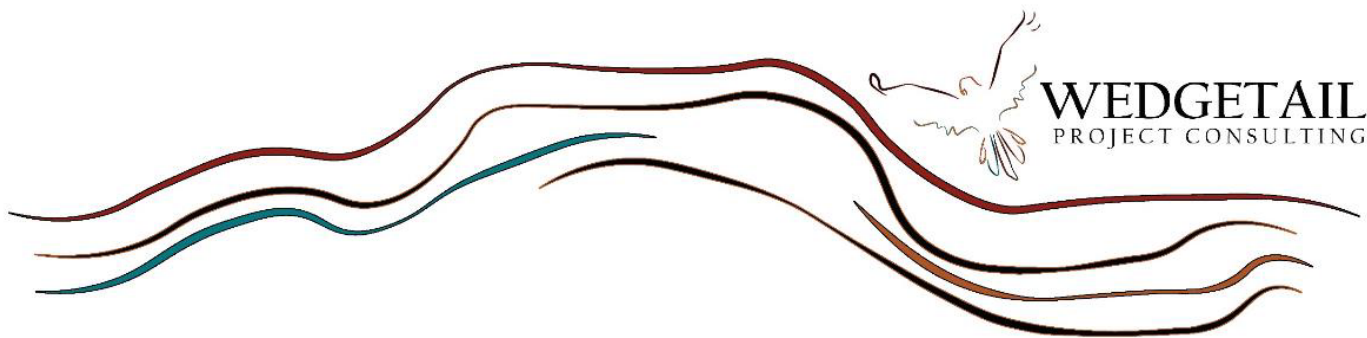




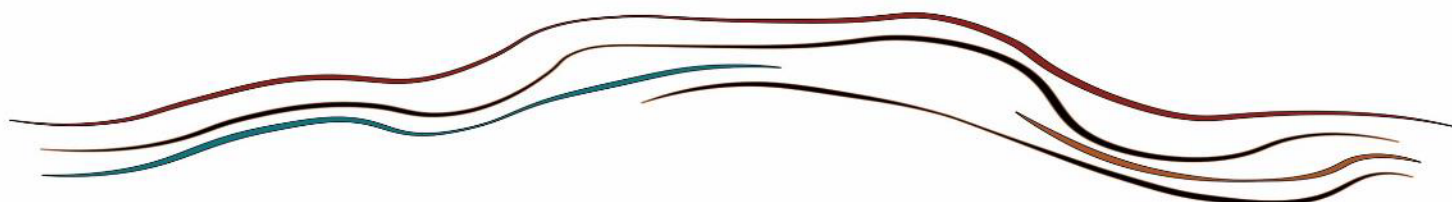
Deep Creek Quarry Response to Submissions Report

Limeburners Creek, New South Wales



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Rev 1
23 December 2022



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Limeburners Creek, New South Wales

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DECLARATION

Project Details	
Project Number	SSD 11591659
Project Name	Deep Creek Quarry
Address of the land in respect of which the development application is made	279 Deep Creek Road Limeburners Creek NSW 2324 Lot 472 DP 1162208 & Lot 48 DP 753178, Lot 551 DP 1238818 & Lot 12 DP1277150
Applicant Details	
Applicant Name	Ironstone Developments Pty Ltd
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Role	Lead Author
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The undersigned declares that this Document: • this document contains a Response to Submissions document • contains all available information relevant to the Response to Submissions for the activity or infrastructure • does not contain information that is false or misleading • addresses issues raised in the submissions received on the project • contains a simple and easy to understand summary of the project as a whole, having regard to the economic, environmental and social impacts of the project and the principles of ecologically sustainable development • contains a consolidated description of the project in a single chapter	
Date	23 December 2022
Signature	

EXECUTIVE SUMMARY

Ironstone Developments Pty Ltd (IDPL) are proposing a State Significant hard rock quarry named Deep Creek Quarry (DCQ) located on the boundary of the localities of Limeburners Creek and Allworth, New South Wales. The quarry is west of The Bucketts Way in the Mid-Coast local Government Area.

The Project

The development is a hard rock quarry extracting up to 500,000 tonnes per annum over a period of up to 30 years from a quarry pit of approximately 18 hectares. A new sealed quarry access road, site office, workshop, weighbridge, stockpile area and associated water management infrastructure make up the remainder of the 31.9 hectare application footprint. It is proposed to extract a maximum of 4,000 tonnes per day, with up to 25 laden trucks per hour. On average, 55 trucks per day will achieve the maximum annual extraction rate. The majority of haulage is likely to be south along The Bucketts Way and onto the Pacific Highway.

Operational hours are proposed as follows:

Quarrying Operations:

- 7:00 am to 5:00 pm Monday to Friday.
- 8:00 am to 1:00 pm Saturday.
- No quarrying on Sunday or a Public Holiday.

Loading and dispatch of trucks:

- 6:00 am to 6:00 pm Monday to Friday
- 6:00 am to 1:00 pm Saturday.
- No haulage on Sunday or a Public Holiday.

Blasting:

- 9am to 4pm Monday to Friday.
- No blasts on weekends or public holidays.

The Process

IDPL submitted an Environmental Impact Statement (EIS) for the quarry to the Department of Planning and Environment (DPE), that was publicly exhibited from 19 November 2021 to 17 December 2021, with extension for existing interested members of the public to make submissions up until 31 January 2022. The DPE instructed IDPL to prepare a Response to Submissions based on the submissions received during the exhibition period.

This document provides a response to those submissions.

The Submissions

During the public exhibition period 69 submissions were received by DPE comprising:

- 10 government agency submissions.
- 56 submissions from members of the public (public).
- 3 submissions from organisations or special interest groups (group), noting one group submission from ICAG Inc was made up of 13 individual letters.

Of the submissions received, two submissions were in support, and the remainder objected.

Approximately 66% of the submissions from the Public were made by individuals living local to the site (i.e. within 5 km of the proposed DCQ), while 16% were from people living within the regional area (i.e. 5-100km from the DCQ) and the remainder from people more than 100 km from the site or was not stated.

Of the three submissions received from groups two were local, and one was regional.

Out of the 71 letters received (56 public, 2 organisations, and 13 from ICAG), issues raised by in more than 40% of the submissions included matters relating to:

- Traffic and Transport (65%).
- Biodiversity (59%).
- Social (52%).
- Air Quality (52%).
- Noise Impacts (52%).
- Economics (48%).

Actions Completed Since the EIS

For the preparation of this RTS, additional investigations were completed or otherwise updated from that provided in the EIS to provide a comprehensive response. These investigations included:

Determination of the Solar Reflectance Index of DCQ aggregates

The lighter coloured aggregate from the DCQ is considered to have unique properties for use in creating cooler streets and pavements compared to other quarry materials available on the market. To quantify the benefit of the DCQ aggregate, measurements of solar reflectance, thermal emittance, and the Solar Reflectance Index (SRI) was undertaken by University of New South Wales (UNSW). With the higher SRI, the lighter coloured aggregates from the DCQ can reduce pavement surface temperatures in the order of 2-10 °C compared to similar aggregates available in the Hunter region. Reduced surface temperatures help reduce urban heat build-up making communities more resilient and adaptable to climate change. In addition, these pavements are better for aquatic life, and more reflective that reduces lighting requirements.

Additional biodiversity information

Wedgetail Project Consulting undertook additional survey and prepared a revised Biodiversity Development Assessment Report (BDAR) and Koala Plan of Management (KPoM) for the DCQ Project. This included additional surveys for Koala and New Holland Mouse by Biolink. The additional surveys addressed questions raised during submissions around the survey effort and methodology, with the assessments finding and confirming:

- o No Serious and Irreversible Impacts (SAIIs) as defined by the Biodiversity Conservation Act 2016 (BC Act) were identified within or due to the Development Site.
- o No vegetation was identified as constituting a Threatened Ecological Community under the BC Act or the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).
- o Nineteen threatened species (two flora, 17 fauna) listed under the BC Act, or the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) were recorded onsite.
- o Impacts on vegetation communities can be offset through retirement of ecosystem credits through the Biodiversity Offsets Scheme.

- o *Impacts to the eighteen threatened species listed under the Biodiversity Conservation Act 2016 can be offset through the retirement of species credits through the Biodiversity Offsets Scheme. Of additional note is:*
 - *Koalas were detected within the Project Site via remote cameras and via Koala Spot Assessment Techniques (SATs). Surveys suggest low use / transient movement rather than use by individuals with established home range areas. In addition to the retirement of koala species credits, IDPL will plant 450 preferred koala feed trees within and adjacent to the Deep Creek riparian corridor to increase local habitat value. The access road will include controls such as speed reduction, exclusion fence and fauna underpasses. An updated Koala Plan of Management has also been prepared.*
 - *Approximately 32% of the Black-eyed Susan (Tetratheca juncea), listed under EPBC Act and BC Act species found onsite will be removed by the DCQ Project, with 67% (1225 plants) retained in high quality vegetation. Assessments determined that the Activity has potential to have a significant impact on this population but is unlikely to disrupt breeding cycles and is unlikely to further decrease the habitat in the study area.*
- o *Surveys across a broad area of the subject land identified a population, likely in excess 1000 individuals of New Holland Mouse (Pseudomys novaehollandiae) listed under the EPBC Act The quarry pit is estimated to disturb slightly less than 14% of this population and is unlikely to result in a significant impact on this population. The remainder of the population will be protected within retained vegetation or within a Stewardship Site. IDPL will develop and implement a New Holland Mouse Relocation Plan in consultation with Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEW) prior to disturbance of identified habitat.*

Baseline Aquatic Ecology

Marine Pollution Research Pty Ltd (MPR) was engaged to undertake a base-line aquatic ecology survey of tributary drainages intersected by the Project and Deep Creek between the proposed quarry and the Karuah River estuary interface.

The assessment concluded, with the implementation of a suitable WMP approved by DPE prior to construction and developed in consultation with NSW DPI the quarry is unlikely to 'have an adverse effect on oyster aquaculture development or a priority oyster aquaculture area'. As such, the Consent Authority is able to determine the application consistent with Division 4 of the State Environmental Planning Policy (Primary Production) 2021. The WMP will also ensure there are negligible downstream effects on the Karuah National Park or the Port Stephens Marine Park.

Updates to Groundwater and Surface Water Assessments

HydroMinex and Engeny prepared updated groundwater and surface water impact assessments, resulting in an amended site water balance and the revision of onsite sediment dams to reduce the required discharge frequency.

Given the small size of the quarry, lack of groundwater interception and licenced discharges proposed, the DCQ will have only minor impacts on the annual flow volumes in Deep Creek. IDPL will be required to attain Water Access Licences for interception of surface water above the maximum harvestable right and for intercepted groundwater.

Project Revisions

As a result of the additional studies and information collected there have been relatively few amendments to the project design considered necessary to respond to issues raised and implement the project with acceptable levels of impact. The changes made to the DCQ include:

- *An increase in the sediment basin size to limit the frequency of discharge needed from the quarry, the Project Application extent was maintained at the same overall area and within existing survey extents.*
- *Removal of Deep Creek Road as a possible access route during construction.*
- *Adjustment to the design of the infrastructure to minimise works within the Deep Creek Road reserve adjacent to the office and workshop area and the stockpile area.*
- *Adoption of modified controls to reduce the effect on Koala, including exclusion fencing, road speed changes, signage and suitable fauna underpasses.*
- *Adjustment of tarping bay to avoid large, preferred koala feed trees.*
- *Modification of the proposed onsite area to be under a Stewardship Agreement, that incorporates an extensive area of Tetratheca Juncea and a New Holland Mouse population.*

As a result of the changes and additional studies the management and mitigation measures were also amended.

Clarification of the Biodiversity Offsets Strategy

The RTS provides clarification of the Biodiversity Offset Strategy proposed for the quarry, confirming the strategy will be consistent with the NSW Biodiversity Offsets Scheme.

It is proposed to have a staged fulfillment of biodiversity offset obligations, with the extent of each stage and required credits for that stage confirmed prior disturbance of that stage with survey of the planned disturbance area.

The primary and first source of biodiversity credits (subject to timing and availability) will be to retire credits from an onsite Stewardship Site.

If approved, IDPL will develop an onsite Stewardship Site comprising approximately 235 ha, that will potentially expand to include a further 125 ha of an adjacent land holding, potentially adding 360 ha to active conservation in the local area.

In addition, 450 preferred koala feed trees will be planted within and adjoining the Deep Creek riparian corridor and provide nest boxes at a ratio of one to one within the adjoining retained vegetation.

Matters raised in Agency Submissions

There were 10 agency submissions received, a summary of each submission and key issues raised is outlined below.

Biodiversity Conservation Division (BCD)

The BCD raised a series of questions relating to the adopted survey methodologies and how the former drought conditions were considered within the surveys and assessments. BCD also requested further information be provided in relation to consideration of Matters of Environmental Significance under the EPBC Act.

Additional surveys and assessments were completed to address the issues raised by BCD.

Crown Lands

Crown Lands primary concerns related to the interaction with the Deep Creek Road Reserve. Minor revisions were made to the DCQ Project to minimise the interaction with the road reserve.

Additional consultation occurred with Crown Lands the Mid Coast Council on this matter and an acceptable pathway has been identified for all parties to enable the works to occur as planned, subject to the relevant road authority issuing a Section 138 permit under the Roads Act 1993.

IDPL have adopted additional controls to ensure access for the three landowners (no full-time residences) at the northern end of Deep Creek Road is maintained.

NSW Department of Planning and Environment – Water (DPIE Water)

DPE Water required further information with respect to water licencing, a complex numerical groundwater model, an updated water balance and further considerations of waterfront land.

Updated groundwater and surface water assessments were completed to address the issues raised by DPE Water. An amendment was made to the sediment basin for the stockpile area to maintain all infrastructure within the outer riparian zone and provide offset planting for the area of incursion within the outer riparian zone consistent with Guidelines for Controlled Activities on Waterfront Land.

Environment Protection Authority (EPA)

The key matters raised by the EPA related to reviewing and making additional practical measures to limit the impacts of the quarry on the downstream receiving environment. The EPA also proposed a series of Draft Environmental Protection Licence (EPL) conditions that were, with only minor exception considered acceptable to IDPL.

Revisions to sediment basin sizing was undertaken to reduce the frequency of discharge required as a result of dewatering sediment basins. Basins were increased to the largest reasonable size within the available envelope outside of the inner riparian zone. These basins reduced the frequency of discharge required and are considered an acceptable balance. With the implementation of a WMP impacts to downstream water users and the environment will be negligible.

Heritage Council of NSW

Heritage NSW raised no additional comments or recommendations in relation to Historical Heritage or Aboriginal Cultural Heritage.

Mid Coast Council

Mid Coast Council (MCC) raised concerns in relation to ecology, noise, air quality and to a lesser degree engineering related aspects in their role as the road authority.

MCC's ecological concerns had some overlap with matters raised by the BCD, along with some additional requests for further consideration of edge effects, clarification on the habitat and associated assessments for several other threatened species and revision of the Koala Plan of Management. These matters have been adequately addressed within the updated BDAR and associated KPOM.

MCC also required additional information in relation to the adopted avoidance measures as they relate to ecological values. A more thorough description of the extent of avoidance measures integrated into the quarry design was provided, demonstrating that considerable efforts have been made to avoid impacts to biodiversity.

The MCC suggested offset measures were not adequate and that any proposed offset areas should be rezoned within the Local Environmental Plan along with management plans for offset management or perhaps integrated with the nearby National Park. IDPL see no reason to vary from the use of the NSW Biodiversity Offsets Scheme (BOS), where any onsite offsets would be developed and managed consistent with the BOS. IDPL have clarified the Biodiversity Offset Strategy.

The MCC raised concerns around adequacy of the BDAR in cumulative impact considerations and the need for a broader strategic plan for quarrying in the region that aligns with conservation priorities that would improve the strategic oversight of offset lands and connectivity considerations. The BDAR has been updated to provide better consideration of cumulative impacts and connectivity. The quarry is consistent with the Local Environmental Plan, the primary strategic plan applying to the site. The implementation of a Strategic Plan for quarrying is outside the scope of this RTS.

MCC requested a Deferred Commencement Condition that requires the formation and endorsement of a Final Layout and Offset Strategy [for the DCQ], which includes input, review, and acceptance of the Strategy by a convened Agency Panel that includes Mid Coast Council. IDPL does not accept a Deferred Commencement Condition, nor does it accept the involvement of a further agency panel that would seek to “redesign” the quarry and NSW offset system. Significant investment and investigations have resulted in the adopted design that includes substantial avoidance measures and promotes the use of the NSW Biodiversity Offsets Scheme. If approved IDPL have committed to offsets on adjacent lands that have the potential to increase land under conservation within five kilometres of the DCQ by 4%, over ten times the area of its impact.

MCC raised concerns with respect to the adequacy of the noise and air quality assessments. These assessments have adequately addressed the concerns raised by MCC and show the DCQ will not result in the exceedance of noise or air quality criteria at nearby receptors.

Transport for NSW (TfNSW)

TfNSW raise no objection to or requirements for the proposed development as it is considered there will be no significant impact on the nearby classified (State) road network. TfNSW noted the need for the roads authority to consider any residual risks associated with the new intersection. IDPL have no objections to TfNSW input in the design and welcome the resolution of these matters during detailed design and the permitting process with the relevant road authority.

Concerns raised in Public and Group Submissions

All submissions received were reviewed with issues categorised. An outline of the key issues raised in more than 30% of the public and group submissions is shown below in descending order of frequency that the issue was raised. Other concerns not addressed below but addressed in the RTS included vibration and blasting impacts, project design considerations, cumulative or general environmental concerns, community engagement, standards and integrity, rehabilitation, bushfire, Aboriginal Heritage and geology.

Traffic and Transport

Traffic and transport concerns were primarily related to safety concerns for cars and school buses as a result of having additional trucks travelling on The Bucketts Way. Many of these concerns would appear to relate to concerns over the current condition of the road or the narrow Limeburners Creek Bridge. The Bucketts Way is a significant regional road considered by road and safety assessments to be adequate for quarry traffic, with negligible concerns raised by the road authorities. In addition, MCC currently have a substantial works program underway, that includes the replacement of the Limeburners Creek Bridge, along with drainage and widening works.

Other concerns related to the intersection with the Pacific Highway and potential for increased wait times, the management of haulage contractors and the further deterioration of The Bucketts Way condition that could exacerbate noise and safety concerns. Wait times at intersections were modelled correctly, consistent with TfNSW methods. IDPL have proposed a Driver Code of Conduct to assist in improving contractor behaviour when hauling from the DCQ and will help convey maintenance needs to the relevant Council and publish the annual levy contributions made to Council to improve transparency.

Biodiversity

Biodiversity concerns ranged from concerns on the adequacy of the completed surveys and assessment to the potential for impacts on threatened species, including koala and the adequacy of offsets and ongoing compliance monitoring.

The issues raised were already addressed within the EIS or have otherwise been amended within the updated BDAR.

Social and Lifestyle Impacts

Social and lifestyle impacts largely related to concerns related to changes to the existing lifestyle and amenity afforded to residents of the area, including the use of terms such as “solastalgia”, being the fear and distress from change to ones home - homesickness while still at home. Concerns were raised that the quarry would significantly impact existing stable family units.

The DCQ will result in a change to the current land use, however, the assessments for the DCQ have shown the quarry will not exceed any of the relevant criteria for noise, air quality or vibration, the visual impacts are limited to a short section of a new access road and The Bucketts Way can adequately manage the traffic. No existing resident will be displaced and IDPL have proposed to place adjacent holdings under long term conservation, that is likely to be in excess of 10 times the project disturbance area. Measures to promote continued social engagement along with measures to further minimise impacts from the quarry have been proposed.

Noise

Noise concerns primarily related to the adequacy and extent of the noise assessment and concerns of increased noise levels affecting sleep and the amenity of the properties. Concerns were raised about the use of background noise data that was higher than the noise levels at their property.

The noise assessment was completed consistent with accepted practice and considered the potential affects on sleep disturbance. The use of the background data that included traffic noise from The Bucketts Way was accounted for within the assessment. The noise assessment concluded that one receptor without a permanent dwelling may be affected under some weather conditions, while all other receptors would not be affected above the project specific noise levels.

Air Quality

Concerns around air quality included risks of degraded air quality, rainwater contamination, the adequacy of the air quality assessment, the adopted background data, and the risks of silica dust at surrounding properties.

The air quality assessment was completed to accepted standards and determined the quarry will not exceed any air quality criteria (e.g., TSP, dust deposition, PM₁₀, PM_{2.5}, NO_x) at surrounding residential dwellings on a 24 hour or annual average basis, in an incremental or cumulative context. The use of background data from the lower Hunter Valley in the cumulative assessment provided a conservative approach to the assessment, with the actual impacts likely to be lower than assessed. Given the low levels of dust produced and lack of significant contaminants in the resource, the risks of rainwater contamination are negligible. The low predicted emissions, coupled with the relatively high background levels have resulted in no air quality monitoring being recommended by the air quality specialist.

Additional consideration of the risks of silica from the DCQ was undertaken and determined that considering the low predicted PM_{2.5} emissions from the quarry, even with a very high resource silica content the levels of silica at surrounding receptors would be many times lower than the accepted respirable silica criteria. In addition, IDPL will have a duty of care for their staff and contractors to maintain respirable silica levels to the lowest levels possible, which will further reduce the risk of high respirable silica levels at surrounding receptors.

Economics

Concerns related to the economic considerations of the DCQ had some overlap with the Social and Lifestyle concerns including that the quarry would result in a greater impact on the community for the benefit of relatively few and that existing businesses would be adversely impacted by the DCQ. Concerns were also raised around the reduction in property prices and overstated benefits to the community.

The DCQ cost benefit analysis demonstrated the quarry will result in a net benefit, taking into account the likely costs of the development. With the limited impacts of the quarry from noise, dust, vibration or changes in visual amenity, the risk to existing business is minimal. Property prices are a complex aggregation of a large number of factors, and the value a buyer places on a property will vary from person to person, the DCQ will occupy less than 0.4% of a 5km radius from the quarry yet will result in establishment of a conservation area of over

4 % of the same radius (i.e., over 10x the impact area). With consideration of; the minor spatial extent; large conservation area; limited (i.e., below relevant criteria) impacts on neighbouring properties predicted by noise, vibration and air quality; the projects water quality protections; and the very limited visibility of the Project, the risk of significant changes in property prices is low once the project is operational, noting perceived impacts are likely to be greater than those realised.

Water

Concerns in relation to water included those relating to having access to adequate water supplies, how water would be applied and the risks from the quarry on the downstream environment including the Karuah National Park, the Port Stephens Marine Park and the oyster aquaculture.

The quarry has been modelled to show adequate water supplies are available during most conditions, with supplementary supplies available from onsite dams or licenced offsite reticulated supplies.

The surface and groundwater assessments, along with baseline aquatic ecology assessments have determined with the implementation of a suitable WMP approved by DPE prior to construction and developed in consultation with NSW DPI the quarry is unlikely to 'have an adverse effect on oyster aquaculture development or a priority oyster aquaculture area'. As such, the Consent Authority is able to determine the application consistent with Division 4 of the State Environmental Planning Policy (Primary Production) 2021. The WMP will also ensure there are negligible downstream effects on the Karuah National Park or the Port Stephens Marine Park.

Health

The primary concerns raised in relation to health were due to increased anxiety, affects on health and well-being of residents, the health of Receptor R30 who has a hypersensitivity to diesel emissions, and in relation to comments of existing ailments due to dust from the Karuah Quarry.

It is accepted that the development assessment process, and the prospects of changes in land use can result in increased anxiety, especially when coupled with distribution of incorrect or misleading information by some members of the community. The assessments have shown that the DCQ is unlikely to have any significant affects on the noise or air quality at surrounding receptors, which should limit the effects on the health and wellbeing of residents.

Engagement with receptor R30 during the EIS identified concerns of diesel hypersensitivity, as a result of this information, IDPL modified the proposed quarry access road to move it further from the R30 dwelling, committed to planting a vegetation screen and reduced truck speed limits. The quarry access road is now further from the dwelling, than the dwelling is from The Bucketts Way. Detailed modelling of potential impacts from the quarry and associated haulage on R30 did not identify any exceedance of criteria with predicted levels, many times lower than the criteria. Emissions due to The Bucketts Way (a regionally significant road) are likely to be higher at R30 than from the quarry and R30 purchased the property with full knowledge of their hypersensitivity. Submissions have implied IDPL has an increased duty of care for R30, however no additional duty of care for R30 is acknowledged by IDPL, nor would it be reasonable to impose this duty of care on any other business or haulage operator within the region that needs to use The Bucketts Way.

If approved, IDPL are committed to work with landowners (including R30) to minimise the impacts on health and enjoyment of their respective property because of the construction and operation of the quarry.

Procedural or Systemic Issues

Procedural or systemic issues raised included having the ability to submit additional information beyond the close of public submissions on 17 December 2021, and that broader strategic regional planning is required to guide the suitability of developments, such that people can buy in an area with more confidence of what is permitted.

The DPE permitted the submission of additional information through to 31 January 2022 and numerous people took this opportunity to submit further information.

With respect to the need for broader strategic planning, this is outside the scope of this RTS. However, it is noted that all people who have purchased land within the RU2 Rural Landscape zone would be made aware of the permitted land uses during the conveyancing process, where the Standard Instruments and Model provisions provide a template Council's in NSW to guide and provide consistency in the permissible development within each zone. Extractive Industries are permitted with consent in the Ru2 Rural Landscape zone.

Justification, Sustainability and Land Use

With some overlap with the Social, Economic and Systemic issues raised above, issues concerning justification, sustainability and land use focused on if there was a need for the quarry, the suitability of the location and compatibility of the quarry with neighbouring uses, the sustainability of the quarry or consistency with the zero emissions target by 2050.

The EIS and this RTS have shown the proposed quarry can be conducted without significant adverse impacts on surrounding residential receptors and with limited visibility from surrounding roads or properties and is consistent with the LEP. Compared with other local land uses, the use of the land for quarrying and conservation is likely to have comparable or lower impacts on some aspects of the environment. By way of example, the subject land is approved for subdivision with seven potential lots across the property, similar to Fords Road, The Bucketts Way and larger than the lots on Forest Glen Road. Subdivision would be expected to result in similar or greater vegetation clearing for; houses, asset protection, and utilities, have seven onsite septic systems, introduce predation risks from cats and dogs, and have a duration of impact that will extend beyond the 30-year quarry life.

The development of quarries for the extraction of typical aggregate products is essential for the delivery of and maintenance of private and public infrastructure, including those required to meet emission targets. While no quarry meets the simple definition of sustainability, i.e., a resource that renews at the same rate of its extraction, the proposed Deep Creek Quarry will provide a resource that supports many of the United Nations 17 Sustainability Goals, and will result in net economic benefit.

Justification and Conclusion

This Response to Submissions and the EIS have demonstrated the proposed DCQ Project is well situated to deliver a unique quarry material without significant impacts on the local community and with established measures to avoid, mitigate and offset impacts to the environment.

The quarry has been demonstrated to meet the objectives of Ecologically Sustainable Development and the other objects under Section 1.3 of the EP&A Act. As the demonstrated Ecologically Sustainable Development is coupled with the 'overwhelmingly positive' economic benefits and limited social impacts identified, the project is justified.

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1. INTRODUCTION

Ironstone Developments Pty Ltd are proposing a hard rock quarry which qualifies as State Significant Development and required the submission of an Environmental Impact Statement. The development is named Deep Creek Quarry (DCQ) and is located on the boundary of the localities of Limeburners Creek and Allworth, New South Wales. The quarry is west of The Bucketts Way in the Mid-Coast local Government Area, on a site historically used for agriculture and logging purposes.

Ironstone Developments Pty submitted an Environmental Impact Statement (EIS) to the Department of Planning and Environment (DPE) which was on exhibition from 19 November 2021 to 17 December 2021. During this time, submissions were made by the community, stakeholders and government agencies.

During Exhibition, 7 (seven) submissions were received from government agencies ('Agency Advice') and 60 submissions were made on the project from the public including individuals, community organisations and groups. Of the 60 submissions two supported the proposed project and 58 objected.

DPE wrote to Ironstone on 22 December 2021 informing Ironstone the submission period had ended and that they require a written response to issues raised in the submissions, as required under clause 82(2) of the *Environmental Planning and Assessment Regulation 2000*. On 17 February 2022, DPE requested supplementary information related to several submissions and additional representations from the community also be addressed within the Response to Submissions (RtS) Report. The written response must be in the form of a RtS report that has been prepared having regard to the State Significant Development Guidelines (2021).

This RtS Report has been prepared with regard to the State Significant Development Guidelines (2021).

1.1 PROJECT OVERVIEW

The development is a hard rock quarry extracting up to 500,000 tonnes per annum over a period of up to 30 years. Approximately 12 Mt of rhyolite, arenite and weathered rock will be crushed, screened and sized into various products for road construction and landscaping purposes. A high proportion of product will be used to meet the Transport for NSW (TfNSW) specification for high grip product to improve road safety and will provide a product for pavements with a high solar reflectance index.

The quarry covers an area of approximately 30 ha, with the extraction area of approximately 18 ha and approximately 12ha for infrastructure and ancillary facilities to support the operations.

The infrastructure associated with the project will include a new sealed access road and intersection with The Bucketts Way, site office, workshop, weighbridge and stockpile area with associated water management infrastructure.

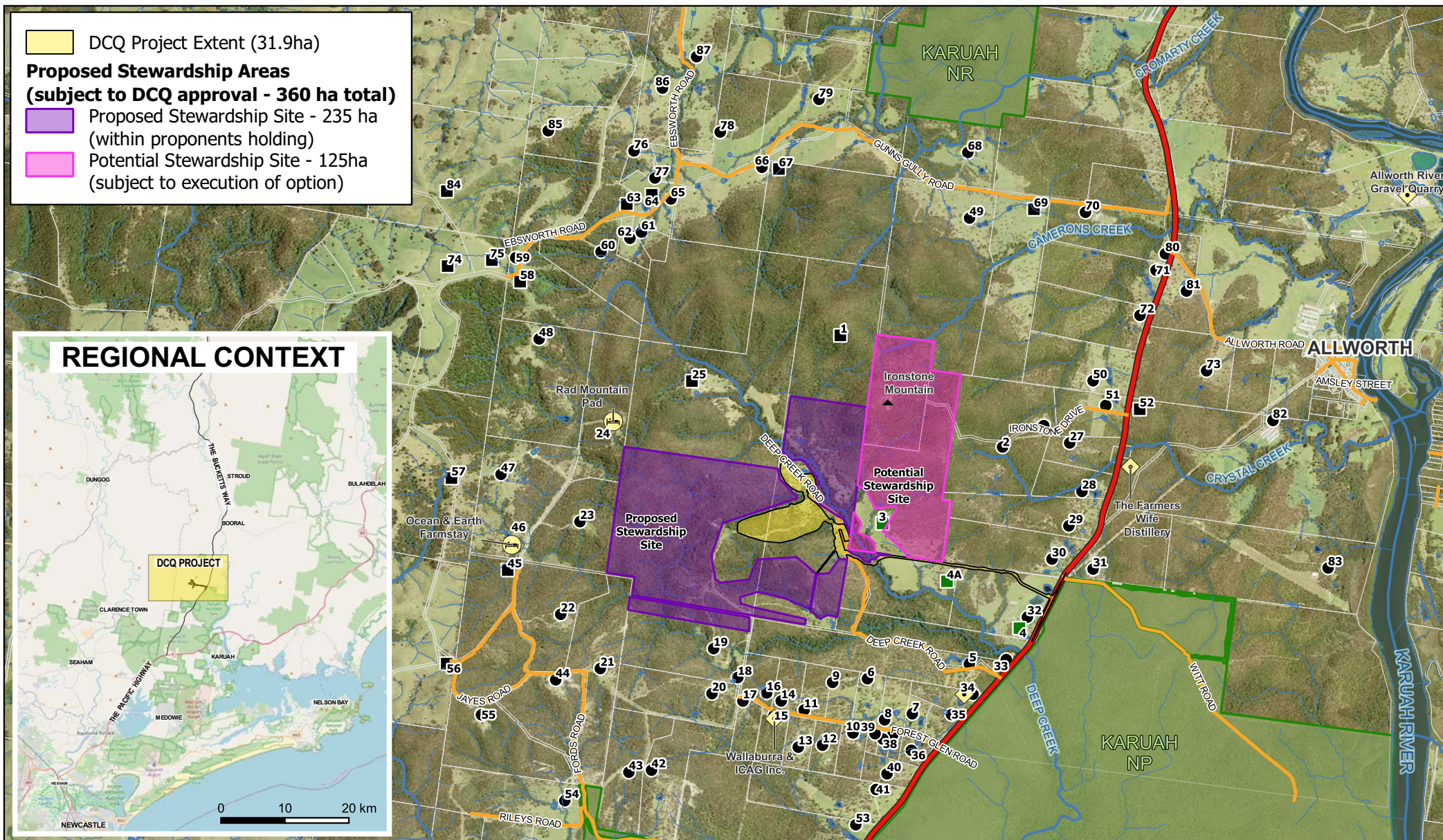
Progressive rehabilitation of the area will occur, returning disturbed land to the pasture and native vegetation that is currently present on site. On completion of extraction, benches will be revegetated with native trees consistent with surrounding vegetation with a free draining quarry floor consisting of open grassland and scattered woodland that may provide a dwelling site generally consistent with the existing approved subdivision of the property.

The key details of the development are shown within **Table 1-1** below.

Table 1-1: Key Aspects of the Proposed Deep Creek Quarry Project

Aspect	Key Aspects of the Project
Key elements	Hard rock quarry extracting up to 500,000 tonnes per annum over a period of up to 30 years including a sealed access road, site office, workshop, weighbridge and stockpile area with associated water management infrastructure. Progressive rehabilitation of quarried land returning to pasture and native vegetation.
Location	279 Deep Creek Road, Limeburners Creek, NSW 2324, within the Mid-Coast local government area.
Property Titles	Lots 472 DP1162208, 48 DP753178, 551 DP1238818, Lot 12 DP 1277150, Deep Creek Road reserve and The Bucketts Way reserve, located off Deep Creek Road at Limeburners Creek, NSW 2324.
Landowner	Ironstone Developments Pty Ltd (access road corridor under option to Ironstone Developments from a local private landholder).
Proponent	Ironstone Developments Pty Ltd.
Project Life	Up to 30 years.
Area	The area subject to this development is approximately 31.9 hectares, comprising: • 18 ha of quarry extraction area. • Less than 13.9 ha in supporting infrastructure and internal access roads. From a proponent land holding of approximately 308 hectares.
Employment	Up to 10 full-time staff, with further support for the local and regional construction industry and associated haulage contractors.
Production and Transport Rate	• Maximum product haulage from site of 500,000 tonnes per annum. • Maximum of 25 laden trucks per hour. • Maximum daily extraction rate of 4,000 tonnes per day. • On average, 55 laden trucks per day will meet peak annual production level. • Up to 10 vehicles of employees would be expected to arrive and depart within 1 hour of opening and closing.
Operating Hours	Construction of quarry access, stockpile pad, internal road, workshop and office: • 7:00 am to 5:00 pm Monday to Friday. • 8:00 am to 1:00 pm Saturday. • No works on Sunday or public holidays. Quarrying Operations: • 7:00 am to 5:00 pm Monday to Friday. • 8:00 am to 1:00 pm Saturday. • No quarrying on Sunday or a Public Holiday. Loading and dispatch of trucks: • 6:00 am to 6:00 pm Monday to Friday • 6:00 am to 1:00 pm Saturday. • No haulage on Sunday or a Public Holiday. Blasting: • 9am to 4pm Monday to Friday. • No blasts on weekends or public holidays.

Aspect	Key Aspects of the Project
Resource and products	Approximately 12 MT of rhyolite, arenite and weathered rock, crushed, screened and sized for various products including road construction and landscaping purposes. The key attributes of this material are: • Decorative and road construction aggregates with unique colouring. • High proportion of product to meet TfNSW specification for high grip to improve road safety. • The light-coloured nature of the resource has a high solar reflectance and consistent with uses aimed at cooling pavements and reducing energy use.
Elevations	Approximate elevations relevant to the development are: • Quarry located between 37 m to 115 m Australian Height Datum (AHD). • Workshop, office and stockpiles located between 31 to 49 m AHD. • Access road located between 22 to 59 m AHD. The Quarry pit is sheltered to the west by a ridge 125 m to 145 m AHD high and is above the nearby Deep Creek which has an elevation of 28 m AHD.
Extraction	• Weathered rock stripped by bulldozer or excavator. • Blasting of hard rock. • Excavator and articulated trucks to feed mobile crusher and screen on pit floor. • Excavator or front-end loader and articulated trucks, to distribute materials between processing and stockpile areas. • Front-end loader to load road registered haulage trucks for saleable products.
Support facilities and utilities	• Site office, weighbridge, workshop, stores, car parking. • New intersection on The Bucketts Way with private sealed access road. • Power supply from diesel generators or solar. • Telecommunications line run adjacent to the access road. • Water supply sourced from rainwater, onsite dams, surface water runoff, groundwater seepage and imported potable water as needed.
Rehabilitation	• On completion of extraction, benches will be revegetated with native trees consistent with surrounding vegetation with a free draining quarry floor consisting of open grassland and scattered woodland that may provide a dwelling site generally consistent with the existing approved subdivision of the property.



Created by: J.Berry
Date: 21 December 2022
Version: A



- Existing Receptor
- Potential Future Receptor
- Potential Future Receptor (with agreement)
- National Park

0 1 2 3 km



Regional Context and Receptors

Figure:

1-1

Deep Creek Quarry Project
Ironstone Developments Pty Ltd
Deep Creek Road, Limburners Creek NSW

2. SUBMISSIONS ANALYSIS

This section provides an overview of the submissions received and the nature of those submissions. Subsequent sections provide a response to the matters raised in those submissions. Each submission was reviewed to assess and categorise the nature of the submissions.

2.1 SUBMISSIONS RECEIVED

The EIS was placed on public exhibition from 19 November to 17 December 2021. During the public exhibition period 69 submissions were made on the Project. This included 10 government agency submissions and 59 public and organisation / interest group submissions.

Table 2-1 provides a breakdown of the submissions received for the proposed project.

Table 2-1: Breakdown of Submissions

Category	Number of submissions
Agency (State/Public Authority)	9
Councils	1
Organisations/Community and Interest Groups	3 [#]
Members of the Public	56
Total	69
* Includes submission by the Koala Coalition Econetwork Port Stephens Inc received outside submission timeframe.	
# The ICAG submission comprised 13 letters from different ICAG members.	

2.1.1 Agency Submissions

As outlined in **Table 2-1**, nine agency and one council submissions were received. These included:

- Biodiversity Conservation Division (BCD)
- Crown Lands
- NSW Department of Planning and Environment – Water (DPIE Water)
- Environment Protection Authority (EPA)
- Heritage Council of NSW
- Transport for NSW (TfNSW)
- Mid Coast Council

2.1.2 Public Submissions

Of the 59 submissions received from members of the public and organisations/ interest groups, 57 (96.6%) were objections and two (3.4%) were in support of the proposed project. It is noted that of these submissions, there are several that have been received from the same individual and

numerous from the same residential address, being submitted as a member of the public and part of an organisation or interest group.

One submission was received from each of the following special interest groups and organisation:

- Ironstone Community Action Group (ICAG) that was comprised of 14 letters from various members of ICAG.
- Ocean Earth Farm Stay.
- Koala Koalition Econetwork Port Stephens Inc

Given the similar nature of the group submissions, these have been responded to with the general public submissions, and where relevant the name of the organisation or interest group has been referenced.

A breakdown of the location from where submissions were made is presented below in **Figure 2-1** and **Figure 2-2**. The majority of the submissions received were from the “**Local**” area, (i.e., less than 5km from site e.g., Allworth and Limeburners Creek), with those in the “**Regional**” area (i.e., more than 5km <100km e.g. Newcastle, Maitland), and “**Broader**” area (i.e. more than 100km from site e.g. Sydney).

