altering the existing hydrology of the landscape which includes surface and groundwater flows. This would involve the removal of upstream catchment and potential changes to hydrology that may affect the White-flowered Wax Plants downslope of the proposed extraction area.

The assessment concluded that the proposed modification is not likely to result in a significant impact on this species. BCS is of the view that adequate justification is provided in the BDAR for this species being a low risk.

Boral proposes an offset strategy which includes the retirement of 1 species credit for this species. BCS has confirmed that the calculation of offset credits is appropriate.

Gang-gang Cockatoo (*Callocephalon fimbriatum*)

The assessment predicts that the proposed modification would indirectly impact on 0.05 ha of potential foraging habitat for the Gang-Gang Cockatoo.

The assessment noted that no hollow-bearing trees suitable for the Gang-gang Cockatoo were present within the proposed modification extension area. However, the presence of trees which may potentially be suitable for the species within adjoining habitat to the north could not be discounted and therefore the Gang-Gang Cockatoo was assumed to be present.

The assessment concluded that the proposed modification is not likely to result in a significant impact on this species. BCS is of the view that adequate justification is provided in the BDAR for this species being a low risk.

Boral proposes an offset strategy which includes the retirement of 1 ecosystem credit for this species foraging habitat. BCS has confirmed that the calculation of offset credits is appropriate.

Orange-bellied Parrot (*Neophema chrysogaster*)

The assessment predicts there would be a direct impact to 7.65 ha of potential shrubland foraging habitat (PCT 720) for the Orange-bellied Parrot.

There have been no records within the proposed modification extension area of the Orange-bellied Parrot, but there is a record to the east of the site from 2003. There would thus be a reduction in the potential foraging area for the species.

The current area of occupancy for the Orange-bellied Parrot is considered to be approximately 30 km² (TSSC 2006). The proposed modification would result in the removal of 7.65 ha of potentially suitable shrubland foraging habitat which equates to a reduction of 0.0255% of their habitat.

The assessment concluded that the proposed modification is not likely to result in a significant impact on this species. BCS is of the view that adequate justification is provided in the BDAR for this species being a low risk.

No offsets would be required for this species under the NSW Biodiversity Offset Scheme and accordingly, no offsets are proposed. BCS has confirmed that this is a suitable approach.

Spotted-tailed Quoll (*Dasyurus maculatus maculatus* (SE mainland population))

The Spotted-tailed Quoll was not recorded on site. However, potential suitable habitat does occur within the landscape context.

The assessment found that the proposed modification would result in the direct impact of 7.65 ha of potential habitat for the Spotted-tailed Quoll and the indirect impact of 1.03 ha of potential habitat.

The assessment concluded that the proposed modification is not likely to result in a significant impact on this species. BCS is of the view that adequate justification is provided in the BDAR for this species being a low risk.

Under the NSW Biodiversity Offsets Scheme, this species is an ecosystem credit species. Ecosystem credits are proposed for this (and other) species foraging habitat. BCS has confirmed that the offset assessment for this species is appropriate.

Grey-headed Flying-fox (*Pteropus poliocephalus*)

The assessment predicts that the project would indirectly impact on 0.05 ha of potential foraging habitat for the Grey-headed Flying Fox. The proposed modification would remove potential foraging habitat, though it is considered that this would be low quality habitat, as the species is not known to forage on Bracelet-Honey Myrtle.

The assessment concluded that the proposed modification is not likely to result in a significant impact on this species. BCS is of the view that adequate justification is provided in the BDAR for this species being a low risk.

In accordance with the NSW Biodiversity Offsets Scheme, breeding habitat for the Grey-headed Flying Fox was not detected in the study area and therefore, species credits are not required. Ecosystem credits are proposed for this (and other) species foraging habitat. BCS has confirmed that the offset assessment for this species is appropriate.

Black-faced Monarch (*Monarcha melanopsis*)

The assessment predicts that the proposed modification would indirectly impact on 0.05 ha of potential foraging habitat for the Black-faced Monarch (PCT 1300).

The assessment concluded that the proposed modification is not likely to result in a significant impact on this species. BCS is of the view that adequate justification is provided in the BDAR for this species being a low risk.

No offsets are specifically required for this species. However, Boral proposes an offset strategy which includes the retirement of 1 ecosystem credit for PCT 1300 and a proposed Biodiversity Stewardship site which also contains approximately 31.3 ha of the ecological community (PCT 1300) which is utilised as foraging habitat for the Black-faced Monarch.

Rufous Fantail (*Rhipidura rufifrons*)

The assessment predicts that the proposed modification would indirectly impact on 0.05 ha of potential foraging habitat for the Rufous Fantail (PCT 1300).

