Government of Western Australia
Department of Water and Environmental Regulation

Decision Report

Application for Licence

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

Licence Number	L9445/2024/1
Applicant	Kimberley Ports Authority
Application number	APP-0026125
Premises	Port of Broome Location 409 on Miscellaneous Plan 221193 Lots 616 and 956 on Deposited Plan 240107 Lot 621 on Deposited Plan 70861 Lots 650 and 651 on Deposited Plan 415214 Lot 698 on Deposited Plan 209491 Lot 848 on Deposited Plan 174017 BROOME WA 6725 As defined by the coordinates in the Issued licence
Date of report	06 June 2025
Decision	Licence granted

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1. Decision summary

This decision report documents the assessment of potential risks to the environment and public health from emissions and discharges during the operation of the premises. As a result of this assessment, licence L9445/2024/1 has been granted.

2. Scope of assessment

2.1 Regulatory framework

In completing the assessment documented in this decision report, the Department of Water and Environmental Regulation (the department; DWER) 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 Application summary and overview of premises

On 27 June 2024, Kimberley Ports Authority (KPA, the applicant) submitted an application for a licence to the department under section 54 of the *Environmental Protection Act 1986* (EP Act).

The application relates to unloading mineral sands using rotating containers directly into ship cargo at Broome Port (the 'premises'), which is about 3.7 km southwest of Broome township. The applicant has also requested to incorporate registration R2432/2016/1 into the licence, which authorises boat maintenance activities under category 82 at the premises.

The proposed premises operation relates to categories 58 and 82 and respective assessed design capacities under Schedule 1 of the *Environmental Protection Regulations 1987* (EP Regulations) which are defined in licence L9445/2024/1. The equipment relating to the premises category and any associated activities which the department has considered in line with *Guideline: Risk Assessments* (DWER 2020a) are outlined in licence L9445/2024/1.

The applicant currently holds Registration R2548/2023/1 for Category 86 bulk material loading at the premises via a closed vessel loading system at an assessed throughput of 60,000 tonnes per annum.

Trial Conditions

Trial conditions will be applied to the licence in accordance with the *Guideline: Port Authority bulk handling trial (DWER 2018)*. Trial conditions are added to licences which fall under the Port Authority and are intended to provide operational flexibility for ports and minimise impacts to economic growth where it can be demonstrated that any risk to public health, amenity and the environment is minimized to an acceptable level.

To assist in minimising this risk, the trial conditions are intended to be conservative. Actual or ongoing Category 58 (or 58A) activities, assessed through a licence amendment after a trial, may be conditioned less conservatively depending on the results of the trial. Trial conditions require notification prior to commencement of the trial and require specified monitoring for potential emissions through the trial.

2.3 Exclusions

Wastewater treatment plant (WWTP) is operated within the boundary of the premises. The WWTP operates at a throughput of approximately 3 m^3 per day. This is below the production capacity thresholds of Categories 54 and 85 under the EP Regulations and therefore, operation of the WWTP does not form part of this assessment.

The Delegated Officer have also excluded assessment of potential natural radionuclides in dust given the Radiological Council of Western Australia and Department of Energy, Mines, Industry Regulation

and Safety (DEMIRS) have statutory responsibility for regulating radiation safety.

2.4 Overview of bulk loading operations

The applicant is currently authorised to conduct time-limited operations (TLO) for ship loading infrastructure specified in works approval W6852/2023/1. The applicant intends to export up to 1.6 million tonnes of mineral sands per year for up to 42 years, including magnetic concentrate, non-magnetic concentrate and paramagnetic concentrate. During active periods the facility will operate 24 hours per day, seven days per week.

The mineral sands product is initially loaded into enclosed rotating containers ('rotainers') at the mine site. Once each container is filled, it is secured, checked for residual product and transported by truck to the laydown areas within the Port of Broome premises. The containers are temporarily stored at Laydown area 1 and 3 prior to being trucked via bitumen-paved access roads to the Port wharf. Containers are typically handled with reach stackers, stacked up to 4-7 containers high.

The product is transferred directly into the vessel hold using a Mobile Harbour Crane or another type of ship crane equipped with Lidar sensing technology for precise placement, tipping height and positioning within the vessel's hold. The crane's rotating tipping frame is lowered onto the container, secured and then the container is lifted, maneuvered, and lowered into the hold. The lid of the container is opened as it descends, and the container is rotated 180 degrees to discharge its contents. Once emptied, the container is returned to its upright position, re-lidded, and lifted out of the hold.

During the loading process, earthmoving equipment may be used within the hold to evenly distribute the product. After loading, the vessel's hatch is closed, preparing it for transport. Empty containers are placed on the wharf where any residue is cleaned up with a mechanical sweeper. A forklift or the harbour crane is then used to reload the empty containers onto trucks for return to the laydown area and subsequent transport back to the mine.

Each vessel is loaded with approximately 40,000 to 60,000 tonnes of product, with an expected total annual throughput of up to 1.6 million tonnes. The applicant predicts the number of shipping movements for mineral sands exports to be fewer than 60 per year, depending on the load sizes.

The composition of the magnetic, non-magnetic and paramagnetic KMS sands products is described in Table 1. The product is not classified as hazardous or a Dangerous Good and has low toxicity.

