

ASSESSMENT REPORT

CADIA EAST GOLD/COPPER PROJECT Processing Rate Modification 06_0295 – Mod 6

1 BACKGROUND

The Cadia Valley gold and copper mining complex is located 25 kilometres south-west of Orange in the Cabonne and Blayney local government areas (LGAs) (see Figure 1).



Figure 1: Regional Context

The mining complex is owned and operated by Cadia Holdings (Cadia), a subsidiary of Newcrest, and comprises (see Figure 2):

- the mining complex itself, which includes:
 - the Cadia Hill open cut mine;
 - the Ridgeway underground mine;
 - the Cadia East underground mine;
 - two large Tailings Storage Facilities;
 - two large waste rock dumps;
 - ore processing facilities; and
 - o a range of ancillary surface infrastructure, including an extensive water management system;
- the Blayney Dewatering Facility in Blayney, which will shortly be replaced by a new dewatering facility outside town (see Figure 1); and
- the pipeline route between the mine and the dewatering facility at Blayney (see Figure 1), which includes concentrate and return water pipelines.

Open cut mining operations at Cadia ceased in 2012, so all mining is now done underground. Ore is extracted from these underground mining operations and processed on site to produce concentrate.

The concentrate is pumped via pipeline to the dewatering facility at Blayney. Following dewatering it is placed into containers and loaded onto trains and railed to Port Kembla for export.

Cadia now operates the entire mining complex under a single Ministerial approval which was granted by the Minister for Planning on 6 January 2010. This approval has been modified six times, and allows Cadia to extract and process up to 27 million tonnes of ore a year until 30 June 2031.

Cadia employs an average of 880 people at the mining complex.

2 PROPOSED MODIFICATION

Cadia is seeking a further modification to its approval. This approval has five distinct components as outlined below.

2.1 Increase in Ore Production

Following further exploration work, Cadia estimates it will be able to extract a further 6.5 million tonnes of ore from the approved mining areas at Cadia East. This extraction would not require any changes to the physical extent of these mining areas, but would increase the total amount of ore extracted from the Cadia East mine from 449.5 to 456 million tonnes.

2.2 Increase in Annual Processing Rate

For economic reasons, Cadia is seeking to increase the maximum annual processing rate at the mining complex from 27 to 32 million tonnes of ore a year.

2.3 Infrastructure Upgrade

To support the proposed increase in annual processing rates, Cadia proposes to upgrade the existing infrastructure at the mine, including:

- installing additional secondary crushing and/or screening capacity at the two concentrators at the mine's ore processing facilities;
- upgrading the underground crushing and screening infrastructure; and
- upgrading the pump and associated pipework for the tailings thickeners and tailings discharge lines.

These upgrades are expected to take 12 months to complete.

While the upgrades are occurring, Cadia proposes to use a mobile conveyor stacker and crusher to maintain the mine's crushing capacity. The use of this equipment would require the use of two additional excavators and the three haul trucks to move crushed ore between the ore stockpiles at the two concentrators.

2.4 Blast Notifications

Under the existing conditions of approval, Cadia is required to notify nearby landowners of the blasting schedule of the mine, operate a blasting hotline and publish up-to-date information on its blasting schedule on its website. It is also required to advertise the blasting hotline number and website information in a local newspaper at least two times a year.



Figure 2: General Arrangement

Cadia is seeking approval for advertising the blasting hotline and website information in its own local newsletter rather than in a local newspaper.

2.5 Road Noise Mitigation

Under the existing conditions of approval, Cadia is required to provide additional noise mitigation (such as double-glazing, insulation and/or air conditioning) to landowners along certain roads if traffic noise levels generated by the project exceed certain traffic noise criteria.

However, since the original approval was granted the government has released the Voluntary Land Acquisition and Mitigation Policy. This policy restricts the provision of additional mitigation rights to onsite, and says they should not be provided for noise impacts on the public road network.

Cadia is seeking to delete its existing road noise mitigation obligations under the approval, and bring the approval into line with current government policy.

