

Summary of Mitigation Measures

Provided below is a summary of the updated mitigation measures to accommodate the proposed MOD 11 development.

1.0 Plans, Documents and Approvals

The development will be completed generally in accordance with the documentation and descriptions of the development provided in the Section 4.55(2) Modification Report (April 2026) prepared by ADW Johnson.

The development will be carried out in general accordance with Project Approval MP09_0175.

2.0 Revision of Management Plans

The following Management Plans, as approved by the NSW Planning Secretary, will be updated to reflect the MOD 11 development:

- KEQ Environmental Management Strategy.
- KEQ Biodiversity Offset Strategy.
- KEQ Biodiversity Offset Area Management Plan.
- KEQ Heritage Management Plan.
- KEQ Noise Management Plan.
- KEQ Blast Management Plan.
- KEQ Air Quality Management Plan.
- KEQ Water Management Plan.
- KEQ Transport Management Plan.
- KEQ Landscape & Rehabilitation Management Plan.

A new section within the Environmental Management Strategy will be developed and implemented that details the administrative arrangements required to achieve compliance with the overlapping extraction areas between the Karuah East Quarry and the adjoining Karuah Hard Rock Quarry (DA265-10-2004) and relevant consent conditions.

3.0 Biodiversity and Conservation Offset

Biodiversity Offsets

Retirement of one ecosystem credit for *PCT 3433: Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest* will occur prior to the commencement of clearing activity associated with the proposed MOD 11 development.

Mitigation & Management Measures for Direct & Indirect Impacts

Impact	Action and Outcome	Timing
Direct Impact		
Clearing of native vegetation	• Avoid and minimise clearing impacts to native vegetation where possible. • Clearly delineate the boundaries of the project footprint to prevent any unnecessary clearing beyond its extent. • Ensure vehicle and equipment parking areas and stockpile areas are identified and positioned to avoid areas containing ecological value. Stockpiling must not occur within, or in close proximity (5m) to, the established EBOA. • Appropriate signage such as 'no go zone' or 'environmental protection area' should be maintained surrounding the EBOA.	Prior to and during vegetation clearing.

Impact	Action and Outcome	Timing
	- Clearly identify and communicate the location of any 'no go zones' in site inductions. - Tree protection measures will be implemented to protect retained trees and native vegetation adjacent to the Impact Area. Tree protection measures should consider allowances for Tree Protection Zones in accordance with AS4970 (Standards Australia, 2009).	
Removal of vegetation resulting in fauna injury and mortality	- Limit removal of trees to that required within the project footprint where possible. - Due to the lack of hollows recorded during site surveys, a pre-clearance survey is not requirement. - Any vegetation requiring removal as part of the development should be done so in accordance with KEQ Landscape & Rehabilitation Management Plan (2024).	Prior to and during tree clearing.
Impacts to surface and groundwater quality and quantity due to sediment run off and/or contaminant runoff into adjacent watercourses	- Source controls such as sediment fences, mulching and jute matting will be utilised where appropriate. - Site-based vehicles and plant equipment will carry spill kits. - Erosion and sediment control will be implemented required in accordance with Managing Urban Stormwater: Soils and Construction (Landcom, 2004) prior to commencement of construction. - Limit the use of pesticides in the project footprint where possible to avoid contamination of nearby watercourses/wetland areas.	During vegetation clearing, construction and operation.
Vehicle collision with fauna	- Speed limits within the subject site will be limited to 30 km/hr during construction. - The area of additional disturbance will be separated from vegetated areas throughout the construction and operational phases of the development. This separation should be achieved through physical barriers including fencing and appropriate signage.	During construction and operation.
Indirect Impact		
Transfer of weeds and pathogens to and from site	- The fungal pathogens <i>Phytophthora cinnamomi</i> and Myrtle Rust (<i>Puccinia psidii</i>) are known to occur in the MidCoast LGA, however, it is unknown if they occur within the proposed area of additional disturbance. - All plant and equipment brought on to site should be assessed (or declared) as clean of biological contamination. - Ensure soil seed material is not transferred.	During vegetation clearing, construction, and operation.
Noise, vibration, lighting, 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 construction and operational activities, such as disturbance to an animal's normal behaviour patterns due to noise, vibration, lighting or dust may cause areas of previously suitable habitat to become sub-optimal and may cause fauna species to vacate previously suitable areas. - Measures to mitigate impacts on flora and fauna from noise, vibration, waste, light and air pollution such as: - Enforce 'carry-in, carry-out' policy regarding rubbish - and waste materials generated on-site during - construction to avoid waste materials entering adjacent vegetation.	During construction and operation.

