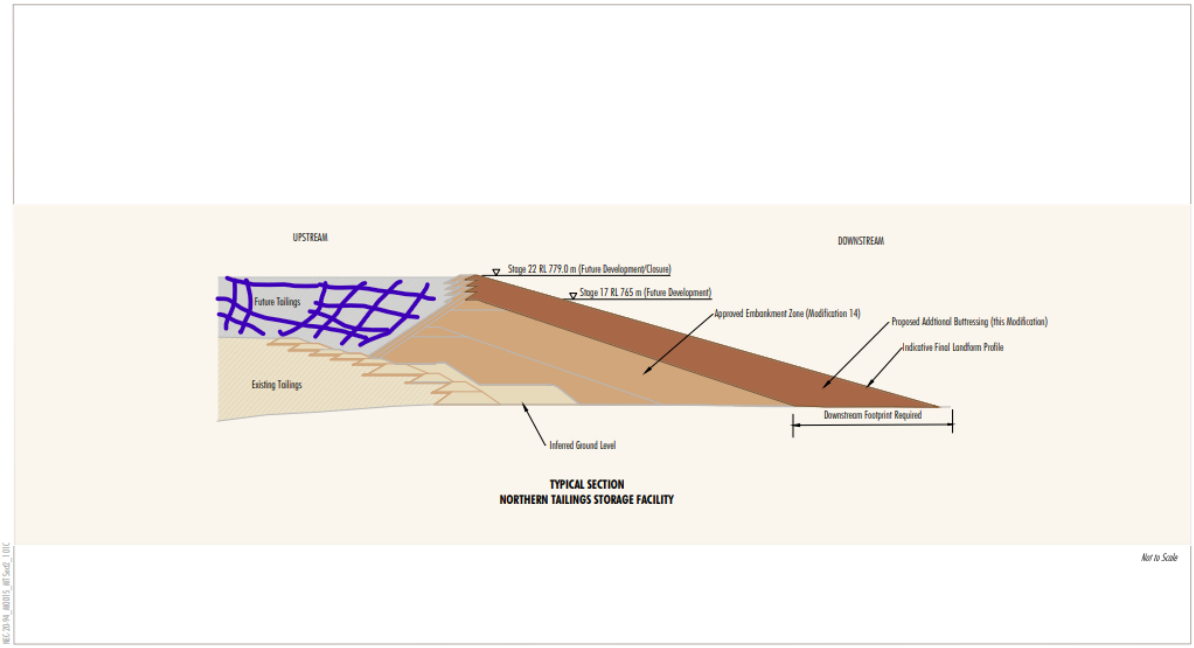
# Cadia Community Sustainability Network (CCSN) Comments/Objections To Newmont/Cadia Valley Operations (CVO) Modification 15 Tailings Storage Facility Embankment Buttressing

## 1 Embankment Buttressing

1.1 Changes to the approved volume of tailings stored (pES-2)

Changing the tailings dam construction from upstream to centreline or downstream will result in a significant increase in storage capacity (blue cross hatched area). The dam wall will effectively be built in a line upwards rather than building over the current tailings dam. The Advisian model (Appendix D – Groundwater Impact Assessment) for the NTSF and STSF revises the cell matrix used to model the tailings dam footprints and identifies an increase in the tailings dam footprint area by 200 modelled cells, approximately 20% (Figure 5-2).




Source: After CHPE (2023); ATC Williams (2023)

Newmont
CADIA
CADIA VALLEY OPERATIONS

Typical Cross Section through the Northern Tailings Storage Facility Main Embankment

**Figure 2-1b**

Descriptions that buttressing the outer slopes of both the NTSF and STSF and moving to a centreline or downstream lift has no change in the volume of tailings material stored or the footprint of the stored tailings is false. The assertion that all tailings deposition would remain within existing Mine License (ML) is totally misleading. The notice of exhibition for the Mod is deliberately intended to mislead and downplay the significance of Mod 15.

1.2 TSF maintenance facilities

No details are provided in regard to TSF maintenance facilities. It is unknown if this is a retrospective approval or planned future construction. The use of dual skinned fuel storage is a considerable improvement over the existing fuel storage system that has resulted in contamination of existing groundwater.

It appears that there is currently only limited requirement for CVO to monitor and report contamination from the various activities across the site in the groundwater system

1.3 Extension of construction hours

The extension to construction hours for the TSFs to the evening period, 6pm – 10pm is unnecessary and unreasonable for nearby residents.

The total materials scheduled to be moved, over a period of 9 years is 80.5Mtonne, the additional evening material movement is 3.5Mtonne. This tonnage can be included in the daytime material movements. The additional material movement hours are not necessary.

1.4 Minor Realignment of Panuara Road – Executive Summary pp. 2 & 3

The modification includes "A minor realignment of Panuara Road in two locations to accommodate the STSF buttressing foot print." This statement is misleading as the proposed road rerouting relates to more than 50% of the Panuara Road, from Cadia Road to the western edge of the mine lease.

Panuara Road is the only road in to Panuara authorised to carry heavy vehicles and is critical to the operation of a number of agricultural businesses in the district. If the road is to be closed for any period of time the closure must be timed to coincide with the operation of those enterprises.

Buttressing appears to be constructed within a few metres of the Panuara Road (Figure 3-1, Executive Summary p28).

The realignment of Panuara Rd within the proposed extended mine lease area is not consistent with the purpose of a mine lease. In the interests of public safety, the Panuara Rd should be wholly relocated outside the mine lease area prior to construction of the embankments.

1.5 Realignment of a section of the Belubula river pipeline – Executive Summary p. 43

CVO has in the last 12 months upgraded the Belubula River pipeline. It is not clear if this is a retrospective approval or a future change.

1.6 NTSF Repair

Mod 14 planned to repair the NTSF by encapsulation of the slump area and change to centreline /downstream lifts. This work was planned to be completed by 2023.

Mod 15 proposes additional embankments, repairs are now scheduled for completion in 2027.

Following extensive dredging and assessment at the slump area foundations the repair work was terminated and the NTSF has been placed in care and maintenance with an irrigation area over approximately 50% of the surface area.

1.7 NTSF Irrigation

No information is provided on the irrigation system and its water usage. Todoroski refers to the centre pivots being installed by the end of 2023. This is incorrect, none are working at this time. A major concern is the development of efflorescent salts by the continuing evaporation of recycled water from the pit onto the NTSF.

1.8 Alternative Proposals

This Modification ignores NSW Resource Regulators directives away from conventional wet slurry tailings storage facilities. Use of a filtered tailings high density deposition system would be a feasible option as the TSF has been consolidating for nearly 10 years by the time it is recommissioned.

High density filtered tailings deposition would require no buttressing, provide a slope to efficiently shed water, reduce overall water usage by 75%, eliminate risk of slurry failure and allow progressive rehabilitation to occur over the complete mine life and future approval periods.

A constant slope from the STSF to the SW waste dump would allow additional tailings to be deposited over the existing footprint and minimise overall environmental damage.

Filtered high density tailings deposition, if expanded to include the pit would allow increased tailings storage for future use and proper capping and rehabilitation of the pit area.

