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Air Quality Assessment

Prepared for

Bluestone Mines Tasmania Joint Venture Pty Ltd

Paste Backfill Plant

3 March 2021

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Glossary

Term	Definition
Units of measurement	
d	day
h	hour
K	Kelvin (unit of temperature)
km	kilometre
km/h	kilometres per hour
m	metre
m/s	metres per second (velocity)
m^2	square metres
m^3	cubic metres
m^3/s	cubic metres per second (volumetric flow rate)
min	minute
Nm^3/s	normalised cubic metres per second (volumetric flow rate at 0 °C and 1 Atm)
°C	degrees Celsius
s	second
Sm^3/s	standard cubic metres per second (volumetric flow rate at 25 °C and 1 Atm)
yr	year

Abbreviations/Definitions

AWS	Automatic Weather Station
BMTJV	Bluestone Mines Tasmania Joint Venture Pty Ltd
CFT	Cassiterite Flotation Tailings
DDG	Dust Deposition Gauge
EPA	Tasmanian Environment Protection Authority
PBP	Paste Backfill Plant
$PM_{2.5}$	Particulate matter less than 2.5 µm (microns) in aerodynamic diameter
PM_{10}	Particulate matter less than 10 µm (microns) in aerodynamic diameter
PSG	Project Specific Guidelines
TSF	Tailings Storage Facility
TSP	Total Suspended Particulate matter
WCC	West Coast Council

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Executive Summary

Air Environment was commissioned by Bluestone Mines Tasmania Joint Venture Pty Ltd to conduct a qualitative assessment of ambient air quality impacts associated with the construction and operation of their proposed Paste Backfill Plant (PBP) at the Renison Tin Mine in western Tasmania.

The PBP will receive tailings, which are an existing waste stream from the Tin Processing Plant, dewater them to produce filter cake, and convert the filter cake into a cement paste. Newly mixed cement paste will be pumped underground for use as ground support, or as backfill to stabilise closed out stopes. An adjacent enclosed storage facility will stockpile un-used filter cake for subsequent mixing into cement paste.

EPA have determined that air quality impacts from the construction and operation of the PBP are not key issues in the assessment of the PBP proposal. Potential construction and operational dust impacts were therefore assessed in a qualitative manner, rather than through the development of a detailed emissions inventory and dispersion modelling-based air quality impact assessment.

The major dust sources associated with construction arise from bulk earthworks necessary to develop an all-weather access road, clear the site and construct a level platform for development, and create a bunded pipeline corridor. The PBP is not expected to produce visible dust emissions during operation, with the major processes and material transfers occurring within sealed pipes and enclosures, and contained within fully enclosed buildings.

A range of potential dust sources was identified for both the construction and operational phases. Each source was found to be either of a low impact or readily controllable. The location of the PBP site, approximately 390 m from the mining lease boundary and 3.6 km from the closest sensitive receptor, indicates that offsite impacts are unlikely to occur, even during plant breakdown conditions. This is reinforced by the prevailing meteorology, which would direct dust emissions away from the mining lease boundary and sensitive receptors.

Construction and operation of the PBP are therefore not considered to be a significant source of dust emissions and consequently, are expected to have a negligible impact on the receiving air environment.

1 Introduction

Air Environment was commissioned by Bluestone Mines Tasmania Joint Venture Pty Ltd (BMTJV) to conduct a qualitative assessment of ambient air quality impacts associated with the construction and operation of their proposed Paste Backfill Plant (PBP) at the Renison Tin Mine.

The PBP will take tailings, which are an existing waste stream from the Tin Processing Plant, and convert them into a cement paste. This is used underground as ground support, or as backfill to stabilise closed out stopes. The PBP will be operated on a campaign basis, typically processing 73,600 tonnes of tailings per year, with a maximum production rate of 88,500 tpa.

The proposed 0.47 ha PBP site is located approximately 150 m to the north-northeast of the Tin Processing Plant on the site of the existing core shed, as shown in Figure 1-1.

Figure 1-1 The proposed PBP development footprint in relation to the Tin Processing Plant

Figure note: Image taken from Figure 1 (p. 2) of the BMTJV NOI (BMTJV, 2020b)

The Environment Protection Authority (EPA), in their Project Specific Guidelines [PSGs, EPA (2020)], regard water quality and waste management as being the key issues for consideration when assessing this proposal, with air quality being a non-key issue.

Section 6.1 of the PSGs relates to air quality, and requires the proponent to:

- *Identify and characterise sources of potential dust generation from the construction and ongoing activities of the paste plant.*
- *Discuss the potential environmental impact of fugitive dust emissions associated with the paste plant and its operation.*

- *Describe any measures to reduce dust movement from the site during construction and operation of the paste plant.*
  (EPA, 2020, Section 6.1, p. 6)

In particular, a quantitative (modelling-based) approach, is not required.

This report will provide:

- A description of the project during both the site preparation and construction, and plant operational phases.
- A description of the sensitive receptor locations surrounding the proposed plant.
- An assessment of the dispersion meteorology of the broader Renison Tin Mine site.
- An assessment of the potential for dust impacts to arise during the construction and operational phases, and any proposed mitigations measures planned.
- A discussion of the potential environmental impact of any fugitive dust emissions occurring during plant construction and operation.

2 Project Description

The site preparation and construction phase of the PBP project will be described first, followed by a description of the plant operation phase.