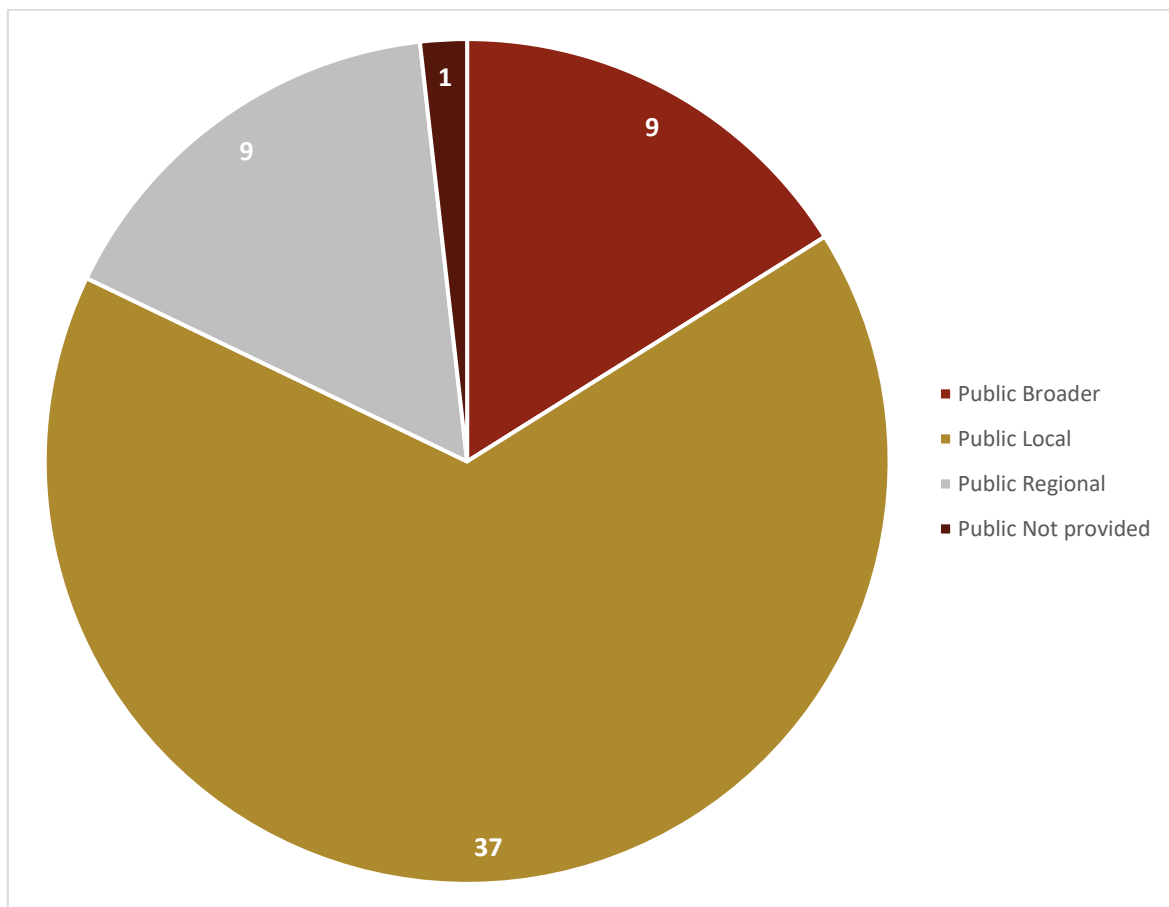


Figure 2-1: Breakdown of the origin of community submission makers

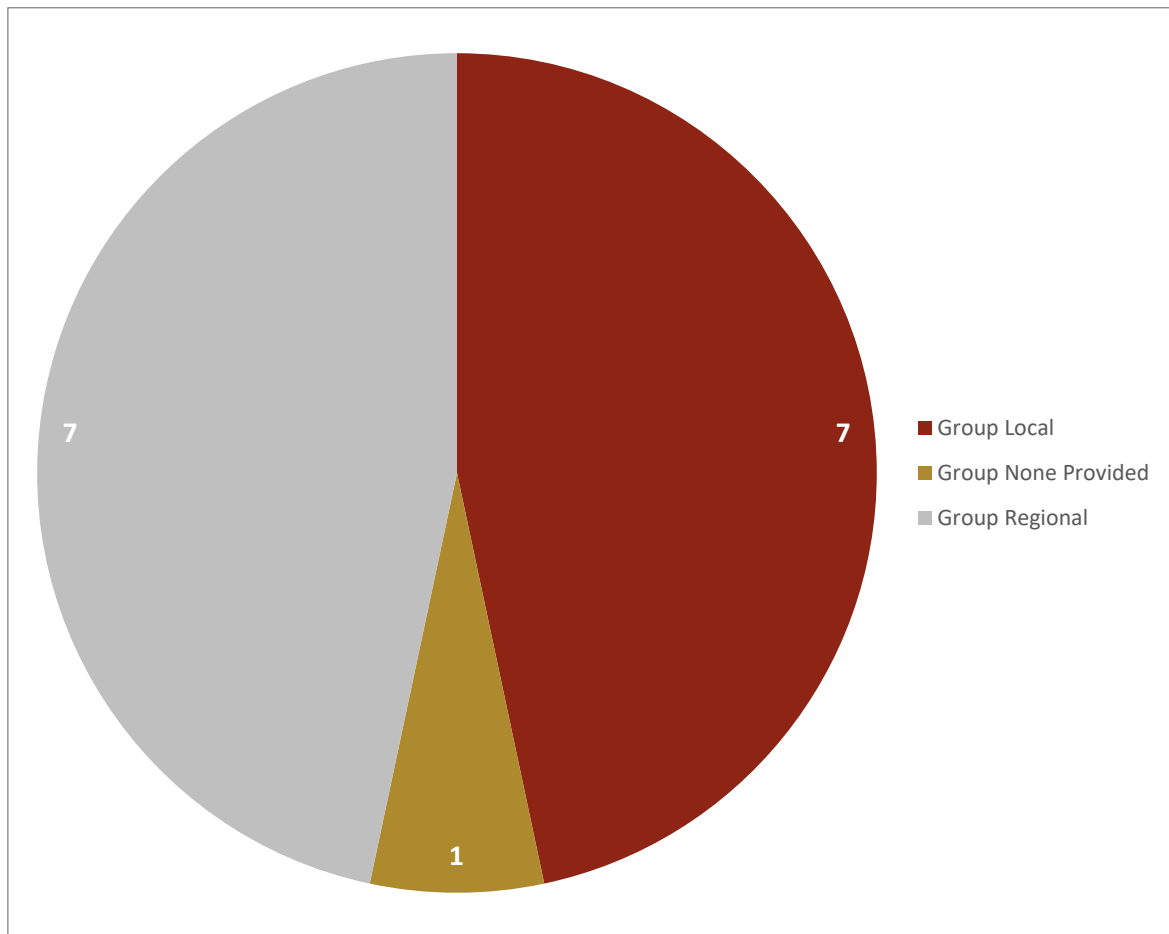


Figure 2-2: Breakdown of the origin of group submission makers. Note, only three group submissions were received, two local, one regional, however the ICAG submission was composed of multiple letters from members at other locations, these letters of the group have been treated like individual submissions.

2.2 PUBLIC AND GROUP SUBMISSIONS CATEGORIES

Each submission was reviewed, and the submission issues broken down and classified according to the nature of the issue. This formed the basis of the topics for response within **Section 5**. A copy of the submission register is attached in **Appendix A**. Overlap exists within several of the issues raised.

Out of the 71 letters received (56 public, 2 organisations, and 13 from ICAG), issues raised by in more than 40% of the letters included matters relating to:

- Traffic and Transport (65%).
- Biodiversity (59%).
- Social (52%).
- Air Quality (52%).
- Noise Impacts (52%).
- Economics (48%).

Figure 2-3 shows the frequency of the issues raised within the submissions from the public and groups.

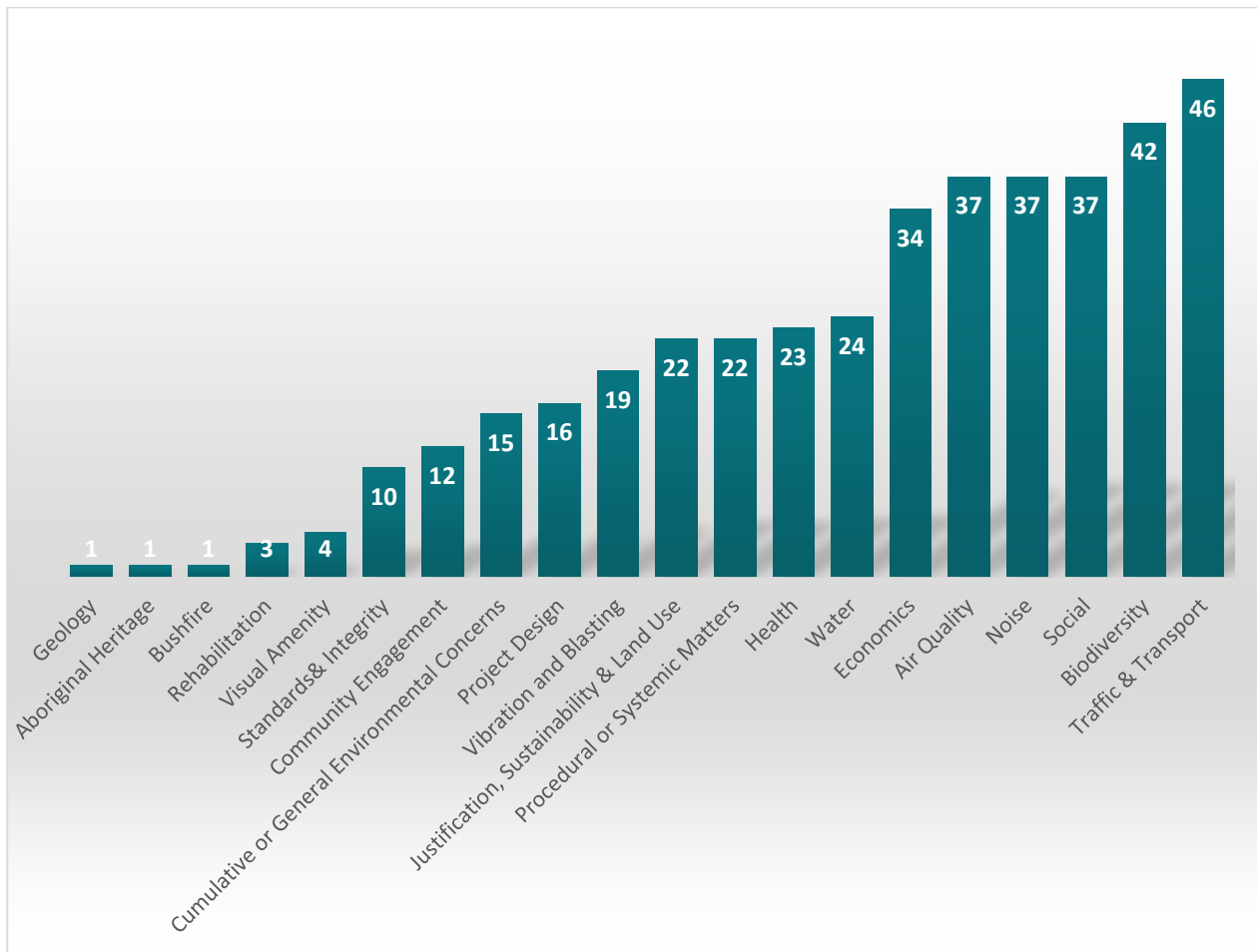


Figure 2-3: Tally of submission issues from public and group submissions. Note, only two group submissions were received, however the ICAG submission was composed of multiple letters from its members, these letters in the group submission have been given equal weight for this purpose as individual submissions.

3. ACTIONS SINCE EIS EXHIBITION

Following the exhibition of the EIS, the following additional consultation, studies and information was collated to assist in the resolution of issues raised during the public exhibition period:

- Consultation with the NSW EPA, Crown Lands and Mid Coast Council.
- Solar Reflectance Index assessment of quarry aggregate to justify the unique qualities of the material included as **Appendix D**.
- Additional biodiversity data and an updated Biodiversity Development Assessment Report (BDAR) included as **Appendix E**.
- Collection of additional Koala and New Holland Mouse data by Biolink, this information is included within **Appendix E**.
- Aquatic ecology baseline information and assessment for Deep Creek included as **Appendix F**.
- Revision of the Groundwater Impact Assessment including detailed modelling of groundwater inflows included as **Appendix G**.
- Revision of the Surface Water Impact assessment, including an updated water balance, included as **Appendix H**.

A summary of the additional data collected, and the findings is provided below.

3.1 DCQ MATERIAL WILL MITIGATE URBAN OVERHEATING

The lighter coloured material planned for extraction from the DCQ is considered to have unique properties for use in creating cooler streets compared to other quarry materials that are available on the market. To quantify the benefit of the DCQ aggregate, measurements of solar reflectance, thermal emittance, and the Solar Reflectance Index (SRI) for five types of pavement materials was undertaken by University of New South Wales (UNSW). This UNSW SRI report is presented as **Appendix D**.

The SRI is not a direct measurement but an index that condenses in a single number, the solar reflectance value and thermal emittance value, allowing the comparison of products having both different thermal emittance and solar reflectance. This calculation is performed following the procedure defined in ASTM E 1980. A higher SRI is likely to maintain cooler temperatures than a lower SRI.

3.1.1 DCQ Aggregate has high SRI

To validate the lighter aggregate from DCQ would have a higher SRI, core samples from DCQ exploration were prepared into 10 mm aggregate and placed within a sample cement mould, along with several other quarry aggregate samples and slag material that would typically be used in local roads. These samples are shown below in **Plate 3-1**. The results of the assessment determined an SRI range (low wind to high wind) for each sample as shown within **Table 3-1**.

Table 3-1: Relative pavement surface temperatures

Sample	Solar Reflectance Index	
	Low wind (0-2m/s)	High wind (6-10m/s)
Sample 1 (DCQ)	24	23
Sample 2 (DCQ)	29	28
Sample 2b (DCQ) Sample 2b included carbon black to remove effect of mould cement)	23	22
Sample 3 (slag)	7	4
Sample 4 (Hunter Region Quarry Material)	12	11
Sample 5 (Hunter Region Quarry Material)	10	9

As shown above, the proposed DCQ aggregate will have an SRI nearly double that of other aggregates available in the Hunter Region.

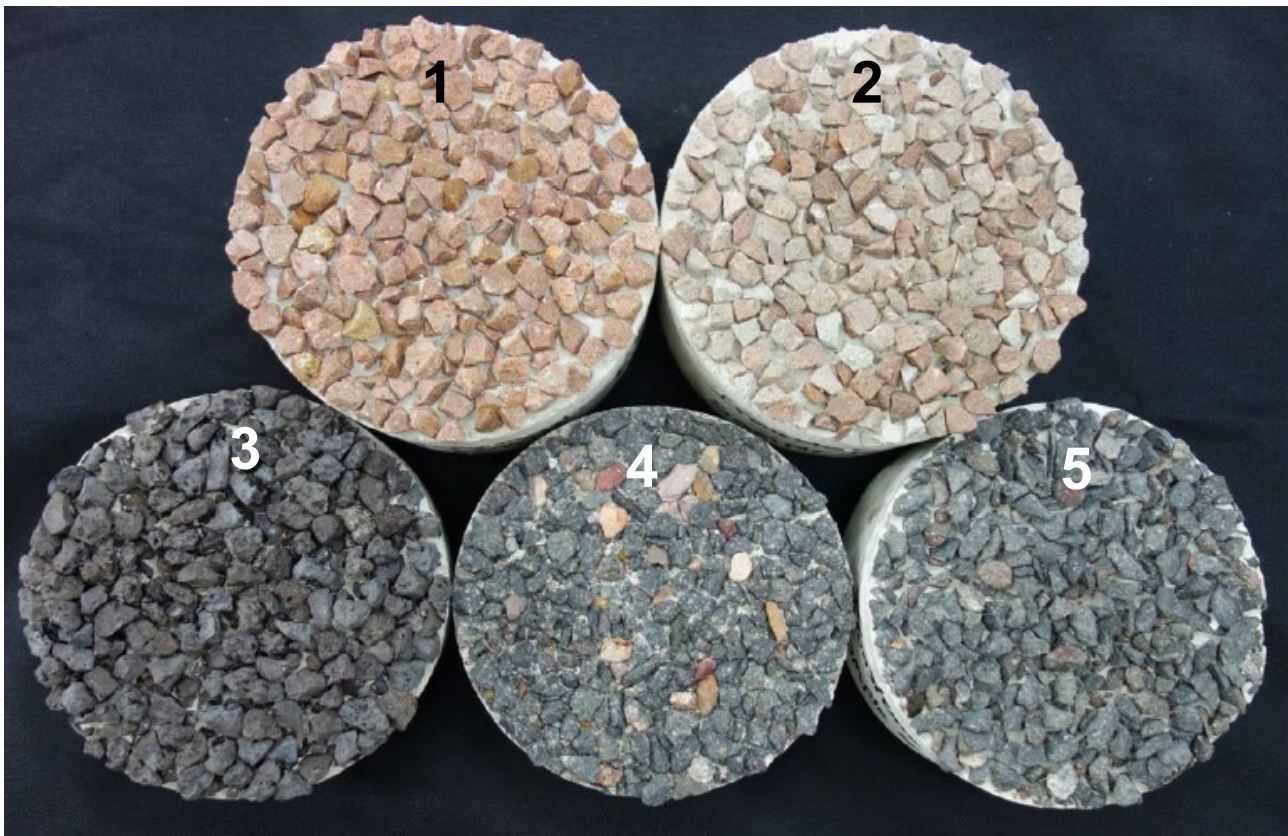


Plate 3-1: Aggregate samples tested for solar reflectance, 1) DCQ high PAFV aggregate, 2) DCQ high PAFV aggregate, 3) Slag with high PAFV, 4) Hunter Region hard rock quarry with normal PAFV aggregate, 5) Another Hunter Region hard rock quarry with normal PAFV aggregate.

3.1.2 DCQ aggregate can reduce pavement temperatures

The higher the SRI, the cooler the pavement. To put the SRI in a practical context, the derived surface temperatures of pavements using these aggregates can be calculated (refer to <https://www.otm.sg/sri-calculator>). Using the values from the UNSW SRI report the following surface temperatures a comparison of surface temperatures is provided below in **Table 3-2**. This demonstrates that pavements using the DCQ aggregate can reduce surface temperatures in the order of 2-10 °C.

Table 3-2: Relative pavement surface temperatures

Sample	Pavement surface temperature comparison (°C)	
	Low wind (0-2m/s)	High wind (6-10m/s)
Sample 1 (DCQ)	90.9 °C	56.4 °C
Sample 2 (DCQ)	87.9 °C	55.3 °C
Sample 2b (DCQ) <i>Sample 2b included carbon black to remove effect of mould cement</i>	91.1 °C	56.6 °C
Sample 3 (slag)	99.8 °C	60.3 °C
Sample 4 (Hunter Region Quarry Material)	97.3 °C	58.9 °C
Sample 5 (Hunter Region Quarry Material)	98.3 °C	59.2 °C

3.1.3 Better environmental outcomes from lower temperature pavements

The UNSW SRI Report concluded pavements that used the DCQ aggregate “*can mitigate urban overheating as they display a solar reflectance (or albedo) greater than that of “business as usual” asphalt concrete (i.e., unaged albedo of 0.05 and aged albedo of 0.10-0.15), which would have an SRI ranging between 0 and 8. An urban albedo increase of 10%, which can be achieved with a combination of cool roofs and pavement, can reduce the average and maximum temperatures by 0.27 °C and 0.78 °C, respectively. In Sydney, the decrease in peak ambient temperature would be 1.5 °C*”. While increasing the SRI of pavements is an important component of reducing urban overheating, other aspects such as better pavement permeability, increased tree shading and design that considers the prevailing climate are also important factors.

Other benefits lower temperature pavements and pavements with a higher reflectance as noted by the US EPA (2012) can include the following:

- Cooler pavements reduce the temperature of surface water runoff, resulting in less thermal shock to aquatic life and lower risk of algal blooms.
- More reflective pavements can enhance visibility at night, reducing lighting requirements (saving money and energy, where energy is derived from fossil fuels the net benefit is higher again by reducing greenhouse gas emissions).

- Cooling pavement improves the comfort of people in these areas and reduces the extent that additional energy is expended in cooling occupants (e.g., less air conditioning is used).

Lake Macquarie City Council has adopted an Urban Heat Strategy in June 2022. The strategy identified objectives and actions aimed at addressing urban heat to make Lake Macquarie more liveable and resilient. A copy of the UNSW SRI Report was provided to Council for consideration of the value of the DCQ aggregate for creating cool pavements. Council officers confirmed the material would be suitable for inclusion within their cool pavement trial, aimed at meeting the Urban Heat Strategy Objective to; *“Improve selection of building and construction materials to make them more resilient, and reduce the impacts of urban heat”*.

The Hunter Regional Plan 2041 (NSW DPE 2022), also highlights the need to improve resilience to heatwaves through the design of urban environments that reduce how much heat is absorbed by buildings and roads. As demonstrated above, the DCQ quarry materials are well suited to assist in building this resilience.

3.2 BIODIVERSITY UPDATE

To respond to submissions by the Mid Coast Council and the Biodiversity Conservation Division, Wedgetail Project Consulting undertook and commissioned additional survey and prepared a revised Biodiversity Development Assessment Report (BDAR) and Koala Plan of Management (KPoM) for the DCQ Project. These documents are included within **Appendix E**.

3.2.1 Additional Surveys

3.2.1.1 Wedgetail Project Consulting Surveys

Wedgetail Project Consulting completed the following additional biodiversity surveys:

- 7 hours of additional review of hollows within the impact area as potential breeding habitat for owls – no owls were found.
- 13 pit fall trapping transects for consistency with updated Biodiversity Assessments Methodology (BAM) – no additional species were found.
- Collection of data from an additional 58 remote cameras that were active for 42 consecutive nights across the site – the cameras recorded occurrence of the squirrel glider (*Petaurus norfolcensis*) not previously recorded.
- Collection of two additional BAM plots to confirm extent of exotic grasslands on the access road alignment.
- Completion of additional surveys for threatened frogs, no threatened frogs were found.
- Collection of additional survey for threatened flora within the land holding outside the impact area.
- Collection of New Holland Mouse (*Pseudomys novaehollandiae*) potential habitat data across within the Subject Land comprising soil, floristic and topographical analysis. The surveys helped inform surveys completed by Biolink.

3.2.1.2 Biolink Surveys

Biolink were engaged to conduct additional field survey to gather supplemental ecological data enabling a response to matters concerning the potential of the proposed development to impact on koalas and new holland mice (NHM). A summary of the key findings of these surveys is included below, and a copy of the report included within **Appendix E**.

The use of habitat by koalas in the major area to be impacted – the proposed quarry pit – was assessed by way of Spot Assessment Technique (SAT) sampling at 250 m intervals and for the proposed access road by foot-based traverses along the alignment. Preferred Koala Food Tree (PKFT) species within the area proposed for the development are known to be forest red gum, grey gum and tallowwood. Koala activity was detected by SAT survey at two locations within the proposed quarry pit, in both instances at levels of low use / transient movement rather than use by individuals with established home range areas. The indicative activity gradient resulting from the SAT activity implies the presence of higher activity levels to the south of the proposed quarry pit. Evidence of koalas in the form of scats was also observed in areas to the west of the proposed quarry pit and in other locations to the southwest and southeast of the proposed quarry pit.

The NHM population was surveyed over two events using a series of trap stations comprising five type-A Elliot traps, each station located at ~ 150 m intervals across the quarry pit and within the proposed offset areas. One thousand, one hundred and eighty-six (1,186) trap nights at 60 trap stations were collectively accumulated during the two sampling events. NHM trapping data enabled a minimum definable Extent of Occurrence (EoO) for the species of at least 77.02 ha to be identified, within which NHM density was estimated at 15.01 individuals ha⁻¹. Extrapolation of the NHM density estimate across the EoO implies the presence of a local population of more than 1,000 individuals. The northern extent of the EoO extends into the proposed quarry pit, density data implying that approximately 160 NHM, or 13.84% of currently known site population size estimate, would be directly impacted / displaced by habitat removal for the proposed quarry pit.

3.2.2 Biodiversity Impacts Summary

The DCQ Project has incorporated numerous measures to avoid and mitigate impacts on biodiversity, these are summaries in *Section 4.6.1.1* below, in response to the Mid Coast Council submission. Many of these measures have not changed within this Response to Submissions but have been better articulated.

No Serious and Irreversible Impacts (SAILs) as defined by the *Biodiversity Conservation Act 2016 (BC Act)* were identified within or due to the Development Site.

No vegetation was identified as constituting a Threatened Ecological Community under the BC Act or the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).

Nineteen threatened species (two flora, 17 fauna) listed under the BC Act, or the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) were recorded onsite.

3.2.2.1 Vegetation Impacts

A summary of the impacts to vegetation communities and the ecosystem credits required to offset this impact under the Biodiversity Offsets Scheme is shown within **Table 3-3**.

Table 3-3: Impacts to plant community types and the required ecosystem credits to offset impacts

Plant Community Types (PCTs)	Area (ha)	Credits Required
PCT 1590: Spotted Gum - Broad-leaved Mahogany - Red Ironbark shrubby open forest	18.41 ha	321
PCT 1619: Smooth-barked Apple - Red Bloodwood - Brown Stringybark – Hairpin Banksia heathy open forest of coastal lowlands	8.73 ha	166
PCT 1567: Tallowwood - Brush Box - Sydney Blue Gum moist shrubby tall open forest on foothills of the lower North Coast	1.83 ha	52
PCT 1556 Tallowwood - Smooth-barked Apple - Blackbutt grass tall open forest of the Central and lower North Coast	0.17 ha	5
Total	29.14 ha	544

3.2.2.2 Impacts to Threatened Species

A summary of the impacts to threatened species and the required species credits to offset this impact under the Biodiversity Offsets Scheme is shown within **Table 3-4**.

Table 3-4: Impacts to threatened species and the required credits to offset impacts

Species (Protected under the BC Act unless otherwise stated)	Offset Note	Credits Required	Impacts	Context
<i>Black-eyed Susan</i> (<i>Tetradlea juncea</i>) (listed under EPBC Act and BC Act)	Offset credits determined by species polygon	577	Removal of 586 plants	A population of 1830 individuals has been recorded within the Subject Land. Approximately 32% of an important population (defined as any population over 1,000 plants) for the species would be removed, with 67% (1225 plants) retained in high quality vegetation. An Impact Assessment in accordance with the guidelines (DSEWPaC 2011) has been prepared for the species. This assessment determined that the Activity has potential to have a significant impact on this population but is unlikely to disrupt breeding cycles and is unlikely to further decrease the habitat in the study area.
<i>Netted Bottlebrush</i> (<i>Callistemon linearifolius</i>)	Offset credits determined by species polygon	92	Removal of 60 plants	A total of 573 individuals were detected during surveys onsite.
Koala (listed under BC Act and EPBC Act)	Offset credits determined by species polygon	736*	28.75 ha of potential habitat requires offsets	Detected within the Development Site via remote cameras and via Koala SATs. Surveys suggest low use / transient movement rather than use by individuals with established home range areas.

Species (Protected under the BC Act unless otherwise stated)	Offset Note	Credits Required	Impacts	Context
				An Impact Assessment in accordance with the guidelines (DSEWPaC 2011) has been prepared for the species. This assessment determined that the Activity is unlikely to have a significant impact on the species. Koala Plan of Management (KPoM) prepared. <u>* IDPL will plant 450 preferred koala food trees within and adjacent to the Deep Creek riparian corridor to further offset loss of feed trees.</u>
Southern Myotis	Offset credits determined by species polygon	409	17.71 ha of potential habitat requires offsets	Identified via Anabat recordings.
Squirrel Glider	Offset credits determined by species polygon	714	28.75 ha of potential habitat requires offsets	Recorded within the Development Site via remote cameras. Not previously identified in original surveys.
New Holland Mouse (<i>Pseudomys novaehollandiae</i>) – listed under the EPBC Act only.	Not listed within Biodiversity Offsets Scheme. Over 86 % of the known habitat onsite will be retained, of which a portion will be protected within the Stewardship Site.		Approximately 160 NHM, or 13.84% of currently known site population size	Detected within the Development Site during terrestrial trapping surveys. The northern extent of the EoO extends into the proposed quarry pit, density data implying that approximately 160 NHM, or 13.84% of currently known site population size estimate, would be directly impacted / displaced by habitat removal for the proposed quarry pit. See above survey data in Section 3.2.1.2. IDPL will implement a suitable New Holland Mouse Relocation Plan in consultation with Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEW) prior to disturbance of identified habitat.
Grey-headed Flying-fox (listed under BC Act and EPBC Act)	Impacts offset with ecosystem credits	Observed foraging within the site however, no camps were detected. An Impact Assessment in accordance with the guidelines (DSEWPaC 2011) has been prepared for the species. This assessment determined that the Activity is unlikely to have a significant impact on the species.		
Glossy Black-Cockatoo (<i>Calyptrorhynchus lathami</i>)	Impacts offset with ecosystem credits	Observed flying over the Study Area (outside the Development Site) during bird surveys. No evidence of breeding was detected within the Development Site.		
Little Lorikeet (<i>Glossopsitta pusilla</i>)	Impacts offset with ecosystem credits	Identified flying over the Study Area during bird surveys. No evidence of breeding was detected within the Development Site.		

Species (Protected under the BC Act unless otherwise stated)	Offset Note	Credits Required	Impacts	Context
Masked Owl (<i>Tyto novaehollandiae</i>)	Impacts offset with ecosystem credits			Detected during nocturnal surveys (heard calling offsite). No evidence of breeding was detected within the Development Site
Sooty Owl (<i>Tyto tenebricosa</i>)	Impacts offset with ecosystem credits			Detected during nocturnal surveys (heard calling offsite). No evidence of breeding was detected within the Development Site.
Eastern False Pipistrelle (<i>Falsistrellus tasmaniensis</i>)	Impacts offset with ecosystem credits			Identified via Anabat recordings.
Eastern Coastal Free-tailed Bat (<i>Micronomus norfolkensis</i>)	Impacts offset with ecosystem credits			Identified via Anabat recordings.
Little Bent-winged Bat (<i>Miniopterus australis</i>)	Impacts offset with ecosystem credits			Identified via Anabat recordings. No evidence of breeding was detected within the Development Site.
Golden Tipped Bat (<i>Phoniscus papuensis</i>)	Impacts offset with ecosystem credits			Identified via Anabat recordings and captured using a harp trap.
Yellow-bellied Sheath-tail-bat (<i>Saccolaimus flaviventris</i>)	Impacts offset with ecosystem credits			Identified via Anabat recordings.
Greater Broad-nosed Bat (<i>Scoteanax rueppellii</i>)	Impacts offset with ecosystem credits			Identified via Anabat recordings.
Eastern Cave Bat (<i>Vespadelus troughtoni</i>)	Impacts offset with ecosystem credits			Identified via Anabat recordings. No evidence of breeding was detected within the Development Site.
Large-eared Pied Bat (<i>Chalinolobus dwyeri</i>)	Impacts offset with ecosystem credits			Identified via Anabat recordings.

The DCQ Project is considered a Controlled Action under the EPBC Act for impacts to listed threatened species and communities. The project will be assessed under the Bilateral Agreement (Amending Agreement No.1, 2020) between the Commonwealth and NSW Governments.

3.3 COLLECTION OF BASELINE AQUATIC ECOLOGY

Marine Pollution Research Pty Ltd (MPR) was engaged to undertake a base-line aquatic ecology survey of tributary drainages intersected by the Project and Deep Creek between the proposed quarry and the Karuah River estuary interface. The field aquatic ecological assessments included:

- Deep Creek freshwater stream-health sites sampled for fish and macroinvertebrates.
- Metered water quality and Riparian, Channel and Environment Condition assessments at all sites.

- Field habitat inspections and aerial drone imagery of the estuarine and intertidal vegetation communities and including occurrence of oyster lease infrastructure in the lower estuarine section of Deep Creek and around the river confluence.
- Aquatic habitat assessment including potential threatened and protected species habitats.

A copy of the report is included within **Appendix F**, with findings outlined below.

The overall Aquatic and Riparian Habitat condition, as estimated using the Riparian, Channel and Environment (RCE) Index, indicate *good to very good* aquatic and riparian conditions within Deep Creek, with the tributaries scoring slightly lower.

The surface water quality showed:

- Electrical conductivity (EC) was lower (fresher) in the tributaries (65-158 $\mu\text{S}/\text{cm}$), compared with Deep Creek ranging from 200 to 15,480 $\mu\text{S}/\text{cm}$ downstream at the estuary interface.
- Dissolved oxygen ranged from fair to good (53-89% sat) in Deep Creek, higher than that recorded in the tributaries.
- pH in Deep Creek ranged from 6.1 to 7.2, with tributaries recording the lower values between 5.1 and 6.2.
- Water turbidity was generally high ranging from 32.1 to 141 NTU.

Aquatic macroinvertebrate sampling and fish trapping identified:

- 39 macroinvertebrate taxa in the study area.
- Overall SIGNAL-2 and EPT taxa values suggest the Deep Creek condition to be moderately to mildly impaired.
- Three native and one introduced fish species were recorded in the study area (none threatened).

The Deep Creek Estuarine environment was inspected by foot and using drone imagery to record the current conditions. Oyster leases were noted and are mapped by NSW Fisheries within the lower reaches of Deep Creek.

The report includes a review of water quality and oyster aquaculture in the Karuah River and the current state with respect to Qx disease. The review indicates that Karuah River waters during stormwater events have excessive nutrient and sediment levels, elevated heavy metal concentrations and elevated faecal coliform levels. The DCQ SWIA (refer **Appendix H**), note the water quality onsite has low pH, occasional elevated nutrients and occasional elevated heavy metals (copper, lead and zinc) along with high iron, which is consistent with the overall Karuah River catchment water quality.

The Aquatic Ecology Report concluded that with the implementation of a suitable WMP approved by DPE prior to construction and developed in consultation with NSW DPI, the quarry is unlikely to *“have an adverse effect on oyster aquaculture development or a priority oyster aquaculture area”*. As such, the Consent Authority is able to determine the application consistent with Division 4 of the *State Environmental Planning Policy (Primary Production) 2021*.

3.4 UPDATED GROUNDWATER IMPACT ASSESSMENT

In response to submissions, the Groundwater Impact Assessment, prepared by Hydrominex Geoscience Consulting for the EIS was updated to address matters identified in submissions. A copy of the report is included within **Appendix G**.

The primary change in the updated groundwater assessment was the preparation of a complex numerical model to determine the potential groundwater inflows into the quarry. The complex numerical model showed changes as stages of the quarry were developed, reaching a maximum of 25 ML/year, with an average of 18.3 ML/year over the operation and ongoing inflows of 17.9 ML/year following closure of the quarry. These equate to an inflow of 0.3 mm/day over the area of the quarry, well below the average evaporation for the site.

A licence for approximately 18ML will be required under the *Water Sharing Plan for the North Coast Fractured and Porous Rock Groundwater Sources 2016 (New England Fold Belt Coast Groundwater Source)* will be required for the estimated groundwater take.

3.5 UPDATED SURFACE WATER IMPACT ASSESSMENT

In response to submissions, the Surface Water Impact Assessment (SWIA), prepared by Engeny for the EIS was updated to address matters identified in submissions. A copy of the report is included within **Appendix H**. The key changes made to the report related to the update of the water balance model results taking into account updated groundwater inflow calculations, an increase in sediment dam sizing and an estimate of the likely discharge volumes from the quarry.

The quarry water management system consists of the following basic outline

- Clean water is diverted around disturbance areas.
- Runoff from disturbance in the pit area is captured in the Quarry Dam (increased by 30%). No discharge of the quarry dam is required in average conditions, and any discharge would be via an event-based mechanism approved by the EPA for extreme conditions.
- Runoff from the Stockpile Area, and Office and Workshop Area drain to two sediment dams:
 - o As a result of the submissions, these dams were increased by 50% in capacity and were designed with two stages of capture, a primary pit closer to the source to capture coarse sediments and secondary dam below these for remainder (refer to the updated plans in **Appendix C**).
 - o The increase in sediment dam sizes reduced the number of discharge events per year from an estimated 6-12 times to 3-7 times with approximately 115 ML per annum. The discharges would occur under controlled conditions at scour protected locations on tributaries of Deep Creek consistent with EPL and WMP water quality criteria.
 - o These sediment dams are designed to contain 5-day 95% event and are intended to be dewatered to the quarry dam (where possible).
 - o Potential for 1-2 events per year (those exceeding 91.5mm over 5 days) would exceed the capacity of the sediment dams. These would overflow via grassed spillways into open paddock and would be in the order of 9ML per annum (for the site).
- Water from Sediment Dams and the Quarry Dam forms the primary source of water for dust suppression onsite. Up to 10ML per year (of the 94ML maximum harvestable right) is expected to be taken from onsite dams when these dams are dry.

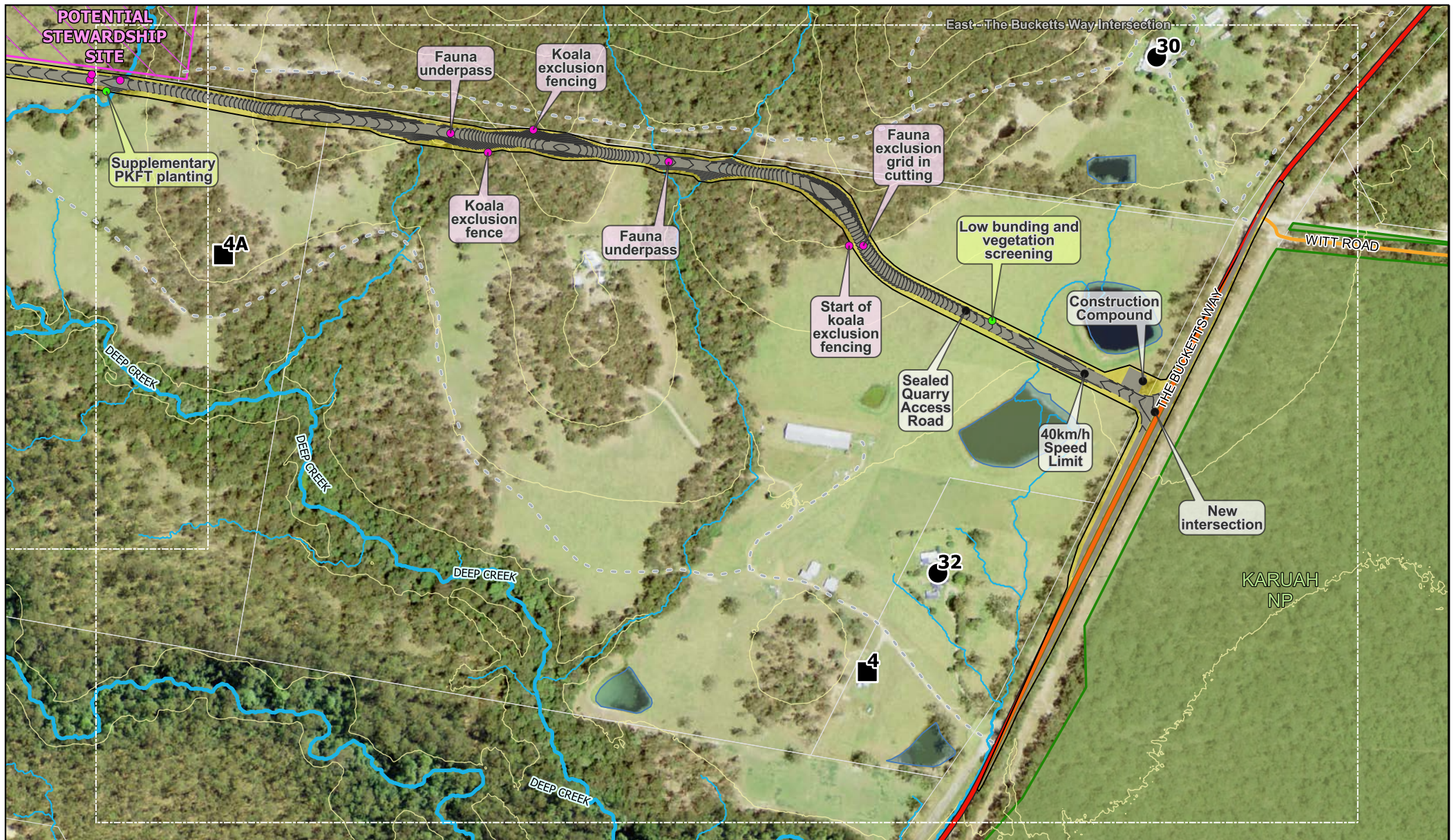
Water balance modelling suggest that surface water take (rainfall and runoff capture) is approximately 147 ML for median conditions. With the available maximum harvestable right of 94 ML, licencing under the Water Sharing Plan for the Lower North Coast Unregulated and Alluvial Water Sources 2016 will be required for an estimated 53ML.

3.6 PROPOSED PROJECT REVISIONS

As a result of the additional studies and information collected there have been relatively few amendments to the project design considered necessary to respond to issues raised and implement the project with acceptable levels of impact. The changes made to the DCQ include:

- An increase in the sediment basin size to limit the frequency of discharge needed from the quarry, the Project Application extent was maintained at the same overall area and within existing survey extents.
- Removal of Deep Creek Road as a possible access route during construction.
- Adjustment to the design of the infrastructure to minimise works within the Deep Creek Road reserve adjacent to the office and workshop area and the stockpile area.
- Adoption of modified controls to reduce the effect on Koala, including exclusion fencing, road speed changes, signage and suitable fauna underpasses.
- Adjustment of tarping bay to avoid large, preferred koala feed trees.
- Modification of the proposed onsite area to be under a Stewardship Agreement, that incorporates an extensive area of *Tetratheca Juncea* and a New Holland Mouse population.

As a result of the changes and additional studies the management and mitigation measures were also amended as included within **Appendix B**.