The proposed modifications are summarised in Table 1 and depicted in Figure 3. They are also described in detail in the Environmental Assessment (EA) submitted in support of the application (see **Appendix B**).

Aspect	Existing/approved CVO	Project as Modified
Mining Methods	Cadia East underground mine – underground panel caving with associated surface subsidence zone. Ridgeway – underground sublevel and block caving with associated surface subsidence zone.	No change.
Life of Mine Cadia East Ore Production	Approximately 449.5 Mt.	Approximately 456 Mt.
Life of Mine CVO Ore Production	Approximately 561 Mt since the commencement of the Cadia East Project.	Approximately 562 Mt.
Waste Rock Management	Minor amounts of waste rock to be deposited in the South Waste Rock Dump.	No change.
Life of Mine	Mining up until approximately 2030.	Mining up until approximately 2029.
Ore/Rock Preconditioning	Use of both underground techniques and surface boreholes to precondition the Cadia East orebody and host rock above the orebody.	No change.
Tailings Management	Raising of the Northern Tailings Storage Facility (NTSF) and Southern Tailings Storage Facility (STSF) via upstream embankment lifts.	No change to maximum Tailings Storage Facility (TSF) embankment elevations. Increased rate of tailings embankment lift.
Ore Processing	Processing of up to 27 Mtpa of gold and copper ore. Upgrades to the existing ore processing facilities and associated stockpiles and materials handling equipment.	 Processing of up to 32 Mtpa of gold and copper. Upgrades to the existing Concentrators 1 and 2 including: additional crusher at Concentrator 1; additional flotation capacity installation at Concentrator 1; installation of new regrind Vertimills at Concentrator 1; additional crusher at Concentrator 2; upgrades to the Concentrator 2 regrind Vertimill; and plant de-bottlenecking process improvements within the existing Concentrators 1 and 2.
Concentrate Transport and Dewatering	Construction of a new CVO Dewatering Facility to the east of Blayney and eventual decommissioning of the existing Blayney Dewatering Facility. Installation of a new concentrate pipeline from the CVO to the CVO Dewatering Facility. Rail transportation of dewatered mineral concentrate to the eastern seaboard.	No change to CVO Dewatering Facility, concentrate pipeline or rail movements. Additional containers on product concentrate trains (from 68 to 106 containers per train).

 Table 1: Summary of Project as Modified

 Approx1

Aspect	Existing/approved CVO	Project as Modified
Water Supply And Management	Augmentation and upgrade of the existing CVO water management/supply system including development of additional pipeline/pumping systems and raising of the Rodds Creek Water Holding Dam.	No change to water supply and management. Increase in water demand in-line with proposed increased processing rate.
Power Demand	Peak demand of 160 megawatts (MW).	Increase in peak demand to 164 MW.
Power Supply	Additional power supply infrastructure would be the subject of a separate approvals process.	No change.
Employment	An average of 880 employees up to a maximum of approximately 1,300 employees.	No change to operational employment. Additional 20 employees during construction of modification infrastructure.

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Figure 3: Existing Operations and Proposed Upgrades to Ore Processing Facilities

3 STATUTORY CONTEXT

3.1 Section 75W

The project approval was granted under the former Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act). Although Part 3A was repealed on 11 October 2011, the project remains a "transitional Part 3A project" and under the current savings provisions the project approval can only be modified under Section 75W of the EP&A Act (or the former Part 3A provisions).

3.2 Approval Authority

The Minister for Planning is the approval authority for the modification application. However, under the Minister's delegation of 16 February 2015, the application may be determined by the Executive Director Resource Assessments and Business Systems as Cadia has not made any reportable political donations, the Councils do not object to the proposal and there were fewer than 25 public submissions.

3.3 Modification

The Department is satisfied that the proposal can be characterised as a modification to the current project approval rather than a new project in its own right because:

- there would be no change to the physical extent of the approved mining operations;
- the upgrades to the existing infrastructure would be relatively minor; and
- the annual processing rate would only increase by 18.5%.

Consequently, the Department considers the proposal to be within the scope of Section 75W of the EP&A Act.

