

CADIA HILL TAILINGS COMPLETION MODIFICATION
SUBMISSIONS REPORT



OCTOBER 2019
Project No. NEC-18-89
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EXECUTIVE SUMMARY

Cadia Holdings Pty Limited (CHPL) owns and operates the Cadia Valley Operations (CVO), including the Cadia East underground mine, the Cadia Hill open pit mine, the Ridgeway underground mine, the concentrate dewatering facilities in Blayney, and a wide range of ancillary and supporting infrastructure.

Project Approval (PA 06_0295) for the Cadia East Project has been modified on a number of occasions, with the Determination of Modification 12 most recently occurring on 24 September 2018 to deposit tailings in the completed Cadia Hill open pit to a consolidated level of 560 metres Australian Height Datum (mAHD).

Following identification of the opportunity to deposit additional tailings in the Cadia Hill open pit, CHPL submitted the Cadia Hill Tailings Completion Modification Report (the Modification) to the NSW Department of Planning, Industry and Environment (DPIE) on 9 September 2019. The Modification is being sought under section 4.55(1A) of the *Environmental Planning and Assessment Act, 1979*. The Modification also includes construction of additional buttressing of the Southern Tailings Storage Facility embankment.

The Modification Report was placed on public exhibition by the DPIE from 26 September to 10 October 2019. During this period, government agencies, non-government organisations (NGOs), businesses and members of the public were invited to provide submissions on the Modification Report to the DPIE.

Submissions Summary

A total of 10 submissions on the Modification were received, consisting of seven from NSW Government agencies and three from local councils. None of the submissions received by CHPL objected to the Modification. CHPL did not receive any submissions from stakeholder groups or individual community members.

The following key issues were raised:

- Air quality issues associated with tailings at the proposed raised level of 713 mAHD.
- Groundwater monitoring program for the Cadia Hill open pit.
- Surface water monitoring program for the Cadia Hill open pit.
- Noise modelling of the proposed buttressing of the STSF embankment.
- Biodiversity assessment for decommissioning of existing ventilation adit VR101.
- Management of exposed tailings in the Cadia Hill open pit post-closure, prior to development of a “wet cover”.

Consultation

No additional actions, including consultation or changes to the Modification, have been made since lodgement of the Modification Report.

Evaluation of Merits

The Modification Report concluded that the Modification is justified on environmental, economic and social grounds. Based on CHPL’s consideration of the submissions on the Modification, CHPL considers that the justification provided in the Modification Report remains unchanged.

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1 INTRODUCTION

1.1 BACKGROUND

The Cadia Valley Operations (CVO) is located approximately 25 kilometres (km) south-west of Orange, in the Central Tablelands of New South Wales (NSW) (Figure 1).

Cadia Holdings Pty Limited (CHPL) is the owner and operator of the CVO, and is a wholly owned subsidiary of Newcrest Mining Limited.

Project Approval (PA 06_0295) for the Cadia East Project was granted by the NSW Minister for Planning under Part 3A of the *Environmental Planning and Assessment Act, 1979* (EP&A Act) on 6 January 2010.

PA 06_0295 includes all components of the CVO including the Cadia East underground mine, the Cadia Hill open pit mine, the Ridgeway underground mine, the concentrate dewatering facility near Blayney, and a wide range of ancillary and supporting infrastructure. These integrated operations are herein referred to as the CVO.

PA 06_0295 has been modified on a number of occasions, with the Determination of Modification 12 most recently occurring on 24 September 2018.

On 9 September 2019, CHPL submitted the Cadia Hill Tailings Completion (the Modification) Modification Report to the NSW Department of Planning, Industry and Environment (DPIE). The Modification is being sought under section 4.55(1A) of the EP&A Act. An overview of the Modification is provided in Section 1.2.

