Planning & Environment
Resources Regulator

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By email: Anthony.Barnes@planning.nsw.gov.au

Wallerawang Quarry Modification 3 (DA344-11-2001-Mod-3) (Lithgow City): Adequacy of the Statement of Environmental Effects (SEE)

Dear Anthony,

I refer to the email dated 9 July 2019 inviting the Resources Regulator to provide advice regarding the adequacy of the Statement of Environmental Effects (SEE) for Project **Wallerawang Quarry Modification 3 (DA344-11-2001-Mod-3) (Lithgow City)**.

Development Details

The Wallerawang Quarry is an open cut operation located near Wallerawang, approximately 8 kilometres North-West of Lithgow, NSW. The Wallerawang Quarry Modification 3 (DA344-11-2001-Mod-3) (Lithgow City) proposes:

- Extension of the approved extraction area (from 6.5 ha to 13.3 ha surface area and from 930 m AHD to 860 m AHD depth) to increase the quartzite which can be recovered and incorporate additional resources to quartzite, namely, hornfels, sandstone and cobble conglomerate from which a wider variety of products can be produced. The extension involves both an increase to surface area and depth.
- Extension to the stockpiling areas on the Quarry Site to accommodate both an increase in overburden materials generated by the increased extraction area and additional Quarry products.
- Modifications to water diversion, capture and storage on the Quarry site to accommodate the extended stockpile areas and improve the water security of the Quarry.
- Extension to the current limit on Quarry operations from July 2020 to July 2050.

Previous Advice

The Resources Regulator has previously provided advice regarding this Modification (letter to Walker Quarries dated 10 August 2018 (DOC18/560751, DOC18/572277). See **Attachment** 1 for the full list of the 'Mining Development - Rehabilitation Standard Assessment Requirements' and review comments on each item by the Resources Regulator.

Environment and Rehabilitation

Compliance Operations within the Resources Regulator has responsibility for providing strategic advice for environmental issues pertaining to the proposed project in so far as they relate to or affect rehabilitation.

The Resources Regulator notes the following:

- A new Mining Lease will be required to cover the quarry expansion area. It is understood that the relevant Mining Lease Applications have already been submitted (MLA570 and MLA558)
- There is ongoing reference to the current Mining Operations Plan for Wallerawang Quarry (Sections 1.1, 1.4.9, 1.6, 2.3.4.1, 2.10, 2.10.2, 2.10.3, 2.10.4, 2.10.4.5, 2.10.5.2, 4.11.1, 4.11.2, 4.11.3.1, 4.11.3.2. It is important to note that the Mining Operations Plan must be consistent with the Development Consent, not vice versa. Any rehabilitation outcomes, completion criteria in the SEE which rely on consistency with the current Mining Operations Plan are not supported as a valid justification for rehabilitation outcomes which are below contemporary standards.
- The Statement in Section1.4.9 that "In accordance with the MOP, the Applicant intends on creating a final landform which includes…a final void…" should not be taken as support for retention of a final void, or any other stated rehabilitation outcome in this section, by the Resources Regulator. The retention of a final void is consistent with the current Development Consent and therefore included in the current Mining Operations Plan.
- "The overall disturbance footprint of the Quarry site would increase, however, there would be no change to annual production, transportation operations or hours of operation"
- The extension will result in the clearing of an additional 14.1 ha of native vegetation communities, with associated biodiversity impacts.
- The "Summary of Key Environmental and Social Impact Assessment Findings" relating to rehabilitation is as follows:
  - *"The proposed final landform and land use considers requests and recommendations made by Forestry Corporation NSW and the Department of Industry – Crown Lands, owners of the land on which the Proposed Modification occurs.*
  - *In keeping with these requests and recommendations, all infrastructure (including roads and water storages) would be decommissioned and removed, and the landform return to a moderately undulating one, with micro-relief, to achieve a natural landform design in keeping with the surrounding topography. These landforms would be vegetated to return to a native woodland equivalent to that of the surrounding vegetation.*
  - *The retention of a final void is unavoidable, however, to reduce the risk of landform contamination the void would be drained to prevent accumulation of groundwater and surface water runoff" (it is noted in Table 2.1 that this would be achieved by "free draining through borage of a drainage hole from the 860 m floor".*
- *Section 2.6 covers Quarry Water Management including the installation of two clean water diversions (Central and Western) and additional sediment basins.*

The Resources Regulator advises the Department of Planning, Industry & Environment – Resources Assessments that the SEARs for Rehabilitation have not been adequately addressed in the Statement of Environmental Effects (SEE) for **Wallerawang Quarry Modification 3 (DA344-11-2001-Mod-3) (Lithgow City)**, dated **June 2019** (Final, dated 20 June 2019).