Table 1 Composition of mineral sands handled at the premises

Product	TiO_2	Fe_2O_3	SiO_2	Al_2O_3	ZrO_2	U (ppm)	Th (ppm)	CeO_2
Magnetic concentrate	35-40%	45-57%	0-10%	0.8-1%	0-1%	45-60	400-600	0.2 - 0.3%
Non-magnetic concentrate	15-20%	<2%	20-30%	<1.5%	40-55%	300-375	900-1,150	0.2-0.4%
Para-magnetic concentrate	10-15%	15-20%	5-10%	<2%	3-10%	100-140	1.500-1900	0.5-1.50%

The source of mineral sands to be exported at the premises is Thunderbird Mine about 70 km west of Derby. The mining process involves the mining and concentration of heavy mineral sands and the separation of the heavy mineral concentrate into the individual minerals concentrates to make zircon products and ilmenite suitable for manufacturing titanium dioxide pigment or smelting into chloride slag.

2.5 Slipway operations

The applicant holds Registration R2432/2016/1 for Category 82 boat maintenance activities at an existing slipway at the premises. The slipway has vessel bays on a bunded hardstand area for storage and 'minor' works permitted by Kimberley Ports Authority. No abrasive blasting is permitted, nor are

organotin compounds used or removed from vessels. Potential contaminants in wash water include fuel, oil, detergents, anti-fouling paints and chemicals to remove biological hull foulants or marine biota.

2.6 Stormwater infrastructure

Stormwater is managed using compensation basins and open drainage swales. Weirs and vegetated swales are used to manage water velocity and quality. The drainage system and all associated structures including compensating basins are to be designed to collect and convey an Average Recurrence Interval (ARI) storm event of one in 100-year. Stormwater conveys directly to the ocean on the wharf deck.

3. Legislative context

3.1 Part IV of the EP Act

The Port of Broome premises itself is not regulated under Part IV of the EP Act. Rather, activities at the premises are governed by the conditions outlined in Ministerial Statement 1080, which was published on 10 August 2018, and by post-assessment changes approved under section 45C on 8 November 2022. Ministerial Statement 1080 authorises the construction and operation of a heavy mineral sands mining operation on the Dampier Peninsula and the transportation of the products to the ports of Broome and Derby for export.

Specifically, Ministerial Statement 1080 and post-assessment amendments permit:

- Up to 50 return journeys (100 truck movements) per day between the Thunderbird Mineral Sands Project (mine site) and the Port of Broome, operating 24 hours a day.
- The export of up to 1.6 million tonnes per annum (Mtpa) of bulk mineral sand products from the Port of Broome.

Radiation management

There is a Radiation Management Plan in place to monitor the potential impacts of elevated levels of NORMs in the mineral sands products. The supporting EPA report '*Report and recommendations of the Environmental Protection Authority - Thunderbird Mineral Sands Project (2017)'* identified that DEMIRS is responsible for regulating the mining and processing of radioactive materials with this responsibility formalised in a Memorandum of Understanding between the DEMIRS and the Radiological Council dated December 2012.

As part of the Radiation Management Plan required by the Radiological Council and the DEMIRS, the applicant will undertake monitoring of environmental radiation levels, including baseline monitoring, at the Thunderbird Mineral Sands Project. However, the scope of this monitoring does not include ambient marine monitoring at the premises.

3.2 Part V of the EP Act

Compliance history

A review of the departments Incidents and Complaints Management System found the department received no complaints from the public relating to air or dust emissions associated with the activities at the premises authorised under the works approval W6852/2023/1 TLO period.

3.3 Radiation Safety Act 1975

The mineral sands transported from the mine source include zircon concentrate, primary zircon and HiTi88 leucoxene, which are classified as radioactive substances as their radiation concentration will exceed one Bq/g. The applicant advises the products will have a specific activity concentration below 10 Bq/g and as such will not be required to have their transport regulated under the *Radiation Safety*

Act 1975. Environmental radiation level monitoring is specified in the Radiation Management Plan (see section 3.1) to monitor the potential impacts of elevated levels of NORMs in the mineral sands products.

4. Modelling and monitoring review

4.1 Noise modelling and monitoring

Acoustic assessments

The applicant submitted an *Operational Acoustic Assessment* (SLR 2024a) and *Laydown Acoustic Assessment* (SLR 2024b). These reports document noise modelling for several scenarios at the premises, with key activities (and therefore noise sources) being mineral sand rotainer loading operations using a mobile harbour crane at the wharf, with rotainers being stacked and trucked from different laydown areas in each scenario. Environmental noise modelling of the type used in the acoustic reports is based on an engineering method and therefore has inherent associated errors, a common error range is +/- 3 dB for this type of modelling.

As the port operates on a 24-hour basis and the activities are the same at night as during the day (Cruise ships excepted), night-time assessment criteria under the *Environmental Protection (Noise) Regulations 1997* (Noise Regulations) were applied in all scenarios. The Noise Regulations stipulate that noise levels in nearby residential areas do not exceed specified limits (assigned levels), which vary depending on the time of day and whether it is a standard workday or a holiday.

Noise levels were measured for a representative range of equipment and port activities during shiploading operations from 17-20 March 2024, during TLO authorised under works approval W6852/2023/1 (Table 2). These measurements captured noise emissions from operational rotainer ship loading activities as well as from wharf fodder loading. During this period only Laydown Area 1 was operational.