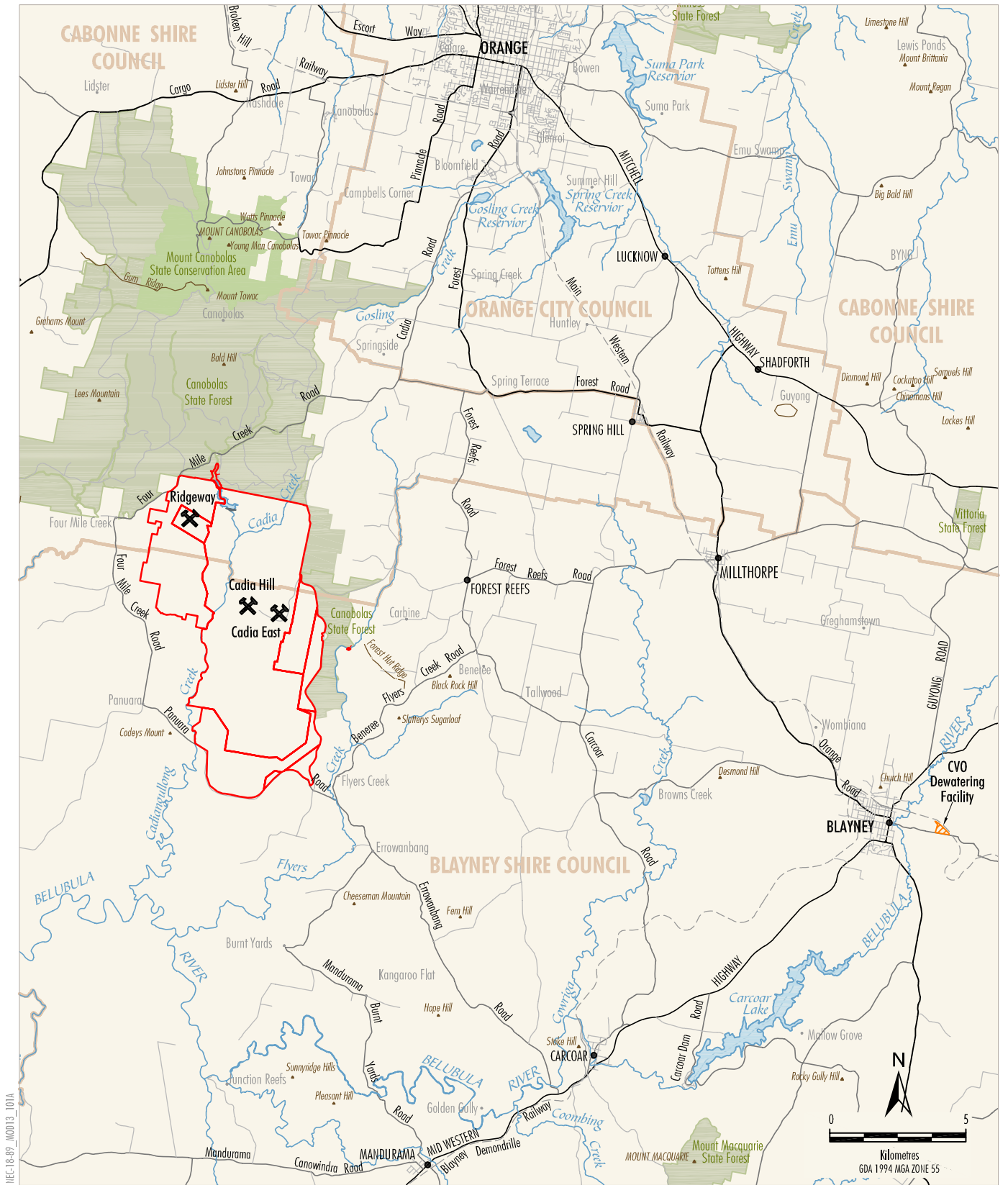
The Modification Report was placed on public exhibition by the DPIE from 26 September to 10 October 2019. During this period, Government agencies, non-government organisations (NGOs), businesses and members of the public were invited to provide submissions on the Modification Report to the DPIE.

The DPIE provided a letter to CHPL dated 18 October 2019 requesting a Submissions Report be prepared and submitted by 1 November 2019. CHPL's responses to the submissions received during the public exhibition period are detailed in Section 4.

This Submissions Report has been prepared generally consistent with the draft *Preparing a Submissions Report – Guidance for State Significant Projects* guideline (Department of Planning and Environment, 2019).

1.2 OVERVIEW OF THE EXHIBITED MODIFICATION

On Friday 9 March 2018, CHPL identified a limited breakthrough of tailings material at the embankment of the Northern Tailings Storage Facility. No external environmental impacts arose from the incident (all tailings and rock material in the slump area were wholly contained within the Southern Tailings Storage Facility, located immediately downstream).



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- LEGEND**
- Mining Lease/Mining Lease Application Boundary
 - Local Government Area
 - Road
 - - - Railway
 - NSW State Forest
 - NPWS Reserve

Source: Department of Lands NSW (2006);
Department of Industry (2017)



CADIA VALLEY OPERATIONS
Regional Location

Figure 1

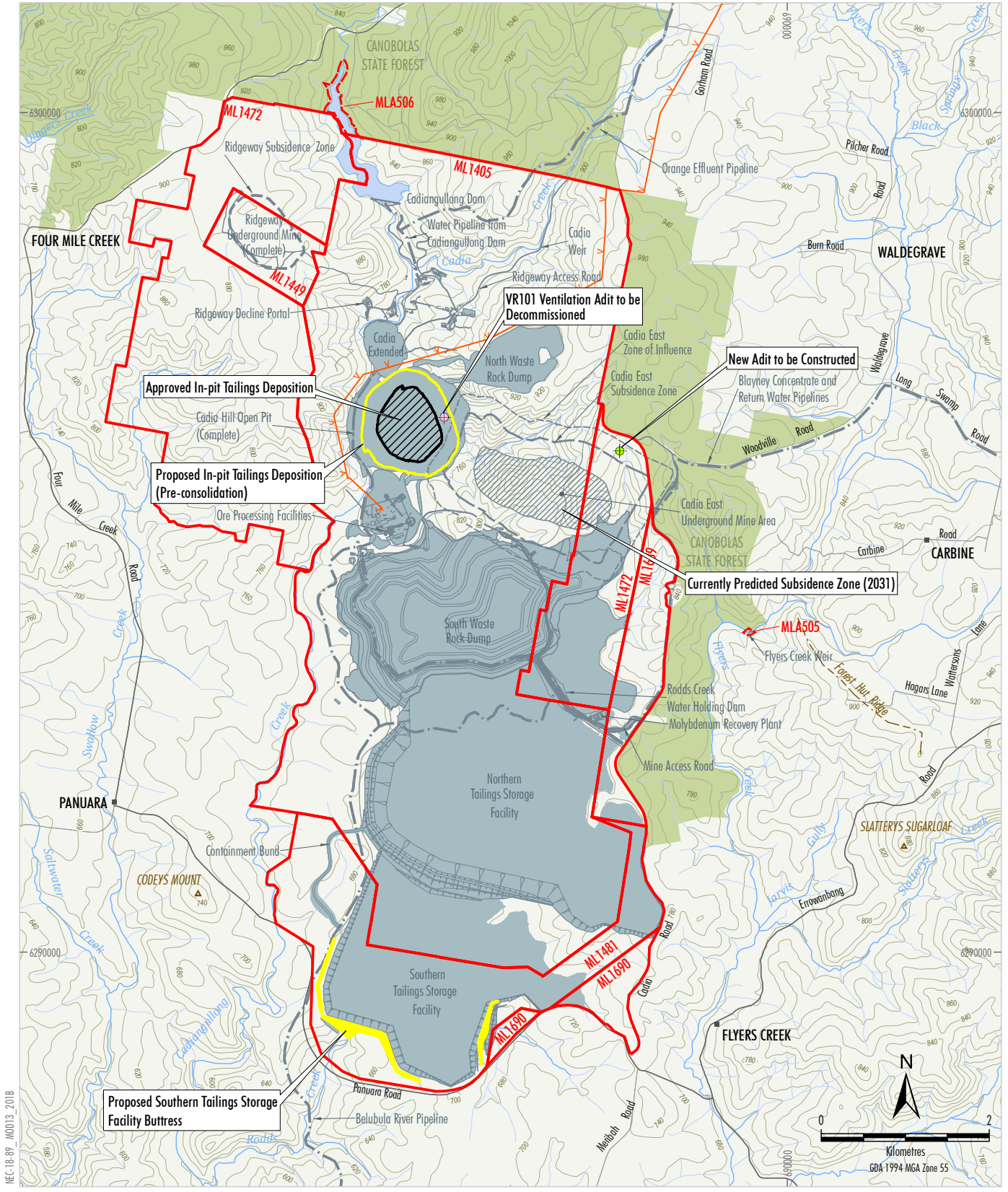
CHPL was subsequently granted approval to deposit CVO tailings in the completed Cadia Hill open pit (i.e. in-pit deposition). CHPL is currently exploring engineering solutions to repair the embankment of the NTSF. A report on the NTSF embankment failure by the Independent Technical Review Board is now available on the Newcrest Mining Limited website¹ and CHPL is implementing the recommendations contained in the report. In parallel, CHPL has identified the opportunity to deposit additional tailings within the completed Cadia Hill open pit (Figure 2).

