



Application for Licence Amendment

Part V Division 3 of the *Environmental Protection Act 1986*

Licence Number	L6798/1993/12
Licence Holder	TT Sand Pty Ltd
ACN	064 072 322
File Number	DER2015/000288-1
Premises	Mindijup Silica Sand Mine 570 Mindijup Road PALMDALE WA 6330 Being Mining Tenement M 70/793 Legal description – Lot 5 on Plan 62329 Certificate of Title Volume 1629 Folio 660 As defined by the premises map in Schedule 1 of the Revised Licence.
Date of Report	4 December 2023
Decision	Revised licence granted

Steve Checker
**MANAGER, WASTE INDUSTRIES
REGULATORY SERVICES**

an officer delegated under section 20 of the *Environmental Protection Act 1986* (WA)

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1. Decision summary

Licence L6798/1993/12 is held by TT Sand Pty Ltd (Licence Holder) for the Mindijup Silica Sand Mine (the Premises), located at 570 Mindijup Road within Mining Tenement M 70/793, Palmdale Western Australia 6330.

This Amendment Report documents the assessment of potential risks to the environment and public health from proposed changes to the emissions during the operation of the Premises. As a result of this assessment, Revised License L6798/1993/12 has been granted.

The Revised Licence issued as a result of this amendment consolidates and supersedes the existing Licence previously granted in relation to the Premises.

2. Scope of assessment

2.1 Regulatory framework

In completing the assessment documented in this Amendment Report, the department has considered and given due regard to its Regulatory Framework and relevant policy documents which are available at <https://dwer.wa.gov.au/regulatory-documents>.

2.2 Amendment summary

Mindijup Silica Sand Mine uses conventional mining practices to excavate, screen and process silica sand. Mined material is screened through a moveable screening plant to remove large material, before being mixed to a slurry using process water. The slurry is pumped through a pipeline to the wet processing plant and is processed using wet gravity. Fine sand less than 50 µm, coarse sand greater than 800 µm and iron oxide is separated from the product. Following processing, the product is either stockpiled on site or is transported to Albany Port for shipping. Tailings are pumped from the processing plant to one of the tailings storage facilities (tailings dams). Water is decanted from the dam and is used as process water. When the tailings dam fills with reject material, it is returned to the mine void, topsoil is applied, and the area is rehabilitated.

On 6 February 2023, the Licence Holder submitted an application to the department to amend Licence L6798/1993/12 under section 59 and 59B of the *Environmental Protection Act 1986* (EP Act). The application was to increase Category 5 throughput from 250,000 to 320,000 tonnes per annum, through an increase in operation from 4 days to 5 days per week with no proposed changes to activities or infrastructure.

Correspondence between the Department of Mines, Industry Regulation and Safety (DMIRS), the Licence Holder and the department indicated that 320,000 tonnes per year figure referred to the amount of silica sand produced annually and not the total amount of material processed through the facility, as assessed by the department under Category 5. The department requested an additional application to be submitted with the revised Category 5 throughput and waived additional fees for the revised application.

On 26 July 2023, the Licence Holder submitted a revised application to the department to amend Licence L6798/1993/12 under section 59 and 59B of the *Environmental Protection Act 1986* (EP Act). The following amendments are being sought:

- Category 5: to increase throughput from 250,000 to 460,000 tonnes per annual period.

No more than 460,000 tonnes of sand will be processed through the facility per year. Up to 320,000 tonnes of silica sand is expected to be produced as product per year and up to 140,000 tonnes of reject material is expected to be returned to the mine void per year.

The applicant has a clearing permit CPS 5511/2 and *Environment Protection and Biodiversity Conservation Act 1999* (EPBC 2012/6472) approval. EPBC 2012/6472 includes conditions regarding the regulation of native vegetation clearing and protection of Black Cockatoos and Black Cockatoo habitat.

3. Risk assessment

The department assesses the risks of emissions from prescribed premises and identifies the potential source, pathway and impact to receptors in accordance with the *Guideline: Risk assessments* (DWER 2020).

To establish a Risk Event there must be an emission, a receptor which may be exposed to that emission through an identified actual or likely pathway, and a potential adverse effect to the receptor from exposure to that emission.

3.1 Source-pathways and receptors

3.1.1 Emissions and controls

The key emissions and associated actual or likely pathway during premises operation which have been considered in this Amendment Report are detailed in Table 1 below. Table 1 also details the proposed control measures the Licence Holder has proposed to assist in controlling these emissions, where necessary.

Table 1: Licence Holder controls

Emission	Sources	Potential pathways	Proposed controls
Dust	<p>Screening of material, vehicle movements, bulk material handling, lift-off from product stockpiles, tailings material and reject material.</p> <ul style="list-style-type: none"> - No change to excavation, truck loading and unloading or transport processes. - No additional equipment required to increase the premises production capacity. - No change to stockpile and tailings management. 	Air/ windborne pathway	<ul style="list-style-type: none"> - Drop height is minimised to prevent dust emissions when transferring sand from front end loaders and when loading the screen hopper and haul trucks. - Stockpile height limited to 10 m or less in summer when dust emissions are higher due to loss of moisture. - Once sand is screened, it is mixed with water to become a slurry ceasing dust emissions. - Water available on-site to minimise dust emissions during summer months and as required. - 100 m remnant native vegetation buffer at the tenement boundary, 1.2 m high shade cloth fencing (where required) to limit sand migration, and use of soil stabiliser emulsion. - AustSand Mining <i>Dust Management Plan</i> (GHD, 2021) to manage dust emissions on the Premises. - Tailings material is slurry and is periodically removed from the tailings dam as required. The high moisture retention of tailings eliminates dust emissions during removal and dumping. - A tipping face of 20 m reduces dust emissions as tailings material dries. Coarse material covers the top of the tipping face to reduce potential for dust emissions. - Haul roads and adjacent vegetation monitored for stockpile encroachment and sand removed when identified. - Progressive rehabilitation of mined areas. <p>Note: Existing environmental offset of 793 ha at Lot 51 Branson Rd. 690 ha balance remains for future expansion.</p>
Sediment laden stormwater	<ul style="list-style-type: none"> - Stockpiles exposing bare soil. - Unsealed roads. - Run-off from buildings. 	Overland flow	<ul style="list-style-type: none"> - Stormwater from the roof of on-site buildings is collected in rainwater tanks for on-site use. - Water from processing plant is collected downslope in the collection and process dams for reuse. - 100 m native remnant vegetative buffer surrounds mine site activities. - Mindijup Road wetland is separated from mining activities by a 1-2 m ridge and clearing of surrounding vegetation is not permitted. <p>Note: Due to deficit of fill, rehabilitated surface levels are lower than pre-mining levels, acting as landscape depressions where any overland run-off generated may migrate towards.</p>
Noise	Vehicle movements, screening and processing of material.	Air/ windborne pathway	<ul style="list-style-type: none"> - 100 m native remnant vegetation buffer surrounding premises boundary. - <i>Environmental Protection (Noise) Regulations 1997</i>
Hydrocarbons	Hydrocarbon storage	Direct	Fuel is stored onsite within a fuel storage facility, which

Emission	Sources	Potential pathways	Proposed controls
	and refueling activities	discharge Overland flow	<p>occupies an area of 20 square metres</p> <p>A concrete slab adjoins the fuel storage area and there is a dedicated wash down area to the north.</p> <p>No changes to fuel storage or to vehicle refueling, servicing or wash down are proposed as part of this amendment.</p>

3.1.2 Receptors

In accordance with the *Guideline: Risk assessments* (DWER 2020), the Delegated Officer has excluded employees, visitors and contractors of the Licence Holder's from its assessment. Protection of these parties often involves different exposure risks and prevention strategies, and is provided for under other state legislation.