2.1 Site preparation and construction

The proposed BMTJV PBP will be developed at the Renison Tin Mine, at the site of the existing core shed to the north of the Tin Processing Plant. Site works to prepare a compacted level platform and concrete foundations will commence immediately following approval, with construction of the plant, its integration with the Tin Processing Plant, and commissioning occurring over a subsequent nine-month period (Table 2, BMTJV, 2020b, p. 15.)

An all-weather road will be established at the commencement of the site preparation and construction phase to provide access to the site. The existing core shed will then be demolished and removed, along with its concrete pad and laydown material. The site will then be cleared and grubbed.

A preliminary foundation assessment has indicated the presence of historical mine waste scats, with poor geotechnical properties, covering approximately a third of the current site. A cut of unsuitable material must therefore be removed and filled with excavated material from the south of the site. This will be conducted using a ‘load and haul’ approach, with excavated scats and unsuitable material being removed to the tailings storage facility (TSF) approximately 950 m by internal road to the north.

A cut and fill approach will then be used to enlarge the current site footprint to the appropriate size, forming a platform for the PBP facility to be built on. This will necessitate prior removal of regrowth vegetation along the northwest and southern boundaries. The site slopes down towards the north, requiring material excavated from the south of the site to be used as fill at the north.

The leveled platform will then be covered with stockpiled engineered fill, which will be compacted to form a suitable base. All PBP structures will be mounted on concrete pad foundations.

A new storm water drainage system will be constructed around the PBP site to allow storm water to be directed into the existing stormwater management system. Pipeline corridors with earth bunding will also be constructed for the slurry and water transfer pipeline.

2.2 Plant operation

2.2.1 Particle size distribution of Cassiterite Flotation Tailings

The Renison Tin Mine produces three types of mine tailings:

- Low Sulphide Tailings,
- Cassiterite Floatation Tailings (CFT), and
- Slimes Tailings.

The PBP processes CFT only. The particle size distribution for CFT is provided in Figure 2-1, showing that if tailings (or dewatered tailings as filter cake) were dried and suspended in the atmosphere then:

- approximately 3% of the suspended particles would be in the $PM_{2.5}$ particle size range,
- approximately 9% would be in the PM_{10} particle size range,
- approximately 58% would be in the TSP particle size range (i.e. ≤ 100 µm in aerodynamic diameter, which includes PM_{10} and $PM_{2.5}$ particles), and
- the remaining 42% of the CFT is larger than 100 µm in aerodynamic diameter and is in the nuisance dust particle size range.

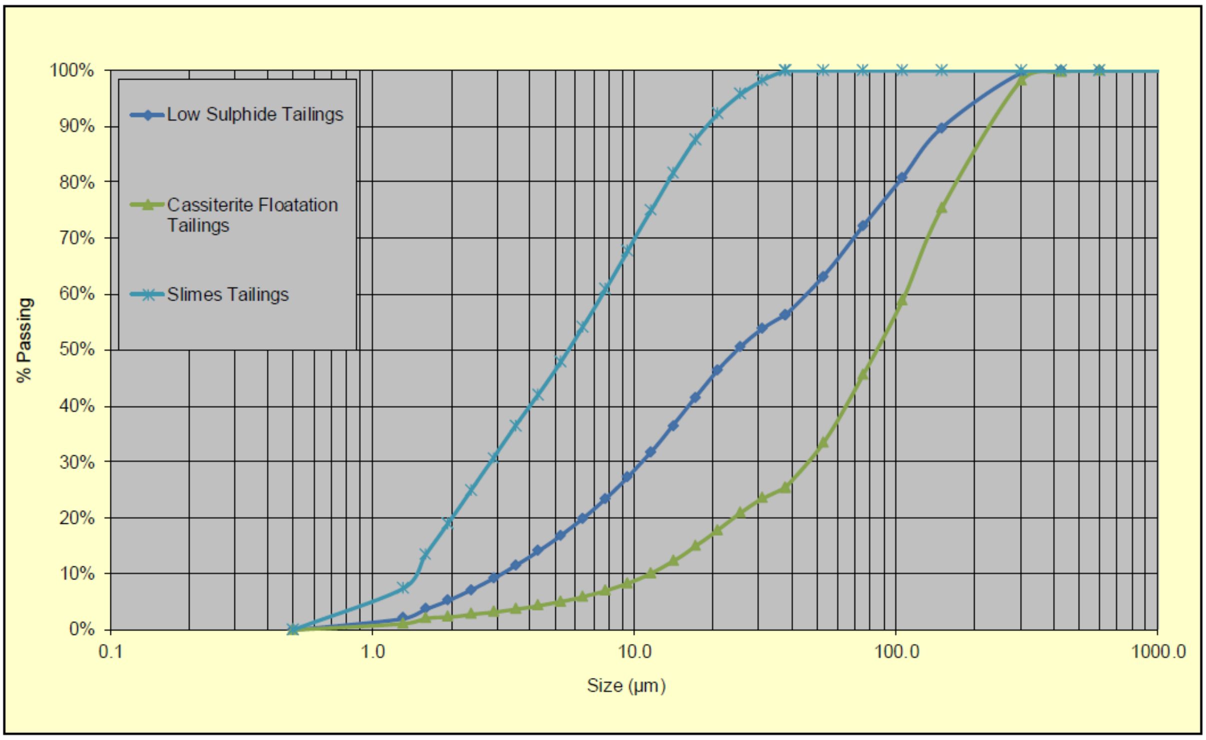

Figure 2-1 Particle size distribution of Renison Mine tailings

Figure note: The PBP processes Cassiterite Floatation Tailings only

In the unlikely event that CFT material is released into the ambient environment, then the PM_{10} particle size fraction, which has the highest potential for long distance travel and the causation of adverse health effects, only comprises 9% of the total material. This is a relatively low portion of the total volume of CFT material.