The main activities associated with the Modification include:

- increasing the tailings level from 560 metres Australian Height Datum (mAHD) (consolidated tailings level) to 713 mAHD (pre-consolidation tailings level);
- an additional 177 million tonnes (Mt) of capacity, equivalent to approximately seven years of additional deposition to this storage facility;
- decommissioning and closure of the existing ventilation adit VR101 (VR101), located in the Cadia Hill open pit, which would be inundated by tailings;
- installation of a new ventilation adit within the currently approved disturbance footprint of Cadia East (outside of the Cadia Hill open pit);
- construction of additional buttressing of the STSF embankment; and
- a pit lake (i.e. a “wet cover”) as the final landform of the Cadia Hill open pit, consistent with the approved final landform.

Table 1 provides a comparative summary of the proposed modified operations against the currently approved CVO.

¹ URL <http://www.newcrest.com.au/investors/market-releases>. Accessed 1 May 2019.



Source: Land and Property Information (2017);
NSW Planning & Environment Resource & Energy (2017)
CHPL (2018)



CADIA VALLEY OPERATIONS
Modification Location

Figure 2

Table 1
Snapshot of Proposed Changes to Currently Approved
Cadia East Project

Project Development Component	Currently Approved ²	Cadia Hill Tailings Completion Modification
Mining Methods	Cadia Hill - conventional open pit mining methods. Ridgeway - underground sub-level and block caving with development of associated surface subsidence zone. Cadia East - underground panel caving with development of associated surface subsidence zone.	No change.
Life of Mine Cadia East Ore Production	Approximately 456 Mt.	No change.
Life of Mine CVO Ore Production	Approximately 562 Mt.	No change.
Waste Management Rock	Deposition in the North and South Waste Rock Dumps and mined-out void of the Cadia Extended open pit. Cadia East waste rock to be deposited in the South Waste Rock Dump.	No change.
Life of Mine	Mining up until approximately 2030. Project Approval to 2031.	No change.
Tailings Management	Use of the NTSF and STSF and raising of these storages via upstream embankment lifts. 100 Mt of tailings disposal in Cadia Hill open pit. Cumulative tailings disposal volume of 497 Mt from 2013.	Deposition of tailings in the Cadia Hill open pit to its full capacity, to a (pre-consolidation) level of approximately 713 mAHD. This would provide an additional 177 Mt of capacity in the Cadia Hill open pit. Cumulative tailings disposal volume unchanged. Installation of additional buttressing of the STSF.
Ventilation Adit	The mining complex includes several ventilation adits/shafts for ventilation of underground mining areas. VR101 is located within the Cadia Hill open pit and is used as an intake for underground mine ventilation.	Decommissioning and closure of existing adit VR101, which would be inundated by tailings in the Cadia Hill open pit as a result of the Modification. Installation of a ventilation adit within the current approved disturbance footprint, to replace adit VR101.
Ore Processing	On-site processing of up to 32 million tonnes per annum (Mtpa) of gold and copper ore.	No change.
Concentrate Transport and Dewatering	Gold/copper concentrate is transported from the ore processing facilities via a concentrate pipeline to the Blayney Dewatering Facility. Construction of 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. Transport of dewatered mineral concentrate by rail to the eastern seaboard.	No change.

² PA 06_0295 for the Cadia East Project, as modified by section 75W Modifications numbered 1 to 10 and section 4.55(1A) Modification numbers 11 and 12.

