

FINGERBOARDS MINERAL SANDS PROJECT

Risk treatment plan: Airborne and deposited dust

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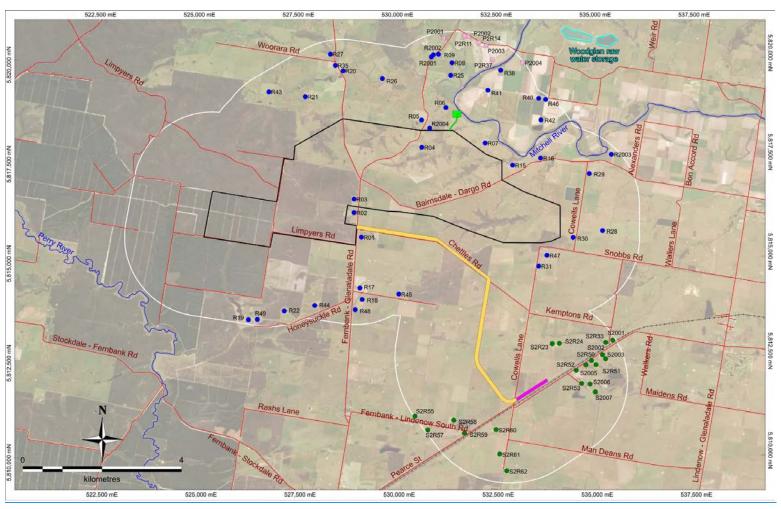
Scope

This risk treatment plan is for the control of mining hazards associated with airborne and deposited dust. This plan does not directly address radioactive hazards in airborne dust: management of radiation hazards is addressed in the Fingerboards Radiation Management Plan. A 'mining hazard' means any mining activity that may pose a risk to the environment, to any member of the public or to land, property or infrastructure in the vicinity of work carried out at the Fingerboards mine at any stage of project implementation (construction, operations, decommissioning and closure).

2. Key sensitive receptors

Key sensitive receptors include the environment, any member of the public or land, property or infrastructure in the vicinity of the mine that may be impacted or put at risk by airborne or deposited dust arising from mining activities within the Fingerboard mining licence area. The key sensitive receptors associated with airborne and deposited dust hazards include 49 residential dwellings and the land surrounding them (Figure 2.1), horticultural production areas of the Lindenow flats, approximately 0.8 km northeast of the mining licence area (Figure 2.2) and the Woodglen surface water storage facility (shown as 'water' in Figure 2.2) and other smaller water storages (farm dams and roof water tanks) on rural properties surrounding the mining licence area.

Kalbar has identified 49 residential locations in proximity to the mining licence area as sensitive receptors (Table 2-1). The properties at locations R2 and R3 are owned by Kalbar and will not be occupied during construction or operations. The property at location R4 is being used by Kalbar as a mine site office.





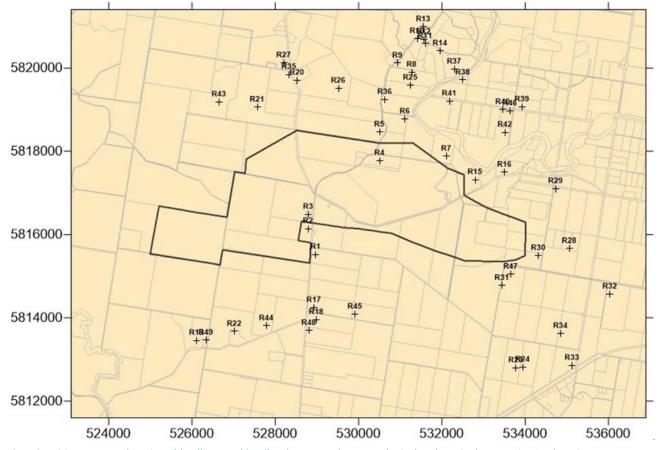
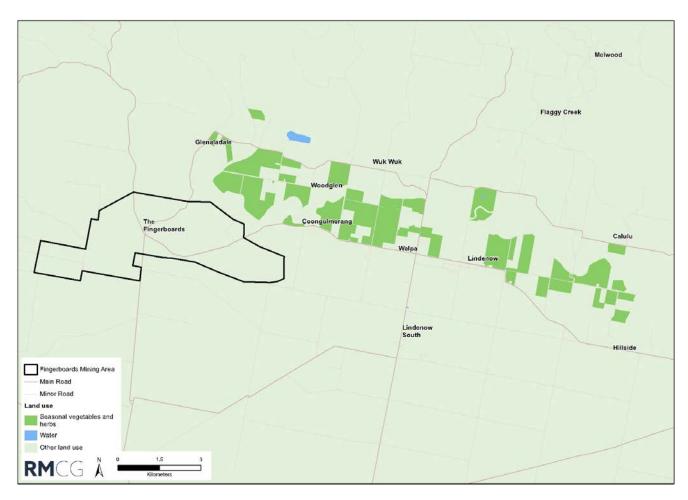