2.2.2 Tailings transfer

The PBP will receive CFT, generated as a waste stream by the Tin Processing Plant. In a typical year the PBP will process 73,600 tonnes of CFT, with a maximum production rate of 88,500 tpa.

The two existing CFT centrifugal slurry pumps, currently used to pump CFT from the Tin Processing Plant to the tailings storage facility (TSF), will be equipped with a bypass manifold allowing CFT to be directed to the paste plant. This will provide operational flexibility in managing the tailings waste stream, allowing it to be operated on a campaign basis as an integral part of the existing Tin Processing Plant. Tailings are pumped as a moist slurry within a fully enclosed pipeline, so the CFT transfer process is not considered to be a potential dust emissions source.

2.2.3 Tailings dewatering

The CFT will be dewatered by a paste plant, with the capacity to produce between 50 and 80 m^3 of filter cake per hour.

CFT from the processing plant will first be thickened within a high-rate centrifugal thickener, to produce a thickened slurry with 65% solids w/w (i.e. 35% moisture content). Thickened slurry will then be transferred to an agitated slurry storage tank (the filter feed tank) to buffer the flow into the paste filter. The paste filter is a disk filter, operated under vacuum, which will create a filter cake with a 12-15% moisture content.

A new flocculant mixing and storage plant will dose the filter feed stream with flocculant prior to filtering, to assist in the formation of a filter cake. Flocculant will be stored in a sealed powder storage bin and will be pneumatically conveyed to a wetting head to create a flocculent solution, which is mixed with raw water in a batch process for subsequent use.

Dewatering operations will occur within a fully enclosed building.

2.2.4 Filter cake binding and mixing

The resultant filter cake will be either temporarily stockpiled onsite within the filter cake storage facility or directly conveyed, via the paste mixer feed conveyor, to the filter cake binding and mixing system. The paste mixer feed conveyor will be equipped with a primary and secondary scraper and a belt wash station to minimise carry back. The area directly below the conveyor will be bunded to facilitate cleaning of spillage and limit its spread.

The filter cake binding and mixing system converts filter cake into cement paste, for immediate pumping underground for use as ground support or as backfill to stabilise closed out stopes.

Cement paste is made by mixing moist filter cake with a cement binder, within a fully-enclosed binder mixing system (the paste mixer). The paste mixer receives moist filter cake as a slurry, which is mixed with binder within a vortex mixer to minimise fugitive dust emissions. The process control system will regulate the slurry and binder rates into the vortex mixer, and the addition of dilution water, to ensure that the correct paste density and binder strength is achieved in the paste mixing process. Once mixed, the cement paste will contain approximately 28% moisture.

Out of specification paste plant tailings will be directed to the paste tailings hopper for transfer as a slurry to the existing low sulphur tailings pumps and disposal in the TSF. Filtrate and clean-up from plant spillage will be directed to the paste tailings hopper.

Filter cake binding and mixing will occur within a fully enclosed building.

2.2.5 Filter cake storage

Filter cake that is not immediately converted into cement paste will be temporarily stockpiled within a fully enclosed filter cake storage building. The filter cake storage building will have a footprint of approximately 20 m by 30 m, and will have the capacity to store up to 2,500 m^3 of dried filter cake. The storage building capacity and appropriate scheduling of underground back filling campaigns means that there is no risk that the storage facility will ever become full, requiring filter cake to be stored outside.

Filter cake will be moved within the storage facility via a dedicated wheel loader. The wheel loader will load the filter cake into a hopper with an enclosed screw conveyor for delivery to the Backfill Plant for conversion into cement paste. The filter cake storage area, filter cake conveyor system, and the mixing system are all enclosed to prevent loss and emission of dust or slurry. The storage facility will have a rated concrete slab floor, and will be bunded with concrete walls to ensure that the metal clad walls cannot be damaged during storage operations.

2.2.6 Cement binder storage and dosing

The cement binder will be stored onsite within a cement silo. Fugitive dust emissions will be minimised during silo filling with a reverse air pulsation cleaned dust collector, which is fitted to the silo. The silo will be equipped with a wire guided radar level measurement to monitor stored binder levels and ensure that it cannot be overfilled.

A limited amount of cement binder will automatically be transferred to a binder day bin each day via dense phase pneumatic transfer (i.e. compressed air) within a fully enclosed pipe system. The binder day bin is also equipped with a reverse air pulsation cleaned dust collector to minimise fugitive dust emissions during binder transfer.

Binder will be discharged from the binder day bin into a fully enclosed fixed-speed weigh feeder to monitor the binder dosing rate. All components of the binder storage and dosing system are fully enclosed and do not represent a dust source.

2.2.7 Cement paste delivery

Newly-created cement paste from the paste mixer will be discharged into a paste hopper, with the discharge chute being extended into the lower portion of the hopper to minimise spillage and splashing. Cement paste from the paste hopper will be delivered to the underground mine distribution network by a "slick line" delivery pipeline system, entering the mine via a bore hole. The pipeline system will be fully enclosed and does not represent a dust source.