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PROJECT CONSULTING PTY LTD



- | | |
|---|---|
| Project Application Extent (31.9 ha) | Site Feature Labels |
| Approx Disturbance Footprint (~28 ha) | Regeneration Labels |
| Existing Receptor | Fauna Feature Labels |
| Potential Future Receptor | |

0 100 200 300 m

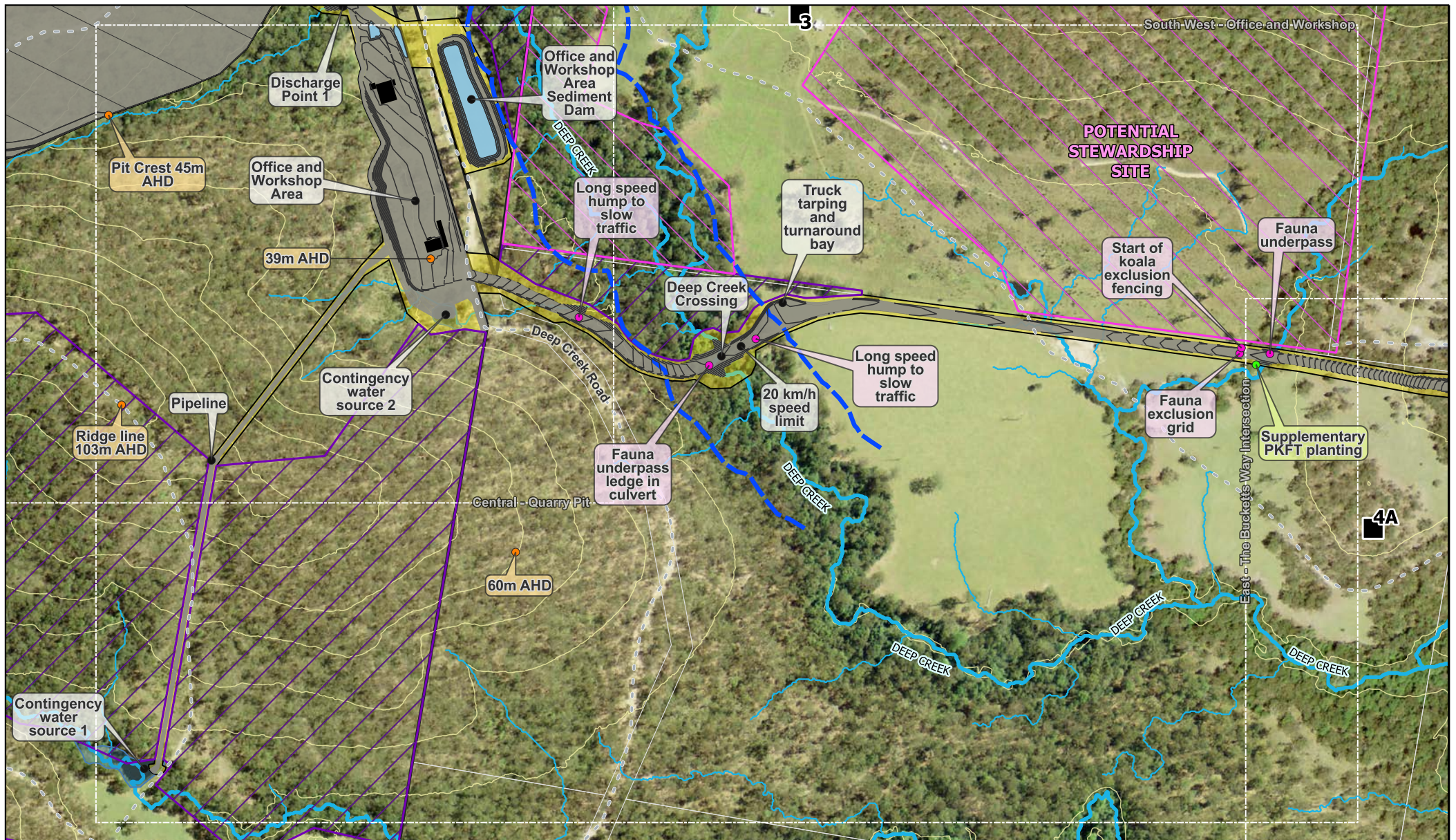


Quarry Site Plan East - The Bucketts Way Intersection

Figure:

3-2

Deep Creek Quarry Project
Ironstone Developments Pty Ltd
Deep Creek Road, Limburners Creek NSW



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WEDGETAIL
PROJECT CONSULTING PTY LTD



- Project Application Extent (31.9 ha)
- Approx Disturbance Footprint (~28 ha)
- Natural Feature Labels
- Site Feature Labels
- Regeneration Labels
- Fauna Feature Labels

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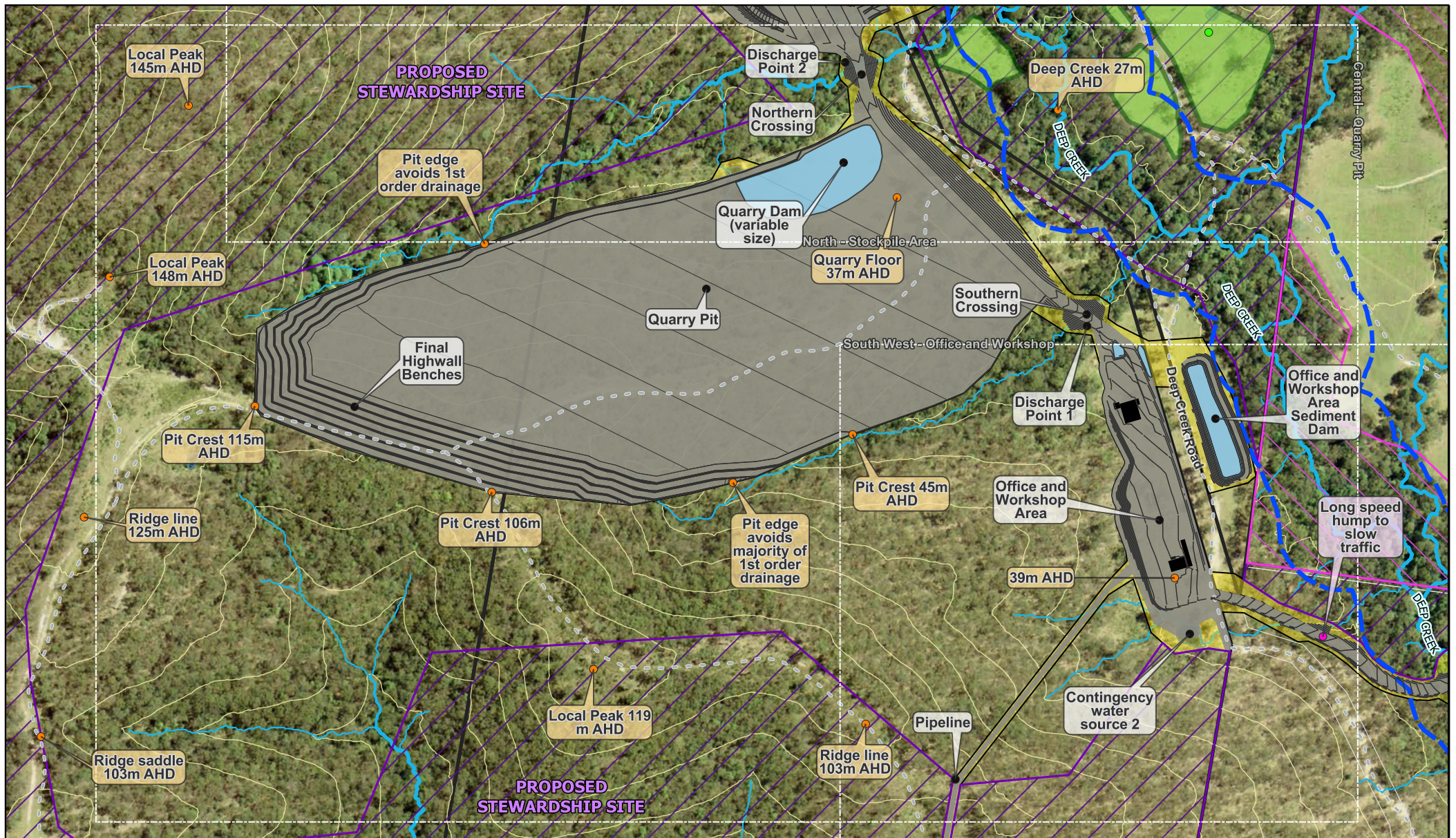


Quarry Site Plan South West - Office and Workshop

Deep Creek Quarry Project
Ironstone Developments Pty Ltd
Deep Creek Road, Limburners Creek NSW

Figure:

3-3



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- Project Application Extent (31.9 ha)
- Approx Disturbance Footprint (~28 ha)
- PKFT and Riparian Planting Areas
- Natural Feature Labels
- Site Feature Labels
- Regeneration Labels
- Fauna Feature Labels

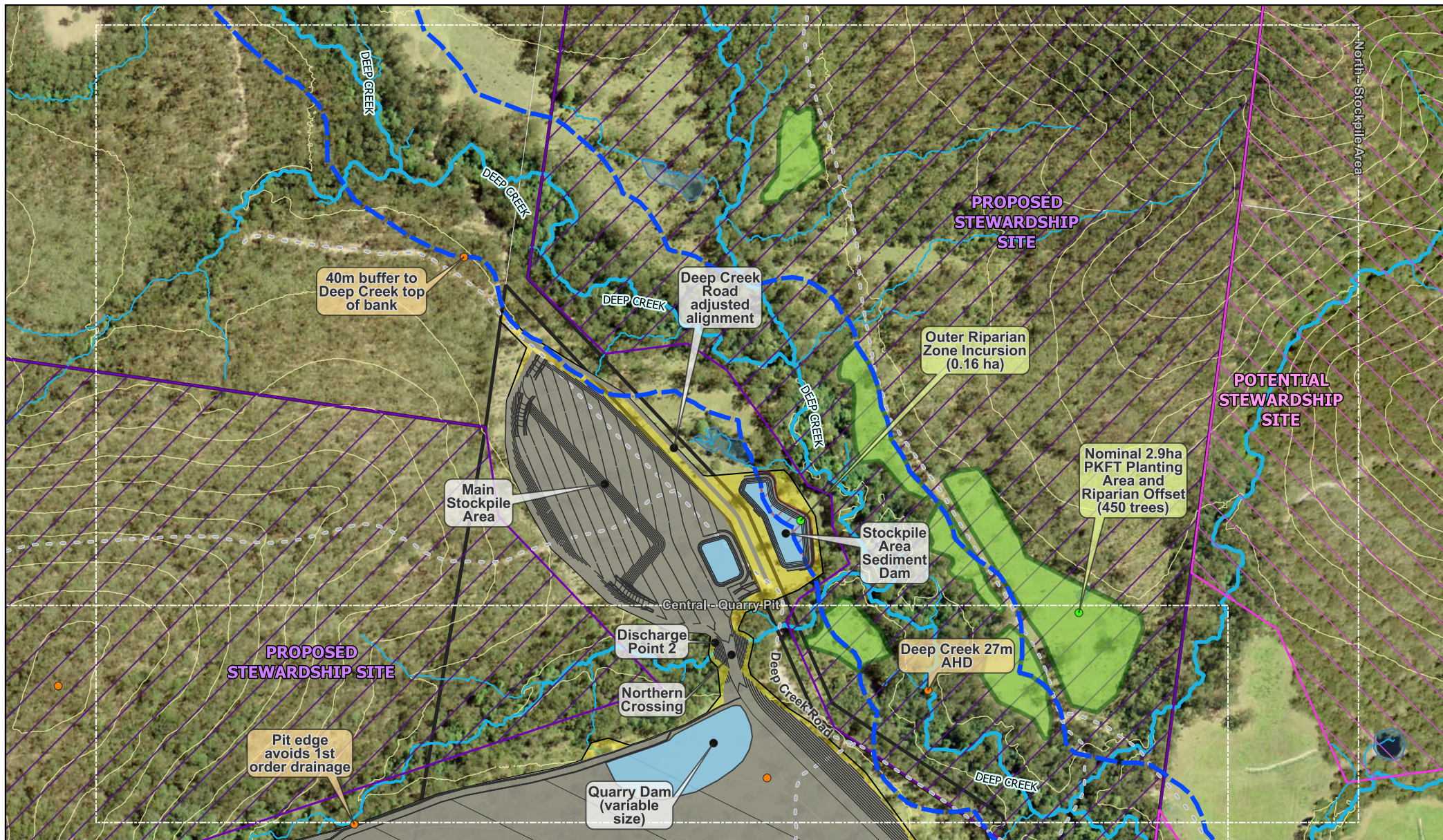
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Quarry Site Plan Central - Quarry Pit

Figure:

3-4

Deep Creek Quarry Project
Ironstone Developments Pty Ltd
Deep Creek Road, Limburners Creek NSW



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Version: A



- | | | | |
|--|---------------------------------------|--|------------------------|
| | Project Application Extent (31.9 ha) | | Natural Feature Labels |
| | Approx Disturbance Footprint (~28 ha) | | Site Feature Labels |
| | Outer Riparian Zone Encroachment | | Regeneration Labels |
| | PKFT and Riparian Planting Areas | | |



Quarry Site Plan North - Stockpile Area

Figure:

3-5

Deep Creek Quarry Project
Ironstone Developments Pty Ltd
Deep Creek Road, Limburners Creek NSW

3.7 CLARIFICATION OF BIODIVERSITY OFFSETS

This section provides an update to the biodiversity offsets strategy presented within the EIS (Section 7.1.14). The extent of changes to the strategy are not significant, however, as several submissions made comment on the matter, and changes were made to the onsite offsets area, revised strategy is presented below.

3.7.1 The Biodiversity Offset Strategy

The Biodiversity Offset Strategy for the Deep Creek Quarry will consist of the following key elements:

- **Staged fulfillment of biodiversity offset obligations** consistent with the NSW Biodiversity Offsets Scheme. The extent of each stage and required credits will be confirmed prior to each stage with survey of the planned disturbance area, indicatively, it is expected to comprise the following core stages:
 - o Prior to disturbance of biodiversity in the construction footprint.
 - o Prior to disturbance within the area covering the first 12 months of quarry extraction.
 - o Prior to disturbance within the area covering the next 2 years of quarry extraction.
 - o Prior to disturbance of any further quarry extraction area for the remainder of the obligations.

Staging of the credits ensures improved financial feasibility and more credits are retired from the onsite biodiversity stewardship sites. Biodiversity values are protected for each stage consistent with the *Biodiversity Conservation Act 2016* until the required credit obligations are fulfilled.
- **With approval of the Project, IDPL are committed to the creation of an onsite biodiversity stewardship site** consistent with the NSW Biodiversity Offsets Scheme on land adjacent to the quarry, that is expected to include:
 - o Approximately 235 ha within the proponent's land holding.
 - o Potentially a further 125 ha of an adjacent holding (subject to execution of an options agreement with landowner).
- Biodiversity offsets obligations will be satisfied (subject to timing and availability of credits) in the following order of preference:
 - o Retirement of like for like credits generated within the onsite biodiversity offset areas.
 - o Retirement of required credits through purchase from existing biodiversity stewardship sites (that are likely to be local in order to satisfy the credit requirement).
 - o Payment into the Biodiversity Conservation Trust Fund for any credit requirement that cannot be met through the above retirement of credits.
- **Planting of a minimum of 450 preferred koala feed trees** within the proponent's land holding within or adjacent to land within the Deep Creek riparian corridor.
- **Erection of nest boxes in retained vegetation** at a ratio of one nest box for each hollow removed.

The retirement of ecosystem and species credits will be in accordance with Section 10.3 of the BAM (DPIE, 2020) will form the core component of the proposed biodiversity offsets strategy for the quarry. Biodiversity offset credits would be retired in accordance with BC Act and EPBC Act

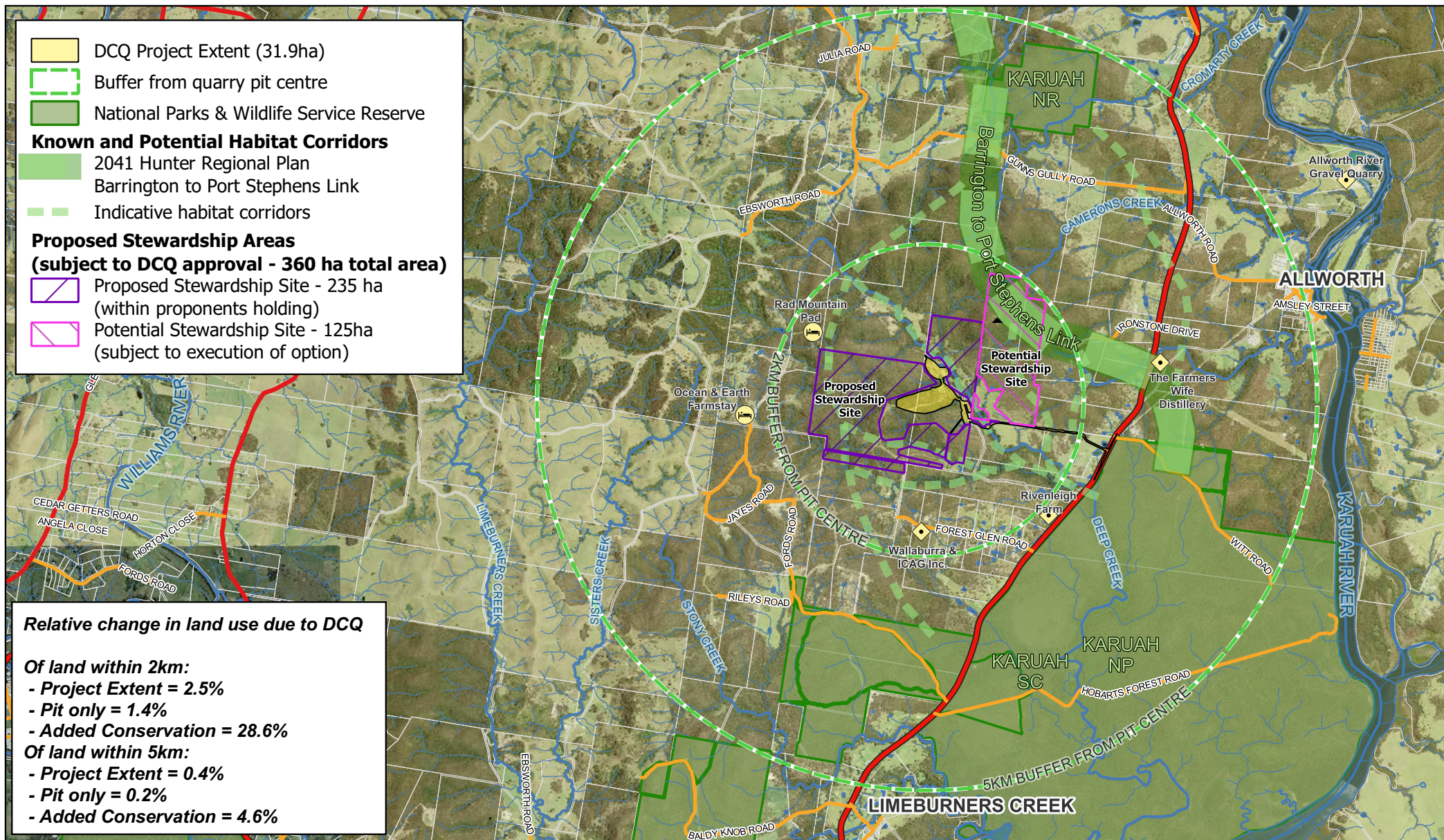
requirements (the proposed action will be assessed in accordance with the bilateral assessment agreement Amending Agreement No. 1).

3.7.2 Planting of PKFTs and Riparian Offset

It is estimated the quarry will remove an estimated 225 preferred koala feed trees (PKFTs). The PKFTs within the area are known to be *Eucalyptus tereticornis* (forest red gum), *Eucalyptus punctata* (grey gum) and *Eucalyptus microcorys* (tallowwood) (Biolink 2022 – refer **Appendix E**). This estimate is based on stadia metric survey and associated density estimates within the quarry access road and use of density estimates for impacts to PCT 1567 (Tallowwood - Brush Box - Sydney Blue Gum moist shrubby tall open forest on foothills of the lower North Coast). PCT 1567 is considered to have a higher koala carrying capacity than other vegetation communities onsite, especially when in alluvial landscapes (Biolink 2022). In addition to the satisfying the required credit requirement under the NSW Biodiversity Offsets Scheme, IDPL will plant a minimum of 450 PKFTs within its landholding within or adjacent to the Deep Creek Riparian Corridor across an area of land of approximately 2.9 ha.

Within this estimated 2.9 ha of land planned for planting of PKFTs, approximately 1,600m² will satisfy the incursion (from the stockpile sediment dam) of the same size in the outer riparian zone (i.e., 20-40m from the Deep Creek bank), consistent with the *Guidelines for riparian corridors on waterfront land* (2012).

Refer to **Figure 3-5** for the indicative areas of planting and riparian corridor offset.



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0 1 2 3 4 km



Conservation and Land Use Context

Figure:

3-6

Deep Creek Quarry Project
Ironstone Developments Pty Ltd
Deep Creek Road, Limburners Creek NSW

3.8 STAKEHOLDER ENGAGEMENT

Stakeholder engagement since the lodgement of the EIS has included:

- Discussions with Crown Lands and Mid Coast Council with respect to gaining the approval of the relevant roads authority to undertake works within the Deep Creek Road reserve. The works proposed to be completed within the road reserve include repositioning of the existing track to its correct alignment and culverts or cattle grids aimed at transferring water from infrastructure areas on the upgradient side, to the sediment basins on the lower side.
- Engagement with adjacent property owners that access their properties via Deep Creek Road regarding changes to Deep Creek Road and associated property access.

4. RESPONSE TO AGENCY SUBMISSIONS

Agency submissions and the response to these matters are provided below. Agency submissions are shown in *italics within a beige shaded and outlined box*. Where additional actions are adopted as a result of the submission response, these are shaded in grey.

4.1 BIODIVERSITY CONSERVATION DIVISION

4.1.1 Biodiversity

"1.BCD recommends that further information is provided on how drought conditions were managed to ensure that vegetation surveys, and targeted threatened species surveys done to best effect. BCD also recommends that monthly average rainfall is provided to show rainfall any deficit during the survey period."

This has been addressed with the updated Biodiversity Development Assessment Report (BDAR) in **Appendix E**.

Dry Condition vegetation benchmarks were used to assess Vegetation Integrity for Vegetation Zones 5-9 as the site recorded below average rainfall in the preceding 12 months. Benchmarks were manually changed within the BAM-C in accordance with Section 1.4.2(3.) and the Guidance for assessors and decision-makers in applying modified benchmarks to assessments of vegetation integrity (see Section 3.2.5 of the BDAR). Two threatened flora species were considered likely to be affected by the drier conditions experienced within the region *Cryptostylis hunteriana* and *Pterostylis chaetophora*. Both species were known to flower that season despite the drier conditions, details on reference populations are now provided (refer to BDAR Section 4.2.1.1).

"2.BCD recommends that the proponent shows how species-specific requirements from the Threatened Species Data Collection were met in the assessment."

This has been addressed with the updated BDAR in **Appendix E**, refer to Appendix 6 of the BDAR.

"3.BCD recommends that further information is provided on the vegetation classed as 'Exotic Grassland' in the BDAR, and whether it meets the definition of 'Native Vegetation'. If it meets the definition of native vegetation, then its full biodiversity values will need to be assessed in accordance with the BAM. If it is not native vegetation, then it will need to be assessed for threatened species habitat and prescribed impacts."

This has been addressed with the updated BDAR in **Appendix E**. Two additional BAM plots were completed within this zone to show that the vegetation zone was characterised as having between 0.04 and 1.04% native species cover. This is below any known benchmark for 'native vegetation' - as such, the vegetation was considered to be exotic.

"4.BCD recommends that further information is provided to demonstrate how the 'NSW Guide to Surveying Threatened Plants' was met in relation to parallel transect spacing."

Further justification on the use of traverse separations (5, 10 or 20m) is provided within Section 4.2.1 of the BDAR in **Appendix E**.

"5.BCD recommends that the Table in Appendix 1 is revised so that the consideration of the presence, or not of the listed threatened entities is consistent with the rest of the BDAR."

A new table in Section 4.1.3 of the BDAR now details all of the candidate species credit species and provides justification for their exclusion for further assessment in accordance with Habitat Constraints, Geographic Limitations or Absence/unsuitability of microhabitats present within the site.

"6.BCD recommends that the proponent provides a statement that biodiversity offset obligations for the project will be done in accordance with the Biodiversity Offsets Scheme, and that an indication of the likely offset package."

Biodiversity offset obligations for the Deep Creek Quarry project will be done in accordance with the Biodiversity Offsets Scheme. The offsets are expected to include a combination of local onsite biodiversity offsets and biodiversity offsets purchased from the local market, where unavailable, payment into the Biodiversity Conservation Fund may be appropriate. The offset strategy includes the establishment of a 235 hectares Biodiversity Stewardship Site west of the Project. Also refer to Section 3.7 above for further description of the proposed Biodiversity Offset Strategy.

"7.BCD recommends that the further details are provided on the rock den(s) found in the Study Area."

One (1) rock den was noted as occurring within the Development Site. An inspection of this potential habitat feature found that it only consisted of an outcrop of rocks, potentially representing habitat for locally occurring reptiles and small mammals. See Section 4.1.1 of the BDAR in **Appendix E**.

4.1.2 Matters of National Environmental Significance

8.BCD recommends that additional information on the assessment of Matters of National Environmental Significance is provided in the Response to Submissions Report.

This has been addressed with the updated BDAR in **Appendix E**.

4.2 DPE CROWN LANDS

"The proponent should provide the Department with details of any impacts on the Crown public road reserve(s) so the Department can provide further guidance on potential legal mechanism for approvals in accordance with the Department's Crown Road Policy and Guidelines."

Consultation with DPE Crown Lands has been undertaken to determine the most appropriate process for DCQ in relation to its interaction with Crown Roads. The DCQ Project will interact with the Deep Creek Road, a Crown Road reserve that dissects the eastern portion of the Subject land west of Deep Creek. Deep Creek Road has little, or no existing constructed formation and it provides legal access to three properties within the area that would be affected by the DCQ, these are:

- 335 Deep Creek Road, Limeburners Creek, a "weekender" with no current permanent resident. Access is reasonably attained by the Deep Creek Road reserve.
- 254 Deep Creek Road, Allworth, this connection is as a paper road only. Practical access is via farm tracks.

- Deep Creek Road, Limeburners Creek (Lot 25 and 72 DP753178), is accessed via a right of way from Deep Creek Road, the practical access is not aligned with the right of way. Ironstone Developments Pty Ltd has an agreement to purchase this property.

Ironstone Developments will be required to seek appropriate authority (e.g., S138 of the Roads Act 1993) from the Roads Authority (currently Crown Lands, unless transferred to Mid Coast Council). The authority will be required for activities proposed within the road reserve for the project that are proposed to include:

- Crossing of Deep Creek Road by the new quarry access road. This will include provision for suitable signage on Deep Creek Road.
- Re-alignment of Deep Creek Road over the last 370m, noting there is no existing constructed road surface in this area.
- Cattle grids and or culverts to enable water to pass under the road and to convey pipes across the road reserve.
- No quarrying or extraction of material for sale is proposed within the road reserve.

The formation of Deep Creek Road traverses lot 1 DP 1264650 [located near its intersection with The Bucketts Way]. It is noted that this lot has been transferred following an Aboriginal Land Claim and is no longer Crown land. The consent of the new landowner will need to be sought regarding any impacts on this land.

The DCQ Project had anticipated some construction traffic may use Deep Creek Road. This will now be avoided, as such there will be no interaction of the Project with Lot 1, DP 1264650.

Authority to use, traverse, access or build infrastructure on Crown roads is required under the Roads Act 1993. Section 71 and 138 of the Roads Act 1993 may apply.

Noted.

4.2.1 Adopted Controls

The following measures are adopted as a result of this engagement and in relation to other users of Deep Creek Road:

- On completion of the proposed Deep Creek Quarry access road, a right of way for will be created to enable legal use of the access road for the three properties at the northern end of Deep Creek Road.
- Maintain existing level of access for properties that use the northern end of Deep Creek Road.
- IDPL will gain authority from the roads authority prior to works within the Deep Creek Road reserve.
- The DCQ Project will not utilise the section of Deep Creek Road affected by the Native Title Claim.

4.3 DPE WATER

4.3.1 Water Take and Licencing

“DPE and NRAR require the proponent to provide more information on water take and licences, and address the aquifer interference policy requirements and impacts on waterfront land.”

The proponent has provided insufficient information to confirm dams on the landholding are within the Maximum Harvestable Rights Dam Capacity (MHRDC). The EIS references 8 dams within the project area, one of which is to be an external water source. The capacity of these dams could not be identified.

A review of the estimated dam capacities and MHRDC is provided within **Appendix H**. In summary, within the proponent’s land holding there are 12 farm dams. These farm dams are characterised as follows:

- Dams excluded from MHRDC calculation have a capacity of approximately 0.235 ML, which include:
 - o Two dams will be removed during construction of the quarry and infrastructure.
 - o Five dams will be located within a proposed biodiversity stewardship site and are therefore considered an excluded work.
- Dams included within the MHRDC calculation have an estimated capacity of 3.32 ML and include:
 - o Three dams that will be retained and have the potential to be used within future agricultural land uses.
 - o Two dams that will have potential to be used as a water source backup for the quarry.

Using the Water NSW MHRDC calculator, it is estimated that the 308 ha land holding (excluding the access road corridor and the associated lands), will have a MHRDC in the coastal-draining catchment of:

- 33.88 ML, based on 10% rainfall runoff; OR
- 96.9 ML, based on 30% rainfall runoff.

With consideration to the existing storage capacity in farm dams, there is a residual MHRDC of between 29.9 to 93.6 ML.

Uncertainty exists as to the need to extract water from a third order watercourse. This is referenced in two sections of the EIS, however no further detail is provided in terms of volumes or an impact assessment. As water take from third order watercourses needs to be accounted for, clarification is required of this requirement, the associated volumes and the ability to acquire entitlement if necessary.

A review of the stream order for this dam has determined the third order reference in the EIS to be incorrect, this dam is based on only a second order stream (using the Strahler stream order with the 1:25k topographic map series). The use of existing farm dams to supplement water use onsite is adopted as a contingency only.

The water balance for the project relies on water being retained on the site to meet the annual demands if dry times were sustained. The water demands would be more than met by onsite supply if average to wet conditions occur and there would be a need to discharge excess water from the site. The risk of inadequate water during sustained dry times would need to be understood and planned for by the proponent.

Noted and agreed. Increased dam volumes proposed under revisions to the project will provide some attenuation of the risks of inadequate water supplies and need to import water.

Aquifer interference activities resulting from this project are predicted to result in groundwater take within the range of 8 – 51ML/yr. The proponent has not demonstrated the ability to acquire this entitlement, however based on a review of existing entitlements in the relevant water source and previous releases under Controlled Allocation Orders, the proponent has a viable pathway to secure the necessary entitlement.

Noted in relation to availability of a viable pathway for the necessary entitlement. Updated groundwater take estimates from a complex numerical model, determined a maximum inflow of 25 ML/year, with an average of 18.3 ML/year as described by **Appendix G**. The relevant water licences will be sort prior to intersecting groundwater. Groundwater will not be intercepted until the quarry pit is developed following construction.

A comprehensive water balance for the quarry pit will be required to validate groundwater take predictions and to inform model updates and potential changes to licence requirements. This will need to include accurate metering of water pumped into and out of the quarry combined with modelled inputs and outputs. This will also inform surface water capture within the quarry that may be subject to a licence exclusion. The groundwater level monitoring program will assist in identifying and understanding potential changes to groundwater inflows from that predicted, in the event that drawdown either exceeds or does not reach impact predictions.

Refer to **Appendix G** for updated groundwater modelling and **Appendix H** for the amended site water balance. It should be noted that based on the groundwater modelling, the likely capture of groundwater is expected to be negligible with inflows expected to be the equivalent of 0.3mm/day over the quarry, well below the daily evaporation rate, as such, the actual capture of groundwater in the quarry is likely to be very low.

“Recommendation – Prior to Determination

That the proponent:

- *confirm the combined capacity of all dams on minor streams on the landholding, are within the MHRDC for the property.*
- *confirm the need to extract water from a third order watercourse. If required, the proponent should provide an impact assessment and demonstrate the ability to acquire sufficient entitlement to account for this water take in the relevant water source.*
- *secure groundwater entitlement in the New England Coast Fractured Rock Groundwater Source to account for ongoing groundwater take during the quarrying operational period and post closure”*

See responses to these matters above. Given DPE Water has also acknowledged there is a viable pathway to secure the required entitlement, it is requested that the requirement to secure water licence entitlements is permitted post approval, as in the absence of an approval there is little value in the IDPL securing the entitlements.

“Recommendation – Post Approval

That the proponent:

- *prepare a Water Management Plan in consultation with relevant government agencies to detail the groundwater and surface water management system, water balance and the monitoring, mitigating and management measures. Where existing monitoring bores are to be impacted, suitable alternatives need to be installed with baseline data collection commenced prior to mining activities.*
- *develop a plan to accurately meter and monitor water take from surface and groundwater sources with ongoing review of actual versus modelled predictions.*
- *report on water take at the site each year (direct and indirect) in the Annual Review. This is to include water take where a water licence is required and where an exemption applies. Where a water licence is required the water take needs to be reviewed against existing water licences.*
- *ensure sufficient water entitlement is held in a water access licence/s to account for the maximum predicted take for each water source prior to take occurring.*
- *ensure that relevant nomination of work dealing applications for water access licences proposed to account for water take by the project have been completed prior to the water take occurring.*
- *ensure consistency with the rules of the relevant water sharing plans.*

IDPL, supports the inclusion of the above matters within the Conditions of Consent for the quarry.

4.3.2 Waterfront Land Assessment

3.1 Explanation

Significant disturbance of the channel of Deep Creek is proposed to install a culvert crossing as part of the main access road to the site. This includes realigning the channel to improve hydraulics. Rock rip rap is proposed to mitigate scour and this will need to be appropriately sized to withstand the local shear stresses. It appears pipe culverts may be proposed for the Deep Creek crossing. Box culverts or a bridge are recommended due to the size of this watercourse and the need to maintain natural hydrologic and hydraulic functions. This can be addressed at detailed design stage and all watercourse crossings need to be consistent with the Guidelines for Watercourse Crossings on Waterfront Land. Uncertainty exists as to whether the sediment basins at the infrastructure area and the stockpile are within waterfront land and meet relevant buffer requirements. As Deep Creek is a 4th or higher order watercourse, a vegetated buffer of 40m is recommended between the top of the high bank of the watercourse and the basin.

As shown by the Northrop drawings (**Appendix C**), four large pipe culverts have been adopted that would include a concrete liner on the bottom section to improve longevity. These pipes were adopted

due to the significant cost difference when compared to box culverts or a bridge and are expected to provide similar functionality given the size of the pipes adopted. Notwithstanding, the proponent will address the requirements of DPE Water during detailed design as suggested.

A review of waterfront land was undertaken, with the increased size of sediment basins proposed to reduce the occurrence of discharge from sediment basins, it was not possible to maintain all basins outside the 40m riparian buffer. The Office and Workshop Area sediment dam is located outside the 40m riparian area, however the Stockpile Area sediment dam does intersect the 40m riparian buffer with a disturbance area of approximately 1600m² of the outer riparian zone (20-40m from the Deep Creek bank). The intersected area is within a largely cleared paddock and will remove several paddock trees and remains above the bank of Deep Creek. Several areas are available within the proponent's landholding to increase the vegetated riparian corridor to compensate for the incursion, refer to **Figure 3-5** for the an indicative location of planting.

"3.2 Recommendation – Prior to determination

That the proponent:

- *confirm the vegetated buffer distance between the proposed sediment basins and the high bank of Deep Creek is 40m. Redesign is recommended if the current layout does not meet this."*

See Above.

3.3 Recommendation – Post approval

That the proponent:

- *ensure watercourse crossings and other works within waterfront land are in accordance with the Guidelines for Controlled Activities on Waterfront Land (NRAR 2018).*

Ironstone Developments will complete watercourse crossings and other works within waterfront land consistent with the Guidelines for Controlled Activities on Waterfront Land (NRAR 2018) or as otherwise approved by the DPE.

4.3.2.1 Adopted Controls

The following measures are adopted as a result of this submission:

- IDPL will complete watercourse crossings and other works within waterfront land consistent with the Guidelines for Controlled Activities on Waterfront Land (NRAR 2018) or as otherwise approved by the DPE.
- IDPL will provide compensatory planting to offset works required within the riparian corridor on a one for one basis, providing an extension of riparian corridor of at least 1,600m². It is to be located within the Proponents Landholding adjoining Deep Creek and be conducted in conjunction with replanting of PKFTs.

4.4 ENVIRONMENTAL PROTECTION AUTHORITY

4.4.1 Licence (EPL)

Based on the information provided, the proposal will require an Environment Protection Licence (EPL) under the Protection of the Environment Operations Act 1997 (POEO Act) for Extractive activities clause 19 of Schedule 1 of the POEO Act.

The EPA notes that the EIS states that the proposal will need to discharge water from the dirty water management system to the environment and that these discharges will be subject to EPL conditions. If the development is approved, the proponent must not pollute waters as defined by section 120 of the POEO Act.

However, the EPA may not be able to licence the development as currently proposed. In reviewing a licence application, in accordance with section 45 of the POEO Act, the EPA will not consider issuing a licence where practical measures can be taken to conduct the activity without polluting waters.

The EPA considers that the proposal can implement additional practical measures that will effectively restore or maintain the relevant environmental values of the receiving waters.

The proponent may wish to consider modifying the proposed surface water management system as part of the current development application to ensure that any changes required to obtain an EPL are documented and approved within the consent. The EPA has discussed these matters with the proponent.

With consideration of the EPA's comments, the proponent has made the following amendments to the application:

- Reviewed the water balance, accounting for updated groundwater inflow estimates.
- Undertaken a sensitivity analysis to determine what reasonable increases to water storage volumes (above that required in the Blue Book Appendix for Quarries) can be made to reduce the frequency of discharge from the quarry. The analysis determined:
 - o With a 50% increase in proposed dam storage volumes:
 - Controlled discharges (i.e., pump down volume in dams within five days of rain event) would be reduced from 6-12 times per year to 3-7 times per year.
 - Uncontrolled discharges (i.e., where rain volumes exceed capacity of sediment dams and there is no window to treat and pump down dam volumes) would be reduced from 2-3 times per year to 1 time per year.
 - o With a 100% increase in volumes, the benefit was only marginally better than a 50% increase in size.
 - o As such, plans were adjusted to increase sediment dam storage capacities by 50%.
 - o The total volume of controlled discharge per year is estimated at 115 ML, uncontrolled overtopping of sediment dams would be in excess of this volume due to the occurrence of large rain events. Discharges would be required due to rain events and runoff from access roads, car parks, and the workshop area and the stockpile area.

- o No discharge will occur from the quarry pit, without express permission of the EPA during extreme weather events.

4.4.2 Downstream Water Users

The EPA notes that an application for a licensed discharge point must consider the environmental values of the receiving waters with reference to downstream water users and the NSW Water Quality and River Flow Objectives (<https://www.environment.nsw.gov.au/ieo/>).

The amended SWIA in **Appendix H** includes further consideration of the NSW Water Quality and River Flow Objectives.

Deep Creek flows into the Karuah River, which has a very large catchment area. The SWIA has indicated that water quality or quantity is not anticipated to be adversely impacted by the proposed quarry on a sub-regional or regional scale.

There are no licensed water users on Deep Creek downstream of DCQ. The proposed quarry will have minor impacts on the annual flow volumes in Deep Creek, due to the relatively small change in catchment associated with the quarry operations. As such it is unlikely that any effects would occur for other basic landholder rights associated with Deep Creek.

As Deep Creek flows into the Karuah National Park and Karuah River, an assessment of the aquatic ecology within Deep Creek and potential impacts of discharge from the quarry has been completed by Marine Pollution Research and is enclosed within **Appendix F**. The assessment determined that providing water discharged by the quarry is maintained within the adopted water quality parameters, and the quarry is constructed and operated consistent with a Water Management Plan, there is minimal risk to ecological values downstream or effects on the users within the Karuah River (such as oyster growers).

4.4.3 Noise

In relation to the predicted noise impacts, the EPA expects the relevant planning authority to carefully consider the suitability of any new residential development near the proposal in terms of mitigating land use conflicts.

Noted.

4.4.4 Draft Conditions

The EPA proposed a set of draft conditions for the EPL, these are enclosed as **Appendix I**. With exception to those conditions noted below, all conditions are considered appropriate to the proponent.

4.4.5 Transport Noise

L6.9 The Proponent shall ensure laden truck movements exiting the site do not exceed 25 per hour and no more than 110 per day.

Note: In this condition, "per hour" means within any period of 60 minutes following the change of hour.

This should be amended to reflect the peak daily haulage rate of 4,000 tonnes (that equates to 125 laden trucks of 32 tonne capacity), i.e. *“The Proponent shall ensure laden truck movements exiting the site do not exceed 25 per hour and no more than 125 per day.”*

4.4.6 Requirement to Monitor Noise

M8.1 Attended noise monitoring must be undertaken within the first 12 months of extractive operations in accordance with Condition L6.5 and must:

- *occur at each location specified in Condition L6.1 or otherwise agreed to by the EPA;*
- *occur, during each day and night period as defined in the Noise Policy for Industry for a minimum of:*
 - *1.5 hours during the day;*
 - *30 minutes during the night (being the loading and dispatch period of 6:00AM to 7:00AM).*
- *occur for three consecutive operating days.*

Given the undefined nature of Condition L6.1 being “All existing residential receivers (residences) at the date of issue of the consent” it will be necessary to define a reduced number of locations for monitoring surrounding the quarry as monitoring at all residences will not be feasible. This can be agreed with the EPA during the development of the Noise Management Plan. It is noted the EPL defines a Residence as follows:

“A lawful and permanent structure erected in a land-use zone that permits residential use (or for which existing use rights under the EP&A Act apply) where a person/s permanently reside and is not, nor associated with, a commercial undertaking such as caretakers’ quarters, hotel, motel, transient holiday accommodation or caravan park.”

4.4.7 Adopted Controls based on EPA

The following measures are adopted based on comments received by the EPA:

- Construction and operation of the quarry in accordance with the conditions of an EPL.
- Development of a Blast Management Plan.
- Installation of a meteorological station onsite consistent with EPA requirements.
- Development of a Noise Management Plan, that includes defined noise monitoring locations, or a procedure to determine the most suitable locations based on activities being conducted.

4.5 HERITAGE NSW

“The subject site is not listed on the State Heritage Register (SHR), nor is it in the immediate vicinity of any SHR items. Further, the site does not contain any known historical archaeological relics. Therefore, no heritage comments are required. The Department does not need to refer subsequent stages of this proposal to the Heritage Council of NSW.”

“Heritage NSW has no additional comments or recommendations in relation to the Proposed Deep Creek Quarry proceeding with respect to Aboriginal cultural heritage.”

Noted. A Heritage Management Plan will be developed for the quarry prior to its operation.

4.5.1 Adopted Controls relative to Heritage

The following measures are adopted relative to Heritage:

- Preparation of a Heritage Management Plan to guide the quarry construction and development.

4.6 MID COAST COUNCIL

4.6.1 Ecology

4.6.1.1 Adequacy of knowledge and evaluations

“The adequacy of some of the biodiversity knowledge and evaluations

The fauna field surveys in the BDAR appear satisfactory to generate biometric data that informs the credit calculation process under the BAM. However, I am not satisfied that the work addresses key uncertainties associated with the type, nature and significance of impacts on certain threatened species. For instance, there is ecological uncertainty in respect of:

The extent of the population, occupied habitat and connectivity of the subject population of the Koala and New Holland Mouse. It is not known how much of the disturbance footprint contributes to the viability of the subject / local population of these species as a targeted population study has not been presented. The proper assessment under the EPBC Act 1999, for instance, should rely on a higher degree of the understanding of the nature of subject populations of these nationally threatened species.”

It is difficult to conclude that the impacts of the proposal are not significant for species such as the koala and New Holland mouse.

Additional surveys and assessment have been completed by Biolink and Wedgetail Project Consulting to investigate the likely Koala and New Holland Mouse habitat, population and connectivity. This is presented within an updated BDAR, along with an updated Koala Plan of Management (KPOM) and report by Biolink, these are included within **Appendix E**. The investigations have concluded the proposed Project can proceed without significant impacts on these species subject to the following core controls:

- Implementation of Biodiversity and Rehabilitation Management Plan that provides controls for clearing activities, weed management and rehabilitation.
- Offset of residual biodiversity impacts consistent with the NSW Biodiversity Offsets Scheme.
- Implementation of the Koala Plan of Management that includes controls to minimise impacts to Koala, including imposing speed limits and speed controls on the access road and other site roads, installing koala fencing and fauna underpasses in key areas of the access road.
- The development and implementation of a New Holland Mouse translocation program prior to disturbing New Holland Mouse Habitat.

