**Tinashe Mukota** <tinashe@airshed.co.za> Thu, Nov 14, 2024 at 2:20 PM
To: Marli Burger <oryxsolutionsafrica@gmail.com>
Cc: Nick Grobler <nick@airshed.co.za>, "gabriel@gomes.co.za" <gabriel@gomes.co.za>, "candis@enviromінprojects.co.za" <candis@enviromінprojects.co.za>

Good day Marli

I'm well and I hope you are too.

Thank you very much for the feedback on the report. Here are some responses to the concerns.

1. It does not seem like the impact from the trucks on the mine access road were considered in the assessment based on Fig.25 Simulated monthly dustfall levels. (I see it is included in the daily and annual simulation for PM10 and Si). Please provide clarification or update of impacts. The trucks on the mine access road were included in the monthly dustfall levels. The reason why the isopleth in Figure 25 is different is because dustfall deposition as opposed to $PM_{10}$ and $PM_{2.5}$ is accounted for and normalised to a 30-day average (monthly first highest) whereas the $PM_{10}$ and $PM_{2.5}$ show the region where you are likely to encounter daily exceedances (99th percentile). The spread you see in figure 25 is the footprint area were the daily dustfall deposition will be encountered when normalised to a 30-day average.
2. Will an Air Pollution Monitoring Station be installed? When would such a station be required? The concern is with ongoing exposure to Si from the mine and access road throughout the LOM. It is not a mandatory requirement to install one. However, It would be a wise idea for the project proponent to install an air quality monitoring station and from time to time, take gravimetric samples to monitor and analyse for silicates in the ambient air at the nearest air quality sensitive receptor. The station can be installed before operations begin to provide an ambient air quality baseline that can be used for comparison as activities progress. The access haul road will less likely be a source of crystalline silicates compared to crushing and screening, hence if any intervention has to take place, then it will have to be at the crusher.

3. Please clarify what is meant with 50% control efficiency? It sounds like the mine will only be implementing dust control half the time or will only be doing half the implementation. Is the mine only expected to have a 50% control efficiency? In the context of the Australian National Pollution Inventory (NPI), "control efficiency" refers to the effectiveness of a specific control measure or technology in reducing the emission of pollutants from a source. It is expressed as a percentage and represents the proportion of emissions that a control method can successfully capture, remove, or neutralize before they are released into the atmosphere. For example, if a dust control system at a quarry has a control efficiency of 50%, it means that the system can prevent 50% of the particulate emissions generated from activities like crushing or blasting, allowing only 50% to be released into the environment.

4. Was the cumulative impact on air quality considered in light of other facilities in the area having an impact, ex. there are 5 brick manufacturing operations nearby contributing to lower air quality of the area. The cumulative impact was not accounted for due to the lack of ambient monitoring data ($PM_{10}$ and $PM_{2.5}$) within the study area. If this data is available, we can perhaps include it in the report otherwise state their exclusion as a limitation. Dustfall data was provided, and an additional isopleth plot will be included to account for the cumulative impact due to nuisance dust.

I hope the responses answered your questions. Feel free to contact me if you have any other questions, concerns, or suggestions.

Kind Regards

**Tinashe M. Mukota**
Air Quality Consultant
**Cell**: +27843611620

AIRSHED PLANNING PROFESSIONALS
CELEBRATING 21 YEARS

480 Smuts Drive, Halfway Gardens
Postnet Suite #18, Private Bag X59, Halfway Gardens, 1685
**Tel:** +27 (0)11 805 1940
**Web:** www.airshed.co.za

---

**From:** Marli Burger <oryxsolutionsafrica@gmail.com>
**Sent:** Thursday, November 14, 2024 1:20 PM
**To:** Tinashe Mukota <tinashe@airshed.co.za>
**Cc:** Nick Grobler <nick@airshed.co.za>; gabriel@gomes.co.za <gabriel@gomes.co.za>; candis@enviromінprojects.co.za <candis@enviromінprojects.co.za>
**Subject:** Bundu Rietvalei Mine: Comments on AQIA

[Quoted text hidden]

---

**Gabriel Gomes** <gabriel@gomes.co.za> Thu, Nov 14, 2024 at 6:56 PM
To: Tinashe Mukota <tinashe@airshed.co.za>
Cc: Marli Burger <oryxsolutionsafrica@gmail.com>, Nick Grobler <nick@airshed.co.za>, "candis@enviromінprojects.co.za" <candis@enviromінprojects.co.za>

Good Day,

With regard to point 3. Why is it assumed that we can only control 50% of the dust.

Surely there must be case study of more that 50% being controlled?

Regards
Gabriel

> On 14 Nov 2024, at 14:20, Tinashe Mukota <tinashe@airshed.co.za> wrote:
>
> Good day Marli
>
> I'm well and I hope you are too.

**Tinashe Mukota** <tinashe@airshed.co.za> Fri, Nov 15, 2024 at 8:46 AM
To: Gabriel Gomes <gabriel@gomes.co.za>
Cc: Marli Burger <oryxsolutionsafrica@gmail.com>, Nick Grobler <nick@airshed.co.za>, "candis@enviromінprojects.co.za" <candis@enviromінprojects.co.za>

Good morning Gabriel

Please find attached are the control efficiencies as prescribed in the NPI.

When we do not have the sufficient information, we recommend mitigation based on industry practice. Let us know if there is any need for adjustment.