**The CCSN requests that:**

- **Groundwater monitoring should include a requirement to test for contaminants from all activities on site including, the tailings dam, diesel storage and transport across site, concrete pant, Molybdenum plant etc**

- **CVO test all groundwater bores for diesel contaminants**
  Barium, Beryllium, Ethyl Benzene, Xylene, Total Petroleum Hydrocarbons including C6-9, C10-14, C15-28 and C29-36, Silver, Boron

- **All bores on site should to be tested for diesel and mine waste contamination (tailings):**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| MB21 | CB8A | MB51 | MB50 | MB52 | MB82 | CB14B | CB14A | MB1B | MB18 |
| MB18 | MB23 | TW05MP | MB27 | MB26A | MB26B | MB25 | MB98 | MB87 | MB2B |
| MB5C | MB80 | RO8 | RO6A | RO6 | RS09 | RO7 | PZ90 | MB81 | MB3A |
| MB91 | MB7A | MB4A | MB4B | MB1A | MB10A | MB9A | MB70 | MB68 | MB69 |

- **Groundwater monitoring for contamination at the Blayney Dewatering Plant should be included in the Environmental Protection Licence (EPL). The following sites need to be included to ensure the Environmental Protection Agency (EPA) have the ability to monitor groundwater impacts at the Blayney site:**
  - **MW1**
  - **MW2**
  - **MW3**
  - **MW4**

- **There should be no change to the operating hours for construction of the TSFs.**

- **The realignment of Panuara Road should be reconsidered and the safety of the community prioritised.**

- **There needs to be careful planning and consultation with the community before any work begins on Panuara Road to ensure disruption to neighbouring agricultural businesses is minimised.**

- **CVO provide a water balance for the operation showing the impact of the centre pivot irrigation and hydro cyclone and additional water sprays required for construction.**

- **Centre pivots should be operated using clean water to minimise efflorescent salt build up.**

- **CVO be required to correctly define closure risks and develop control measures in advance of closure.**

- **CVO provide information for the repair of the NTSF and timeframes for when this will be completed.**

- **CVO investigates more appropriate tailings deposition in line with the Resource Regulators directives.**

## 2 Installation and operation of two additional Cadia East Underground Mine upcast surface ventilation fans

2.1 All existing vent fans for Cadia East were installed after the underground mine commenced operations in 2010. We believe all emissions should be categorised as Group 6 (plant installed after 2005) and the relevant concentration limit pursuant to Schedule 2 of the Protection of the Environment Operations (Clean Air) Regulation 2022 (POEO) per vent shaft is 20mg/$m^3$.

Refer Appendix A: Environmental Defenders Office letter to EPA 12 October 2023.

2.2 The installation of two additional booster surface fans substantially increases the vertical upstream velocity and momentum of the discharge air.

Todoroski assumes that the discharge points from VR81- 1,2,3 may be modelled by dividing the flow in the main upcast VR8 between the 3 smaller ducts. That is Todoroski assumes the flow in the 4.7m diameter vent shaft is divided between the 3 smaller surface booster fans and discharges at the same velocity as the main vent shaft (15 m/s). However, this is not consistent with Ektimo who measured a flow velocity of 24m/s through a sampling plane of 5.9m diameter. The Todoroski assumption potentially underestimates the point of discharge upstream velocity from the surface fans that are actually powerful turbo compressors. The discharge from the booster fans is highly turbulent and concentrated in a narrow stream in a vertical direction. Increasing the upstream velocity by a factor of 2-3 significantly alters the area of dust dispersal.

Installation of the turbo booster fans by CVO on VR8 was originally intended to illegally clear the mine of excess dust and to a lesser degree byproducts from diesel combustion. Prior to installation of the booster fans a bogger was employed removing mud and debris from the base of the ventilation shaft. Mine ventilation for Respirable Crystalline Silica (RCS) and Diesel Particulate Matter (DPM) did not comply with WorkSafe 12-hour criteria or safe visibility for truck operation underground.

Emissions from VR 8 are currently the subject of criminal charges by the NSW EPA as the point discharge rate at 360mg/$m^3$ was 18 times that allowed by the NSW POA Act 1997 for Group 6 emissions. Increasing the air flow in an attempt to reduce dust levels in the mine by dispersal, dilution in the atmosphere is not a responsible or sustainable solution.

2.3 Installation of more and more fans is a poor solution for a badly designed ventilation system. The ventilation requirement is primarily a function of installed internal combustion equipment.

An alternative that should have been included in Section 1.4 Table 1-2 (Analyses of Alternatives) and a more efficient alternative is the use of electric loaders and vehicles underground. This change would materially reduce the air volume required and power consumption of the fan. Removal of diesel operated equipment from underground operations would drastically reduce the Scope 1 emissions.

It is noted that the CVO operation over the 25 years of operation has made no effort to reduce carbon emissions, other than an agreement with a wind farm in Victoria to purchase electricity in 2025.

Based on past performance S 6.10.5 mitigation measures are nothing more than greenwashing.

2.4 Dust emissions inventory Todoroski Air Sciences Table C-2 are obviously incorrect for the ventilation shaft emissions as the $PM_{10}$ and PM $_{2.5}$ are the same as the TSP