The extent of the foraging habitat and range of the glossy black-cockatoo population of the Study Area. There has not been a comprehensive analysis of the presence of foraging habitat and an analysis of feeding trees and their locations.

A Targeted Glossy Black Cockatoo habitat assessment of the foraging habitat within the development site has been completed and is presented within **Appendix E**.

Whether or not the sooty owl or masked owl rely on any of the 51 large hollows of the development footprint for nesting purposes.

Additional surveys of hollow bearing trees have been completed. No owls were identified and only a small fraction of the 51 large hollows were deemed suitable for owl nesting purposes. Refer to **Appendix E** for further detail. No evidence of Sooty Owl breeding or roosting habitat was identified within the Study Area.

4.6.1.2 Avoidance measures

“Avoidance measures and Impacts to threatened species

The proposal is associated with substantial impacts to threatened species including the koala, southern myotis, Tetratheca juncea, Callistemon linearifolius and others as well as impacts on native vegetation and trees with hollows.

Avoidance of biodiversity impacts is the highest priority in the consideration of the avoid – minimize – offset hierarchy enshrined in the Biodiversity Conservation Act 2016.

The proposal and the BDAR submitted in support of the proposal does not refer to recent judgments of the NSW Land and Environment Court in relation to the practical consequences of “avoiding” biodiversity impacts. The BDAR should be revised to reflect the LEC judgment associated with IRM Property Group (No. 2) Pty Ltd v Blacktown City Council [2021] NSWLEC 1306 and other relevant cases. I am not satisfied that the development proposal satisfactorily avoids biodiversity impact in accordance with the relevant requirements of the BC Act 2016.

The proposal should be enhanced in relation to avoidance, mitigation and offsetting actions to ensure that threatened fauna species are not significantly or unreasonably harmed by the development.

The proposed action has been the subject of an extensive project design process since it was first considered in 2013. Section 1.5.3 of the EIS provided an outline of the key alternatives that were considered in the development of the Project. Further consideration of the avoidance measures contained within the project alternatives is provided below, highlighting the ecological value of the project design elements.

- **Resource Area:** Resource evaluations of the property identified a potential quarry resource in excess of 90 ha (with access and facility areas in addition to this area). This resource comprised a thick high quality rhyolite material located near the centre of the adopted pit shell, along with other rhyolite and arenite (a hardened sandstone) quarry materials across the site. From this total resource area, the following amendments were made:
 - o Consideration of surrounding ridge lines and risk of noise propagation reduced the western and northern extent of the adopted resource boundary. This removed approximately 20 ha from the pit extent and avoided impacts in that catchment.

- o *Tetratheca Juncea* (TJ) populations identified during initial investigations resulted in the contraction of the southern boundary of the quarry, which also retained a ridge line that would limit noise propagation to the south. This removed a further 34 ha of pit extent (remaining resource area of 36 ha).
- o Additional TJ individuals located mid-slope in the current pit shell were then avoided that removed a further 7 ha from the pit extent. While this avoided direct impacts, it would have resulted in a change in the hydrological conditions of those plants, with uncertain outcomes. This avoidance resulted in the loss of higher quality rhyolite resource and changed the direction of quarrying activities and introduced restrictive and more complex highwalls.
- o With further resource evaluation, a decision was made to consolidate and simplify the quarry extent to focus on the highest quality resource onsite. This resulted in the avoidance of 18 ha of native vegetation to the south of the current pit shell and impacts to a first order creek, however the 7 ha previously avoided (albeit hydrologically modified) was now directly impacted. This resulted in a final quarry pit area of approximately 18 ha.
- o The eastern extent of the pit shell plays an important part in ensuring adequate resource can be extracted, while maintaining a more free-draining final landform (i.e., as opposed to a void pit).
- **Hydrology:** Hydrological impacts of the quarry have been reduced or avoided through the following:
 - o The western boundary of the quarry has been positioned near the crest of a hill to minimise disturbance to adjacent catchments.
 - o Adjustment of the northern and southern boundaries to avoid the majority of first order drainage lines.
 - o The eastern boundary avoiding Deep Creek and the associated riparian vegetation.
 - o The quarry floor being positioned above where the hydraulic head of a lower quality groundwater has been measured below the quarry floor.
- **Visual:** The quarry location and extraction plan has been developed to avoid visual impacts to adjoining landowners and public roads.
- **Noise:** The quarry location and extraction sequence has been designed to minimise noise propagation to the west and south.
- **Access:** The following access considerations were evaluated:
 - o Forest Glen Road, while a legal access road to the property was avoided due to the greater number of dwellings in proximity to the haulage route in conjunction with steeper grades to access the quarry. To establish a better grade would have resulted in more extensive clearing and disturbance.
 - o Deep Creek Road, while a legal access road has a disjointed alignment and is heavily constrained by vegetation requiring widening of the existing cleared area, that would also impact on threatened species (*Callistemon Linearifolius* and TJ). Use of Deep Creek Road would have also resulted in high noise impacts to a dwelling located less than 20m from the legal alignment.
 - o The proposed alignment was developed in consultation with neighbouring landowners, and enables a straighter and more energy efficient haulage road for the quarry. The alignment follows the fence line and access easement for the neighbouring property. Additional

discussions with a neighbouring landowner (R30) resulted in further amendment to the proposed road corridor shifting the eastern section of the road south to minimize impacts on dwelling R30 to north of the access road.

- o The implementation of speed restrictions and limit of haulage operations from 6am to 6pm (i.e., essentially daylight hours) will avoid impacts to nocturnal species.
- o Surveys of large hollow bearing trees within the gully lines guided the placement of the internal access roads and the new quarry access road. Within the Deep Creek section of the access road, the alignment avoided very large trees on the east and west of the creek line, including a Tallowwood with a diameter at breast height of over 2m) was also avoided.
- o Changes in the location of the tarping bay, east of Deep Creek to avoid large, preferred koala feed trees (PKFTs).
- o In addition to the above, the section of the access road crossing of Deep Creek included the following considerations:
 - As the road caters for large heavy vehicles, the curvature, or horizontal alignment required to maintain a safe and practical road reduces the ability to avoid trees.
 - The location of cadastral boundaries provides a restricted window to the placement of the road.
 - The alignment sort to avoid compromising better quality grazing land on the alluvial flats east of Deep Creek.
 - The western extent of the alignment needs to intersect the existing Deep Creek Road and the office area at a suitable angle to maintain a safe intersection.
 - The topography of the area dictates the best location in terms of optimum cut and fill requirements.
 - The need to maintain suitable grades for heavy vehicles prevented pushing the road further west into the hill as the extent of cut (and disturbance area) increases considerably.
 - The alignment ideally approaches the creek at a near perpendicular angle to the flow within Deep Creek.
- **Infrastructure areas:** While the location of the stockpile area and the office and workshop areas are strategically located on lower slopes, they are positioned and spatially limited to the cleared areas west of Deep Creek.

As evident from the above design considerations, significant avoidance has been incorporated into the presented quarry design, this is likely to include avoidance of the following ecological values:

- o Over 72 ha of native vegetation (and the associated habitat for a broad range of threatened fauna).
- o More than 1246 *Tetratheca Juncea* individuals.
- o More than 200 individuals of *Callistemon Linearifolius*.
- o Numerous hollow bearing trees.
- o Avoidance of potential ecological impacts by limiting the affected catchments and direct impacts to 1st order drainage lines from the quarry pit.

4.6.1.3 Edge Effects

The consideration of edge effects and indirect impacts appears to be relatively subjective in the BDAR rather than scientific and prescriptive.

Edge effects have been adequately considered consistent with accepted standards and guidelines, refer to **Appendix E** for further detail. Also refer to Section 5.3.6 of this document.

4.6.1.4 Conservation Measures

Further, avoided habitat does not appear to be actively conserved within this proposal at the present time. There is only a consideration that 271-hectares of land around the development will be actively conserved.

Inadequate offsetting of residual biodiversity impacts

The proposal purportedly seeks to avoid, mitigate and then offset the biodiversity impacts of the development.

The proposal fails to ensure the protection of features of significance across the project area.

The proposal does not confine offsets to the local area, does not secure local populations of affected threatened species in perpetuity or explore novel approaches to effective conservation (e.g. expansion of Karuah NR).

As noted above, significant consideration of ecological values has been made in the development of the quarry resulting in significant avoidance, and as documented within Appendix B, and Section 3.7 of this document mitigation measures, and biodiversity offsets (consistent with the NSW Biodiversity Offsets Scheme) have been committed.

Given the Proponents land holdings do not adjoin the Karuah National Park (with exception to the access road), it is unclear how the expansion of Karuah National Park can be reasonably considered. The implementation of a Stewardship Site is considered the most appropriate mechanism for long term conservation on the proponent's land holding.

Further, if the development is positively determined that:

- *Required offsets must be confined to be delivered locally.*
- *Any Offset Area Management Plan that would define and manage the offset area be finalised only through involvement, input and endorsement by MidCoast Council.*
- *As part of the finalisation of the offset areas, there should be further scientific analysis of the functional avenues of local or sub-regional wildlife connectivity for the proposed offset areas and their contribution to agency and community aspirations. Greater attention to local connectivity opportunities and constraints and sub-regional wildlife corridor targets is required and should be utilised to place an offset area into a more effective, broader landscape context. This should include reference to key regional corridors, the climate change adaptation corridors projects, existing protected areas and aspirations by MidCoast Council. In a sub-regional context, the locality of the proposal occupies land between*

larger networks of remnant native vegetation, including agency lands of Karuah NP and the Black Bulga SCA and / or Myall River SF.

- *An Offset Area Management Plan should consider issues associated with fencing, methods of active revegetation, management of weeds and pests, management and use of fire, signage and restrictions on access, as well as the relocation of habitat features such as hollows and logs and performance measurement and monitoring. Further, it should discuss pre-clearing capture and translocation of pertinent threatened fauna species from the disturbance area, which may be essential to avoid harm to individual species and serious loss of local populations. Further, it should program the compensation (at least on a 1:1 basis) of the loss of natural hollows from the disturbance area through a relocation of felled trees or artificial nesting box program and define the relocation and placement of other habitat furniture (rocks and fallen timber) into revegetation areas as cover for dependent fauna and to aid nutrient cycling and macro-invertebrate populations.*

The proponent will commit to securing biodiversity offsets consistent with the NSW Biodiversity Offsets Scheme. As documented within Section 7.1.14 of the EIS, it is likely that credits generated by the proposed Stewardship Site within the proponent's residual land will fully meet the required offsets. However, if the proposed onsite Stewardship Site does not meet the required demand, where feasible credits will be sort from suitable Stewardship Sites, and as a last resort met through payment into the Biodiversity Conservation Fund.

The management of any offset areas will be consistent with the requirements imposed by the BCD for Stewardship Sites. This is a site-specific management plan prepared in accordance with the requirements under the BAM and relevant guidelines. The management of Stewardship Sites involves at a minimum, weed and pest management, fencing, regular reporting and monitoring and ecological fire management.

As a result of the project 235 ha of the IDPL's land holding, and potentially a further 125 ha of an adjoining landholding under agreement with IDPL (i.e., 360 ha in total) will be made a Biodiversity Stewardship Site consistent with the NSW Biodiversity Offsets Scheme. These Stewardship Sites will provide the majority of the credits required to offset the impacts of the quarry and will increase the local area actively under conservation. For context, this represents approximately 13% of the nearby Karuah National Park and 43% of the Karuah Nature Reserve and is located between these two conservation areas and will make a meaningful contribution to conservation in the local area.

Consideration of the ecological corridors and connectivity within the landscape is illustrated within **Figure 3-6**. The plan illustrates that the establishment of the stewardship sites associated with the Proponents holdings will result in additional protections for biodiversity in the local area that will connect with Karuah National Park through riparian corridors and retained vegetation.

Measures to avoid impacts to native fauna during clearing activities will be contained within the Biodiversity and Rehabilitation Management Plan.

The commitment to a 1:1 nest box replacement was made within Section 7.1.13 of the EIS and included in **Appendix B, Management Table 6**.

The offset area should be zoned immediately on project approval for the highest level of Environmental Conservation (C2). The Applicant should facilitate this strategic process with Mid Coast Council.

It is unclear what additional benefit the change in land use zone will afford the property once under management as a Stewardship Site, which is protected by legislation in perpetuity and includes a funding mechanism for ongoing management.

4.6.1.5 Cumulative impact and strategic ecological context

It is concerning that cumulative hard rock quarry proposals are advanced in the North Karuah / Limeburners Creek area in the absence of a strategic framework. Quarries in the locality have gained approval for a limited initial term but have then been subject to modifications and extensions, which expand project timelines and enlarge footprints (and thus prolong and expand disturbance to the local environment).

Thus, quarry project proposals in the North Karuah – Limeburners Creek should be considered in a strategic framework.

In the broader context, MidCoast Council has developed the Tops to Lakes Initiative and has commissioned studies which demonstrate that the quarry is sited in an area that is an important connecting habitat (Karuah NR to Black Bulga SCA connection). Our Tops to Lakes Initiative seeks to reinstate and protect connected landscapes and enhance the quality and integrity of natural landscapes to provide environmental services provisions. Relevantly, any decisions relating to this proposal (by way of either a refusal or a conditional approval) should recognise the existence and aspirations of Council's Tops to Lakes Initiative and its aspirations and the Karuah Catchment modelled wildlife corridors (Lechner & Fung 2018).

One of the key goals of the Tops to Lakes Initiative is the establishment and protection of a connecting corridor(s) of functional, resilient natural vegetation between Karuah Nature Reserve (and associated habitats) and the foot-slopes and ranges of Black Bulga SCA as well as Karuah Nature Reserve and Myall River State Forest.

The BDAR for this project impacts but does not advance the preservation and restoration of regional connectivity. It does not report on the Great Eastern Ranges Initiative.

Quarrying, cumulatively, has the potential to further fragment and sever connecting habitats and make the large-scale restoration of connecting habitats and functional natural areas in the landscapes of this locality practically unachievable. However, the strategic planning of quarries and their associated offset areas and restored perimeter lands represents an opportunity to deliver the connectivity and ecological enhancement/restoration that is required. This depends however on proactive, committed and strategic planning of quarries and their associated offset lands. It also requires the timely delivery of offset requirements, in both a practical sense (i.e. revegetation of degraded or modified areas) as well as in an administrative sense (public dedication, environmental zoning, conservation mechanisms, etc). Consent authorities and the community need to be assured that conservation outcomes are effectively and appropriately delivered, and managed and secured in perpetuity.

The cumulative risks and paucity of strategic oversight of offset lands and connectivity have not been properly considered in the BDAR.

The proponent has developed this proposal consistent with the primary strategic land use document, namely the Great Lakes Local Environmental Plan 2014 that is intended to guide the development of land within the local government area.

The development of a broader strategic regional plan for the Mid-Coast LGA and assessment of its cumulative impact is outside the scope of this Response to Submissions.

The aspirations of Council's Tops to Lakes initiative are recognised and commented on within the avoidance and minimisation section of the updated BDAR, along with comment on the Great Eastern Ranges Initiative.

As noted above, Stewardship Sites are an established mechanism within NSW to offset impacts on biodiversity, no additional strategic oversight is considered warranted or necessary.

Should the Department deem that the proposal can be positively determined, I would ask that the finalisation of all spatial, temporal and administrative details associated with the footprint (avoidance) and offsets for the proposed development be a Deferred Commencement Condition that requires the formation and endorsement of a Final Layout and Offset Strategy, which includes input, review and acceptance of the Strategy by a convened Agency Panel that includes Mid Coast Council.

It is important that the true ecological risks and threats of the proposal be clearly understood by the agencies in formulating a decision in relation to this proposed quarry.

IDPL does not accept a Deferred Commencement Condition, nor does it accept the involvement of a further agency panel that would seek to “redesign” the quarry and offset system. As noted above, the project design to date has included numerous considerations that have resulted in significant avoidance of ecological values in the area.

IDPL has made a significant investment in the development of the quarry to date and the imposition of further strategic reviews, and the likely significant delays has the potential to result in the failure to develop a significant quarry resource that will provide both substantial economic investment in the region and provide a unique quarry product with potential to improve road safety and reduce greenhouse gas emissions.

Based on recent quarry projects in the region, typical quarry development lead times are in excess of five years from concept to fruition, Deep Creek Quarry for example is currently approaching 10 years since the concept was initiated and discussed with Mid Coast Council in 2013.

The Mid Coast Council submission on biodiversity appears to unfairly question the integrity of the Proponent and the consultant team that has prepared the documentation, with seemingly little acknowledgement of the established Biodiversity Offsets Scheme or the significant investment that Proponents make in order to establish a quarry that will provide an important and necessary natural resource. Without Proponents such as IDPL seeking to develop quarry resources on private lands that are zoned appropriately and undertaking rigorous environmental assessments, access for public and private infrastructure will suffer with inadequate resources, and increased development costs.

4.6.1.6 Koala Plan of Management

The KPOM is inadequate

In my opinion, the details within the KPOM submitted with the biodiversity reporting are not satisfactory to be confident that its practical implementation will conclusively and proactively conserve the subject population of the koala on the lands. Additional assessments and more detailed and prescriptive actions are required to conserve the local population of the koala.

The koala cannot be conserved on-site unless the habitat that it needs for survival is protected and actively managed. The KPOM only is “considering” establishing a BSA for an onsite offset and acquiring additional offset land to the east. The project should be executing the conservation of the proposed 271-hectares of koala habitat formally.

An amended Koala Plan of Management (KPOM) is included within **Appendix E**, this is inclusive of additional input from Biolink and the adoption of specific controls for the protection of Koala onsite.

If approved, IDPL are committed to establishing a Biodiversity Stewardship Site consistent with the Biodiversity Offsets Scheme within their land holdings as shown within **Figure 3-6**, and potentially within an adjacent landholding. Biodiversity Credits required to satisfy the required offsets will where feasible be attained from this Stewardship Site. The formalisation of this Biodiversity Stewardship Agreement (BSA) requires third party approval from the Credit Supply Taskforce. The process to secure the area under the BSA will commence once there is a determination for the project.

4.6.2 Engineering

“Engineering

The development proposes upgrade the intersection of The Bucketts Way / Deep Creek Road. This will be subject to a detailed design and Public Engineering Works Permit (PEWP) to resolve the minor details but the general concept is acceptable. TBW is currently under review for potentially being handed back to TFNSW. If this happens before handover then the upgrade will form part of a Works Authorisation Deed with TFNSW which will resolve the intersection in the same way”.

Noted. IDPL will seek the relevant permits for construction of the intersection prior to commencement.

“The development proposes to upgrade Deep Creek Road and it is noted that the design provided by Northrop is not consistent with MCC Standard Drawing SD048 – Typical Road Cross Sections for Rural Roads:

<https://www.midcoast.nsw.gov.au/files/assets/public/document-resources/plan-amp-build/stage-2/roads-amp-bridges/design-guide-amp-construction-specs/standard-drawing/sd048-typical-road-cross-sections.pdf>

Batters and shoulders should be updated to reflect the requirements in Councils standard drawing as well as catering for a minimum shoulder width of 1m rather than 0.5m. This will form part of the traffic assessment and may be dealt with by condition and under a Public Engineering Works Permit. This includes the road design, pavement thickness, swept path analysis etc.”

IDPL will work with the relevant road authority (MCC or Crown) to implement a suitable road design standard for the short section (less than 350m) of Deep Creek Road that is proposed to be realigned, which services one part-time resident (i.e. a weekender). The updated engineering plans contained within **Appendix C** provide for a conceptual standard and alignment for this section of Deep Creek Road that is consistent with a Category 1 fire trail, and significantly above the existing road construction level. This existing section of Deep Creek Road is currently unconstructed and is little more than a worn path within a grassed paddock. The proposed realigned section of road will be constructed such that removal of trees will be avoided wherever feasible.

4.6.3 Noise

4.6.3.1 Receptor Locations

Modelling used to determine noise impacts on future potential receptor locations may not be representative of 'worse case' situations i.e., potential future receptor (dwellings) may be built closer to quarry site than indicated in Figure 2 of the Acoustic Report.

The adopted receptor locations for potential future receptors were based on existing development on these properties (i.e. sheds etc), or in consultation with the property owner. They are considered reasonable and appropriate for the assessment of potential noise impacts.

4.6.3.2 Project Noise Trigger Levels

Project Noise Trigger Levels (PTNL) were not provided for night time period. PTNL and relevant noise modelling results should be included for the night time period as product dispatch (loading of empty trucks and movement of the trucks to and from The Bucketts Way) is proposed to occur from 6am.

As stated in Section 3.4 of the Noise and Vibration Impact Assessment, a Project Trigger Noise Level of 52 dB(A) L_{max} is defined for night-time noise emissions.

4.6.3.3 Model Source Locations

"The modelling location used for extractive equipment including dozers and excavators may not be representative of a 'worse case' scenario. Modelling should include use of extractive equipment at existing and elevated ground levels as well as within the quarry pit area.

The Product Stockpile area appears to be located further north in the project plans prepared by Kleinfelder (2021/10/21 – version 1) than in Figures 4 to 6 in the Acoustic Report prepared by Spectrum Acoustics (Document No: 181724-9247) dated October 2021.

The assessment of trucks on the haul road is unclear, including location of modelling, methodology and consideration of all impacts such as brakes. It must be demonstrated that the haul road trucks will meet relevant criteria (including during the night time period – 6:00am to 7:00am)."

Modelled noise sources are considered appropriate for the proposed quarry and has considered all sources operating simultaneously which is likely to be in excess of typical operations. In addition, noise levels at permanent receivers are well below criteria, and all other project associated receivers are only affected under some conditions. The location of the stockpile area is consistent with the Project Layout, the primary stockpile area shown in model source figures is not the same as the Main Stockpile Area that is located further north.

Trucks have been considered on the proposed access road and their potential impacts on neighbouring receivers. The use of compression brakes is not a routine noise emission source.

The Drivers Code of Conduct that will be issued to all truck drivers accessing the quarry during the site induction will include a requirement that truck drivers do not use compression braking.

4.6.3.4 Background Noise Levels

Location of noise logger may not represent background noise levels at the most sensitive receiver as 'This location is closer to The Bucketts Way than many receivers, but further than others that front The Bucketts Way'. Existing receptors 19,9,6 (for example) are located in an area with less traffic noise than the elected location used for noise logging.

Ambient noise level monitoring conducted for the project established that the default minimum rating background level of 35 dB(A) L_{A90} was appropriate for the project, despite some receivers being closer to The Bucketts Way and likely experiencing a higher background noise level. This is described in Section 3.3 of the Noise Impact Assessment (Appendix Q).

4.6.3.5 Unhabituated Receivers

The Acoustic Report States that 'Receivers R3 and R4a are currently unhabituated with no approved dwelling. Ironstone Developments Pty has a negotiated agreement with these properties and management/mitigation of predicted noise impacts is not required'. It should be confirmed that it is possible to maintain this arrangement for the life of the development.

Agreements currently in place are appropriate for the life of the quarry.

4.6.3.6 Noise Complaints

A common noise complaint received by Council is in relation to quarry trucks breaking in the early morning. While residents along the Bucketts Way may not notice increased truck movement residents located along or close to the haul road (quiet rural road) are likely to be affected by increased traffic, in particular during early morning period 6am to 7am.

Noted, there are no receptors (except 4A) that are closer to the proposed haul road than The Bucketts Way, for example:

- Receiver 30 is over 280 m from the haul road and 155 m from The Bucketts Way.
- Receiver 31 is over 420 m from the haul road and 145 m from The Bucketts Way.
- Receiver 32 is over 220 m from the haul road and 110 m from The Bucketts Way.

A noise complaint procedure will be included within the Noise Management Plan.

4.6.4 Air Quality

4.6.4.1 Weather Station Location

Section 5.1 Local climatic conditions provides that 'Williamtown RAAF is located approximately 27.4km north-northeast of the Project'. This is incorrect, and it must be confirmed that this assumption has not affected modelling results.

Noted, this is a simple typographical error, where the Project is located 27.4km north-northeast of the Williamtown RAAF weather station (not the reverse). This does not affect model assumptions or results.

4.6.4.2 Assessment of Project Stages

The AQIA The development has not been assessed each stage of the development in line with the EIS. Further detail in this regard should be provided.

The AQIA has assessed sufficient stages of the quarry and at both maximum annual tonnage and peak daily tonnage to ensure impacts to receivers are adequately addressed and not underestimated. It should be noted that it is unlikely the project will produce at maximum tonnage until the customer base and quarry operations are sufficiently established, on this basis it is therefore possible the air quality assessment has overestimated the actual air quality impacts.

4.6.4.3 Ambient Air Quality Monitoring

It is provided that 'there are no specific ambient air quality monitoring recommendation for Project at the residential receptors. This is unacceptable and an air quality monitoring network (including real-time air quality monitoring) should be proposed to allow for appropriate investigation of complaints, to ensure that predicted impacts are accurate, to ensure that mitigation and management measures are effective and to assess and record the impact of any future developments in the area on ambient quality.

The recommendation for no specific air quality monitoring at residential receptors has been made by an experienced air quality specialist. It is noted within Section 7.2 of the Air Quality Impact Assessment (AQIA) that the Project has a small influence at assessed receptor locations and in most cases would be difficult to discern beyond the existing background level. For this reason, the monitoring of air quality at receptors is unlikely to provide a beneficial management framework to guide the quarry operations. It is further noted within Section 8 of the AQIA that the operation of the project would be guided by a suitable management plan that would manage dust emissions at the site and include aspects such as key performance indicators, response mechanisms, and complaints management.

4.6.4.4 Management Measures

Details of reactive and predictive management requirements and trigger conditions for works to cease have not been included.

It has not been demonstrated that all reasonable and feasible air quality management options have been investigated.

As noted above the quarry has been considered to represent such as small component of overall dust levels that specific monitoring at residential receptors is unlikely to be able to discern the difference between background levels and the quarry, as such the development of effective predictive management and trigger conditions is not considered warranted. Given the low air quality emissions predicted using existing controls, no further specific mitigation measures are considered warranted. The quarry will be required under the *Protection of Environment Operations Act 1991* (PoEO Act) and its EPL to minimise air quality emissions from the quarry.

4.6.4.5 Agency Comments

The AQIA does not sufficiently address agency comments as identified in section 3 of the AQIA.

As noted above, the Mid Coast Council's request within the SEARs were addressed, given the modelled impacts of the quarry were shown to be below air quality impact assessment criteria at all assessed receivers.

4.6.5 General

Work needs to be completed and considerable consultation and liaison needs to be established before it can be concluded that a reasonable and satisfactory development is occurring and that noise, air quality and biodiversity impacts (at a subject, local and sub-regional scale) are appropriately avoided, mitigated or compensated.

Furthermore, minor adjustment will be required to proposed roadworks to comply with Council standards.

These matters have been addressed above.

4.7 TRANSPORT FOR NSW

General

TfNSW has reviewed the information provided and raises no objection to or requirements for the proposed development as it is considered there will be no significant impact on the nearby classified (State) road network.

Road Responsibility

TfNSW considers that Bucketts Way, as a classified Regional road, is the responsibility of Council. As such the proposed intersection treatment at the entry to the development is for the assessment and consideration of Mid Coast Council.

It is noted that TfNSW raises no objection or requirements for the proposed development and that it considers there will be no significant impact on the nearby classified State Road network.

Road Safety

DPIE should consider together with Mid Coast Council, the additional safety risk of vehicles being pushed closer to existing trees created by the CHR and widening / clearing in the shoulder area. Additionally, it is recommended that truck turning warning signage on the approaches and safety barriers on the eastern side of Bucketts Way be provided.

IDPL have no objections to TfNSW input in the design and welcome the resolution of these matters during detailed design and the permitting process with the relevant road authority.

5. RESPONSE TO COMMUNITY AND GROUP SUBMISSIONS

Community and interest group submissions were combined given the similarity of the issues raised. Submissions issues are shown in *italics within a beige shaded and outlined box*. Where additional actions are adopted as a result of the submission response, these are shaded in grey. Issue descriptions are paraphrased or directly quoted from the submission.

5.1 ABORIGINAL HERITAGE

The quarry will impact artefacts, sacred places and traditional land. May cause solastalgia "fear and distress from change of a place to indigenous people.

A comprehensive assessment of the potential impacts on Aboriginal heritage and artifacts has been undertaken. Section 5 of the Aboriginal Cultural Heritage Assessment Report has not identified any specific cultural values associated with the study area, nor any were any significant cultural materials located during archaeological assessment.

As part of the site survey, four artefacts (of low scientific significance) were retrieved from the ten 1m² test pits. The larger size of the artefacts and the absence of debitage and small flakes suggests that the area was not a site of primary reduction or retouch / re-purposing of large flakes, tools or blanks. The scientific significance of the study area is low, due to low density, not complex sites resulting from peripheral occupation.

An Aboriginal Cultural Heritage Management Plan will be developed in consultation with the Registered Aboriginal Parties to guide the management of cultural heritage aspects affected by the quarry.

5.2 AIR QUALITY

5.2.1 Rainwater contamination

Concern of the risks of air borne contaminants and rainwater collected from roofs.

Dust deposition from the quarry has been assessed within Appendix H of the EIS. Dust deposition at receivers is predicted to be negligible. The quarry resource is not known to contain any significant minerals such as metal sulphides (that would oxidise when exposed) or other contaminants of a concentration that would cause concern for rainwater contamination, especially given the low concentrations of dust modelled to occur at neighbouring properties. If significant concentrations of water-soluble contaminants were present it would be reasonable to expect these to be present within the extensive water monitoring undertaken for the project, and while some metals have been detected, they are in low concentrations even when in direct contact with the quarried rock.

Modelling of diesel emissions was also completed and determined the concentrations of diesel emissions from the quarry operation would not exceed the relevant health criteria.

Concerns by some residents on Forest Glen Road about receiving dust from existing quarrying activities at Karuah would seem unlikely (based on modelling completed for the DCQ) and are not views supported by all residents.

5.2.2 Decreased air quality

"Decreased air quality in the area due to dust and particulate matter from the quarry and an increase in emissions and dust due to additional traffic."

Air quality modelling was undertaken using a combination of the CALPUFF Modelling System, CAL3QHCR and The Air Pollution Model (TAPM). The modelling predictions did not indicate any exceedance of the relevant pollutant impact assessment criteria at any of the residential receptors. All the assessed air pollutants generated by the operation of the Project would comply with the applicable assessment criteria at the assessed receivers and therefore would not lead to any unacceptable level of environmental harm or impact in the surrounding area.

Overall, the assessment demonstrates that even using conservative assumptions, the Project can operate without causing any significant air quality impact at residential receptors in the surrounding environment.

Nevertheless, the site would apply appropriate air pollution management measures to ensure it minimises the potential occurrence of excessive air pollutant emissions from the site. As stated in the EIS, minimising dust has been a priority through the design of the quarry. This includes positioning the quarry below the ridgeline, sealing the main access road, and crushing to take place on the quarry floor.

"Adequacy of the modelling, models can have errors that will make the results misleading or inaccurate, needs revisiting."

The Air Quality Impact Assessment has assessed the potential air quality impacts associated with the construction and operation of the proposed project. The Assessment was prepared by experienced consultants in accordance with the NSW EPA document *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (NSW EPA, 2017) and the specific requirements outlined therein as well as the SEARs requested by the NSW EPA.

5.2.3 Air Quality Assessment

"The air quality assessment has used background data from Mayfield and Beresfield, which is considered excessive for Limeburners Creek and should be considered irrelevant."

The main sources of air pollutants in the area surrounding the quarry would primarily include emissions from agricultural activities and anthropogenic activities such as wood heaters and motor vehicle exhaust.

Ambient air quality monitoring data from the Project site are not available. Therefore, to assess the potential impacts associated with the Project against the relevant dust criteria, consideration of background dust levels needs to be applied. The nearest air quality monitors at Beresfield and Mayfield were used to characterise the background levels for the Project site. This data is operated by the NSW DPE.

It is to be noted that the Beresfield and Mayfield monitoring stations are located in generally more urban environments with potentially higher ambient air emissions sources originating from industrial and commercial operations as well as traffic emissions. The use of this monitoring data when predicting cumulative air quality impacts (i.e., background plus the DCQ), is therefore likely to

overstate background levels in the locality of the Project, and the consequential cumulative project impacts.

I do not consider computer generated models relevant or accurate to reality.

Modelling is an accepted and well tested method used throughout the world to predict potential impacts of projects on key environmental matters such as air quality, noise and water.

Air quality modelling of the site was undertaken using a combination of the CALPUFF Modelling System, CAL3QHCR and The Air Pollution Model (TAPM). The Air Quality Impact Assessment has been prepared in accordance with the NSW EPA document *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (NSW EPA, 2017) and the specific requirements outlined therein as well as the SEARs requested by the NSW EPA.

5.2.4 Silica Dust and Cancer

Concern over potential for silica dust and increased cancer. "EIS also does not make any study of the impacts of silica dust (below 2.5 microns) on adjacent landholders. Silica dust can be as small as 0.01 microns, can remain in the air for some 12 days and travel some 3km (with wind speeds of 5km/h). Silica dust can pose serious health hazards. Exposure to respirable silica dust, which is fragmented crystalline silica, can lead to silicosis, lung cancer, and COPD. Rhyolite (the main target of the quarry) is the most silica rich of volcanic rocks. It is inconceivable that silica dust will not be a major issue associated with the quarry operations."

Crystalline silica (most commonly quartz) is one of the most common minerals in the earth's crust and forms a proportion of most quarry aggregates. Shale typically contains 22%, granite 30%, rhyolite up to 80%, for context engineered stone contains up to 97% crystalline silica (Safe Work Australia).

When these minerals are extracted and processed during quarrying, materials containing silica can create respirable crystalline silica dust (that is dust less than 10 µm, or for silica normally accepted as less than 2.5 µm). It is important to note that only a small fraction of the material processed has the potential to be respirable. This respirable dust is associated with the respiratory disease silicosis. Silicosis is typically associated with those that work with silica rich materials on a daily basis (such as stone masons) and has most recently been reported in industries working with manufactured stone bench tops.

While the quarry will extract rock containing crystalline silica, the need for the quarry operator to protect its workers consistent with work health and safety (WHS) regulations ensures the risks to neighbouring residential receivers more than 1,200 m away are very low. It is in the quarry operators best interest to maintain respirable silica levels to the lowest levels possible.

The quarry manager will be responsible for ensuring that the silica dust levels for all operators working within the quarry are in line with the WHS regulations. The mandatory limit for silica dust exposure in Australia is 0.05 mg/m³ (or 50 µg/m³) averaged over an eight-hour day (except in Tasmania where it is 0.1mg/m³). Under WHS regulations, employers must provide health monitoring for workers if they carry out ongoing work using, handling, generating, and storing crystalline silica. The quarry will also have a duty of care to ensure the workplace exposure standard for crystalline silica is not exceeded and to provide health monitoring and air monitoring to workers.

While the proposed quarry has the potential to generate particulate matter emissions, the modelling predictions from the AQIA for the quarry do not indicate any exceedance of the impact assessment criteria at any of the residential receptors, for dust, total suspended solids, particulate matter below 10 micron (PM₁₀), or particulate matter below 2.5 micron (PM_{2.5}).

No criteria for residential receptors exist within NSW for respirable silica, noting the above is only applicable to workplaces and not those exposed for longer durations. The Victorian EPA define an annual average criterion of 3 µg/m³ for respirable crystalline silica (as PM_{2.5}) within the *Protocol for Environmental Management (PEM) for Mining and Extractive Industries (2007)* that is an incorporated document of the Victorian State Environment Protection Policy (Air Quality Management) 2001.

If it was assumed that 80% of all PM_{2.5} created by the quarry was respirable silica (which is likely overstated), the highest annual average concentration at a neighbouring residence not associated with the quarry would be <0.08 µg/m³. For the receptor R3 (at 500m from the quarry), the concentration is predicted to be 0.32 µg/m³. This confirms the risks to surrounding residents from respirable silica from the DCQ is very low.

If approved, the quarry would develop an Air Quality Management Plan (AQMP). The AQMP would include a dust management plan which outlines the measures to manage dust emissions at the site and include aspects such as key performance indicators, response mechanisms, and complaints management.

5.3 BIODIVERSITY

5.3.1 Koalas

Many submissions raised concerns specifically about koalas, including:

- Reports referred to koalas in the area as "not an important population", a detailed assessment must be completed by those with an understanding of koalas. Suitable Koala habitat under significant pressure from expanding residential dwellings, quarry will add further pressure. The quarry will destroy koala habitat and adversely effect the koala population.*
- The Koala Plan of Management (KPOM) is inadequate.*

An updated BDAR, along with a revised KPOM and additional surveys and assessment for koala have been completed by Biolink and are attached within **Appendix E**.

An 'important population' is defined by EPBC Act Significant Impact Guidelines 1.1 as a population that is necessary for a species' long-term survival and recovery. This may include populations identified as such in recovery plans, and/or that are:

- Key source populations either for breeding or dispersal
- Populations that are necessary for maintaining genetic diversity, and/or
- Populations that are near the limit of the species range.

Following the exhibition of the EIS, a supplemental survey for impacts on koalas at the proposed site was undertaken by Biolink in June 2022. As part of this survey, a review of recent studies was included to place the local koala population into a broader landscape context.

As detailed in the BDAR, evidence of koalas was detected across the proposed development area, including in the vicinity of the proposed haul road (opportunistic sighting, SAT and camera trap) and towards the southern edge of the proposed quarry pit (SAT). The site of the proposed quarry is located within the Wang Wauk State Forest Area of Regional Koala Significance and at its eastern end directly adjoins a known area of koala generational persistence (Core Koala Habitat). For these reasons alone it is important that koala management actions on the site reflect best practice as befitting an area of Core Koala Habitat.

Koala activity was detected at two locations within the proposed quarry pit, in both instances at levels of low use/transient movement rather than use by individuals with established home range areas. No evidence of Koala breeding was found within the Study Area. Due to the extent of habitat in the locality and the large occurrence of local Koala records, it is unlikely that the Koala population within the Study Area is necessary for maintaining genetic diversity within the species. The Study Area is not near the limit of the species range. It is unlikely the Koala population within the Study Area comprises an important population.

The indicative activity gradient resulting from the Spot Assessment Technique (SAT) activity completed by Biolink implies the presence of higher activity levels to the south of the proposed quarry pit. Evidence of koalas in the form of scats was also observed in areas to the west of the proposed quarry pit and in other locations to the southwest and southeast of the proposed quarry pit.

The area of occupancy for the population present will be reduced by 29.02 hectares due to the removal of critical habitat. Approximately 247 hectares of suitable habitat for the Koala will be retained within the property boundary, outside the proposed Development Site. Vegetation mapping determined that the majority of this area is comprised of "Spotted Gum - Broad-leaved Mahogany - Red Ironbark shrubby open forest (PCT 1590)". This PCT is dominated by Koala feed trees such as *Corymbia maculata* (Spotted Gum), *Eucalyptus fibrosa* (Broad-leaved Ironbark) and *Eucalyptus umbra* (Broad-leaved White Mahogany). These areas are therefore likely to represent suitable Koala habitat.

5.3.2 Insufficient survey

Some submissions raised concerns about the adequacy of ecological survey, including:

- There was barely any recognition of the diversity of wildlife in the area under discussion. No mention of snakes or lizards, of which there are many and hardly any of frogs and insects. On any night the sounds of insects, frogs in particular, can't help but be recognised as significant.*
- Impacts of drought not taken into consideration.*
- It is impossible to do a flora and fauna study by only attending the site on a few days/nights in a couple of months.*

The OEH BioNet Atlas and DoEE Protected Matters search tool databases were utilised to produce a list of threatened species, populations and ecological communities that have been modelled or reported to occur within a five-kilometre radius of the Study Area. This list can be found in Appendix 1 of the BDAR, updated and presented in **Appendix E**.

The updated BDAR includes discussion on how the impacts of the drought were managed with respect to survey findings and assessments. Only two threatened species were considered

potentially affected, however, both of these species were flowing at the time of surveys in known reference populations.

An assessment was then made for each of these on the likelihood of occurring within the Study Area or using the habitat as an essential part of a foraging range.

Appendix 2 of the BDAR lists a total of 78 fauna species identified as a result of the targeted surveys. These comprised six amphibians, 37 bird, 33 mammal, two reptile, one fish and one crustacean species. Of these, 13 mammal and four bird species detected are listed as Vulnerable under the BC Act and/or the EPBC Act.

The candidate threatened flora species were surveyed in accordance with the *NSW Guide to Surveying Threatened Plants* (DPIE, 2020).

The candidate threatened flora species are listed in Table 17 of the BDAR. These were surveyed across the Study Area by suitably qualified ecologists over a period of seven weeks. Survey tracks for each round of targeted surveys are shown in Section 4.2.1 (figures 8-11) of the BDAR. All surveys were conducted using systematic parallel transects. Parallel field traverses were separated by 5 to 10m for orchids, herbs and forbs, 10 to 15m for sub-shrubs, and 10 to 20m for species in all other life forms (shrubs and trees).

Targeted surveys for threatened fauna were conducted in accordance with the appropriate guidelines. The survey methodologies and effort for are outlined in Section 4.2.2.1 and Table 9 of the BDAR.

A summary of the Fauna Survey Effort and comparison against the *Threatened Species Survey and Assessment: Guidelines for developments and activities (working draft)* (DEC, 2004) and DAWE Guidelines is provided in Appendix 5 of the BDAR.

5.3.3 Plants and animal impacts

The project will damage the natural environment and habitats and affect animals and destroy flora, loss of local animal species. These are then offset by money in the purchase of credits.

A Biodiversity Development Assessment Report (BDAR) has been undertaken in accordance with the NSW Biodiversity Assessment Method (BAM) under the *Biodiversity Conservation Act 2016* (NSW) (BC Act). An updated BDAR is included as **Appendix E** of this document. The BDAR assessed the biodiversity values of the Subject Land and the impacts of the proposed DCQ on biodiversity values in accordance with the BAM. The BDAR sets out the measures proposed to be undertaken to avoid and minimise impacts on biodiversity. The BDAR also details the number and class of biodiversity credits that are required to be retired to offset residual impacts. The BDAR, determined that the activity is unlikely to have a significant impact on any species.

As a result of the project 235 ha of the IDPL's land holding, and potentially a further 125 ha of an adjoining landholding under agreement with IDPL (i.e., 360 ha in total) will be made a Biodiversity Stewardship Site consistent with the NSW Biodiversity Offsets Scheme. These Stewardship Site will provide the majority of the credits required to offset the impacts of the quarry and will increase the local area actively under conservation. For context, this is approximately 13% of the nearby Karuah National Park to the southeast and 43% of the Karuah Nature Reserve to the northwest, and is located between these two conservation areas and will make a meaningful contribution to conservation in the local area.