Table 2 A list of the noise sources at the premises and their representative sound power levels

Item or Operation	Sound Power Level (dBA)
Mobile Harbour crane – mineral sands loading	106
Forklift loading empty rotainers onto truck	105
Reach stacker unloading empty rotainers and loading full rotainers, LA10 for B-double truck	105
Bulk (liquid) truck travelling on wharf (20 km/hr)	102
Cattle truck/rotainer truck travelling on wharf (accelerating)	106
Walinga Agrivac transporting fodder mix onto ship – line of sight	116
Walinga Agrivac transporting fodder mix onto ship – alignment towards port buildings / residences. Fodder truck body acting as a partial barrier (normal operation).	112

For both acoustic assessments, the most noise-sensitive receivers identified within or in the vicinity of the port (receptors R2, R3, R4, R5 and R6) were given an Assigned Level (noise level in decibels) that included an ‘influencing factor’. This influencing factor was added to the default night-time

Assigned Level of 35 dB specified in the Noise Regulations. An influencing factor is applied to highly sensitive areas, such as areas where humans are sleeping, in scenarios where there are commercial or industrial land uses within 450 m of the receptor. L_{A10} of 50 dBA (Table 3). Another receptor, R1, was identified as a caretaken for the Port and is excluded from this assessment. Commercial receptors were given a night-time Assigned Level L_{A10} of 60 dBA.

Results

The noise modelling in the *Operational Acoustic Assessment* (SLR 2024) predicted that the proposed activities would be compliant with the requirements of the Noise Regulations (Table 3). However, the departments noise experts identified that the influencing factor applied to receptors R2 and R3 was overestimated by 2 dB and should be 13 dB instead of the 15 dB applied in the report. On the basis that the influencing factor for receivers R2 and R3 is 2 dB lower than estimated by SLR, a marginal exceedance of 1 dB is predicted at R3 for the scenario with loading of rotainers at the wharf sourced from Laydown Area 3 (indicated in red in Table 3).

Table 3 The revised predicted noise emissions for the modelling scenarios in the Operational Acoustic Assessment (SLR 2024) following DWER review

Receptor	Night-time Assign Level (dBA)	Noise level (dBA) predicted under each operational scenario			
		A — Fodder Loading	B — Mineral Sands Loading Laydown 1	C — Mineral Sands Loading Laydown 2	D — Mineral Sands Loading Laydown 3
R1 - Caretaker	NA	45	44	54	58
R2	48	40	41	47	48
R3	48	45	44	46	49
R4	46	39	44	40	40
R5 - Gun Club	38	38	37	36	36
R6 - Habit Resort	38	36	34	34	33
Cl - Fishing Club	60	47	45	45	45
C2 - Border Force	60	48	47	47	47
C3 - Pearl House	60	56	59	59	59
C4 - Function	60	47	46	46	47
C5 - Lookout	60	44	48	51	44
C6 - Aqua Tafe	60	41	42	53	49
C7 - Golf Club	60	37	34	35	34

The *Laydown Acoustic Assessment* (SLR 2024) identified that a reach stacker operating within 300 m of residential receptor R4 in Laydown Area 2 has the potential to exceed the assigned night-time noise level. The report advised this potential noise emission could be mitigated using an acoustic barrier. The Delegated Officer notes that Laydown Area 2 will not be used given concerns that the land in this area is sinking and not suitable for container stockpiling. No exceedances were predicted at receptor R4 from stackers operating in Laydown areas 1 and 3, which are over 450 m to the south of receptor R4.

The Delegated Officer has reviewed the information in this section and has found:

- A review of the modelling data indicates compliance with the Noise Regulations, with one exception being a marginal exceedance predicted at night for receptor R3 for the scenario with stacking rotainers at Laydown Area 3 for transport to the wharf. Noise verification monitoring for this scenario was not undertaken during TLO because Laydown Area 3 was not yet operational, therefore further controls should be considered to mitigate potential impacts from noise emissions on this receptor.

4.2 Air quality modelling and monitoring

Air quality modelling

An *Air Quality Assessment* (Environmental Technologies & Analytics [ETA] 2021) report was submitted to support the licence application. This assessment included modelling of ambient particulate levels and dust deposition at the premises, focusing on total suspended particulates (TSP), PM_{10}, and $PM_{2.5}$. The Weather Research and Forecasting (WRF) model and the CALMET/CALPUFF model suite were used to predict ground-level concentrations within the model domain and at identified sensitive receptors.

The model was built with the understanding that mineral sands would arrive at the premises in covered loads to be unloaded within storage sheds, followed by loading the sands into rotainers and shuttling rotainers to the wharf for unloading into the ship's hold. The proposed activity has since been revised so that the product remains within close rotainers at the premises until being unloaded to the vessel hold. Therefore, the model predictions, which relate to the transfer within the storage sheds, is no longer relevant.

The following is a summary of the key Air Quality Assessment findings:

- PM_{10} and TSP levels: Projected to remain within the *National Environmental Protection (Ambient Air Quality) Measure* (NEPM) 24-hour assessment criteria (50 µg/m^3) at all sensitive receptors. Any localized exceedances of the TSP and PM_{10} NEPM assessment criteria are confined to the immediate vicinity of the ship loader.
- $PM_{2.5}$ levels: Projected to stay within NEPM assessment criteria at all sensitive receptors and within the entire modelled area.

The highest predicted PM_{10} concentration was 24 µg/m³ at Broome Dinosaur Adventures (BDA), increasing to 44 µg/m³ with the background concentration. The highest predicted $PM_{2.5}$ concentration at BDA was 7 µg/m³, rising to 14 µg/m³ with the background concentration. The maximum predicted TSP 24-hour ground-level concentration at BDA was 47 µg/m³ (87 µg/m³ including background).

The report advised that given the granular nature of the product, it's low fines content and high specific gravity, minimal dust generation during vessel loading was anticipated.