**Table C-2: Dust Emissions Inventory – CVO Activity**

| Activity | TSP emission | PM10 emission | PM25 emission | Intensity | Units | EF - TSP | EF - PM10 | EF - PM25 | Units | Var 1 | Units | Var 2 | Units | Var 3 | | | Units | Var 4 | Units | Var 5 | Units | Control | Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General constuction work | 52,993 | 27,556 | 1,590 | 3,785 | t/y | 14 | 7.28 | 0.42 | kg/h | | | | | | | | | | | | | | |
| Loading waste to trucks | 1,332 | 630 | 95 | 1,296,296 | t/y | 0.00103 | 0.00049 | 0.00007 | kg/t | 2.2 | average (ws | 3.85 | M.C. % | | | | | | | | | | |
| Hauling waste to emplacement area | 11,396 | 2,438 | 244 | 1,296,296 | t/y | 0.0586 | 0.0125 | 0.0013 | kg/t | 199.2 | t/load | 3.92 | km/return | 3.0 | 0.6 | 0.1 | kg/VKT | 2 | S.C. % | 244 | Ave weight | 85 | C. % |
| Emplacing waste at dump | 1,332 | 630 | 95 | 1,296,296 | t/y | 0.00103 | 0.00049 | 0.00007 | kg/t | 2.2 | average (ws | 3.85 | M.C. % | | | | | | | | | | |
| Dozers working on waste rock dumps | 26,258 | 4,827 | 2,757 | 8,445 | h/y | 3.1 | 0.6 | 0.3 | kg/h | 5 | silt content | 3.85 | M.C. % | | | | | | | | | | |
| Secondary ore crushing | 106,400 | 38,500 | 3,311 | 35,000,000 | t/y | 0.03 | 0.01 | 0.0009 | kg/t | 90 | %reduction (covers/enclosure) | | | | | | | | | | | 90 | C. % |
| Loading crushed ore to storage pile from unders | 35,962 | 17,009 | 2,576 | 35,000,000 | t/y | 0.00103 | 0.00049 | 0.00007 | kg/t | 2.2 | ave. ws (m/s | 3.85 | M.C. % | | | | | | | | | | |
| Loading ore at Ore Stockpile | 2,055 | 972 | 147 | 2,000,000 | t/y | 0.00103 | 0.00049 | 0.00007 | kg/t | 2.2 | ave. ws (m/s | 3.85 | M.C. % | | | | | | | | | | |
| Hauling ore to COS stockpile | 7,179 | 1,582 | 158 | 2,000,000 | t/y | 0.0239 | 0.0053 | 0.0005 | kg/t | 125.4 | t/load | 1.1 | km/rt | 2.8 | 0.6 | 0.1 | kg/VKT | 2 | S.C. % | 166 | Ave weight | 85 | C. % |
| Unloading ore at COS stockpile | 2,055 | 972 | 147 | 2,000,000 | t/y | 0.00103 | 0.00049 | 0.00007 | kg/t | 2.2 | ave. ws (m/s | 3.85 | M.C. % | | | | | | | | | | |
| Loading ore at COS Stockpile | 2,569 | 1,215 | 184 | 2,500,000 | t/y | 0.00103 | 0.00049 | 0.00007 | kg/t | 2.2 | ave. ws (m/s | 3.85 | M.C. % | | | | | | | | | | |
| Hauling ore to Ore Stockpile | 8,974 | 1,977 | 198 | 2,500,000 | t/y | 0.0239 | 0.0053 | 0.0005 | kg/t | 125.4 | t/load | 1.1 | km/rt | 2.8 | 0.6 | 0.1 | kg/VKT | 2 | S.C. % | 166 | Ave weight | 85 | C. % |
| Unloading ore at Ore Stockpile | 2,569 | 1,215 | 184 | 2,500,000 | t/y | 0.00103 | 0.00049 | 0.00007 | kg/t | 2.2 | ave. ws (m/s | 3.85 | M.C. % | | | | | | | | | | |
| Loading ore at COS Stockpile for Green and Yell | 4,624 | 2,187 | 331 | 4,500,000 | t/y | 0.00103 | 0.00049 | 0.00007 | kg/t | 2.2 | ave. ws (m/s | 3.85 | M.C. % | | | | | | | | | | |
| Hauling ore to Green Stockpile | 20,078 | 4,423 | 442 | 2,000,000 | t/y | 0.0669 | 0.0147 | 0.0015 | kg/t | 125.4 | t/load | 3.0 | km/rt | 2.8 | 0.6 | 0.1 | kg/VKT | 2 | S.C. % | 166 | Ave weight | 85 | C. % |
| Unloading ore at Green Stockpile | 2,055 | 972 | 147 | 2,000,000 | t/y | 0.00103 | 0.00049 | 0.00007 | kg/t | 2.2 | ave. ws (m/s | 3.85 | M.C. % | | | | | | | | | | |
| Rehandle ore at Green Stockpile | 411 | 194 | 29 | 400,000 | t/y | 0.00103 | 0.00049 | 0.00007 | kg/t | 2.2 | ave. ws (m/s | 3.85 | M.C. % | | | | | | | | | | |
| Loading ore at Green Stockpile | 1,027 | 486 | 74 | 1,000,000 | t/y | 0.00103 | 0.00049 | 0.00007 | kg/t | 2.2 | ave. ws (m/s | 3.85 | M.C. % | | | | | | | | | | |
| Hauling ore to COS Stockpile | 10,039 | 2,212 | 221 | 1,000,000 | t/y | 0.0669 | 0.0147 | 0.0015 | kg/t | 125.4 | t/load | 3.0 | km/rt | 2.8 | 0.6 | 0.1 | kg/VKT | 2 | S.C. % | 166 | Ave weight | 85 | C. % |
| Unloading ore at COS Stockpile | 1,027 | 486 | 74 | 1,000,000 | t/y | 0.00103 | 0.00049 | 0.00007 | kg/t | 2.2 | ave. ws (m/s | 3.85 | M.C. % | | | | | | | | | | |
| Hauling ore to Yellow Stockpile | 19,209 | 4,232 | 423 | 2,500,000 | t/y | 0.0512 | 0.0113 | 0.0011 | kg/t | 125.4 | t/load | 2.3 | km/rt | 2.8 | 0.6 | 0.1 | kg/VKT | 2 | S.C. % | 166 | Ave weight | 85 | C. % |
| Unloading ore at Yellow Stockpile | 2,569 | 1,215 | 184 | 2,500,000 | t/y | 0.00103 | 0.00049 | 0.00007 | kg/t | 2.2 | ave. ws (m/s | 3.85 | M.C. % | | | | | | | | | | |
| Rehandle ore at Yellow Stockpile | 514 | 243 | 37 | 500,000 | t/y | 0.00103 | 0.00049 | 0.00007 | kg/t | 2.2 | ave. ws (m/s | 3.85 | M.C. % | | | | | | | | | | |
| Loading ore at Yellow Stockpile | 2,055 | 972 | 147 | 2,000,000 | t/y | 0.00103 | 0.00049 | 0.00007 | kg/t | 2.2 | ave. ws (m/s | 3.85 | M.C. % | | | | | | | | | | |
| Hauling ore to COS stockpile | 15,367 | 3,385 | 339 | 2,000,000 | t/y | 0.0512 | 0.0113 | 0.0011 | kg/t | 125.4 | t/load | 2.3 | km/rt | 2.8 | 0.6 | 0.1 | kg/VKT | 2 | S.C. % | 166 | Ave weight | 85 | C. % |
| Unloading ore at COS stockpile | 2,055 | 972 | 147 | 2,000,000 | t/y | 0.00103 | 0.00049 | 0.00007 | kg/t | 2.2 | ave. ws (m/s | 3.85 | M.C. % | | | | | | | | | | |
| Ore processing in mill (x5) | 179,812 | 85,046 | 12,878 | 175,000,000 | t/y | 0.00103 | 0.00049 | 0.00007 | kg/t | 2.2 | ave. ws (m/s | 3.85 | M.C. % | | | | | | | | | | |
| Wind erosion from waste rock dumps | 380,184 | 190,092 | 28,514 | 217 | ha | 3,504 | 1,752 | 263 | kg/ha/y | | | | | | | | | | | | | 50 | C. % |
| Wind erosion from pit tailing storage facility | 203,232 | 101,616 | 15,242 | 116 | ha | 3,504 | 1,752 | 263 | kg/ha/y | | | | | | | | | | | | | 50 | C. % |
| Wind erosion from subsidence zone | 82,344 | 41,172 | 6,176 | 47 | ha | 3,504 | 1,752 | 263 | kg/ha/y | | | | | | | | | | | | | 50 | C. % |
| Wind erosion from plant stockpiles and exposed | 143,664 | 71,832 | 10,775 | 82 | ha | 3,504 | 1,752 | 263 | kg/ha/y | | | | | | | | | | | | | 50 | C. % |
| Wind erosion from tailings storage facilities | 1,408,608 | 704,304 | 105,646 | 804 | ha | 3,504 | 1,752 | 263 | kg/ha/y | | | | | | | | | | | | | 50 | C. % |
| Wind erosion from MOD15 disturbance area | 493,844 | 246,922 | 37,038 | 282 | ha | 3,504 | 1,752 | 263 | kg/ha/y | | | | | | | | | | | | | 50 | C. % |
| Grading roads | 23,935 | 8,363 | 742 | 38,889 | km | 0.62 | 0.22 | 0.02 | kg/VKT | 8 | km/h | | | | | | | | | | | | |
| Ventilation shaft emissions | 2,763,096 | 2,763,096 | 2,763,096 | | | | | | | | | | | | | | | | | | | | |
| Conveyors and conveyor transfer points | 10,789 | 5,103 | 773 | 35,000,000 | t/y | 0.00103 | 0.00049 | 0.00007 | kg/t | 2.2 | ave. ws (m/s | 3.85 | M.C. % | | | | | | | | | 70 | C. % |
| Diesel emissions | 14,672 | 14,672 | 14,232 | | | | | | | | | | | | | | | | | | | | |
| **Total Emissions (kg/year)** | **6,046,284** | **4,353,719** | **3,009,393** | | | | | | | | | | | | | | | | | | | | |



The installation of multiple fans each measuring at 50 - 100mg/$m^3$ must not be allowed to be a method to circumvent the regulations.

**The CCSN requests that:**

- **The EPL be updated to reflect the scale and nature of CVO's operation. CVO is a Group 6 polluter and must be held to those regulations – 20mg/m$^3$ for each vent point discharge.**

- **Upcast fans must not be considered as an alternative to installing effective dust control systems.**

- **Total emissions from the mine site be capped at current levels.**

- **Dust should be collected and filtered at the point of source.**

- **Upcast fans must be constructed or altered to allow real time measurement and monitoring of emissions.**

- **Increasing air flow at point of discharge should not be allowed to be a methos to circumvent dust point of discharge requirements of the POEO Act.**

## 3 Construction of a larger tailings pilot plant and associated sand embankment (hydrocyclone sands) (S3.5)

3.1 There is no rationale provided for the construction of a larger "trial" hydrocyclone pilot plant and sand embankment. This supposed trial plant will increase Scope 1 emissions for the site by 4% and dust emissions by 2% for no apparent benefit. It is not apparent why this hydrocyclone pilot plant requires approval but the original pilot did not.

3.2 Todoroski's dust emission factor for the hydrocyclone sands is the same as that used for the ore, that is probably incorrect as the hydrocyclone sands have been specifically processed to eliminate smaller particles <60μm.

3.3 A goal of the hydrocyclone process is to separate the tailings into a large particle relatively free draining sand compound and a smaller particle more fluid slurry. The net result is to achieve a relatively stable component (approximately 15% of the volume) and create a less stable component with the balance (approximately 85% of the volume).