5.3.4 Threatened Species Survey Requirements

Survey effort for the threatened species Thesium australe and Rhizanthella slateri includes dates outside of the species-specific flowering period and is not in accordance with the threatened species guidelines

Upon review of the original BDAR, it is acknowledged that there was an error in the survey timing for *Thesium australe* and *Rhizanthella slateri*. This is a typographical error. Instead, it should have read as follows, reproduced from the updated BDAR.

Table 17 of the BDAR

Scientific name	Survey Requirements	Surveys within the Study Area
<i>Rhizanthella slateri</i>	September to November	14-18 October 2019
Eastern Australian Underground Orchid		5-7 November 2019 26-29 November 2019
<i>Thesium australe</i>	November to February	5-7 November 2019
Austral Toadflax		

This error has been corrected in the updated BDAR and shown in Table 17.

5.3.5 Hollow-Bearing Tree Survey

Extent of survey in significant hollow-bearing trees not clear, including were hollows surveyed through relevant breeding seasons to determine presence?

Section 4.1.1.4 of the BDAR states a survey of trees within the Study Area was undertaken on 12, 14, 15, 19, 20, 22, 26 and 27 August 2019 to locate hollow-bearing trees, and dead standing stags.

Hollows were assessed as either potentially suitable for Large Forest Owls and Cockatoos, or not suitable due to hollow diameter, height of hollow or hollow type. Potentially suitable hollows were stag-watched as part of nocturnal surveys, additional stag watching was completed during 2022 as documented within the updated BDAR in **Appendix E**.

These hollows were surveyed during the appropriate seasons for the candidate threatened bird species, specifically the breeding periods for gang-gang cockatoos, owls and birds of prey, as per the Biodiversity Assessment Methodology. For survey type and timing, see Table 9 in the BDAR.

5.3.6 Indirect and Offsite Impacts

Some concerns were raised in relation to indirect and offsite impacts such as:

- *There is inadequate consideration of the indirect impacts on ecology, including koala, Callistemon, and Tetraetheca Juncea from edge effects and the associated reduction in habitat due to light, noise and dust.*
- *The effect of the traffic on wildlife should be investigated.*

Consideration of edge effects and associated controls is included within updated BDAR. The BDAR included survey within 25 to 50m of the development boundary to account for potential edge effects. Consideration of the key potential edge effects are considered below:

- Increased levels of dust have the potential to reduce light absorption on leaves and change soils. Dust management controls will be implemented by the quarry to minimise the impacts to vegetation adjoining the quarry pit, including sealing of the haulage road.
- Increased levels of noise and blasting. This will vary from species to species and is further considered in Section 5.18.2.
- Operations are restricted to daylight hours (6am -6pm), with minimal lighting required at the office are overnight, and lighting that would be consistent with a rural dwelling.
- Erosion of soils within and adjoining the disturbance area and the associated sedimentation down gradient if controls are not in place.
- Downstream modification of hydrology and vegetation downstream of the impact area, has been considered within the BDAR.
- The *Tetratheca juncea* plants outside the direct impact of the quarry are unlikely to be affected from any changes in hydrology, with only minor changes to upgradient catchments.
- Transfer of weeds and pathogens increases at the edges of clearing and with increased activity. Weed and pest management will occur both within residual retained vegetation adjoining the quarry and within the proposed Stewardship Site to minimise these indirect effects.
- The effect of road traffic has been considered for the proposed quarry access road and includes several measures to reduce the potential for impacts to native fauna. As haulage activities are largely during daylight hours (6am to 6pm) the potential for impacts to native fauna are reduced. In the context of daily traffic volumes on The Bucketts Way, the quarry traffic represents a relatively small portion of traffic with limited nexus requiring IDPL to contribute to further investigate this aspect. It is noted that recent upgrades to The Bucketts Way, have included additional fauna protections.

Impacts from operational activities, such as disturbance to an animal's normal behaviour patterns due to noise, vibration, and dust may cause areas of previously suitable habitat to become sub-optimal and may cause fauna species to vacate areas of previously suitable habitat. This will vary from species to species and will vary temporally as the quarry progresses. The environmental management plans for the Quarry will consider measures to minimise impacts on fauna from noise, vibration, waste, and air pollution.

5.3.7 2019/20 bushfire impacts

Insufficient consideration of the effects of bushfires on the fauna habitat impacted by the proposal.

Locally, the 2019/20 bushfires, while impacting unprecedented areas across New South Wales, did not have a significant effect on habitat locally that will be impacted by the proposal. Given the elapsed time since the fires, and recovery of the vegetation communities affected by those fires, the net cumulative impact caused by the Project on foraging habitat is negligible.

5.3.8 Biodiversity Offsets

Biodiversity offsets must be provided on or near the proposed quarry, not many miles away where no benefit to the local wildlife is offered

The Biodiversity Offsets Strategy includes the development of Biodiversity Stewardship sites on the proponent's land holding and sourcing the credits from these stewardship site wherever feasible. This will ensure benefits accrue to local wildlife through the in-perpetuity management and conservation of this land.

5.3.9 Monitoring by MCC if approved

Add a condition(s) to approval; a) that the MCC Senior Ecologist be granted continuous access to the subject site. This is vital before a "sod" is turned. Then during the clearing, access road construction and quarry establishment. The MCC officer should be involved in how the proponent is saving the overburden for future and ongoing rehabilitation. The MCC officer needs to be continually involved in the ongoing management of this site. This involvement by MCC should be on a cost recovery basis. This is on top of the inspection rights of the State Government agencies.

The DCQ Project is a State Significant Development that is monitored for compliance by the NSW DPE, by dedicated compliance officers, quarry safety is regulated by the NSW Resources Regulator. MCC are not the regulator for this quarry. The management of the quarry activities is guided by a comprehensive management plan framework covering soil management, clearing procedures and rehabilitation. On an annual basis the status of the will be reported via an Annual Environmental Review that will be available to MCC and the public for viewing. In addition, IDPL will be required to provide regular updates on the status of the project at the Community Consultative Committee meetings that typically occur on a quarterly basis, and would include a representative from MCC, of which the minutes are available for viewing by the public.

No additional oversight by MCC is considered necessary or reasonable.

5.4 BUSHFIRE

5.4.1 Bushfire Assessment

The project has not considered bushfire effectively and provided for risk of bushfire and exit strategies, emergency shelters, by-pass road system for workers to escape etc.

A Bush Fire Management Plan (BFMP) will be prepared prior to the commencement of construction, including the following information at minimum:

- APZ locations and management details
- Landscaping requirements, where proposed
- Access provisions such as locations, passing bays and alternate emergency access
- Water supplies and bush fire suppression systems (including static water supply, natural water sources etc.).

- Schedule of the BAL requirements and building footprints as well as any specific construction details
- Details regarding the Bush Fire Emergency Management and Evacuation Plan
- Any other essential bush fire safety requirements.

Additionally, there will be designated emergency assembly areas in areas clear of bush fire risk and the property will have three potential roads to leave the site, the rear access via Forest Glen Road, Deep Creek Road and the new private access road.

5.5 COMMUNITY ENGAGEMENT

5.5.1 Consultation Process

- 1. Community engagement and zoom session was inadequate and not conducted fairly, some issues were not addressed or were dismissed.*
- 2. Internet in the area is also very poor.*
- 3. Majority of people in the area use PO Boxes.*
- 4. DL leaflets were provided that referred to a website that could not be found.*
- 5. Only one letterbox drop within 2kms of quarry and one meeting during work hours that was difficult to attend.*
- 6. Business such as Ocean Earth Homestay was not contacted in the preparation of the EIS.*
- 7. Timing for consultation was also (perceived as) strategic and clever as just prior to Christmas for both initial consultation and for proposal being open for public comment is at the busiest time of the year when many people just don't have time with work and family commitments*

Outbreaks of Covid-19 prevented drop-in sessions for the Project. The use of Zoom sessions, although not ideal, was the next best option and still successfully allowed the Project to be better explained. The zoom sessions and consultation process were developed and run by an experienced social impacts consultant.

While internet in the area has been reported to be poor, the attendance of the zoom sessions by a range of residents, that were able to both stream and view the presentation suggests that satisfactory internet is available to a broad cross section of residents in the area.

There were three fliers with project information put in the letter boxes, two were hand delivered (one in November 2020 and the other in July 2021) and the one with information and the community survey was delivered through the postal service in May 2021.

Businesses in the area, such as Ocean & Earth Farmstay were not contacted independently as all modelling and impact assessments determined the likely impacts were below relevant health and amenity criteria. These businesses have been afforded the opportunity to make a submission on the Project through the assessment process. Best efforts of the project team were made to hand deliver newsletters to mailboxes within the area.

There has been no strategy to avoid, minimise or reduce the ability of individuals to make comment on the proposal. The Project timing has been governed by various technical aspects such as survey timing and the design of project elements. It is noted the DPE extended the consultation window and undertook a dedicated community meeting.

5.5.2 Ocean Earth Farm Stay

Ironstone Developments have not consulted with myself [Ocean Earth Farm Stay] in regards to their application for the proposed quarry or the impact this project will have on my business and livelihood.

There were three fliers with project information placed in the letter boxes, two were hand delivered (one in November 2020 and the other in July 2021) and the one with information and the community survey was delivered through the postal service in May 2021.

Community and stakeholder feedback was invited on the proposed development between September 2020 and August 2021. All feasible channels were used to reach as many people as possible to inform them of the project. When the consultation plan was developed in mid-2020, COVID-19 related considerations and measures applicable to public gatherings applied to the project.

5.5.3 One on one meetings

Not once have they been to see the residents directly effected

A social engagement professional was engaged to develop and guide the communication process that included letter box drops with project information, the survey, the online information sessions and the additional information available on the Project and Department of Planning websites.

Where properties and the associated residences were assessed to have potential to be impacted by the Project due to noise or dust above relevant criteria or changes in visual impacts (i.e., the access road) or property access, these residences were contacted, and one on one meetings were undertaken with Quarry representatives, where COVID related considerations at that time could be managed and were accepted by both parties.

Where specifically requested by other residents, the majority of these meetings were able to occur with Project representatives.

5.6 ECONOMICS

5.6.1 Positive for jobs

Good source of jobs and investment.

Noted. The quarry will provide an opportunity for employment within area, and additional business for those businesses servicing the quarry and associated contractors that visit the area due to the quarry.

5.6.2 Property Value Decrease

Concern was raised in some submissions about a decrease in property values, such as:

- *The quarry will decrease property values boarding the development. A conservative estimate of \$5-\$10 mil has already collectively been wiped off the value of properties in the area from the lodging of this EIS, which is a major social and economic impact for land holders. How will land owners be compensated?*
- *Road noise drives down property values, this isn't taken into account.*

There was a perception from some stakeholders that a quarry in the vicinity would devalue property prices. Compensation was also asked about in relation to potential property damage and acquisition. This project will be subject to the requirements of the Voluntary Land Acquisition Policy. This includes compensation through to voluntary property acquisition where health and amenity criteria are exceeded.

In general, property prices are a complex aggregation of a large number of factors, and the value a buyer places on a property will vary from person to person. Concerns over increased traffic noise devaluing properties along The Bucketts Way need to be taken in the context that The Bucketts Way is a significant arterial road connecting numerous regional towns, traffic and the consequential road noise will increase. The noise impact assessment has determined the quarry operations will meet the relevant road noise criterion for this road.

Spatially the project occupies less than 0.4% of a 5km radius from the quarry yet will result in establishment of a conservation area of over 4 % of the same radius (i.e., over 10x the impact area). With consideration of; the minor spatial extent; large conservation area; limited (i.e., below relevant criteria) impacts on neighbouring properties predicted by noise, vibration and air quality; the projects water quality protections; and the very limited visibility of the Project, the risk of significant changes in property prices is low once the project is operational, noting perceived impacts are likely to be greater than those realised.

5.6.3 Bulahdelah benefit overstated

Bulahdelah is not expected to be a town that benefits from the quarry.

Bulahdelah was not mentioned in the economic assessment. It was used throughout the Social Impact Assessment to identify broader impacts due to use of infrastructure, supply chains, haulage routes, transportation of materials and equipment and workforce may affect a larger regional area. These factors require the area of social influence to extend and include portions of the Mid Coast Council LGA, Port Stephens LGA and Dungog LGA.

5.6.4 Local jobs overstated

The extent of local jobs will be limited and most will be from Newcastle

Logically, the makeup of any company's workforce will be skewed by the larger regional centres and the existing location of any associated company's main office or long-term work site. However, this does not preclude more local interested people applying for employment at the quarry, or existing associated employees relocating to closer to the quarry to avoid commuting. Applicants would be assessed on their experience and their suitability for the role as per normal process, however it would

be desirable to employ people from the local area given the reduced employee travel needs and added benefit to the local community.

5.6.5 Local supplies benefit overstated

Due to the proponents existing supply chains there will be no use of local contractors and suppliers, expect a commitment to a percentage of workforce and suppliers to be engaged from within 20km of site.

The quarry operation will be approachable by all suppliers, local and non-local, and will make purchases on the merit of the goods and services that best fit the quarry business requirements. It is reasonable to expect that contractors and suppliers more locally based will already be at a commercial advantage given reduced commuting distances. For the longevity of the quarry and its effective integration with the community, it is in IDPL's best interests to engage local contractors but see no reason to prescribe numeric limitations for the workforce or its suppliers.

While the potential adverse economic impacts from the quarry are minimal, there are some potential areas that should be monitored, and strategies employed to ensure benefits of the quarry to the 'Catchment' and NSW are maximised and any potential adverse impacts minimised:

- To maximise local benefits derived from the quarry, the proponent and contractors engaged by the proponent will be encouraged to source labour locally (where possible and practical) and provide training opportunities where practical.
- To maximise local benefits derived from the quarry, the proponent and contractors engaged by the proponent will provide sufficient opportunities and access to information for local businesses to understand the quarry's supply opportunities and requirements and improve their ability to secure supply contracts.

5.6.6 Existing business impacts

Some submissions raised concerns about the impacts to the local bed and breakfast, Air B&B opportunities and similar business, such as:

- *"Existing small cottage businesses will be adversely impacted by the quarry causing financial impacts."*
- *The Ocean & Earth Farmstay business will be destroyed.*
- *The noise, vibration, air pollution, traffic congestion and safety of travellers staying at my property [Ocean & Earth Farmstay] will adversely impact negatively on my business and the paying clients impression of the area and my farmstay."*

Noise, vibration, air quality and traffic assessments have concluded the proposed quarry can be undertaken safely and within the accepted health and amenity criteria. The Ocean & Earth Property is about 1.9km west of the quarry. Under most conditions noise, noise at the property due to the quarry is under 20 dB(A) and is likely to be inaudible, under ESE conditions (i.e., wind blowing directly from the quarry to Ocean & Earth Farmstay), noise levels remain below 30dB, which is also likely to be largely inaudible in the context of natural noises (insects, birds, wind in trees etc).

Notwithstanding this, the quarry is not visible from surrounding properties, and the most intensive noise generation will occur during extraction activities that are limited to 7am to 5pm Monday to

Friday and 8am to 1.00pm on Saturday with no operations on Sundays or public holidays. Even if the quarry is audible the majority of weekend stays would remain unaffected.

The quarry will have a footprint that will be visible in aerial imagery available on platforms such as google maps. With a maximum quarry pit footprint of 18 ha (noting workshops and roads are not unique in the area), this forms only a small percentage of the local area. For context, Ocean & Earth Farmstay is within 5 km (approx. 1.9-2.7km) of the quarry, giving an area of this catchment (as a radius) of 7,854 ha. The quarry pit accounts for 0.2% of that area (or less than 0.4% accounting for the total footprint). While noise, dust and vibration will affect a larger area to varying degrees, in viewing the local area on google maps for example (as a prospective customer might), it would be difficult to assume that a disturbance area of less than 0.4% in this catchment would cause a significant detractor for tourism to the local area. In addition, if approved, IDPL are committed to establishing a biodiversity Stewardship Site that would occupy almost 4% of that same catchment, that would provide a permanent conservation buffer of over 1 km between the quarry and the Ocean & Earth Farmstay.

IDPL will establish a Complaints process and commit to operating the quarry within the bounds of its Conditions of Approval and with consideration of neighbouring dwellings and businesses.

5.6.7 Cost benefit to community

Several submissions stated the proposed benefits of the quarry are outweighed by the impacts on community such as:

- *What is the cost benefit to the community?*
- *Estimated jobs created will be less than the income destroyed for present eco-tourism ventures.*
- *Wealth to a few at cost to others.*
- *The benefits of the proposed quarry are outweighed by the impacts on air, noise, water, biodiversity and traffic impacts.*

Appendix N of the EIS provided a Cost Benefit Analysis (CBA) for the Project. The CBA considered the environmental and social impacts of the development (through the technical studies performed) and the cost of performing the development. The CBA concluded that the quarry is economically desirable for NSW with the benefits outweighing the costs. Using a discount rate (or interest rate) of 7%, the Net Present Value (NPV) of the Project to the NSW economy is estimated at \$22.7 million. This accounts for a present value (PV) of the costs of \$87.6 million and PV of benefits of \$110.3 million, that means for each dollar in cost, the project will return \$1.26. In more simple terms:

- The quarry will result in a change in the current land use, however, that change is consistent with the land use zoning, noting that changes in land use can concern some people for varying reasons.
- The quarry will result in additional jobs and investment in the local area.
- However, the quarry has been designed such that:
 - o Air and noise impacts to local receivers are below accepted health and amenity criteria.
 - o The quarry operates during daylight hours and is not operational on Saturday afternoons, Sundays or Public Holidays, where ecotourism ventures are likely to be more intensely used.

- o The visual impact of the quarry is negligible.
- o The ecological impacts are offset using accepted methodology (i.e., NSW Biodiversity Offsets Scheme).
- o There are negligible impacts to water, and no licenced or stock and domestic water supplies are affected.
- o The quarry disturbs less than 0.4% of land within 5km of the quarry.
- o As a result of the quarry, approximately 4.0% of the land within 5km will become under active conservation (i.e., through a Stewardship Site).
- o Traffic impacts have been assessed to be within accepted levels and impacts to the road network will be offset through over \$11 million dollars levied by Mid Coast and Port Stephens Councils over the life of the quarry.
- The quarry will provide a unique quarry material offering high grip properties for safer roads.
- The quarry material is lighter in colour, which results in a higher reflectivity that supports climate change orientated strategies and plans aimed at reducing the heat island effect, resulting reduced electricity costs and greenhouse emissions.
- The increased availability of quarry aggregates in the local area will reduce haulage costs and improve availability of materials for local infrastructure.
- The owner of the property is afforded the same rights as all local property owners that seek alternate uses to their properties consistent with the land zone in order to generate an income from the property, which includes eco-tourism ventures, or perhaps other more intensive agricultural ventures.

5.6.8 Short Term Gain

Believes this is an unnecessary development that puts human health, native wildlife and the environment at risk for short term economic gain of a company.

Many developments are seen as necessary and unnecessary by different people, it is up to the DPE to evaluate the project on the information gathered (positive and negative). As noted above, the assessment has determined the net benefit of the project exceeds its potential impacts.

5.6.9 State Government Revenue

Concerns the economic benefits of the quarry is overstated through concerns such as:

- *I have been informed that quarries are classed by Government as extractive industries and as such bring zero dollars to State Government revenue, and that Councils in the area broker a deal with the company?*
- *Quarries are clearly not of great economic benefit to the local community.*

The economic benefits of the Project are detailed within Appendix N of the EIS. The Project will provide a lift in Australian, State and Local government taxation revenues through a variety of taxes and duties. Overall, the Project is estimated to deliver a total of:

- \$11.1 million in road levy revenue to Local Government compared to what would occur without the Project.

- \$1.5 million in additional revenue to the NSW Government compared to what would occur without the Project.
- \$23.8 million in additional revenue to the Australian Government, through personal income tax, fringe benefits tax, company tax and GST, compared to what would occur without the Project.

These additional revenues can be used by government to provide additional infrastructure and services to support business and households throughout Australia. Roads for example in the local area are funded by the local, State and Commonwealth governments.

5.7 GEOLOGY

No mention of ironstone in geology report that is common in the area. Concerns over potential expansion into magnetite extraction around Ironstone Mountain that has been touted by others in the past.

Magnetite is not mentioned within this application as no magnetite has been identified in the geological exploration of the proposed quarry extraction area and the target material is hard rock for civil, engineering, and decorative applications. If the quarry is successful, a Biodiversity Stewardship Site is proposed for the land containing Ironstone Mountain. Biodiversity Stewardship Sites are intended to provide in perpetuity conservation that would ensure a magnetite mine on this land (even if commercially viable) would not be feasible due to the conservation area.

5.8 CUMULATIVE OR GENERAL ENVIRONMENTAL CONCERNS

5.8.1 Cumulative Impacts

Some submissions raised concerns around cumulative impacts:

- *“Our main concerns about this quarry proposal are the cumulative impacts on our environment and community. There are a substantial number of existing and proposed hard rock quarries or extensions in our area which require koala habitat removal, and that have many direct and indirect impacts on fauna and residents.”*
- *Cumulatively, the proposed development will cause unacceptable impacts to road safety, resulting in adverse social and economic impacts, and would be contrary to the public interest*

The impact assessments provided for this quarry have considered the effects of the Project on various aspects of the environment taking into account impacts on local flora and fauna populations and the local community.

Inherent in ecological assessments is the consideration of the cumulative impacts through the State and Federal governments designated conservation status of flora, fauna and ecological communities. This designation is made with consideration of the regional, State and Federal populations and the existing cumulative impacts on this biodiversity. In addition, it is inherent within assessments on local flora and fauna populations to consider whether the project places the local population at risk of extinction. The DCQ project, given the connectivity and extent of the local populations shows there is no risk of local extinction. So cumulatively, assuming the considerations

at other quarries are of similar equivalence, the impacts on these same flora and fauna over a more regional area are also unlikely to have a significant impact on the population.

Issue specific cumulative incremental assessments were completed for traffic, air, and noise impact assessments that took into account both the existing baseline conditions and the proposed Hillview Quarry. Assessments of road safety and traffic impacts were made on key aspects of the traffic route and determined the quarry could proceed. Taking into account the upgrade works currently underway for The Bucketts Way (see Section 5.17), the safety concerns (and associated cumulative social and economic aspects) are further reduced. In the case of air quality and noise, this considered potentially more elevated baseline conditions (i.e., air quality in the lower Hunter) or possibly higher traffic noise on ambient conditions, however, in doing so it represented a more conservative assessment approach. These assessments determined that taking into account; the baseline, the DCQ and Hillview Quarry, the relevant criteria would not be exceeded. This ensures that residents of the local community are not displaced from their current residence, and potential impacts to community functionality are avoided.

With respect to consideration of Combined Cumulative Impact Assessment, the quarry will result in a net beneficial outcome. It is acknowledged that the quarry will be a change in the current land use, and with that change will be varying levels of impacts. Individually the impact assessments have shown the quarry can be constructed and operated within a manageable level of impact that will not result in the displacement of local residents and has biodiversity impacts that can be fully offset consistent with the NSW Biodiversity Offsets Scheme. The Cost Benefit Analysis determined the project would result in a net benefit, even when taking into account the impacts of the Project. A comprehensive range of mitigation measures have been developed to minimise the impacts of the Project on the environment and community.

In developing the quarry, a unique supply of quarry materials will be available with benefits in making safer roads and reducing heating effects (and resultant climate change consequences) and in doing so, the quarry will deliver local employment and economic benefits to the region and State. With the significant private investment, foresight and lead-time in developing quarry resources, each quarry proposal provides a significant benefit to the community in providing quarry products to satisfy the construction of both private and public infrastructure. When demand outstrips supply, material prices increase, and projects are delayed as existing providers become fully allocated. Where existing suppliers are fully allocated to existing companies or related parties, this can reduce market competition in the construction sector further driving up costs.

Quarrying projects must be sited in locations where suitable natural resources are located, whilst being close to customers using the material (typically urban areas) to avoid excessive haulage costs. All quarries involve the clearing of vegetation, excavation of material and haulage to customers. Taking this into account, and with consideration of the cumulative impacts, the DCQ Project is located in a suitable location that will avoid significant impacts to the community, is located near main arterial roads, has developed measures to manage and mitigate impacts and will provide a needed quarry material.

5.8.2 General Environmental Concerns

General environmental concerns that include matters such as:

- *Environmental Concerns and does not believe adequate work has been done to address this.*

- *Polluting animals, the ocean, the air and ourselves (diesels and petrol)*
- *General unspecified concerns*
- *Objects on many and varied grounds, to the environmental effects this quarry will have on its surrounds.*
- *Environmental impacts to the Rural Landscape*

The EIS and Response to Submissions has provided a comprehensive assessment of the potential environmental impacts from the proposal. These assessments have determined that with adequate controls and suitable offsets, the proposed project can be undertaken without significant impact to the environment or the community.

Increased human activity (from workers and traffic levels) directly adjacent to sensitive habitat areas may cause disturbance to flora and fauna species in adjoining habitat. Impacts from operational activities, such as disturbance to an animal's normal behaviour patterns due to noise, vibration, and dust may cause areas of previously suitable habitat to become sub-optimal and may cause fauna species to vacate areas of previously suitable habitat. Management Plans for the Quarry will consider measures to mitigate impacts on flora and fauna from noise, vibration, waste, and air pollution such as:

Traffic Management Plan that will include measures to improve driver behaviour, that will be communicated through inductions and a Drivers Code of Conduct applicable to all haulage contractors. Key measures to be included are:

- Speed limits within the Development Site will be limited to 40 km/hr.
- Speed limit signage.
- Staff and contractor awareness of increased animal activity during dawn and dusk should be communicated in site inductions and through appropriate onsite signage.
- Enforce 'carry-in, carry-out' policy regarding rubbish and waste materials generated on site to avoid waste materials entering adjacent vegetation.
- Restriction of public access and associated impacts from domestic pets, waste dumping and damage to adjoining vegetation must be enforced pre, during and post construction.
- Fence sensitive areas to delineate 'no go' zones.
- Noise and vibration minimization practices should be included in the Noise and Vibration Management Plan for the quarry.

Dust control measures will be implemented through the Quarry's Air Quality Management Plan, this should include covering loads where required; amending operations under excessive wind conditions including ceasing operations if required; use of water carts and static sprays as required to control dust; rehabilitation or stabilisation of exposed surfaces; and other dust minimisation measures as become evident during works.

The proposed design of the DCQ has taken into consideration the social, economic and environmental settings present within the area. These include:

- Positioning of the quarry pit on the eastern side of a dominant ridgeline, and within a location that is screened to the south by several ridgelines to minimize the potential for noise and dust emissions from the quarry to impact on surrounding private dwellings

- Adapting the quarrying direction to provide in pit screening to the south to limit noise impacts
- Adjusting the northern and southern extents of the quarry pit to exclude the majority of the 1st order drainage lines and positioning of the quarry outside the Deep Creek riparian area
- Limiting the depth of the quarry to avoid intersecting potentially lower quality groundwater
- Developing a new private access road and intersection with The Bucketts Way to minimize disturbance of existing residential properties and increase the distance of the access road from the Forest Glen Road area and associated higher number of dwellings
- Adjusting the alignment and inclusion of landscaping on the haulage road to minimize disturbance to adjacent dwellings that noted concerns due to high sensitivity to diesel emissions
- Positioning of the office, workshop and main stockpile area on lands that have been previously cleared.

The controls and mitigation measures detailed within the EIS detail the measures proposed by to avoid, minimise and ameliorate impacts, ensuring the proper management of natural and other resources.

A small number of neighbours may be impacted by dust and diesel emissions during construction of the access road. The emissions and dust due to the construction of the access road and intersection are not included in the assessment. Even though these are a temporary potential impact, construction emissions still have the potential to exacerbate health and wellbeing of nearby neighbours due to changes in air quality during construction. Health impacts from air quality associated by construction activities are likely. The magnitude of the impact would be minor. The impact of construction dust and emissions from construction is assessed at Medium – B2.

As indicated in the AQIA, the air quality modelling for the development does not predict an exceedance of the relevant pollutant impact assessment criteria at the residential receptors. There is one resident next to the private access road alignment who has reported a sensitivity to diesel fumes. Because of the resident's concern, the development has realigned the access road 190m further away from this resident's boundary to minimise potential impact to this residence.

Prior to commencing operations, a site Water Management Plan will be prepared that will include details of erosion and sediment controls, surface water and groundwater monitoring programs, as well as a surface and groundwater response plan. The WMP will include specific monitoring requirements for:

- Erosion and sediment control measures.
- Surface water and groundwater quality monitoring.
- Stream health and channel stability monitoring.

During storm events, discharges from the sediment dams may occur. Monitoring of these discharges should be undertaken in addition to the water quality testing schedule, see the SWIA. Water quality triggers are used in combination with the water quality sampling, to identify whether the discharges have impacted the downstream water quality (and therefore, potentially, caused material harm).

5.9 HEALTH

5.9.1 Health and Wellbeing

Concerns relating to:

- *Increased anxiety in the community over the potential impacts of the quarry*
- *Concern over potential for quarry to affect the health and wellbeing of residents*

Thorough assessments of the potential impacts from the quarry have been completed and made available for review and comment by the Community and regulators through a variety of means. The studies have concluded that the project can proceed without adverse health or amenity impacts on local residents and the community.

It is acknowledged that some members of the community receive information that is incorrect or may have otherwise been unable to determine the impacts of the proposed development. Since the commencement of the impact assessment process there has been accessible contact details for the Project Team for residents to discuss their concerns, and numerous residents have taken this opportunity.

If approved the quarry will be required to develop a series of management plans that will guide the construction and operation of the quarry that are aimed at ensuring the impacts of the quarry are consistent with or less than the predicted impacts. The DPE will regulate the implementation of these management plans and the status of the quarry and monitoring will be reported on a regular basis and accessible on the company's website.

5.9.2 Diesel sensitivity to R30

Numerous concerns have been raised in relation to Receptor R30, located north of the proposed haulage roads intersection with The Bucketts Way, these issues have included:

- *Concerns relating to the loss of lifestyle and impact to health of Receptor 30 north of the Haulage Road due to the diesel fumes generated by the haul road in particular exacerbating an existing health condition relating to hypersensitivity from Diesel emissions.*
- *That concerns related to the communication of health concerns from the haul road have not been heard.*
- *The haul road makes more than 25% of the property [R30] inaccessible due to diesel emissions during operating hours.*
- *With the aspect of our home at the base of a hill these winds funnel up past our home as do southerlies.*
- *Mitigation measures for effected land owners.*
- *The assessment of potential nitrogen dioxide impacts does not appear to have been considered adequately.*

- *Detailed research into diesel particulates and their effects on people living with hypersensitivity, chemical sensitivity.*
- *Duty of Care for the health of R30 given they have been upfront with health concerns and anyone that supports this quarry would be accountable for health deterioration.*

The R30 residence is located approximately 150 m from The Bucketts Way a major arterial road with heavy haulage vehicles servicing the industries in the local and wider communities. During the design of the proposed haulage road, the initial alignment developed with consideration of existing land rural use, intersection construction and use of the haul road was proposed along the southern boundary of the R30 property, within 140m of the dwelling. Preliminary noise and air quality assessments determined that this alignment could be used without exceeding noise or air quality emissions criteria, and the landholder had already begun the construction of a right of way access road to Lot 551 DP 1238818 along the boundary.

Despite the likely ability to use this alignment without exceeding criteria, following consultation with R30 a new alignment was developed with consideration of land use and engineering constraints that would ensure a greater separation from R30, acknowledging concerns raised about diesel sensitivity with the Project Team. The revised alignment is now 290m away from the dwelling on R30, considerably further than the 150m separation of R30 to The Bucketts Way. The change in alignment was communicated to residents at R30 including a walkover of the proposed location. In addition to the change in the location of the alignment, there will be a mix of native trees and shrubs planted along portions of the access road and an earthen bund on the eastern extent intended to reduce noise and increase the visual screening effect.

Detailed air quality emission modelling and analysis have been conducted as presented within the AQIA contained in Appendix H of the EIS. The assessment considered the key diesel emissions with regulated health criteria, being nitrous oxides (NO_x) and particulate matter. The assessment included consideration of potential cumulative impacts from additional vehicles on the road including the proposed Hillview Hard Rock Quarry. The predicted impacts of the quarry, notably emissions from trucks and traffic on R30 were determined to be negligible in the context of changes in estimated background or the accepted criteria. The AQIA notes *“The results most closely associated with harm, PM_{2.5}, are too low to be measurable, and would not result in any discernible effect on health at any of the receptors near any of the roads, including the quarry access road.”*

The proposed quarry access road runs parallel and within 20m of the boundary of R30 for approximately 630 m of the western and timbered area of the R30 property, before diverting south away from the dwelling and cleared land surrounding the house. Modelling has included consideration of the access road alignment and topography and presents isopleths of the potential extent of diesel emissions. The modelling shows that even when the road is adjacent to the boundary the emissions are substantially lower than air quality criteria, with the effects of existing traffic on The Bucketts Way being the dominant impact to the property.

Where emissions from the quarry exceed the established health and amenity criteria within the Voluntary Land Acquisitions Policy, additional mitigations or options for voluntary acquisition are available to R30.

R30 chose to purchase the property with full acknowledgement of its proximity to The Bucketts Way, an important arterial road, and with their pre-existing concerns of hypersensitivity to diesel.

Despite the assessment of the Project against accepted health criteria for diesel emissions a hypersensitivity to diesel emissions will mean R30 may be more acutely affected than the majority of the population, however, IDPL are entitled (as every landowner is) to undertake activities on private lands under their control that is consistent with established health and amenity criteria and have made substantial efforts to minimise the potential effects of the haulage road on R30. No additional duty of care for R30 is acknowledged by IDPL, nor would it be reasonable to impose this duty of care on any other business or haulage operator within the region that needs to use The Bucketts Way.

If approved, IDPL are committed to work with landowners (including R30) to minimise the impacts on health and enjoyment of their respective property as a result of the construction and operation of the quarry.

To limit impacts to R30, some submissions made suggestions of alternate haulage roads that included:

- *No quarry or haul road.*
- *Deep Creek Road as ironstone development already has access approval.*
- *On the existing gravel sealed road running through property lot 552/551, on southern end, that the owner already operates heavy truck and trailer used for carrying gravel. This would ensure exhaust dilution rate may be at a manageable rate.*

Without a suitable access or haulage road, the quarry logically is not viable.

Deep Creek Road was thoroughly considered prior to the adoption of the current alignment, including ecological surveys, cadastral survey, and noise assessments but was discounted for the following core reasons:

- The existing alignment of Deep Creek Road is rarely within the correct alignment, which, would require extensive additional clearing.
- The cadastral alignment is not well suited to heavy vehicles, necessitating property acquisition and realignment of sections of the road.
- Receptor R5 is located immediately adjacent (i.e., less than 20m) to the road with some existing infrastructure built within the cadastral alignment.
- Deep Creek Road is longer and places the road in closer proximity to residents on Forest Glen Road.

The alternate proposition of a haulage road running diagonally through Lots 551 and 552, DP 1238818 (now Lot 12, DP 1277150) on an existing trail is not feasible for the following reasons:

- This would position the haulage road 40m, 80m and 320m from three dwellings, versus two dwellings with the closest being 240m on the adopted alignment.
- The alignment is longer, with poorer horizontal alignments that reduces visibility.
- The alignment splits these two properties in half reducing functionality of the properties.
- At the intersection with The Bucketts Way, the road would necessitate widening of the existing Deep Creek Bridge at considerable additional cost to the Project.

- The owner of these lots has sold their truck.

Forest Glen Road is a legal access to the property but is not well suited to haulage by heavy vehicles given the steep grade on the existing access road, and the proximity of the residential properties along Forest Glen Road.

Limit the hours and days of operation to improve the quality of outside life for R30.

The demand for quarry materials will be variable throughout the day depending on the customer requirements, though it is anticipated that mornings and possibly afternoons will be the busiest periods. The adopted window for haulage operations ensures flexibility throughout the day, which is likely to result in windows where there is limited haulage being completed. For some projects, it will require the nominated operating hours to practically service the customer requirements. Limiting the days and time for haulage compresses the window available requiring higher haulage peaks when the quarry is open. No change in the hours or day is considered practical to service customers, nor is it considered to significantly change the outside quality of life for R30.

Provide electrically powered plant, offices, crusher, and water pumps to reduce diesel emissions.

A mix of solar and diesel fuelled generators will be used for pumps and the weighbridge / office but the option of electricity for the operation of the crushing and screening plant is cost prohibitive and not practicable for mobile gear and the crushing and screening plant will be located approximately 2.2 km away from the R30 residence, and as such is likely to result in a negligible change in the diesel emission levels at R30.

5.9.3 Claims Nose Bleeds are an impact of quarries

Claims Nose Bleeds are an impact of quarries excessive dust and diesel fumes.

Claims to have nose bleeds from Hunter Quarries Dust or claims to know of people with nose bleeds from Hunter Quarries Dust.

Each individual is likely to have different sensitivities and responses to dust and diesel emissions, noting that health-based criteria are developed to provide regulators reliable levels to regulate development that ensures the health of the majority of the population are not affected. Anecdotally, very experienced quarry personnel who have worked in quarrying for in excess of 30 years (at likely emission levels significantly higher than those at residential properties), have not suffered from or made aware of colleagues that suffer from nose bleeds, suggesting it is not a widespread industry problem. Those suffering from nose bleeds are recommended to seek medical attention for diagnosis and treatment.

5.10 STANDARDS AND INTEGRITY

5.10.1 Document Standards

Some submissions raised concerns about inconsistencies, standards and language (like insignificant, limited, reasonable, may) used within reports and that these reports express opinions, which are likely to vary between people.

The EIS and all the associated studies are prepared by qualified professionals, the majority are subject to a considerable review process, however it is inevitable that some inconsistencies will occur

within these documents. These inconsistencies do not have a significant bearing on the overall findings of these studies.

With respect to the use of language within the reports that express an opinion, these words are used to best describe in the opinion of the author (who is a qualified professional, engaged to assess an impact in their field of expertise) in describing the potential impact on the environment. These “opinions” are supported by clear factual data and the authors professional judgement.

5.10.2 Claims of Lies and Mistruths

Claims that the authors of the EIS and its associated appendices have deliberately misled community, including:

- *The EIS includes clear lies and mistruths.*
- *Concerns where an EIS is commissioned and paid for by the developer seems to produce lots of favourable outcomes when the facts included or left out suggest otherwise.*

The NSW system places the onus on landowners / proponents to commission and pay the costs of the EIS for a Project. Each EIS project team is comprised of a team consultants engaged to assess the impacts of the project and develop suitable measures to reduce environmental impacts of the development. These consultants must ensure the work is accurate and completed consistent with established guidelines, requirements and can withstand scrutiny by everyone, including the regulatory authorities. Without investment in developing quarry projects by private individuals, in most cases on private land, there would be a significant shortage of construction materials.

5.10.3 False claims made within submissions

Some submissions made claims that can only be characterised as false, and have likely contributed to concerns of other residents. Key claims made in some submissions include:

- *Claims that clearing and construction of the quarry access road has commenced on some of the subject land.*
- *We note that the proponents may already be polluting Deep Creek as we have been shown photographs of runoff from a recently built access road into the creek.*

IDPL has maintained their own property as a farm. The adjoining property where the proposed haul road will go has had some clearing done by the property owner in the establishment of an access road to their Lot 551, this was completed before IDPL approached them to consider the quarry access road. This existing partially constructed access road, while in a similar location to the quarry access road is not consistent with the form or extent proposed within this application. The statement that IDPL has already been polluting Deep Creek through recent access road construction is incorrect.

- *Claims that Ironstone Developments is underhandedly proceeding with extraction plans of Magnetite from Ironstone Mountain.*

As noted above, IDPL is not seeking to extract magnetite, nor has magnetite been identified in the geological exploration of the proposed quarry extraction area. In addition, if successful, IDPL have proposed the potential establishment of a Stewardship Site on land containing Ironstone Mountain.

- *Claim that Ironstone representative Tim Mullaney told a resident " its already been approved and nothing you or community can do to stop it'.*
- *Claims Tim Mullaney was scaring them into selling their properties (which he has been successful in doing).*

This is a false claim that unfairly accuses an IDPL employee of misleading statements or suggests a significant misunderstanding during discussions. The Project Team fully understands and has communicated that the development is subject to the detailed investigation of all the elements required for the DA submission, that is then subject to review by all interested parties and a determination by the DPE and Independent Planning Commission (IPC).

Everyone working on the Deep Creek Quarry project has been understanding and respectful throughout any communication with local residents.

- *Claimed that Ironstone Developments did not supply any aerial photographs of the site in the DA submission.*

This statement is clearly false with numerous plans containing aerial photographs used throughout the EIS.

- *Blast and vibration felt by some Forest Glen residents mid 2021 could have this been a test blast?*
- *They have written that they will blast each day.... what 365 days of the year.*

In the EIS document it clearly states "it is possible that smaller blasts may be required depending on the conditions and target resource of the blast and therefore it is anticipated that up to 25 blasts per year could be performed".

Ironstone Developments have not conducted any blasting on their own or any adjacent properties and would not until an approval was granted for a quarry and the appropriate approved management plans are in place.

- *The proposed quarry is in the creek bed.*

The EIS clearly documents that the quarry development does not enter the creek bed other than for the construction of the creek or gully crossings for access roads and has maintained infrastructure more than 20m from the bank of Deep Creek.

5.11 JUSTIFICATION, SUSTAINABILITY AND LAND USE

5.11.1 Need

While some submissions noted in the positive, that the quarry will provide a reliable quarry material source, other submissions preferred that existing quarries could supply materials without impact, such as described below:

- *“Other existing quarries can be further developed to supply the need for quarry materials without the impacts.”*
- *“Other quarries are in the region that provide materials at a competitive rate.”*
- *“Why should we all suffer, because the Woodbury family does not want to buy gravel from any other operating quarry surrounding this area of The Bucketts Way, (Hunter Quarries, that we look at from our house), Hansons, Boral, Allworth, Limeburners Creek Road Quarry, or haul their gravel from Blackhill from their owned and operated quarry/mine etc?”*

The construction sector is currently facing limited availability and long wait lists for access to the full range of quarry materials causing delays in construction and increased costs, which suggests the current quarry supplies are not adequate to meet demand. Existing quarries that can be further developed are likely to result in varying increases in impacts in that location, it will not be without impact.