Table 2 and Table 3 below provide a summary of potential human and environmental receptors that may be impacted as a result of activities upon or emission and discharges from the prescribed premises (*Guideline: Environmental siting* (DWER 2020)).

Table 2: Human receptors and distance from prescribed activity

Human receptors	Distance from prescribed activity
Residential sensitive receptors	<p>Residence 1 1.2 km west-northwest of the screening plant, 1.4 km northwest of the processing plant, 1.2 km northwest of the closest stockpile and 700 m east of the premises boundary.</p> <p>Residence 2 1.5 km west-southwest of the screening plant, 1.3 km west of the processing plant, 1.3 km west of the closest stockpile and 1.1 km west of the premises boundary.</p> <p>Residence 3 1.8 km south-southeast of the screening plant, 1.3 km south-southeast of the processing plant, 1.2 km south-southeast of the closest stockpile and 577 m south-southeast of the premises boundary.</p> <p>Residence 4 1.6 km east-southeast of the screening plant, 1.6 km east of the processing plant, approximately 800 m east-southeast of the closest stockpile and 80 m south of the premises boundary.</p>
Industrial (non-sensitive) Receptor - Vancouver Waste Services Pty Ltd (Prescribed premises)	Vancouver Waste Services Pty Ltd prescribed premises boundary borders the northern TT Sands Pty Ltd prescribed premises boundary and part of the western prescribed premises boundary.

Table 3: Sensitive environmental receptors and distance from prescribed activity

Environmental receptors	Distance from prescribed activity
DBCA Legislated Tenure	Nature Reserve (619446) is 1.66 km east, measured from the northeastern corner of the premises boundary. The reserve is 3.4 km east northeast of the screening plant, 3.5 km east northeast of the processing plant and 2.6 km east-northeast of the closest stockpile.
Aboriginal Sites and Heritage	Kalgan River Registered Site Place ID 31739 (historical site, mythological site and water source) is 0.86 km northwest, measured from the northwestern corner of the prescribed premises boundary (the closest point), 1.9 km northwest of the screening plant and 2.1 km east of the processing plant. Note: Measurements taken from the premises boundary closest to the sites, to the boundary of the site that is closest to the premises.
Rivers and Lakes	Kalgan River is 0.86 km northwest of the premises boundary, 1.9 km northwest of the screening plant, 2.1 km east of the processing plant and 2 km from the closest stockpile. An unnamed perennial lake is 2.6 km southeast of the closest stockpile.
South Coast Significant Wetlands National (ANCA) Wetlands	Conservation Class Wetlands: Mindijup Road wetland (within premises boundary). Note: National (ANCA) and other South Coast Significant Wetlands surround the premises as depicted in Figure 1; however they are screened out due to distance.
Threatened Ecological Communities (TEC`s)	No TECs identified in the department's GIS system. Licence holder has noted that Endangered Proteaceae Dominated Kwongan Shrublands of the Southeast Coastal Floristic Province of Western Australia (listed in 2014) is likely represented within the premises boundary. Clearing has been approved.
Threatened and/or priority fauna	Carnaby's Black Cockatoo (<i>Calyptorhynchus latirostris</i>) within premises boundary. White-tailed Black Cockatoo (<i>Calyptorhynchus</i> sp.) and Baudin's Cockatoo (<i>Calyptorhynchus baudini</i>) within 2 km of premises boundary. Black Cockatoo species are protected under EPBC 2012/6472. The statement regulates Black Cockatoo habitat and species protection; therefore, Black Cockatoo species will not be further assessed in this report.

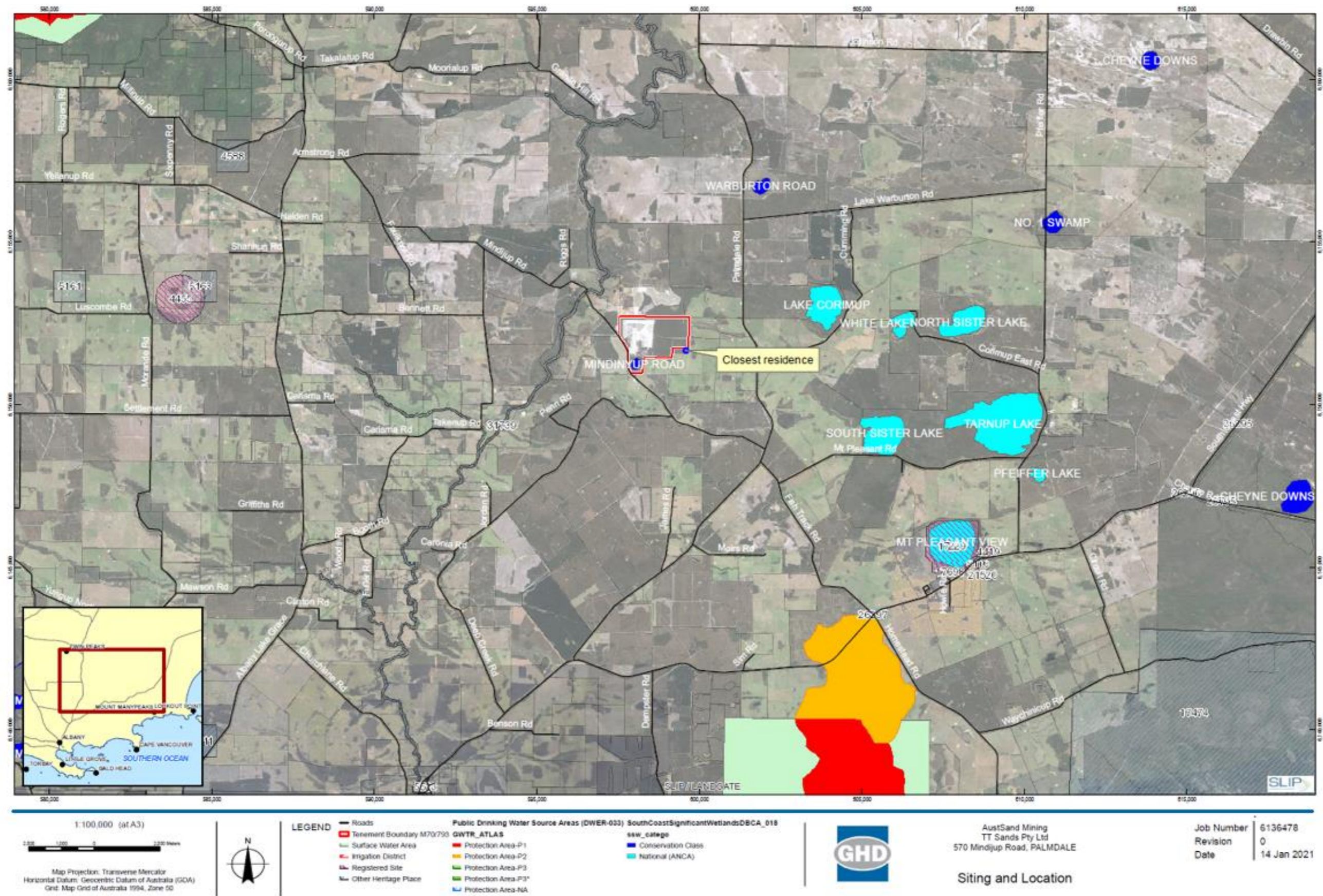


Figure 1: Distance to sensitive environmental receptors – Residential properties, Public Drinking Water Source Areas (PDWSA), surface water areas and South Coast Significant Wetlands.