4 CONSULTATION

The Department exhibited the application from 16 April until 1 May 2015, and made the EA publicly available on its website, at its Information Centre and at Blayney Shire Council, Cabonne Council and Orange City Council.

The Department received 21 submissions including 8 from government agencies. There were 13 objections including 4 from special interest groups and 9 from community members. A summary of the matters raised in submissions is provided below, and full copies of the submissions are included in **Appendix C**.

4.1 Agency Submissions

Environment Protection Authority (EPA) raised no issues and confirmed that no variation to Cadia's Environment Protection Licence (EPL) would be required. The EPA supports Cadia's commitment to further investigating noise and air quality mitigation measures during the design phase of the modification. The measures for noise mitigation include selection of key infrastructure, enclosure or shrouding of key noise sources and consideration of acoustic lining of sheds and buildings. The measures for air quality include standard dust suppression measures such as watering haul roads, sprays on coarse ore stockpiles and maintaining haul trucks. The EPA requests that the outcomes of the noise and air mitigation investigations are incorporated into the existing environmental management and monitoring measures. The Department notes that implementation of mitigation measures are already addressed by the current approval which contains provisions for implementing all reasonable and feasible best mitigation measures for both noise and air impacts.

The EPA is satisfied that the southern tailings facility has sufficient storage capacity to accommodate the increased ore processing rate but noted that ongoing management of the basins and tailings storage facility was essential to maintaining adequate capacity. This issue is discussed in Section 5.1.

NSW Office of Water (NOW) raised no issues and supported a recommendation made in the EA that the design criteria be reviewed for the Site Runoff Dam and the Northern Leachate Dam to ensure adequate storage capacity is available. This issue is discussed in Section 5.1.

Division of Resources and Energy (DRE) raised no issues and noted that, if approved, the Mining Operations Plan would need to be revised.

Orange City Council noted that there is community concern around potential impacts on water resources and sought to ensure that water security for the broader community, agriculture and the environment are prioritised during any drought periods. This issue is discussed in Section 5.1.

Council also noted that there would be some increase in noise, dust and traffic impacts and encouraged a review of associated conditions of approval and agreements to ensure continued relevance. These impacts are discussed in Sections 5.2 and 5.3.

Office of Environment and Heritage (OEH), Roads and Maritime Services (RMS), Cabonne Council, and Blayney Shire Council raised no issues and made no recommendations.

4.2 Special Interest Group and Public Submissions

The key issues raised by special interest groups and the community included concerns relating to:

- Surface water the level of water usage by the mine and the impact on the Belubula River during periods of drought, concerns about the adequacy of the Site Water Balance, consideration of the effects of climate change and adequacy of water licences (see Section 5.1);
- Groundwater tailings leaching into groundwater systems (see Section 5.1);
- Amenity impacts the potential for an increase in dust, noise, vibration and heavy vehicle traffic (see Sections 5.2 and 5.3);
- Traffic the condition of local roads and the speeds of mine-related vehicles (see Section 5.3); and
- Socio-economics the benefits to the local community of the modification being overstated, the project being unsustainable and the existing approval being based on an economic assessment that considered the operation to be viable (see Section 5.3).

Some additional concerns were raised about:

- the limited time to comment and the number of modifications to the approval;
- health and safety of workers as indicated by recent incidents in the mining operation;
- the requirements for a new powerline from Orange to Cadia (that it should go underground) and objecting to a dam being constructed on the Belubula River; and
- inadequate rehabilitation of the existing rock dump.

The Department notes that many of these concerns are about the existing mining operations rather than the merits of this modification. It also notes that:

- section 75W of the EP&A Act allows proponents to seek approval for modifications to their approved project and the Department is required to assess each modification on its merit. The Department is satisfied that the proposed changes can be characterised as a modification and assessed in accordance with section 75W of the EP&A Act and that the exhibition met the requirements of the Regulations;
- safety incidents are regulated by the relevant work health and safety laws;
- the powerline and dam on the Belubula River are not part of this modification and would be the subject of separate approvals processes; and
- rehabilitation is addressed in the existing approval through the framework of the Rehabilitation Strategy and its implementation is to be to be satisfaction of the Minister for Mineral Resources.