Table 1 (Continued)
Snapshot of Proposed Changes to Currently Approved
Cadia East Project

Project Development Component	Currently Approved	Cadia Hill Tailings Completion Modification
Water Supply and Management	<p>Water supply sourced from the Cadiangullong Dam, Flyers Creek Weir, Cadia Creek Weir, Orange Sewage Treatment Plant treated effluent, Blayney Sewage Treatment Plant treated effluent, on-site groundwater bores, Belubula River, Cadia Extended open pit and site runoff.</p> <p>Development of additional pipeline/pumping systems and raising of the Rodds Creek Water Holding Dam.</p> <p>Contingent transfer of supernatant tailings water from STSF and NTSF to Cadia Hill open pit for water management.</p> <p>Internal tailings return water pipeline and pumping systems from Cadia Hill open pit.</p>	No change.
Operational Employment	An average of 880 employees up to a maximum of approximately 1,300 employees.	No change.
Final Landforms	<p>Includes South Waste Rock Dump, North Waste Rock Dump, NTSF, STSF, Cadia East Subsidence Zone, Ridgeway Subsidence Zone, Cadia Hill open pit, Cadia Extended open pit, Cadiangullong Dam, Rodds Creek Holding Dam and other water management infrastructure.</p> <p>The final landform of Cadia Hill pit would be a pit lake (i.e. a wet cover).</p> <p>Cadia East underground mine subsidence zone and Cadia Hill open pit to intersect in the long-term and combine to form an integrated post-mining landform with a single final void waterbody.</p>	<p>No change.</p> <p>No change.</p> <p>No intersection between the Cadia East underground mine subsidence zone and Cadia Hill open pit in the long-term and, therefore, two separate final void waterbodies (smaller in extent compared with the approved subsidence zone).³</p>

The general arrangement of the Modification is shown on Figure 2.

³ This change is forecast by updated geotechnical (subsidence) modelling and is not a consequence of the Modification.

2 ANALYSIS OF SUBMISSIONS

2.1 NUMBER OF SUBMISSIONS

A total of 10 submissions on the Modification were received, consisting of:

- Three from local councils (namely the Blayney Shire Council [BSC], Cabonne Council and Orange City Council [OCC]).
- Seven from NSW Government agencies, namely:
 - Department of Primary Industries (DPI);
 - Biodiversity and Conservation Division (BCD) within the DPIE;
 - Division of Resources and Geoscience (DRG) within the DPIE;
 - Resources Regulator within the DPIE (Resources Regulator);
 - Department of Industry – Crown Lands;
 - Environment Protection Authority (EPA); and
 - Dams Safety Committee.

A register characterising each submission (i.e. support, objection or comment) and a reconciliation of the comments provided is provided in Appendix A.

No submissions from stakeholder groups or individual community members were received.

2.2 SUMMARY OF SUBMISSIONS

Local Councils

The BSC, Cabonne Council and OCC did not provide any comment or objection to the Modification.

NSW Government Agencies

The BCD, EPA and Resources Regulator provided comments on the Modification. The DPI, DRG and Dams Safety Committee did not provide any comment or objection to the Modification.

Crown Lands

Crown Lands provided a comment unrelated to the Modification, requesting that CHPL contact Crown Lands to discuss closure and purchase of roads that intersect the CVO STSF. Their comment is therefore not considered further in this report. CHPL has paid for the relevant Crown roads in the area.

2.3 KEY ISSUES RAISED IN SUBMISSIONS

Although no objections to the Modification were received, the following key issues were raised:

- Air quality issues associated with potential dust from the surface of the tailings, at the proposed raised level of 713 mAHD.
- Groundwater monitoring program for the Cadia Hill open pit.
- Surface water monitoring program for the Cadia Hill open pit.
- Noise modelling of the proposed buttressing of the STSF embankment.
- Biodiversity assessment for decommissioning of VR101.
- Management of exposed tailings in the Cadia Hill open pit post-closure, prior to development of a “wet cover”.

CHPL’s responses to the submissions which included comments are provided in Section 4.

3 ACTIONS TAKEN SINCE EXHIBITION

No additional actions, including consultation, changes to the Modification or further assessment, have been made since lodgement of the Modification Report.

4 RESPONSE TO SUBMISSIONS

Responses to the issues raised by the various stakeholders are provided in the sub-sections below. As described in Section 2.1, CHPL did not receive any submissions from stakeholder groups or individual community members.

The following local council and NSW Government agencies provided comment on the Modification in their submissions (Section 2.2):

- EPA;
- BCD; and
- Resources Regulator.

The comments provided by the EPA, BCD and Resources Regulator have been addressed in the sub-sections below.

4.1 AIR QUALITY

The Modification would include increasing the tailings level for the Cadia Hill open pit from 560 mAHD (consolidated tailings level) to 713 mAHD (pre-consolidation tailings level). The EPA provided comments in relation to potential air quality impacts of the Modification. These comments, and a response to each are provided below.

Comment 1

The EPA noted the recent dust events at the CVO NTSF, as a result of high winds on uncovered tailings material. The EPA therefore requested that DPIE seek the following information:

- Details for management of potential dust associated with exposed tailings at the proposed raised level, having regard to the site air quality monitoring and management system and the dust suppression program currently in development.

Response 1

The Surface Water Assessment for the Modification describes the following (Hydro Engineering & Consultants, 2019):

Therefore, whilst tailings slurry will initially be deposited to 713 mAHD, it will slowly settle to 563 mAHD in the middle of the Cadia Hill Pit. This means that within about six to seven years the level of the tailings will fall below 700 mAHD and a lake will form over the settling tailings.

In the six to seven-year period between ceasing pumping of tailings into the pit and the formation of a wet cover, some dry tailings would be exposed in the pit.

It is noted that tailings within the Cadia Hill open pit are less susceptible to wind erosion and associated dust compared to the NTSF and STSF, due to the shape/depth of the Cadia Hill open pit. This is because the pit walls reduce wind erosion and increase retention of dust within the pit relative to a conventional tailings storage such as the NTSF (i.e. the pit walls provide significant shielding of stored tailings on all sides). Additionally, the Cadia Hill open pit is situated in the centre of Mining Lease 1405, and is therefore not in proximity to any sensitive receivers (i.e. the closest receiver is approximately 4 kilometres away).

Notwithstanding, real-time air quality monitoring would continue to be conducted, in accordance with the CVO Air Quality Management Plan.

