

EA APPLICATION SUPPORTING REPORT

SAVANNAH GOLDFIELDS LTD

Appendix 16 Air Impact Assessment Review (SEG, 2025)



Simpson Engineering Group

3/1404 Logan Road
Mount Gravatt East, QLD 4122
Phone: (07) 3117 2468
www.SEGroup.com.au
Inc: Noise Mapping Australia

Friday, 25 July 2025

Savanah Goldfields Ltd
C/- Ardent Group Pty Ltd
3 Water Street
Red Hill, QLD 4059

Attn: Jacob Arnold

Subject: Air Quality Impact Assessment Review – Agate Creek Ongoing Operations Project

Dear Jacob,

Background

In 2023 SEG prepared an air quality assessment report for Laneway Resources Pty Ltd for the Agate Creek Expansion Project, 6 June 2023. It is understood that Laneway Resources (now Savannah Goldfields Limited (SVG)) have made minor amendments to the mine plan compared to the mine plan being the basis of our 2023 assessment report. Based on the updated mine plan, SVG intends to backfill the pits with waste rock from the out of pit waste rock dump. This backfill operation was not considered as part of the original air quality assessment report.

Change in Dust Emissions

SVG has advised that during backfill operations mining for ore would not be occurring, additionally the backfilling operations would be using the existing equipment on site. Based upon this there is likely a reduction in dust emissions at the ROM area due to the reduction in truck traffic and trucks not dumping ore. For the pit region, there would likely be a change in dust emissions due the:

1. Reduction in truck cycle distance
2. Increase in waste volumes being dumped and emplaced in the pit.

The likely dust emissions from the backfill operations has been estimated using the same assumptions in the original report with emission factors from the NPI Emission Estimation Technique Manual for Mining¹

¹ Emission Estimation Technique Manual for Mining, Estimation technique manual - Version 3.1, Department of Sustainability, Environment, Water, Population and Communities, 2012

and it has been found that there is likely to be approximately 7% reduction in overall emissions during the backfill operations. This is broken down into an approximately 40% reduction at ROM area and approximate 7% increase in the pit area. Table 1 contains a summary of the backfill operations, Table 2 contains the particulate emissions for mining from the 2023 Air Quality Assessment and Table 3 contains the particulate emissions for the backfill case.

TABLE 1: BACKFILL SCENARIO

Item	Case
Maximum monthly ROM Ore (Tonnes/month)	0
Maximum monthly mining waste (Tonnes/month)	125,000
Relevant operations	Excavators on waste rock Haul trucks from out of pit waste rock dump to pit Graders on internal roads Water trucks on internal roads Bulldozer on waste rock B-Double trucks taking ROM to offsite processing Drilling and Blasting
Type of Emission	Crustal Matter (soil, etc.)

TABLE 2: PARTICULATE EMISSIONS FOR MAIN EMITTING ACTIVITIES IN TONNES (AIR QUALITY ASSESSMENT 2023)

Activity	Includes Control Factor	Emissions [t/a] for Particulate Fraction		
		TSP	PM ₁₀	PM _{2.5}
Excavator Loading Trucks		38.0	18.3	2.3
Trucks Moving on Site	Water Cart Level 2 Watering (75%)	21.4	6.3	0.8
Trucks Dumping Waste rock		15.2	5.4	0.7
Trucks Dumping Ore		3.0	1.1	0.1
Dozer		22.3	5.4	0.7
Grader		0.3	0.1	<0.1
Front End Loader		7.4	3.5	0.4
Watercart	Water Cart Level 2 Watering (75%)	11.1	3.3	0.4
Wind Erosion		1.8	0.9	0.1
Export Truck on Site	Water Cart Level 2 Watering (75%)	19.3	5.7	0.7
Drilling	-	18.4	0.2	<0.1
Blasting	-	0.4	0.2	<0.1
Total		158.7	50.4	6.3

TABLE 3: BACKFILL OPERAITON LIKELY DUST EMISSIONS

Activity	Includes Control Factor	Emissions [t/a] for Particulate Fraction		
		TSP	PM ₁₀	PM _{2.5}
Excavator Loading Trucks		38.0	18.3	2.3
Trucks Moving on Site	Water Cart Level 2 Watering (75%)	14.3	4.2	0.5
Trucks Dumping Waste rock		18.3	6.5	0.8

Trucks Dumping Ore		0.0	0.0	0.0
Dozer		22.3	5.4	0.7
Grader		0.3	0.1	<0.1
Front End Loader		7.4	3.5	0.4
Watercart	Water Cart Level 2 Watering (75%)	6.5	1.9	0.2
Wind Erosion		1.8	0.9	0.1
Export Truck on Site	Water Cart Level 2 Watering (75%)	1.8	0.9	0.1
Drilling	-	18.4	0.2	<0.1
Blasting	-	0.4	0.2	<0.1
Total		146.9	47.0	5.9