Figure 2.1: Sensitive receptor locations (dwellings and land) and suggested meteorological and particulate monitoring locations



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Figure 2.2: Sensitive receptor locations (horticultural production and water supply)

Table 2-1: Sensitive receptors

Receptor	To project area (km)	To mining activity (km)	<u>Description</u>
<u>R01</u>	<u>0.14</u>	0.76	<u>Residence</u>
<u>R02</u>	0.16	0.18	Residence (owned by Kalbar)
<u>R03</u>	0.00	0.00	Residence (owned by Kalbar)
<u>R04</u>	0.00	<u>0.12</u>	Residence (owned by Kalbar)
<u>R05</u>	0.26	0.36	<u>Residence</u>
<u>R06</u>	0.58	0.84	<u>Residence</u>
<u>R07</u>	0.22	0.32	<u>Residence</u>
R08	<u>1.70</u>	1.94	<u>Residence</u>
<u>R09</u>	1.92	2.06	<u>Residence</u>
<u>R15</u>	0.27	0.53	<u>Residence</u>
<u>R16</u>	0.94	1.13	<u>Residence</u>
<u>R17</u>	1.08	2.04	<u>Residence</u>
<u>R18</u>	1.38	2.31	<u>Residence</u>
<u>R19</u>	1.89	<u>1.92</u>	<u>Residence</u>
<u>R20</u>	<u>1.21</u>	<u>1.52</u>	<u>Residence</u>
<u>R21</u>	0.95	<u>1.11</u>	<u>Residence</u>
<u>R22</u>	<u>1.65</u>	1.84	<u>Residence</u>
<u>R25</u>	1.39	1.64	<u>Residence</u>
<u>R26</u>	1.15	<u>1.53</u>	<u>Residence</u>
<u>R27</u>	<u>1.66</u>	1.93	<u>Residence</u>
<u>R28</u>	<u>1.07</u>	<u>1.09</u>	<u>Residence</u>