The Hunter Regional Plan 2041 (NSW DPE 2022) was released in December 2022 and outlined the need for an estimated 101,800 new houses within the Hunter Regional area over the next 20 years, along with the associated road network infrastructure. This will place a significant demand on quarry materials and demonstrates the importance of ensuring adequate supply of construction materials. The Hunter Regional Plan 2041 also highlights the need to improve resilience to heatwaves through the design of urban environments that reduce how much heat is absorbed by buildings and roads. As demonstrated in Section 3.1, the DCQ quarry materials are well suited to assist in building this resilience.

Other quarries in the region either, do not have the material properties that the proposed Deep Creek Quarry deposit will provide, or have a limited supply of material with these specifications.

Mark Woodbury (Ironstone Developments) owns this property and recognises the resource and the need for this unique material in the marketplace. All quarries depending on their materials and location have a defined competitive radius for supply to civil projects and certain material specifications cannot be met by all quarries.

5.11.2 Location Suitability and Land Use

Concerns were raised about the suitability of the location, including:

- *The proposed quarry is out of keeping with other local land uses.*
- *Takes a grazing area to an industrial area for 6 days per week.*
- *The quarry cannot operate near the Deep Creek as is proposed because it is in an “environmental conservation zone” [by its connection to Karuah National Park, and Port Stephens Great Lakes Marine Park downstream].*

The quarry is consistent with the permitted land uses within the prevailing Local Environmental Plan, that is developed as the overarching method to manage land use. The proposed quarry will result in a negligible change in the local area for grazing activities, and is not visible from The Bucketts Way, aside from a new access road (that is not indifferent to existing roads), as such it will not result in the transformation of the local area to an industrial area. As noted above, within a 5km radius of the site the quarry will occupy approximately 0.4% of the land area yet will result in active conservation being established for over 4% of the same area (i.e., 10x the impact area).

Compared with typical local land uses, the use of the land for quarrying and conservation is likely to have comparable or lower impacts on some aspects of the environment. By way of example, the subject land is approved for subdivision, of the eight lots originally approved, one has been sold, leaving the seven potential lots across the remainder of the property. This would be similar to those on Fords Road to the west, The Bucketts Way to the east or lots about four times larger than those on Forest Glen Road to the south. As a comparison, if this were to occur the following impacts could reasonably be expected:

- Approximately 21-35 hectares would be cleared associated with establishing house sites (i.e., 7 lots with 3 to 5 hectares cleared per lot for house yard, grazing and asset protection zones), compared to less than 32 hectares for the quarry.
- Rural Fire Service clearing codes or routine agricultural activities permit 6 - 25m clearing on boundaries could result in a further 8 to 35 hectares in clearing along boundaries, in addition to that for internal fences.
- Potential additional clearing for reticulation of overhead power.
- Likely long-term occupation of these areas (i.e., in excess of the 30 years for the quarry).
- Seven onsite effluent disposal systems within the Deep Creek Catchment draining to the Marine Park and oyster aquaculture areas (compared to the pump out system used by the quarry).
- Many households would be likely to keep cats and dogs as pets, these could impact over 30 hectares of native habitat and fauna:
 - o House cats have mean home range of 2.9 ha, ranging from 0.4 ha to 5.1 ha (Meek, 2003), predation on animals such as New Holland Mouse would be reasonable to expect.
 - o Many native animals are attacked by domestic dogs each year, including Koalas, home ranges are likely to vary.
- Active stewardship conservation would be unlikely to be feasible in subdivided allotments, compared within in excess of 235 hectares associated with the quarry).

While the quarry will generate more daytime noise, dust and traffic and result in a greater change to the landform, alternate permissible land uses are not without impact and in some aspects are likely to result in a greater impact than the quarry.

As discussed within Section 5.20, the quarry is not located within Deep Creek and includes a raft of mitigation measures aimed at avoiding and minimising impacts to Deep Creek and the downstream environments, including a requirement to develop the Water Management Plan with regard to avoiding impacts to the oyster industry. The lower reaches of Deep Creek are within a Habitat Zone of the Port Stephens – Great Lakes Marine Park Zoning Map, this zoning does not extend to the quarry site. Land within the quarry footprint, or Deep Creek adjacent to the site does not include any lands defined as an “environmental conservation zone”, which under the Great Lakes Environmental

Plan 2014 includes a zoning of C1, C2, C3 or C4. The nearest environmental conservation zone is the Karuah National Park.

5.11.3 Sustainability

Objection to the project being located in this location as it will impact residents and deliver no benefits to community, goes against responsibilities for ensuring a sustainable future.

The local community will have the benefit of quarry materials available locally and any flow on affects with local businesses offering goods and services, along with increased local employment opportunities.

The proponent is required to develop and operate the quarry without impacting neighbouring properties above health and amenity criteria, and in the unlikely event impacts do occur, the Proponent will be required to mitigate the impacts, compensate or provide voluntary acquisition rights to the affected party.

The development of quarries for the extraction of typical aggregate products is essential for the delivery of and maintenance of private and public infrastructure, and while no quarry meets the simple definition of sustainability, i.e., a resource that renews at the same rate of its extraction, the proposed Deep Creek Quarry will provide a resource, and supports many of the United Nations (UNs) 17 Sustainability Goals, those relevant to quarrying include:

- “11. Sustainable Cities and Communities” The quarry materials help build more sustainable cities through the supply of a lighter coloured aggregate that will help minimise energy consumption in cities.
- “12 Ensure sustainable consumption and production patterns” The quarry includes design elements aimed at reducing resource consumption and has adopted a modest annual tonnage and limited operations to daylight hours. The quarry will produce an aggregate of high demand, unique within the local market.
- “13 Take urgent action to combat climate change and its impacts” The supplied aggregate supports measures to reduce greenhouse emissions.
- “15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss”. The quarry has been designed to avoid, mitigate and offset biodiversity impacts, and includes post-quarrying rehabilitation, that is consistent with this goal.

Objections to the exploitation of the resource for economic gain at all costs against a more sustainable approach.

This project involves significant investment that will provide economic gain; however, appropriate controls will be in place to manage potential environmental and social impacts of the operation. As noted above, sustainability has been considered in the design of the Project and the cost benefit analysis, that took into account the costs of the project, determined the quarry will result in a net present value of \$22.7 million.

"Maybe it's time for the Department of Planning, Industry and Environment to consider the welfare of the local residents and their quality of life, instead of profit and minimal job opportunities and save our rural properties"

The DPE is required within its assessment consider *"the likely impacts of that development, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality"*. Within their assessment, the DPE must take into account the need and availability of resources, such that where possible sufficient supplies and a pipeline of future resource supplies is available for the construction of public and private infrastructure. With this project having a nominal pipeline from inception to supply in excess of 10 years, the impacts from the failure to realise resource projects must also be considered.

Believes this project does not fit in with the Federal Parliament Zero emissions target of zero emissions by 2050."

Achieving zero emission cannot be attained by the avoidance of the quarry resource extraction, almost all projects aimed at helping achieve zero emission targets require infrastructure of which quarry materials are an integral part (i.e., concrete, roads and rail).

As documented within **Section 3.1**, the light colour of the proposed Deep Creek Quarry deposit material will assist with the reduction of emissions with the application of light-coloured roads, and carparks to assist with the reduction of street lighting (electricity use) and air conditioning requirements of adjacent buildings in summertime through reduced heat build-up (i.e. heat islands effect).

5.12 NOISE

5.12.1 Noise Impacts and Assessment

Concerns were raised over the adequacy of the noise assessment, including concerns over:

- *The extent of noise assessment.*
- *The noise from crushers, machinery and trucks will be heard constantly all day.*
- *Machinery reverse alarms.*
- *Noise will have a detrimental effect on the amenity of the lives of properties surrounding the quarry.*
- *Baseline noise assessment is not appropriate and adoption of the EPA baseline is not reflective of the existing noise levels in the area.*

The noise assessment was completed by Spectrum Acoustics using established methodology to determine the impacts on surrounding properties. The assessment took into account the full extent of machinery operating in the quarry and trucks hauling materials under a range of different weather conditions. These weather conditions assess the potential impacts where wind is blowing directly from the source to receiver (i.e., in many cases worst case). The assessment concluded that there is no permanent residence that will be impacted above criteria during any of the assessed weather conditions.

Controls have been adopted that require the use of broadband reverse alarms (e.g., Quacker) on all site machinery, and where possible within contracted machinery.

A Noise Management Plan (NMP) will be developed for the quarry prior to the commencement of construction, and at a minimum the NMP would include a noise monitoring program and management controls to minimise noise impacts. Response protocols in the event of a monitored exceedance or noise complaint and implementation of reasonable feasible mitigation measures where criteria are exceeded.

The EPA assigns minimum background levels for day, evening and night in areas where background noise levels are low. This is to ensure that requirements derived from noise assessment are not unreasonably below thresholds for health or amenity impact, based on World Health Organization recommendations and the latest dose-response literature.

Ambient noise level monitoring conducted for the project established that the default minimum rating background level of 35 dB(A) L_{A90} was appropriate for the project, despite some receivers being closer to The Bucketts Way and likely experiencing a higher background noise level. This is described in Section 3.3 of the Noise Impact Assessment (Appendix Q).

According to Appendix Q page 19-25 the majority of receptors will be subject to continuous daytime noise. This will drastically change the current amenity value noise (EIS page 99).

Page 19-25 of Appendix Q details the results of the noise modelling and the predicted noise levels due to the Project expected at each assessed receiver. It is important to note, every receiver will experience background noise already, for example, a person breathing is about 30 dB(A); the hum of a refrigerator is about 40 dB(A), a loud conversation is about 70 dB(A); and a lawn mower 85 dB(A). Importantly noise is not linear, but logarithmic, that is the levels shown on Pages 19-25 of Appendix Q are not simply added to any existing background noise, as such, if the project is predicted to make for example, 38 dB(A), this would not be heard over the hum of the refrigerator making 40 dB(A), further it is also unlikely that changes in existing noise levels of less than 2dB are even perceptible.

Noise concerns from shift workers that will struggle to sleep during peak noise activities.

The Noise Impact Assessment in Appendix Q of the EIS undertook an assessment of the potential for the quarry to reach the sleep disturbance screening levels and determined the predicted maximum noise levels from the quarry were substantially below the threshold of 52 dB(A).

Will equipment have noise suppression to minimise impacts on wildlife and residents.

Machinery will comply with Australian Standards and work within the approved noise criteria for the quarry operation.

5.12.2 Traffic Noise

The increase in heavy vehicles will increase traffic noise from The Bucketts Way that will be exacerbated by potholes and the poor road condition.

The Traffic Impact Assessment and Noise Impact Assessment have found the noise generated by the vehicles associated with the quarry will be within acceptable levels.

Section 94 contributions from the quarry will be paid to Council for the maintenance and upkeep of The Bucketts Way, an estimated \$11.1 million dollars will be paid over the life of the quarry in road maintenance contributions minimising risks of potential increased noise from poor road conditions.

5.12.3 Acceptable Noise

Concern that the proposed noise levels from the quarry are not acceptable with all the other noise in the area that has a broader benefits as the quarry will not benefit anyone except the owners, this is described in comments like:

“Every weekend we are subjected to the sound of hundreds of motorbikes as they make their way to Gloucester and Taree via the Bucketts Way then on Sunday afternoon the same as they make their return trip.

We are under the flight path of planes travelling from Williamtown Airport to Brisbane and also are regularly overflown by RAAF jets practicing for warfare.

These activities are acceptable as we must have transport and our country needs to be kept safe, however noise from a money making enterprise that benefits no-one except the owners is not acceptable in a rural environment.

If this proposal is allowed to go ahead we will have no peace at all with noise from motorbikes, planes, jets and then added to that blasting, heavy vehicles, bulldozers and the crushing machine.”

Existing noise levels within the area have been considered consistent with the Noise Policy for Industry guideline. The popularity of The Bucketts Way as a tourist drive, and its importance in connecting the towns of Stroud, Gloucester and surrounding towns with Newcastle is well understood and along with aircraft noise are incorporated into the noise assessment through consideration of the ambient (background) noise levels.

The proposed quarry will provide an important source of quarry materials used in the construction of private and public infrastructure, that will ultimately benefit a broad cross section of people in the region. In addition, the materials from the quarry are somewhat unique in nature providing with high grip properties to make safer roads, roundabouts, bus stops, intersections, bends and the lighter colour material has environmental benefits by reducing the heat island effect as well as reducing the street lighting requirements saving energy costs and reducing greenhouse gas emissions.

Noise impacts have been assessed as discussed above, and are considered acceptable (i.e., below noise criteria) at all private dwellings under a range of weather conditions. The quarry operates during daylight hours Monday to Saturday, with blasting only expected up to 25 times per year, and activities audible at surrounding properties can be conducted on Sundays or Public Holidays.

5.13 PROCEDURAL OR SYSTEMIC MATTERS

5.13.1 Request later submission opportunity

Request for ability to make additional submissions after the cutoff date of 17/12/2021

The DPE extended the period that submissions could be made. While the DPE closed the submission date, the DPE advised the community during the community meeting that additional information and requests could be submitted through to 31 January 2022. On 17 February 2022,

DPE requested that the proponent address supplementary information related to several submissions and additional representations from the community within the Response to Submissions (RTS) Report.

5.13.2 Systemic Matters

Some submissions raised the need for broader strategic regional planning to be completed, such as:

- To avoid the submission toll on the community, the implementation of strategic regional planning and the cumulative impact of developments, so that people may buy property in a 'greenfield' area and be able to expect it to remain that way so they may enjoy their asset.*
- Strategic planning for cumulative impacts of quarries and other mines or developments must be completed prior to further development proposals being approved.*

The development of a broader strategic regional plan and assessment of its cumulative impact is outside the scope of this Response to Submissions.

However, it should be noted that development in NSW is managed through the development of Local Environmental Plans that seek to provide direction on what development is permitted with consent within a zone. All individuals that choose to purchase property within the RU2 zone, do so with the standard (i.e., not unusual) inclusion that extractive industries are permitted with consent in this zone.

5.14 PROJECT DESIGN

5.14.1 Construction traffic

Does not want the transport of large equipment via Forest Glen Road.

Forest Glen road is a legal access to the quarry property, and it is possible that some heavy machinery will be floated in to assist site establishment works if the dedicated new quarry access road is not operational. The number of vehicles that use Forest Glen Road will be infrequent and kept to a minimum, such that any traffic noise will not exceed accepted noise criteria for local roads.

5.14.2 Mechanical Workshop

Objection made to a mechanical workshop and access via Forest Glen Road.

The writer has been confused by another DA for a workshop by a neighbouring property owner.

5.14.3 Haul Road Location

Alternate haulage road location proposed that would reduce impacts on the Receptor 30, includes either using Deep Creek Road, or an existing property track that is further south of the proposed road that would not run along the boundary with R30. The access road entering The Bucketts Way would be to the south.

Refer to Section 5.9.2, for consideration of alternate haulage routes.

5.14.4 Extraction and operations limits

Concern over the extraction, haulage and operational limits and consideration of alternatives, including:

- *The proposed extraction limit and haulage numbers are too high and extending into the weekend should not be permitted.*
- *The hours of this business are excessive in a rural/agricultural area. The hours for truck loading and hence heavy vehicle freight movements of 6AM to 6PM is unacceptable. This is a quiet lifestyle living area.*
- *The location of the stockpile area and project in relation to Deep Creek needs further consideration and riparian buffers maintained.*
- *Insufficient consideration of alternatives given.*

The proposed annual extraction limit of 500,000 tonnes is commercially considered a reasonable target for a quarry of this nature in order to justify the costs of development, construction, operations and associated environmental management. Within the context of other hard rock quarries within the region, the extraction rate is lower and operational hours are shorter, for example:

- The Karuah East Quarry is approved to extract up to 1.5 million tonnes per annum (Mtpa), with haulage from 5am to 9pm Monday to Friday and 6am to 6pm on Saturday.
- Brandy Hill Quarry is approved to extract up to 1.5 Mtpa, with hourly haulage limits of up to 60 trucks (30 laden) from 7am to 6pm.

The haulage rates (a maximum of 25 laden) and the Saturday shift proposed are considered necessary to meet the variable demands of the construction industry during busy periods. It is likely that when demand is low, there will be limited production or haulage on a Saturday.

The proposed stockpile area and the associated sediment dam has made consideration of the Deep Creek riparian buffer consistent with the *Guidelines for riparian corridors on waterfront land (2012)*. This includes ensuring no infrastructure other than roads occur within 20m of the bank of Deep Creek, and that any infrastructure incursion (aside from roads) within 40m is suitably offset through widening of the riparian buffer on the IDPL land holding. Refer to Section 3 for further details.

The development of the quarry has given significant consideration of the viability of alternate designs on the site to further minimise the impacts of the quarry on the threatened biodiversity and the environment. These are outlined in the response provided to Mid Coast Council in Section 4 above.

5.14.5 Future Quarry Expansion

Concerns over future expansion of the quarry, including:

- *Concern that the quarry will expand into a much larger quarry or mine.*
- *Concern that Magnetite will be mined from Ironstone Mountain.*

Any future expansion of the quarry will be subject to a development application made at that time; this would require an Environmental Impact Statement.

Magnetite is not mentioned within this application as no magnetite has been identified in the geological exploration of the proposed quarry extraction area and the target material is hard rock for civil, engineering, and decorative applications. If the quarry is approved, a Biodiversity Stewardship Site is proposed for the land containing Ironstone Mountain. Biodiversity Stewardship Sites are intended to provide in perpetuity conservation that would ensure a magnetite mine on this land (even if commercially viable) would not be feasible due to the conservation area. Refer to **Figure 3-6** that shows Ironstone Mountain in the context of a potential Stewardship Site.

5.14.6 No suitable haul road access

No suitable access road entering or exiting The Bucketts Way to the site.

The adopted Project Design accounted for the limited suitability of Deep Creek Road and Forest Glen Road, making it necessary to incorporate a new access road into the design.

Access to the quarry will be via a dedicated quarry access road. This road will be constructed within a portion of land that will be subdivided from Lot 551 DP 1238818 and Lot 12 DP 1277150. In addition to this, a T-intersection is proposed in the Traffic Impact Assessment at the junction of the quarry access road and The Bucketts Way.

The proposal is to construct a channelised right turn (CHR) / auxiliary left (AUL) turn quarry access intersection of The Bucketts Way approximately 850 metres north-east of Deep Creek Road as shown in the Northrop concept plans shown in Attachment C. This standard of rural intersection is warranted due to the high percentage of heavy vehicle traffic using the intersection. With traffic volumes on The Bucketts Way less than 500 vtpd and traffic volumes using the quarry access road less than 62 vtpd this intersection would operate with uninterrupted flow conditions and no further intersection analysis is required.

5.14.7 Objects to use of the Deep Creek Quarry name

Some submissions raised concerns about the proposed quarry name, such as:

- *“I object to the proposed rock mine being called Deep Creek Quarry as they don’t own the name, only own land on one tributary of the creek and use of that name implies ownership”.*

This is a descriptive name and refers to the general location, ownership is not implied, even though Deep Creek is within the proponents land holding, and legal access is derived from Deep Creek Road. If approved, the name will assist anyone trying to find the quarry and is in line with other quarries across Australia such as Brandy Hill Quarry, Seaham Quarry or Karuah Quarry. While the quarry is located in the suburb of Limeburners Creek, consideration of the name “Limeburners Creek Quarry” was discounted as it would suggest proximity to the township of Limeburners Creek, despite being approximately equal distance from Allworth. Deep Creek Quarry is considered an appropriate name.

5.14.8 Exploration Licence

When was an exploration licence approved for this proposed quarry and by whom?

The proposed aggregate quarry is not required to attain an exploration licence.

5.15 REHABILITATION

Several submission made comment on rehabilitation, including:

- *Request that a bond must be for the life of the extractive industry operation plus a short time after for community and expert feedback to DPIE. The ongoing bond is higher than just the rehab after 3 years. It should be substantial as the quarry owner can walk away at the end of the current period of 30 years.*
- *Scepticism that quarries and mine sites do not achieve acceptable rehabilitation.*
- *Given the environmental significance of the site, that rehabilitation works should be more accurately planned to appropriately minimise disturbance and impacts on the surrounding area, prior to any approval being given.*

There are several measures to make sure the quarry has adequate financial backing to develop the project effectively and is generally included in the conditions of an approval. The quarry must operate to the conditions of approval, if it cannot meet the conditions of approval, regulatory authorities can close the quarry down.

Prior to commencing the project, a rehabilitation bond will be submitted to the State government. The bond is calculated by an approved quantity surveyor and normally covers the costs needed to rehabilitate the first three years of the quarry disturbance. This is then reviewed and updated as the quarry continues. If rehabilitation was not performed as agreed under the conditions of approval, the bond would allow rehabilitation to be performed and costs to be covered.

Rehabilitation measures and criteria for the quarry was examined in Appendix T of the EIS, with commitments shown in **Appendix B, Management Table 11**. Prior to commencing operations, a Rehabilitation Management Plan will be developed for the quarry, this plan will then be adapted as the quarry progresses enabling IDPL to respond to potential unexpected conditions a

5.16 SOCIAL & LIFESTYLE IMPACTS

5.16.1 Lifestyle impact

Some submissions raised concerns about the impact of the quarry on lifestyle, community and environment, typified by these issues:

- *People moved to this area to get away from development and live in the country. The life of the owners whose properties that adjoin the development will be "destroyed". "The unspoilt nature, quietness and pristine qualities of the air and water will be negatively and irreversible impacted if this quarry proposal is approved. Neighbouring property is used for peace and quiet for respite, this will be lost if quarry proceeds.*
- *Will cause solastalgia "fear and distress from change to ones home - homesickness while still at home" for the local community. Irreversible change to the community, environment and feeling of this secluded area typified by the natural environment.*

The NSW approvals system provides a rigorous process to ensure that development is planned and executed without "destroying" the life of neighbouring owners or the environment. The voluntary land

acquisition policy provides mechanisms to ensure that projects that impact neighbouring properties above accepted health and amenity criteria are adequately compensated.

Specialist studies show that there will be very little change to the visible and audible landscape at the surrounding residents and at publicly accessible locations for the community. The quarry will not displace any long-term community members due to quarry noise or air quality exceeding health or amenity criteria.

Further, the proposed quarry will not be visible from surrounding properties, and if viewed from an aerial image for example, the quarry will result in a change to less than 0.4% of the landscape within 5km of the quarry, and in that same radius, the proponent will establish a conservation area over approximately 4% of that same radius.

The Bucketts Way is a major arterial road used to connect surrounding rural towns, where approximately 8-13% of the existing traffic is heavy vehicles, this equates to over 150 trucks travelling each day. The quarry will on average, at peak annual production, add 55 laden trucks per day to that total, which is unlikely to change the character of the road. The maximum haulage rate of 25 laden trucks per hour will be sporadic and unlikely to occur for long periods. While 25 laden trucks per hour travelling south is a substantial increase in any one hour compared to existing levels (approx. 10-25), it is also unlikely to result in an appreciable change in character over the course of the day.

Noise, vibration, air quality, water and traffic assessments have concluded the proposed quarry can be undertaken safely and within the accepted health and amenity criteria at surrounding properties. Biodiversity on surrounding properties will not be adversely impacted, and water quantity and quality will be maintained. The quarry is not visible from surrounding properties, and the most intensive noise generation will occur during extraction activities that are limited to 7am to 5pm Monday to Friday and 8am to 1.00pm on Saturday with no operations on Sundays or public holidays.

While the quarry will have a footprint, the extent of this footprint is minimal, within 5 km the quarry pit accounts for 0.22% of that area and less than 0.4% accounting for the total footprint. It would be difficult to assume that a disturbance area of less than 0.4% in this small catchment would cause a significant detracting to the local area. In addition, if approved, IDPL are committed to establishing a biodiversity Stewardship Site that would occupy almost 4% of that same catchment.

IDPL will establish a Complaints process and commit to operating the quarry within the bounds of its Conditions of Approval and with consideration of neighbouring landowners and their enjoyment of their land.

The neighbouring property (assumed to be R3), has voluntarily entered into an agreement to remedy "loss of peace and quiet for respite", associated with the proposed quarry.

At the completion or closure of quarrying, the disturbed area will be rehabilitated. While the landform change in the area of the quarry pit is irreversible, the majority of other related quarry impacts should they occur (e.g., noise, air and water) are reversible.

Therefore, while change is inevitable as populations expand, and subdivisions divide the once large rural land holdings for more dwellings, some industries decline (e.g. local dairies or chicken farms), new industries are created (e.g. local distillery or this quarry), the extent of change (i.e. in air quality, noise, visual, residential dwellings, and traffic) as a result of the proposed quarry is likely to be relatively minor and it is difficult to reconcile that lives will be "destroyed" by the proposed DCQ Project.

5.16.2 Social impact

Social impact concerns were raised including:

- *The approval of this development will drastically impact on the stable family units that deliberately moved to the area to enjoy the serene, quiet landscape, with no benefit to the local community.*
- *Social Impact Management Plan should be prepared for consideration by the community prior to approval of this proposal.*

It was concluded in the Social Impact Assessment (SIA) that the likelihood of impacts on the community character due to the introduction of a quarry is unlikely. Community character refers to aspects of place, people and areas that are unique to a town with distinguishing characteristics differing from surrounding locations. The introduction of a new industry, infrastructure growth and traffic can potentially impact such characteristics. These can lead to the loss of community character, which can lead to residents feeling alienated from their local surroundings. However, the SIA concluded the magnitude of impacts would be minor and the unmitigated risk of impacts on character of the community has been assessed as Low.

The local community will benefit from increased job opportunities, both directly and indirectly with the presence of the quarry. The quarry will contribute over \$11.1 million to the maintenance of roads in the LGA during the Project Life and provide a source of high-quality aggregates making safer local roads that will benefit the local community.

The Economic Impact Assessment concluded that the project is not expected to generate any adverse economic issues, risks or impacts of significance, while resulting in a net positive economic benefit.

Due to the availability of appropriate labour and skillsets, all labour required for the operation of the proposed quarry is anticipated to be sourced from within the Catchment. A total of \$73.7 million in wages and salaries is estimated to be paid to workers in NSW either directly engaged by the Project or engaged through flow-on activity between 2021-22 and 2051-52. Of this, \$62.7 million will be paid to local workers.

Additionally, the construction phase is estimated to support business revenues for local businesses within the Catchment of approximately \$5.8 million through direct construction activity. Flow-on supply chain impacts during construction are estimated to support an additional \$3.3 million in business revenue in the Catchment. An additional \$0.9 million in business revenues are estimated to be supported in the rest of NSW through direct and flow-on activity.

During operations, the Project is estimated to support approximately \$15.7 million in business revenues per annum on average in the Catchment through direct and flow-on activity, with a further \$1.3 million in revenues supported for businesses in the rest of NSW.

Given the project does not result in the exceedance of criteria such that local residences will be displaced, and the quarry is not visible from neighbouring properties (access road excluded), there is no demonstrated benefit in developing a Social Impact Management Plan for this quarry. IDPL has committed (as per Management Table 2) to developing Community Engagement Plan for the quarry and is committed to minimising the impacts of the quarry construction and operations.

May cause solastalgia "fear and distress from change of a place to indigenous people.

A comprehensive assessment of the potential impacts on Aboriginal heritage and artifacts has been undertaken. Section 5 of the Aboriginal Cultural Heritage Assessment Report has not identified any specific cultural values associated with the study area, nor any were any significant cultural materials located during archaeological assessment.

As part of the site survey, four artefacts (of low scientific significance) were retrieved from the ten 1m² test pits. The larger size of the artefacts and the absence of debitage and small flakes suggests that the area was not a site of primary reduction or retouch / re-purposing of large flakes, tools or blanks. The scientific significance of the study area is low, due to low density, not complex sites resulting from peripheral occupation.

5.16.3 Loss of opportunity

Will take away the ability for people to create animal refuges and B&B retreats.

Refer to Section 5.6.6 above, based on the assessments completed, the quarry is unlikely to result in any appreciable change on the existing businesses in the area, it is therefore unlikely the development would limit the opportunity for others. The quarry will employ a broad range of measures to limit construction and operational impacts on fauna and will result in a substantial active conservation area being established, the effect on people being able to create an animal refuge is negligible.

5.17 TRAFFIC AND TRANSPORT

5.17.1 The Bucketts Way Suitability and Safety

Concerns were made regarding the suitability and safety of The Bucketts Way, including:

- *The Bucketts Way is not suitable for heavy vehicles and is also not suitably maintained by Port Stephens or Mid Coast Councils to cater for the current traffic let alone the proposed increase in heavy vehicle traffic.*
- *Will present a significant safety risk.*
- *The road presents a safety risk to all vehicles and school buses, particularly for School Buses.*
- *There are very few places to pull over on The Bucketts Way, the added trucks will make this more unsafe than it already is.*
- *Within Appendix K, Section 4, there are false statement regarding lane width, lane width is typically not approximately 3.2m with 0.5-1.0m shoulder - lane widths are as small as 3.05 on Limeburners Creek Bridge to 3.1 (near Fords Road) and typically have no sealed shoulder.*
- *There are numerous property driveways and roads joining onto The Bucketts Way, some with poor visibility.*
- *The road is built on a swamp so road improvements will not last and will worsen with added traffic.*

The Traffic Impact Assessment (TIA) in Appendix K concluded that the proposed development will not have an adverse impact on the local and state road network in the vicinity of the site and that the network is suitably safe for use by quarry traffic, meeting all the minimum requirements of MidCoast Council and Transport for NSW (TfNSW).

MCC reported in February 2022 that Member for Upper Hunter Dave Layzell sees The Bucketts Way as a vital connection for residents, motorists and freight. *“The Bucketts Way is the main road through the Gloucester region carrying a significant volume of traffic and is a key transport link between the Gloucester region, the Northern Tablelands, Newcastle and the Hunter Valley and the rest of NSW”*

The Bucketts Way has successfully serviced the local and wider communities for decades, servicing industries such as cattle, dairy and poultry farming, service stations, shops and tourism with the associated heavy haulage of cattle, milk, poultry, stock feed, fuel and goods/grocery deliveries as well as public transport, school buses, residents, cars, cars with trailers i.e., horse floats and caravans, motorbikes. Even with the additional trucks proposed by the project, the road network will not reach its technical capacity.

Statements regarding incorrect statements of lane width in the TIA, would appear to be out of context, Section 3.2 states “Near the site it is a two lane two-way sealed road with approximately 3.2 metre travel lanes and varying sealed shoulders from 0.5 to 1 metre wide. The report does not comment on lane widths of the road in other areas, aside from near its intersection with the Pacific Highway.

Any private driveways with existing poor visibility should seek to resolve these issues, regardless of the quarry being approved.

The quarry will provide approximately \$11.1 million dollars over the quarry life in Section 94 contributions for maintenance of The Bucketts Way between the quarry entrance and the Pacific Highway. These contributions will be paid annually to the Mid Coast and Port Stephens Councils.

With the age of The Bucketts Way, the geotechnical design requirements have likely changed since it was first constructed, as upgrades of the road continue, the road pavement design should improve resulting in longer lasting improvements, irrespective of the site conditions.

Significant improvements to The Bucketts Way are currently being undertaken under The Bucketts Way Route Access Strategy – Stage 1. This is a joint project funded by the Federal Government’s Heavy Vehicle Safety and Productivity Program, the NSW Government’s Restart NSW Fund and the Mid Coast Council’s Regional Roads Rehabilitation Capital Works Program (Mid Coast Council 2022). Based on correspondence with MCC, Council news= and as published on the Mid Coast Council Capital Works Program, key upgrades relevant to the Quarry include:

- Construction of a northbound overtaking lane on The Bucketts Way about a kilometre south of Allworth Road and road pavement upgrades, majority of these works appear to be completed, Works Program notes completion in September 2023.
- Improvements, including road widening and drainage works near Stony Creek between Baldy Knob Road and Forest Glen Road, scheduled for completion in December 2022, completion appears to have been delayed due to weather.
- Limeburners Creek Bridge, investigations have been completed, works have started with the preparation of a side track and relocation of services. A full replacement of the bridge is scheduled to commence in March 2023.
- Other works have also occurred north of the quarry and are likely to improve overall driver safety on The Bucketts Way.

For transparency and improvement of The Bucketts Way, IDPL propose to:

- Annually report and make available to the Public via its website the road maintenance contributions paid by the quarry that are specific to this section of The Bucketts Way.
- IDPL will also include as part of the Driver Code of Conduct and induction for all contractors to actively report to IDPL where maintenance of The Bucketts Way is needed, IDPL will then forward these observations to the respective Council for action.

5.17.2 Limeburners Creek Bridge

Concerns with respect to Limeburners Creek Bridge, including comments such as:

- *The Road Safety Audits description of Limeburners Creek bridge states that the bridge is 6.1m wide, which is insufficient for two trucks to pass as the mirrors overhang and would be 6.2m wide when combined, concerns about risks of trucks and school bus colliding on the bridge. Near miss data about the safety of the bridge such as damaged rims is not readily available to assess potential risks.*

The current bridge has been in operation for a long period with no reportable incidents, notwithstanding the anecdotal suggestions of damaged rims. The Road Safety Audit does note the bridge deck is narrow and has signage indicating the reduced width. At the height of the mirrors of cars and trucks the bridge is wider. While it is unclear when the current bridge was constructed, The Bucketts Way has been a significant arterial road for more than 100 years connecting Gloucester and the New England areas to the Coast with recent repairs reported around 2010 after flood damage in 2007 (ABC 2010). During this period of use, while the bridge is narrow (hence the signage to that effect), the bridge has functioned without significant incident, which as supported by the Road Safety Audit, meets the required standards for this road. As noted above, a full replacement is scheduled to occur in 2023 by Mid Coast Council. If the quarry is approved, accounting for the period of construction and ramping up of operations, it is unlikely that quarry haulage activities would reach its peak until the bridge replacement has been completed.

5.17.3 School Buses and Public Transport

Concern over the impact of the quarry on school buses and public transport, including:

- *Potential school bus impacts have not been adequately considered, there are 4 (eight daily runs) and Transport Link service that go south around 8am and return at 6pm.*
- *The road presents a safety risk to all vehicles and school buses, particularly for School Buses.*
- *In this report it is stated that there is no public transport along the Bucketts Way. Again this is false. All you need to do is view the bus routes. School buses travel this road daily to and from Medowie and Raymond Terrace and also from Limeburners Creek to Booral*

The Bucketts Way is a main arterial road that has adequate capacity to cater for the safe operation of all vehicles, including School Buses and quarry traffic.

Some confusion may have been created within Appendix K of the EIS with the Traffic Impact Assessment stating "There is no public transport (bus) service to the area that is within convenient

walking distance to the site”, this statement was used correctly in the context of the remainder of the paragraph that discussed the suitability of a service to cater for employees or visitors to use to access the quarry.

5.17.4 Adequacy of traffic assessment

New independent traffic assessment is required with correct figures, measurements and counts, especially wait times.

The existing Traffic Impact Assessment has been prepared consistent with the required guidelines and has been presented to all relevant roads authorities (i.e., TfNSW, Mid Coast Council and Port Stephens Council) for review and comment. These comments are addressed within Section 3.8.

Within Appendix K, Section 9 [Assume 5], Table 4.5 [of the guide to traffic generating development] assumes lane width of 3.7, yet lanes are 3.2 or less, the incorrect guide to traffic generating development has been used.

The lane width does not impact on the capacity. This table is accepted by TfNSW for assessments for all lane widths larger than 3 metres.

5.17.5 Road Upgrade Expectations

Some submissions raised concerns or made comments about upgrades to the road network, such as:

- *The proponent must be responsible for the upgrading of any haul road that does not already meet Ausroads standards. A haulage levy is only for the upkeep of those roads and not for building them.*
- *If approved, the quarry’s contribution must be increased beyond the \$1.1 million over 30 years as noted in the EIS.*
- *Make project conditional on full road upgrade including on and off ramps for the Pacific Highway intersection, acknowledging its worth \$250M.*

The payment of a haulage levy for road maintenance (estimated at \$11.1 million over the quarry life – not \$1.1 million) is a standard measure required for quarries and is implemented according to each Council’s relevant contributions plan. Typically levy calculations take into account the associated benefits of attracting businesses to a region along with the costs to maintain the road network. Given the significance of The Bucketts Way as a regional arterial road, the burden for the complete upgrade cannot reasonably fall to a single development. To improve transparency, IDPL have committed to publishing in the annual reports the contributions made to Council’s for improvement of the road network used by the quarry.

An assessment of truck movements was undertaken along the proposed primary haulage route. This includes the righthand turn onto the Pacific Highway (A1).

TfNSW have recently completed improvements to the Pacific Motorway / The Buckets Way intersection to improve the efficiency and safety of the intersection. This work included the introduction of a left turn slip lane onto The Buckets Way from the Pacific Highway and the provision of a dedicated left turn lane on The Buckets Way.

Major upgrades such as a grade separated interchange cannot reasonably fall to a single development for such a major arterial road as The Bucketts Way, this would make most projects unviable. As of June 2021, the Federal Government has committed \$48 million to overpasses along the Pacific Highway, including the intersection at The Bucketts Way.

5.17.6 Haulage Contractors

Concerns were raised over haulage contractors, including:

- *Must acknowledge that company is responsible for safety of all aspects of the operation including contractor haulage activities.*
- *Concern that external contractors will use other roads, such as East Seaham Road and Italia Road, which are not suitable for extra heavy vehicle traffic.*

IDPL will be responsible for ensuring all personnel accessing the quarry, including haulage contractors are inducted to the quarry. This will include a site-specific Driver Code of Conduct that will specify the expectations of IDPL on all drivers hauling material from the quarry. A component of the driver code of conduct will reinforce the importance of travelling only on key arterial roads, unless accessing a local delivery location. Practically, travelling on East Seaham and Italia Road, unless making a local delivery is unlikely to make commercial sense for a haulage contractor given it adds over 15km and 15 minutes compared to using The Bucketts Way and the Pacific Highway.

Breaches of the Code of Conduct will be dealt with on a case-by-case basis and may result in a particular driver being warned or banned from accessing the site. The responsibility of each driver to adhere to the road rules while on public roads is associated with their own drivers licence and the police.

5.17.7 Quarry Access Road Intersection with The Bucketts Way

Concerns were raised in some submissions regarding the intersection of the proposed quarry access road with The Bucketts Way, including:

- *This intersection will remove a valuable overtaking opportunity, the proponent should pay for overtaking lanes.*
- *Also concern with slow heavy vehicles entering 90 km traffic.*
- *Entering a narrow laned Bucketts Way*

The ability to safely overtake within this section of The Bucketts Way is limited. The program of road upgrades for The Bucketts Way includes the provision of three overtaking lanes, to provide safer overtaking opportunities.

Vehicles exiting the quarry haul road to head south will exit into a designated south bound merging lane reaching approximately 70 to 90 kms per hour before merging with traffic doing a similar speed heading in the same direction, there is also ample clear vision of this area for southbound and northbound vehicles.

The proposed intersection will have the correct width lanes in line with the design and the appropriate road construction guidelines.

5.17.8 Alternative access road locations

Proposes an alternative access road location through the middle of lots 551 and 552 exiting close to Deep Creek Bridge.

Refer to Section 5.9.2, for consideration of alternate haulage routes and access roads for the quarry.

5.17.9 Traffic Increase

Increase in truck traffic from the quarry. Within Appendix K, Section 9, notes that 50 heavy vehicles proposed during peak periods is more than double the current heavy vehicles per hour of 21.

The Bucketts Way is a major arterial road used to connect surrounding rural towns, where approximately 8-13% of the existing traffic is heavy vehicles, this equates to over 150 trucks travelling each day. The quarry will on average at peak annual production add 55 laden trucks per day to that total, which is unlikely to change the character of the road. The maximum haulage rate of 25 laden trucks per hour will be sporadic and unlikely to occur for long periods. While 25 laden trucks per hour travelling south is an increase in any one hour compared to existing levels (approx.10-25), it is also unlikely to result in an appreciable change in character over the course of the day.

5.17.10 Traffic Count Data

Flawed traffic counts should be done post COVID lock down and during school holidays. The Bucketts Way gets a significant volume of traffic during holidays, especially holidays?

Traffic counts are considered sufficiently representative to determine the likely impacts of the quarry on the typical performance of the road network and TfNSW require all counts to be undertaken outside school holiday periods, the counts were completed prior to COVID related lock downs. Anecdotally, post-COVID lockdowns it would appear that more people are used to and set up for working from home and shopping on-line, such that peak hour traffic volumes on major arterial and collector roads are down 15% of pre-covid volumes.

5.17.11 Intersection modelling

Intersection modelling on highway is flawed and does not include the longer delay times that are shown in Attachment D, delays of several minutes during holidays are experienced not 17.5seconds as stated in Table 3 of Appendix K. There is no consideration in intersection modelling for trucks turning right being heavier and slower that would exacerbate delays.

The intersection modelling is considered appropriate for the proposed development. The model does require input on the percentage of heavy vehicles because it does take into count their use of the intersection and their slower acceleration times so that statement in the objection is incorrect.

SIDRA reports the average delay times over the peak hour period not the maximum delay time. As the performance criteria adopted by TfNSW is the average delay, there will be both shorter and longer delays than the average figure in the results table. Similarly, the back of queue length is the average queue length for 85 % of the time in the peak hour and is not the maximum queue length. There could be longer queue lengths, but they probably only last for 10 minutes. Again, the

TfNSW performance criteria is the 85 % back of queue length, as such the modelled intersection performance is adequate.

5.17.12 Pacific Highway intersection

The intersection of The Bucketts Way with the Pacific Highway is poorly designed and is not suited to proposed heavy vehicle movements, existing delays and safety at the intersection are already poor. The use of the intersection on Fridays, weekends and holidays are currently very bad and will only get worse with additional trucks.

EIS noted the upgraded intersection should improve performance, but it has not. The updated left turn lane into The Bucketts Way is now even more dangerous as you cannot see if the road is clear beyond a left turning vehicle to be able to turn right. This and the potential increase in impatience after having to queue will encourage riskier behaviour to turn resulting in more accidents. There is no blend lane when turning left onto the Pacific Highway so trucks from a standing start are slow, so needing larger gap to safely enter the highway, thus increasing wait times at the intersection, which again could lead to riskier behaviour.

TfNSW have completed the upgrade for the improvement of the intersection, if there is concern with the safety of the intersection, concerns should be directed to the Assets section of TfNSW.