Experience with the 2018 NTSF failure is that due to the inherent beach deposition process heavier particles generally concentrate and deposit closest to the walls and contribute to the wall strength. In the event of a tailings breach the flow and loss of tailings at CVO was moderate and not catastrophic even though serious limitations were identified in the Morgenstern Report in regard to both construction and operation of the dam.

Mining industry experience with hydrocyclone dam failure in Brumadinho in Brazil and Mount Polly in Canada shows that in the event of a breach the flow of the hydrocyclone separated tailings is catastrophic.

Inclusion of the hydrocyclone facility changes the rheological properties of the tailings deposited in the TSF's and hence the relative safety of the design.

3.4 Description of this plant and associated equipment, (conveyors etc) and 2 million tonnes stack of hydrocyclone sands is completely inadequate, there is no information on:

- Maximum processing capacity for the hydrocyclone sands plant
- Height and size of the plant
- Lights
- Noise
- Location of the hydrocyclone sands and position of the proposed dam wall to be built using this material. Mod 15 states the trial would conduct a series of sand embankments in the area shown in Fig 1-5, there are no embankments noted on this Figure. This is a new tailings dam, where are the technical experts approving the foundations, construction and location of this wall?
- Why this plant is referenced in Mod 15 when the initial pilot plant was built with no details included in Mod 14
- How the dust will be controlled from the new sand embankment tailings dam to be built using bulldozers
- How this plant differs to the CVO planned final plant
- Reasons for position of plant – it is very close to near neighbours and will create additional noise and dust pollution close to the ML boundary. This plant could have been positioned to the west of the tailings dams with minimal impact on the community.
- The community has been told the hydro cyclone technology would require multiple relatively small cyclones positioned around the edge of the tailings dam, this single large cyclone appears to be a significantly more intrusive plan. There is no justification provided for this change.

**The CCSN requests that:**

- **CVO be required to provide additional information as noted above**

- **Where is the analysis relating to location, foundations, safety appropriate use of technology etc? This proposal must be stopped until a full Modification has been completed to consider all aspects of adopting this technology. If the Department of Planning and Environment (DPE) does not block this proposal, it has in effect given a back door approval to an inappropriate change in technology for the tailings dam which could have catastrophic consequences for our district and would have favoured the proponent.**

- **Full independent safety analysis of the impact of this proposed change in rheological properties of the tailings stored in the current TSF.**

- **DPE follow the Compliance Direction issued by the Resource Regulator in regard to wet tailings dams. June 2020 NSW Resources Regulator Publication "Leading Practice Tailings Management For Successful Closure" - It is noted that Professor Williams at a conference with the Resource Regulator in April 2019 in general recommended against this technology.**

- **CVO provide funding to allow the community to access an independent expert to advise us on alternate tailings storage technology in accordance with the Global Industry Standard on Tailings Management (GISTM).**

## 4 Restarting Ridgeway underground mine (Executive Summary p. 3)

4.1 The proposal to restart the Ridgeway mine is poorly considered, ambiguous and unclear exactly what methodology is actually being employed. Prior to shut down, CVO was the subject of criminal charges following the death of Mr. Lee Peters in the Ridgeway mine due to the operation of the drawbells. It should be noted the Ridgeway mine is a block cave design rather than panel cave as used in Cadia East and the drawbells behave in a manner significantly different to the Cadia East drawbells. It appears that CVO's intention is to operate a "cut price" operation mine at Ridgeway, minimising investment and costs due to the limited ore remaining to be mined.

4.2 The Todoroski Air Dispersion model analysis for the dust emission inventory is inconsistent with the proposed operation at Ridgeway. The proposed recommencement (S 3.3.2) is based on 60 tonne trucks, Todoroski has modelled emissions based on 40 tonne trucks for hauling ore to the surface. The proposal is based upon road trains for haulage to the ore processing facility, Todoroski has modelled emissions based on 30 tonne trucks. Emission factor of the rehandled stack is considered constant which is an unlikely approximation.

Todoroski has not included emissions in the dust inventory from upcast ventilation at Ridgeway, emissions from underground explosive clearing of the drawbells or loading the Moxy transporter (Todoroski Air Services Table C-5).

Table C-5: Dust Emissions Inventory – Ridgeway Underground Mine

| Activity | TSP emission | PM10 emission | PM25 emission | Intensity | Units | EF - TSP | EF - PM10 | EF - PM25 | Units | Var 1 | Units | Var 2 | Units | Var 3 | | | Units | Var 4 | Units | Var 5 | Units | Control | Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hauling ore to stockpile with Moxy | 1,123 | 240 | 24 | 2,000,000 | t | 0.004 | 0.001 | 0.000 | kg/t | 40 | t/load | 0.1 | km/rt | 1.5 | 0.3 | 0.0 | kg/VKT | 2.0 | S.C. (%) | 53 | Ave weight | 85 | C, % |
| Emplacing ore at stockpile | 2,055 | 972 | 147 | 2,000,000 | t | 0.00103 | 0.00049 | 0.00007 | kg/t | 2.2 | ave. ws (m | 3.85 | M.C. (%) | | | | | | | | | | |
| Rehandle at stockpile | 411 | 194 | 29 | 400,000 | t | 0.00103 | 0.00049 | 0.00007 | kg/t | 2.2 | ave. ws (m | 3.85 | M.C. (%) | | | | | | | | | | |
| Loading to haul truck | 2,055 | 972 | 147 | 2,000,000 | t | 0.00103 | 0.00049 | 0.00007 | kg/t | 2.2 | ave. ws (m | 3.85 | M.C. (%) | | | | | | | | | | |
| Hauling ore to processing plant - unsealed | 63,894 | 13,669 | 1,367 | 2,000,000 | t | 0.213 | 0.046 | 0.005 | kg/t | 30 | t/load | 5.5 | km/rt | 1.2 | 0.3 | 0.0 | kg/VKT | 2.0 | S.C. (%) | 31 | Ave weight | 85 | C, % |
| Hauling ore to processing plant - sealed | 963 | 185 | 45 | 2,000,000 | t | 0.00048 | 0.00009 | 0.00002 | kg/t | 30 | t/load | 0.1 | km/rt | 0.2 | 0.0 | 0.0 | kg/VKT | 2.0 | S.L. g/m2 | 31 | Ave weight (t) | | |
| Emplacing ore at stockpile | 2,055 | 972 | 147 | 2,000,000 | t | 0.00103 | 0.00049 | 0.00007 | kg/t | 2.2 | ave. ws (m | 3.85 | M.C. (%) | | | | | | | | | | |
| Rehandle at stockpile | 411 | 194 | 29 | 400,000 | t | 0.00103 | 0.00049 | 0.00007 | kg/t | 2.2 | ave. ws (m | 3.85 | M.C. (%) | | | | | | | | | | |
| Loading to crusher | 2,055 | 972 | 147 | 2,000,000 | t | 0.00103 | 0.00049 | 0.00007 | kg/t | 2.2 | ave. ws (m | 3.85 | M.C. (%) | | | | | | | | | | |
| Crushing | 5,400 | 2,400 | 444 | 2,000,000 | t | 0.00270 | 0.00120 | 0.00022 | kg/t | | | | | | | | | | | | | | |
| Unloading to stockpile | 5 | 2 | 0 | 4,800 | t | 0.00103 | 0.00049 | 0.00007 | kg/t | 2.2 | ave. ws (m | 3.85 | M.C. (%) | | | | | | | | | | |
| Diesel emissions | 935 | 935 | 907 | | | | | | | | | | | | | | | | | | | | |
| Wind erosion of stockpiles | 392 | 196 | 29 | 0.2 | ha | 3,504 | 1,752 | 263 | kg/ha/yr | | | | | | | | | | | | | 50 | C, % |
| **Total Emissions (kg/year)** | **81,755** | **21,904** | **3,465** | | | | | | | | | | | | | | | | | | | | |



The total area for the stockpile is calculated as 0.2Ha which seems very small, emissions of 5kg/year for unloading the stock pile is not a credible assumption.

4.3 CVO is seeking approval to extend the existing decline to 4570 RL, again this work is not included in the Dust Emissions Inventory. There is no modelling for this change.