Impact	Action and Outcome	Timing
	- Dust control measures such as covering loads where required; amending operations under excessive wind conditions including ceasing operations if required; use of water tankers as required, to control dust; rehabilitation through vegetation of surfaces to be left unsealed; and, truck wheel washes or other dust removal measures. - Levels of lighting within the site will be reduced to a minimal level to reduce any adverse effects upon the essential behavioural patterns of light-sensitive fauna. - Lighting to comply with Australian Standard AS4282 (INT) 1997 – Control of Obtrusive Effects of Outdoor Lighting. - Noise minimisation practices in accordance with the KEQ approved Noise Management Plan.	

4.0 Aboriginal Archaeology

Mitigation & Management Measures	
Training & Unexpected Finds	1. All on-site personnel are to be made aware of their obligations under the National Parks and Wildlife Act 1974, which includes protection of Aboriginal sites and the reporting of any new, or suspected, Aboriginal heritage sites. This may be done through an on-site induction or other suitable format.
	2. In the unlikely event that Aboriginal, or suspected Aboriginal, archaeological material is uncovered during the development, then works in that area are to stop and the area is to be cordoned off. The KEQPL Environment and Development Manager is to contact the Heritage Consultant to make an assessment as to whether the material is classed as Aboriginal object/s under the National Parks and Wildlife Act 1974 (NSW) and advise on the required management and mitigation measures. Works are not to recommence in the cordoned off area until heritage clearance is given and/or the required management and mitigation measures have been implemented.
	3. In the very unlikely event that human remains, or suspected human remains, are uncovered during the development, then works in that area are to stop and the area is to be cordoned off. The KEQPL Quarry Manager is to contact the NSW Police to establish whether the area is a crime scene. If it is not a crime scene, and the remains are determined to be Aboriginal ancestral remains, then Heritage NSW is to be notified via the Environment Line on 131 555 and management measures are to be devised in consultation with the local Aboriginal community. Works are not to recommence in the area until the management measures have been implemented.

5.0 Noise

No additional noise mitigation or monitoring measures are necessary to facilitate the MOD 11 development.

6.0 Blasting

No additional blasting mitigation or monitoring measures are necessary to facilitate the MOD 11 development.

7.0 Air Quality

No additional mitigation measures are necessary to facilitate the MOD 11 development.

Updated monitoring will be undertaken, as detailed below.

Updated Monitoring Program	
Updated Monitoring Program	An updated monitoring program will be incorporated into an updated Air Quality Management Plan that will consist of: 1. One site specific meteorological station, at the current location. 2. Removal of depositional dust monitoring. 3. Provision of an additional HVAS monitor for PM_{2.5}, at the current location, for compliance purposes. 4. Two real-time air quality monitors capable of measuring PM₁₀ and PM_{2.5} and positioned on opposite sides of the KEQ to allow for the calculation of development contributions to air quality for ongoing management purposes.

8.0 Surface Water

No additional surface water monitoring is necessary to facilitate the MOD 11 development.

Updated mitigation measures are detailed below.

Mitigation and Management Measures	
1. The existing in-pit sump will be proportionally upgraded in accordance with the below parameters:	
Parameter	Value
Predicted soil loss (m ³ /Ha/Year)	42
Storage Zone ¹ (ML)	14.91
Settling Zone (ML)	0.67
Minimum Volume (ML)	15.57
2. A bund wall will be constructed on the Lot 11 / 12 boundary for the extent of the extraction area at the time the KEQ is extracted to approximately RL65m. Sizing shall be subject to further detailed design. This information will be included in the update to the approved Site Water Management Plan (SLR, May 2019, Revision 1).	
3. During Stage 2 of the extraction sequence, strategic blasting is to be undertaken to maintain eastward flows in KEQ and westward flows in KHRQ.	
4. Erosion and sediment controls will be implemented in accordance with the Blue Book Volume 2E (Mines & Quarries). This includes the small catchment within the former powerline corridor which bypasses the extraction area and Dam 1 until extraction has sufficiently progressed.	

9.0 Groundwater

No additional groundwater monitoring is necessary to facilitate the MOD 11 development.

Mitigation measures are detailed below.

Mitigation and Management Measures
1. Benches and pit floor will be graded to promote drainage toward the entrance of the extraction area.
2. Minor seepage and ponding of water resulting from excessive rainfall/runoff will be managed by conventional drainage measures within the quarry such as periodic pumping of in-pit sumps out to the surrounding drainage controls. Water will be retained on-site for quarry operations and for environmental mitigation.
3. Refuelling will be undertaken in the designated non-permeable refuelling areas.
4. Runoff water from the site will be collected and monitored for environmental mitigation to prevent chemicals and hydrocarbons such as petroleum, diesel, and oil seeping into the groundwater system.
5. Handling and storage of fuel and oil within the project site will be in accordance with Australian Standards, AS 1940-2004 (Storage and Handling of Flammable and Combustible Liquids) and NSW Work Cover 2005 Code of Practice for Storage and Handling of Dangerous Goods to reduce the risk of any spills or environmental release. Above ground storage in a bunded facility will be used.