Air quality monitoring (during time-limited operations)

A monitoring program was specified in works approval W6852/2023/1 that required continuous monitoring of PM_{10} and dust deposition during TLO at one location (L1) within the premises. The purpose of the monitoring was to provide baseline information for the port and conduct continuous monitoring to evaluate the dust related risks at sensitive receptors. One deposition monitor and two beta attenuation monitors (BAM) were installed at location L1, while an additional dust deposition monitor (L2) was installed to the northwest of L1 within the premises (Figure 1).

Figure 1 Air quality monitoring locations

Monitoring data collected from the period 20 February 2024 to 31 December 2024 was submitted to inform this assessment. The Delegated Officer notes that period includes the worst-case conditions for dust in Broome, from March to October, based a review of the historical meteorological conditions at the BoM Broome Airport station.

Monitoring data available up to 12 December 2024 is summarised in Table 4 and Table 5. The average PM_{10} concentration over the ten-month period detailed in Table 4 is 19.4 µg/m^3, which is below the annual PM_{10} criteria of 25 µg/m^3.

Two exceedances of the 24-hour PM_{10} criteria were reported during this period at monitoring location L1. The first exceedance on 20 March 2024 was attributed by the works approval holder to workshop activities including forklift operation, given winds were north-westerly. The second exceedance on 21 December 2024 was reportedly caused by the monitor using 10-minute data as a 1 hour rolling alarm, which has been rectified. No ship loading was occurring during the second exceedance event.

No exceedances of the dust deposition amenity criteria of 4 g/m^2/month was reported (Table 4). Results for monitoring location L2 from 21 February 2024 to 4 April 2024 are missing due to damage to the sample container in transit.

Table 4: Summary of PM_{10} concentrations and exceedances of relevant health criteria from February to December 2024

Monitoring Period	PM_{10} 24-hr average concentration ($\mu g/m^3$)		Exceedances of Criterion
	Max.	Ave.	
22-02-2024 to 29-02-2024	36.5	32.7	0
01-03-2024 to 31-03-2024	67.2[2]	22.7	1
01-04-2024 to 30-04-2024	26.9	15.5	0
01-05-2024 to 31-05-2024	23	14.4	0
01-06-2024 to 30-06-2024	29.4	12.8	0
01-07-2024 to 31-07-2024	29.4	13	0
01-08-2024 to31-08-2024	24.9	16.5	0
01-09-2024 to30-09-2024	40.4	20.2	0
01-10-2024 to 30-10-2024	46.2	28.9	0
01-11-2024 to 30-11-2024	43.2	27.7	0
01-12-2024 to 31-12-2024	50.5	22.2	1
All Data	67.22	19.4	2
Criteria	**50**	**29[1]**	**-**

1. Annual average criterion
2. Exceedance 20 March 2024 investigated: Elevated dust levels attributed by applicant to workshop activities including forklift operation and leveling of yard with a bar. Predominant wind direction WNW.

Table 5: Summary of dust deposition rates from April to October 2024

Monitoring Period	Dust Deposition Rate (g/m^2/month)		
	Ash Content	Combustible Matter	Total Insoluble Matter
Location L1			
04-04-2024 to 03-05-2024	0.3	0.2	0.5
03-05-2024 to 04-06-2024	0.6	<0.1	0.6
04-06-2024 to 03-07-2024	0.3	<0.1	0.3
03-07-2024 to 01-08-2024	0.7	0.1	0.8
01-08-2024 to 30-08-2024	0.6	0.1	0.7
30-08-2024 to 03-10-2024	0.8	0.1	0.9
03-10-2024 to 31-10-2024	1.4	0.4	1.8
Location L2			
04-04-2024 to 03-05-2024	1.0	0.3	1.3
03-05-2024 to 04-06-2024	1.8	<0.1	1.8
04-06-2024 to 03-07-2024	1.6	0.2	1.8
03-07-2024 to 01-08-2024	1.2	0.1	1.3
01-08-2024 to 30-08-2024	0.8	0.2	1.0
30-08-2024 to 03-10-2024	1.0	<0.1	1.0
03-10-2024 to 31-10-2024	2.2	1.7	3.9
Criterion			**4**

The department's internal air quality experts reviewed the *Air Quality Assessment* (ETA 2021) and TLO air monitoring data submitted to the department. A summary of their findings is presented below:

- Although the monitoring location L1 met compliance with Australian Standard (AS) (AS/NZS 3580), there are limitations as the monitor is unlikely to be representative of air quality in the vicinity of receptors to the south such as the Broome Volunteer Sea Rescue Group and Broome Fishing Club, due to the predominant winds being northeasterly and that L1 is not located precisely between the wharf and these receptors.
- The modelling results indicated the highest 24-hour PM_{10} concentrations were predicted at Broome Adventure Cruises and the Port Office. The location of air monitoring units at L1 may provide an indication of the air quality experienced by these two receptors, however there are limitations as the monitor is also not directly positioned between these receptors and source (wharf).
- Recommend installing real time monitors (RTMs) and wind sensors with BAMs to monitor fugitive dust emissions and wind conditions. These devices allow for the combination of dust concentration data with wind speed and direction for analysis of high concentration events.