4.2 GROUNDWATER

The Modification Report includes the proposed installation of additional monitoring bores adjacent to the south-western corner of the Cadia Hill open pit. The EPA provided comments in relation to the proposed additional monitoring bores. These comments, and a response to each are provided below.

Comment 1

The EPA indicated its support of the proposed mitigation and management measures described in the Modification for the in-pit disposal of tailings to a pre-consolidated level of 713 mAHD.

The EPA did, however, request that DPIE seek the following:

- The location/s of the proposed additional monitoring bores between Cadiangullong Creek and the south western boundary of the Cadia Hill Pit wall.

Response 1

Since the Modification was submitted, surveys have been undertaken of the south-west corner of the Cadia Hill open pit to determine the most suitable locations for the proposed additional groundwater monitoring bores. The indicative locations of these bores are shown on Figure 3. These locations would be confirmed as part of an update to the CVO Water Management Plan (see below).

Comment 2

The EPA has requested the following:

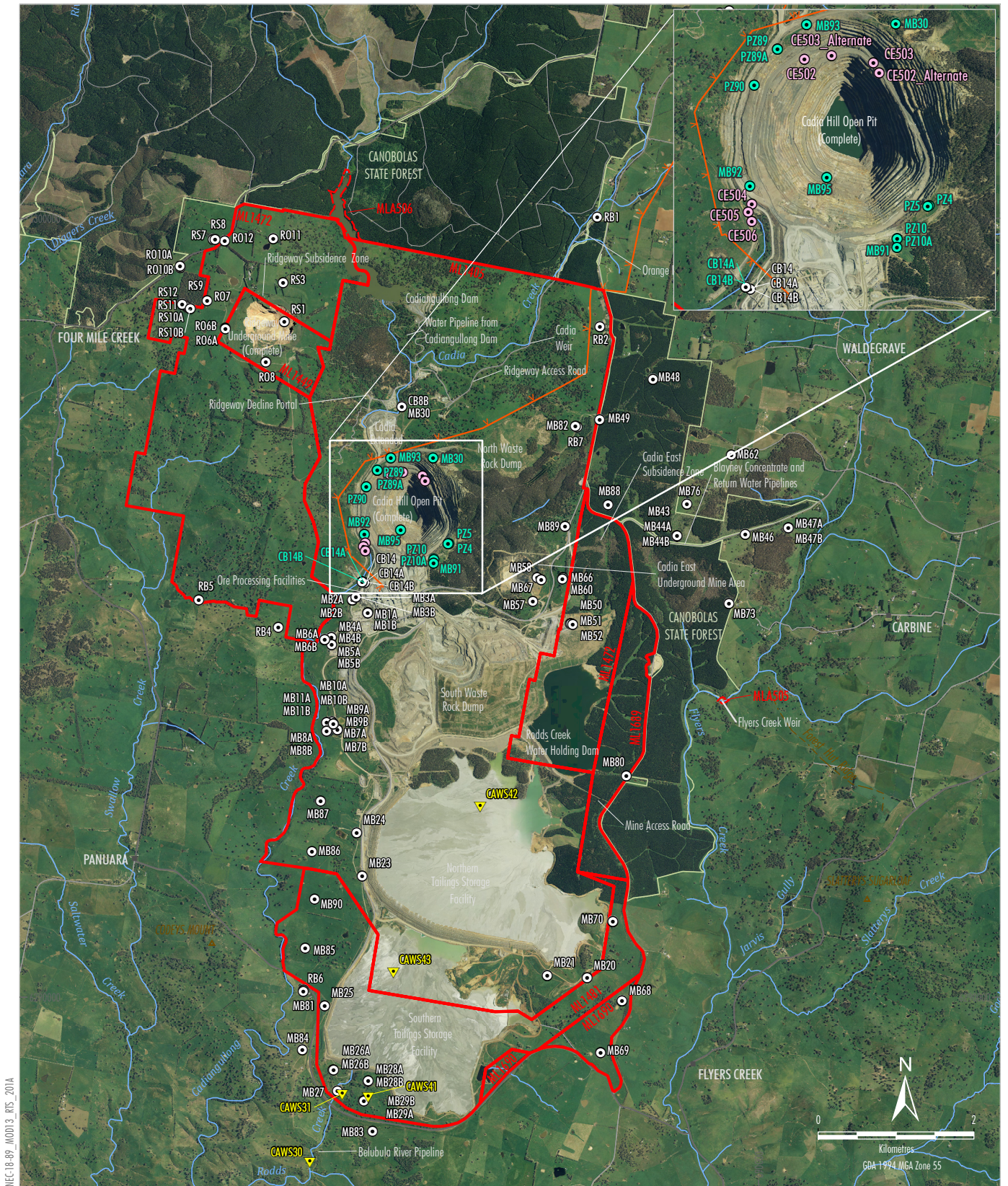
- An update of the CVO Water Management Plan, to include the proposed additional groundwater monitoring bores and management and contingency measures described in the Modification Report.
- The trigger standing water levels that indicate a reversal of the hydraulic gradient between the Cadia Hill pit wall and Cadiangullong Creek.

Response 2

CHPL would prepare a revision to the CVO Water Management Plan within three months of approval of the Modification. This would include the additional groundwater monitoring bores shown in Figure 3, in addition to further detail regarding the management and contingency measures described in the Modification Report:

- conduct trials to assist in determining and testing the optimal treatment strategy prior to inundation of tailings;
- locate faults and cracks in the south-west corner of the Cadia Hill pit, between 694 mAHD and 713 mAHD, and treat these using, for example, a grout/polyurethane sealant (injected under pressure into fractured networks); and
- implement contingency measures should unforeseen impacts occur (e.g. cease pumping of tailings and supernatant into the pit and commence pumping out of the pit).