5.17.13 RSA Issue fixes

Appendix K, Section 10.4, states that Road Safety issues identified by road safety audit, "should" be resolved as part of recent road works. These issues are of critical importance and must be resolved.

Incorrect. Section 10.4 states: It is expected that the issues raised with respect to the Pacific Highway/The Bucketts Way intersection would be resolved as part of the current TfNSW works on the intersection. The other matters will be addressed at detailed design stage of the quarry access intersection with The Bucketts Way. A copy of the audit has been provided to the relevant road's authorities for action and is the responsibility of TfNSW to maintain the intersection on the Pacific Highway.

5.18 VIBRATION AND BLASTING

5.18.1 Blast and Vibration impacts

Some submissions were concerned about blasting and vibration including comments with concerns such as:

- *Blasting and vibration from machinery, including the number of blasts per year (25)*
- *Vibration assessment including, concerns over the extent of vibration risks to surrounding properties, including those located on the rock shelf (possibly along Limeburners Creek) or on ironstone that will lead to greater vibration impacts.*
- *Requests a bond of \$7M to be included in Development Consent to cover vibration impacts to private properties.*

The Noise and Vibration Impact Assessment has found that the Project would be able to operate in compliance with the appropriate criteria for potential blast overpressure and vibration impacts.

Given the extent of separation between the receptors and the quarry, there is negligible risk that a blast will result in any damage to private property. Predicted blast impacts show the predicted peak particle velocity (PPV) at the nearest receptor (without an agreement) to be 0.4mm/s against the criteria of 5mm/s, a standard based more on human perception than structural damage (Jordan 2013), noting damage to plasterboard was found in some studies at 12.7mm/s, while the TfNSW 2019 Construction Noise and Vibration standard (DMS-ST-157) suggests minimal cosmetic damage in residential style buildings at levels between 15 and 50 mm/s depending on the frequency. Given considerably low risk of structural damage a bond related consent condition to address blast and vibration impacts is not necessary.

The Project will be required to operate in accordance with a Blast Management Plan that will include blast monitoring to ensure levels are consistent with calculated vibration and overpressure at receptor dwellings. The purpose of blast monitoring is to ensure local factors such as a rock shelf and the geology type are taken into account in the blast design. Blasts can be modified to reduce the extent of vibration at surrounding receptors.

5.18.2 Concern over vibration on animals

Concern over vibration on animals

Vibration and overpressure impact from blasting are temporary in nature occurring up to 25 times per year occurring over a very short period of time. The effects on fauna will vary with species and proximity to the blast, the more sensitive species are likely to move away, while others will remain. Blasting will occur within a cleared area of the quarry and is focused at retaining rock within the quarry, which directs the blast away from surrounding fauna habitat.

Blasting creates a ground vibration (measured in mm/s, where 5mm/s is the accepted criteria) and air-overpressure (measured in dB, where the criteria is 115 dB). Appendix Q of the EIS assessed noise and vibration impacts from blasting and determined at 500m from the quarry the predicted air-overpressure is expected to be 109 dB. For context, 120 dB in overpressure is equivalent to the pressure produced by a 32 km/h wind gust, and fireworks are in the order of 140 dB. While fauna near the edge of pit may be startled, the infrequent nature of the blasting activity is unlikely to result in significant impacts on fauna or associated habitat structures.

Impacts from operational activities, such as disturbance to an animal's normal behaviour patterns due to noise, vibration, and dust may cause areas of previously suitable habitat to become sub-optimal and may cause some fauna species to vacate areas of previously suitable habitat. The environmental management plans for the Quarry will consider measures to minimise impacts on fauna from noise, vibration, waste, and air pollution.

5.19 VISUAL AMENITY

Concerns over visual impacts, such as:

- *Current property owners will be affected visually by quarry.*
- *Rejection of the assumption that it will not be visible from neighbouring properties.*
- *Down play of the impact of the quarry access road and its visual impact.*
- *Do not accept the statement of quarry visibility and note that other properties may wish to build a quarry in the next 30 years, concerned residents have not been consulted about the visibility from their property (near western end of Forest Glen Road owned by A.Albury).*

The only visual impact from the quarry development is from the proposed access road and intersection, which will be greatest during construction. After the access road is established and in use, the visual impact will begin to diminish as the road becomes a part of the landscape. It is relevant to consider that the current landowner in the vicinity of the access road has a legal access corridor in a similar location to the proposed quarry access road. It is likely that this road would have been constructed at some point in time and would be likely to result in a similar change in the visual amenity.

Viewpoints toward the site will be obscured view by trees, vegetation and topography. Viewpoints described within the Visual Impact Assessment in Appendix V of the EIS illustrate that there are very few locations, if any, from which the quarry will be visible.

The visual impacts for this project are limited. The proposed quarry itself is not visible from any residences and is shielded by ridge lines and the surrounding bushland.

The visual impact assessment (Appendix V of the EIS) included consideration from Forest Glen Road in in View Point 5. View Point 5 is taken from near the crest of the hill and shows the considerable vegetation in the view shed in the foreground, with two additional timbered ridges between the quarry and the dwellings on this road. All vegetation in the intervening ridges would need to be cleared for any visibility to be afforded, and in that event, the majority of the quarry is below the ridgeline and would not be visible.

The development of new dwellings over the next 30 years that have the potential to see the quarry are highly unlikely given the surrounding topography and land holdings. If they were constructed would require significant clearing to establish any clear visibility into the quarry. Any dwelling built after the quarry was approved would need to do so with consideration of neighbouring land uses and the associated views.

5.20 WATER

5.20.1 Water security

Some submissions raised concerns over water security including:

- *Doubts over the adequacy of water availability calculations to support dust suppression, particularly during drought events and reference to the Mill Paddock Dam as a supply.*
- *Where will it come from?*
- *Is there enough?*
- *How much will be used?*

As the quarry pit progresses, the volume of water managed within the dirty water management system will increase, as there is limited opportunity for progressive rehabilitation to be undertaken. Therefore, as quarry operations progress, the volume of water requiring management will increase, resulting in the need for licenced discharge to Deep Creek. These discharges will need to be in accordance with any water quality conditions specified within the site EPL, and will require sufficient water quality testing prior to, during and following discharges to demonstrate water quality criteria are met.

The water balance model in the Surface Water Impact Assessment predicts the following water usage for dust suppression for each stage of the quarry operation:

- Stage 1 (years 1-5) = 22.8 ML
- Stage 2 (years 5-11) = 25.8 ML
- Stage 3 (years 11-21) = 25.7 ML
- Stage 4 (years 21-30) = 25.1 ML

Water balance modelling indicates that, provided sufficient water storage is maintained in the quarry (balancing discharge with onsite use), external water supplies can be minimal, meaning all water demands on site can be met by water harvested on site (mostly within the dirty water management system).

The Mill Paddock dam along with the dam adjacent to the office can be utilised by IDPL within the harvestable rights allocation. The inclusion of these dams increases the surface water catchment where water can be accessed for the quarry. The use of these dams will only be as a supplement to existing supplies within the sediment dams and quarry dam.

In the unlikely event there is insufficient or limited water available onsite there are four main options for control:

- Import water from external licenced supplies.
- Reduce production / activity onsite.
- Use dust suppressants to reduce water consumption.
- Modify the surface material of roads (e.g., sealing) such that the need for dust suppression is removed.

5.20.2 How will water be used for dust suppression

How will water be used for dust suppression.

Dust suppression will be performed as required with a water cart on site at all times to be utilised in periods of high wind or when elevated dust is identified. A water truck is to be used on internal quarry haul roads for dust suppression. During processing, water sprays are used for dust suppression at material discharge points as required.

5.20.3 Deep Creek, Oysters and Downstream

Concerns were raised in some submissions about the effects of the quarry on Deep Creek and downstream water users and industries in the Karuah River, these are characterised by the following:

- *The impacts of the proposal including a proposed stockpile placement within close proximity of the 4th order stream, Deep Creek, includes multiple incursion into the designated riparian buffer and corridor, including the proposed removal of remnant riparian vegetations and significant risk of downstream impacts. These are inadequately assessed and/ or mitigated. The riparian corridor and designated buffers in accordance with regulator guidelines should be maintained and restored throughout the proposal. Adequate demonstration that all proposed mitigation will result in the retention and protection of Deep creek is required.*
- *Better predictions on flooding are needed in a revised water management plan assessment*
- *Concern over ensuring water management and discharges from the quarry, including (sediment management) is at the highest level to avoid risks to Oyster growers, fishing and recreational users downstream and into the Karuah River and Port Stephens, including impacts to the Karuah National Park, Habitat Protection Zone and Karuah River Sanctuary Zone as part of the Great Lakes Marine Park. Does not consider regional council considerations included in the Midcoast Council Rural Strategy "Rural Waterways Background Report version 5 of June 2020.*

The surface water impact assessment (revised version included as **Appendix H**) completed a detailed flooding assessment on Deep Creek and determined that accounting for climate change the quarry pit is unaffected by significant flood events (i.e. Deep Creek will not flood into the quarry), and further in the event of a probable maximum flood (PMF) the quarry pit and infrastructure areas are largely unaffected. In the PMF may inundate the batters of the sediment basins along with lower sections of the quarry access road.

With respect to Deep Creek and the proximity of the Project as proposed within the EIS, the following information is provided for clarification of the submission comments:

- No portion of the quarry pit is located within 40m of the top of bank of Deep Creek. The quarry at its closest is 70m from the centre of Deep Creek, with most of the creek line over 115m from the quarry edge.
- Approximately 2,250 m² of the sediment basin below the Stockpile Area was located within 40m of the bank of Deep Creek. Approximately 1,000 m² of this area extended into the inner riparian

corridor. These works were largely within cleared agricultural paddock with scattered trees. The spill way was approximately 25m from Deep Creek centre, while the dam batter toe was approximately 35m from the Deep Creek centreline.

- Less than 20m² of the sediment basin below the workshop area is within the 40m riparian corridor, and again is within cleared agricultural paddock. Deep Creek itself was approximately 47m from the centre of Deep Creek.

With further consideration of the project and Deep Creek, in the context of submissions, the following amendments were made to the Project:

- Sediment basin sizes were increased to reduce the frequency of required discharge from the quarry.
- The location of the sediment basins was adjusted to ensure the quarry infrastructure remained consistent with the NSW Government, *Guidelines for riparian corridors on waterfront land (2012)*. This resulted in a 1600 m² incursion into the outer riparian zone, and a commitment to offset that reduction in riparian corridor elsewhere on the property (refer **Figure 3-5**).

The Development Site has been positioned to minimise direct impacts on drainage lines, with the pit located between two first order drainage lines and the buffer from Deep Creek identified above. However, there is some potential for impacts to water quality downstream through sedimentation and changes in water quality. Implementation of appropriate erosion and sedimentation control measures, particularly during construction and meeting discharge licence requirements during operations will be required to minimise the potential and extent of these impacts.

The project will be required to operate in accordance with a Water Management Plan (WMP) and Environmental Protection Licence (EPL) that will guide and regulate the quarry construction and the potential impacts on water. With implementation of this management plan and the conditions of the EPL, no significant impacts on surface water quality would be expected.

Marine Pollution Research undertook an assessment of the baseline aquatic ecology within Deep Creek and the potential impacts of the Deep Creek discharges (refer to **Appendix F**). The assessment provides baseline aquatic ecology conditions against which potential construction and operational impacts could be assessed. The WMP for the quarry will need to be developed to consider:

- Developed with consideration of avoiding impacts on downstream aquaculture, as per NSW DPI (2017) publication Healthy Estuaries for Health Oysters – Guidelines (HEHO 2017).
- Include water quality and aquatic ecology monitoring linked to a Trigger-Response Action Plan (TARP).
- Include controls to minimise sediment laden runoff (during construction and from the sealed quarry access road) reaching Deep Creek.

The Aquatic Ecology Report concluded that with the implementation of a suitable WMP approved by DPE prior to construction and developed in consultation with NSW DPI the quarry is unlikely to 'have an adverse effect on oyster aquaculture development or a priority oyster aquaculture area'. As such, the Consent Authority is able to determine the application consistent with Division 4 of the *State Environmental Planning Policy (Primary Production) 2021*.

The proposed quarry will have minor impacts on the annual flow volumes in Deep Creek, due to the reduced catchment associated with the quarry operations. As such only minimal impacts are

expected on basic landholder rights on Deep Creek to The Bucketts Way, downstream of which is the Karuah National Park. Deep Creek flows into the Karuah River, which has a very large catchment area. Water quantity is not anticipated to be adversely impacted by the proposed quarry on a sub-regional or regional scale.

There are no known licensed water users on Deep Creek downstream of the Deep Creek Quarry.

5.20.4 Groundwater Pollution

Pollution of groundwater and flow on effects into the Karuah River and Port Stephens

The risks of contamination or pollution of groundwater are very low, and largely relate to isolated spills consistent with any land use in the catchment. It is highly unlikely, that with the implementation of the SWMP and associated hydrocarbon controls that any contamination of groundwater would occur.

A comprehensive groundwater assessment has been undertaken to identify the possibility of any potential impacts occurring as a result of the project.

No residual or cumulative impacts were identified in the Groundwater Impact Assessment. Following completion of the proposed quarry operations, groundwater will continue to discharge into the quarry pit and evaporate, with no significant impact of the quarry development considered to occur on the surrounding area. The floor of the rehabilitated extraction area will be above the groundwater table and will avoid intersecting groundwater from the lower pH unit below the rhyolite to maintain the best possible long term groundwater quality.

6. UPDATED PROJECT JUSTIFICATION

This section highlights the key justifications for the DCQ Project along with an update to the justification provided in the EIS against the Objects of the EP&A Act 1979. This section demonstrates the Approval of the DCQ Project is justified.

6.1 DEMAND

The Hunter Regional Plan 2041 (NSW DPE 2022) shows significant population growth. The plan outlines the need for an estimated 101,800 new houses within the Hunter Regional area over the next 20 years, along with the associated road network infrastructure to support the growing population. This will place a sustained demand on existing quarry material supplies and with quarry approval timeframes approaching 10 years and requiring significant private investment, there is clear justification for well situated quarries, such as the DCQ, to proceed to ensure adequate supply of construction materials. Aside from employment, investment and taxes to government, quarries provide a significant benefit to the community in providing quarry products to satisfy the construction of both private and public infrastructure. When demand outstrips supply, material prices increase, and projects are delayed as existing providers become fully allocated. Where existing suppliers are fully allocated to existing companies or related parties, this can reduce market competition in the construction sector further driving up costs.

The DCQ quarry material will help meet existing and future demand.

6.2 DCQ AGGREGATE CAN MAKE SAFER ROADS

DCQ quarry aggregate has a high Polishing Aggregate Friction Value (PAFV). TfNSW have specified high PAFV aggregates for use in intersections and roundabouts for over a decade. A PAFV of 48 is typically specified for general road construction, while a high grip material requires a PAFV of 58 to 65. The PAFV test results for the DCQ range from 57 to 65, meeting the requirements of high grip material. The availability of this material in the current market is limited. Increased availability of high grip aggregate has the potential to substantially increase road safety.

DCQ is anticipated to become an important supplier of road base, crusher dust, aggregates, and rock domestically. The general resource market areas for the products of the quarry include Port Stephens, Newcastle, Maitland, Lake Macquarie, and Mid-Coast. Decorative and high Polishing Aggregate Friction Value (PAFV) products will travel further and have a wider market, including Sydney, Lithgow, Canberra, Port Macquarie, and Coffs Harbour.

The DCQ aggregates will make safer roads.

6.3 DCQ AGGREGATE CAN REDUCE URBAN OVERHEATING

The DCQ aggregate has a higher solar reflectance index (SRI) than comparable aggregates available in the Hunter region. The higher the SRI, the cooler the pavement. UNSW completed testing of DCQ aggregate and other Hunter aggregates to determine the SRI. The SRI of DCQ aggregates was more than double the SRI of other locally available aggregates. With a higher SRI, DCQ aggregate can reduce pavement surface temperatures in the order of 2-10 °C.

Other benefits lower temperature pavements and pavements with a higher reflectance as noted by the US EPA (2012) can include the following:

- Cooler pavements reduce the temperature of surface water runoff, resulting in less thermal shock to aquatic life.
- More reflective pavements can enhance visibility at night, reducing lighting requirements (saving money and energy). Where energy is derived from fossil fuels the net benefit is higher again.
- Cooling pavement improves the comfort of people in these areas, and reduces the extent that additional energy is expended in cooling occupants (e.g., less air conditioning is used).

Lake Macquarie City Council has adopted an Urban Heat Strategy in June 2022 and the NSW DPE adopted the Hunter Regional Plan 2041 (NSW DPE 2022), in December 2022. These documents highlight the importance of addressing urban heat build-up to make regions more liveable and resilient. As demonstrated above, the DCQ quarry materials are well suited to assist in building this resilience.

DCQ aggregates can help make the Hunter Region more resilient to climate change and reduce emissions.

6.4 NOISE AND AIR QUALITY IMPACTS ARE BELOW CRITERIA

Noise, vibration and air quality impacts on neighbouring receptors of the proposed DCQ are below applicable criteria. Noise and air quality impacts have been assessed for the quarry considering construction, operational and road traffic impacts. Reasonable and feasible measures have been adopted by the quarry to reduce potential for impacts on Receptor R30 due to a diesel hypersensitivity, with predicted DCQ related emissions likely below those that would be expected from unrelated traffic on The Bucketts Way.

Noise and air quality emissions, and blast vibration levels from the DCQ will not exceed applicable criteria and management plans will be developed to further minimise effects on the environment and community.

6.5 BIODIVERSITY MANAGEABLE AND WELLUNDERSTOOD

In the preparation of the project documentation, a substantial number of ecological surveys have been completed, ensuring a comprehensive knowledge of the flora and fauna present and the likely impacts. The DCQ Project design has incorporated numerous measures to avoid and mitigate impacts on biodiversity.

No Serious and Irreversible Impacts (SAILs) as defined by the *Biodiversity Conservation Act 2016* (BC Act) were identified within or due to the DCQ Project.

No vegetation was identified as constituting a Threatened Ecological Community under the BC Act or the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).

Nineteen threatened species (two flora, 17 fauna) listed under the BC Act, or the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) were recorded onsite.

A series of management measures have been developed to minimise the impacts of the quarry construction and operation on biodiversity in the project area.

Impacts to biodiversity can be offset in accordance with the Biodiversity Offsets Scheme through the retirement of ecosystem credits and species credits and the proposed Biodiversity Offsets Strategy. It is proposed to have a staged fulfillment of biodiversity offset obligations where the extent of each

stage and required credits will be confirmed prior to each stage with survey of the planned disturbance area. The primary and first source of biodiversity credits (subject to timing and availability) will be to retire credits from an onsite Stewardship Site. If approved, IDPL will develop an onsite Stewardship Site comprising approximately 235 ha, that will potentially expand to include a further 125 ha of an adjacent land holding, potentially adding 360 ha to active conservation in the local area.

Biodiversity impacts are well understood and can be offset consistent with the BC Act 2016.

6.6 MANAGEABLE IMPACTS TO WATER RESOURCES

Given the small size of the quarry, lack of groundwater interception and licenced discharges proposed, the DCQ will have only minor impacts on the annual flow volumes in Deep Creek. IDPL will be required to attain Water Access Licences for interception of surface water above the maximum harvestable right and for intercepted groundwater.

With the implementation of a suitable WMP approved by DPE prior to construction and developed in consultation with NSW DPI the quarry is unlikely to 'have an adverse effect on oyster aquaculture development or a priority oyster aquaculture area'. As such, the Consent Authority is able to determine the application consistent with Division 4 of the *State Environmental Planning Policy (Primary Production) 2021*. The WMP will also ensure there are negligible downstream effects on the Karuah National Park or the Port Stephens Marine Park.

With suitable management, the downstream water quality, quantity and associated users will have negligible impacts from the construction and operation of the DCQ.

6.7 EXISTING RURAL CHARACTER MAINTAINED

The proposed Deep Creek Quarry project is located within the RU2 Rural Landscape zone of the Great Lakes Local Environmental Plan 2014, where extractive industries are permitted with consent.

The proposed quarry will result in a negligible change in the local area for grazing activities, is not visible from The Bucketts Way, aside from a new access road (that is not indifferent to existing roads), and will not displace residents due to excessive noise, dust or vibration, as such it will not result in the transformation of the local area to an industrial area. Within a 5km radius of the quarry will occupy approximately 0.4% of the land area yet will result in active conservation being established for over 4% of the same area (i.e., 10x the impact area).

Compared with typical local land uses, the use of the land for quarrying and conservation is likely to have comparable or lower impacts on some aspects of the environment. By way of example, the subject land is approved for subdivision with seven potential lots across the property, similar to Fords Road, The Bucketts Way and larger than the lots on Forest Glen Road. Subdivision would be expected to result in similar or greater vegetation clearing for; houses, asset protection, and utilities, have seven onsite septic systems, introduce predation risks from cats and dogs, and the duration of that impact will extend beyond the 30-year quarry life.

The quarry will not result in a significant change to the rural character.

6.8 ROAD NETWORK ADEQUATE AND IMPROVING

The Traffic Impact Assessment (TIA) concluded that the Deep Creek Quarry will not have an adverse impact on the regional and state road network in the vicinity of the site and that the network can accommodate the proposed quarry traffic, meeting all the minimum requirements of Mid Coast Council and Transport for NSW (TfNSW).

The Bucketts Way is a key transport link between the Gloucester region, the Northern Tablelands, Newcastle and the Hunter Valley and the rest of NSW, with funding for improvements from a variety of sources including the Federal government's Heavy Vehicle Safety and Productivity Program.

Many traffic concerns from public submissions related to the existing condition of the road. Mid Coast Council is currently undertaking a significant package of road drainage, widening and upgrade works to resolve many of these concerns. The Limeburners Creek Bridge is scheduled for replacement in 2023, which will address concerns regarding the narrow bridge deck.

IDPL will contribute over \$11.1 million to contribute to the maintenance of the sections of The Bucketts Way that it uses, reporting this annually within its Annual Reports. Sections of the road requiring maintenance will be reported by IDPL to the relevant Council for action.

IDPL will institute a site-specific driver code of conduct to regulate haulage activities within the quarry road network and advise of drivers of expected behaviour on public roads.

The road network servicing the DCQ is adequate and improving.

6.9 Objects of the *Environmental Planning & Assessment Act 1979*

This section demonstrates the project as proposed is consistent with the objects of EP&A Act 1979, building on the justification provided within the EIS.

6.9.1 S1.3(a) Proper Management, Development and Conservation of Natural and Artificial Resources

Object 1.3(a) of the EP&A Act is:

(a) to promote the social and economic welfare of the community and a better environment by the proper management, development and conservation of the State's natural and other resources

The proposed DCQ provides for the extraction of natural resources and will provide this resource for use within the State for the ultimate benefit of the community through the provision of quality aggregates with the potential for increased road safety and improved community resilience through better climate adaptation opportunities.

The EIS and this RTS show the design of the DCQ has taken into consideration the social, economic and environmental settings and proposed controls and mitigation measures to avoid, minimise and ameliorate impacts, ensuring the proper management of natural and other resources.

The development of this resource provides direct employment security for 10 personnel and results in direct and indirect economic benefits to the local and regional communities.

6.9.2 S1.3(b) To Facilitate Ecologically Sustainable Development

Object 1.3(b) of the EP&A Act is:

(b) to facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment,

Consideration of the proposed DCQ Project against the principles of Ecologically Sustainable Development (ESD) is provided below.

6.9.2.1 The Precautionary Principle

The precautionary principle is based upon the principle that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.

Full scientific impact assessments have been performed in the areas of:

- Biodiversity (updated in the Response to Submissions).
- Noise and Blasting.
- Air Quality.
- Surface Water (updated in the Response to Submissions).
- Groundwater (updated in the Response to Submissions).
- Aboriginal Heritage.
- Historic Heritage.
- Traffic and Transport.
- Land Resources.
- Waste.
- Hazards.
- Visual Amenity.
- Social.
- Economic.
- Aquatic Ecology.

These studies have identified baseline data and assessed the potential impacts, including if there are threats of serious or irreversible environmental damage. The EIS demonstrates that no serious or irreversible environmental damage has been determined to occur as a result of the quarry.

While this has been done inherently through quarry design and planning, the EIS also presents management and offset measures to remove, reduce or compensate for any impacts identified. Further, a comprehensive set of management plans would be produced post approval and prior to project commencement to further prevent environmental degradation, as per the precautionary principle.

6.9.2.2 Inter-Generational Equity

Inter-generational equity, that the present generation should ensure that the health, diversity, and productivity of the environment are maintained or enhanced for the benefit of future generations, can be demonstrated to be met through the outcomes of impact assessments presented in this EIS. There will be on site impacts to threatened species and vegetation communities, these will be offset through both the provision of offset sites within the land immediately adjacent to the proposed project site, and through the purchase of offsite biodiversity credits. This will ensure that commensurate areas are protected in perpetuity for future generations and thus meet the intent of the inter-generational equity aspect of an ESD.

In addition, this aggregate has unique properties that will provide safer roads for use by future generations and will provide access to aggregate that will help make communities more resilient to climate change and result in a reduction in greenhouse gas emissions (compared to typical Hunter Region aggregate).

6.9.2.3 Conservation of Biological Diversity and Ecological Integrity

The intent of this aspect of an ESD is that conservation of biological diversity and ecological integrity should be a fundamental consideration. This has been considered throughout the project planning since inception. The quarry layout has been designed to limit disturbance to previously cleared areas wherever possible. While some clearing of native vegetation is required it is limited to the minimum required for the quarry. This is demonstrated where the land previously cleared for grazing makes up the majority of the quarry infrastructure areas, thus conserving diversity and ecological integrity as far as is reasonably possible. The pit area, while underlying native vegetation which will require clearing has been selected as it targets the highest quality resource in a more efficient and shallow extraction area than otherwise would be required thus allowing for a reduced disturbance area. Alternative project designs were considered, however they resulted in increased impacts to the receiving environment.

Further, the application of progressive rehabilitation and a final landform that provides for a safe, sustainable and non-polluting landform allows for the current level of biological diversity and ecological integrity to be maintained.

The Biodiversity Offset Strategy proposed for the Project provides a considerable increase in the land under active conservation, offsetting the impacts of the quarry consistent with the Biodiversity Offsets Scheme.

The fundamental consideration of biological diversity and ecological integrity throughout the planning, design, proposed offsets and mitigations measures for the quarry has therefore led to the intent of this aspect of an ESD being met.

6.9.2.4 Improved Valuation, Pricing and Incentive Mechanisms

The intent of this aspect of an ESD is that environmental factors should be included in the valuation of assets and services. The economic study considered the impact upon biodiversity through the purchase of biodiversity offset credits and implementation of ongoing management in relation to funds released from the bond held by the Biodiversity Conservation Trust (as would be paid by IDPL). A road levy which will be payable to local Council's and estimated at over \$11 million to fund road maintenance over the life of the project.

The CBA has identified that should the quarry be approved; economic impacts are positive. The quarry will contribute to economic growth through increased Gross Regional / State Product (GRP / GSP) during construction, operations, and decommissioning / rehabilitation phases, compared to what would occur without the quarry, flowing from both direct and flow-on impacts.

6.9.3 S1.3(c) Orderly and Economic Use and Development of Land

Object 1.3(c) of the EP&A Act is:

(c) to promote the orderly and economic use and development of land,

The proposed DCQ is positioned within the RU2 zone where extractive industries are permitted with consent. The quarry has been positioned with regard to the proximity of surrounding dwellings, and access to key infrastructure necessary for the development of the quarry, namely The Bucketts Way and Pacific Highway.

As urban areas continue to expand, the ability to undertake quarrying in areas closer to the primary demand (e.g., roads, urban, industrial and commercial developments), without adverse impact on

the community is reduced. This drives the need to develop quarry resources from other areas where the density of dwellings is relatively low.

The quarry will not result in any significant displacement of existing rural land use. The quarry has been developed such that it will not result in any significant impacts at adjoining private dwellings or properties. The positioning of the quarry has had regard to the visibility from surrounding properties and publicly accessible areas and will therefore have limited impact on the scenic qualities of the area that may be associated with tourism related land uses.

At the conclusion of quarrying, the land, outside any retained infrastructure, will be returned to a condition comparable, albeit slightly lower than the existing land capability.

6.9.4 S1.3(d) Delivery and maintenance of affordable housing

Object 1.3(d) of the EP&A Act is:

(d) to promote the delivery and maintenance of affordable housing,

The DCQ does not have a direct effect on the delivery and maintenance of affordable housing, however the quarry will likely increase the number of available quarry material sources within the region and will likely replace existing suppliers as reserves are depleted. This improved or consistent supply of aggregate ensures the costs of construction of roads and concrete for a range of development (including for affordable housing) remain viable and feasible to deliver and maintain.

6.9.5 S1.3(e) Protection of the Environment

Object 1.3(e) of the EP&A Act is:

(e) to protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats,

The development and operation of the quarry infrastructure and the extraction of quarry resource inevitably has an impact on the environment. A key environmental risk associated with the DCQ includes the impacts on clearing native vegetation, clearing of threatened flora and loss of habitat and increased risks to threatened fauna.

The design of the DCQ has avoided or minimised impacts on these matters where feasible. Where impacts remain, proposed mitigation measures and offsets to protect the environment are proposed, including:

- Offsetting the biodiversity impacts consistent with the NSW Biodiversity Offsets Scheme.
- Establishing onsite biodiversity offsets (Stewardship Sites) for the local in perpetuity protection of similar ecological values.
- Biodiversity management measures to be implemented through an environmental management framework.

The effectiveness of these protection and mitigation measures will be determined through an environmental monitoring program. This program will be reported on annually. Environmental protection measures will be reviewed and improved based on the results from the monitoring program.

6.9.6 S1.3(f) Built and Cultural Heritage

Object 1.3(f) of the EP&A Act is:

- (f) to promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage),*

The DCQ is located within an area that has been determined through heritage investigations to not have any significant impacts on built or cultural heritage in the area. Isolated finds located onsite during the Aboriginal Heritage impact assessment have been considered, and will be managed, along with any other currently unknown, cultural artefacts consistent with a site-specific management plan developed in consultation with the local Aboriginal Community.

6.9.7 S1.3(g) Good Design and Amenity of the Built Environment

Object 1.3(g) of the EP&A Act is:

- (g) to promote good design and amenity of the built environment,*

The design of the quarry has taken on best practice in design elements ensuring geotechnical stability and safety of extraction. The longer-term amenity of the area is provided for with the proposed rehabilitation of the quarry.

The office and workshop area has been designed for the purpose of providing a safe, functional space that separates light vehicles and heavy vehicles, provides for water management and keeps the office area separated from the quarry pit to minimise dust within the office and improve safety for visitors.

The new road and intersection proposed by the DCQ have been designed consistent with the relevant road standards and will be required to be constructed consistent with those standards that will provide for the health and safety of motorists using these roads, whilst also minimising the effects on neighbouring properties through their placement and sealing to minimise dust generation. IDPL will contribute levies to the roads authorities to ensure the amenity and design of public road network, including The Bucketts Way, is maintained to suitable standards.

The DCQ will also provide a lighter coloured materials with a high solar reflectance index that will improve the amenity of the built environment where it is used.

6.9.8 S1.3(h) Proper Construction and Maintenance

Object 1.3(h) of the EP&A Act is:

- (h) to promote the proper construction and maintenance of buildings, including the protection of the health and safety of their occupants,*

Infrastructure constructed for the DCQ will be required to meet the relevant standards of construction as required under the Building Code of Australia, where applicable.

6.9.9 S1.3(i) Sharing of Responsibility for Environmental Planning

Object 1.3(i) of the EP&A Act is:

- (i) to promote the sharing of the responsibility for environmental planning and assessment between the different levels of government in the State,*

The development of the DCQ has included early consultation with local councils (Mid-Coast and Port Stephens) Councils, consultation with NSW State government departments (e.g. DPE) and the Commonwealth government (DAWE). The relevant NSW government agencies have provided comment on the EIS and issues raised have been responded to within this RTS. The project will be assessed by the State and Commonwealth governments under the Bilateral framework.

6.9.10 S 1.3(j) Opportunity for Community Participation in Environmental Planning and Assessment

Object 1.3(j) of the EP&A Act is:

- (j) to provide increased opportunity for community participation in environmental planning and assessment."*

This EIS and RTS has documented the various methods of community participation undertaken during the development of the DCQ and also documents the social impact assessment undertaken for the project to better understand the potential impacts of the quarry on the community.

Through the exhibition process interested parties were provided the opportunity to provide submissions on the project to be responded to within this RTS document. These submissions have been given due consideration in this RTS, and the Mitigation Measures proposed provides for ongoing engagement with community through construction and operation of the quarry.

7. CONCLUSION

This Response to Submissions and the EIS have demonstrated the proposed DCQ Project is well situated to deliver a unique quarry material without significant impacts on the local community and with established measures to avoid, mitigate and offset impacts to the environment.

The quarry has been demonstrated to meet the objectives of Ecologically Sustainable Development and the other objects under Section 1.3 of the EP&A Act. As the demonstrated Ecologically Sustainable Development is coupled with the 'overwhelmingly positive' economic benefits and limited social impacts identified, the project is justified.

8. REFERENCES

ABC 2010. Lobbying efforts secure bridge repair funding. Fri 8 Jan 2010.
<https://www.abc.net.au/news/2010-01-08/lobbying-efforts-secure-bridge-repair-funding/1202332>

Jordan. B., 2013, *Mine blasting vibration and its effects on buildings and structures – implementing a frequency-based approach*. Published by AEES (Technical Society of Engineers Australia), accessed at <https://aees.org.au/wp-content/uploads/2013/11/29-JORDAN-Bill-MineBlastingVibration.pdf>

Meek PD. 2003. Home range of house cats *Felis catus* living within a National Park. *Australian Mammalogy* 25, 51-60.

Mid Coast Council 2022. *Improvements for The Bucketts Way*.
<https://www.midcoast.nsw.gov.au/Your-Council/Our-news/News-Media/Improvements-for-The-Bucketts-Way#:~:text=The%20project%20will%20include%20road,for%20the%20protection%20of%20koalas>

Mid Coast Council. *2021/22 Capital works program*.
<https://www.midcoast.nsw.gov.au/Services/Roads-and-bridges/Major-road-projects/Capital-works-program>

NSW Department of Planning and Environment. 2022. Hunter Regional Plan 2041. State of New South Wales through Department of Planning and Environment 2022

U.S. Environmental Protection Agency. 2012. "Cool Pavements." *In: Reducing Urban Heat Islands: Compendium of Strategies. Draft*. <https://www.epa.gov/heat-islands/heat-island-compendium>.

United Nations, (2022). The 17 Goals. United Nations, Department of Economic and Social Affairs, Sustainable Development. <https://sdgs.un.org/goals>



APPENDIX A: SUBMISSIONS REGISTER

**Deep Creek Quarry
Response to Submissions Report**

Submission Details							Submission Issues																				
Submission ID	Submitter Type	DPE Submission ID	Submitter Name	Submitter Location Classification	Submission Type	Form Letter	Aboriginal Heritage	Air Quality	Biodiversity	Bushfire	Community Engagement	Economics	Geology	Cumulative or General Environmental Concerns	Rehabilitation	Health	Standards & Integrity	Justification, Sustainability & Land Use	Noise	Project Design	Procedural or Systemic Matters	Social	Traffic & Transport	Visual Amenity	Vibration and Blasting	Water	
P01	Public	SE-32799729	James Pearce	Broader	Support	No - Unique						X			GEC2			X									
P02	Public	SE-32934339	Stephen Tonitto	Local	Object	No - Unique											X						X				
P03	Public	SE-33289792	Name Withheld	Local	Object	No - Unique		X	X	X	X	X				X		X	X	X		X	X		X	X	
P04	Public	SE-33293088	Name Withheld	Local	Object	No - Unique								X							X						
P05	Public	SE-33333183	Name Withheld	Regional	Object	No - Unique			X			X						X				X	X				
P06	Public	SE-33413793	Name Withheld	Regional	Object	No - Unique										X		X									
P07	Public	SE-33467631	Susan Chambers	Broader	Object	No - Unique		X											X				X			X	
P08	Public	SE-33491284	Neil and Denise Burge	Local	Object	No - Unique	X	X	X		X	X		X			X		X			X	X	X	X	X	
P09	Public	SE-33500073	Jess Beattie	Regional	Object	No - Unique										X			X			X					
P10	Public	SE-33525879	Name Withheld	Regional	Object	No - Unique			X																		
P11	Public	SE-33527613	Name Withheld	Local	Object	No - Unique		X	X		X	X	X				X		X		X	X	X		X	X	
P12	Public	SE-33568795	Name Withheld	Broader	Object	No - Unique		X	X										X		X			X	X	X	
P13	Public	SE-33634541	Tamara Somerville	Local	Object	No - Unique		X				X				X						X	X		X	X	
P14	Public	SE-33652499	Rachael Somerville	Local	Object	No - Unique																	X		X		
P15	Public	SE-33652513	Name Withheld	Local	Object	No - Unique																	X				
P16	Public	SE-33653766	Name Withheld	Local	Object	No - Unique		X	X			X						X	X			X	X	X		X	X
P17	Public	SE-33658682	Rod Blom	Broader	Object	No - Unique														X		X					
P18	Public	SE-33687719	Stephen Somerville	Local	Object	No - Unique		X	X			X				X			X		X	X	X			X	
P19	Public	SE-33695423	Name Withheld	Local	Object	No - Unique		X	X			X				X		X	X		X	X	X				
P20	Public	SE-33698712	Steven Cox	Regional	Object	No - Unique			X					X								X	X				
P21	Public	SE-33706063	Michelle Driscoll	Local	Object	No - Unique		X				X						X	X				X	X			
P22	Public	SE-33703179	Name Withheld	Local	Object	No - Unique		X	X			X						X	X					X		X	X
P23	Public	SE-33707106	Luke Burge	Local	Object	No - Unique		X	X		X	X							X			X	X				
P24	Public	SE-33707115	Mark Lancaster	Local	Object	No - Unique		X	X			X				X			X	X	X	X	X			X	
P25	Public	SE-33710306	Tony Spiller	Local	Object	Yes - Form Letter 1		X	X			X				X		X	X	X	X	X	X	X		X	
P26	Public	SE-33711318	Megan Spiller	Local	Object	Yes - Form Letter 1		X	X			X				X		X	X	X	X	X	X	X		X	
P27	Public	SE-33710393	Riley Spiller	Local	Object	Yes - Form Letter 1		X	X			X				X		X	X	X	X	X	X	X		X	
P28	Public	SE-33738073	Geoff MacDonald	Local	Object	No - Unique		X	X		X	X					X		X			X	X				
P29	Public	SE-33736636	Scott Lawrence	Regional	Object	No - Unique						X										X				X	
P30	Public	SE-33745225	Melanie Pegg	Regional	Object	No - Unique			X			X						X				X				X	
P31	Public	SE-33771739	Jim Costello	Local	Object	No - Unique		X				X						X	X						X	X	
P32	Public	SE-33777925	Paul Spiller	Local	Object	Yes - Form Letter 1		X	X							X			X	X	X	X	X	X		X	
P33	Public	SE-33775913	Jennifer Spiller	Local	Object	Yes - some sections copied		X	X							X			X	X	X	X	X	X		X	
P34	Public	SE-33780011	Greg Ferguson	Broader	Support	No - Unique												X									
P35	Public	SE-33799364	Name Withheld	Broader	Object	No - Unique			X										X					X		X	
P36	Public	SE-33805821	Name Withheld	Local	Object	No - Unique						X								X							
P37	Public	SE-33808998	Bruce Chisholm	Regional	Object	No - Unique																		X			
P38	Public	SE-33812724	Sam Wass	Regional	Object	No - Unique		X	X					X		X						X					
P39	Public	SE-34010797	Phillipa Fagan	Local	Object	No - Unique			X														X				
P40	Public	SE-34010830	Ian Hill	Broader	Object	Yes - Form Letter 2															X						
P41	Public	SE-34016838	Maureen Magee	Broader	Object	Yes - Form Letter 2															X						
P42	Public	SE-34019723	Jocelyn Maughan	Broader	Object	No - Unique			X										X					X			
P43	Public	SE-34029992	Kylie Renahan	Local	Object	No - Unique								X													
P44	Public	SE-34037464	Matt Sprakel	Local	Object	No - Unique					X	X		X			X	X			X	X	X				
P45	Public	SE-34036774	Sheridan Thomas	Local	Object	No - Unique			X			X		X				X			X	X	X				
P46	Public	SE-34048295	Name Withheld	Local	Object	Yes - Form Letter 2								X							X						
P47	Public	SE-34046797	Steven Albury	Local	Object	No - Unique															X						
P48	Public	SE-34011214	Amanda Albury	Local	Object	No - Unique		X	X		X	X				X	X	X		X	X	X					
P48A	Public	SE-34058549	Amanda Albury					As above	As above	As above	As above	As above	As above	As above	As above	As above	As above	As above	As above	As above	As above	As above	As above	As above	As above	As above	

Submission Details							Submission Issues																			
Submission ID	Submitter Type	DPE Submission ID	Submitter Name	Submitter Location Classification	Submission Type	Form Letter	Aboriginal Heritage	Air Quality	Biodiversity	Bushfire	Community Engagement	Economics	Geology	Cumulative or General Environmental Concerns	Rehabilitation	Health	Standards & Integrity	Justification, Sustainability & Land Use	Noise	Project Design	Procedural or Systemic Matters	Social	Traffic & Transport	Visual Amenity	Vibration and Blasting	Water
P49	Public	SE-34060988	Brad Hallet	Local	Object	No - Unique										X							X			
P50	Public	SE-34196681	Rusty Listens	Broader	Object	No - Unique		X	X		X	X		X			X		X	X		X	X	X	X	X
P51	Public	SE-36493777	Name Withheld (MB)	Local	Object	No - Unique		X				X			X					X						
P52	Public	SE-36514659	Name Withheld	Local	Object	No - Unique		X	X					X		X			X				X			X
P53	Public	SE-36518902	Name Withheld	Local	Object	No - Unique			X					X								X	X			
P54	Public	SE-36957214	Kerrylea MacDonald	Local	Object	No - Unique		X	X		X	X		X				X	X				X		X	X
P55	Public	SE-36989632	Rina Rocco	Local	Object	No - Unique															X					
P56	Public	SE-36989634	M Rice	Local	Object	No - Unique															X					
G57	Group ICAG Cover Letter	SE-34053242	ICAG Cover Letter					Cover letter	Cover letter	Cover letter	Cover letter	Cover letter	Cover letter	Cover letter	Cover letter	Cover letter	Cover letter	Cover letter	Cover letter	Cover letter	Cover letter	Cover letter	Cover letter	Cover letter	Cover letter	Cover letter
G57A	Group	SE-34053242	ICAG - Amanda Albury	Local	Object	No - Unique		X	X		X			X		X		X	X	X		X				
G57B	Group	SE-34053242	ICAG - Margarete Ritchie	Regional	Object	No - Unique		X	X							X			X			X	X		X	
G57C	Group	SE-34053242	ICAG - Linda Pereboeff	Local	Object	No - Unique		X	X			X				X				X		X	X		X	
G57D	Group	SE-34053242	ICAG - Gail and Paul Foster	Regional	Object	No - Unique		X	X										X				X			
G57E	Group	SE-34053242	ICAG - Dennis O'Donohue	Local	Object	No - Unique		X											X							
G57F	Group	SE-34053242	ICAG - LB	None Provided	Object	No - Unique		X	X			X							X							
G57G	Group	SE-34053242	ICAG - John McKenzie	Regional	Object	No - Unique		X										X	X			X	X			
G57H	Group	SE-34053242	ICAG - Steven and Bronwyn Larsen	Regional	Object	No - Unique												X					X			
G57I	Group	SE-34053242	ICAG - Susanna Pereboeff	Regional	Object	No - Unique		X	X							X			X			X	X		X	
G57J	Group	SE-34053242	ICAG - John and Wendy Kopko	Local	Object	No - Unique			X			X											X			
G57K	Group	SE-34053242	ICAG - Anonymous Objector 1	Local	Object	No - Unique		X	X			X				X			X			X	X		X	
G57L	Group	SE-34053242	ICAG - Glenn Albrecht	Regional	Object	No - Unique			X					X					X			X	X			
G57M	Group	SE-34053242	ICAG - Anonymous	Local	Object	No - Unique		X	X		X	X			X	X	X	X	X	X		X	X		X	X
G58	Group	SE-33350109	Ocean and Earth Farmstay	Local	Object	No - Unique			X		X	X					X		X			X	X		X	
G59	Group	27/1/22 Received Outside Submission Timeframe	Koala Koalition Eco Network	Regional	Object	No - Unique		X	X			X		X	X	X	X	X	X	X	X	X	X	X	X	



APPENDIX B: UPDATED MITIGATION MEASURES

Deep Creek Quarry Response to Submissions Report

Mitigation measures proposed for the Deep Creek Quarry Project are contained in the following tables, these measures are subject to amendment as necessary through the Conditions of Project Approval and the associated approved management plans.

