Cadia East Gold/Copper Project

Modification 13

(Cadia Hill Tailings Completion)

State Significant Development

Modification Assessment

(MP 06_0295 MOD 13)

December 2019

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Cover photo

Cadia Hill Open Cut Pit (Source: Department of Planning, Industry and Environment)

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1. Introduction

Cadia Holding Pty Limited (Cadia), a wholly owned subsidiary of Newcrest Mining Limited, operates the Cadia Valley Operations mining complex, located within the Cabonne and Blayney local government areas and approximately 25 kilometres (km) southwest of Orange (see **Figure 1**).

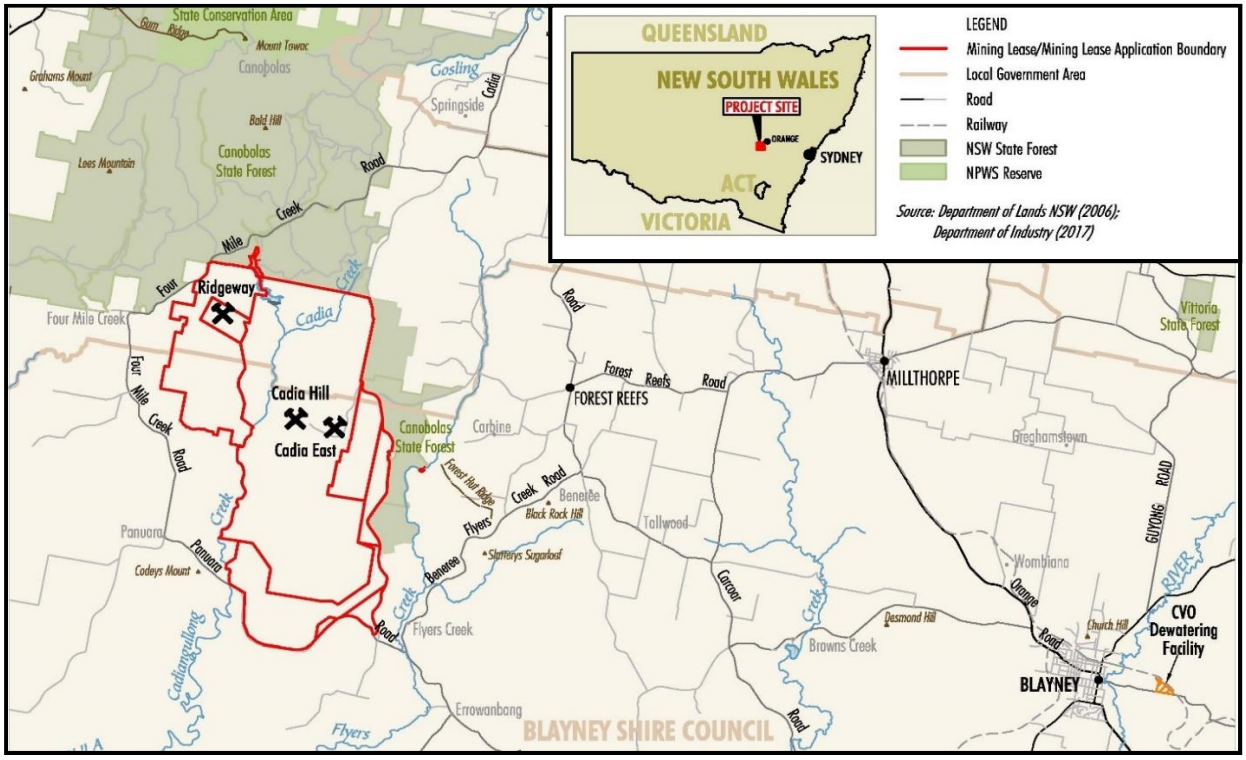

Figure 1 | Regional Context Map

The mining complex operates under a project approval (PA 06_0295) granted by the Minister for Planning on 6 January 2010, and includes the active Cadia East underground mine (which commenced production in January 2013 and produces copper and gold concentrates), the Cadia Hill open cut mine (which ceased operations in 2012), the Ridgeway underground mine (which was placed on care and maintenance in 2016) and the Blayney Dewatering Facility (located approximately 25 km east of the mine).

The project approval has been modified 12 times, and allows Cadia to undertake the following activities until 30 June 2031:

- extract approximately 562 Mt of ore from the mining complex;
- process up to 32 Mt per annum of gold and copper ore on-site and produce a tailings waste stream of 30 Mt a year; and
- transfer gold/copper concentrate via pipeline to Cadia's two dewatering facilities in Blayney, where it is dewatered and transported via rail to Port Kembla for export.

The project approval allows the disposal of tailings into three tailings storage facilities; the Northern Tailings Storage Facility (NTSF), the Southern Tailings Storage Facility (STSF) and Cadia Hill open cut Pit (CHP). Following failure of the NTSF in 2018, Cadia modified its approval to allow deposition of 100 Mt of tailings into the CHP (Modifications 11 and 12), which was equivalent to approximately 4 years of additional deposition. Tailings deposition in the CHP commenced in May 2018 and allowed Cadia to return to its full production.

On 1 August 2019, the Department of Planning, Industry and Environment (the Department) approved Cadia's request to decommission the Blayney Dewatering Facility and works associated with the site demolition and remediation. This approval is subject to revision of the Rehabilitation Strategy and evaluation of all the potential impacts (required under condition 36 of Schedule 3 of the project approval), prior to commencement of the works. Cadia continues to use its new dewatering facility to the east of Blayney, which was commissioned in 2016.