Cadia has considered the submissions in its Response to Submissions (RTS) report (see **Appendix D**). The Department has considered all relevant issues in the submissions and Cadia's response in its assessment.

5 ASSESSMENT

In assessing the merits of the proposal, the Department has considered:

- the EA for the original project;
- the existing conditions of approval;
- the EA for the proposed modification;
- submissions on the application;
- relevant environmental planning instruments, policies and guidelines; and
- the requirements of the EP&A Act.

The Department's assessment has focussed on the key issues of water and noise from the proposed modification. A summary of the Department's consideration of other issues is provided in Section 5.3.

5.1 Water

The EA states the majority of water use at the mine is recycled, including mine water, excess water in the tailings storage facilities and return water from the Blayney Dewatering Facility. Sources of make-up water include extraction from the Belubula River (extraction licences for up to 7,205 ML/year),

Cadiangullong Dam, Flyers Creek Weir and Cadia Creek Weir, treated effluent from the Orange Sewage Treatment Plant and Blayney Sewage Treatment Plant, surface water runoff collected on-site, and extraction from groundwater bores.

Cadia has upgraded the water management system since the original approval which includes:

- use of the completed open cut as a contingency storage for excess water on site;
- implementation of the Belubula Water Sharing Plan which allows Cadia to source water from Belubula regulated river and associated unregulated tributaries up to the annual extraction limits; and
- introduction of trigger action response plans.

The increases to ore handling from the proposed modifications would increase on-site water usage by some 18.5%, taking the total to 55.82 ML of water per day. The additional water requirements would be sourced from the existing water supply scheme.

Community members and Orange City Council raised concerns about the high water usage of the mine and on how the mine could maintain production at a higher rate during drought years without impacting on the Belubula River. The EA includes a Site Water Balance assessment which modelled the water balance for low, medium and high rainfall scenarios over the life of the mine. Modelling of the updated water management system with and without the modification concluded that the modification would not result in any supply shortfalls, mainly due to the high total stored water volume at the start of the simulation period (February 2015). The modelling shows that the existing water management system can continue to supply water without the need to adjust or augment the existing water supply network or acquire additional Water Access Licences.

The Department notes that water licences are already regulated by the approval with an existing condition that requires the mine to ensure that sufficient water is available for all stages of the project and that the scale of mining operations is adjusted to match its licensed water entitlements.

NOW supported a recommendation made in the EA that the design criteria be reviewed for the Site Runoff Dam and the Northern Leachate Dam to ensure that adequate storage capacity is available. The EPA also noted that ongoing management of the basins and tailings storage facility was essential to maintaining adequate capacity. The Department notes that the existing approval contains a requirement that Cadia does not discharge any water from the site unless provided for by an Environment Protection Licence and that the Site Water Balance includes details of water management on site. The Department acknowledges the comments of NOW and the EPA but considers that this issue is already adequately addressed within the framework of the existing approval.

Overall, the Department and NOW are satisfied that the proposed modification would have negligible additional impacts on water supply beyond those already approved under the original approval.

The Department notes that the existing conditions require Cadia to review, and if necessary, update its Water Management Plan to address the proposed modifications.

With regard to groundwater, some submissions raised concerns about existing tailings leaching into groundwater systems, particularly in relation to impacts on the shallow bore MB27. The Department notes that the impact of these tailings on groundwater is a compliance issue and is not directly related to the proposed modifications. The Department also notes that the existing approval contains a framework of management measures for regulating the impact on groundwater through the Water Management Plan, which includes a Groundwater Monitoring Program and a contingency plan for managing any identified impacts.

5.2 Noise

There are five elements of the proposed modifications which have relevance to noise impacts and management. These are discussed below.

Operation of new infrastructure and increase in ore processing

Noise at Cadia has decreased following open cut mining ceasing. Although the noise impact assessment predicted minor increases (0-3 dBA) associated with the proposed modifications, the project as modified is predicted to comply with the noise limits in the existing approval at all times.

The Department is satisfied that there will be no new exceedances from the modification.