3 Sensitive Receptors

The BMTJV PBP site is located in a remote location (see Figure 3-1), with the closest sensitive receptor being a residence located on the Murchison Highway (Residence 1) approximately 3.6 km to the east-northeast of the site. A second residence (Residence 2), also on the Murchison Highway, is located approximately 4.5 km to the east-northeast. The town of Rosebery lies approximately 6.9 km to the east.

Following the Murchison Highway to the west and southwest, the closest residence is located at the entrance to the town of Zeehan, approximately 12.4 km to the south-southwest. BMTJV have also identified the Melba Flats roadside siding, located approximately 6.3 km to the south-southwest of the site, as a sensitive receptor location.

The proposed PBP site is approximately 390 m to the north of the Murchison Highway.

Figure 3-1 The closest sensitive receptors to the proposed PBP site

Figure note: The PBP site is shown in red. There is a gun club located between Residences 1 and 2.

4 Dispersion Meteorology

A detailed TAPM/CALMET meteorological model was prepared previously by Air Environment for the BMTJV site in support of the ongoing Rentails project, as described in Section 10 of Air Environment (2019). Meteorology was predicted for a representative meteorological year commencing on 1 March 2014 and ending on 28 February 2015.

Predicted winds, air temperature and rainfall for the Rentails site (located approximately 700 m to the north-northwest of the PBP site) are analysed for the most important meteorological parameters affecting dust generation and dispersion.

4.1 Wind speed and direction

The annual distribution of winds, based on TAPM/CALMET modelling, for the Rentails site is presented as a wind rose diagram in Figure 4-1. Predicted wind speed ranged between 0.0 and 6.7 m/s, with mean and median wind speeds of 1.9 and 1.7 m/s respectively.

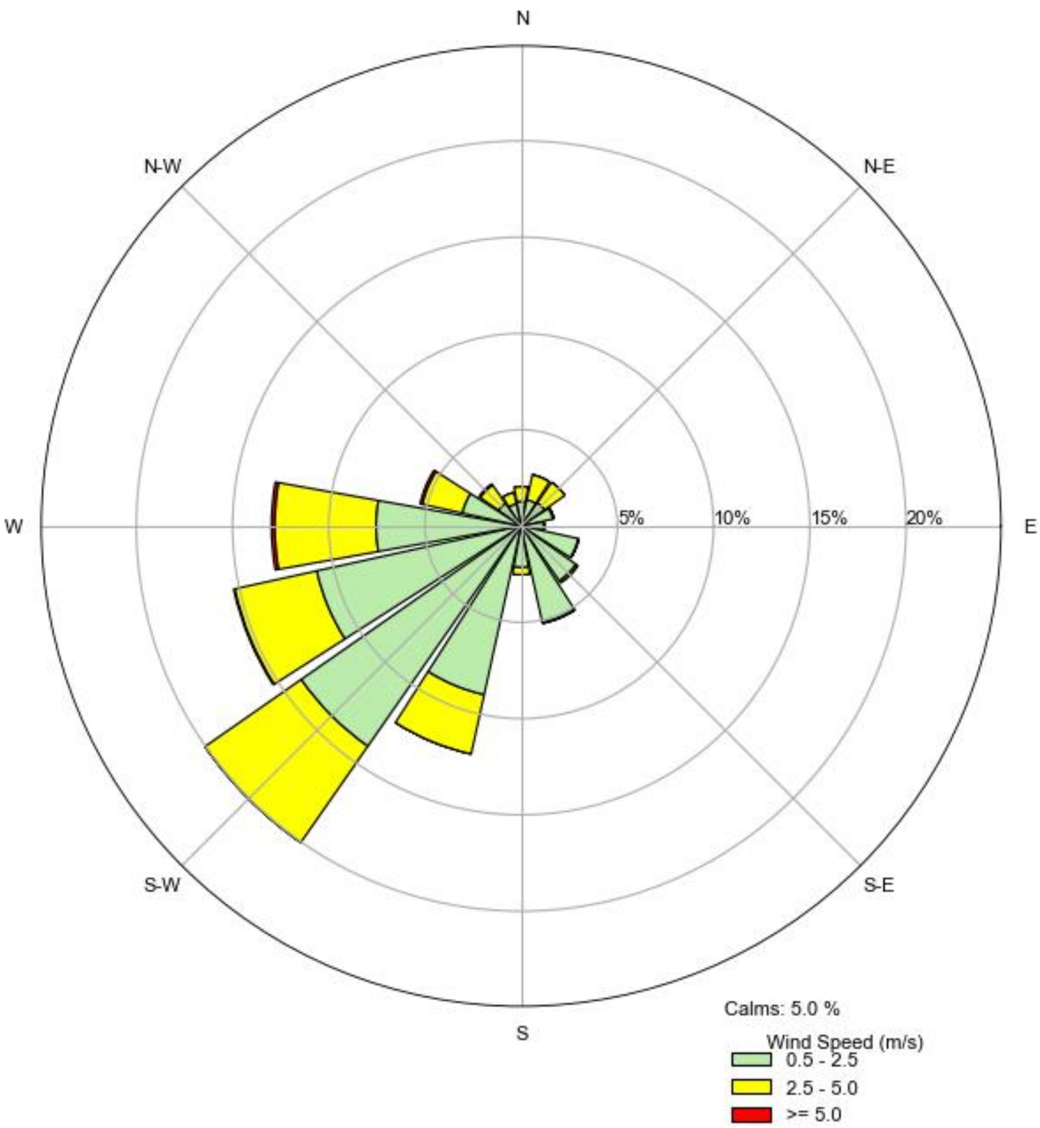

Figure 4-1 Predicted annual distribution of winds at the nearby Rentails site

The annual wind rose shows that the prevailing wind arrives from the southwest, with winds from the southwest quadrant accounting for approximately 63% of all winds. The remaining winds may arrive from each of the other quadrants. Easterly and east-northeasterly winds are relatively rare, with a combined frequency of 2.9%. Calm winds, those below 0.5 m/s, are predicted to occur on 5.0% of occasions.