The Department of Health (DoH) also reviewed the submission documents, including the *Air Quality Assessment* (ETA 2021) and TLO air monitoring data. DoH advised:

- There is no justification to include respirable crystalline silica in the analytical suite for air monitoring, based on the information provided including the component weight percentages shown in the safety data sheets for the product
- Any increase in particulates corresponds to a relative increase in risk, since no threshold of effect has been identified for particulate matter. Therefore, particulate emissions should be controlled as far as reasonably practicable, with NEPM standards representing acceptable risk levels.
- The *Air Quality Assessment* (ETA 2021) contains conservative assumptions for ship loading and includes modelling of activities that are no longer proposed. The results from Air Quality Monitoring Summary (Appendix H) provide more relevant data for understanding public health risk.
- Including $PM_{2.5}$ in air quality monitoring should be considered, to provide comprehensive monitoring of public health risks. Following further clarification from DoH, the Delegated Officer understands that DoH are satisfied that $PM_{2.5}$ monitoring is not necessary based on the distance to receptors, handling of the mineral sands material and PM10 monitoring results during the TLO period. However, DoH are supportive of a 12-month campaign period to collect $PM_{2.5}$ baseline data at monitoring location L1.

The Delegated Officer has reviewed the information in this section and has found:

- The modelling in the Air Quality Assessment (ETA 2021) was based on activities no longer proposed and is conservative given it was based on continuous loading, 24 hours per day, every day of the year.
- The location of monitoring units (BAMs and dust deposition gauges) at L1 has limitations in monitoring air quality that is representative of conditions at several receptors, including Broome Volunteer Sea Rescue Group, Broome Fishing Club, Broome Adventure Cruises and the Broome Port Office.
- A review of the modelling and monitoring data indicates the risk of dust emissions impacting the Broome Volunteer Sea Rescue Group and Broome Fishing Club is low, however it is recommended the applicant engages with these receptors as part of their wider site dust management program.
- The location of monitoring units at L1 is considered appropriate to monitor air quality that is representative of conditions at Broome Adventure Cruises, noting that the location is not precisely between this receptor and the potential source (wharf). The Port Office is excluded from the assessment in accordance with the *Guideline: Risk Assessments* (DER 2017), given it is occupied by employees, visitors, or contractors of the applicant who are protected from exposure risks under other State legislation.
- The absence of PM_{10} and TSP levels exceeding health criteria due to ship loading and laydown area operations, as well as the absence of complaints to date, indicate that dust levels at receptors identified within and surrounding the premises is generally low and have not significantly increased from the commencement of loading activities at the wharf and laydown areas.
- Ongoing monitoring of PM_{10} is recommended to support the monitoring of fugitive dust emissions at the premises, with the addition of real time monitors (RTMs) and wind sensors with BAMs to combine dust concentration data with wind speed and direction for analysis of high concentration events.

4.3 Marine ecology monitoring

The applicant commissioned an Ongoing Marine Monitoring Program (OMMP) that commenced in 2018 and included sampling of water quality, sediment quality and benthic communities, habitats and infauna. Monitoring results from 2018-2023 were provided in a document titled '*Ongoing Marine Monitoring 2023 Annual Report – Port of Broome (O2 2023)* to support the application.

The department's internal marine ecosystems experts reviewed the monitoring program and made the following recommendations to ensure the program can comprehensively monitor potential impacts to water and sediment quality associated with dust and accidental spills from the ship loading operations:

- Undertake a comprehensive analysis of the composition of each of the proposed products to be shipped including radioactive elements, at an accredited laboratory to a level of reporting which is below the Toxicant Default Guidelines for Sediment Quality (Australian and New Zealand Guidelines for Fresh and Marine Water Quality – ANZG 2018). Outcomes from the characterisation study should be used to identify parameters of concern to inform tailored marine monitoring programs.
- Analysis of particle size distribution of each of the proposed products to be shipped.
- Water and sediment quality monitoring programs should be focused on monitoring all parameters of concern identified through a characterisation study. Criteria for parameters for which Default Guideline Values (DGVs) do not exist are to be based on percentile

concentrations recorded at reference sites.

- It is recommended that water quality is monitored quarterly for the first two years of operations and sediment annually for the first five years. If no impacts are detected the frequency of monitoring may be reduced.
- The program should add bioaccumulation monitoring on an annual basis for the first three years. If no impacts are detected the frequency of monitoring may be reduced.

5. 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 2020a).

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.

5.1 Sources, pathways and receptors

Emissions and controls

The key emissions and associated actual or likely pathway during premises operation which have been considered in this decision report are detailed in Table 6, along with control measures the applicant has proposed to assist in controlling these emissions, where necessary.

Table 6 Proposed applicant controls

Emission	Sources	Potential pathways	Proposed controls
Dust	Unloading of mineral sands in rotainers into ship hold Fugitive dust originating from moving (loading, unloading) containers in the laydown areas	Air / windborne pathway causing impacts to human health and amenity	Off-site controls: • Product loaded into containers and sealed at the mine/source location and inspected for remnant product before transport by road to the lay down areas at the premises On-site controls: • All roads leading to laydown areas are bitumen; laydown area 1 is also bitumen and laydown area 2 is gravel base • Container checking regime at mine and laydown • The product (in rotating containers) will be loaded directly into a vessel hold via the mobile harbour crane. • Stevedore Safe Operations Procedure
Noise	Vehicle / machinery movements within the premises boundary Trucks and reach stackers used within the laydown areas for offloading of rotainers from trucks and reloading empty	Air (wind dispersion) pathway causing impacts to human health and amenity	• Routine site inspections and audit programs • Multiple containers per truck to reduce truck movements. Controls specified in Works Approval W6852/2023/1: • Noise monitoring during TLO to validate noise modelling • Attended noise monitoring will be undertaken within the first 6 months of operations.