The mining complex is a major employer in the regional area and at full production employs an average of 880 workers.

2. Proposed Modification

On 9 March 2018, failure of part of the NTSF embankment led to a limited breakthrough of tailings into the STSF. The tailings material was fully contained with no discharge to the environment and suitable contingency measures were put in place to manage ongoing residual risks, including the construction of a containment bund and increased real-time radar monitoring of the dam wall.

Cadia is investigating the cause(s) of the NTSF embankment failure and engineering solutions to repair the embankment to resume deposition into the NTSF. This includes commissioning an independent expert report on the NTSF embankment failure in April 2019, which identified a requirement for a comprehensive assessment of the NTSF and STSF to determine the required measures for their stabilisation, remediation and reclamation (see **Appendix A**). This on-going investigation is complex and requires a wide range of testing and analysis and remediation actions are expected to take several years.

Following the engineering studies, Cadia is proposing to modify its current project approval for the active Cadia East mine to:

- increase the CHP tailings level from the currently approved level of 560 mAHD (consolidated tailings level) up to its full capacity of 713 mAHD (pre-consolidated tailings level);
- increase the CHP capacity by 177 Mt, which would be equivalent to 7 years of additional in-pit deposition over the remaining approved life of mine;

- install a new ventilation adit within Cadia's approved disturbance footprint and outside Cadia's subsidence zone to replace adit VR101 within the CHP, which would be inundated by the proposed additional tailings deposition; and
- construct additional downstream buttressing of the STSF embankment to cater for its future approved lifts (up to the approved height of 702 mAHD).

It is noted that closure and rehabilitation of adit VR101 was assessed and approved in Modification 1. The proposed modifications would be within the approved project's disturbance footprint, except for the proposed buttressing, which would be located within highly disturbed agricultural land mostly covered by exotic grass. The proposed modification activities would not change other aspects of the approved project, including the final landform of the CHP as a pit lake or a wet cover, and the total life of mine tailings disposal (calculated based on the approved production of tailings waste stream of 30 Mt a year). The approved and proposed activities are shown in **Figure 2**.

Full details of the proposed modification are available in Cadia's Modification Report (see **Appendix B**).

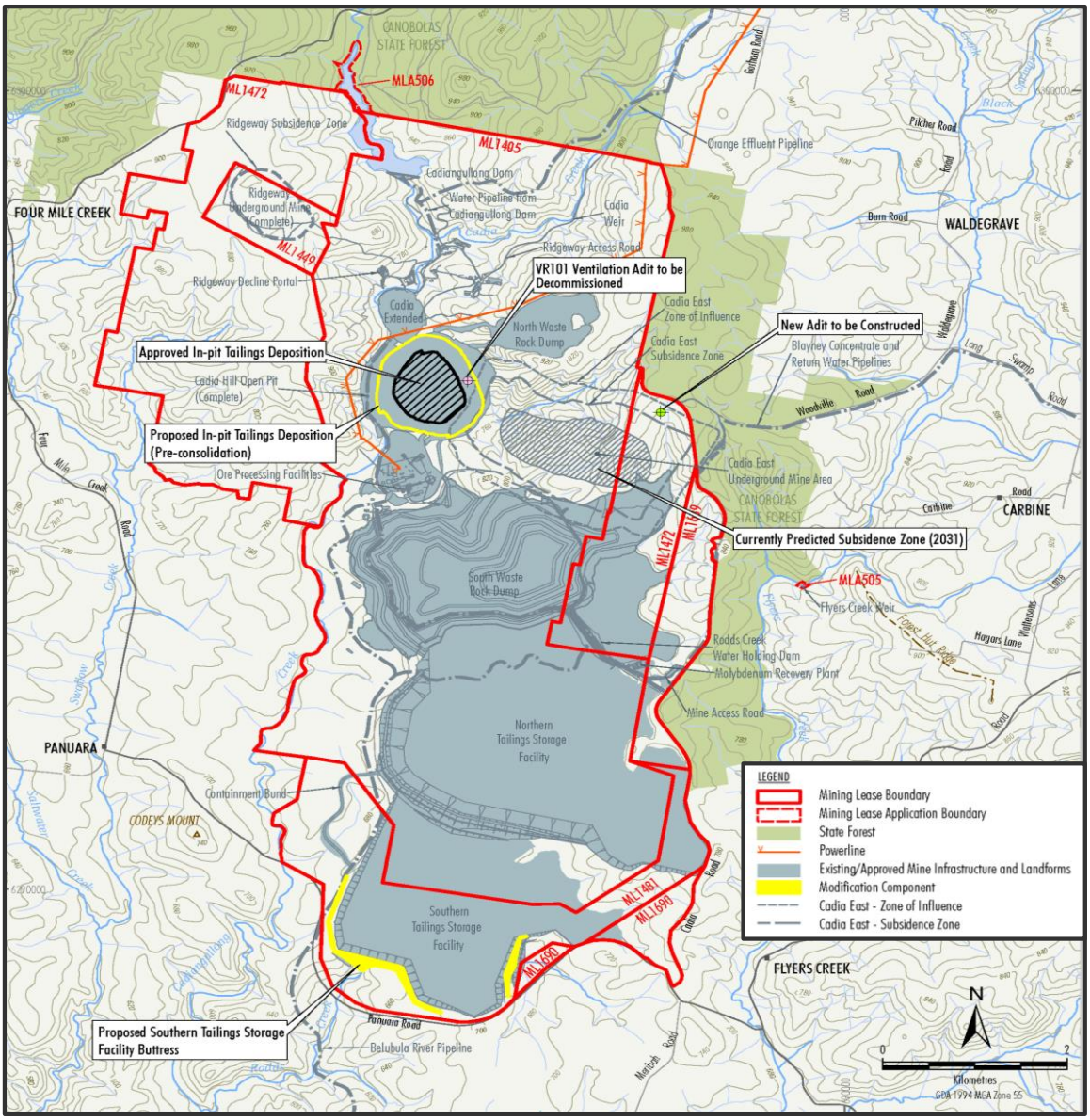

Figure 2 | Proposed Modification Layout

3. Strategic Context

3.1 Scope of Modification

The Cadia East Project was originally approved on 6 January 2010 under Part 3A of the *Environmental Planning and Assessment Act* 1979 (EP&A Act).