The lightest winds, between 0.5 and 2.5 m/s, may arrive from any direction, occurring with a combined frequency of 68%. They most frequently arrive from the southwest (13.9%), west-southwest (10.9%), south-southwest (9.0%), and west (7.5%).

Winds exceeding 5 m/s (a gentle to moderate breeze and above) are strong enough to raise dust from exposed surfaces and stockpiles (MfE, 2016, S. 5.2.2 to 5.2.5). These are confined to the west-southwest to north-northeast sectors, and are predicted to occur infrequently (0.5%) accounting for a total of less than 45 hours per year. This is shown more clearly in a plot of seasonal distribution of predicted wind speeds (Figure 4-2).

The TAPM model is known to underestimate the frequency of high wind speeds and overestimate the frequency of low wind speeds, which is a conservative feature when assessing gaseous pollutant dispersion from fugitive sources. The wind speed distributions shown in Figure 4-2 are therefore likely to underestimate the frequency of winds above 5 m/s. Despite this it is clear that the frequency of dust-raising winds will be relatively low.

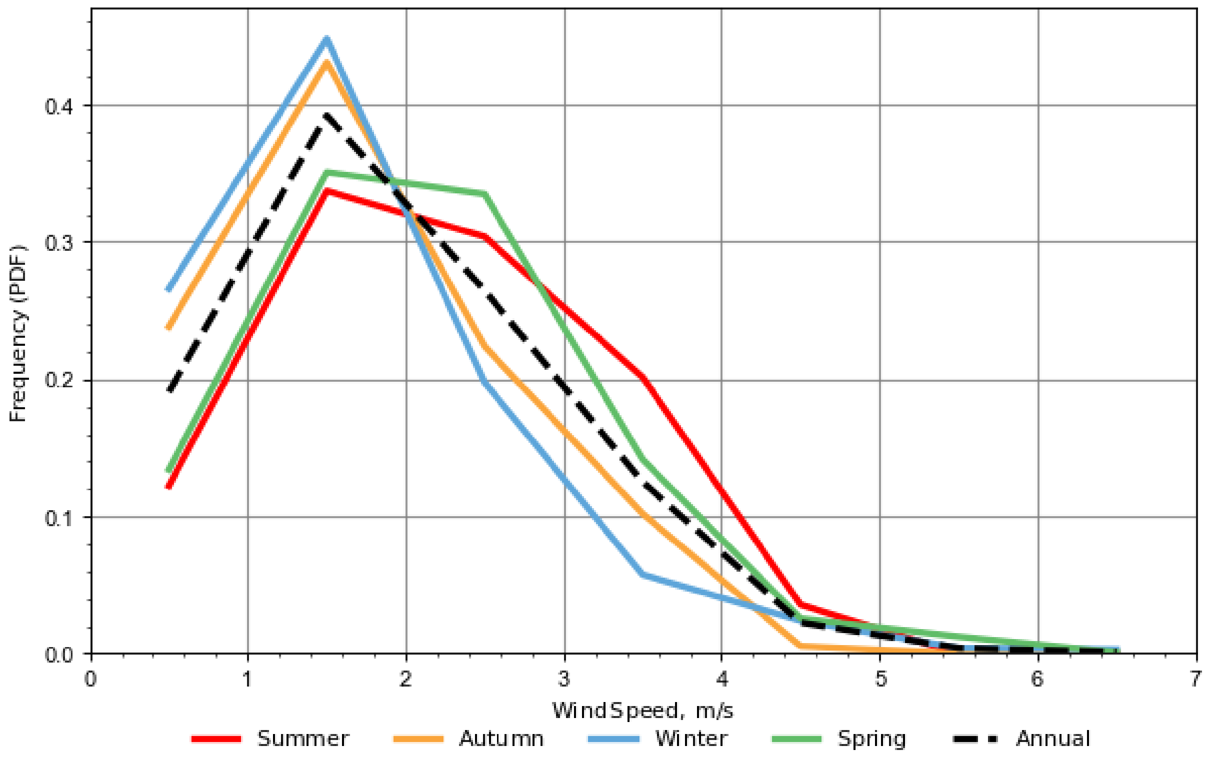

Figure 4-2 Predicted seasonal distribution of wind speed at the nearby Rentails site

4.2 Air temperature

The predicted diurnal and monthly variation in air temperature at the Rentails site is plotted in Figure 4-3. Temperature ranges between 3 and 30°C, with a mean temperature of 11.9°C and a median temperature of 10.9°C. The hottest temperatures, most conducive to dust creation, occur during the daytime hours over the summer and autumn periods.