The assessment concluded that the proposed modification is not likely to result in a significant impact on this species. BCS is of the view that adequate justification is provided in the BDAR for this species being a low risk.

No offsets are specifically required for this species. However, Boral proposes an offset strategy which includes the retirement of 1 ecosystem credit for PCT 1300 and a proposed Biodiversity Stewardship site which also contains approximately 31.3 ha of the ecological community (PCT 1300) which is utilised as foraging habitat for the Rufous Fantail.

Satin Flycatcher (*Myiagra cyanoleuca*)

The assessment predicts that the proposed modification would indirectly impact on 0.05 ha of potential foraging habitat for the Satin Flycatcher (PCT 1300).

The assessment concluded that the proposed modification is not likely to result in a significant impact on this species. BCS is of the view that adequate justification is provided in the BDAR for this species being a low risk.

No offsets are specifically required for this species. However, Boral proposes an offset strategy which includes the retirement of 1 ecosystem credit for PCT 1300 and a proposed Biodiversity Stewardship site which also contains approximately 31.3 ha of the ecological community (PCT 1300) which is utilised as foraging habitat for the Satin Flycatcher.

Spectacled Monarch (*Symposiachrus trivirgatus*)

The assessment predicts that the proposed modification would indirectly impact on 0.05 ha of potential foraging habitat for the Spectacled Monarch (PCT 1300).

The assessment concluded that the proposed modification is not likely to result in a significant impact on this species. BCS is of the view that adequate justification is provided in the BDAR for this species being a low risk.

No offsets are specifically required for this species. However, Boral proposes an offset strategy which includes the retirement of 1 ecosystem credit for PCT 1300 and a proposed Biodiversity Stewardship site which also contains approximately 31.3 ha of the ecological community (PCT 1300) which is utilised as foraging habitat for the Spectacled Monarch.

C4 – Demonstration of “Avoid, Mitigate, Offset” for Matters of National Environmental Significance

Avoidance and minimisation of Biodiversity Impacts

Boral have minimised impacts to threatened ecological communities and species through reducing the area of native vegetation (containing both Illawarra Subtropical Rainforest and the NSW listed *Melaleuca armillaris* Tall Shrubland community) to be cleared for the project from 19 ha to 7.8 ha.

Impact mitigation

Boral has committed to several measures aimed at minimising the residual biodiversity impacts of the project. These include:

- Delineation of Disturbance Areas;
- Staff training;
- Chemicals and fuel to be kept outside of the pit expansion area;
- Removal of weeds from the construction site prior to clearing;
- Weed hygiene protocols;
- Installation of sediment controls;
- Pre-clearance surveys, by a suitably qualified ecologist, to be conducted prior to removal of native vegetation;
- Translocation of topsoil and Illawarra Irene and Illawarra Zieria plants from the proposed modification extension area to the Proposed Dunmore Quarry Habitat Corridor;
- Preparation of a Vegetation Translocation Plan, which sets out how the proposed translocation would be approached, and the lands where this is proposed to occur. The Plan would include the following mitigation measures:
 - Collect native plant material and rocks for use at the translocation sites;
 - After the collection of seeds and propagules, mulch remaining native plant material;
 - Topsoil, subsoil, and overburden are to be collected from the proposed modification, collected together, and roughly placed at translocation sites. Material is not to be retained or stored for longer than 24 hours in trucks;
 - Erect wildlife friendly fencing to delineate the translocation lands;
 - Remove weeds from the receiving translocation sites prior to clearing;
 - Testing of soil properties and appropriate soil treatment of translocation sites;
 - Weed control at translocation sites; and

- Monitoring of the translocation sites.
- Monitoring of native vegetation, potential GDEs, and threatened species to the north of the RIC Pit extension and at a reference site throughout extraction;
- Offsetting residual impacts (detailed further below); and
- Updating the existing Flora and Fauna management plan to incorporate the proposed modification.

Boral has committed to preparing and implementing a Vegetation Translocation Plan, in addition to updating the existing Flora and Fauna Management Plan, that incorporates the mitigation measures outlined above.

The Department and BCS are satisfied with the avoidance and mitigation measures proposed by Boral 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. The Department considers that the proposed modification 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 require Boral to implement its Biodiversity Offset Strategy, as described in the Modification report, Submissions report, and additional information. The recommended conditions would require Boral to retire the biodiversity credits prior to clearing vegetation and to establish a Biodiversity Stewardship site. The Biodiversity Offset Strategy accounts for the residual impacts of the project that cannot be addressed through the avoidance and mitigation measures.