Under clause 6 of Schedule 2 of the *Environmental Planning and Assessment (Savings, Transitional and Other Provisions) Regulation 2017* (EP&A Regulation), the Cadia East Project was transitioned to State Significant Development (SSD) by order, which took effect by publication in the NSW Government Gazette on 13 April 2018.

A modification application under Section 4.55(1A) of the EP&A Act for a modification involving minimal environmental impact was submitted to the Department on 9 September 2019.

The Department considers that the application can be characterised as a modification involving minimal environmental impact, as it is substantially the same development as originally approved in 2010, would not significantly increase the environmental impacts of the project as approved, and would not change the approved mining, processing and transport methods, extraction rate, or schedule of the land.

Consequently, the Department considers that the proposed modification is within the scope of Section 4.55(1A) of the EP&A Act.

3.2 Consent Authority

The Minister for Planning and Public Spaces (the Minister) is the consent authority for the modification application. However, under the Minister's delegation of 11 October 2017, the Director, Resource Assessments, may determine the application. This is because the relevant Councils did not object to the proposal and Cadia has not made any reportable political donations.

3.3 Mandatory Matters for Consideration

In accordance with Section 4.15(1) and Section 4.55(3) of the EP&A Act, the following must be considered in granting the modification application as relevant to the application:

- environmental planning instruments or proposed instruments;
- any planning agreement;
- EP&A regulation;
- likely impacts of the modification application, including environmental impacts on both the natural and built environments, and social and economic impacts;
- suitability of the site;
- any submissions;
- the public interest; and
- the reasons for granting approval for the original application.

The Department has considered the relevance of these considerations for the modification application below.

Environmental planning instruments or proposed instruments

A number of environmental planning instruments apply to the modification, including:

- *State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007* (the Mining SEPP);
- *State Environmental Planning Policy No 55—Remediation of Land* (SEPP No 55 – Remediation of Land);
- *Cabonne Local Environmental Plan 2012*; and
- *Blayney Local Environmental Plan 2012*.

The Department has considered the proposed modification against the relevant provisions of these instruments. The Department has also considered Cadia's consideration of the relevant instruments in its Modification Report. The Department considers that the proposed modification can be carried out in a manner that is generally consistent with the aims, objectives and provisions of these instruments.

EP&A Regulation

There are no additional considerations relevant to the modification application in the EP&A Regulation.

Likely impacts of the modification application

The likely impacts of modification are considered in **Section 5** of this report.

Suitability of the site

The modification would not change the approved site boundaries. The Department considers that this modification application would not result in significant changes that would alter the conclusions made as part of the original assessment.

Submissions

The Department notified and sought comment from Cabonne Council, Blayney Shire Council, Orange City Council and relevant agencies, and made the application available on its website, as discussed further in **Section 4** of this report.

Public Interest

The consideration of the public interest is provided in **Section 6** of this report.

The reasons for granting the consent for the original application

In determining the original application, the Department concluded that the benefits of the project outweighed the impacts and imposed a range of strict conditions to appropriately manage the impacts. The Department has considered the proposed modification against the reasons the Department provided for determining the project and is satisfied that the proposed modification does not affect the decision that was previously made.

3.4 Objects of the EP&A Act

The consent authority must also consider the objects of the EP&A Act when making decisions under the Act. The Department has assessed the proposed modification against the current objects of the EP&A Act. The objects of most relevance to the decision on whether or not to approve the proposed modification are found in section 1.3 of the Act. They are:

- Object 1.3(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*;
- Object 1.3(b): *to facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment*;
- Object 1.3(c): *to promote the orderly and economic use and development of land*;
- Object 1.3(e): *to protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats*;
- Object 1.3(f): *to promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage)*;
- Object 1.3(i): *to promote the sharing of the responsibility for environmental planning and assessment between the different levels of government in the State*; and
- Object 1.3(j): *to provide increased opportunity for community participation in environmental planning and assessment*.

The Department is satisfied that the proposed modification encourages the proper management and development of resources (Object 1.3(a)) and the promotion of the orderly and economic use of land (Object 1.3(c)). The proposal would optimise resource recovery under the project approval (06_0295), while utilising the mine's established infrastructure and workforce.

The Department has considered the principles of ecologically sustainable development (ESD, Object 1.3(b)) in its assessment of the proposed modification. The Department considers that the proposed modification may be carried out in a manner that is consistent with the principles of ESD. The Department's assessment has sought to integrate all significant environmental, social and economic considerations.

The Department has carefully considered the environmental impacts of the proposed modification, including potential impacts on the natural, cultural and built environments (Object 1.3(e) and (f)). The key findings of the Department's assessment are summarised in **Section 5**.

The Department made the modification application available on its website and consulted with Councils (Object 1.3(i) and (j)). The outcomes of the consultation process are outlined in **Section 4**.