**The CCSN requests that:**

- **CVO be required to provide detailed operational and safety plans for Ridgeway**

- **New ventilation systems be built with point of source filtration and real time monitoring equipment.**

- **Emission limits for new or modified ventilation shafts should be set at 20mg/m$^3$, in line with NSW POEO 1997 requirements. Total emissions from the mine site should be capped at current levels.**

- **The Todoroski models' assumptions are not consistent with the actual proposed operation at the Ridgeway mine. The model should be rebuilt using an independent specialist.**

- **An independent safety risk assessment should be carried out on the operation of the vent system prior to restarting mining activities at Ridgeway.**

## 5 Rehabilitation Research and Trials S3.9.6

5.1 The Rehabilitation Strategy document was provided to the CCC for comment on 18 July 2023 (it was due according to Mod 14 by March 2022). Specific comments provided by the CCSN on 16 August 2023 is attached (Appendix - B), these comments have not been responded to and ignored by CVO. It should be noted that a key issue at that time for the CCSN was the claim that tailings dams could be rehabilitated and used for agricultural purposes.

Mod 15 repeatedly refers to rehabilitation of the TSF into sustainable grazing pastures. Pages 45 and 46 refer to grazing, agriculture and pasture 21 times.

Research conducted in conjunction with CVO by Vanessa Connick et al in March 2009 determined that many pasture species readily took up metals from the tailings and the pasture and leaf matter became contaminated. (Appendix - C)

The tailings do not represent a suitable growth medium for pastures intended for use to graze livestock. There is a real risk of contaminants entering the food chain.

Any suggestion by CVO that tailings could be rehabilitated into sustainable pastures is blatant greenwashing and completely false and misleading.

Trials conducted by DnA Environmental in 2011 identified that whilst there was successful establishment of plants growing in tailings with a topsoil or biosolid treatment, those plants with tailings only displayed symptoms of nutrient deficiency. If deep rooted trees and shrubs are planted in tailings even with topsoil and/or biosolids, how long before those nutrients are depleted?

5.2 CVO has been operating for 25 years and there is:

- *no* long-term trial growing local trees and shrubs in the tailings.

- *no* long-term trial to determine the extent of contamination taken up by plants regardless of the growth medium they are initially planted in.

- *no* timeframe commitment for any of the rehabilitation.

- *no* progressive rehabilitation on the CVO site, other than the SW Waste Rock dump which is now to be demolished to provide construction material for the failed TSFs.

CVO not been held accountable for rehabilitation for the last 25 years. Future rehabilitation plans from a mine the size and profitability of CVO, which has failed to execute any meaningful rehabilitation over the last 25 years, cannot be taken seriously.

The CCSN believes the Rehabilitation Strategy as presented is not fit for purpose and is a blatant attempt to greenwash the reality of a massive mine site with no viable plans for rehabilitation.

**The CCSN requests that:**

- **there should be an independent full audit of rehabilitation to date and CVO should be held accountable for the lack of rehabilitation so far.**
- **the rehabilitation strategy be rewritten by an independent party (not Umwelt).**
- **CVO and the regulators recognise that tailings are a finely ground mix of rock containing many heavy metals and other elements which may be readily taken up by many plant species (Appendix - C)**
- **long term trials are required to determine which plants will survive under all conditions when planted in the tailings. This means planting in deep tailings with surface topsoil/biosolids.**
- **the surface of the dams must dry out to allow rehabilitation to commence, this will take several years. The rehabilitation strategy must address how CVO will control the inevitable dust during this period (irrigation may not be appropriate if trying to dry the surface).**
- **the Rehabilitation Strategy must identify the sources of clay capping, top soil and biosolids sufficient to cover thousands of acres. If rehabilitation of the entire TSF's approx. 1000 hectares is left until the end of the mine life, it is unlikely that this will be available.**

## 6 Final Landform S3.10

6.1 Figure 3-8 shows the Conceptual Post Mining Landforms, it is based on a pre-Mod 15 landform and does not show the impact of the buttressing and changed ML as per Figure 1-5.

6.2 A key assumption of the final landform is that the essentially flat 1° slope can be stabilised in a short time frame and that consolidation and settling will not create depressions and pooling on the surface resulting in seepage /contamination issues as different settlement rates occur across the tailings dams. This assumption appears to be flawed, studies using finite element FLAC analysis and Goldsim's new software tools indicate final settlement can take 27 years. The CCSN believes that ultimately a 1° slope on a dam surface the size of the NTSF and STSF will be insufficient to optimize drainage of rain falling on the surface of the tailings dam. Minimisation of

seepage from the dams will require minimisation of rainfall soaking into the dams and therefore a greater gradient on the surface and or impermeable clay capping.

Any water pooling on the surface of the tailings dams will over time become acidic, saline and contaminated with metals drawn up from the tailings dam.

6.3 Drainage from the entire TSF is into 5 small stilling basins. These basins, as catchment for contaminated run off must sit within the ML.

The seepage from the base and toe of the dam is predicted to be of the order of 0.27ML/day into the stilling basins and then pumped back to the TSF. ANCOLD requirement is that the system ultimately be a passive system, it is difficult to see how this can be accomplished without mechanical pumping in perpetuity.

**The CCSN requests that:**

- **the rehabilitation strategy be designed in accordance with statutory requirements.**
- **Rehabilitation to be carried out progressively over the mine life.**
- **DPE consider modifying bond requirements to provide financial incentives for progressive rehabilitation over the mine life.**

## 7 Administrative Change to remove the conditions associated with the now decommissioned Blayney Dewatering Facility S 3.12.4

This change is presented as a minor administrative change; however, we believe, based upon recent independent water test analysis that the decommissioned Blayney Dewatering Facility may not be fully rehabilitated and represents a contamination risk for Abattoir Creek which flows along the boundary of St Joseph's Primary School and directly into the Belubula River.

Results from water samples collected 12/8/23 and 14/8/23 from Abattoir Creek Blayney (under Gerty St bridge).
Comparison to Australian Drinking Water Guidelines and Australian Ecosystem guidelines (protection of 95% of aquatic species)

| | 12 August | 14 August | Australian Drinking Water Guidelines (Health) | 12 August Exceedance of ADWG | ANZECC (River Ecosystem Guidelines) 95% protection | 12 August Exceedance of ANZECC |
|---|---|---|---|---|---|---|
| Arsenic | 8470 µg/L (=8.47 mg/L) | 2 µg/L (=0.002 mg/L) | <10 µg/L | X 847 times | <24 µg/L (but depends on form of As) | X 352 times |
| Copper | 20600 µg/L (=20.6 mg/L) | 3 µg/L (=0.003 mg/L) | <2000 µg/L | X 10 times | <1.4 µg/L | X 14714 times |
| Lead | 1520 µg/L (=1.52 mg/L) | <1 µg/L (= <0.001 mg/L) | <10 µg/L | X 152 times | <3.4 µg/L | X 447 times |
| Nickel | 1200 µg/L (=1.2 mg/L) | 2 µg/L (=0.002 mg/L) | <20 µg/L | X 60 times | <11 µg/L | X 109 times |
| Uranium | 22 µg/L (=0.022 mg/L) | <1 µg/L (= < 0.001 mg/L) | <20 µg/L | by 10 % | No guideline | No guideline |

Source – Assoc. Prof Dr. Ian Wright (UWS) and the CCSN


**The CCSN requests that:**

- **independent environmental testing of the site be completed, supervised by DPE & EPA. Testing should include soil on the site and adjacent creek and water in the creek and drainage pools.**

- **this site is within a very short distance of a pre-school and a primary school. Rehabilitation requirements must be of the highest possible standard. The community expects CVO to be held accountable for its pollution.**

## 8 Air Quality Impact and Greenhouse Gas Assessment

The Todoroski Air Sciences model is a work of fiction designed to achieve the answer required by the proponent. Section 6.2.2 is false and misleading; dust complaints are under reported.