Transitional arrangements

The modification includes transitional arrangements requiring additional plant and temporary trucking over approximately 12 months while the new infrastructure is being constructed. Although the noise impact assessment predicted minor increases (1-4 dBA) associated with the transitional arrangements, the project as modified is predicted to comply with the noise limits in the existing approval during the transitional period.

The Department is satisfied that there will be no new exceedances from the modification.

Blayney Dewatering Facility and rail noise

No upgrades to the Blayney Dewatering Facility or the concentrate or return pipelines are required as part of the modification, and the proposed modifications are not expected to result in any increased noise at the facility.

The number of trains remains the same with four to five rail arrivals and departures per week and not more than one arrival and departure per day. However, to accommodate the additional mineral concentrate production, the train capacity would be increased from 68 to 106 containers, in turn increasing the length of the trains and the time to load the trains.

The noise assessment stated that the modification would result in a slightly longer duration of noise generation during the daytime period (rather than an increase in the noise levels) as a result of the longer trains. However, as the noise levels over a 15 minute period would remain unchanged, the resulting noise impact was insignificant with respect to the intrusiveness assessment. The noise assessment concluded that the project as modified would continue to comply with the existing approval limits.

The Department is satisfied that there will be no new exceedances from the modification.

Road noise

Cadia has requested that the requirements under the approval to provide noise mitigation measures upon request in certain circumstances be amended to be consistent with the NSW Government's *Voluntary Land Acquisition and Mitigation Policy – SSD Mining* (2014) by removing reference to road noise.

Cadia has undertaken road traffic noise mitigation at a number of properties along Cadia Road and Orchard Road as required by the current condition. Although the Department acknowledges that the condition is not strictly consistent with the current policy, the Department considers that it is not appropriate to retrospectively change this condition.

Blasting notifications

Cadia requested that the approval requirements for notification of blast events to be advertised in a local newspaper at least 2 times each year be modified to allow the advertisement to occur via Cadia's local newsletter. Cadia's existing newsletter is distributed to the wider community and is the community's main source of mine-related news. Consequently, the Department accepts this request and has recommended changes to the condition to allow the hotline and website information to be provided in the mine's regular newsletter.

Summary

Whilst its assessments indicate that noise associated with the proposed modifications would continue to comply with the limits in the existing approval, Cadia has committed to further investigating mitigation measures at the design phase including considering the sound power levels in the selection of key infrastructure, full or partial shrouding of key noise sources, and the acoustic lining of sheds and buildings.

The Department and the EPA are satisfied that noise emissions from the proposed modification would be negligible and would not result in any new exceedances of noise limits.

The Department notes that the existing approval requires Cadia to implement a range of noise mitigation, monitoring and management measures. Cadia is also required to review and revise its existing Noise Management Plan to reflect the proposed modification.

5.3 Other Issues

Other relevant issues and the Department's assessment are summarised in Table 2 below.