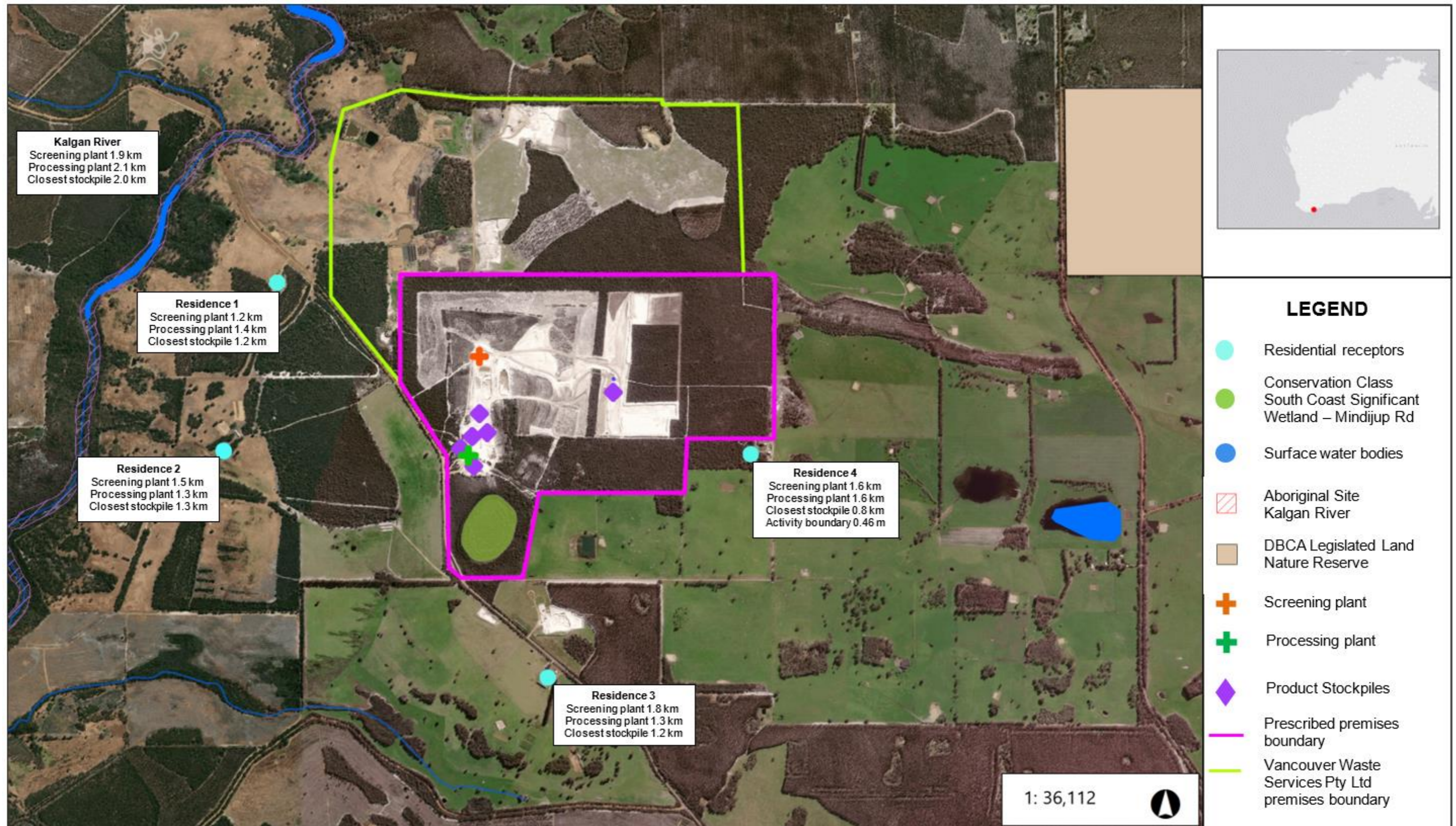


Figure 2: Distance to sensitive environmental and human receptors within 2 km from the screening plant, processing plant and stockpiles.

3.2 Risk ratings

Risk ratings have been assessed in accordance with the *Guideline: Risk Assessments* (DWER 2020) for those emission sources which are proposed to change and takes into account potential source-pathway and receptor linkages as identified in Section 3.1. Where linkages are incomplete they have not been considered further in the risk assessment.

Where the Licence Holder has proposed mitigation measures/controls (as detailed in Section 3.1), these have been considered when determining the final risk rating. Where the Delegated Officer considers the Licence Holder's proposed controls to be critical to maintaining an acceptable level of risk, these will be incorporated into the licence as regulatory controls.

Additional regulatory controls may be imposed where the Licence Holder's controls are not deemed sufficient. Where this is the case the need for additional controls will be documented and justified in Table 4.

The Revised Licence L6798/1993/12 that accompanies this Amendment Report authorises emissions associated with the operation of the Premises i.e. Category 5 activities.

The conditions in the Revised Licence have been determined in accordance with *Guidance Statement: Setting Conditions* (DER 2015).

Table 4: Risk assessment of potential emissions and discharges from the Premises during operation

Risk Event					Risk rating ¹ C = consequence L = likelihood	Licence Holder's controls sufficient?	Conditions ² of licence	Justification for additional regulatory controls
Source/ Activities	Potential emission	Potential pathways and impact	Receptors	Licence Holder's controls				
Operation								
Additional screening, processing, hauling, unloading and loading of material Additional storage of product in stockpiles Increased tailings and reject material Increased vehicle movements	Dust - generated by exposed sand	Air/windborne pathway causing impacts to amenity	Residential properties - closest to screening plant 1.2 km, closest to nearest stockpile 800 m (460 m from activity boundary) and closest to premises boundary 80 m.	Refer to Section 3.1	C = Minor L = Unlikely Medium Risk	N	<u>Condition 1</u> Condition 3 <u>Condition 4</u> <u>Condition 5</u>	Controls within <i>Dust Management Plan 2021</i> (GHD, 2021) have been implemented on the premises to prevent dust moving beyond the premises boundary and are deemed necessary to control impacts from dust emissions. The dust management strategies within the plan have been added to the licence as conditions (1, 4 and 5) to maintain an acceptable level of risk. The Western Australian Environmental Protection Authority's <i>Guidance Statement No. 3: Separation Distances between Industrial and Sensitive Land Uses</i> (Environmental Protection Authority [EPA], 2005) (GS3), recommends a 300 to 500 m separation distance for sand extraction (no grinding or milling). The distance from the current activity boundary to the southeastern receptor is 460 m and wind roses from DWER Air quality branch as shown in Figures 3 and 4, show wind direction to be strong and frequent towards this receptor, particularly in summer months when conditions are dry; therefore there is an increased risk of impacts to this receptor.
			Kalgan River - 1.9 km from screening plant, 2 km from closest stockpile and 0.86 km from premises boundary. Nature Reserve (619446) 3.4 km from screening plant, 2.6 km from closest stockpile and 1.66 km from premises boundary.		C = Minor L = Rare Low Risk	Y	Condition 3	Additionally, stockpiles and mine voids (refilled with reject material) are likely to move closer to the southeastern residential receptor as the excavation area expands east due to increased throughput, and stockpile height, size and number may also increase, potentially increasing dust emissions impacting this receptor. Due to the above reasons, condition 1 (table 1, row 1, point 2), 4 and 5 controls are deemed necessary. This risk assessment is based on the current screening plant location as shown in Figure 3 of the amended licence; therefore condition 1 has been added to clarify its location. The 100 m native vegetation buffer surrounding the premises provides some protection from wind erosion. EPBC 2012/6472 prohibits clearing of this buffer. Note: Non-compliance with Annual Environmental Report 27/12/2012 is noted. The report omitted effectiveness of dust mitigation measures for the reporting period. There is no record of complaints for this premises.