In addition, CHPL would establish a process to determine appropriate trigger standing water levels. These would be incorporated into the revised CVO Water Management Plan.



MEC-18-49_MOD13_RIS_201A

- LEGEND**
- Mining Lease Boundary
 - Mining Lease Application Boundary
 - State Forest
 - Powerline
 - ▼ Tailings Water Quality Location
 - Groundwater Bore
 - Cadia Hill Open Pit Groundwater Monitoring Network
 - Proposed Groundwater Monitoring Bore

Source: Land and Property Information (2017);
 NSW Planning & Environment Resource & Energy (2017);
 CHPL (2018)


NEWCREST
 MINING LIMITED

CADIA VALLEY OPERATIONS
 Proposed Additional Groundwater
 Monitoring Bores for the
 Cadia Hill Open Pit

Figure 3

4.3 SURFACE WATER

The EPA provided comments in regards to the results of the site water balance model for the Modification and the CVO surface water monitoring program. These comments, and a response to each are provided below.

Comment 1

The EPA noted that while no spills were predicted to occur from the Tailings Storage Facilities (TSFs), the water balance model for the Modification predicted spills from the following storages:

- Site Runoff Pond;
- Southern Leachate Dam;
- STSF Seepage Reclaim Pond.

The EPA requested that DPIE seek additional information and details that address the predicted spills from these storages in comparison to the current conditions. The EPA additionally requested details on if, and how, avoidance of spills from these storages can be achieved in consideration of the Modification.

Response 1

The Modification proposes no change to the Site Runoff Pond, Southern Leachate Dam and STSF Seepage Reclaim Pond. Therefore, the modelled spills are reflective of the current conditions at the CVO and are not as a result of the Modification.

Section 5.4 of the Surface Water Assessment for the Modification describes the following (Hydro Engineering & Consulting, 2019):

In order to avoid these predicted spills, CHPL plans to review the catchment, capacity and pumping capacity of the above storages in order to ensure consistency with the hydrologic design criteria given in CHPL (2009) and the requirements of Environment Protection Licence (EPL) 5590. Note that EPL 5590 allows for spills from these storages under high rainfall conditions.

CHPL would undertake the above described review as part of the next revision to the CVO Water Management Plan. CHPL would use the results of this review to explore options for restoration of capacity of these storages if required, which may include desilting and/or minor extensions to the storages.

Comment 2

The EPA requested the options for monitoring of model predictions in the Surface Water Assessment, to inform long-term monitoring post-closure. The EPA noted that water level monitoring is already proposed. In addition, the EPA requested action-based triggers and contingencies to mitigate against unforeseen impacts to surface water resources.

Response 2

As described above, surface water levels (and quality) in the pit are routinely monitored. Monitoring of water quality, in addition to groundwater levels, will be undertaken via the additional groundwater monitoring bores proposed for the Cadia Hill open pit (Figure 3). These would be included in the revised version of the CVO Water Management Plan.

The following management and contingency measures described in the Modification Report would also be incorporated into the revised CVO Water Management Plan:

- conduct trials to assist in determining and testing the optimal treatment strategy prior to inundation of tailings;
- locate faults and cracks in the south-west corner of the Cadia Hill pit, between 694 mAHD and 713 mAHD, and treat these using, for example, a grout/polyurethane sealant (injected under pressure into fractured networks); and
- implement contingency measures should unforeseen impacts occur (e.g. cease pumping of tailings and supernatant into the pit and commence pumping out of the pit).

In addition, CHPL would establish a process to determine appropriate trigger standing water levels. These would be incorporated into the revised CVO Water Management Plan.

4.4 NOISE

Construction activities associated with the Modification include construction of a ventilation adit to replace existing VR101, which would be inundated by tailings in the Cadia Hill open pit. The Modification also proposes construction of buttressing for the embankment of the STSF, in anticipation of future approved lifts (up to its approved height of 702 mAHD). The EPA provided a noise-related comment in its submission and a response is provided below.