8.1 Dust input data is based upon, for the most part, a series of assumptions not actual measurements and has been manipulated between successive models:

| TSP - Kg/yr | Mod 14<br>1/12/2020 | <br>4/7/2023 | Mod 15<br>15/11/2023 |
|---|---|---|---|
| WE – pit TSF | 406,341 | 224,256 | 203,232 |
| WE – subsidence zone | 166,087 | 336,384 | 82,344 |
| Vent shaft emissions x 4 | 205,131 | - | 2,763,096 |
| Total CVO activity inc TSF construction | 5,887,942 | 8,010,260 | 7,478,697 |

| | | | |
|---|---|---|---|
| Total CVO inc TSF construction excluding vents | 5,682,811 | | 4,715,601 |

Source: Todoroski Air Services

- No information is provided to support the assumption that dust from subsidence zones and the pit will be half that assumed in 2020.
- Remarkably despite the increase in dust attributable to vent shaft emissions, total dust from CVO activity and including TSF construction decreases by almost 17% from 5,682,811 kg/yr to 4,715,601 kg/yr.

8.2 The model assumes that because CVO is compliant at the boundary monitoring stations there must be no dust leaving the site. The model ignores:

- The fact the EPA has filed 5 criminal charges against CVO in 2023, for dust emissions leaving the site.
- The fact the Lead Isotope Report identified lead in water tanks in the Cadia district which matched the mine ore lead isotope some 18 km from CVO.
- The fact that DG 9 has repeatedly measured exceedances, as reported in CVO's Annual Environmental Management Report (AEMR).
- The fact Vent 8 booster fan is operating at high velocity and effectively launching emissions over the monitors around the edge of the Mine Licence area
- The fact dust monitors are in the wrong locations, they may have been appropriate when CVO began operations 25 years ago but the scale and nature (underground) of the operation has changed dramatically since. Dust monitoring is not fit for purpose.

8.3 Respirable Crystalline Silica

Respirable crystalline silica is a significant problem within the CVO mine:

- a number of employees / contractors have been diagnosed or are under investigation for silicosis;
- the Resource Regulator has issued multiple Notices to CVO regarding excessive dust and worker exposure.

Todoroki's Section 6.7 RCS results are misleading and deliberately misinterprets the criteria for the safety of workers and the general community.
The assumption that RCS can be modelled by exclusively considering $PM_{2.5}$ is dangerous. RCS by definition (ACGIH, NIOSH, CEN) all define RCS as crystalline silica in the $PM_4$ range. It is also generally recognised that the $PM_{10}$ fraction is termed the respirable fraction.

Work Safe Australia generally agree that the workplace exposure standard (WES) should be $0.02mg/m^3$ however due to limitations in current measuring technology for RCS a value at $0.05mg/m^3$ has been adopted for compliance purposes. Mine operators should understand the limitation of RCS measurement and regulations and adapt a precautionary approach.

12 hr WorkSafe WES recommendations are actually $0.014mg/m^3$ with an action level $0.008mg/m^3$. EPA interim criteria for the general community is $0.003mg/m^3$ based on $PM_{10}$ /year.

On the basis a precautionary approach is adopted, 10-20%of the $PM_{10}$ is RCS and there are real concerns in regard to life time exposure to RCS around the CVO mine, refer to Todoroski $PM_{10}$ isopleth below.

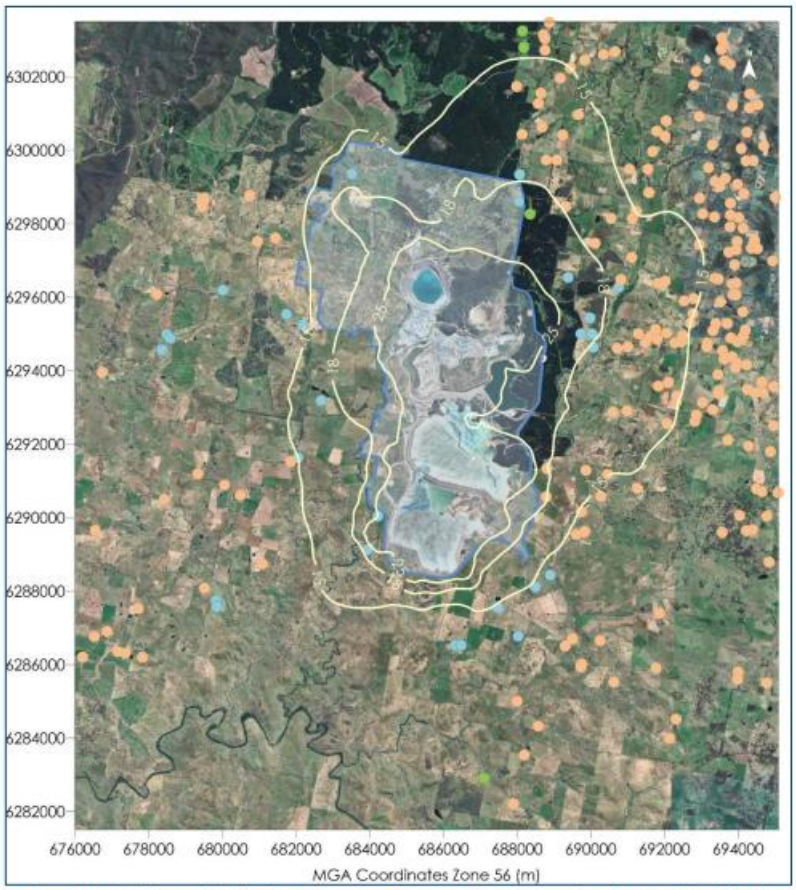



Figure F-6: Sensitivity analysis showing predicted annual average $PM_{10}$ concentrations due to emissions from the Modification and other sources (µg/m³)



The Todoroski data (which we believe is significantly understated) identifies approximately 50 receptors adjacent or inside the $PM_{10}$ 0.015mg/m$^3$ isopleth. Based on an RCS fraction of 20% of $PM_{10}$, RCS would be at least the EPA interim criteria.

Contrary to Todoroski assertions, we cannot dismiss concerns that multiple residents are living with RCS levels close to or in excess of the EPAs interim criteria of 0.003mg/m$^3$.

This risk should not be ignored.

**The CCSN requests that:**

- **The air dispersal model be rebuilt by an expert independent of CVO. The Todoroski model is flawed in many respects and cannot be relied upon.**

- **The conclusion that only two neighbours will experience exceedances is incorrect based on the above information, the dispersal of dust across the district has the potential to have significant health consequences. Recognition of which residences are affected must be based upon all of the facts.**

- **RCS should be modelled based upon $PM_4$**

- **CVO clean all water tanks in the district, and provide clean drinking water to all residents**

- **All dust exceedances be recorded by an independent authority. Self-reporting by CVO cannot be relied upon.**

## 9 Social License Issues

9.1 Mod 14 Conditions have not been completed
Mod 14 required multiple management plans to be updated, many of these remain outstanding or have been delivered months and years after their due date. It appears that one of the largest gold and copper mines in the Southern hemisphere is operating without many of its key management plans in place and approved by the Regulators.

CVO has demonstrated a complete disregard for its commitments under Project Approval 06-0295 and EPL 5590 and has demonstrated that they cannot be trusted to behave in a moral and ethical manner.

The following have been identified:

- Traffic Management Plan: due March 2022, approved October 2023
- Dewatering Facility Water Management Plan: due March 2023, approved October 2023.
- Water Management Plan: due June 2022, approved August 2023
- Blast Monitoring Plan hasn't been updated/reviewed since August 2020 due March 2022.
- Biodiversity and Land Management Plan not updated since August 2021 due for completion in June 2022. Large scale clearing works occurred under Mod 14 in 2023.
- Noise Monitoring Plan not updated since August 2021
- EMS last updated in June 2021 – there have been multiple triggers for review (see page 31 of document) and it being due in June 2022.
- Rehabilitation Plan last updated November 2011, required to be updated by March 2022.
- Forward Works Program, that ceases in 2025, has only 2 commitments, both of which have not been started, has no plans for any preparation of land for rehabilitation at all during the period, but somehow, expects to have 2.35 ha of ecosystem and land use establishment by 2025. The constructed wetlands trial is allowing leachate into the environment via the wetlands. This is not allowed under the development consent which ensure the protection of the receiving environment from such leachate. The scientific consensus is that wetlands do not remove leachate from the environment, but over a 30-year period, wetlands can assist in rehabilitating leachate affected areas, so long as there are no additional inputs of leachate.
- Air Quality and GHG Management Plan: required to be completed by March 2022. It is not on the website so we assume this plan has not been completed.