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Risk Event					Risk rating ¹ C = consequence L = likelihood	Licence Holder's controls sufficient?	Conditions ² of licence	Justification for additional regulatory controls
Source/ Activities	Potential emission	Potential pathways and impact	Receptors	Licence Holder's controls				
	Dust - generated by exposed sand potentially containing respirable crystalline silica	Air/windborne pathway causing impacts to human health	Residential properties - closest to screening plant 1.2 km west, closest to nearest stockpile 800 m and closest to premises boundary 80 m southeast.		C = Major L = Rare High Risk		<u>Condition 1</u> Condition 3 <u>Condition 4</u> <u>Condition 5</u> <u>Condition 6</u> <u>Condition 7</u> <u>Condition 8</u> <u>Condition 14</u>	Justification for additional controls outlined in detail in Section 3.2.1.
	Dust - generated by exposed sand	Air/windborne pathway causing accumulation of dust on native vegetation and/or an increase of suspended solids and sediment in nearby surface water bodies	Proteaceae Dominated Kwongkan Shrublands within premises boundary South Coast Significant Wetlands (closest is Mindijup Road wetland within premises boundary approximately 100 m from the activity boundary)	Refer to Section 3.1	C = Minor L = Unlikely Medium Risk	N	<u>Condition 1</u> Condition 3 <u>Condition 4</u> <u>Condition 5</u>	<p>Native vegetation within the premises provides a crucial 100 m buffer between mining activities and receptors, reducing the likelihood of stormwater, dust and noise emissions extending beyond the premises boundary. It is therefore necessary to protect the native vegetation from accumulation of dust which may affect biological processes and increase vulnerability to other stressors (EPA Victoria. 2020).</p> <p>Due to the close proximity and conservation status of Mindijup Road wetland to mining activities, stockpiles and access routes (transported product), the addition of conditions 1, 4 and 5 are necessary to reduce dust emissions at the source to prevent impacts to wetland water quality and riparian vegetation due to dust deposition (EPA Victoria, 2020).</p> <p>This risk assessment is based on the current screening plant location as shown in Figure 3 of the amended licence; therefore condition 1 has been added to clarify the location.</p> <p>The native vegetation buffer surrounding Mindijup Road Wetland provides some protection from wind erosion. EPBC 2012/6472 prohibits clearing of this buffer; therefore the buffer will remain.</p>

Risk Event					Risk rating ¹	Licence Holder's controls sufficient?	Conditions ² of licence	Justification for additional regulatory controls
Source/ Activities	Potential emission	Potential pathways and impact	Receptors	Licence Holder's controls	C = consequence L = likelihood			
			<p>Kalgan River - 1.9 km from screening plant, 2 km from closest stockpile and 0.86 km from premises boundary</p> <p>Nature Reserve (619446) 3.4 km from screening plant, 2.6 km from closest stockpile and 1.66 km from premises boundary</p>	Refer to Section 3.1	<p>C = Slight L = Rare Low Risk</p>	Y	Condition 3	<p>Given the separation distance to DBCA nature reserve (shown in Figure 2), controls within the dust management plan and wind rose data, it is rare that dust emissions would reach this receptor.</p> <p>The likelihood of dust emissions reaching Kalgan river is also rare due to the separation distance and presence of native vegetation buffers between sources of dust emissions and the river.</p> <p>No additional controls added.</p>
	Sediment laden water	Potential increase in sediment loads in overland runoff causing ecosystem disturbance due to increased suspended solids and sedimentation	<p>Kalgan River 0.86 km west of premises boundary</p> <p>South Coast Significant Wetland (Mindijup Road wetland within premises boundary)</p>	Refer to Section 3.1	<p>C = Minor L = Rare Low Risk</p>	Y	N/A	<p>There is a downward slope from on-site ground disturbing activities to Kalgan River and Mindijup Road wetland; however soil within and surrounding the premises is silica sand which is free draining. If overland flow is generated, it is likely to be intercepted by vegetation buffers, significantly slowing migration and erosive capacity (DoW 2006). Additionally, stormwater is likely to migrate towards mining voids and rehabilitated areas within the premises which are lower than the surrounding landscape, rather than towards receptors.</p> <p>Due to the separation distance and the 100 m native vegetation buffer surrounding the premises boundary, the likelihood of sediment laden water reaching Kalgan River is rare.</p>
		Unforeseen failure of pipelines or containment infrastructure			<p>C = Moderate L = Rare Medium Risk</p>	N	Condition 2	<p>The area between Mindijup Road wetland and the mining activity boundary is either vegetated or in the process of rehabilitation and EPBC 2012/6472 clearing permit does not permit clearing of this area; therefore the buffer will remain to slow stormwater flow and minimise erosion (DoW, 2006). Additionally, stormwater runoff from the roof of nearby on-site buildings is eliminated by the collection of rainwater into tanks, minimising the generation of stormwater on site.</p> <p>Condition 2 is necessary due to the close proximity of conservation class Mindijup Road wetland to pipelines and infrastructure carrying slurry containing high sediment loads, therefore daily visual inspections of pipelines and infrastructure integrity are added in condition 2.</p>

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Risk Event					Risk rating ¹	Licence Holder's controls sufficient?	Conditions ² of licence	Justification for additional regulatory controls
Source/ Activities	Potential emission	Potential pathways and impact	Receptors	Licence Holder's controls	C = consequence L = likelihood			
Increase in vehicle movements, earth moving equipment activity, screening plant and processing plant operation	Noise	Air/windborne pathway causing impacts to health and amenity	Residential properties – closest to screening plant 1.2 km northwest, closest to processing plant 1.3 km west, closest to nearest stockpile 800 m southeast (460 m from activity boundary). Closest to premises boundary 80 m south.	Refer to Section 3.1	C = Minor L = Rare Low Risk	N	<u>Condition 1</u>	<p>The Western Australian EPA's <i>Guidance Statement No. 3: Separation Distances between Industrial and Sensitive Land Uses</i> (EPA, 2005) (GS3), recommends a 300 to 500 m separation distance for noise generated by sand extraction industries with no grinding or milling works.</p> <p>The separation distances to residential receptors from the main sources of noise emissions (screening plant and processing plant) are greater than 1 km and there is no record of noise complaints for the premises; therefore, the <i>Environmental Protection (Noise) Regulations 1997</i> is deemed sufficient to manage noise emissions; however the screening plant is moveable and able to be moved to a location closer to the southeastern residential receptor, which may increase the risk of noise impacts to this receptor. As this risk assessment is based on current screening plant and processing plant locations (Figure 3 of the amended licence), condition 1 is deemed necessary.</p> <p>Note: Vegetation buffers surrounding the premises may provide some protection from noise impacts reaching residential receptors (DoW 2006).</p>

Note 1: Consequence ratings, likelihood ratings and risk descriptions are detailed in the *Guideline: Risk assessments* (DWER 2020).