Additional Information Required/Compilation of Action Items

Additional information is required to demonstrate that sustainable rehabilitation outcomes can be achieved as a result of the project. With reference to the Resources Regulator SEARs, the required additional information is as follows:

i. *(a) Identification and assessment of post-mining land use options;*

ii. *(b) Identification and justification of the preferred post-mining land use outcome(s), including a discussion of how the final land use(s) are aligned with relevant local and regional strategic land use objectives;*
***Action** – the proponent should be asked to provide further detail of the post mining land use options considered, including alternatives to the final void option, why the selected option was assessed as the most suitable, and how this is aligned with relevant local and regional strategic land use objectives.*

iii. *(f) Mine layout and scheduling, including maximising opportunities for progressive final rehabilitation. The final rehabilitation schedule should be mapped against key production milestones (i.e. ROM tonnes) of the mine layout sequence before being translated to indicative timeframes throughout the mine life. The mine plan should maximise opportunities for progressive rehabilitation;*
***Action** - The proponent should be asked to provide further information to demonstrate that this is an appropriate soil management strategy which will maximise re-use of the soil resource.*

iv. *(g) Inclusion of a drawing at an appropriate scale identifying key attributes of the final landform, including final landform contours and the location of the proposed final land use(s);*
***Action** - The proponent should be asked to review the proposed vegetation communities and provide further clarification of the differences between each of the selected types.*
***Action** - The proponent should be asked to review and revise Section1.4.9 of the SEE.*

v. *(h) Outlining the monitoring programs that will be implemented to assess how rehabilitation is trending towards the nominated land use objectives and completion criteria;*

vi. *(i) Details of the process for triggering intervention and adaptive management measures to address potential adverse results as well as continuously improve rehabilitation practices (i) Details of the process for triggering intervention and adaptive management measures to address potential adverse results as well as continuously improve rehabilitation practices*
***Action** – Section 2.10.4.5 of the SEE should be modified to specify the monitoring programs, trigger intervention and adaptive measures to be used, rather than referring to the MOP.*

vii. *(k) Description of how post-rehabilitation areas will be actively managed and maintained in accordance with the intended land use(s) in order to demonstrate progress towards meeting the rehabilitation objectives and completion criteria in a timely manner;*
***Action** – Further detail should be provided about management and maintenance programs to be used.*

viii. *(m) Where a void is proposed to remain as part of the final landform, include:*

- *a constraints and opportunities analysis of final void options, including backfilling, to justify that the proposed design is the most feasible and environmentally sustainable option to minimise the sterilisation of land post-mining;*
- *a preliminary geotechnical assessment to identify the likely long term stability risks associated with the proposed remaining high wall(s) and low wall(s) along with associated measures that will be required to minimise potential risks to public safety; and*
- *outcomes of the surface and groundwater assessments in relation to the likely final water level in the void. This should include an assessment of the potential for fill and spill along with measures required be implemented to minimise associated impacts to the environment and downstream water users.*

***Action** – include a constraints and opportunities analysis of final void options.*

***Action** – Potential risks associated with the proposed drainage arrangement need to be documented, including maintenance requirements to ensure the drainage pipe remains open. Alternatives to this arrangement also need to be documented.*

ix. *(o) Consideration of the controls likely to be required to either prevent or mitigate against rehabilitation risks as part of the closure plan for the site;*
***Action** – Assessment of potential rehabilitation risks should be documented in the SEE.*

It should be noted that this review does not represent the Resources Regulator's endorsement of the proposed rehabilitation methodologies as presented in the SEE. Under the conditions of a mining authority granted under the *Mining Act 1992*, the Resources Regulator, requires an authority holder to adopt a risk-based approach to achieving the required rehabilitation outcomes. The applicability of the controls to achieve effective and sustainable rehabilitation is to be determined based on the site specific risk assessments conducted by an authority holder. This risk assessment should be used to not only establish a basis for managing risk when planning an activity, but it should also be used and updated (as required) to continuously evaluate risk and the effectiveness of controls used to prevent or minimise impacts. An authority holder may also be directed by the Resources Regulator to implement further measures, where it is considered that a risk assessment and associated controls are unlikely to result in effective rehabilitation outcomes.

The Resources Regulator requests that Walker Quarries provide information responding to the comments above.