Comment 1

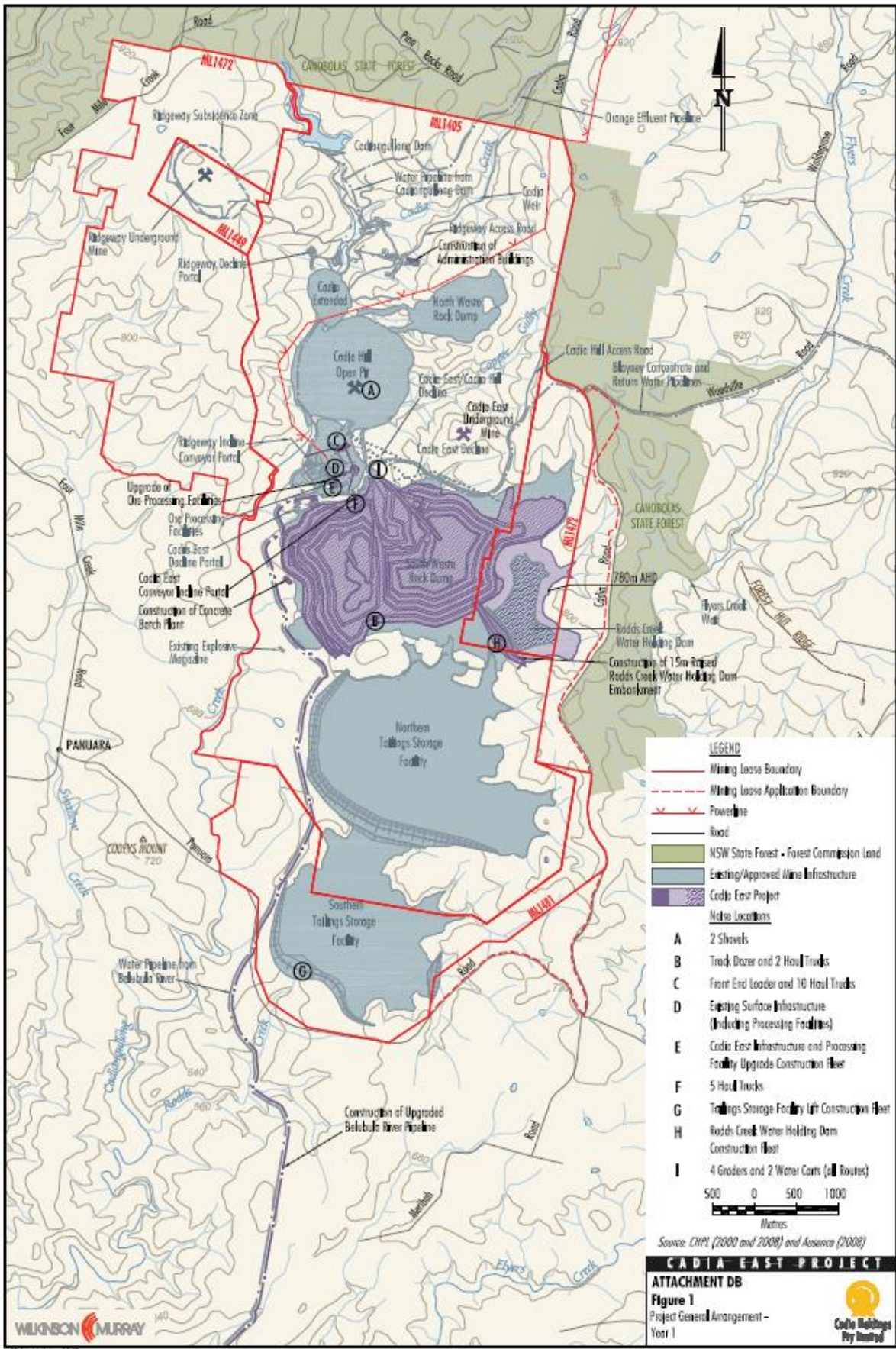
The EPA commented that the Noise Assessment for the Modification does not consider construction noise from the proposed STSF buttressing at sensitive receivers. The EPA therefore requested that DPIE seek additional detail and modelling of noise associated with construction of the STSF buttressing.

Response 1

CHPL gained approval through the Cadia East Project Environmental Assessment (EA) to progressively raise the embankments of the NTSF and STSF, to accommodate progressive deposition of tailings over the life of the Project. Progressive raising of the embankments was included in noise modelling for the Cadia East Project Noise and Blasting Impact Assessment (Wilkinson Murray, 2009). This included three assessment scenarios: Year 1 (2010), Year 4 (2013) and Year 17 (2026). The table below has been taken from this assessment, which lists the construction fleet for lifts to the TSFs. In addition, the following image shows the location of Reference location 'G' in the same location as where the buttress works are proposed. CHPL considers buttressing of the embankment to be a subset of this previously modelled scenario and that noise impacts are therefore approved as part of PA 06_0295 and do not need to be remodelled for the Modification. Accordingly, buttress construction would occur daytime only in accordance with the conditions of PA 06_0295.

Table 5 Tailings Storage Facility Lift Construction Fleet (Daytime Only)

Reference (refer to Figures 1, 2 and 3)	Item	Sound Power Level (dBA)
G	5 x 40 t (CAT AD40)	104
	2 x 50 t (Hitachi AD500)	100
	1 x 60 t (Komatsu PC600)	105
	1 x 45 t (CAT 345B)	103
	2 x 30 t (CAT 330DL, Komatsu PC300-8)	102
	1 x D10 (CAT D10T)	115
	1 x D8 (CAT D8N)	113
	1 x D5 (CAT r D5M)	111
	1 x 18 t (Smooth Drum Dynapac)	105
	2 x 18 t (Pad Foot Dynapac)	100
	2 x Rigid 12,000 L Water Trucks (Kenworth , Isuzu)	110
	1 x 12H Grader (CAT 12H)	109



4.5 BIODIVERSITY

The Modification includes the construction of buttressing for the STSF, which would require clearing of 0.31 ha of Box-Gum Woodland Endangered Ecological Community. The Modification would also include decommissioning and closure of the existing VR101, located in the Cadia Hill open pit, which would be inundated by tailings. The BCD of the DPIE provided biodiversity-related comments in its submission and a response is provided below.

Comment 1

The BCD noted the Modification Report describes a bat habitat assessment completed for VR101, which was conducted separately to the Biodiversity Development Assessment Report (BDAR) for the Modification. The BDAR assessed impacts related to the construction of buttressing for the STSF embankment.

The BCD recommended that, in accordance with Section 6.4.1.21 of the BAM, CHPL either:

- conduct the additional seasonal surveys to determine species presence;
- obtain an expert report; or
- assume species presence.

Additionally, the BCD recommended that the BDAR be updated to demonstrate that prescribed impacts associated with the decommissioning of VR101 have been adequately addressed in accordance with the BAM.

Response 1

The closure and rehabilitation of VR101 is an approved activity under PA 06_0295, hence, potential impacts will be managed in accordance with existing management strategies. No bats were identified in VR101 during surveys for the bat habitat assessment. VR101 is connected with the Cadia East underground workings and has significant air flow through it. Notwithstanding, as stated in the Modification Report, CHPL would conduct additional seasonal surveys prior to closing of VR101 to determine the extent of bat habitat and use on-site. If threatened bats are identified, fauna management strategies would be developed in accordance with current site management practices.