Note 2: Proposed Licence Holder's controls are depicted by standard text. **Bold and underline text** depicts additional regulatory controls imposed by department.

3.2.1 Dust emissions (respirable crystalline silica) – Justification for additional controls

Conditions 1, 4, 5 and 14

The recommended separation distance between sensitive land uses (in this case human receptors) and land used for industrial sand extraction activities (not involving milling or grinding), as per the Western Australian EPA's *Guidance Statement No. 3: Separation Distances between Industrial and Sensitive Land Uses* (EPA, 2005) is 300 to 500 m based on fugitive dust emissions. The distances between all on-site sources of fugitive dust emissions and residential receptors 1 to 3 (Figure 2) exceed 1 km, providing a buffer sufficient to reduce the likelihood of emissions reaching these receptors. Remnant vegetation between receptors 1, 2 and 3 and the source of fugitive dust emissions is sufficiently dense and tall to intercept the emission pathway, further reducing the likelihood of impacts to these receptors. However, the screening plant is moveable; therefore, the addition of condition 1 to the Revised Licence is required to ensure the separation distance to receptors remains sufficient to mitigate impacts.

Workplace Health and Safety (WHS) occupational monitoring conducted on the premises in 2022 and 2023, detected respirable crystalline silica (RCS) (note that levels are within workplace exposure standards). While occupational monitoring of RCS is not a direct indication of ambient air concentrations (there may be controls or conditions to lower occupational exposure), it does indicate that impacts to receptors are possible.

Dust particles less than 10 µm in diameter (PM₁₀) are capable of causing a range of acute and chronic health impacts when inhaled. Although the likelihood of impacts from fine particulate matter (<PM₁₀) reaching residential receptors is rare (due to distance, existing strategies within the *Dust Management Plan 2021* and surrounding vegetation), the human health consequences are major (Safe Work Australia, 2022). Recent research revealing respirable crystalline silica as a Category 1A carcinogen with major, irreversible associated health impacts warrants the addition of regulatory controls to reduce dust generation at the source (Safe Work Australia, 2022).

Stockpile height, location, size and number may increase in the future due to the increased throughput, potentially increasing dust emissions. Particle size of product stockpiles is greater than 50 µm and is therefore unlikely to cause health impacts; however the undersized fractions of the reject material returned to the mining void is less than 50 µm and has the potential to cause health impacts. Haul roads are also likely to contain finer fractions of silica dust.

To date, there have been no recorded complaints relating to dust emissions; therefore conditions which reduce emissions at the source (conditions 1, 4 and 5) are deemed sufficient to manage current dust emissions.

Future expansion - Conditions 6, 7 and 8

The southeastern residential receptor (residence 4) is located 80 m from the premises boundary, 800 m from the closest stockpile and approximately 460 m from the edge of the activity boundary; therefore, the distance between ground disturbing activities and residence 4 is currently less than 500 m, the upper range of the recommended separation distance of 300 to 500 m outlined in *Guidance Statement No. 3: Separation Distances between Industrial and Sensitive Land Uses* (EPA, 2005). Where separation distances provided in the Guidance Statement are not met, the likelihood of impacts increases.

Dust is transported via windborne pathways; therefore meteorological conditions are determinants of dust migration. Wind rose data taken from the department's Albany Air Quality Meteorological Station is representative of meteorological conditions at the premises, and shows annual (Figure 3) and seasonal autumn, winter and spring (Figure 4) predominant wind direction and strength for 2017 to 2022 to be from the west-northwest; therefore it is likely that dust may migrate towards residence 4 (south-east of the premises). Where rainfall is low and temperatures are high, stockpiles, roads and reject material have the potential to dry out, increasing the likelihood of transmission via wind-borne pathways. Although most west-northwesterly winds are in winter months when rainfall is higher and soil moisture is likely to be retained, dust migration is possible in the event of reduced rainfall.

Currently, the separation distance between sources of fugitive dust emissions and residence 4 (Figure 2) is deemed sufficient not to trigger a more detailed assessment. However, as the activity boundary moves east due to expansion of mining activities, the buffer distance is likely to reduce to be less than 500 m, requiring a more detailed analysis. The addition of dust monitoring and revision of the dust management plan as outlined in conditions 6, 7 and 8, will demonstrate whether the reduced distance from the source of emissions to residence 4 will result in increased emissions reaching the receptor and if increased emissions are identified, the revised dust management plan will trigger management actions that will be employed to mitigate and minimise the impacts of potential silica dust emissions.

The area defined in Figure 3 of the Revised Licence employs a 430 m (+/-10m) separation distance from residence 4 sensitive land use activity boundary to the industrial land use activity boundary and is within the recommended separation distances of 300 to 500 m for sand extraction activities as outlined in *Environmental Protection Authority - Guidance for the Assessment of Environmental Factors: Separation Distances between Industrial and Sensitive Land Uses No. 3*. Due to the substantial increase in throughput, the severity of respirable silica health impacts, hours of operation (24 hours per day and 5 days per week), and with consideration of the licence holder's comments outlined in Table 5, a 430 m separation distance is selected. Technical advice sought from the department's Air Quality Branch was utilised to inform the risk assessment and the requirements outlined in conditions 6, 7 and 8.

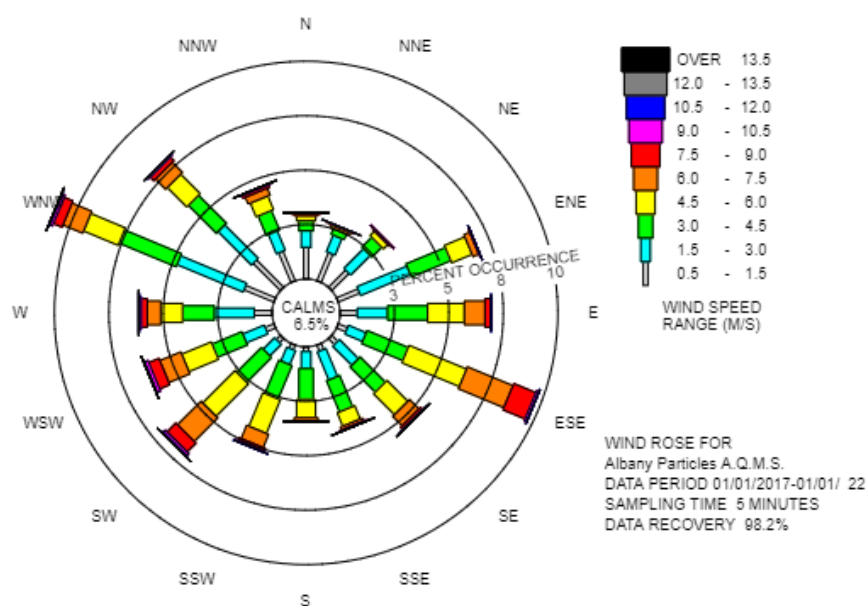


Figure 3: Wind rose from DWER Albany Air Quality Monitoring Station (2017-2022)