Receptor	To project	To mining activity (km)	Description	
R29	1.09	1.50	<u>Residence</u>	
R30	0.33	0.35	Residence	\
R31	0.59	0.61	Residence	\
R35	<u>1.36</u>	<u>1.65</u>	Residence	\
R36	<u>1.04</u>	1.14	Residence	
R38	<u>1.94</u>	2.12	Residence	1
R40	<u>1.83</u>	2.03	<u>Residence</u>	1
R41	<u>1.34</u>	<u>1.55</u>	<u>Residence</u>	1
R42	<u>1.42</u>	1.72	<u>Residence</u>	_ √
R43	<u>1.51</u>	1.66	<u>Residence</u>	
R44	<u>1.65</u>	2.00	<u>Residence</u>	
R45	<u>1.65</u>	2.08	<u>Residence</u>	
R46	1.90	2.13	<u>Residence</u>	
R47	0.33	0.35	<u>Residence</u>	
R48	<u>1.63</u>	2.59	<u>Residence</u>	
R49	<u>1.85</u>	1.92	<u>Residence</u>	
R2001	<u>1.85</u>	1.95	<u>Residence</u>	
R2002	<u>1.91</u>	2.02	<u>Residence</u>	1
R2003	<u>1.83</u>	2.22	<u>Residence</u>	1
R2004	0.05	0.30	<u>Residence</u>	_
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Receptor ID	Easting (km)	Northing (km)	Description	Distance and direction from the mining licence boundary	Receptor ID	Easting (km)	Northing (km)	Description	Distance and direction from the mining licence boundary
R1	528975	5815522	Residence	0.1km S	R26	529517	5819511	Residence	1.1km N
R2*	528790	5816141	Residence (owned by Kalbar)	0.2km S	R27	528208	5820127	Residence	1.7km N
R3*	528794	5816481	Residence (will not be occupied during construction or operation)	Inside boundary	R28	535065	5815665	Residence	1.1km E
R4*	530508	5817778	Kalbar site office	Inside boundary	R29	534736	5817100	Residence	1.1km E
R5	530504	5818463	Residence	0.3km N	R30	534321	5815494	Residence	0.3km E
R6	531118	5818774	Residence	0.6km N	R31	533447	5814778	Residence	0.6km SE
R7	532109	5817878	Residence	0.2km NE	R32	536038	5814570	Residence	2.2km SE
R8	531278	5819897	Residence	1.7km NE	R33	535132	5812855	Residence	2.9km SE
R9	530938	5820117	Residence	1.9km NE	R34	534853	5813624	Residence	2.1km SE
R10	531409	5820703	Residence	2.5km NE	R35	528333	5819844	Residence	1.4km N
R11	531602	5820582	Residence	2.4km NE	R36	530633	5819243	Residence	1.0km N
R12	531563	5820692	Residence	2.5km NE	R37	532301	5819973	Residence	2.0km NE
R13	531557	5820990	Residence	2.8km NE	R38	532507	5819711	Residence	1.9km NE
R14	531959	5820411	Residence	2.3km NE	R39	533930	5819064	Residence	2.2km NE
R15	532798	5817318	Residence	0.3km E	R40	533464	5819000	Residence	1.8km NE
R16	533507	5817495	Residence	0.9km E	R41	532183	5819206	Residence	1.3km NE

Receptor ID	Easting (km)	Northing (km)	Description	Distance and direction from the mining licence boundary	Receptor ID	Easting (km)	Northing (km)	Description	Distance and direction from the mining licence boundary
R17	528930	5814244	Residence	1.1km S	R42	533517	5818455	Residence	1.4km NE
R18	528987	5813955	Residence	1.4km S	R43	526650	5819185	Residence	1.5km NW
R19	526114	5813457	Residence	1.9km SW	R44	527790	5813809	Residence	1.7km S
R20	528524	5819707	Residence	1.2km N	R45	529914	5814086	Residence	1.6km S
R21	527569	5819058	Residence	0.9km NW	R46	533639	5818968	Residence	1.9km NE
R22	527018	5813673	Residence	1.6km S	R47	533657	5815047	Residence	330m SE
R23	533781	5812799	Residence	2.6km SE	R48	528810	5813696	Residence	1.6km S
R24	533943	5812818	Residence	2.6km SE	R49	526338	5813464	Residence	1.8km SW
R25	531245	5819585	Residence	1.4km N					

Table note: * Not included as a sensitive receptor in the air quality assessment

3. Inherent risk

In this risk treatment plan 'inherent risk' means the likelihood and consequence of a risk event, assuming that standard controls specified in Attachment A of the Fingerboards draft Risk Management Plan are implemented.

Table 3-1: Summary of inherent risk ratings (airborne and deposited dust)