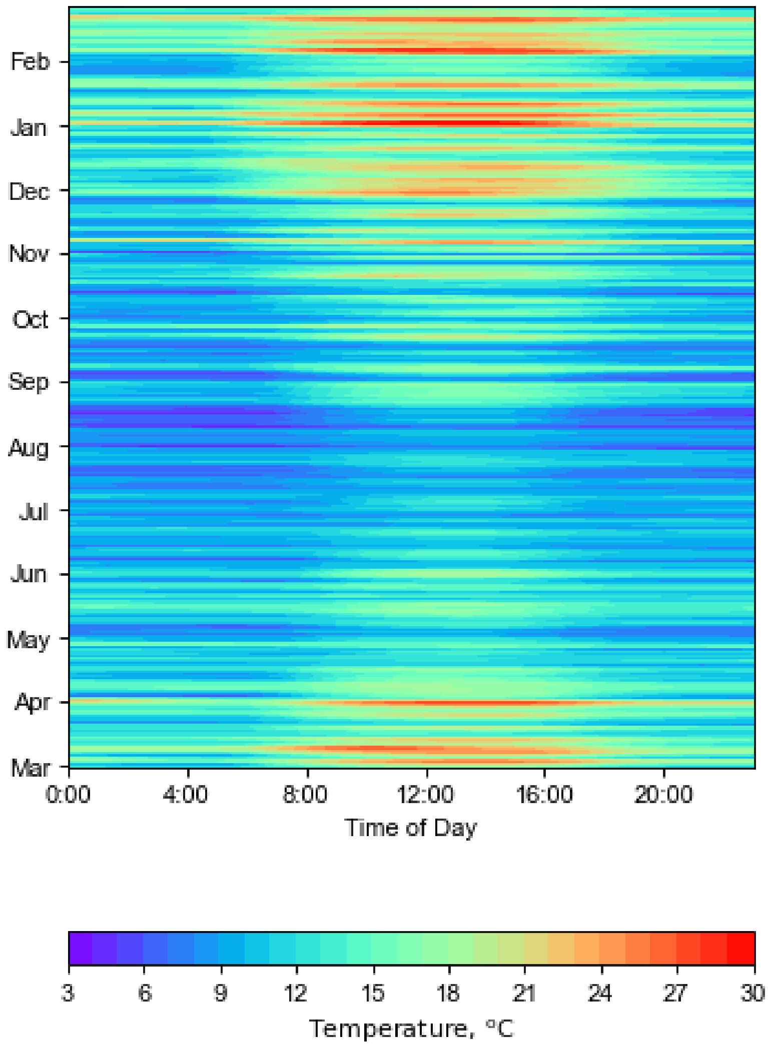

Figure 4-3 Predicted monthly and diurnal variation in air temperatures at the nearby Rentails site

4.3 Rainfall

Predicted monthly rainfall for the Rentails site location is plotted in Figure 4-4. A total annual rainfall of 2770 mm is predicted, with the greatest rainfall occurring during the winter (895 mm) and spring (813 mm) months. The summer months are predicted to experience 686 mm of rain, with the driest season being autumn (380 mm).

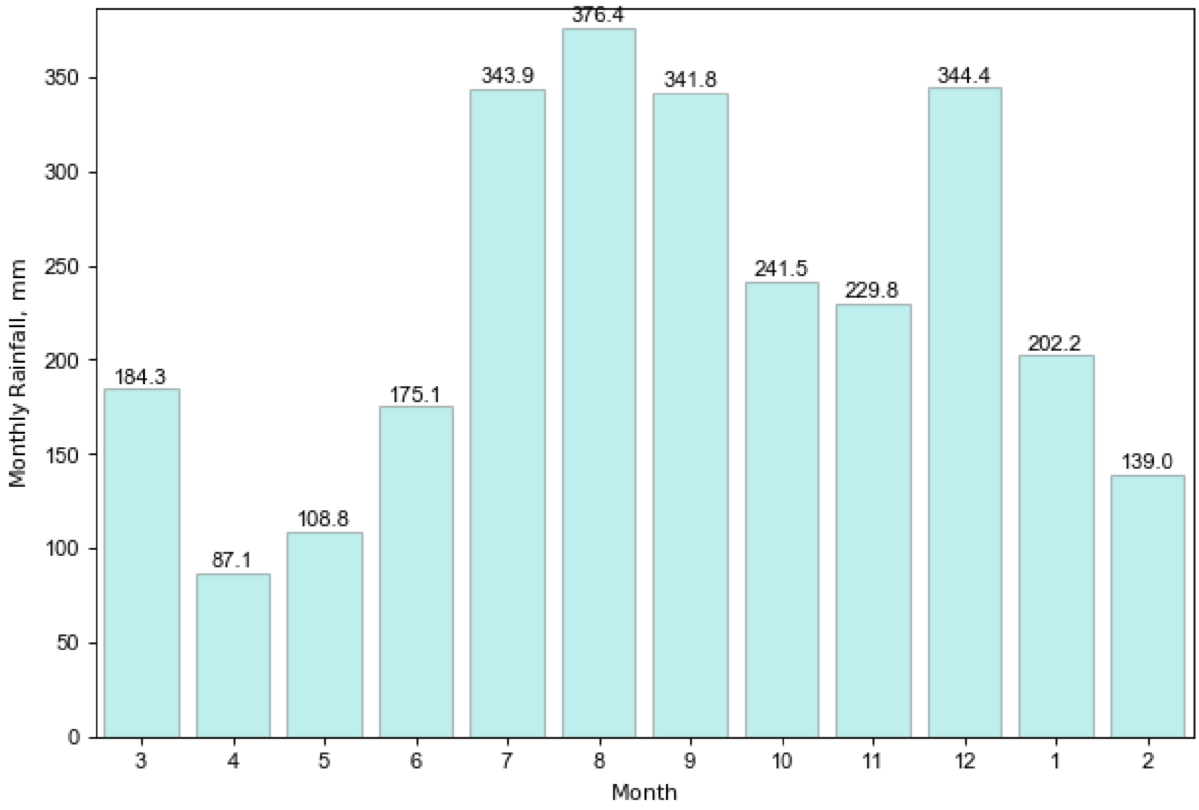

Figure 4-4 Predicted monthly rainfall totals at the nearby Rentails site

5 Construction Impacts

The following mobile plant will be used during construction operations:

- 1 x 30 Tonne Excavator
- 1 x 20 Tonne Excavator
- 1 x Sheeps Foot Roller
- 1 x Pad Foot Roller
- 5 x 10 M Tip Trucks.

Dust emissions are most likely to occur as a result of earthworks and vehicle movements during the bulk earthworks phase. They may also occur during the construction of pipeline corridors and earth bunding.

Any dust emissions from these sources will be readily controlled by the confinement of earthworks within a delineated development footprint, and the application of water to exposed trafficked areas and bare surfaces (S4.7, BMTJV,2020b, p. 12).

The site is located 390 m from the mining lease boundary, at the Murchison Highway, and the closest sensitive receptor is 3.6 km away. Prevailing winds blow towards the northeast, away from the mining lease boundary at the Murchison Highway and sensitive receptor locations. The second prevailing winds, which occur on approximately 15 % of occasions, blow towards the closest sensitive receptors to the east-northeast. It is therefore very unlikely that uncontrolled dust emissions arising from construction activities would be able to be transported beyond the mining lease boundary, let alone impact sensitive receptors. The risk of dust impacts due to PBP construction activities is therefore considered to be low, localised to small areas, and readily controlled. Potential construction dust sources, mitigating factors and additional available mitigation measures are described in Table 5-1.

Table 5-1 Potential construction dust sources and mitigation measures

Potential construction dust source	Mitigating factors	Additional mitigating measures available	Risk of dust impact
Site Clearing and Bulk Earthworks	• Excavated material will be moist. • With the exception of pipeline corridors, bulk earthworks will be confined to the 0.35 ha development footprint. • Distance to site boundary (390 m) and sensitive receptors (> 3.6 km). • Dust emissions arising from bulk earthworks will be managed by the Construction Environmental Management Plan CEMP.	• Sprinkler system installed if necessary. • Construction activities integrated into the Dust Management Plan for Renison Mine.	Low

Potential construction dust source	Mitigating factors	Additional mitigating measures available	Risk of dust impact
Transfer of legacy scat to the TSF kibble dump.	• Excavated material will be moist. • Immediate transfer of excavated material with no stockpiling or chance for material to dry out. • Transferred by tripper truck. • Low transportation distance (< 1 km). • Onsite speed limit of 25 km/h. • Localised fugitive emissions possible during tipping. • Relocation of tailings delivery pipes to ensure legacy scat materials are covered with moist tailings after tipping. • Distance to site boundary (390 m) and sensitive receptors (> 3.6 km). • Dust emissions will be managed by the CEMP.	• Covering of loads. • Use of a water truck on access roads in warmer conditions. • Use of a sprinkler system. • Application of polymer-based dust suppression product to roads. • Sheeting program (repairs to the running surface of existing road to reinstate the correct road profile) in place for some roads. • Construction activities integrated into the Dust Management Plan for Renison Mine.	Low
Recovery of engineered material and its utilisation for foundation material	• The majority of the material to be used for construction of the construction pad will be sourced from a cut into the existing embankment on the site. • If additional material is required it will be sourced from existing borrow pits at West Pieman or C Dam Borrow Pit. • Transferred by tripper truck. • Low transportation distance (< 1 km). • Onsite speed limit of 25 km/h. • Localised fugitive emissions possible during tipping will be managed by the CEMP.	• Covering of loads. • Use of a water truck on access roads in warmer conditions. • Application of polymer-based dust suppression product to roads. • Sheeting program in place for some roads. • Use of a sprinkler system. • Construction activities integrated into the Dust Management Plan for Renison Mine.	Low

Potential construction dust source	Mitigating factors	Additional mitigating measures available	Risk of dust impact
Construction of pipeline corridors and pipeline bunds	• Localised linear source. • Large distance to site boundary and sensitive receptors. • Dust emissions will be managed by the CEMP.	• Excavator operator is onsite and can activate mitigation measures if necessary. • Construction activities integrated into the Dust Management Plan for Renison Mine.	Low
Concrete works	• Not a dusty process	• N/A	None
Structural steel and platework	• Not a dusty process	• N/A	None
Piping	• Not a dusty process	• N/A	None
Electrical and control system	• Not a dusty process	• N/A	None
Slight increase in traffic at the construction site	• Only 14 construction contractors, who are currently employed on other projects on the Renison site, will be used in constructing the PBP. • Onsite speed limit of 25 km/h. • Traffic-generated dust will be managed by the CEMP.	• Road watering. • Road sheeting for selected roads.	Low

6 Operational Impacts

The risk of dust impacts from the site due to operational activities is expected to range from non-existent to low, with the PBP plant not expected to produce dust under normal operating conditions. All operational activities will be integrated into the Dust Management Plan for Renison Mine.