Mine Safety

It is relevant to note that the Resource Regulator Mine Safety Operations is responsible for ensuring mine operators manage the risk to worker health and safety though compliance with the *Work Health and Safety (Mines and Petroleum Sites) Act 2013* and the subordinate mining legislation. In particular the effective management of risk associated with the principal hazards as specified in the *Work Health and Safety (Mines and Petroleum Sites) Regulation 2014* and to ensure that required Principal Hazard Management Plans (PHMPs) are in place prior to the quarry cut back.

For enquiries regarding this matter please contact me on (02) 4063 6444 or minres.environment@planning.nsw.gov.au

Yours sincerely

Greg Kininmonth
Manager Environmental Operations (Southern)

On behalf of
Matthew Newton
Director Compliance Operations
Resources Regulator
NSW Department of Planning, Industry & Environment

15 August 2019

Attachment 1 – SEARS requested by the Resources Regulator
(letter to Walker Quarries dated 10 August 2018 (DOC18/560751, DOC18/572277))

With Reference to SEARs provided by the Resources Regulator (blue text), how these have been assessed (black text) and recommended action required to address identified omissions (red text) are documented below

The Resources Regulator requests that the forthcoming Environmental Impact Statement addresses the **Mining Development - Rehabilitation Standard Assessment Requirements**, attached to this letter. The Development Consent modification is an opportunity to re-assess existing approved post mining rehabilitation outcomes and ensure they are modified to meet contemporary standards and expectations.

Avoiding or minimising the size and batter steepness of any final void should be a key consideration when determining the post mining landform.

It is noted you are consulting directly with the Forestry Corporation of NSW. The EIS should document how the proponent has addressed issues raised by the Forestry Corporation of NSW with regard to post mining rehabilitation outcomes.

Mining Development - Rehabilitation Standard Assessment Requirements

Post-mining land use

(a) Identification and assessment of post-mining land use options;

Only one option considered which is nature conservation/passive conservation ("i.e. sustainable native woodland with management requirements no greater than the surrounding landforms"). No other options appear to have been assessed.

Section 4.11.3.2 of the SEE states "There are no reasonable or feasible alternatives to the retention of the final void".

(b) Identification and justification of the preferred post-mining land use outcome(s), including a discussion of how the final land use(s) are aligned with relevant local and regional strategic land use objectives;

Yes, nature conservation identified as the preferred post-mining landuse, with a goal to re-establish the native open forest community which previously occurred across the areas disturbed. The quarry entrance, internal roads and water storages would be decommissioned and removed or remediated unless retention was requested by the landowner.

Consultation with FCNSW is covered in Section 3.2.1.2

With reference to a) above, there is a lack of detail about how this proposed landuse has been selected in preference to other options. There is no reference to local and regional strategic land use objectives

***Action** – the proponent should be asked to provide further detail of the post mining land use options considered, including alternatives to the final void option, why the selected option was assessed as the most suitable, and how this is aligned with relevant local and regional strategic land use objectives.*

(c) Identification of how the rehabilitation of the project will relate to the rehabilitation strategies of neighbouring mines within the region, with a particular emphasis on the coordination of rehabilitation activities along common boundary areas;

Not applicable – no neighbouring mines

Rehabilitation objectives and domains

(d) Inclusion of a set of project rehabilitation objectives and completion criteria that clearly define the outcomes required to achieve the post-mining land use for each domain. Completion criteria should be specific, measurable, achievable, realistic and time-bound. If necessary, objective criteria may be presented as ranges;

Four domains have been identified – Infrastructure areas, Surface Water Management Structures, Processing and Stockpile Areas, Void Areas. General rehabilitation targets for each of these are covered in Section 2.10.2 and Section 2.10.3.

Rehabilitation Objectives and Completion Criteria are in the form of general statements only, including within Section 2.10.1.2 (Rehabilitation Objectives), including Objectives and Targets for Land Use, Landform, Biodiversity, Infrastructure and Final Void. Stated targets are generally supported, but Final Void is not an ideal outcome and requires further justification.

Short to medium term goals are " to stabilise all earthworks, drainage lines and disturbed areas not actively included in Quarry operations".

Long term rehabilitation objective is "to restore the Quarry Site to resemble the surrounding bushland and to not require maintenance in addition to what may be required in the surrounding bushland".

Rehabilitation Methodology

(e) Details regarding the rehabilitation methods for disturbed areas and expected time frames for each stage of the rehabilitation process;

Section 2.10.3.1 covers the rehabilitation objectives for each of the 4 Domains identified and Section 2.10.3.2 covers the Rehabilitation Phases (Decommissioning, Landform Establishment, Growth Media Development, Ecosystem and Land Use Establishment and Ecosystem and Land Use Sustainability) including objectives for each. These sections are general in scope and there is no detail of expected timeframes but objectives are generally supported.