4. Engagement

The Department referred the application to key government agencies for advice and made it publicly available on its website from 26 September 2019.

4.1 Submissions and Response to Submissions

The Department received advice from 11 government agencies, including the local councils, none of which objected to the proposed modification. A full copy of the submissions is available in **Appendix C** and a summary of the agency advice is provided below. Cadia provided a Submissions Report, responding to matters raised and the Department placed the Submissions Report and a further addendum on its website (see **Appendix D**). Additional agency advice on Cadia's Submissions Report is available in **Appendix E**.

4.2 Key Issues – Government Agencies

The local councils (**Orange City**, **Cabonne** and **Blayney Shire Councils**) have reviewed the application and the modification report and did not have any comments or concerns about the proposal.

The **Water Group** within the Department (DPIE-Water) and **Natural Resources Access Regulator** (NRAR) submission included a request for further information about Cadia's operation as a whole and not specifically on the proposed modifications, including Cadia's water take during operations, construction of the new adit and post-closure, site water balance modelling, impacts on surface water quality and tailings dam spill predictions as well as revision of water monitoring and management programs. The Department notes that the proposal would not change the project's surface or groundwater take or increase the predicted spills from the approved tailing facilities and hence, considers these issues are not material to the assessment of the proposed modification application. Matters related to the Department's assessment of the likely impacts of the proposal on water resources are discussed in **section 5.1**.

The **Biodiversity and Conservation Division** (BCD) within the Department was satisfied with the Aboriginal cultural heritage assessment of the proposal. However, it noted that the proposal's Biodiversity Development Assessment Report (BDAR) did not include assessment of the potential impacts on bat habitats associated with decommissioning and closure of adit VR101 in CHP. BCD requested further information about Cadia's assessment and management measures to mitigate and avoid impacts of the proposal on threatened species in accordance with the requirements of the *Biodiversity Conservation Act 2016* (BC Act). Cadia provided additional information in its Submissions Report (see **Appendix D**) and BCD's response and recommendations are available in **Appendix E**. BCD accepted that the closure of the adit VR101 was an approved activity and not relevant to this assessment. Consideration of biodiversity impacts of the proposal is discussed in **section 5.2**.

The **Resources Regulator** within the Department raised concerns about matters related to rehabilitation of the CHP tailings, particularly management of the exposed CHP until the pit lake is formed. This matter is considered in **section 5.3** of this report.

The **Environment Protection Authority** (EPA) requested further information about impacts on water resources, air quality and noise; in particular, clarifications about surface water quality monitoring, management of potential dust from CHP, predicted frequency of spills from STSF, and noise due to construction of STSF buttressing. The Department's consideration of these issues is discussed in **sections 5.1** and **5.3**.

The **Division of Resources and Geoscience** (DRG) supported the proposed modification and acknowledged that the proposal would not change the approved mining areas and methods, ore processing rate, or mine life.

The **Department of Primary Industries** and **Crown Lands** with the Department and **Dams Safety Committee** (DSC) raised no concerns and made no recommendations to the proposal. Crown Lands confirmed that the proposal would not increase impacts on Crown land and/or roads compared to the approved project. DSC noted that STSF is a prescribed dam and Cadia is yet to provide the final design report for the proposed buttressing of the STSF. The Department notes that matters related to final design of the prescribed dam (STSF) are subject to DSC requirements under the *Dams Safety Act 2015*.

5. Assessment

The Department has assessed the modification application and supporting information in accordance with the relevant requirements of the EP&A Act, including the matters for consideration, as set out in section 4.15(1) of the EP&A Act. A list of the key documents that informed the Department's assessment is provided in **Appendix A**.

It is noted that the proposed modification would be within the currently approved disturbance footprint, except construction of the additional STSF buttressing. The Department considers that the key issues concerning the proposed modification relates to potential impacts of additional deposition of tailings in the CHP on water resources, and construction of additional STSF buttressing on biodiversity. The Department has also considered a range of other potential impacts associated with the proposed modification activities in **section 5.3**.

5.1 Water Resources

The Modification Report includes a groundwater impact assessment by Australasian Groundwater and Environmental Consultants Pty Ltd (AGE, 2019), and a surface water assessment by Hydro Engineering & Consulting (HEC, 2019). The surface water assessment included water balance modelling of tailings deposition in the CHP, updated flood modelling to assess the flooding risks to Cadiangullong Creek,

and updated groundwater modelling. In addition, a peer-review of groundwater assessment by Dr Noel Merrick was submitted as part of this proposal.

The Department considers that the main areas of concern relate to impacts of additional tailings deposition into the CHP on the groundwater system and potential spills from the CHP to surface waters. The Department's assessment of these matters is summarised below.

Cadia East Subsidence Zone

The Modification Report's geotechnical assessment found that the Cadia East underground mining subsidence zone would not extend to the CHP. Therefore, it predicted that the CHP and Cadia East pit lakes would remain separate, instead of the original prediction of a single pit lake formation across the two areas (see **Figure 3** taken from the application's groundwater impact assessment).