#	Details of risk event	Phase	Consequence	Likelihood	Inherent risk
1	Ground clearing, mining, materials handling, vehicular traffic: exposure of sensitive offsite receptors to airborne particulates (total particulates, PM10, PM2.5, crystalline silica) exceeds human health guideline values	C, O, CL	Minor	Unlikely	Low
2	Wind erosion from disturbed surfaces and /or stockpiles: Exposure of sensitive offsite receptors to airborne particulates (total particulates, PM10, PM2.5, crystalline silica) exceeds human health guideline values	C, O, CL	Minor	Unlikely	Low
3	Wind erosion from TSF: Exposure of sensitive offsite receptors to airborne particulates (total particulates, PM10, PM2.5, crystalline silica) exceeds human health guideline values	0	Minor	Unlikely	Low
4	Ore processing: Exposure of sensitive offsite receptors to airborne particulates (total particulates, PM10, PM2.5, crystalline silica) exceeds human health guideline values	0	Minor	Rare	Low
5	Wheel-generated dust and lift off from disturbed areas and stockpiles: Contamination of horticultural crops (inert dust)	C, O, CL	Minor	Unlikely	Low
6	Wheel-generated dust and lift off from disturbed areas and stockpiles: contamination of horticultural crops (metals or radionuclides)	C, O, CL	Insignificant	Unlikely	Low
7	Wheel-generated dust and lift off from disturbed areas and stockpiles: impacts on productivity or marketability of horticultural crops	C, O, C L	Insignificant	Unlikely	Low
8	Wheel-generated dust and lift off from disturbed areas and stockpiles: Soiling of surfaces at sensitive receptors	C, O, CL	Insignificant	Unlikely	Low
9	Wheel-generated dust and lift off from disturbed areas and stockpiles: Deposition on rooftops, followed by contamination of rainwater tanks	C, O, CL	Insignificant	Unlikely	Low
10	Wheel-generated dust and lift off from disturbed areas and stockpiles: Aesthetic impacts: reduction in clarity of air	C, O, CL	Insignificant	Unlikely	Low
11	Wind erosion from disturbed surfaces, stockpiles or TSF: exposure of sensitive offsite receptors to airborne toxicants human health guideline values	C, O, CL	Insignificant	Unlikely	Low
12	Ore processing: Exposure of sensitive offsite receptors to airborne toxicants exceeds human health guideline values	0	Insignificant	Unlikely	Low

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#	Details of risk event	Phase	Consequence	Likelihood	Inherent risk rating
13	Vehicle emissions: Exposure of sensitive offsite receptors to airborne toxicants exceeds human health guideline values	C, O, CL	Insignificant	Unlikely	Low
14	Scope 1 and Scope 2 GHG emissions: Emissions intensity incompatible with best practice management	C, O, CL	Minor	Possible	Medium
15	Wind erosion from disturbed surfaces, stockpiles or TSF(ailings: exposure of sensitive offsite receptors to radionuclides exceeds human health guideline values	C, O, CL	Insignificant	Unlikely	Low
16	Ore processing: exposure of sensitive offsite receptors to radionuclides exceeds human health guideline values	0	Insignificant	Unlikely	Low

Note: 'C' = construction; 'O' = operations; 'CL' = decommissioning and closure

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4. Objectives

The objectives of this risk treatment plan are to minimise and manage project-related airborne and deposited dust so as to:

- Protect the health, wellbeing and amenity of residents and local communities, and
- Protect surrounding land uses and prevent contamination of crops and surface water supplies (including water harvested in rainwater tanks),
- Protect the beneficial uses of the air environment as defined in the State Environmental Protection Policy (SEPP) Air Quality Management and
- Maintain compliance with applicable environmental quality objectives specified in the State
 Environmental Protection Policy Ambient Air Quality (SEPP AAQ) and other relevant policy, guidance
 and legislation (as described in Section 4).

5. Compliance standards

The compliance standards for this risk treatment plan are:

- EPA Protocol for Environmental Management (PEM) Mining and Extractive Industries
- State Environment Protection Policy Air Quality Management (SEPP AQM)
- EPA Guideline: Recommended separation distances for industrial residual air emissions.

6. Acceptance criteria

Acceptance criteria are the measures which, if attained, are the basis for concluding that the control measures described in this plan have been effective in achieving the plan objectives. Air quality design criteria specified in the EPA Protocol for Environmental Management (PEM) – Mining and Extractive Industries have been used as the basis for defining acceptance criteria for airborne dust, including respirable silica¹. The acceptance criteria for this risk treatment plan are:

- No nuisance dust issues are experienced by pre-existing, nearby sensitive receptors
- Project -related dust emissions do not cause airborne particulate concentrations or deposited dust concentrations to exceed the criteria summarised in Table 6-1.