Section 2.10.4 covers "Rehabilitation methods and procedures" generally, with sub sections for each of the Rehabilitation Phases Decommissioning, Landform Establishment, Growth Media Development, Ecosystem and Land Use Establishment and Ecosystem and Land Use Sustainability. These sections are general in scope and there is no detail of expected timeframes but objectives are generally supported.

Landform Establishment would result in slopes no greater than the surrounding landforms, with ripping parallel to the contour and contour banks where slopes exceed 10m in length.

Growth media Development would include spreading of a mixed topsoil/subsoil unit with a depth between 300 and 600mm (deeper on flatter areas and shallower on steeper slopes). Slow release fertilizers may be used.

Ecosystem and Land Use Establishment would include use of a seed mix of locally endemic native grass, shrub and tree species being sown or planted as tubestock to establish a grassy woodland setting.

Ecosystem and Land Use Sustainability identifies "ongoing monitoring of the success of rehabilitation would be undertaken in accordance with the procedures outline in the MOP and remedial action would be implemented should the progression of rehabilitation not be satisfactory".

The statement that "rehabilitation methods and procedures would be consistent with the methods described in the MOP" is not considered to be a justification of any stated methods or procedures in the current MOP and has not been assessed in this review.

(f) Mine layout and scheduling, including maximising opportunities for progressive final rehabilitation. The final rehabilitation schedule should be mapped against key production

milestones (i.e. ROM tonnes) of the mine layout sequence before being translated to indicative timeframes throughout the mine life. The mine plan should maximise opportunities for progressive rehabilitation;

Section 2.10 – Quarry Site Decommissioning and Rehabilitation outlines a proposed progressive approach to the rehabilitation of disturbed areas but notes this is limited by the nature or quarry operations which requires most rehabilitation towards the end of quarry life.

Section 2.3 covers the stages of the Extraction Area extension. Figures 2.6 (2025), 2.7 (2035) and 2.8 (2045) show the Quarry Extension Sequence development in ten year intervals.

With regard to extension issues relating to rehabilitation:

- Section 2.3.3 - Clearing and stripping ahead of extraction would only be undertaken to allow for the following 12 months activities.
- Section 2.3.4.1 covers site pegging and clearance surveys (including inspection for threatened native flora or fauna), erosion and sediment control, vegetation clearing (including retention and usage of hollows identified in the pre-clearing surveys), soil stripping and management (stripping and stockpiling or direct placement of soil for use in rehabilitation

There is some concern re the statement that "the act of stripping the shallow, skeletal soil, stockpiling and re-spreading would provide for adequate blending of the topsoil and subsoil recovered". It is unclear how this would result in a soil outcome the same as or better than what would be recovered.

***Action** - The proponent should be asked to provide further information to demonstrate that this is an appropriate soil management strategy which will maximise re-use of the soil resource.*

Conceptual Final Landform Design

(g) Inclusion of a drawing at an appropriate scale identifying key attributes of the final landform, including final landform contours and the location of the proposed final land use(s);

A final landform plan has been included as Figure 2.9. The Plan shows Final Landuse / Vegetation Communities as being "Grassy Woodland", "Native Grassland", "Native Grassland with Occasional Trees" and "Stabilised Batters & Berms (Native trees and shrubs)".

It is unclear why native grassland has been selected as this appears to be inconsistent with the statement that the final land use would be "to re-establish the native open forest community".

***Action** - The proponent should be asked to review the proposed vegetation communities and provide further clarification of the differences between each of the selected types.*

The statement in Section 1.4.9 that "In accordance with the MOP, the Applicant intents on creating a final landform which includes: a final void, retention of two water storage dams and major drainage lines.... retention of the Quarry site entrance, sealed access road and access roads to the water storages... profiling of the remaining surfaces to create a gently undulating landform, vegetated as open forest, sympathetic to the surrounding environment."

The "....retention of the Quarry site entrance, sealed access road and access roads to the water storages." is inconsistent with Section 2.10.4.1 which now indicates these would be "decommissioned and removed or remediated" unless otherwise requested by the landowner.

***Action** - The proponent should be asked to review and revise Section1.4.9 of the SEE.*

Monitoring and Research

(h) Outlining the monitoring programs that will be implemented to assess how rehabilitation is trending towards the nominated land use objectives and completion criteria;

(i) Details of the process for triggering intervention and adaptive management measures to address potential adverse results as well as continuously improve rehabilitation practices;

Section 2.10.4.5 of the SEE states "Ongoing monitoring of the success of rehabilitation would be undertaken in accordance with the procedures outlined in the MOP, and remedial action would be implemented should the progression of rehabilitation not be satisfactory.