Table 2: Consideration of Other Issues

Issue	Consideration	Recommendation
Air Quality	 An air quality review was undertaken as part of the EA for th modification. 	17 and 18 of Schedule 3 to
	 The assessment indicates that although there would be mindicates in dust emissions from the project as modified (in 4.3% during construction and 2.4% during operations for tot suspended particulates), the existing air quality limits in the approval would still be achieved. 	e. criteria. al
	 Dust emissions from the site are managed in accordance with an Air Quality Monitoring Program (AQMP). 	th
	 Cadia has also committed to investigating enclosing the crushe and using water sprays, and enclosing or wind shielding th conveyor transfer points and using water sprays to minimise th dust emissions. Cadia's trigger-based air quality alarm syste would continue to operate to minimise potential exceedances. 	ne m
	 The Department notes that the existing approval requires Cad to implement a range of air quality impact mitigation, monitorir and management measures. Cadia is also required to revie and revise its existing AQMP to account for the propose modification. 	ng w ed
	 The Department and the EPA are satisfied that air quali impacts from the proposed modification would be negligible ar would be unlikely to result in any additional exceedances of th criteria. 	nd
	 The Department has recommended some minor changes to the conditions of approval regarding particulate matter to include additional notes to provide clarification of the criteria are measurement requirements. 	de
Traffic	 The modification would result in a minor increase in heavy vehicle traffic for bulk deliveries of process consumables in line with the scale of production increase. Light vehicle traffic associated with an additional 20 employees is also expected during the construction period of 12 months. 	ne amendments necessary.
	 Although the community expressed concern about the traff impacts of the modification, neither the RMS nor the Counci consider the increase in traffic due to the modification a significant. 	ils
	 The Department is satisfied that the traffic impacts of the modification are minor and will not require amendments additions to the existing conditions of approval. 	
Tailings Storage	 Tailings from Cadia East are stored in the Northern Tailing Storage Facility and the Southern Tailings Storage Facilit (TSFs) with a combined storage capacity of approximately 49 	ity amendments required.
	 Mt. The modification does not seek to increase the final storage capacity. 	as a result of the
	 The EA included an assessment of the implications that the modification would have on tailings storage over the life of the mine. The assessment concluded that the TSFs have adequal capacity to accommodate the increased tailings deposition the proposed 32 Mtpa rate. 	he requiring these revisions is te already provided for in the
	 Cadia would manage the freeboard of the TSFs to maintain the required containment capacities, including undertaking regul inspections to manage the potential for tailings overflows. 	
	 The Department and EPA are satisfied that the approved TSI have sufficient available capacity for the tailings resulting fro the increased production rate. 	
Socio- economics	 The Department notes that Cadia generates approximate 14.3% of the Gross Regional Product and 6.5% of full tin equivalent employment for the region. The Department satisfied with Cadia's justification for the modification and th the project will continue to provide benefits locally, regiona and statewide. 	amendments necessary. is at
	 Although some community members expressed concern th these benefits were overstated, the Department is satisfied th the socio-economic benefits of the project are nevertheles significant. 	at

6 RECOMMENDED CONDITIONS

The Department has drafted a Notice of Modification for the proposed modification (see **Appendix A**). Cadia has reviewed and accepted the proposed amended conditions.

7 CONCLUSION

The Department considers that the impacts resulting from the increase to ore production, annual processing rate and associated infrastructure can be managed within the limits of the existing approval. In particular, the assessment indicates that the noise and dust emissions would continue to comply with the limits in the existing approval. The existing framework in the approval for a Site Water Balance, Noise Management Plan and Air Quality Monitoring Program would appropriately address the proposed modifications and the Department notes that these plans would be updated to accommodate the modification. The Department accepts the requested changes to the approval for the blast notices but does not accept the request for changes to mitigation for road noise.

The Department has assessed the merits of the modification in accordance with the relevant requirements of the EP&A Act. Based on this assessment the Department is satisfied that the modification would not result in any significant additional environmental impacts.

Overall, the Department is satisfied that the benefits of the modification outweigh any residual costs. Consequently, the Department believes that the modification is in the public interest and should be approved, subject to conditions.

8 **RECOMMENDATION**

It is recommended that the Executive Director Resource Assessments and Business Systems, as delegate of the Minister for Planning:

- considers the findings and recommendations of this report;
- determines that the modification is within the scope of Section 75W of the EP&A Act;
- approves the modification application under Section 75W of the EP&A Act, subject to conditions; and
- signs the attached notice of modification (Appendix A).

Stuart Withington Team Leader Resource Assessments

31.8.15 Mike Young

A/Executive Difector // Resource Assessments and Business Systems

APPENDIX A: NOTICE OF MODIFICATION

APPENDIX B: ENVIRONMENTAL ASSESSMENT See website at: https://majorprojects.affinitylive.com/public/19443c106bd1d6438a7d4252d782bb66/Cadia%20Mod%206 %20-%20Environmental%20Assessment.pdf

APPENDIX C: SUBMISSIONS See website at: <u>http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=6995</u>

APPENDIX D: RESPONSE TO SUBMISSIONS See website at: https://majorprojects.affinitylive.com/public/f0891b8cceb759a808d01e3d62bc870e/Cadia%20East%20Mo d%206%20RTS.pdf