Table 6-1: Acceptance criteria – airborne and deposited dust

Pollutant	Averaging period	Air quality design criteria	Source
PM ₁₀	24 hours	60 - <u>50</u> μg/m³	SEPP AAQ environmental quality objectives for 24-hour average concentrations EPA Protocol for Environmental Management (Mining and Extractive Industries). Proposed Final ERS.
PM _{2.5}	24 hours	36- 25_µg/m³	SEPP AAQ environmental quality objectives for 24-hour average concentrations. Proposed Final ERS. EPA Protocol for Environmental Management (Mining and Extractive Industries).
Dust deposition	Annual	2 g/m²/month Note 1	Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales (NSW EPA, 2017)
	Annual	4 g/m²/month Note 2	(,,
Respirable crystalline silica (as PM _{2.5})	Annual	3 μg/m³	Protocol for Environmental Management (Mining and Extractive Industries).
Arsenic	Annual	0.003 μg/m₃	EPA Protocol for Environmental Management (Mining and Extractive Industries).
Radionuclides	Annual	ALARA	EPA Protocol for Environmental Management (Mining and Extractive Industries).

Note 1 - Maximum increase in deposited dust level.

Note 2 - Maximum total deposited dust level.

Note 3 - Dust is assessed as insoluble solids as defined by AS 3580.10.1: 2016.

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¹ The State Environment Protection Policy (SEPP) (Ambient Air Quality) standards do not apply to individual sources but rather to regional air quality. Accordingly, the SEPP AAQ criteria have not been used as compliance values in this risk treatment plan. RISK TREATMENT PLAN – AIRBORNE & DEPOSITED DUST– VERSION B 11 MARCH 202111 MARCH 20213

7. Controls to address hazard

The controls listed in Table 7-1 will be implemented in order to minimise airborne and deposited dust from activities conducted within the mining licence area.

Table 7-1: Controls and associated performance measures (airborne and deposited dust)

#	Details of controls	Parformance measures	
	Details of controls	Performance measures	
AQ01	Areas will be cleared in a staged manner only as required to reduce dust generation by minimising the area of exposed ground surfaces at any one time.	Clearing records; airborne and deposited dust monitoring records. Maximum disturbed area at any given time will not exceed 360 ha.	
AQ02	Water or appropriate suppressants will be applied to working surfaces, stockpiles, haul roads, the mine voids and other areas as required to minimise dust generation.	Airborne and deposited dust monitoring records; water cart usage records	Formatted Table
AQ03	Drop heights for topsoil and overburden during creation of stockpiles will be minimised as far as practicable to reduce dust generation.	Work instruction; periodic compliance observations	
AQ04	Speed limits will be implemented and enforced on	Induction records; signage; periodic audits;	Formatted Table
	unsealed project roads to minimise dust generation	tiered vehicle speed limit of 20 km/hr on unsealed project roads in the event of dusty conditions and 50 km/hr under normal conditions_speed limit of 50 km/hr enforced on unsealed road.	Formatted: Font: +Body (Calibri), 10 pt
AQ05	Topsoil stripping will be planned and conducted in consideration of forecast and actual weather conditions to minimise dust generation	Topsoil stripping records; materials inventory; site meteorological records; operations schedule. Topsoil stripping to be suspended under windy conditions (average wind speed > 2540 km/hr)	
AQ07	The mine void will be progressively backfilled and rehabilitated to minimise the area required for topsoil and overburden stockpiles	Clearing and rehabilitation records; materials inventory.	
AQ08	Haul vehicles will travel on designated haul roads only and haul routes will be minimised where possible. Haulage of product will be limited to daytime hours only (11hours a day)	Mine plans; haulage records	Formatted Table
AQ09	Suppressants and water will be applied to exposed areas and stockpiles, where rehabilitation is not yet practical, to reduce potential for dust generation. In particular, during drier months when less rainfall is expected	Records of dust suppressant and water use.	
AQ10	Ore will be transferred across the project area as a slurry to reduce potential for dust emission	Pipeline as-built report.	
AQ11	Ore will be processed as a slurry.	Commissioning report.	
AQ12	There will be no crushing or grinding of ore, preventing the potential generation of respirable crystalline silica emissions	Plant design specifications and as-built report.	