The offset liabilities for impacts to MNES are shown in Table C4.1.

Table C4.1 | Summary of biodiversity credit requirements for MNES

Credit Type	Impact	Credits required
PCT 1300 PCT 1300 – Whalebone Tree – Native Quince dry subtropical rainforest on dry fertile slopes, southern Sydney Basin Bioregion	0.05 ha	1
Illawarra Zieria (<i>Zieria granulata</i>)	0.05 ha	2,762
Illawarra Irene (<i>Irenepharsus trypherus</i>)	0.11 ha	8
White-flowered Wax Plant (<i>Cynanchum elegans</i>)	0.73 ha	1

Credit Type	Impact	Credits required
Gang-gang Cockatoo (<i>Callocephalon fimbriatum</i>)	1,381 ha	1

To offset the impacts to EPBC-listed species, Boral has committed to establishing a Biodiversity Stewardship Area (BSA), over residual lands to the south of the quarry (known as Rocklow), which contain known habitat for Illawarra Zieria (*Zieria granulata*) and Shoalhaven-Illawarra Subtropical Rainforest in the Sydney Basin Bioregion (PCT 1300).

The Department has recommended a condition requiring Boral to incorporate the existing Offset Area (as required by condition 45c) and existing Compensatory Habitat Area (as required by condition 45a) into the BSA.

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.

C5 – 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.

C5.1 – 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 approvals are not inconsistent with CITES as the proposed action does not involve international trade in specimens of wild animals and plants.

Recovery Plans and Approved Conservation Advices

The Department has undertaken a detailed and comprehensive assessment of the potential impacts of the proposed modification 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 proposed modification, including:

- Approved Conservation Advice for Illawarra zieria (*Zieria granulata*);
- Approved Conservation Advice for the Illawarra-Shoalhaven subtropical rainforest of the Sydney Basin Bioregion;
- Approved Conservation Advice for Illawarra Irene (*Irenepharsus trypherus*);
- Approved Conservation Advice for White-flowered Wax Plant (*Cynanchum elegans*);
- National Recovery Plan for the Orange-bellied Parrot (*Neophema chrysogaster*);
- Approved Conservation Advice Spotted-tailed Quoll (*Dasyurus maculatus maculatus*) (southeastern mainland population);
- National Recovery Plan for the Spotted-tailed Quoll (*Dasyurus maculatus*); and

- Approved Conservation Advice for Gang-gang Cockatoo (*Callocephalon fimbriatum*).

As discussed above, the proposed modification is not predicted to significantly impact on any of these threatened species and communities, with the exception of Illawarra Irene (*Irenepharsus trypherus*).

The *Approved Conservation Advice for the Illawarra-Shoalhaven subtropical rainforest of the Sydney Basin Bioregion* recommends a “a minimum buffer zone that extends 100 m beyond the canopy of the outermost trees”. The Approved Conservation Advice provides the following justification for the buffer zone: “The 100 m buffer zone encompasses an area large enough to protect the root zone of edge trees and other components of the ecological community from fertiliser, pesticide or herbicide applied or sprayed in adjacent land (e.g. spray drift), weed invasion, water runoff, soil erosion and other damage and edge effects.”

The proposed modification was delineated into different management zones that allowed for direct and indirect impacts to be quantified and offset. The direct impact area has been identified as the area within which all resource extraction activities will occur, including a new access track, and a bund at the northern edge of the extraction area. The bund will direct water flow towards the quarry’s water management system (away from retained vegetation). Extraction activities will consist of progressive blasting, which will remove rock into the quarry pit at a lower elevation than the extraction area. A bund will be put in place at the northern edge of the RIC Pit Extension area. Together, these mitigation and management measures will minimise sediment flow into native vegetation to be retained to the north of the RIC pit extension, which includes Illawarra Subtropical Rainforest.

On this basis, it was considered that an indirect buffer area of 10 m from the proposed modification area meets the intentions and objectives outlined in the Approved Conservation Advice for the Illawarra-Shoalhaven subtropical rainforest of the Sydney Basin Bioregion.

The Department has recommended that mitigation and recovery measures are implemented via an updated Flora and Fauna Management Plan and Boral’s commitment to prepare and implement a Vegetation Translocation Plan. Many of the management actions in the Flora and Fauna Management Plan would align with those set out in relevant conservation advice for the EPBC-listed species impacted by the proposed modification.

Additionally, Boral 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 proposed modification would not be inconsistent with the Approved Conservation Advice for the relevant MNES.