We suspect there are more, given the timeframe this is what is evident and has been established by the group.

9.2 Length of Modifications

It would appear that the mining industry believes the length of the modification document is of greater importance than the quality and relevance of the information. This Mod 15 is an exercise in repetition, with many significant issues either ignored entirely or brushed over and other areas of lesser consequence reviewed and discussed repeatedly.

Many of the expert reports included in Mod 15 have been drafted over several months. The community and the CCC should have been briefed on the contents and conclusions of these reports ahead of the Mod being produced.

Given the short time frame available to communities to review and comment on modifications delivering a 2,000 + pages shortly before Christmas not only favours the proponent but creates significant inefficiencies for the multiple regulators and advisors trying to comprehend voluminous modifications in a short time.

The modification document demonstrates a strategy by CVO designed to obfuscate and cover up areas of the operation which should be receiving significantly greater regulatory attention. We believe that in the interests of sustainability for the mine and the community greater emphasis should be placed on diligent compliance with regulatory requirements.

The CCSN believes the current strategy, a pattern of harassment and intimidation, it is not acceptable.

9.3 Timing of CVO Modifications

CVO commenced working and meeting with the community on Mod 15 in late 2021. A modification that has taken two years to produce suddenly a month before Christmas became sufficiently urgent it must be filed with DPE.

Similarly Mod 14 was filed with DPE on December 19 2020 and effectively required the community to review and comment over the summer holiday period from 21 January 2021 to 19 February 2021 – this included an extension due to the sheer volume of community feedback to regulators and the proponent.

The CCSN believes this is a pattern of harassment and it is not acceptable.

9.4 Community Health and Drinking Water Impacts

In October 2022 the Independent Air Quality report (“Zephyr Report”) required by DPE as a condition of Mod 14 was made available to the community. The regulators received this report in August 2022. This report identified that the main vent extracting dust from the crusher was constructed with no filtration and a fan installed in early 2020 was operating at close to 100km/hr. In effect as the community had been telling the regulators for years, the dust from the underground operation was passing up and over the air quality monitors on the boundary of the mine area and landing on the area where the residents live.

In late 2022 and early 2023 the community in the Cadia district conducted, with Assoc Professor Dr. Ian Wright (University of Western Sydney), a series of water tank tests aimed at determining if the visible dust leaving the mine site was being deposited on our roofs and in our water tanks. We regard the water tanks as a deposition gauge and a simple reliable way to inform us if something has been deposited in our tanks which usually would not be expected.

The results of this series of water tank tests were a huge surprise to the community and lead to some 40 people having blood and hair samples tested, along with a control group in the Lue area near Mudgee NSW. The results of this human health testing led to a Parliamentary Inquiry and a growing realisation amongst many residents in mining districts and some regulators and politicians that it would appear the regulation and monitoring of mining is failing to protect the residents who are most adversely affected by the mines and living closest to the operations (Appendix - D - Section A CCSN submission to the Parliamentary Inquiry).

CVO has consistently attempted to claim that "no dust leaves the site" despite 5 criminal charges this year from the EPA, 3 of which CVO has already pleaded guilty to. Mod 15 continues the theme of there being no link between CVO's operations and the contamination in water tanks in the district.

Table 5-2 Key Outcomes of Recent Environmental Studies (Executive Summary p. 66) includes the following ***incorrect*** claims:

- Lead isotope report found no evidence linking CVO to the lead sampled in districts rainwater tanks. This statement is ***untrue***, refer Appendix - E - *Prof Brian Gulson says Cadia Hill goldmine could not be ruled in or out as the source of the lead, despite miner saying there was 'no evidence'* The Guardian 21 July 2023.

  The lead isotope report matched lead in the bottom of district water tanks to the CVO ore field as far as 18km from the mine site.

- Sage Human Health Risk Assessment (HHRA) concluded the risks to human health were low and acceptable. ***However,*** this report is required by regulators to be rewritten to reflect the revised Air Dispersion Modelling (Todoroski). The revised Sage report has not yet been received by the community.

- CVO makes no reference to the ***5 criminal charges*** for dust contamination brought by the EPA, or that it has already pleaded guilty to 3 of these charges.

- CVO does not refer to the NSW Health Fact Sheet "Mine Dust and You" issued in June 2023, after the CCSN had approached NSW Health for support in relation to heavy metal contamination in our blood tests (Appendix - F). This Fact Sheet states:

  > "Can Mine dust contaminate drinking water?
  > Yes, ***dust can land on house roofs and flow into water tanks during rain***"

- The EPA has published a number of reports which look at individual aspects of a water tank study but has ***failed*** to consider the following:
  - the EPA has compared the concentration of contamination in district water tanks to contamination in urban and industrial tanks in Sydney, Melbourne and Newcastle.
  - the concentration of contamination in the rural tanks in the Cadia district is similar to the urban and industrial tanks and in some cases worse.
  - no consideration of the actual amount of contamination in the bottom of tanks.
  - no comparison has been made to regional water tanks.
  - no consideration has been given to the age of a tank or timeframe since it was cleaned.
  - As of first of 1 June 2023 CVO had cleaned approx. 35 tanks and continued to clean tanks till the end of Aug2023. The CCSN believes CVO cleaned the tanks which either

had a point of use contamination issue at the tap or fingerprint matching the mines ore body lead. In doing so, it is possible that CVO has cleaned the most contaminated tanks. The EPA did not include the results of these tank in looking at the distribution of contamination and as a result, any analysis by the EPA will underestimate the magnitude of the problem and is misleading.

In its response to the EPA, the CCSN provided the following information comparing the level of contamination in water tanks in the Cadia district to pollution in the Lue area:

**Lue Water Tanks**

Measuring water tanks at Lue shearing shed, approx. 100 years old. Last clean 5 years ago.

Measuring a domestic tank approximately 6-8 years old. Never cleaned. Positioned under a tree canopy and has sieve on the inlet

**Cadia Water Tanks**

*Tank approximately 10-15 years old galvanised shed and plastic pipes. Never cleaned.*

*Tank cleaned 10 months prior to this photo being taken, it was also cleaned twice in the previous 24mths.*

Whilst regional water tanks might over time accumulate a small amount of contamination it is very clear that the water tanks in the Cadia district are significantly more contaminated than might usually be expected in a rural district.

In addition, we believe we have identified what appears to be a pattern of distribution:

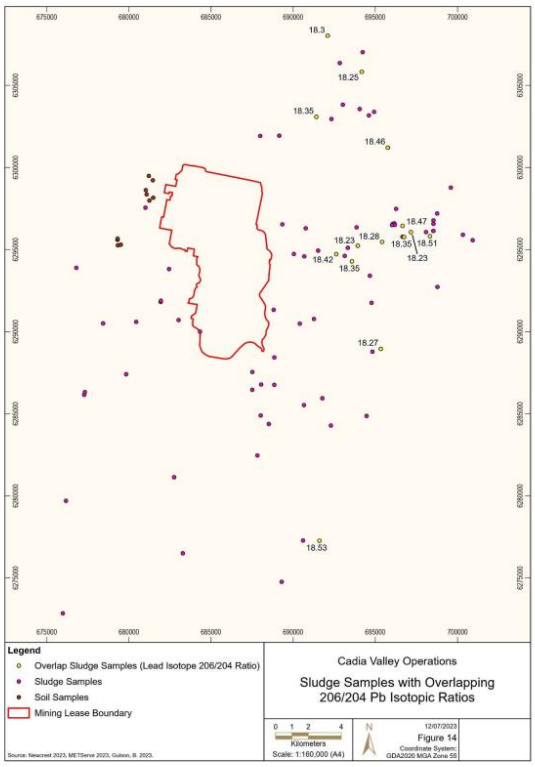



**Figure 16. Sludge samples with 206/204 Pb isotopic ratios overlapping the 'Ore field' values.**

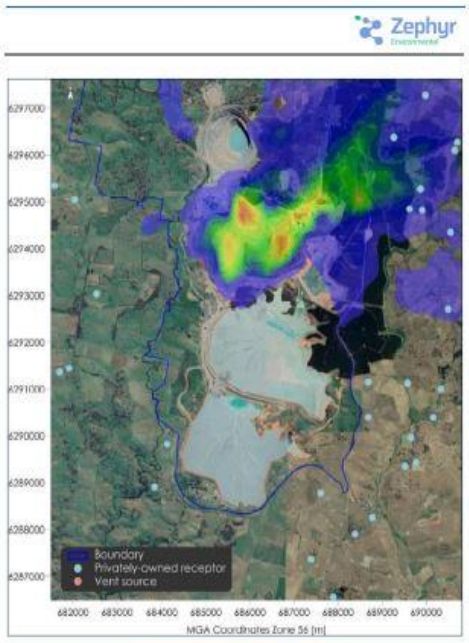



Figure 5-17: Predicted 24-hour average dispersion pattern from CVO ventilation shafts

www.zephyrenviro.com
0030 Cadia Valley Operations Independent Air Quality Audit
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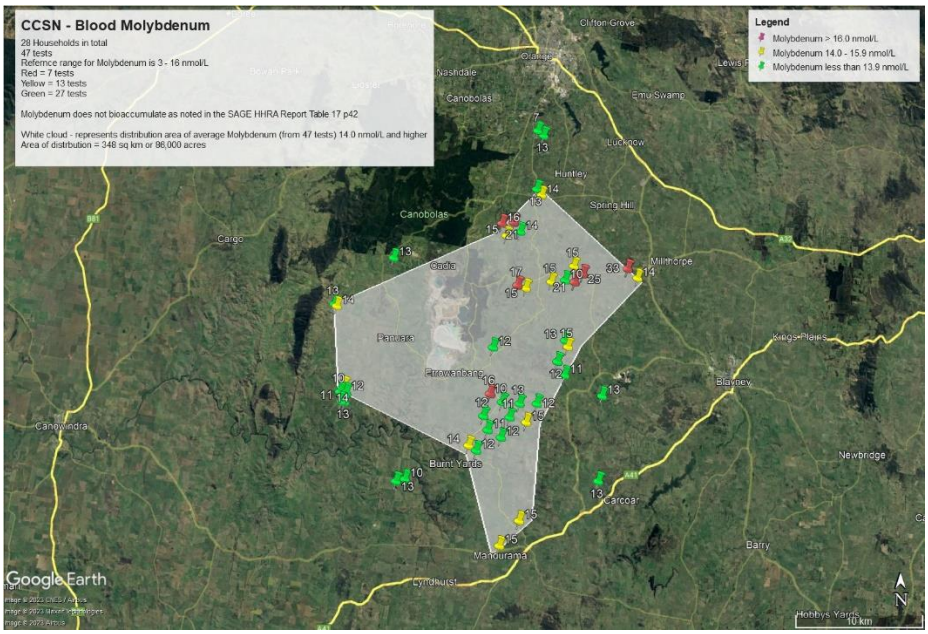
L - Professor Brian Gulson Sludge Sample Map from *"An Evaluation of Lead Isotopic and other Geochemical Information of Relevance to the Cadia Mine operations".*
R – Zephyr Report – Periodical 24-hour average dispersion pattern from CVO ventilation shafts

- the samples with a number were identified by Professor Gulson as matching the ore field isotope 206/204. Professor Gulson also identified multiple tanks which matched the ore field isotope range 207/206, 208/206, 208/206 and 208/204.
- the cluster of overlap samples to the east of Cadia is close to Millthorpe.
- The Zephyr report identified the expected distribution of emissions form the mine

Residents in the Cadia district undertook a study of blood contamination. The results of this study are summarised in Appendix - D - Section A Parliamentary Inquiry. It was noted as part of this work that there appeared to be a pattern of distribution. There follows a map of the distribution of Molybdenum levels in 47 blood samples (adults and children). We looked at the distribution of above reference range levels (>16 red pin) and close to reference range levels (14-15.9 yellow pin).

The red pin (33) to the east near Millthorpe is a 4-year-old child with a blood level of 33. CVO has a molybdenum plant.




(Appendix D – the above map for clearer viewing)

We are aware that the EPA is continuing its research into water tank contamination, including further lead isotope testing and the CCSN continues to work with the EPA to identify and confirm the source of our pollution.

Refer Appendix G - https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/community/23p4476-tank-water-metals-at-cadia.pdf?la=en&hash=A2EB43564FFC4806A0CDBB7B3DC605BAB84ACEC8 and https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/community/23p4477-tank-sediment-metals-at-cadia.pdf?la=en&hash=79AFDF28215698478BA85F801AF8349E34356B60

Refer Appendix H - CCSN - EPA Water Reports Response 27.11.23

We believe it is misleading at this time for CVO to claim it has not contaminated district water tanks.

9.5 Environmental Sustainability
Removal of striped legless lizard and pink tailed legless lizard species credits on the basis they are now not found on the mine licence area is not justified. This is a petty demonstration of CVOs reluctance to accept any responsibility for the impact of their activities on the surrounding environment.

The fact that these creatures are not now found close to the mining operation and that the surveys "were only stratified around suitable patches of the best available habitat left" (Biodiversity Monitoring Service S 2.2). This is not surprising as the habitat and food source of ant nests has possibly already been severely restricted by the mine tailings (not conducive to healthy ants), mining activities and seepage from the TSF.

The small cost of inclusion of the legless lizard credits reflects poorly on CVOs environmental credentials and demonstrates the unethical basis of their determination for a minimum expenditure environmental strategy.

9.6 Superb Parrots

Superb parrot nesting trees are identified in ES Fig 6.5, which shows the elimination of approximately 30 nesting sites. Superb parrot nesting sites are the product of hundreds of years of tree growth and adaptation, they are irreplaceable within a meaningful timeframe for the survival of the species in the Cadia district.

Purchase of credits on the open market does not address biodiversity loss within the Cadia community.

9.7 Dust exceedances

Incremental impact of deposited dust allows 5 exceedances of the criteria over the life of the mine. We note data in Table 6.5 CVO Annual Environment Report FY 2022 reports the following exceedances:

- DG 9 - 7 exceedances,
- DG 1 - 2
- DG L06 – 1
- DG L08 – 3
- DG L09 – 1
- DG 5A – 4

A total of 18 exceedances in a single year.

We also note the EPA has charged CVO with 5 criminal dust exceedances relating to VR8 and the tailings dam.

Clearly CVO has exceeded the permitted 5 dust exceedances over the life of the mine within the 2022/2023 period.

**The CCSN requests that:**

- **DPE conduct an independent audit of all Management Plans and seek enforcement of the conditions in the CVO Project Approval, stakeholders review all mine operating plans.**

- **timeframes to review Modification and Licence applications be adjusted to reflect the length of a document.**

- **all future modifications for Cadia Valley Operations are required to be filed in any given year by 1st November and any new mine licence application must be filed by 1st September.**

- **DPE to investigate high premature mortality rates due to respiratory disease as identified by NSW Health and Sage for the community adjacent to CVO (2x NSW and North Orange average).**

- **Legless lizard biodiversity credits to be retained**

- **Nesting boxes for superb parrots to be established within the ML district to support existing populations of superb parrots and other vulnerable species.**

- **Printouts of Modification documentation to be issued to stakeholders prior to the review period commencing.**

- **Public exhibition notices to be displayed at least 60 days prior to the review period commencing.**

- **CVO must be held to account for false and misleading conduct. CVO's representation and manipulation of the expert reports investigating contamination of local residents is unacceptable. There have been many instances of this behaviour and attempts to rewrite history.**

- **Potable water to be supplied to all affected residents.**

- **Dust exceedances at all measurement stations to be investigated and appropriate penalties to be imposed for all exceedances.**