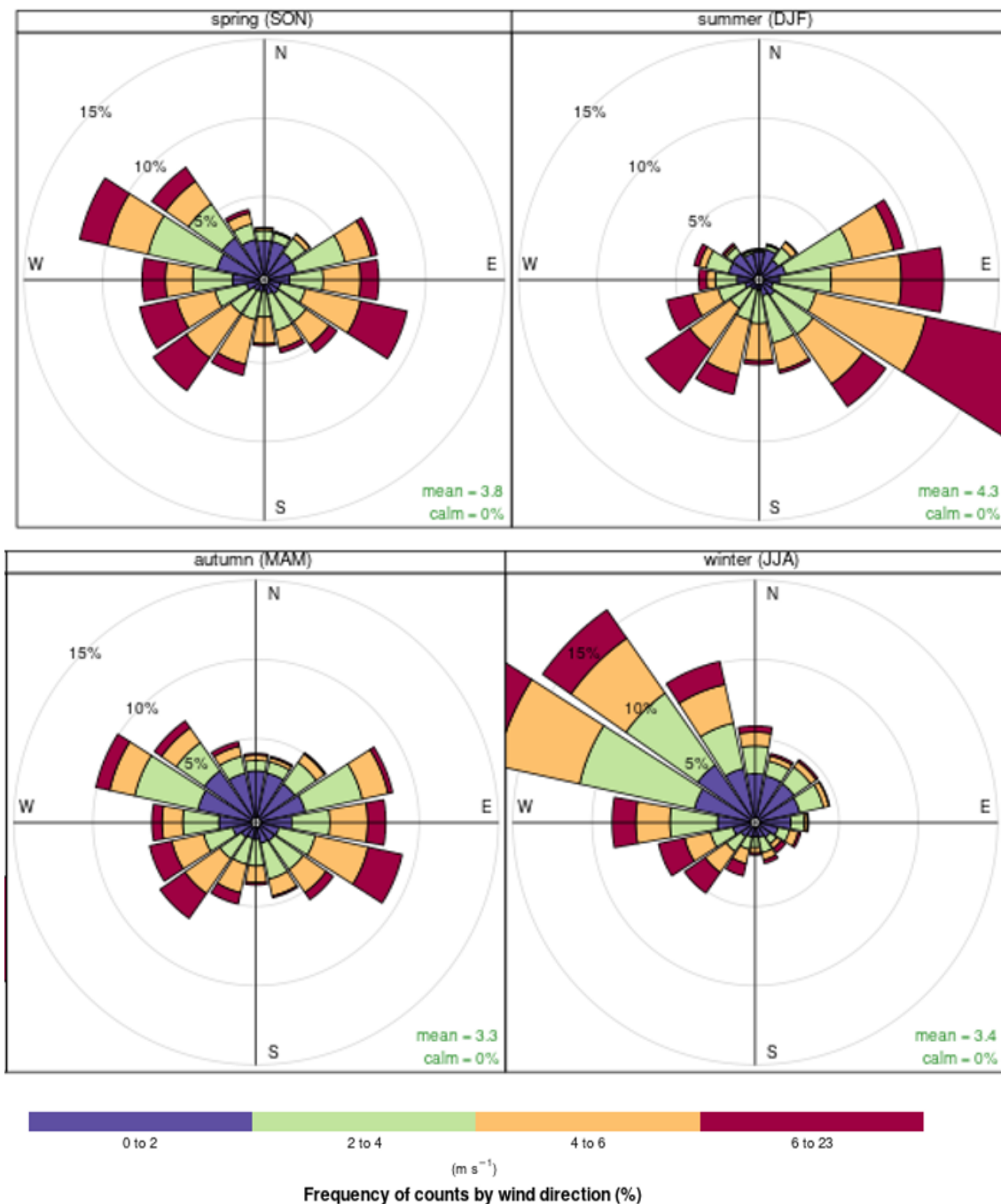


Figure 4: Seasonal wind roses from DWER Albany AQMS (2017 to 2022)

Departmental Advice

The Department recommends that the licence holder seeks advice from the Department of Health (DoH) regarding RCS in ambient air, when drafting the revised Dust Management Plan. Note that the Department will obtain internal and external expert advice from the Department's Air Quality Branch, DoH and DMIRS when reviewing the revised Dust Management Plan.

The Delegated Officer suggests that the licence holder opens lines of communication with residence 4 prior to expansion, allowing residents to lodge concerns or complaints directly

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with the licence holder and enabling management strategies to be implemented immediately, avoiding impacts.

4. Consultation

Table 5 provides a summary of the consultation undertaken by the department.

Table 5: Consultation

Consultation method	Comments received	Department response
Department of Mines, Industry and Safety (DMIRS) advised of proposal (4/05/23)	<p>DMIRS provided comment on the amendment to increase throughput to 320,000 tonnes per year on 13 June 2023:</p> <p>The proposed amendment is generally in line with the approved Mining Proposal (MP Reg ID 47246), which indicates that approximately 350,000 tonnes of sand is to be processed annually, 200,000 tonnes of silica sand is to be produced annually and approximately 150,000 tonnes of residue sand and process waste is to be generated annually.</p> <p>DMIRS notes that if there is any disturbance outside the approved disturbance envelope, if there is any alteration in the characteristics of key mine activities outlined in the mining proposal, if an activity type is changed or added beyond those detailed in the mining proposal or if an increase in area is required for mine activities, a revised mining proposal submission is required.</p>	<p>DMIRS response is noted.</p> <p>Licence Holder advised to contact DMIRS to discuss proposed plans for the premises to ensure the plans are within the scope of the current mining proposal.</p>
Department of Mines, Industry and Safety (DMIRS) advised of proposal (21/08/23)	<p>DMIRS provided comment on the amendment to increase throughput to 460,000 tonnes per year on 14 September 2023, stating that the proposed amendment to increase throughput and to increase days of operation from 4 to 5 days per week is not in alignment with the current Mining Proposal (M 70/793 Reg ID 47246). DMIRS stated that the current Mining Proposal allows a maximum of 200,000 tonnes to be processed annually and a maximum of 350,000 tonnes to be extracted annually.</p> <p>DMIRS informed DWER that an amendment to the current Mining Act approval is required and is to include records of stakeholder engagement and a strategy for continuous stakeholder engagement.</p>	<p>It is the responsibility of the licence holder to ensure all other relevant approvals are in place prior to commencing activities authorised under the licence.</p> <p>Licence Holder advised to contact DMIRS to discuss their requirements under the <i>Mining Act 1978</i>.</p>
Department of Mines, Industry and Safety (DMIRS) advised of proposal (21/08/23)	<p>DMIRS provided revised comment on the amendment to increase throughput to 460,000 tonnes per year, stating no objections to DWER granting the licence amendment, providing that emissions and impacts due to dust and noise are adequately managed.</p>	<p>DMIRS response is noted.</p> <p>DWER intends to grant the throughput increase of 460,000 tonnes per annum.</p>
Local Government Authority advised of proposal (email sent 4/05/23 and 21/08/23)	<p>No comments received from the City of Albany relating to the amendment to increase throughput to 320,000 tonnes per year or to 460,000 tonnes per year.</p>	N/A
Licence Holder was	Refer to Appendix 2.	Refer to Appendix 2.

