

Appendix D – Mitigation Measures

Key Issues	Mitigation Measures
Biodiversity	Design of the watercourse / drainage line crossings will be consistent with the NSW Department of Planning Environment Fact Sheet, <i>Controlled activities – Guidelines for watercourse crossings on waterfront land</i> , to minimise changes to hydrology and maintain natural functioning of the watercourses.
	Sediment and erosion control measures consistent with <i>Managing Urban Stormwater: Soils and Construction</i> (the Blue Book) will be adopted to minimise erosion, sedimentation and nutrient loads in runoff.
	Speed limits shall be set to 30km per hour on internal roads and tracks.
Air Quality and Greenhouse Gas	Dust Mitigation
	• 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). • Weather forecast to be checked prior to undertaking material handling or processing. • 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. • The extent of exposed surfaces and stockpiles is to be kept to a minimum.

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	• Exposed areas and stockpiles are either 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. • Reduce drop heights from loading and handling equipment where practical. • Dampen material when excessively dusty during handling. • 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 • Driveways and hardstand areas to be swept/cleaned regularly as required etc. • Vehicle traffic is to be restricted to designated routes. • Speed limits are to be enforced. • Vehicle loads are to be covered when travelling off-site. • An Air Quality Management Plan be prepared for the site. The Air Quality Management Plan would include a specific chapter which outlines the measures to manage dust emissions at the site and include aspects such as monitoring, key performance indicators, response mechanisms, and complaints management.
	Greenhouse Gas Mitigation
	• Ongoing monitoring of the fuel efficiency and maintenance of diesel equipment is to occur. • Explore optimising conditions for fleet operations.

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	• Conduct energy awareness programs for staff. • Minimise the production of waste generated on-site. • Regular review of alternative renewable energy sources is to occur. • forecast before undertaking material handling or processing.
Water Resources	An Operations Monitoring Plan (OMP) is to be finalised and implemented to ensure appropriate operation and functioning of the site sediment basins during quarrying activities. The OMP is to include ongoing groundwater monitoring and will include monitoring locations, trigger levels, response actions and plans, together with reporting requirements.
Aboriginal Heritage	Prior to construction, the proponent will develop an Aboriginal Cultural Heritage Management Plan (ACHMP) which is to be prepared in consultation with the RAPs and Heritage NSW and approved by DPHI. The ACHMP will include an unanticipated finds protocol, unanticipated skeletal remains protocol, and long-term management of any Aboriginal objects.
	Surface artefact/s from # 37-6-4640 (Lochnagar IF-1) will be collected prior to construction of the project and moved to a safe location in consultation with the RAPs. The ACHMP will detail the procedures for the surface artefact collection and provide a strategy for the long-term curation of the artefacts. No further archaeological investigation is warranted at # 37-6-4640 (Lochnagar IF-1) due to the disturbed, secondary context of the site.
	A site card update must be submitted to AHIMS to record the correct location of # 37-6 3827 (Elderslie 2) at GDA2020 Zone 56, 346426E, 6394443N.
	All land-disturbing activities must be confined to within the disturbance area. Should the parameters of the proposed work extend beyond this, then further archaeological assessment may be required.

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	Inductions for work crews should include a cultural heritage awareness procedure to ensure they recognise Aboriginal artefacts. Consultation with RAPs regarding the Aboriginal cultural heritage induction materials should be considered.
Historic Heritage	Prior to construction, the project must prepare a Historic Heritage Unanticipated Finds Protocol.
	It is assessed that SHR item #01457 Beckers Bridge over Webbers Creek, located approximately 5 km north of the Project site on Glendonbrook Road, Glendon Brook, may be impacted by the increase of heavy vehicle movements associated with the dispatch of processed materials. Given the heritage significance of this bridge, no heavy vehicles associated with the project should use this bridge. If heavy vehicles associated with the project plan to use this bridge, an assessment by a suitably qualified structural engineer should be undertaken to determine the likelihood of damage to the state significant heritage item associated with long term use by heavy vehicles.
	LEP item #I14 Elderslie Bridge, located approximately 4 km southwest of the Project site on Elderslie Road, Elderslie, is a locally listed heritage item owned and maintained by TfNSW. As TfNSW has not requested alternative haul route or additional structural assessment, continued liaison with TfNSW and Singleton Council is recommended to ensure haulage operations remain consistent with road authority requirements and any future network planning.
	All the proposed works must remain within the disturbance footprint of the Project site.
Traffic and Transport	A Traffic Management Plan and Drivers Code of Conduct for the site will be prepared and will reflect the need for drivers to be aware of school busses along the length of the proposed haul roads to ensure that drivers adhere strictly to all speed zones especially those where school bus activity occurs.