Consistent with the Cadia Hill Tailings Modification (Modification 11) (where the closure of a similar adit was triggered by tailings deposition), closure of VR101 is an approved activity and its closure and rehabilitation will be undertaken in accordance with the CVO Land and Biodiversity Management Plan (L&BMP). The Modification 11 outcomes are described in the Secretary's assessment report and copied in Table 2 below (DP&E, 2018).

As the closure and rehabilitation of VR101 is approved, it will be managed in accordance with the L&BMP and therefore this activity does not require inclusion in the BDAR.

Table 2
Biodiversity Recommendations of the Department of Planning and Environment – Modification 11

Issue	Consideration	Recommendation
Biodiversity	<ul style="list-style-type: none"> No additional clearing is required for the modification. A dead-end adit located within the Cadia Hill open cut has been opportunistically inhabited by the threatened (vulnerable) Eastern Bentwing-bat. The entry to the adit is below the tailings emplacement level requiring the entry to be sealed. Adits can be sealed under the existing project approval as identified in the approved Rehabilitation Strategy, the Land and Biodiversity Management Plan (L&BMP) and Mine Operations Plan. As part of its L&BMP, a Threatened Species Management Protocol (TSMP) has been developed. Cadia has consulted with OEH and the Department to develop a management strategy to mitigate impacts on the bats due to its operations. The Department and OEH have agreed to the implementation of the strategy, which would involve the relocation of the bats prior to any tailings deposition, thereby avoiding any potential impacts. 	<ul style="list-style-type: none"> Comply with existing biodiversity conditions. Implement the approved management strategy as part of the TSMP to minimise impacts on the bats.

4.6 REHABILITATION, FINAL VOID AND FINAL LANDFORM

The Modification Report describes the final landform as a pit lake (i.e. a “wet cover”), consistent with the approved final landform. The Resources Regulator provided comments in relation to rehabilitation and the final landform of the Cadia Hill open pit. These comments, and a response to each is provided below.

Comment 1

The Resources Regulator requested additional information on the following:

- how long it would take for a wet cover to form over the consolidated tailings in the Cadia Hill open pit; and
- the management of exposed tailings within the Cadia Hill open pit following mine closure and prior to the formation of a wet cover (e.g. construction of an interim cover/cap).

Response 1

The Groundwater Assessment for the Modification describes the following with respect to the formation of a wet cover in the Cadia Hill open pit:

Therefore, whilst tailings slurry will initially be deposited to 713 mAHD, it will slowly settle to 563 mAHD in the middle of the Cadia Hill Pit. This means that within about six to seven years the level of the tailings will fall below 700 mAHD and a lake will form over the settling tailings.

In the six to seven-year period between ceasing pumping of tailings into the pit and the formation of a wet cover, some dry tailings would be exposed at the fringes of the Cadia Hill open pit. This would be progressively reduced by the exposed tailings eroding into the pit lake via natural processes (i.e. gravity/erosion).

Consistent with the discussion in Section 4.1, it is not expected that exposed tailings would cause significant dust impacts.

Because of the relatively short-term nature of exposed tailings at the completion of deposition and challenges associated with physical access to these areas, an engineered cover or cap is not proposed.

Notwithstanding, CHPL would continue to undertake studies to identify potential solutions that reduce exposure of tailings (including review of relevant case studies) as part of the site Rehabilitation Strategy.

5 UPDATED EVALUATION OF MERITS

The Modification Report concluded that the Modification is justified on environmental, economic and social grounds.

Based on CHPL's consideration of the submissions on the Modification, CHPL considers that the justification provided in the Modification Report remains unchanged.

6 REFERENCES

Department of Planning and Environment (2018) *Assessment Report Cadia East Gold/Copper Project Cadia Hill Pit Tailings Deposition Modification (06_0295 – MOD 11)*.

Department of Planning and Environment (2019) *Preparing a Submissions Report – Guidance for State Significant Projects*. Draft report.

Hydro Engineering & Consultants Pty Ltd (2019) *Surface Water Assessment for Statement of Environmental Effects*.

Wilkinson Murray Pty Ltd (2009) *Cadia East Project Noise and Blasting Impact Assessment*.

APPENDIX A
SUBMISSIONS SUMMARY

Cadia Hill Tailings Completion Modification – Submissions Report

Submitter	Group	View	Submission Format	Submission Topic/s Addressed					
				Air Quality	Groundwater	Surface Water	Noise	Biodiversity	Rehabilitation, Final Void and Final Landform
NSW Government Agencies									
Department of Primary Industries	Government	Comment	Email	No comments provided.					
Biodiversity and Conservation Division within the DPIE	Government	Comment	Letter					X	
Division of Resources and Geoscience within the DPIE	Government	-	Letter	No comments provided.					
Department of Industry – Crown Lands	Government	Comment	Letter	No comments provided.					
Resources Regulator within the DPIE	Government	Comment	Letter						X
Environment Protection Authority	Government	Comment	Letter	X	X	X	X		
Dam Safety Committee	Government	Comment	Letter	No comments provided.					
Local Councils									
Cabonne Council	Government	Comment	Letter	No comments provided.					
Blayney Shire Council	Government	-	Email	No comments provided.					
Orange City Council	Government	-	Email	No comments provided.					

APPENDIX B
REGISTER OF SUBMITTERS

Group	Name	Section Issues Addressed
NSW Government Agencies	Department of Primary Industries	NA
	Biodiversity and Conservation Division within the DPIE	4.5
	Division of Resources and Geoscience within the DPIE	NA
	Department of Industry – Crown Lands	NA
	Resources Regulator within the DPIE	4.6
	Environment Protection Authority	4.1, 4.2, 4.3 and 4.4
	Dam Safety Committee	NA
Local Councils	Cabonne Council	NA
	Blayney Shire Council	NA
	Orange City Council	NA