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provided with draft amendment on (6/11/23)		
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5. Conclusion

Based on the assessment in this Amendment Report, the Delegated Officer has determined that a Revised Licence will be granted, subject to conditions commensurate with the determined controls and necessary for administration and reporting requirements.

6. Summary of amendments

Table 6 provides a summary of the proposed amendments and will act as record of implemented changes. All proposed changes have been incorporated into the Revised Licence as part of the amendment process.

Table 6: Summary of licence amendments

Condition no.	Proposed amendments
N/A	Licence updated. Converted to new template. 'Shall' reworded to 'must' consistent with current licensing format.
Cover page	Change of category 5 throughput from 250,000 to 460,000 tonnes per annual period. Premises details updated.
Licence history table	This amendment added to licence history table.
Condition 1 Table 1	Previous condition 1 deleted - this condition is not risk-based and is now redundant. New condition and table added – infrastructure and operational requirements.
Condition 2 Table 2	New condition and table added – inspection of infrastructure.
Condition 3	New numbering. Previously condition 2. Condition reworded as per current licensing wording.
Condition 4	New condition added – dust management.
Condition 5	Previous condition 5 deleted. Condition is not enforceable, does not ensure compliance and is now redundant. New condition added – tailings and reject material dust management.
Condition 6	New condition added – revised Dust Management Plan submission.
Condition 7	New condition added – revised Dust Management Plan inclusions.
Condition 8	New condition added – revised Dust Management Plan implementation.
Condition 9	New numbering. Previously condition 3. Condition referencing updated.

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	Condition 9(c) added to ensure inspections required under condition 2(c) are recorded.
Condition 10	New numbering. Previously condition 4. Condition referencing amended.
Condition 11	New numbering. Previously condition 6.
Condition 12	New numbering. Previously condition 7
Condition 13 Table 3	New numbering. Previously condition 8. 'Annual Environmental Report' amended to 'environmental report'. Table 1 relabeled Table 3. Table 3 title amended to 'Environmental reporting requirements', 'or table (if relevant)' removed from column 1 heading and column 2 heading amended to 'Requirement' as per current licensing wording and format. 'Forms are available on the department's website' added to Note 1 beneath Table 3, consistent with current licensing format.
Condition 14 Table 4	New numbering. Previously condition 9. Column 1 redundant – deleted from table. Table 2 relabeled Table 4. Note 2 beneath Table 4 updated to 'N1 form is in Schedule 2'.
Definitions: Table 5	Definitions added: 'activity boundary', 'approved form', 'condition', 'ground disturbing activity' and 'PM ₁₀ '.
Schedule 1: Maps	Premises map (Figure 1) updated to recent imagery. Premises map – Area requiring Revised Dust Management Plan Submission (Figure 2) added. Site plan map (Figure 3) added. Screening plant map (Figure 4) added. Processing plant, workshop and office map (Figure 5) added. N1 form updated.

References

1. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
2. Department of Water and Environmental Regulation (DWER) 2020, *Guideline: Environmental Siting*, Perth, Western Australia.
3. Department of Water and Environmental Regulation (DWER) 2020, *Guideline: Risk Assessments*, Perth, Western Australia.
4. Department of Water (DoW) 2006, *Water Quality Protection Note 6 – Vegetation Buffers to Sensitive Water Resources*, Perth, Western Australia.
5. Environmental Protection Authority (EPA) 2005, *Guidance for the Assessment of Environmental Factors (in accordance with the Environmental Protection Act 1986): Separation Distances between Industrial and Sensitive Land Uses No. 3*, Perth, Western Australia.
6. Environmental Protection Authority Victoria 2020, *Working with or adjacent to waterways - Publication 1896*, Carlton, Victoria.
7. GHD 2021, *Mindijup Sand Mine 570 Mindijup Road, Palmdale - Dust Management Plan 2021*, Perth, Western Australia.
8. Safe Work Australia, 2022, *Workplace Exposure Standards for Airborne Contaminants*, Canberra, Australian Capital Territory.

Appendix 1: Summary of Licence Holder's comments on risk assessment and draft conditions

Condition	Summary of Licence Holder's comment	Department's response
Condition 2	Request to revise 'Frequency of inspection', in column 3 of Table 2, to "Daily inspections when site is operational only".	The Delegated Officer considers the request reasonable due to days of operation being limited to 5 days a week. Rows in column 3 of Table 2 amended to 'daily when operating'.
Condition 4(b)	"AustSand Mining is currently working to minimise bare ground by rehabilitating areas within mine void and access roads to minimise dust lift-off. Clearing activities are also being minimised to 3 ha at a time to reduce open areas". Request to amend to "maintaining haul routes and access roads so as to minimise visible dust".	The Delegated Officer considers the terminology 'to minimise visible dust' is sufficiently clear to be enforceable; therefore, condition 4(b) is amended to 'applying water to haul routes and access roads using a water cart so the generation of visible dust from the movement of traffic does not occur' to clarify condition requirements and to reflect wording used in condition 5(b).
Condition 4(c)	Covering loads during transportation may pose a safety risk to truck drivers when leaving/entering haul trucks to remove/apply covers. Travel distance from the mine void pit face to the screening plant is short, and "wetting loads would not significantly reduce visible dust". Dust generated by vehicles will be sufficiently managed by conditions 4(a) and 4(b). Request to remove condition 4(c).	Condition 4(c) removed from the DRAFT licence as requested. Remaining conditions are considered sufficient to manage dust emissions from the premises.
Condition 4(d)	Request to amend to "maintaining stockpiles so as to minimise visible dust".	The Delegated Officer considers the terminology 'to minimise visible dust', not enforceable; therefore, the condition is amended to 'wetting down of stockpiles so the generation of visible dust lift-off does not occur'.
Condition 5(a)	The length of the tailings tipping area is variable and reference to a 20 m tipping area in the <i>Dust Management Plan 2021</i> (GHD, 2021) requires revision. The applicant states "the tipping area is regularly covered with coarse material to minimise dust generation". Request to amend condition 5(a) to "the size of the tipping face in the tailings tipping area is kept to a minimum".	The Delegated Officer considers the terminology 'is kept to a minimum' as not enforceable and considers condition 5(b) adequate to manage tailings dust emissions, given that the tailings material has a high moisture content when deposited in the tailings tipping area; therefore, condition 5(a) has been removed.

Condition	Summary of Licence Holder's comment	Department's response
Condition 6	Request to reduce the separation distance from the industrial activity boundary to residence 4 sensitive land use activity boundary to 430 m at the location of the existing access roads, to allow access to the north for expanding operations into the northeastern corner of the premises prior to submission of the revised Dust Management Plan (DMP).	The shortest distance from the activity boundary to the sensitive receptor boundary is currently 460 m and there have been no reports of dust complaints relating to the premises. Additionally, the requested distance of 430 m remains within the 300-500 m suggested separation distance outlined in <i>Guidance for the Assessment of Environmental Factors (in accordance with the Environmental Protection Act 1986): Separation Distances between Industrial and Sensitive Land Uses No. 3</i> for sand extraction activities; therefore the Delegated Officer has amended the boundary to be 430 m from the residence 4 sensitive land use activity boundary in all directions, which will allow access to the northeastern corner of the premises via the existing access road, as requested.
Condition 7(c)	AustSand Mining propose to commence 6 months of baseline monitoring prior to submission of the revised DMP (12 months prior to expansion into the southeastern corner of the premises). Baseline monitoring intends to capture the summer season.	Condition 7(c) amended to clarify the revised DMP 'baseline and ongoing monitoring' requirements with consideration of the applicant's comments. Conditions 7(c), 7(d) and 7(e) elaborate on the previous condition 7(c). Previous conditions 7(e to g) remain unchanged and have been relabelled to be 7(f to i) accordingly.
Figure 2	Request to reduce the separation distance between the activity boundary and the sensitive land use boundary to 430 m in Figure 2, to allow access to the northeastern corner of the premises via the existing access/haul roads prior to submission of the revised DMP.	Figure 2 updated to reflect condition 6 revision. Refer to condition 6 response.