#	Details of controls	Performance measures
AQ13*	When real-time monitoring indicates that trigger level near key sensitive receptors have been reached, dust generating activities will be ceased at certain times, suspended, slowed or moved to other parts of the mine. This should be done in order of preference as outlined in the trigger action response plan of the AQMP. When real-time monitoring indicates that trigger level near key	Dust monitoring records; site meteorological records; operations records; complaints register. Dust generating activities to be suspended or moved under windy conditions (average wind speed > 40 km/hrin accordance with the trigger action response plan detailed in AQMP.
AQ14*	Ground-disturbing activities (including cessation of night time operations) and materials handling will be scheduled to avoid excessive dust emissions during forecast adverse weather conditions or at certain time within the mining footprint. Schedule certain activities to avoid excessive dust emissions during forecast adverse weather conditions.	Mining schedules; dust monitoring records; site meteorological records; operations records; complaints register. Dust generating activities to be suspended or moved under windy conditions in accordance with the trigger action response plan detailed in AQMP. (average wind speed > 40 km/hr
AQ15*	Additional mitigation measures will be implemented and monitored through the proposed environmental management framework. In particular, the development of an air quality risk treatment plan.	Implementation of this plan.
AQ16	Construction of the wear course of internal haul roads will use an optimal size grading of aggregate with road stabilisation and compaction agents.	Design specifications; as-built reports.
GHG01*	Solar photovoltaic technology will be used to supplement electricity requirements for applications such as lighting.	Annual tracking of energy use and greenhouse gas emissions; NGERS reporting
GHG02*	Energy efficient technology will be used where practicable, including low energy lighting (e.g., LEDs).	Annual tracking of energy use and greenhouse gas emissions; NGERS reporting
GHG03	The power factor of mains electricity will be improved by reducing the phase difference between the voltage and the current. The on-site power factor correction will be optimised for grid electricity usage	Annual tracking of energy use and greenhouse gas emissions; NGERS reporting
GHG04	Vehicle diesel consumption will be reduced through equipment selection, load and route optimisation and production scheduling, and minimising idle time.	Annual tracking of energy use and greenhouse gas emissions; NGERS reporting
GHG05	Fuel-burning equipment will be maintained and operated according to manufacturer/supplier guidelines and recommendations.	Maintenance records
GHG06	Generator diesel consumption will be reduced through selecting a flexible configuration that allows for electricity output to be adjusted in line with demand.	Annual tracking of energy use and greenhouse gas emissions; NGERS reporting
RD09a	Engineering controls, such as ventilation, dust control, and appropriate machinery shielding will be provided where required.	Workplace OH&S particulate monitoring results

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#	Details of controls	Performance measures	
<u>AQ 17</u>	A commitment to conduct continuous visual observation monitoring (e.g. video monitoring) of high dust generation activities if such technology is	Implementation of this measure	Formatted: Font: 10 pt, English (Australia) Formatted: Indent: Left: 0.24 cm, Right: 0.22 cm
	found to be economically viable.		Formatted Table

Note: Mitigation actions followed by an asterisk are 'additional mitigation actions'. All others are 'standard mitigation actions.

8. Residual risk assessment

The risk ratings for events contributing to airborne and deposited dust hazards – once standard and additional mitigation actions have been put in place – are summarised in Table 8-1.