Threat Abatement Plans

One of the main threats to Illawarra Irene (*Irenepharsus trypherus*) identified in the Commonwealth's Conservation Advice for the species is grazing and trampling by native and feral animals (goats and deer). Accordingly, the 'Threat abatement plan for competition and land degradation by unmanaged goats' (DEWHA, 2008) is of relevance to mitigating impacts to this species from the proposed modification.

Actions for mitigating impacts to this species, including requirements for appropriate fencing and monitoring and management of feral animals would be documented in the updated Flora and Fauna Management Plan for the proposed modification.

C6 – Additional EPBC Act Considerations

Table C6.1 contains a range of further mandatory considerations to be taken into account under the provisions of the EPBC Act.

Table C6.1 | Additional considerations for the Commonwealth Minister under the EPBC Act

EPBC Act section	Consideration	Conclusion
Mandatory considerations		
136(1)(b)	Social and economic matters are discussed in Section 6 and Section 7.	The Department considers that the proposed modification would allow Boral to make quarry products more readily available to the construction and infrastructure market without causing any additional social impacts.
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: <ul style="list-style-type: none">• long and short-term economic, environmental, social and equity considerations relevant to this decision;• conditions that restrict environmental impacts, impose monitoring and adaptive management	The Department considers that, subject to the recommended modified conditions of consent, the proposed modification could be undertaken in a manner that is consistent with the principles of ESD.

EPBC Act section	Consideration	Conclusion
	<p>requirements and reduce uncertainty concerning the potential impacts of the proposed modification;</p> <ul style="list-style-type: none"> • conditions requiring the proposed modification 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 and ecological integrity in relation to the controlling provisions for this proposal; 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 proposed modification. 	
36(2)(e)	Other information on the relevant impacts of the action	The Department considers that all information relevant to the impacts of the proposed modification has been taken into account.
Factors to have regard to		
176(5)	Bioregional plans	<p>The proposed modification is located in the Sydney Basin IBRA region and the Illawarra IBRA subregion.</p> <p>The proposed modification 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 proposed modification is unlikely</p>

EPBC Act section	Consideration	Conclusion
		to significantly impact the water resources in these bioregions.
Considerations on deciding conditions		
134(4)	<p>Must consider:</p> <ul style="list-style-type: none"> 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. 	<p>Documents provided by Boral are provided at Appendix A of this report.</p> <p>The Department considers that the recommended modified conditions of consent in Appendix E are a practicable and cost-effective means to achieve their purposes.</p> <p>These conditions have been prepared following careful considerations of all material provided by Boral.</p>

C7 – Conclusions on Controlling Provisions

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

The information provided identifies that the proposed modification has the potential to result in significant impacts to Illawarra Irene (*Irenepharsus trypherus*).

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 E**).

The Applicant has committed to offset the impacts of the proposed modification on threatened species, as outlined in **Table C2**, in accordance with the requirements of the NSW Biodiversity Offsets Scheme.

To offset the impacts to EPBC-listed species, Boral has committed to establishing a BSA, over residual lands to the south of the quarry (known as Rocklow), which contain known habitat for Illawarra Zieria (*Zieria granulata*) and Shoalhaven-Illawarra Subtropical Rainforest in the Sydney Basin Bioregion (PCT 1300).

The Department has recommended a condition requiring Boral to incorporate the existing Offset Area (as required by condition 45c) and existing Compensatory Habitat Area (as required by condition 45a) into the BSA.

The Department considers the proposed Biodiversity Offset Strategy to be acceptable and has recommended a condition requiring the long-term security of the offset area and the retirement of the ecosystem and species credits be carried out prior to the commencement of vegetation clearing activities for the proposed modification, in consultation with BCS and in accordance with the Biodiversity Offset Scheme of the BC Act, or other agreed security mechanism, to the satisfaction of the BCT.

The Department and BCS are satisfied with the avoidance and mitigation measures proposed by Boral to minimise impacts on MNES. The Department considers that the proposed modification has been designed to avoid impacts on EPBC Act-listed threatened species and communities to the greatest extent practicable.

The Department recommends that the Commonwealth Minister require the Applicant to implement the State's conditions, where they relate to the management of impacts on threatened species and communities listed under the EPBC Act.

C6 - Other protected matters

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

C8 - 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 proposed modification. 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.

Appendix D – Recommended instrument of modification

Refer to the 'Determination' folder under the 'Assessment' tab on the Department's website at:
<https://www.planningportal.nsw.gov.au/major-projects/projects/modification-13-dunmore-quarry-pit-extension>

Appendix E – Consolidated consent

Refer to the 'Determination' folder under the 'Assessment' tab on the Department's website at:
<https://www.planningportal.nsw.gov.au/major-projects/projects/modification-13-dunmore-quarry-pit-extension>