VALIDATION CHECKLIST: WORKS APPROVAL, LICENCE, REGISTRATION, AND AMENDMENT APPLICATIONS

Roles and Responsibilities for validation of works approval and/or licensing applications:

Licensing Officer: you are to validate the application package to ensure that information provided is complete and accurate. In order to complete this task, you must complete Sections 1, 2, 3 and 4. If further information is required from the applicant during validation then complete Section 6.

Delegated Officer: you are to check that the validation has been undertaken appropriately and endorse that there is sufficient information to commence assessment. In order to complete this task, you must review Sections 1, 2, 3 and 4 and complete Section 5. If the Licensing Officer has determined that further information is required you must also review Section 6.

SECTION 1: APPLICATION SUMMARY

Application type				
Works approval	<input type="checkbox"/>			
Licence	<input type="checkbox"/>	Relevant works approval number:		None <input type="checkbox"/>
		Has the works approval been complied with?		Yes <input type="checkbox"/> No <input type="checkbox"/>
		Has time limited operations under the works approval demonstrated acceptable operations?		Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>
		Environmental Compliance Report / Critical Containment Infrastructure Report submitted?		Yes <input type="checkbox"/> No <input type="checkbox"/>
		Date Report received:		
Renewal	<input type="checkbox"/>	Current licence number:		
Amendment to works approval	<input type="checkbox"/>	Current works approval number:		
Amendment to licence	<input checked="" type="checkbox"/>	Current licence number:	L6798/1993/12	
		Relevant works approval number:		N/A <input type="checkbox"/>
Registration	<input type="checkbox"/>	Current works approval number:		None <input type="checkbox"/>
Date application received		26 July 2023		
Applicant and Premises details				
Applicant name/s (full legal name/s)		TT Sand Pty Ltd		
Premises name		Mindijup Silica Sand Mine		
Premises location		Mining Tenement M 70/793		
Local Government Authority		City of Albany		

Application documents		
HPCM file reference number:	DER2015/000288-1~3	
Key application documents (additional to application form):	<ul style="list-style-type: none"> • Certificate of Title • ASIC certificate • Certificate of Registration on Change of Name • Premises map • Site Plan map 6/11/22 • Attachment 6A - Emissions and discharges risk assessment • Attachment 7 - Siting and Location map 14/1/21 & Site Contour Map 30/5/23 • Attachment 8 - Dust Management Plan (GHD, 2021) • Appendix A - Figures (Location map 14/1/21, Siting and Location map 14/1/21 and Site Plan map 9/6/21) • Appendix B - Complaint and corrective action reporting form • Attachment 9 - Health and Hygiene Management Plan (AustSand Mining 2021) 	
Scope of application/assessment		
Summary of proposed activities or changes to existing operations.	<p>Licence amendment to increase throughput from 250,000 tonnes per year to 460,000 tonnes per year by increasing operation from four days per week to five days per week. There are no other changes to operations or to emissions and discharges proposed.</p> <p>It is expected that the mine site will:</p> <ol style="list-style-type: none"> 1. Process up to 460,000 tonnes of sand per year 2. Produce 320,000 tonnes of silica sand as product per year 3. Produce 140,000 tonnes of material to be returned to the mining void as reject material per year. <p>Background</p> <p>Mindijup Silica Sand mine operations:</p> <p>Raw material (sand) is excavated via surface excavation and is hauled to the screening plant stockpile. The stockpile raw material is fed into a hopper and conveyed to the on-site mobile screening plant to remove large impurities. The screened material is pumped as a slurry to the onsite processing plant which operates using a wet gravity process. Tailings material is pumped as a slurry to the tailings dam and silica sand product is graded and stored in stockpiles before being transported to Albany Port.</p>	
Category number/s (activities that cause the premises to become prescribed premises)		
Table 1: Prescribed premises categories		
Prescribed premises category and description	Assessed production or design capacity	Proposed changes to the production or design capacity
Category 5: Processing or beneficiation of metallic or non-metallic ore	Assessed – throughput of 250,000 tonnes per year	Increase throughput to 460,000 tonnes per year

Legislative context and other approvals		
Has the applicant referred, or do they intend to refer, their proposal to the EPA under Part IV of the EP Act as a significant proposal?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Referral decision No: N/A Managed under Part V <input type="checkbox"/> Assessed under Part IV <input type="checkbox"/>
Does the applicant hold any existing Part IV Ministerial Statements relevant to the application?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Ministerial statement No: N/A EPA Report No: N/A
Has the proposal been referred and/or assessed under the EPBC Act?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Reference No: 2012/6472
Has the applicant demonstrated occupancy (proof of occupier status)?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Certificate of title <input checked="" type="checkbox"/> dated 1998 General lease <input type="checkbox"/> Expiry: Mining lease / tenement <input checked="" type="checkbox"/> Expiry: 8/6/2035 (verified on Minedex) Other evidence <input type="checkbox"/> Expiry:
Has the applicant obtained all relevant planning approvals?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	Approval: Development approval (P93100) Expiry date: If N/A explain why?
Has the applicant applied for, or have an existing EP Act clearing permit in relation to this proposal?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	CPS No: 5511/2
Has the applicant applied for, or have an existing CAWS Act clearing licence in relation to this proposal?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Application reference No: N/A Licence/permit No: N/A No clearing is proposed.
Has the applicant applied for, or have an existing RIWI Act licence or permit in relation to this proposal?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Application reference No: N/A Licence/permit No: N/A Licence / permit not required.
Does the proposal involve a discharge of waste into a designated area (as defined in section 57 of the EP Act)?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Name: N/A Type: N/A Has Regulatory Services (Water) been consulted? Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/> Regional office: N/A

<p>Is the Premises situated in a Public Drinking Water Source Area (PDWSA)?</p>	<p>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>	<p>Name: N/A Priority: N/A Are the proposed activities/landuse compatible with the PDWSA (refer to <u>WQPN 25</u>)? Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/></p>
<p>Is the Premises subject to any other Acts or subsidiary regulations (e.g. <i>Dangerous Goods Safety Act 2004, Environmental Protection (Controlled Waste) Regulations 2004, State Agreement Act xxxx</i>)</p>	<p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>	<p><i>Mining Act 1978</i> <i>Environment Protection and Biodiversity Conservation Act 1999</i> <i>Environmental Protection (Noise) Regulations 1987</i> <i>Dangerous Goods Safety (Storage and Handling of Non-explosives) Regulations 2007.</i></p>
<p>Is the Premises within an Environmental Protection Policy (EPP) Area?</p>	<p>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>	
<p>Is the Premises subject to any EPP requirements?</p>	<p>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>	
<p>Is the Premises a known or suspected contaminated site under the <i>Contaminated Sites Act 2003</i>?</p>	<p>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>	<p>Classification: N/A Date of classification: N/A</p>