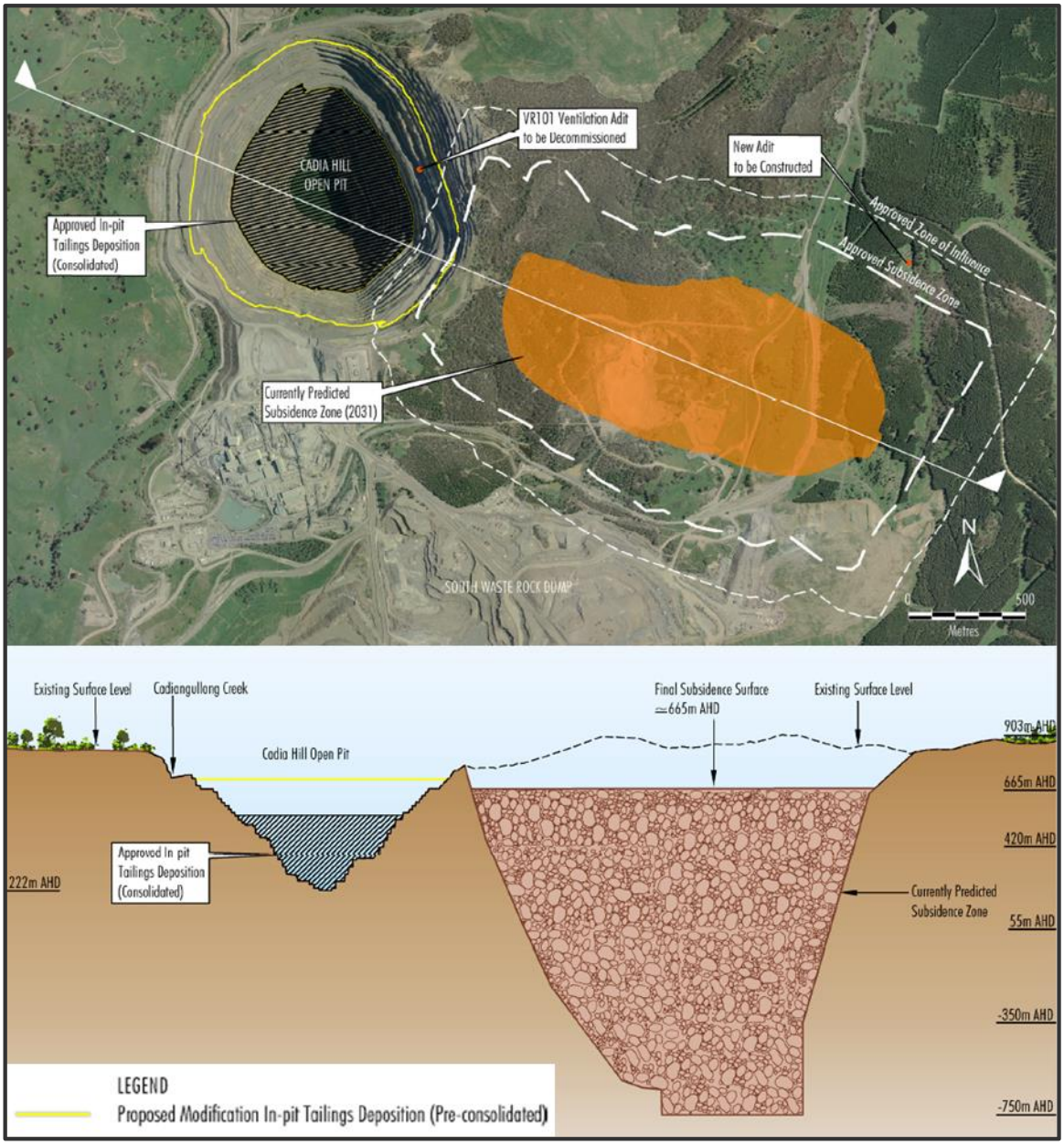

Figure 3 | Conceptual long section of Cadia Hill open cut pit and Cadia East subsidence zone

The revised water balance assessment predicted that the final stabilised water level in the CHP lake would be approximately 30 m higher than the originally predicted level. Furthermore, the modelling prediction found that it would take more than 150 years for the water level to reach equilibrium at around 687 mAHD to 699 mAHD (averaging around 694 mAHD, instead of previously predicted height of 670 mAHD). This predicted peak level is about 21 m below the spill level of 721 mAHD, where discharge to surface waters could occur (see **Figure 4** taken from the application's surface water impact assessment).