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Management Table 1: General environmental controls

Aspect	Management and / or Monitoring Measure
General	- IDPL will produce a series of environmental management plans (EMPs) prior to operations commencing, with a Construction Environmental Management Plan (CEMP) to manage the construction phase. The EMPs and CEMP will provide detail on the implementation of the environmental management and monitoring measures presented throughout the EIS and consolidated within this table, and as required by conditions of consent and licenses. - IDPL will provide an Annual Review of the quarry's environmental performance in line with the requirements of the EMPs to the relevant agencies. Annual reviews will be made publicly available via the quarry website. - Staff, contractor and visitor inductions will include where relevant an overview of management measures and responsibilities and will include: - Relevant EMP requirements - Environmental sensitivities - Hazard and risk management - Designated site access - Waste management, spill response and management - Heritage management and heritage finds protocol - Weed and pathogen control - Bushfire prevention - Emergency response - Incident reporting (environmental and safety) - Driver code of conduct.

Management Table 2: Social mitigation measures

Aspect	Management and / or Monitoring Measure
Social (Community Relations)	- Establishment of a Community Consultative Committee (CCC) to facilitate meetings with representatives of the local community, that includes annual quarry inspections where feasible. - Document CCC meeting agendas, issues raised, action items and close-out. - A dedicated information contact phone number will be established prior to the commencement of construction and maintained throughout the life of the project. - Feedback, enquiries and complaints received will be recorded in a consultation register that will be established prior to the commencement of construction and maintained throughout the life of the project. - Complaints recorded in the consultation register will include details of complainant, IDPL response and commitments to follow-up by whom and when will be detailed. - Community information newsletters (at least annually) providing awareness of: - Project progress - Operating hours, contact information and details of how to provide feedback - Ways in which further information can be sought - Details of breaches of any development approval and licence conditions and IDPL response and corrective actions. - Website to include: - Contact numbers - Copies of community newsletters - Copies of minutes from Community Consultative Committee - Copies of approvals, copies of licenses.
Social	- Pre-Construction - Proactive communication and engagement with neighbours, the community and Council around the Project prior to site establishment. Measures could include newsletter and construction updates on the scope of the project, likely high impact activities (noise, vibration, traffic and changes to the landscape), and contact details for inquiries and complaints. - Meetings/presentations with neighbouring properties and community groups prior to construction should also be considered. - Develop an inquiry and complaint process for the construction period. - Engage with the local community and neighbours to develop a working relationship to disseminate information during and after construction. - Construction - The Construction Environmental Management Plan (CEMP) should be prepared that incorporates the findings of the various project technical studies in relation to communication and notifications. The CMP should detail proposed management and mitigation measures for the identified impacts including: - Amenity impacts including noise monitoring, buffers for visual impacts - Traffic management - Site safety and management - Health impacts – noise, dust, and emissions - Heritage management including unexpected finds procedure - Complaints management process - Ongoing communications with the community around the project to keep residents updated on construction scheduling. This may include signage, notifications, and other appropriate communication channels. - Investigate opportunities to use local contractors, suppliers, and service providers. - Operations - Develop Community Engagement Plan (CEP) identifying proactive and ongoing engagement and communication strategy to build positive relationships with surrounding stakeholders. - Establish consultative committee or reference group.

Aspect	Management and / or Monitoring Measure
	○ Ongoing communication with neighbouring community including creating a Deep Creek Quarry website with regular updates and blasting notifications. ○ Landscape works along the access road installed early in the project, potentially using mature vegetation ○ Proactively manage issues, with nearby residents to avoid escalation to complaints ○ Ongoing engagement with the community. ○ Inquiries and complaints management process.

Management Table 3: Air quality mitigation measures

Aspect	Management and / or Monitoring Measure	
Environmental Protection Licence	• Construction and operation of the quarry in accordance with the conditions of an EPL.	
Air quality	General	• Activities to be assessed during adverse weather conditions and modified as required (e.g., cease activity where reasonable levels of dust cannot be maintained using the available means). • Engines of on-site vehicles and plant to be switched off when not in use. • Vehicles and plant are to be fitted with pollution reduction devices where practicable. • Vehicles are to be maintained and serviced according to manufacturer's specifications. • Visual monitoring of activities is to be undertaken to identify dust generation.
	Exposed areas/stockpiles	• The extent of exposed surfaces and stockpiles is to be kept to a minimum. • Exposed areas and stockpiles are to be dampened with water as far as is practicable if dust emissions are visible, or there is potential for dust emissions outside operating hours. • Minimise dust generation by undertaking rehabilitation earthworks when topsoil and subsoil stockpiles are moist and/or wind speed is below 10 m/s.
	Material handling	• Reduce drop heights from loading and handling equipment where practical. • Dampen material when excessively dusty during handling. • Dust suppression on crushing and screening; water sprays as required to control fugitive dust emissions.

Aspect	Management and / or Monitoring Measure	
	Hauling activities	• Unsealed haul roads should be watered using water carts such that the road surface has sufficient moisture to minimise on-road dust generation but not so much as to cause mud/dirt track out to occur. • Regularly inspect haul roads and maintain surfaces to remove potholes or depressions. • Access roads and hardstand areas will be maintained to minimize excessive fine loose material to limit dust. • Vehicle traffic is to be restricted to designated routes • Speed limits are to be enforced. • Inductions and signage must remind drivers of legal responsibility to cover laden vehicle loads before travelling off-site.
	Receptor R30	• IDPL are committed to work with landowners (including R30) to minimise the impacts on health and enjoyment of their respective property as a result of the construction and operation of the quarry.

Management Table 4: Noise mitigation measures

Aspect	Management and / or Monitoring Measure
Environmental Protection Licence	• Construction and operation of the quarry in accordance with the conditions of an EPL.
Noise	A Noise Management Plan (NMP) will be developed for the quarry prior to the commencement of construction, and at a minimum the NMP would include: • A noise monitoring program, including: ○ Noise monitoring on commencement of construction and on a quarterly basis for at least the first year of operation to determine compliance with the noise criteria and to inform any further noise mitigation works, should the need arise. Monitoring locations could, subject to acceptance by landowner, include R6 and/or R19 and R24 or R25. • Management controls to minimise noise impacts, including: ○ Relevant best practice noise management practices. ○ Ensuring plant and equipment used onsite are generally consistent with the sound power levels used in this noise modelling assessment. ○ The location of plant and equipment relative to bunding and screens is generally consistent with this noise modelling assessment. • Response protocols in the event of a monitored exceedance or noise complaint and implementation of reasonable feasible mitigation measures where criteria are exceeded.
Meteorological Monitoring	• Installation of a meteorological station onsite consistent with EPA requirements.

Management Table 5: Blasting mitigation measures

Aspect	Management and / or Monitoring Measure
Blasting	• A Blast Management Plan (BMP) will be prepared and implemented prior to any blasting occurring onsite. • Where necessary, consultation will occur with the roads authority prior to any temporary road closure during blasting (e.g. Deep Creek Road) to maintain public safety. • Blasting will generally only be permitted during the hours of 9 am to 4 pm Monday to Friday and will not take place on Weekends or Public Holidays. • Blasting will take place no more than once per day. • Blasting will include the provision of spotters, both to provide a visual cue to where blasting will occur and to stop blasting from occurring in the event the event may result in injury to personnel and / or members of the public or site infrastructure / machinery • The Blast Management Plan will include the following items, at minimum: ○ Summary of statutory requirements ○ Outline of blasting frequency and hours ○ Outline of sensitive receivers in the vicinity of the DCQ ○ Procedure for blast notifications ○ Measures to ensure compliance with license limits. ○ Blast management and control measures, including measures to ensure both public and personnel safety during blasting (Blast Exclusion Zone) ○ Procedure for monitoring of meteorological conditions, airblast pressure, ground vibration, flyrock (airborne rocks) and noise during blasting. ○ Procedure for management of receiver complaints. ○ Remedial and reporting action plan to address property damage. ○ Procedure for the updating of Blast Management Plan every 5 years, unless required as a result of consultation, utilising monitoring data to inform the scheduled update. • Mitigation measures outlined under the Voluntary Land Acquisition and Mitigation Policy will be applied as required (no requirements have been identified during impact assessment).

Management Table 6: Biodiversity mitigation measures

Aspect	Management and / or Monitoring Measure		
Biodiversity	<table border="1"> <tr> <td>Clearing of native vegetation</td><td> • Avoid and minimise clearing impacts to native vegetation where practicable • Clearly delineate the boundaries of the Development Site to ensure no accidental incursions within retained vegetation • Appropriate signage such as 'No Go Zone' or 'Environmental Protection Area' should be installed on perimeter adjoining retained vegetation or the Stewardship Site. • Identify and communicate the location of any 'No Go Zones' in site inductions. </td></tr> </table>	Clearing of native vegetation	• Avoid and minimise clearing impacts to native vegetation where practicable • Clearly delineate the boundaries of the Development Site to ensure no accidental incursions within retained vegetation • Appropriate signage such as 'No Go Zone' or 'Environmental Protection Area' should be installed on perimeter adjoining retained vegetation or the Stewardship Site. • Identify and communicate the location of any 'No Go Zones' in site inductions.
Clearing of native vegetation	• Avoid and minimise clearing impacts to native vegetation where practicable • Clearly delineate the boundaries of the Development Site to ensure no accidental incursions within retained vegetation • Appropriate signage such as 'No Go Zone' or 'Environmental Protection Area' should be installed on perimeter adjoining retained vegetation or the Stewardship Site. • Identify and communicate the location of any 'No Go Zones' in site inductions.		

Aspect	Management and / or Monitoring Measure
Removal of hollow-bearing trees / habitat trees and management of fauna.	- Keep clearing to smallest area practicable to complete each construction activity / stage. - Hollows removed will be replaced with nestboxes in retained vegetation within the IDPL landholding at a ratio of 1:1. - A pre-clearing protocol will be implemented during clearing works, as follows: - Pre-clearance surveys will be undertaken to determine presence of fauna. - A suitably qualified and trained fauna handler will be present during hollow-bearing tree clearing to rescue and relocate displaced fauna.
Koala	- Further mitigation measures to reduce the potential for impacts to Koalas are presented in the amended KPOM (Appendix E), measures include: - Koala exclusion fencing through central section of Quarry Access Road. - Installation of three fauna underpasses in the central section of the Quarry Access Road. - Installation of a suitable fauna ledge as an underpass within the culvert on Deep Creek. - Installation of long speed humps either side of Deep Creek to limit speed to the signposted 20km/h limit. - Speed limit on the Quarry access road to 40km/h except on Deep Creek. - Planting of PKFTs.
Offset loss of Preferred Koala Feed Trees (PKFTs)	For loss of estimated 225 PKFTs from PCT 1567, IDPL will plant and maintain until established approximately 450 PKFTs within its land holding on lands within and adjoining the Deep Creek riparian corridor.
New Holland Mouse	Develop and implement a suitable New Holland Mouse Relocation Plan in consultation with Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEW) prior to disturbance of identified habitat.
Impacts to surface and groundwater quality and quantity due to sediment run-off and/or contaminant runoff into adjacent watercourses	- Rehabilitate bare surfaces as soon as feasible. - Implement erosion and sediment controls. - Site-based vehicles will carry spill kits - A Soil and Water Management Plan will be required prior to disturbance activities that includes: - An Erosion and Sediment Control Plan - A Groundwater Management Plan - A Surface Water Management Plan. - Limit the use of pesticides in the Development Site where possible to avoid the risk of contamination of nearby watercourses/wetland areas.

Aspect	Management and / or Monitoring Measure	
	Vehicle collision with fauna	• Speed limits within the Development Site will be limited to 40 km/hr, with exception to the Deep Creek crossing that will be restricted to 20km/h. • This speed limit will be communicated in site inductions and through onsite signage • Staff and contractor awareness of increased animal activity during dawn and dusk should be communicated in site inductions and through appropriate onsite signage • Mitigation measures to reduce the potential for vehicle strikes to Koalas are presented in the KPOM (Appendix E).
	Transfer of weeds and pathogens to and from site.	Fungal pathogens, including <i>Phytophthora cinnamomi</i> and Myrtle Rust (<i>Puccinia psidii</i>), and invasive weeds can have devastating impacts on native plant communities and inhabiting fauna if not managed. Key measures are recommended to include: • Earth moving equipment and off-road vehicles will be required to enter the site clean, free of loose dirt and vegetation matter. • Weed (noxious weeds) infestations within the construction footprint are to be identified and mapped prior to construction. • Ensure soil and seed material is not transferred between weedy and weed free areas onsite. • A Plan of Management for the control of noxious weeds is to be included in the Biodiversity Management Plan. This is to include weed control works to be conducted throughout the construction phase of the Project, and follow-up weed control within the Development Site post construction.

Aspect	Management and / or Monitoring Measure	
	Noise, vibration, waste and air pollution impacts to adjacent sensitive habitat areas.	- Increased human activity (from workers and traffic levels) directly adjacent to sensitive habitat areas may cause disturbance to flora and fauna species in adjoining habitat. Impacts from operational activities, such as disturbance to an animal's normal behaviour patterns due to noise, vibration, and dust may cause areas of previously suitable habitat to become sub-optimal and may cause fauna species to vacate areas of previously suitable habitat. Management Plans for the Quarry will consider measures to mitigate impacts on flora and fauna from noise, vibration, waste, and air pollution such as: - Traffic Management Plan that will include measures to improve driver behaviour, that will be communicated through inductions and a Drivers Code of Conduct applicable to all haulage contractors. Key measures to be included are: - Speed limits within the Development Site will be limited to 40 km/hr and 20km/hr through the Deep Creek crossing. - Speed limit signage - Installation of long speed humps on the access road either side of Deep Creek to help reduce vehicle speed. - Staff and contractor awareness of increased animal activity during dawn and dusk should be communicated in site inductions and through appropriate onsite signage. - Enforce 'carry-in, carry-out' policy regarding rubbish and waste materials generated on site to avoid waste materials entering adjacent vegetation, suitable waste receptacles to be located at office at minimum. - Restriction of public access and associated impacts from domestic pets, waste dumping and damage to adjoining vegetation must be enforced pre, during and post construction. - Fence sensitive areas to delineate 'no go' zones. - Noise and vibration minimization practices should be included in the Noise and Vibration Management Plan for the quarry. - Dust control measures will be implemented through the Quarry's Air Quality Management Plan, this should include covering loads where required; amending operations under excessive wind conditions including ceasing operations if required; use of water carts and static sprays as required to control dust; rehabilitation or stabilisation of exposed surfaces; and, other dust minimisation measures as become necessary during works.
	Retained Vegetation Areas	- Implement weed control program to maintain or reduce the existing weeds within onsite retained vegetation. - Repair and erection of fencing as needed to ensure the exclusion of livestock from the offset area.

Aspect	Management and / or Monitoring Measure	
	Stewardship Areas	- Repair and erection of fencing as needed to ensure the exclusion of livestock from the offset area. - Implement weed control and maintain fencing until Stewardship site is active and under management plan consistent with the Biodiversity Offsets Scheme.
	Biodiversity Offset Strategy	Satisfaction of the Biodiversity Offset Strategy detailed within Section 3.7 of the RTS.

Management Table 7: Economic mitigation measures

Aspect	Management and / or Monitoring Measure	
Economics	- To maximise local benefits derived from the Project, the proponent and contractors engaged by the proponent will be encouraged to source labour locally where possible and practical, and provide training opportunities where practical - To maximise local benefits derived from the Project, the proponent and contractors engaged by the proponent will provide sufficient opportunities and access to information for local businesses to understand the Project's supply arrangements and requirements, and improve their ability to secure supply contracts.	

Management Table 8: Hazard mitigation measures (flooding, bushfire, site and public safety)

Aspect	Management and / or Monitoring Measure	
Hazards	Flood Management	- Adoption of surface water mitigation measures stated in (see 'surface water' within this table) - A Soil and Water Management Plan (SWMP) will be prepared for the proposed DCQ to support the CEMP. The SWMP will be implemented throughout the duration of construction.
	Bushfire	- A Bush Fire Management Plan (BFMP) will be prepared prior to the commencement of construction, including the following information at minimum: - Asset Protection Zone locations and management details. - Landscaping requirements, where proposed - Access provisions such as locations, passing bays and alternate emergency access. - Water supplies and bush fire suppression systems (including static water supply, natural water sources etc.) where utilized. - Schedule of the BAL requirements and building footprints as well as any specific construction details. - Details regarding the Bush Fire Emergency Management and Evacuation Plan. - Any other essential bush fire safety requirements. - Contractors or employees that smoke must do so in a safe manner having full regard to the safe disposal of cigarette butts to ensure bushfire ignition does not occur. Smoking should be confined to the designated smoking area on site

		• Review bushfire danger ratings and when total fire bans are in place prior to undertaking clearing activities or other hot works onsite. Postpone activity where feasible or increase preparedness through having a fire tanker or suitably equipped water cart on standby. • All mobile machinery and fixed plant to include on-board fire extinguishers. • Maintain a sufficient asset protection zone (APZ) around the office and workshop area. • All dangerous goods will be stored in accordance with AS1940, AS1596 and the Dangerous Goods Code. • A minimum 4m vertical clearance will be maintained on DCQ internal roads to allow for tanker access in the event of an emergency. • The DCQ access road is not to be obstructed. • APZs at the DCQ are to be maintained to standards outlined under Appendix 4 of the NSW RFS document <i>Planning for Bush Fire Protection 2019</i>. • The water tank(s) will be fitted with a 65mm Storz outlet with ball valve to allow for use by firefighting personnel if required. • Where utilised, bottled gas supplies will be installed and maintained in accordance with AS/NZS 1596:2014, with valves / outlets facing away from the predominant bushfire threat, site office and workshop area (where applicable). Connection to gas cylinders will be metal. Any gas cylinders will be stored more than 10m from any bushfire hazard. • The proposed DCQ access road verges will be designated 'no stopping' zones to maintain a clear thoroughfare. • In the event of an emergency, Deep Creek Rd (public road), or via Forest Glen Road entrance will provide a secondary emergency egress from the DCQ for site personnel.
	Site Safety	• Prior to the commencement of construction, a Work Health and Safety Management Plan (WHS Management Plan) will be prepared. • Controls listed under the WHS Management Plan will be included as part of a site induction, with all personnel to be presented and sign onto the induction form prior to the commencement of work at the DCQ. • All contractors will be required to partake in a daily toolbox talk by the Construction Manager (or delegate) during construction of the DCQ. • All contractors will then be required to undertake toolbox talks for their individual works prior to commencement each day. Hard copies of toolbox talks will be made available to the DCQ Construction Manager and / or Project Manager upon request. • All personnel will be required to wear appropriate PPE when onsite, as deemed appropriate by their field of work and the DCQ OHS Management Plan.

	Public Safety	• Application of controls for road management and blasting as listed above. • All personnel inducted to the DCQ will be informed of the appropriate communication channels in the event a member of the public is observed onsite. • Fencing and signage of the perimeter of the DCQ Project will occur where a potential safety risk is present (e.g. above highwalls, along Deep Creek Road where public access is feasible). • Quarry vehicles and machinery are to be fitted with reverse alarms (preferentially broadband alarm). • All works at the DCQ are to be stopped immediately once management personnel have been informed of unauthorised entry. Works will not recommence until the unauthorised intruder has been located and removed from site or taken to the site office. • All visitors to the DCQ will be required to sign in upon entry, where they will be presented with a visitor card and high visibility vest (if required). Visitors will return card (and vest if used) when signing out and leaving the DCQ. • The DCQ site entry will include a security gate, to be closed outside of construction and or operation hours. ○ Security cameras will be fitted throughout the DCQ both to observe and record intruders, and to provide a visual cue of site security that may discourage unauthorised access.
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Management Table 9: Heritage mitigation measures

Aspect	Management and / or Monitoring Measure
Aboriginal Heritage	- As a State Significant Development (SSD), DCQ will implement an Aboriginal Cultural Heritage Management Plan (ACHMP) which will act in place of an AHIP for the life of the project. This is per Section 4.41 of the EP&A Act (SSD). - Artefacts uncovered during subsurface testing will be relocated and reburied in locations determined through consultation with the DCQ RAPs. - RAPs will be given the opportunity to be present for the relocation of artefacts uncovered during subsurface testing. - Graders will be utilised during the construction of the proposed detention basins, allowing for shallow scraping of topsoil (to a nominal depth of 300 mm) to lower the possibility of damaging further artefacts that may be present within the proposed detention basin footprints. - RAPs will be offered the opportunity to be present during excavation for the installation of detention basins to allow for identification and collection of any artefacts (or potential artefacts) that are uncovered during excavation works. - All artefacts uncovered during subsurface testing, construction, operation and rehabilitation of the DCQ will be reburied onsite in a location that will not be impacted by the DCQ - Once artefacts have been retrieved and reburied AHIMS will be updated with an impact recording and new location details. - In the event of discovery of a previously unknown object in the course of construction works associated with the development the following procedure to be followed: - Ground disturbance works in vicinity of the object will cease. - The works area will be secured to prevent additional works or intrusion. - The DCQ RAPs and an archaeologist will be notified of the discovery. The artefact will be collected (consistent with the ACHMP) and removed to a long term storage location (preferably onsite). - The ACHMP will define the relevant actions if the archaeologist considers the object/feature to be significant (e.g. a hearth). This will include notification of Heritage NSW and salvage to be developed in consultation with Heritage NSW and the RAPs. - In the event that any potential human skeletal remains are uncovered during works, all work in the immediate area of the remains will halt immediately. The incident will be immediately reported to the NSW Police, Heritage NSW and the RAPs. - No action will be undertaken until the NSW Police provide written notification to the Proponent. If the skeletal remains are identified as Aboriginal, the Proponent will contact DPC and the DCQ RAPs to determine suitable salvage methodologies. No works will continue until Heritage NSW provides written notification to the proponent. - Contractors undertaking earthworks associated with the DCQ will be provided with an Aboriginal Cultural Heritage Awareness Induction document, to be undertaken in conjunction with site induction procedures. The document will outline protocols for discovery of previously identified Aboriginal objects and information to aid in the identification of Aboriginal objects.
Historic Heritage	The report has concluded that the area contains no items of heritage significance and that there are no issues that would constrain the approval of the quarry or require specific management measures.

Management Table 10: Hydrocarbon mitigation measures

Aspect	Management and / or Monitoring Measure
Hydrocarbon Management	• A Pollution Incident Response Plan (PIRMP) will be prepared prior to construction. The PIRMP will be prepared in accordance with NSW EPA Guidelines • A chemical inventory, updated daily, will be clearly displayed onsite including all Safety Data Sheets (SDS), which must be no older than 5 years • All vehicles and machinery should be turned off when not in use • Daily equipment pre-start inspections will be undertaken by site personnel. These are designed to identify faulty equipment and potential oil leakages • Fuel, hydrocarbons and chemical storage will be suitably bunded and within an undercover area within the Office and Workshop Area. • Personnel to be trained in spill containment and response procedures • Spill response kits will be kept and maintained onsite. • Mobile equipment used on site will: ○ Be refueled within controlled areas more than 40m from drainage lines. ○ Have access to spill control kits. • Suitable security arrangements will be maintained onsite to avoid vandalism and potential hydrocarbon spills. • Any hydrocarbon spills on site will include the following response: ○ Immediate deployment of spill control kits ○ Notifications as per the Pollution Incident Response Management Plan (PIRMP) dependent on size and location of spill. ○ Recovery of all contaminated materials for offsite disposal at a licenced waste facility.

Management Table 11: Rehabilitation and soils mitigation measures

Aspect	Management and / or Monitoring Measure
Erosion and Sediment Control	• A CEMP including erosion and sedimentation controls will be prepared and implemented for all construction activities proposed • Erosion and sediment control plans (ESCP) to be prepared and implemented with all internal road construction activities • Install and maintain erosion and sediment controls on-site as required in accordance with the Code of Practice for Managing Urban Stormwater – Soils and Construction (Landcom, 2004) • Erosion and sediment controls will be monitored monthly to ensure performance is maintained.
Rehabilitation and soils	• At completion of the quarrying activity: ○ Infrastructure suitable for the final land use will be retained if approved by Council in a Development Application at that time. ○ The proposed Deep Creek Quarry access road will be retained at completion of quarrying for long term property access. ○ The two minor culverts adjacent to the quarry may be retained if in good condition and useful for access to the north (e.g. as Deep Creek Road uses bed level crossings). ○ The quarry pit and stockpile area and unused portions of the work shop area will be rehabilitated and planted with grasslands and native woodland. • The BDAR recorded four native plant community types (PCTs). Where revegetation is slated to return to native woodland, species assemblages will be sourced from these communities. • Generally, the process of revegetation is as follows:

Aspect	Management and / or Monitoring Measure
	○ Immediately prior to topsoil spreading, the area will either: ▪ Be ripped if possible or otherwise fractured to provide more permeable subsoil layer to allow for water and root penetration; or ▪ Sufficient growth media in the form of subsoil or topsoil will be applied to allow for water accumulation and root development. ○ Topsoil will be re-spread by machine over the areas to a depth of between 100 mm and 200 mm subject to availability, areas such as the quarry benches would benefit from application of deeper quantities. ○ Once topsoil has been respread, seed will be broadcast using the equipment/machinery adequate for the area. ○ Seed for the revegetation will be purchased from commercial seed suppliers where available, but for greater diversity a few species will be required to be collected from site prior to or during clearing. ○ Seed application is the preferred method of revegetation establishment, but tubestock supplied by a recognised native plant nursery can be used if conditions are appropriate (e.g., revegetation of creek lines, visual amenity screens and shade tree patches on the quarry floor). ● The quarry floor will have a hard rock substrate with a shallow topsoil layer suitable for grassland, with patches of shade trees and woodland with deeper soils. In areas of shade trees and woodland, the substrate will require additional shaping (e.g. ripping or blasting and excavation below the quarry floor) to enable the placement of subsoils and topsoil to a nominal depth of approximately 1 m. ● Erosion and sediment control structures will be implemented to prevent run-off and erosion from topsoil. ● Stockpiling of topsoils and subsoils for extended periods of time will lead to degradation of these soils as a rehabilitation resource, but this impact can be contained with suitable management actions including: ○ Topsoil stockpiling should be limited to as short a time as possible, subject to operational requirements ○ stockpiles should be constructed as flat and wide as the available space allows (to prevent anerobic conditions deep within the stockpile) ○ The stockpile should also be seeded to reduce erosion and runoff ○ All stockpiles are to be bunded with a soil bund to contain runoff and erosion until vegetation becomes established ○ When the stockpile is due to be utilised, established vegetation is to be mulched and incorporated into the respread soil.
Rehabilitation Monitoring	● The following monitoring methods are to be used depending upon vegetation type and size of area that has been rehabilitated. Rehabilitation flora monitoring will be conducted annually: ○ Where the area to be rehabilitated is of sufficient contiguous area (>1 ha), monitoring will be conducted by the establishment of permanent 20m x 20m flora quadrats. It is anticipated that only the quarry floor and product stockpile areas consisting of grassland or pasture rehabilitation areas will require this methodology. The number of quadrats to be established based on the Biodiversity Assessment Methodology (BAM) are for areas of >2 – 5 ha two quadrats, while areas of >5 - 20 ha require three quadrats. Therefore, the product stockpile area will have two quadrats and the quarry floor will have three quadrats. Data collected within the quadrat will include the following: ▪ Species composition (including weed species) ▪ Total Vegetation cover (% coverage) as a general observation ▪ Five 1m x 1m plots will be measured at random to determine detailed cover and litter build up ○ Bare soil (if present). Shade tree patches will consist of stands of native tree species over native grasses or exotic pasture. These will be monitored by

Aspect	Management and / or Monitoring Measure
	observation. The same patches will be monitored to provide consistency with a data set collected as follows: ▪ Tree number and species (should be known from rehabilitation data) ▪ Height of trees – to determine growth ▪ General health of trees ▪ Ground cover under the canopy - determined as a general observation ▪ Weed presence and species. ○ If the number of trees (deemed as canopy species at maturity) on the patch exceeds five individuals, then a minimum of five trees will be consistently monitored to provide representative examples of the tree patch. These trees are to be marked with tape, paint or a peg to ensure that the same trees are measured each monitoring event ○ In addition, the quarry floor and product stockpile areas will have a walkover-style inspection conducted to identify weed areas, erosion, revegetation failure, fence condition, evidence of feral animal activity and any other feature or criterion requiring action to ensure successful rehabilitation. • Areas of linear or patch rehabilitation will be monitored by the establishment of transects that run along the length of the feature. The transects will be a maximum of 25m in length. If batters or linear features are of insufficient length to fit this transect, then visual observations only will be made. Data collected for transects will be: ○ Number of trees and within 1m either side of the transect ○ Average height of each stratum i.e. canopy species, midstorey species and shrub species (if present) ○ Cover to be measured using five 1m x 1m plots positioned at five-meter intervals, alternating either side of the transect to determine detailed cover and litter build up. • The extraction area benches will be rehabilitated to native vegetation as they will be unsuitable for agriculture. If access cannot be achieved, then visual inspection of the benches will be sufficient to determine if native vegetation has become established

Management Table 12: Traffic and road safety mitigation measures

Aspect	Management and / or Monitoring Measure
Traffic and road safety	• Prepare a CEMP prior to construction commencement that addresses construction related transport management. • A Traffic Management Plan (TMP) will be prepared and implemented prior to the commencement of operations for the DCQ. • Traffic control plans prepared by an accredited person are to be approved by the roads authority prior to implementation by an accredited person for the construction of the quarry intersection. • On completion of the proposed Deep Creek Quarry access road, a right of way for will be created to enable legal use of the access road for the three properties at the northern end of Deep Creek Road. • IDPL will maintain the existing level of access for all properties that use the northern end of Deep Creek Road. • IDPL will gain authority from the roads authority prior to works within the Deep Creek Road reserve. • The DCQ Project will not utilise the section of Deep Creek Road affected by the Native Title Claim. • The quarry intersection and associated acceleration and deceleration lanes will have signage installed, which will be agreed in consultation with the roads authority.

Aspect	Management and / or Monitoring Measure
	• A signed 40km/hr speed limit along all internal quarry roads, with exception to the Deep Creek Crossing section that will be limited to 20km/h. • IDPL will implement a Drivers Code of Conduct signed onto by all truck drivers accessing the quarry during the site induction, it will amongst other matters include a requirement that truck drivers do not use compression braking. • Haul trucks will be weighed on entry to the site via a weigh bridge at the site office complex and again on leaving the site where product weight and tickets will be generated and recorded for each load. • IDPL will annually report and make available to the Public via its website the road maintenance contributions paid by the quarry that are specific to this section of The Bucketts Way. • IDPL will include as part of the Driver Code of Conduct and induction for all contractors to actively report to IDPL where maintenance of The Bucketts Way is needed, IDPL will compile a log of reported issues and communicate the issue to the respective Council for action. • Once the final merge geometry and headwall locations are determined for the road widening works in the vicinity of the two cell pipe culvert underneath The Bucketts Way, both headwalls will be assessed to determine whether safety barrier protection is required. • Transport for NSW and the Mid Coast Council have been provided a copy of the Road Safety Audit - RSA (Appendix K of the EIS) for rectification of existing road deficiencies as necessary. • IDPL will consider fair and reasonable contribution (on a per tonne levy basis) to road authorities regarding future works on the Pacific Highway / The Bucketts Way intersection commensurate with the relative impact of the traffic generated by the quarry.

Management Table 13: Visual mitigation measures

Aspect	Management and / or Monitoring Measure
Visual	• Trees and shrubs can be planted along the proposed access road near The Bucketts Way to screen views of the proposed road where it can be seen from nearby residences • Bushland around the quarry site should be maintained to keep the existing visual screen intact • Materials, textures and colour selection should relate to the palette of the surrounding environment to minimise visibility and potential for visual impact • Reflective surfaces and bright, contrasting colours should be avoided.

Management Table 14: Water mitigation measures

Aspect	Management and / or Monitoring Measure
Surface Water	Water management controls will be revised and updated on determination of the project to ensure management measures proposed adequately reflect the requirements of the Conditions of Consent: • The revised controls will be prepared in consultation with the NSW EPA and NSW Water for approval by NSW DPE. • The proposed water management system (WMS) would form the basis of a site Water Management Plan (WMP), that will be developed post approval and outline how the WMS is to be operated to meet EPL conditions, and any other relevant conditions of consent, within the requirements of the POEO Act, taking account of both historical and current water qualities in the surrounding watercourses, and current and future downstream water users. • The WMP will allow for the ongoing assessment of risk as quarry operations progress, and the implementation of improvements and changes to the WMS where required. • The WMP for the quarry will also include: ○ Measures to avoid impacts on downstream aquaculture, as per NSW DPI (2017) publication Healthy Estuaries for Health Oysters – Guidelines (HEHO 2017). ○ Water quality and aquatic ecology monitoring linked to a Trigger-Response Action Plan (TARP). ○ Include controls to minimise sediment laden runoff (during construction and from the sealed quarry access road) reaching Deep Creek. ○ Be developed in consultation with NSW DPI. • The Water Management System will include: ○ Scour protection measures for the proposed watercourse crossing points associated with the proposed access route ○ Sediment dams designed with stable spillways for overflows in wet weather ○ Discharge points located within tributaries of Deep Creek with suitable scour protection controls and pumping procedures ○ Management for discharge of sediment dams to ensure water quality measures are implemented. All water management infrastructure, and scour protection measures are to be designed, constructed, maintained, and rehabilitated as necessary to: • Fulfil the statutory conditions of the project approval. • Meet industry standards and best practice, specifically: ○ Landcom 2004. Managing Urban Stormwater – Soils and Construction, Volume 1, 4th Edition ○ Department of Environment and Climate Change (DECC) 2008. Managing Urban Stormwater – Soils and Construction, Volume 2E – Mines and Quarries.
Riparian Corridor	• Provide compensatory planting to offset works required within the riparian corridor on a one for one basis, providing an extension of riparian corridor of at least 1,600m². It is to be located within the Proponents Landholding adjoining Deep Creek and be conducted in conjunction with replanting of PKFTs.
Groundwater	• The final landform will be free-draining and will therefore not represent a loss of groundwater to evaporation. • A groundwater management plan will be developed for the site post approval. The Groundwater Water Management Plan (GWMP) should contain the following information: ○ Presentation and analysis of water levels in groundwater monitoring wells and analysis of groundwater physical and chemical parameters and changes over time ○ Presentation of rainfall data and the possible correlations with groundwater and surface water measurements

Aspect	Management and / or Monitoring Measure
	○ Monthly information should be presented in internal reports and in reporting to government agencies. • Monitoring of the current groundwater network will be performed to evaluate drawdown in the groundwater level associated with quarry operation. This will continue with a period of post-closure monitoring. • As wells within the quarry are likely to be destroyed during quarry operations it is recommended that additional existing wells are added to the monitoring network and new wells are added to compensate for loss of wells within the quarry. These wells should be constructed as purpose-built monitoring wells. In particular wells should provide information on groundwater quality between the quarry and Deep Creek • A dedicated monitoring well should be installed down gradient of the petroleum storage area, to monitor for hydrocarbon contamination of groundwater • Water levels and water quality should be measured during the first year of operations on a monthly basis, followed by quarterly monitoring • Data loggers will be installed in wells at least during the first year of quarry operations to better understand the drawdown cone developing due to quarrying • Water quality monitoring should consist of the analytes and frequencies outlined in Appendix G of the Response to Submissions. • Water level and water quality data should be analysed following each quarterly sampling round and plotted to evaluate trends in the data that may correlate with rainfall and climatic conditions • A rain gauge will be installed on site and rainfall measurements made throughout the life of the quarry operation for comparison with surface and groundwater data. BOM rainfall data may also be used • A database will be maintained with manual water level measurements and measurements from data loggers • Given the natural background groundwater conditions at the quarry site show exceedances of the ANZECC 2000 95% levels for NSW Upland Rivers for many of the metals and some other parameters the selection of trigger values for future reporting needs to be carefully selected prior to commencing operations • Annual reporting should include: • A map showing the location of sites in the monitoring network • Rainfall data and annual variations • Graphs showing changes in groundwater level over time (hydrographs), comparing results between monitoring wells and with rainfall data • Tables and graphs showing changes in groundwater chemistry, identifying any trends and comparison with ANZECC values and other values which may be relevant trigger values • Measurement and recording of inflows into the quarry and evaluation against predictions • Conclusions from monitoring and any suggested modifications to the monitoring network • Reporting will be via the AER.
Water Licensing	• A license under the Protection of the Environment Operations Act 1997 (an EPL) will require two discharge locations: one for each of the two sediment dams. Water balance modelling indicates that licensing of discharges of up to about 124 ML per annum (3-7 times) will be required in median conditions. • Prior to requiring a water license (i.e. after construction): ○ IDPL will obtain a licence under the Water Sharing Plan for the Lower North Coast Unregulated and Alluvial Water Sources 2016 for an estimated 53ML to account for rainfall runoff capture from disturbed areas in excess of the

Aspect	Management and / or Monitoring Measure
	maximum harvestable right. No additional licence is required for water sourced from onsite dams as these are accounted for within the harvestable right. ○ IDPL will obtain licenses for up to 25ML to account for groundwater seepages into the pit under the Water Sharing Plan for the North Coast Fractured and Porous Rock Groundwater Sources 2016 (New England Fold Belt Coast Groundwater Source).

Management Table 15: Waste mitigation measures

Aspect	Management and / or Monitoring Measure
Waste	• No onsite disposal of waste will occur. • Scrap metal will be deposited into a dedicated receptacle for periodic collection and recycling. • Diesel fuel will be stored within self-bunded above ground tank. • All wastes generated by the DCQ will be managed by the way of Council collection services or via appropriately licensed waste contractors. • All waste oil will be collected and stored in containers within a covered and bunded area and will be removed from the site by an appropriately licensed contractor with all relevant waste tracking documentation completed. • All oil filters will be separately stored in containers with a covered bunded area and will be removed from the site by an appropriately licensed contractor with all relevant waste tracking documentation completed. • Sediment / soil will be periodically removed from the various silt control structures and used in progressive rehabilitation of the site. • All office paper and general waste originating from the office and amenities building from routine equipment and vehicle maintenance consumables will be placed in appropriate containers for collection by council or a licensed contractor for disposal/ recycling at an appropriate waste management facility. • Good housekeeping practices and routine inspection/maintenance will be undertaken of all non-public roads, site infrastructure and silt fencing. Damaged infrastructure including sediment control structures will be replaced as required. • Wastewater from the amenities and workshop will be collected in a pump-out system and transported off-site by a licensed contractor. • All waste tyres will be removed by the supplier of replacement tyres. • Hazardous substances will be stored with valves / outlets facing away from the predominant bushfire threat, site office and workshop area (where applicable). Connection to gas cylinders will be metal. Any hazardous material storage will occur more than will be stored more than 10m from any bushfire hazard and more than 10m from the proposed workshop and site office. Hazardous materials will be stored in accordance with AS 2187.1-1998 <i>Explosives-Storage, transport and use – storage</i>.



APPENDIX C: AMENDED DCQ ENGINEERING PLANS

**Deep Creek Quarry
Response to Submissions Report**



APPENDIX D: RELECTIVE INDEX REPORT



APPENDIX E: ECOLOGICAL RESPONSE

Deep Creek Quarry Response to Submissions Report

This appendix contains the following core documents:

Amended Biodiversity Development Assessment Report (BDAR)

Amended Koala Plan of Management (KPOM)

Biolink report on Koala and New Holland Mouse



APPENDIX F: AQUATIC ECOLOGY ASSESSMENT

Deep Creek Quarry Response to Submissions Report



APPENDIX G: GROUNDWATER IMPACT ASSESSMENT

**Deep Creek Quarry
Response to Submissions Report**



APPENDIX H: SURFACE WATER ASSESSMENT

**Deep Creek Quarry
Response to Submissions Report**



APPENDIX I: DRAFT EPL CONDITIONS

**Deep Creek Quarry
Response to Submissions Report**