Emission	Sources	Potential pathways	Proposed controls
	rotainers onto the trucks Mobile harbour crane used for unloading the rotainers.		• Logistics provider using Performance Based Standard (PBS) trucks which have lower noise emissions • Minimal handling method chosen.
Mineral sands	Accidental release from rotainers during ship loading	Direct discharge to marine waters	• The product (in enclosed rotating containers) will be loaded directly into a vessel hold via the mobile harbour crane
Contaminated stormwater / wash water	Stormwater interaction with mineral sands spillage or other contaminants spilled in laydown areas, access roads and wharf	Overland runoff from wharf, access roads and laydown areas entering the marine environment	• Loading method via enclosed rotating containers directly into the vessel cargo hold to prevent spillage. • Empty containers will be temporarily placed on the wharf deck, then loaded back onto the truck for transport back to the laydown area and then mine • Environmental Monitoring (Marine water and sediments) • Procedures for product handling to avoid spillage. • Regular housekeeping to remove spillage. • Sealed hardstand (Warf deck) • Emergency management procedures, including prompt cleanup of spills and disposal. • Loading will continue during light showers, however during heavy showers loading will be suspended and the hatches closed. • For landing containers on the wharf there are spill kits available, brooms & shovels and a designated waste bin. There is a mechanical sweeping device on hand for larger spills and to clean the wharf after each shipment, which is consistent with other Port operations.
Contaminated wash water	Boat maintenance activities: Runoff water from cleaning, painting and mechanical repairing smaller vessels.	Direct overland flow to the Roebuck Bay marine environment	• During major washdown or maintenance activities the slipway is lined and bunded with liners • If applicable, soils removed and disposed offsite at a licenced facility at completion of maintenance activities

Receptors

In accordance with the *Guideline: Risk Assessment* (DWER 2020a), the Delegated Officer has excluded the applicant's employees, visitors, and contractors from its assessment. Protection of these parties often involves different exposure risks and prevention strategies and is provided for under other State legislation. Table 7 below provides 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 2020b)).

Table 7 Sensitive human and environmental receptors and distance from prescribed activity

Human receptors	Description	Distance from prescribed activity
Aboriginal heritage sites	Object ID 8856 (Artefacts / Scatter; Ritual / Ceremonial; Creation / Dreaming Narrative; Midden) Object ID 8926 (Artefacts / Scatter; Midden) Object ID 9676 (Artefacts / Scatter; Midden)	Within or bordering premises boundary
National heritage sites	The West Kimberley National Heritage Place covers a large portion of the Kimberley region	The nearest area is a strip of coastline about 100 m southwest of the premises boundary and 1.5 km from the proposed shiploading activities
Residents	Residential dwellings The residential property R1 within the premises is considered a 'caretaker' residences by the applicant. Similar caretaker arrangements are being progressed for receptors R2 and R3.	Residential dwellings R2 and R3 exist within the premises (refer to Figure 2), about 50 and 80 m to the south of Laydown area 1, respectively, and about 1,200 m west of the wharf A third residential dwelling (R1), is adjacent to the northern premises boundary, about 80 m south of Laydown area 3 and 1,200 m west of the wharf A fourth residential dwelling (R4) is within 500 m of the northern premises boundary and 1,500 m from the wharf
Recreational users or tourists staying at short-term accommodation	Broome Adventure Cruises (also the location of Broome Dinosaur Adventures)	About 155 m southeast to the nearest laydown area and 1,130 m west of the wharf
	Broome Volunteer Sea Rescue Group and Broome Fishing Club	Approximately 650 m southeast to the nearest laydown area and 1,080 m southwest of the wharf
	Broome Pistol Club and Overflow Caravan Park	Approximately 960 m northeast of laydown area and 1,600 m northwest of the wharf
	Habitat Resort Broome	Approximately 1,600m northeast of the laydown area and 2,000 m north-northwest of the wharf
	Broome Golf Club	Approximately 1,750m northeast of the laydown area and 2,000 m northwest of the wharf

Environmental receptors	Description	Distance from prescribed activity
Groundwater	The Broome Sandstone Aquifer is the primary groundwater resource within the region. It is a layered aquifer comprising coarse sandstone and conglomerate and is around 250 m thick beneath Broome. Groundwater within the Broome Sandstone is recharged by direct rainfall infiltration, with fresh to slightly brackish groundwater overlying a saltwater wedge. The groundwater total dissolved solids (TDS) values range less than 500 mg/L (DWER, 2018). The site does not overlap any Public Drinking Water Sources Areas (PDWSA). Broome Groundwater Area – An area proclaimed to protect, manage and regulate water under the *Rights in Water and Irrigation Act 1914*	Water table depth ranges from about 8.5 to 11 m bgl based on measurements in onsite monitoring bores. Within Broome Groundwater Area
Native vegetation	Regional remnant vegetation comprises "Acacia thicket with eucalypt woodland over spinifex *Acacia tumida, Eucalyptus tectifica, Corymbia grandifolia, Triodia pungens, T. bitextura*". No conservation significant species identified in the vicinity of the premises	Within and surrounding the premises
Threatened Ecological Communities	*Monsoon Vine Thickets on the coastal sand dunes of Dampier Peninsula*	Surrounding the premises to the southwest and north About 1,100m west of the wharf
	Species-rich faunal community of the intertidal mudflats of Roebuck Bay	Surrounding the premises to the north, east and south About 550 southwest of the wharf
	Corymbia paractia dominated community on dunes	Surrounding the premises to the west and north
RAMSAR Wetland	Roebuck Bay RAMSAR Wetland	About 10 km east and 8 km south of the premises **This receptor has been screened from the risk assessment due to the separation distance from the prescribed activity.**
State managed Marine Parks	Yawuru Nagulagun / Roebuck Bay Marine Park, which is jointly managed by the Department of Biodiversity, Conservation and Attractions (DBCA) and Nyamba Buru Yawuru Ltd	About 5 km west and south of the premises **This receptor has been screened from the risk assessment due to the**