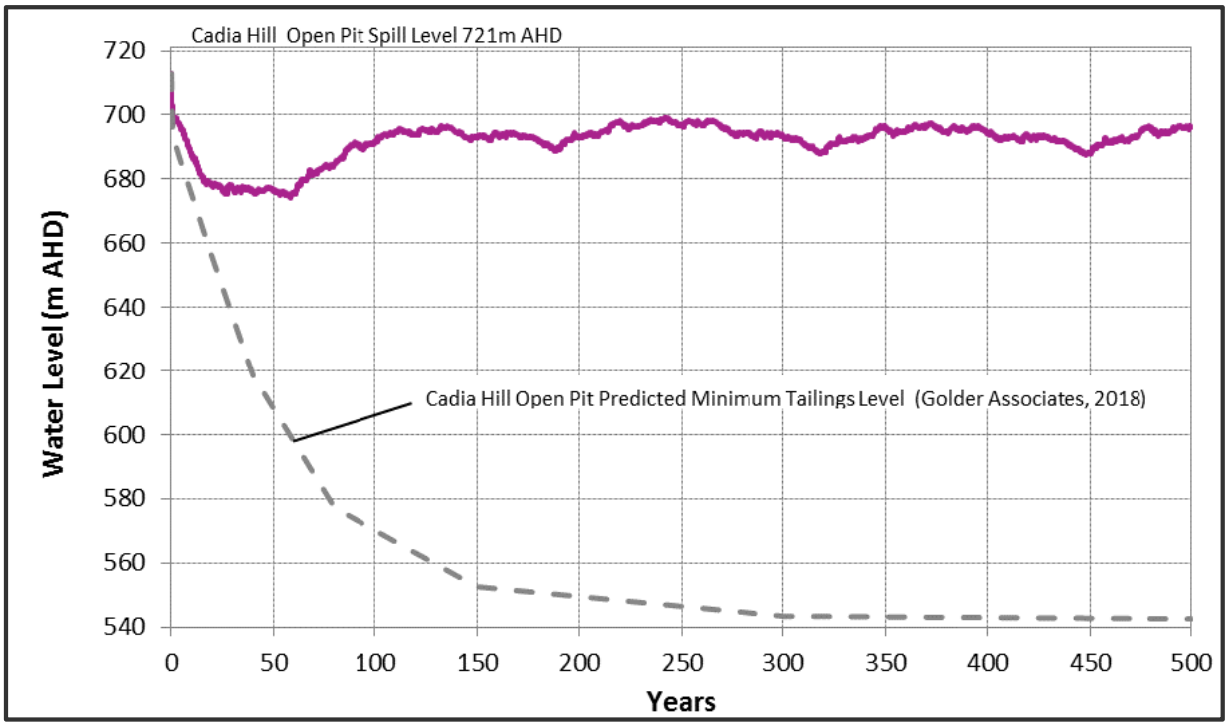

Figure 4 | Cadia Hill open cut pit water level forecast results from the water balance modelling.

Surface and Groundwater Impacts

The CHP is entirely within the Ordovician volcanic basement rock with very low permeability and groundwater flow would mainly be due to fault lines and fractures that intersect the open cut. It is noted that permeability of the CHP due to tailings depositions was assessed in Modification 12 and was not considered as a material issue due to the open cut and adjoining subsidence area remaining a groundwater sink.

The application's groundwater assessment reported that the proposed additional tailings emplacements in the CHP would not change the long-term water quality of the recovered groundwater table or final void (derived by the evapo-concentration of salts and the geochemistry of the host rock) and that the CHP and the adjoining Cadia East subsidence zone would remain groundwater sinks post-closure.

Following Modification 12 and revision of the Site Water Management Plan, Cadia commissioned monitoring bores 90 to 95 (MB90 to MB95) to monitor baseline groundwater conditions and likely impacts of tailing depositions in and around the CHP. It is noted that MB95 would be inundated with the tailings following the proposed additional tailings deposition. However, Cadia has committed to install

additional groundwater monitoring bores, including between Cadiangullong Creek and south-western boundary of the CHP and a replacement for MB95 through revision of the project's Site Water Management Plan.

The proposed CHP tailings would be emplaced to an unconsolidated level of 713 mAHD and when the pumping of the tailings into CHP is ceased, it would then consolidate down to 694 mAHD over six to seven years (563 mAHD in the middle of the CHP) and a lake would form over the consolidated tailings. In terms of short-term effects during mining operations, it was predicted that the proposal could result in outward hydraulic gradient in the south-west section of CHP between 694 mAHD and 713 mAHD, where the water level within CHP would rise above the base of Cadiangullong Creek at 708 mAHD and CHP water could potentially transport into the creek.

The seepage modelling (AGE, 2019) identified that the outward seepage rate from CHP would be very low due to the very low permeability of the surrounding rocks and low hydraulic head differential between the maximum CHP water level and adjacent groundwater level south-west of the CHP (total predicted seepage from CHP of 72 L/year). Given the likelihood of fractures within the rocks and the potential for higher seepage rate during operations, Cadia has proposed conducting trials to test and determine the optimal treatment strategy prior to inundation of tailings, identifying and treating faults and cracks in the south-west of CHP between 694 mAHD and 713 mAHD (sealing and grouting using polyurethane sealant) and implement contingency measures in case monitoring indicates enhanced leakage to surface waters (cease tailings deposition and supernatant into CHP and commence pumping out of CHP). These findings were supported by Dr Merrick in his peer-review report and the EPA.

Summary

The existing project approval include requirements for:

- carrying out surface and groundwater monitoring programs to account for detailed baseline data, stream health conditions in Cadiangullong Creek, potential leakage or spillage from tailings, monitoring the hydraulic gradient, and surface and groundwater quality around the base of the CHP;
- revision of the surface and groundwater monitoring networks, including the installation of additional monitoring bores;
- ongoing verification and refinement of the surface and groundwater models; and
- a Surface and Ground Water Contingency Plan, including a protocol for the investigation, notification and mitigation of any exceedances of the surface water, stream health and groundwater impact assessment criteria.

The Department notes that the DPIE-Water and NRAR's recommendations for re-calibration and updates of the water balance, final void and water management models, and addition of groundwater quality monitoring plan and reporting procedure are consistent for the existing conditions of approval. The project's groundwater model has been re-calibrated twice since the original Cadia's Environmental Assessment in 2009 (AGE 2013 and 2016). The current groundwater model was developed in 2016 in consultation with DPIE-Water and the Department. The Site Water Management Plan would be revised in consultation with DPIE Water, following approval of this modification application, and monitoring

results would continue to be reported in Cadia's Annual Review. Additionally, in accordance with the existing approval, project's Site Water Management Plan would include establishing a process for determining hydraulic gradient flow and the standing water levels between the CHP and Cadiangullong Creek. Additionally, the Department has recommended an amendment to the condition on the project's Surface and Groundwater Contingency Plan to include a procedure for investigating monitoring and minimising leakage from the CHP towards Cadiangullong Creek.

Subject to the revised conditions and relevant monitoring and management programs, the Department and the EPA are satisfied that the proposed additional deposition of tailings into the CHP would have no additional impact on surface and groundwater resources beyond those already approved.