Kind Regards

**Tinashe M. Mukota**
Air Quality Consultant
**Cell**: +27843611620

AIRSHED PLANNING PROFESSIONALS
CELEBRATING 21 YEARS

480 Smuts Drive, Halfway Gardens
Postnet Suite #18, Private Bag X59, Halfway Gardens, 1685
**Tel:** +27 (0)11 805 1940
**Web:** www.airshed.co.za

---

**From:** Gabriel Gomes <gabriel@gomes.co.za>
**Sent:** Thursday, November 14, 2024 6:56 PM
**To:** Tinashe Mukota <tinashe@airshed.co.za>
**Cc:** Marli Burger <oryxsolutionsafrica@gmail.com>; Nick Grobler <nick@airshed.co.za>; candis@enviromінprojects.co.za <candis@enviromінprojects.co.za>
**Subject:** Re: Bundu Rietvalei Mine: Comments on AQIA

[Quoted text hidden]

---

**CEs.pdf**
103K

---

**Gabriel Gomes** <gabriel@gomes.co.za> Fri, Nov 15, 2024 at 2:08 PM
To: Tinashe Mukota <tinashe@airshed.co.za>
Cc: Marli Burger <oryxsolutionsafrica@gmail.com>, Nick Grobler <nick@airshed.co.za>, "candis@enviromінprojects.co.za" <candis@enviromінprojects.co.za>

This looks good thanks.

> On 15 Nov 2024, at 08:46, Tinashe Mukota <tinashe@airshed.co.za> wrote:
>
> Good morning Gabriel
>
> Please find attached are the control efficiencies as prescribed in the NPI.
>
> When we do not have the sufficient information, we recommend mitigation based on industry practice. Let us know if there is any need for adjustment.
>
> Kind Regards
> <Outlook-hf5v3mvj.png>
>
> [Quoted text hidden]
> <CEs.pdf>

## 5.3 Control Technologies

There are a number of ways in which dust emissions from mining operations can be controlled. Most dust control techniques involve the use of water sprays to keep surfaces damp, but there are also other methods. Table 4 summarises the methods used and the effect they have on reducing dust emissions (Holmes Air Sciences, 1998). These are drawn from control factors documented in USEPA (1998), discussions with Greenbase and Buonicore and Davis (1992: Table 3, p 794).

**Table 4: Estimated control factors for various mining operations**

| Operation / Activity | Control method and emission reduction[1] |
|---|---|
| **Coal Mines** | |
| Scrapers on topsoil | 50% control when soil is naturally or artificially moist |
| Dozers on coal or other material | No control |
| Drilling | 99% for fabric filters<br>70% for water sprays |
| Blasting coal or overburden | No control |
| Loading trucks | No control |
| Hauling | 50% for level 1 watering (2 litres/$m^2$/h)<br>75% for level 2 watering (> 2 litres/$m^2$/h)<br>100% for sealed or salt-encrusted roads |
| Unloading trucks | 70% for water sprays |
| Draglines | Control dust by minimising drop height |
| Loading stockpiles | 50% for water sprays<br>25% for variable height stacker<br>75% for telescopic chute with water sprays<br>99% for total enclosure |
| Unloading from stockpiles | 50% for water sprays (unless underground recovery then, no controls needed) |
| Wind erosion from stockpiles | 50% for water sprays<br>30% for wind breaks<br>99% for total enclosure<br>30% for primary earthworks (reshaping/profiling, drainage structures installed)<br>30% for rock armour and/or topsoil applied |
| Loading to trains | 70% for enclosure<br>99% for enclosure and use of fabric filters |
| Miscellaneous transfer and conveying | 90% control allowed for water sprays with chemicals<br>70% for enclosure<br>99% for enclosure and use of fabric filters |
| Wind erosion | 30% for primary rehabilitation<br>40% for vegetation established but not demonstrated to be self-sustaining. Weed control and grazing control. |

| | |
|---|---|
| | 60% for secondary rehabilitation |
| | 90% for revegetation |
| | 100% for fully rehabilitated (release) vegetation |
| **Metalliferous Mines** | |
| All activities listed in Table 2 | 30% for windbreaks |
| | 50% water sprays to keep ore wet |
| | 65% for hooding with cyclones |
| | 75% for hooding with scrubbers |
| | 83% for hooding with fabric filters |
| | 100% enclosed or underground |
| Pit retention | 50% for TSP |
| | 5% for $PM_{10}$ |

Sources: Holmes Air Sciences (1998) and Greenbase (2009)

1 Controls are multiplicative when more than one control is applied to a specific operation or activity. On stockpiles, for example, water sprays used in conjunction with wind breaks give an emission that is

( 1 - 0.5 ) x ( 1 - 0.7 ) = 0.15 of the uncontrolled emission.

The emission control factors as presented in Table 4 can be applied to the uncontrolled emissions as derived using the emission factors and equations presented in Table 2 and Table 3 using Equation 1, as described in Section 5.3 of this manual.

## 5.4 Vehicle exhaust emissions

For vehicles, emission estimation techniques can be found in the Emission Estimation Technique manual for Combustion Engines. Table 5 lists typical vehicles used on mine sites, and how they are classified in the *Emission Estimation Technique manual for Combustion Engines.*

**Table 5: Typical mining vehicle definitions**

| Mine Equipment | Engine/Vehicle Type (from Combustion Engines EET manual) | Comments |
|---|---|---|
| Haul Truck | Off-highway truck | |
| Water Cart (Small) | Heavy Good Vehicle | |
| Water Cart (Large) | Off-highway truck | |
| Loader | Wheeled loader | |
| Bogger | Wheeled loader | |
| Dozer | Track Type Tractor | |
| Wheeled Dozer | Wheeled dozer | |
| Tractor | Wheeled tractor | |
| Bobcat | Wheeled loader | |
| Backhoe | Wheeled tractor | |
| Excavator | Track type loader | |
| -Grader | Motor Grader | |
| Scraper | Scraper | |
| Drill | Heavy Good Vehicle | |