		separation distance from the prescribed activity.
Marine and tidal environments of Roebuck Bay	Benthic communities, including benthic infauna Mixed assemblage (seagrass and macroalgae) dominated the subtidal areas in the vicinity of the wharf	Within and surrounding the premises
	Mangroves	About 100 m north of the premises about 600 m west of the wharf (refer to Figure 3)

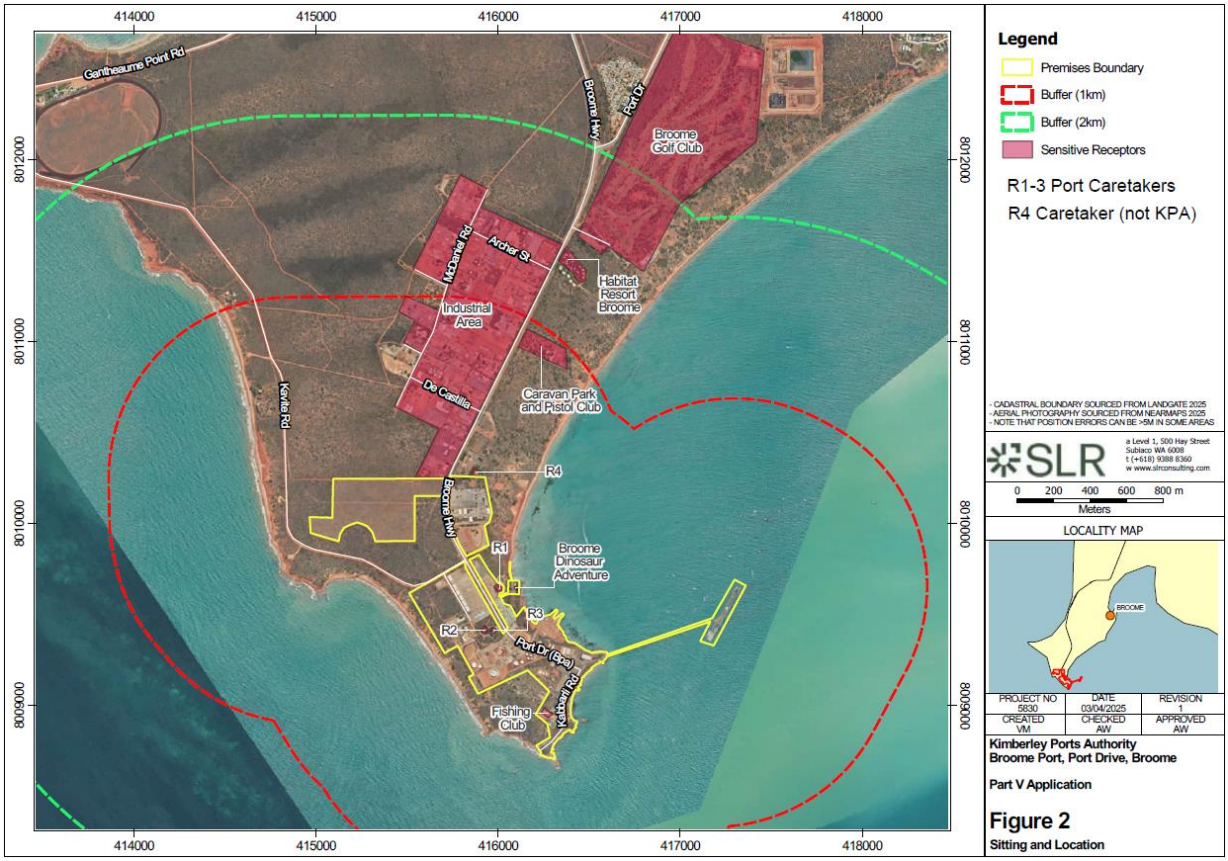

Figure 2 Location of sensitive receptors including dwellings

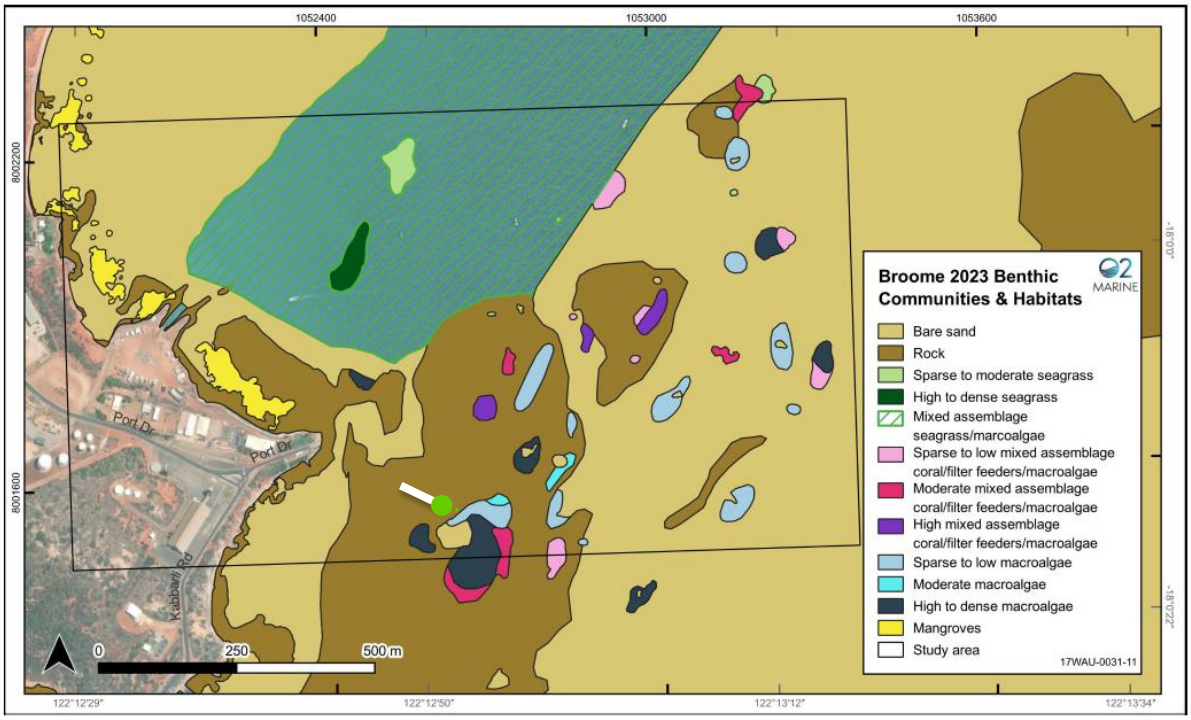

Figure 3 Subtidal benthic communities and habitats compiled from survey results 2019-2023

5.2 Risk ratings

Risk ratings have been assessed in accordance with the *Guideline: Risk Assessments* (DWER 2020a) for each identified emission source and considers potential source-pathway and receptor linkages as identified in Section 5.1. Where linkages are in-complete they have not been considered further in the risk assessment.

Where the applicant has proposed mitigation measures/controls (as detailed in Section 5.1), these have been considered when determining the final risk rating. Where the Delegated Officer considers the applicant'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 applicant's controls are not deemed sufficient. Where this is the case the need for additional controls will be documented and justified in Table 8.

Licence L9445/2024/1 that accompanies this decision report authorises emissions associated with the operation of the premises i.e. Category 58 and 82 activities.

The conditions in the issued licence, as outlined in Table 8 have been determined in accordance with *Guidance Statement: Setting Conditions* (DER 2015).

Table 8 Risk assessment of potential emissions and discharges from the premises during operation

Risk events					Risk rating [1] C = consequence L = likelihood	Applicant controls sufficient?	Conditions [2] of licence	Justification for additional regulatory controls
Sources / activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Applicant controls**				
Loading mineral sands into vessel hold via rotating container unloading system at the wharf Unplanned product spills into marine waters or onto wharf during loading operations	Dust	Air / windborne pathway causing impacts to human health and amenity	Residents about 1,200 m west of the loading operations at the wharf Recreational users about 1,000 m southwest of the loading operations at the wharf	Refer to Section 3.1	C = Moderate L = Unlikely **Medium Risk**	N	Condition 9 – Operational requirements for shiploading infrastructure **Condition 12 – Air quality monitoring, including particulate matter 2.5 microns and under, and wind speed and direction** **Condition 18 – Environmental Report, including provision of raw data and detailed