5.2 Biodiversity

The biodiversity impacts of the modification application would be due to native vegetation clearing for the proposed STSF buttressing construction and potential impacts on threatened bat habitat due to the proposed closure and decommissioning of adit VR101. The Department's assessment of these matters is summarised below.

STSF Buttressing Construction

The BDAR accompanying the Modification Report assessed the impacts of the proposed construction of additional downstream buttressing of the STSF, which would be outside the approved footprint. It would require clearance of 3.9 ha of exotic grassland and 0.31 ha of Box-Gum Woodland. Clearance of Box-Gum Woodland would also result in habitat loss for two threatened flora species and four threatened fauna species; namely, the Squirrel Glider (fauna), and potentially the habitat of the Small Purple-pea (flora), Silky Swainson-pea (flora), Superb Parrot (fauna), Little Eagle (fauna), and Pink-tailed Legless Lizard (fauna).

Box-Gum Woodland is part of the plant community type (PCT) 266 threatened ecological community under the BC Act and *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). However, the existing remnant PCT 266 cover over 0.31 ha does not meet the protection criteria under the EPBC Act Policy Statement, as it lacks presence of at least 12 native non-grass species, including the presence of one important species (Department of the Environment and Heritage, 2006).

Removal of PCT 266 triggers the requirement for the Biodiversity Offset Scheme and would result in an offset requirement of 8 ecosystem and 46 species credits. Cadia has committed to offset the credits by making a payment to the NSW Biodiversity Conservation Trust.

Closure of Adit VR101 and Construction of a Replacement Adit

Cadia commissioned surveys for bat habitat assessment in October 2018. Although these surveys did not identify any bats in the adit VR101, it reported that bat scats were found in one of the seven side passages of adit VR101.

The BDAR accompanying the Modification Report did not include assessment of likely impacts of the proposed decommissioning and closure of the adit VR101. However, it is noted that construction and subsequent closure and rehabilitation of this adit were assessed and approved in 2010 following Cadia's

Modification 1 application. Therefore, closure and rehabilitation of adit VR101 are approved activities under the existing project approval and are not required to be assessed in a BDAR under the BC Act. Decommissioning of the approved adit VR101 would be managed through revision of the project's relevant management plans and strategies; namely, Rehabilitation Strategy, the Land and Biodiversity Management Plan (L&BMP), and Mine Operations Plan, and in consultation with the key agencies, including BCD. This includes revision of the Threatened Species Management Protocol (TSMP) component of the L&BMP, which outlines management strategies to protect any threatened flora and fauna species, such as bats. In addition, Cadia has committed to conduct additional seasonal surveys prior to closing of adit VR101.

It is considered that construction of the proposed new adit to replace adit VR101 would not increase the impacts of the project on biodiversity values, as it would be constructed within the already approved project's disturbance footprint (within the Cadia East zone of influence, which is outside the Cadia East subsidence zone, see **Figure 1**).

Summary

Based on this assessment, it is considered that clearing of 0.31 ha of the lower condition Box-Gum Woodland and associated impacts on threatened species would be minimal. The Department and BCD are satisfied with the calculated ecosystem and threatened species credits. The Department has recommended conditions requiring Cadia to retire the biodiversity offset credits in accordance with the NSW Biodiversity Offset Scheme.

The Department is satisfied that implementation of the revised TSMP and L&BMP would address and avoid any potential impacts on the biodiversity values and threatened species during construction, operation, closure and rehabilitation of the adits, including adit VR101 and the new replacement adit.

The existing project approval requires Cadia to revise strategies, plans and programs following any modification of the approval. Therefore, the Department considers that the associated cumulative impacts of proposed modification on native vegetation loss and reduction of flora and fauna habitat would be minimal.

5.3 Other Issues

Table 1 summarises the Department's consideration of other issues related to the proposed modification.

Table 1 | Assessment of other issues

Issue	Consideration	Recommendation
Noise and Air Quality	• The original project approval considered progressive deposition of tailings and raising of the tailings embankment over the project life. • Tailings deposition is currently being undertaken in the CHP, centrally located within the approved project area. • The new adit and STSF buttressing construction activities would occur within the project's disturbance footprint. • The existing project approval impose strict conditions for noise and air quality during construction and operations,	• Comply with existing conditions.

Issue	Consideration	Recommendation
	including limits, management plans and monitoring requirements. • EPA continues its monitoring and evaluations in accordance with the project's approval conditions and environment protection licence (EPL), and would take regulatory actions if required. • Consequently, the Department and EPA consider that the proposal would not significantly increase air quality or noise impacts associated with the project.	
Rehabilitation and Final Landform	• Consistent with the previous approval, the tailings material would not be capped with soil and/or higher permeability capping materials. • Given the conclusions of the water assessments, the modification would cause no material change to the water quality impacts from the approved project. • It is noted that Cadia's calibration of geotechnical models is on-going and Cadia will include any likely changes to the predicted subsidence zone in the relevant management plans and future modification reports. • Consistent with the existing approval, any changes to the project due to this modification application, including construction, closure and rehabilitation of the new adit must be included in the relevant management plans in consultation with the government agencies, including the Rehabilitation Strategy and L&BMP. • The Department has recommended a requirement for consulting with the RR in relation to project's rehabilitation and final landform. • Consequently, the Department is satisfied that the proposed modification is consistent with the approved final landform.	• Consult with the RR in relation to the project's rehabilitation and final landform (Rehabilitation Strategy and L&BMP). • Comply with existing conditions.
Mine Safety and Hazards	• Increasing the CHP tailings level up to its full capacity of 713 mAHD (pre-consolidated tailings level) would not change underground mine safety and hazards aspects of the project, as it is located within the Ordovician rock and upstream of the of the NTST, STSF and ore processing facilities (see **Figure 1**). • Consistence with the existing approval, Cadia would continue its operational safety management systems, including on-going monitoring of groundwater impact and geotechnical assessment. • RR did not identify any issues with mine safety associated with the proposal.	• Comply with existing conditions.
Resource Recovery	• DRG is satisfied that the proposed increase in the level and capacity of the CHP would not pose any risks to the ore resource and project's operations and that any identified risks or opportunities can be effectively regulated under the *Mining Act 1992*.	• Comply with existing conditions.
Aboriginal Cultural Heritage	• BCD confirmed that the proposed modification would not change the project's impacts on matters related to the Aboriginal cultural heritage.	• Comply with existing conditions.
Socio-economic	• The proposal allows Cadia to operate at full production and continue its social and economic benefits to the State and community, including direct employment of an average of 880 workers.	• Noted.