***Action** – Section 2.10.4.5 of the SEE should be modified to specify the monitoring programs, trigger intervention and adaptive measures to be used, rather than referring to the MOP.*

(j) Outlining any proposed rehabilitation research programs and trials, including their objectives. This should include details of how the outcomes of research are considered as part of the ongoing review and improvement of rehabilitation practices;

None identified in the SEE

Post-closure maintenance

(k) Description of how post-rehabilitation areas will be actively managed and maintained in accordance with the intended land use(s) in order to demonstrate progress towards meeting the rehabilitation objectives and completion criteria in a timely manner;

No details of how post-rehabilitation areas will be actively managed and maintained. Table 2.6 includes some general maintenance and monitoring targets including for Landform, "Maintenance requirements consistent with the agreed post mining land use(s)" & "Woodland vegetation is confirmed (by monitoring) to be sustainable and contiguous.

***Action** – Further detail should be provided about management and maintenance programs to be used.*

Barriers or limitations to effective rehabilitation

(l) Identification and description of those aspects of the site or operations that may present barriers or limitations to effective rehabilitation, including:

(i) evaluation of the likely effectiveness of the proposed rehabilitation techniques against the rehabilitation objectives and completion criteria;

(ii) an assessment and life of mine management strategy of the potential for geochemical constraints to rehabilitation (e.g. acid rock drainage, spontaneous combustion etc.), particularly associated with the management of overburden/interburden and reject material;

(iii) the processes that will be implemented throughout the mine life to identify and appropriately manage geochemical risks that may affect the ability to achieve sustainable rehabilitation outcomes;

(iv) a life of mine tailings management strategy, which details measures to be implemented to avoid the exposure of tailings material that may cause environmental risk, as well as promote geotechnical stability of the rehabilitated landform; and

(v) existing and surrounding landforms (showing contours and slopes) and how similar characteristics can be incorporated into the post-mining final landform design. This should include an evaluation of how key geomorphological characteristics evident in stable landforms within the natural landscape can be adapted to the materials and other constraints associated with the site.

No barriers or limitations identified

(m) Where a void is proposed to remain as part of the final landform, include:

(i) a constraints and opportunities analysis of final void options, including backfilling, to justify that the proposed design is the most feasible and environmentally sustainable option to minimise the sterilisation of land post-mining;

(ii) a preliminary geotechnical assessment to identify the likely long term stability risks associated with the proposed remaining high wall(s) and low wall(s) along with associated measures that will be required to minimise potential risks to public safety; and

(iii) outcomes of the surface and groundwater assessments in relation to the likely final water level in the void. This should include an assessment of the potential for fill and spill along with measures required be implemented to minimise associated impacts to the environment and downstream water users.

Section 4.11.3.2 of the SEE states "There are no reasonable or feasible alternatives to the retention of the final void". There is no constraints and opportunities analysis to justify this statement.

It is proposed to including "draining of the void through the boring of a hole from the final floor" to ensure accumulation of water will not occur. This would be a hole with a diameter of 150 to 300mm and would discharge to the Cox's River to the south.

***Action** – include a constraints and opportunities analysis of final void options.*

***Action** – Potential risks associated with the proposed drainage arrangement need to be documented, including maintenance requirements to ensure the drainage pipe remains open. Alternatives to this arrangement also need to be documented.*

(n) Where the mine includes underground workings:

(i) determine (with reference to the groundwater assessment) the likelihood and associated impacts of groundwater accumulating and subsequently discharging (e.g. acid or neutral mine drainage) from the underground workings post cessation of mining; and

(ii) consideration of the likely controls required to either prevent or mitigate against these risks as part of the closure plan for the site.

Not applicable

(o) Consideration of the controls likely to be required to either prevent or mitigate against rehabilitation risks as part of the closure plan for the site;

Not specified

***Action** – Assessment of potential rehabilitation risks should be documented in the SEE.*

(p) Where an ecological land use is proposed, demonstrate how the revegetation strategy (e.g. seed mix, habitat features, corridor width etc.) has been developed in consideration of the target vegetation community(s);

The SEE states that "a seed mix of locally endemic native grass, shrub and tree species would be sown or planted as tubestock to establish a grassy woodland setting". SEE details soil management, vegetation management and re-use. It is stated that "any hollows identified during the pre-clearance surveys would be collected and retained, where practical, for use in habitat recreation on any final landforms to be rehabilitated".

(q) Where the intended land use is agriculture, demonstrate that the landscape, vegetation and soil will be returned to a condition capable of supporting this; and

Not applicable

(r) Consider any relevant government policies1.

None identified