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	The proponent will contribute monies on an annual basis to Singleton Council, in accordance with the Singleton Local Infrastructure Contributions Plan 2025, an annual Haulage Maintenance Contribution in accordance with Section 7.11 of the EP&A Act.
	The proponent will enter into a Voluntary Planning Agreement with Cessnock City Council to contribute monies on an annual basis to Cessnock City Council, at a contribution rate of \$0.090/t/km for all roads within Cessnock LGA.
	The proponent will enter into a Voluntary Planning Agreement with Singleton Council to widen and upgrade the northern 300m section of Springvale Road to the Project site to accommodate heavy vehicles.
Land Resources	Annual slope inspections should be undertaken by a suitably qualified and experienced geotechnical engineer.
	Adequate design for haul roads with provision for safety features as necessary, i.e. suitable road widths, outer edge protection (i.e. windrow), other specific design features (i.e. lines of site cross cambering) and face edge stand-off be implemented.
	Installation of rock catcher (boulder restraint) bund near toe of bench (may comprise reshaping debris mound) to maintain a buffer between the toe of bench and haul road for vehicles and pedestrian traffic.
	Footings for the weighbridge, office and fixed plant should be designed by a suitably qualified and experienced structural or geotechnical engineer. All exposed foundation material conditions should be inspected by an experienced geotechnical engineer to confirm bearing capacity values and encountered conditions satisfy design assumptions.
	All surface runoff water should be diverted away from the steep slopes as far as possible, to limit soil erosion.

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	Removal of soil overburden should be performed in a manner that reduces the risk of sedimentation occurring on neighbouring lands. All spoil on site should be appropriately managed, and stormwater properly controlled using suitable erosion control measures (refer to the Blue Book) to prevent transportation of sediments off-site.
	Final ground surface should be revegetated with deep rooted grasses to limit soil erosion.
	A Rehabilitation Management Plan (RMP) will be developed prior to the commencement of operations, consistent with relevant guidelines and in compliance with the required rehabilitation outcomes outlined within conditions of the development consent.
	Guidance must be sought from an experienced geotechnical engineer (CPeng accreditation, or similar) on unexpected ground or groundwater conditions encountered: • To maintain low geotechnical risk and identify potential hazards / risks early. • Manage geotechnical risk as a result of changes in quarry operations. • Routine monitoring of all roads and future site-specific inspection shall be undertaken. If risk of any road instability is identified, access shall be closed until inspection by geotechnical engineer. • Annual slope inspections and review of risks should be undertaken by a suitably qualified and experienced geotechnical engineer.
Hazards - Bush Fire	As part of the overall CEMP for the Project, an emergency management plan for bushfire shall be prepared and implemented.
Social Impact	Develop and implement a transparent community donations / sponsorships program aligned to local needs.
	Donate a quantity of materials per annum to community projects free of charge.