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| 6. Safety Data Sheets (SDS) will be kept in the site safety system for all chemicals used on site. The SDS's will contain information on the environmental impacts of the use of certain chemicals and include detail on emergency response, clean up and disposal. Handling and storage of all chemicals within the project site will be in accordance with Dangerous Goods Act 1975 (NSW), and Australian standards, including AS 1940- 2004 (Storage and Handling of Flammable and Combustible Liquids). |
| 7. Groundwater level and quality monitoring will continue in accordance with the established Water Management Plan (to be updated for MOD 11) identify any potential contamination resulting from quarry operations. |

10.0 Visual

No additional visual mitigation measures are necessary due to the overall positive visual impact the MOD 11 proposal will have on the visual character of the landscape.

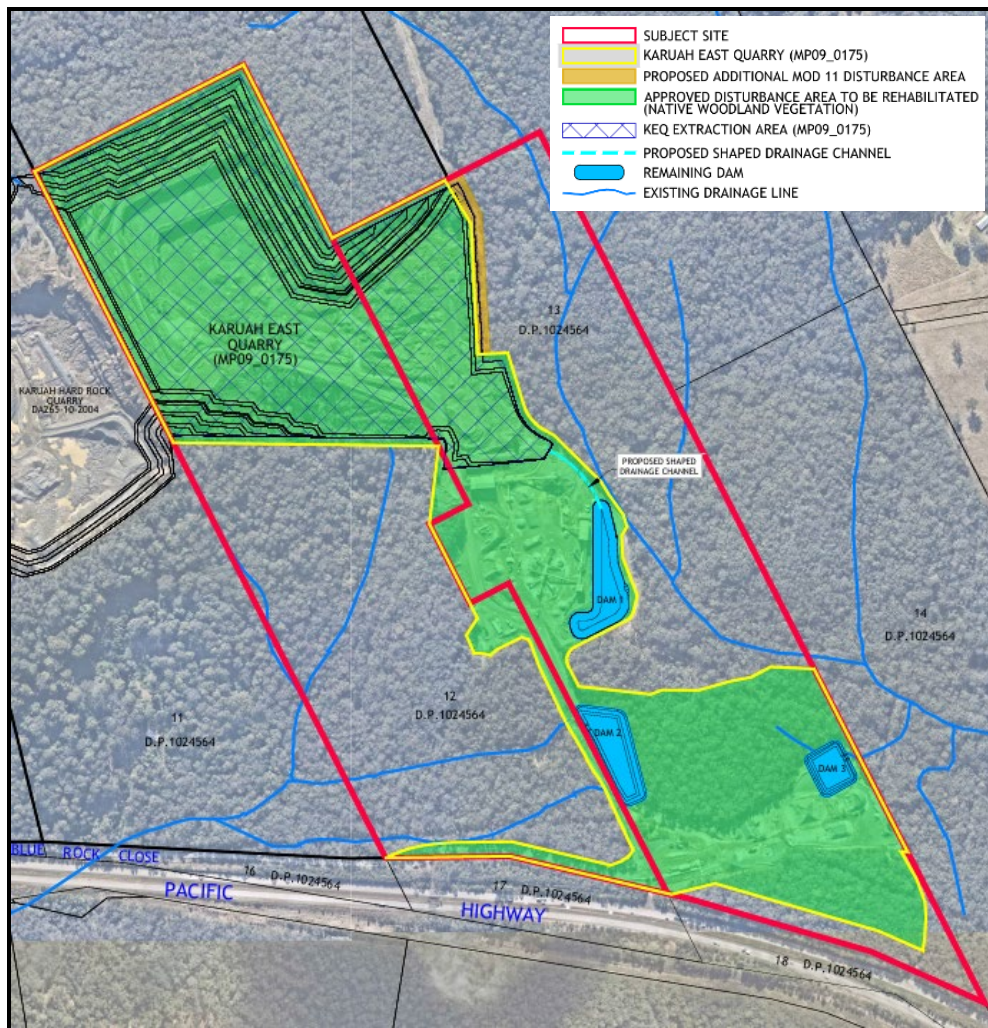
11.0 Traffic & Transport

No additional traffic and transport mitigation or monitoring measures are necessary to facilitate the MOD 11 development.

12.0 Rehabilitation & Closure Strategy

The following post-closure landform outcomes (the final landform) will be established:

- **Domain 1** Woodland Rehabilitation.
- **Domain 2** Benches.
- **Domain 3** Water Management (inclusive of infrastructure i.e. sediment dams).
- **Domain 4** Haul Roads.



Concept Final Rehabilitation Plan

Monitoring requirements for MOD 11 are consistent with those already approved and no new or additional monitoring obligations are necessary.