Impacts of Backfill Operation

Whilst overall there is a 7% reduction in overall dust emissions there is a reduction of 40% for ROM sources and increase in 7% in emissions for Pit based sources. Thus, to conservatively estimate possible impacts from backfill operations (without rerunning the computer simulations), an overall scaling factor comprising a 10% increase in exposure (re 2023 modelling simulation) has been adopted for comparison with dust limits. Table 4 contains the likely particulate levels for backfill operations and Table 5 contains the percentage change in levels at the sensitive receptors.

The PM_{2.5} annual average and PM_{2.5} 24 hour maximum has been updated to reflect variation to the Ambient Air Quality NEPM particles standard². This variation advises that the PM_{2.5} annual average standard is 8 µg/m³ and goal for particulates by 2025 of 7 µg/m³, similarly for PM_{2.5} 24 hour maximum the limit is 25 µg/m³ and goal for particulates by 2025 of 7 µg/m³. Finally, the existing ambient background levels have been updated using the most recent air quality bulletin for Townsville³. The bulletin indicates that the PM_{2.5} annual average is 5.6 µg/m³

² National Environment Protection (Ambient Air Quality) Measure Variation Instrument 2021, <https://www.legislation.gov.au/F2021L00585/latest/text>

³ Air quality bulletin: Northern Queensland, December 2024 , https://www.qld.gov.au/_data/assets/pdf_file/0037/597439/air-quality-bulletin-nq-24-dec.pdf

TABLE 4: PREDICTED PARTICULATE CONCENTRATION AND DUST DEPOSITION FOR SENSITIVE RECEPTORS (INCLUDING ASSUMED AMBIENT LEVELS)

Receptor		Calculated Particulate and Dust Levels at Nearby Sensitive Receptors					
		PM _{2.5} (24-hour) Maximum (µg/m ³)	PM _{2.5} (Annual Average) (µg/m ³)	PM ₁₀ (24-hour) Maximum (µg/m ³)	PM ₁₀ (Annual Average) (µg/m ³)	TSP (Annual Average) (µg/m ³)	Dust Deposition (Max month) (mg/m ² /day)
Goal		20	7	50	25	90	120
Existing Ambient		8	6	22	20	28	53
R1	Mine Camp	13	6	60	21	31	93
R2	Camping Ground	9	6	32	20	28	59
R3	Old Camping Ground	8	6	22	20	28	53
R4	Homestead1	8	6	22	20	28	53
R5	Homestead2	8	6	22	20	28	53
R6	Rungulla Resources Reserve	12	6	50	24	39	174
R7	Rungulla National Park	9	6	29	20	29	65

TABLE 5: PREDICTED PARTICULATE CONCENTRATION AND DUST DEPOSITION PERCENTAGE MAXIMUM CHANGE FOR BACKFILL OPERATIONS

Receptor		Calculated Particulate and Dust Levels at Nearby Sensitive Receptors					
		PM _{2.5} (24-hour) Maximum (µg/m ³)	PM _{2.5} (Annual Average) (µg/m ³)	PM ₁₀ (24-hour) Maximum (µg/m ³)	PM ₁₀ (Annual Average) (µg/m ³)	TSP (Annual Average) (µg/m ³)	Dust Deposition (Max month) (mg/m ² /day)
R1	Mine Camp	3.5%	0.2%	6.1%	0.4%	0.8%	<0.1%
R2	Camping Ground	1.4%	<0.1%	2.8%	0.1%	0.1%	<0.1%
R3	Old Camping Ground	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
R4	Homestead1	<0.1%	<0.1%	0.1%	<0.1%	<0.1%	<0.1%
R5	Homestead2	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
R6	Rungulla Resources Reserve	2.9%	0.6%	5.3%	1.5%	2.6%	<0.1%
R7	Rungulla National Park	1.0%	0.1%	2.1%	0.2%	0.2%	<0.1%

Assessment

The modelling of backfill operations has the same conclusion as the 2023 Air Quality Assessment. The site readily complies with all air quality goals with the same mitigation measures. The Rungulla Resources Reserve exceeds the dust deposition goal. Dust deposition is a nuisance goal and does not strictly apply to the Rungulla Resource Reserve. The mine camp is not a sensitive receptor for the purpose of an air quality assessment and the result at this location is included for reference only.

Should you have any questions on this matter please contact me by phone on (07) 31172468 at any time or by email on chris@segroup.com.au.

Yours faithfully

Simpson Engineering Group



Chris Simpson
Senior Engineer BE