Table 8-1: Summary of residual risk ratings – airborne and deposited dust

#	Details of risk event monitored	Phase	Consequence	Likelihood	Residual risk rating
1	Ground clearing, mining, materials handling, vehicular traffic: exposure to airborne particulates (total particulates, PM10, PM2.5, crystalline silica) sensitive receptors exceeds human health guideline values	C, O, CL	Minor	Unlikely	Low
2	Wind erosion from disturbed surfaces and /or stockpiles: Exposure to airborne particulates (total particulates, PM10, PM2.5, crystalline silica) sensitive receptors exceeds human health guideline values	C, O, CL	Minor	Unlikely	Low
3	Ore processing: Exposure to airborne particulates (total particulates, PM10, PM2.5, crystalline silica) sensitive receptors exceeds human health guideline values	0	Minor	Rare	Low
4	Wheel-generated dust and lift off from disturbed areas and stockpiles: Contamination of horticultural crops (inert dust)	C, O, CL	Minor	Unlikely	Low
5	Wheel-generated dust and lift off from disturbed areas and stockpiles: Adverse impacts on vegetation health / productivity / marketability	C, O, CL	Minor	Unlikely	Low
6	Wind erosion from disturbed surfaces: Exposure to airborne toxicants at sensitive receptors exceeds human health guideline values	C, O, CL	Insignificant	Possible	Low
7	Wind erosion from stockpiles: Exposure to airborne toxicants at sensitive receptors exceeds human health guideline values	C, O, CL	Insignificant	Possible	Low
8	Wind erosion from TSF: Exposure to airborne toxicants at sensitive receptors exceeds human health guideline values	0	Minor	Unlikely	Low
9	Scope 1 and Scope 2 GHG emissions: Emissions intensity incompatible with best practice management	C, O, CL	Minor	Unlikely	Low
10	Wind erosion from disturbed surfaces and/or stockpiles: Exposure to radionuclides at sensitive receptors exceeds human health guideline values	C, O,CL	Insignificant	Unlikely	Low

9. Monitoring

Monitoring required to check the effectiveness of dust management controls is summarised in Table 9-1. Further details of monitoring parameters and recommended locations is contained in the AQMP (Katestone).

Table 9-1: Proposed monitoring for airborne and deposited particulates

#	Aspect to be monitored	Details of monitoring	
1	1-hour average PM ₁₀	Real-timing monitoring (1-hour average) of PM ₁₀ concentrations to be conducted at key sensitive receptor locations (whose positions will vary throughout the mining programme) to allow for changes in operation activities and locations that may impact the achievability of the 24-hour average health-based criteria. Assume minimum of 3 real-time PM10 monitors. Management action trigger level for hourly PM10 readings to be set at \$\frac{150.80}{20.0000} \text{µg/m}^3\$ (1 hr average reading). \$\frac{EPA}{20.0000} will be consulted on the development of the Project's air quality management and monitoring sub-plans.	
2	24-hour average concentrations of PM ₁₀ and PM _{2.5}	Continuous monitoring to be conducted during construction and operations at locations representative of sensitive receptors likely to experience the highest particulate concentrations (monitoring	
3	Weekly analysis of PM_{10} and $PM_{2.5}$ filters for respirable crystalline silica, gross alpha and beta radiation and heavy metals.	locations will change, depending upon the locations of mining activities. Assume network of no fewer than 5 particulate monitoring stations.	
4	Meteorological monitoring	At least hourly monitoring and recording of temperature, humidity, wind speed and direction. Alarms to be sent automatically to shift supervisor if average wind speeds exceed 40-25 km/hr, to trigger management responses, including restricting operations if necessary.	
5	Monthly average dust deposition rates.	Continuous dust deposition monitoring upwind and downwind of active mining areas (assume minimum of 3 downwind and 2 upwind locations).	

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6	Total and dissolved metals and suspended solids in rainwater tanks and dams	Rainwater tanks to be monitored quarterly at a minimum of 13 locations (assuming landholders grant access) prior to construction and during operations to check metals and suspended solids concentrations, relative to pre-mining concentrations. In the event of an incident, or if inspections or monitoring results indicate that performance requirements are not being achieved, corrective actions would be enacted and may include any or all of the following: • Immediately stop work where required. • Complete incident report and investigations. • Report to regulatory authorities as required (with notice of proposed corrective actions where relevant). • Investigate cause of exceedance or issue, including review of relevant monitoring data and effectiveness of implemented corrective actions (if any). • Implement corrective actions as appropriate to prevent recurrence. • Undertake maintenance as required. Notify regulatory authorities of corrective actions implemented and outcome as applicable.	Formattee Formattee Formattee English (A
7	Complaints	Monitor and document continuously. Respond in accordance with Fingerboards complaints management procedure.	
8	Periodic monitoring of deposited dust on nearby crops to validate the assumptions of dust assessments described in the Human Health Risk Assessment.	Local horticultural and agricultural producers and the Environmental Review Committee will be consulted to determine the frequency of this monitoring and the duration of the monitoring program.	Formattee 0 pt Formattee
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10. Reporting