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	Establish apprenticeship or scholarship for a quarry related position.
	Implement a local procurement strategy designed to prioritise the purchase of supplies and consumables from businesses in the LGA.
	Undertake and complete commercial discussions with operating mines in the LGA.
	A Plain-English summary of the Air Quality Impact and Greenhouse Gas Assessment shall be prepared and made available on the Project website.
	A Plain-English summary of the Noise Impact Assessment shall be prepared and made available on the Project website.
Contamination	The Unexpected Finds Protocol (UFP) contained in the Preliminary Site (Contamination) Investigation is to be implemented during development construction works in the event any unexpected find displaying potential evidence of contamination (e.g., observed PACM, petroleum and / or oil spills, chemical odours, staining, etc.) is identified.
	A Construction Environmental Management Plan (CEMP) must be prepared for the construction phase of the project. The CEMP should also include protocols to address any unexpected finds which may be encountered during construction works and refer to the Project UFP.
Site Rehabilitation	A Rehabilitation Management Plan (RMP) will be developed prior to the commencement of operations, consistent with relevant guidelines and in compliance with the required rehabilitation outcomes outlined within conditions of the development consent.
	Opportunities to implement progressive rehabilitation will be identified as part of annual rehabilitation planning processes.

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	The rehabilitation and disturbance schedule for implementation will be incorporated into the RMP and reviewed annually. Detailed rehabilitation methodologies will be documented within the RMP and site procedures prior to the commencement of operations.
	A Ground Disturbance Permit (GDP) process will be established and implemented for all ground disturbance works within the Project Approval boundary in accordance with the GDP Procedure. All clearing activities will be undertaken in accordance with the site approval conditions, site management plans/standards and the conditions contained in the GDP. All works are to be undertaken in an environmentally responsible manner to ensure the conservation of the natural environment as far as practicable.
	Prior to clearance activities commencing as part of the GDP process, suitably qualified personnel would conduct a fauna survey to minimise the risk of any resident fauna becoming displaced or injured. Additionally, the presence of a trained ecological or licensed wildlife handler would be maintained during native vegetation clearance and clearance of rock areas.
	A rehabilitation monitoring program will be undertaken in accordance with best practice standards. Early intervention and adaptive management to minimise the potential for rehabilitation failure will be implemented. The rehabilitation monitoring program developed for the project will include a rehabilitation Trigger Action Response Plan (TARP).
	A rehabilitation quality assurance process (RQAP) will be developed and incorporated into the rehabilitation monitoring program. The RQAP will be implemented through every phase of rehabilitation. The RQAP will also include an inspection protocol to ensure that each phase of decommissioning and rehabilitation has been completed.

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Hazard and Risk	Do not store explosives or precursor materials on site.
	Manage fuels, chemicals and other hazardous materials through appropriate storage, handling, spill response procedures and site management plans.
	Apply relevant dangerous goods and work health and safety requirements to on-site storage and transport activities.
Waste Management	Waste streams will be classified and managed in accordance with the principles of the waste management hierarchy and EPA guidelines.
	All waste or redundant materials generated by the project would be reused or recycled where feasible and reasonable.
	All wastes will be stored in appropriate containers/receptacles that are lidded where practical, within designated waste storage areas.
	All wastes will be collected for reuse/recycling/disposal by appropriately licensed waste contractors. Transport of wastes to recycling or waste disposal facilities would be undertaken by appropriately licensed waste contractors.
	Overburden would be re-used at the site for fill or bunding or will be stored at the site for reuse during rehabilitation.
	Any waste oils, greases and lubricants would be stored in designated drums prior to their removal for recycling or disposal.
	Any soils contaminated through fuel or chemical spills would be excavated and transported to a licensed waste facility and the resulting excavation would be filled with suitable clean soil.

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	Any weed species that area cleared for the proposal would be disposed of at a licensed green waste disposal facility or landfill.
	General wastes will be segregated into recyclable and on-recyclable streams through the provisions of appropriate split receptacles bins.
	Site inductions for employees and contractors will include waste management information. Appropriate signage will be provided at all waste storage areas to clearly identify waste segregation and recycling procedures.
	The WMP will be retained on-site during the excavation and construction phases of the development, along with other waste management documentation (e.g. contracts with waste service providers). Responsibility for the WMP, waste documentation and processes during the excavation and construction phases will be with the site manager or builder. A logbook that records waste management and collection will be maintained on site, with entries including: • Time and date of collections. • Description of waste and quantity. • Waste/processing facility that will receive the waste. • Vehicle registration and company name.