The PBP and filter cake storage facilities are fully enclosed within buildings, with operational activities within buildings being enclosed and using moist materials with a low capacity to generate dust. The tailings that are piped into the plant, and cement paste piped from the PBP to the underground distribution system, are also moist and fully contained. Transfer of filter cake between the PBP plant and the filter cake storage facility will be via an enclosed conveyor, with the material to be transferred reported to have a moisture content of 12 to 15%. Reclaimed filter cake from the storage facility will still retain a degree of moisture, having been stockpiled within an enclosed storage facility.

Despite this there is potential for generation of dust during storage and handling of filter cake, but this will be minimised as it will be undertaken within an enclosed building.

It is therefore difficult to conceive of any significant mechanism beyond catastrophic plant failure that is likely to cause nuisance dust emissions. The risk of dust impacts from the operation of the PBP is therefore considered to be very low. Should dust emissions be generated, their impact would be highly localised to the region surrounding the plant footprint and would be readily controlled. The isolated location of the site, and the prevailing meteorology, suggest that should plant failure occur, releasing fugitive dust emissions, no offsite impacts would be experienced. Potential operational dust sources, mitigating factors and additional available mitigation measures are described in Table 6-1.

Table 6-1 Potential operational dust sources and mitigation

Potential operational dust source	Mitigating factors	Additional mitigating measures available	Risk of dust impact
Transport of CFT tailings to the Paste Plant feed thickener	• Delivered as a slurry via an enclosed pipeline. No opportunity for fugitive dust emissions.	• N/A	None
Tailings dewatering	• Occurs within the enclosed Filter Building. • All materials are moist, with the initial dewatering bringing the moisture content down to 35%, and the final filter cake having a moisture content of 12 – 15%.	• N/A	None
Delivery of filter cake to filter cake storage facility	• Filter cake delivered to storage facility via enclosed conveyor with filter cake at 15% moisture content. • Distance to site boundary (390 m) and sensitive receptors (> 3.6 km).	• The loader operator is available to observe potential dust emissions during filter cake delivery and apply appropriate controls if required.	Very Low
Filter cake storage	• Storage is in an enclosed building, with no wind	• The loader operator is available to observe	Very Low

Potential operational dust source	Mitigating factors	Additional mitigating measures available	Risk of dust impact
	erosion possible.	potential dust emissions and apply appropriate controls.	
Reclaiming filter cake	• Wheel loader used to load reclaimed filter cake into a hopper with an enclosed screw conveyor. • Stored filter cake should still have a degree of moisture. • Loading occurs within the enclosed filter cake storage facility and filter cake is transported via an enclosed conveyor.	• The loader operator is available to observe potential dust emissions and apply appropriate controls.	Very Low
Cement binder delivery and storage	• Cement binder will be stored onsite within a fully enclosed cement silo. • A reverse air pulsation cleaned dust collector fitted to the silo to minimise fugitive emissions during filling. • Cement silo equipped with a wire guided radar level measurement system to monitor stored binder levels and ensure that it cannot be overfilled.	• N/A	Very Low
Filter cake binding and mixing	• Occurs within the enclosed filter building. • All process units and processes are enclosed. • The filter cake and resultant cement paste will both be moist (filter cake 12 to 15% moisture; cement paste 28% moisture content).	• An operator is available to clean up spills and to ensure that fugitive dust emissions cannot occur.	None
Disposal of waste streams and plant spillage	• Will be pumped as a slurry from the paste tailings hopper to the existing low sulphur tailing pumps at the processing plant, through an enclosed pipe, for disposal in the TSF.	• N/A	None

Potential operational dust source	Mitigating factors	Additional mitigating measures available	Risk of dust impact
Transfer of cement paste underground	• Cement paste will contain approximately 28% moisture. • Transfer will be via fully enclosed slick line with no fugitive dust emissions possible.	• An operator is available to monitor the process.	None
Power supply	• The PBP is powered by hydro-electric power, with no associated fuel combustion source air emissions released to atmosphere.	• N/A	None

7 Conclusions

Air Environment was commissioned by BMTJV to conduct a qualitative assessment of ambient air quality impacts associated with the construction and operation of their proposed PBP at the Renison Tin Mine in western Tasmania.

The PBP will receive tailings, which are an existing waste stream from the Tin Processing Plant, dewater them to produce filter cake, and convert the filter cake into a cement paste. Newly mixed cement paste will be pumped underground for use as ground support, or as backfill to stabilise closed out stopes. An adjacent enclosed storage facility will stockpile un-used filter cake for subsequent mixing into cement paste.

EPA have determined that air quality impacts from the construction and operation of the PBP are not key issues in the assessment of the PBP proposal. Potential construction and operational dust impacts were therefore assessed in a qualitative manner.

The major dust sources associated with construction arise from bulk earthworks necessary to develop an all-weather access road, clear the site and construct a level platform for development, and create a bunded pipeline corridor. The PBP is not expected to produce visible dust emissions during operation, with the major processes and material transfers occurring within sealed pipes and enclosures, and contained within fully enclosed buildings.

A range of potential dust sources was identified for both the construction and operational phases. Each source was found to be either of a low impact or readily controllable. The location of the PBP site, approximately 390 m from the mining lease boundary and 3.6 km from the closest sensitive receptor, indicates that the risk of offsite impacts occurring is low, even during plant breakdown conditions.

Construction and operation of the PBP are therefore not considered to be a significant source of dust emissions and will have a negligible impact on the receiving air environment.

8 References

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