Table 10-1: Dust performance and compliance reporting

#	Aspect being reported	To whom will the information be reported? At what frequency?	How will the information be used?
1	Airborne PM ₁₀ (1-hourly averages)	Continuous real-time reporting: if trigger level exceeded notifications to mine shift superintendent; construction earthworks superintendent.	To guide operational decisions (need to implement additional dust controls, relocate or suspend activities).
2	Airborne PM ₁₀ and PM _{2.5} (24-hour averages)	Weekly review by environmental superintendent; monthly reporting to Fingerboards management team; exceedance of acceptance criteria reported to mine manager within 24 hours of exceedance; quarterly reporting to Community Reference Group; annual reporting to ERR and EPA.	Compliance verification; check effectiveness of dust minimization activities; to assist in operational planning
3	Weekly analysis of PM ₁₀ and PM _{2.5} filters for respirable crystalline silica, gross alpha and beta radiation and heavy metals.	Weekly review by environmental superintendent; monthly reporting to Fingerboards management team; exceedance of acceptance criteria reported to mine manager within 24 hours of exceedance; quarterly reporting to Community Reference Group; annual reporting to ERR and EPA.	Compliance verification; check effectiveness of dust minimization activities; to assist in operational planning
4	Meteorological monitoring	Continuous real-time reporting: if wind speed trigger level exceeded notifications to mine shift superintendent; construction earthworks superintendent.	To guide operational decisions (need to implement additional dust controls, relocate or suspend activities); to assist in responding to complaints.
5	Monthly average dust deposition rates.	Monthly review by environmental superintendent; monthly reporting to Fingerboards management team; exceedance of acceptance criteria reported to mine manager within 24 hours of exceedance; quarterly reporting to Community Reference Group; annual reporting to ERR and EPA.	Compliance verification; check effectiveness of dust minimization activities; to assist in operational planning
6	Total and dissolved metals and suspended solids in rainwater tanks	Quarterly review by environmental superintendent; monthly reporting to Fingerboards management team; exceedance of acceptance criteria reported to mine manager and owners of water tanks within 24 hours of exceedance; quarterly reporting to Community Reference Group (release of individual data subject to consent of tank owners); annual reporting to ERR and EPA.	Compliance verification; check effectiveness of dust minimization activities
7	Complaints	Weekly reporting to Fingerboards management team; complaints statistics reported quarterly to Community Reference Group; annual reporting to ERR and EPA;	

References 11.

Environment Protection Authority (NSW), 2016. Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales.

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EPA Victoria, 2007. Protocol for Environmental Management, State Environment Protection Policy (Ambient Air Quality) Mining and Extractive Industries (PEM), Publication 1191.

Government of Victoria, 2001. State Environment Protection Policy Air Quality Management - Environment Protection Act 1970. Victoria Government Gazette, Special No. S 240 Friday 21 December 2001. Victorian Government Printer.

Katestone Environmental Pty Ltd, 2020. Stage Two Air Quality and Greenhouse Gas Assessment for the Fingerboards Mineral Sands Project, Version 1.4 (final), document number D16070-54, April 2020.

Standards Australia, 2016. AS/NZS 3580.10.1:2016 - Methods for sampling and analysis of ambient air Determination of particulate matter - Deposited matter - Gravimetric method.

<u>Katestone Environmental Pty Ltd, 2021. Air Quality Management Plan (AQMP) for the Fingerboards Project, 0.2 DRAFT, document number D19060-4, April 2020.</u>

RCMG, 2019, Fingerboards Mineral Sands Project Horticultural Impact Assessment, Final Draft Report V2, prepared for Kalbar Resources Ltd, January 2019.

12. Kalbar reference documents

[To be completed when EMS is fully developed]

Table 12-1: Kalbar reference documents

#	Document
1	
2	
3	