6. Evaluation

The Department has assessed the modification application and supporting information in accordance with the relevant requirements of the EP&A Act, including the relevant “matters for consideration”.

The Department considers the potential impacts of additional deposition of tailings in the CHP on water resources, and likely impacts of construction of additional STSF buttressing on biodiversity as the key assessment issues.

The modifications would be within the approved project’s surface disturbance footprint, except for the proposed STSF buttressing, which would clear 0.31 hectares of native vegetation. The Department and BCD consider that the STSF buttressing construction could be undertaken with minimal biodiversity impacts and the unavoidable native vegetation clearance would be offset in accordance with the relevant Government policy (NSW Biodiversity Offset Scheme).

The Department is satisfied that additional deposition of tailings into CHP would result in minimal environmental risk to water resources, noting that surface and groundwater monitoring is being undertaken as part of the long-term water management strategy that includes ongoing verification and validation of the surface and groundwater models.

The Department notes that EPA continues its monitoring and evaluations in accordance with the project’s environment protection licence (EPL) and operating conditions and would take regulatory actions if required under its regulatory responsibilities.

Under the existing approval, Cadia is required to review and revise any relevant monitoring and management strategies, plans and programs following approval of any modification application, in consultation with the relevant government authorities, including EPA, DRG, BCD, and DPIE-Water.

In addition, the Department has recommended the following changes to the project approval:

- inclusion of the modification proposal in the project description;
- changes to government agency, legislative changes and standard definitions;
- administrative changes to reflect the Department’s standard approach for incident and non-compliance notification and reporting;
- update to the requirements for the project’s Surface and Groundwater Contingency Plan to include a procedure for investigating monitoring and minimising leakage from the CHP towards Cadiangullong Creek;
- update to the requirements for retiring the biodiversity offset credits;
- a requirement to consult with the RR in relation to the project’s L&BMP and Rehabilitation Strategy;
- update to include a requirement for a TSMP in the project’s L&BMP; and
- update to the project layout plan to reflect the project as modified.

The Department considers that the proposed modification can be undertaken with no significant environmental impacts, including on water resources, biodiversity, noise and air quality, and that any other residual impacts can be adequately managed and mitigated by the revised project approval and updated management plans and monitoring programs, in consultation with the relevant agencies.

The proposed modification would allow continuation of full social and economic benefits by enabling Cadia to operate at full capacity, while it continues investigating failure of the NTSF embankment and its repair to resume tailings deposition into the NTSF, and can be achieved without any significant environmental impacts beyond those already assessed and approved. Consequently, the Department considers that the proposal is in the public interest, and should be approved, subject to the revised conditions.

7. Recommendation

7.1 Recommended Conditions

The Department has drafted a Notice of Modification (see **Appendix F**) for the proposed modification, as well as a consolidated version of the project approval as modified (see **Appendix G**).

Cadia has reviewed the proposed conditions and has raised no concerns.

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

- **considers** the findings and recommendations of this report; and
- **determines** that the application (06_0295 MOD 13) falls within the scope of section 4.55(1A) of the EP&A Act;
- **accepts and adopts** all of the findings and recommendations in this report as the reasons for making the decision to grant approval to the application;
- **modifies** the approval (06_0295); and
- **signs** the attached approval of the modification (**Appendix F**).

Recommended by:

M. Mazaheri 19/12/2019

Mandana Mazaheri
Senior Environmental Assessment Officer
Resource Assessments

8. Determination

The recommendation is: **Adopted / Not adopted by:**

20/12/19

Steve O'Donoghue

Director

Resource Assessments

Appendices

Appendix A – List of Documents

Cadia East Project, Environmental Assessment (EA) dated 2009 (the original EA), including its appendices.

Independent Technical Review Board (April 2019), NTSF Embankment Slump Report (Report on NTSF Embankment Failure), Cadia Valley Operations for Ashurst Australia.

Proposed Decommissioning of the Blayney Dewatering Facility, Cadia Valley Operations (06_0295) (August 2019).

White Box – Yellow Box – Blakely's Red Gum grassy woodlands and derived native grasslands. EPBC Act Policy Statement. Department of the Environment and Heritage, Canberra (2006).

Appendix B – Modification Report

Appendix C – Submissions

Appendix D – Submissions Report

Appendix E – Additional Agency Advice

Appendix F – Notice of Modification

Appendix G – Consolidated Project Approval

https://www.planningportal.nsw.gov.au/major-projects/project/25036