analysis, such as investigations of any exceedances of relevant NEPM criteria at air quality monitoring station L1**	The Delegated Officer considers impact to identified receptors to be unlikely given the separation distance, licence holder controls including transport in sealed rotainers, granular composition of the product to be loaded with limited fines, modelling predictions and monitoring data collected to date. The risk is considered acceptable with the licence holder operational controls in place at the wharf during and following loading operations. The Delegated Officer has specified continued air quality monitoring as an ongoing dust management control to assess potential impacts to receptors within and surrounding the premises and further improve understanding of dust conditions. Particulate matter of 2.5 microns and under will be added to the monitoring suite at the existing air monitoring location for a period of 12 months, which will allow assessment of $PM_{2.5}$ levels at this location during operations across seasonal wind conditions. The Delegated Officer considers the risk of impact from dust on receptors to be unlikely, however this data will be used to compare against the model predictions and refine the assessment of risk of impact to human health by quantifying levels of particulate matter at 2.5 microns and under from all sources at this location, which is of more relevance to human health. This will inform ongoing management of dust emissions at the premises. The Delegated Officer determined that detailed analysis of air quality monitoring data is to be provided annually in an Environment Report, to further refine understanding of dust levels, potential sources and worst-case conditions. This detailed analysis is to include comparison of dust concentration and wind data to better understand if certain wind conditions are associated with higher particle concentrations, which can then allow a more rapid response to high concentration events.
		Air / windborne pathway causing impacts to marine species and communities	Marine environment immediately adjacent to the premises boundary in Roebuck Bay, including intertidal and subtidal species, benthic communities, seagrasses and macroalgae Threatened Ecological Communities in tidal zone		C = Slight L = Unlikely **Low Risk**	Y	Condition 9 – Operational requirements for shiploading infrastructure	N/A The Delegated Officer considers that the risk of dust impacting marine species is adequately controlled by the licence holders' controls. Ambient marine monitoring is specified in the licence to monitor impacts from spills during ship loading over the long-term and it is considered that any impacts to receptors from dust deposited on marine waters as a result of ship loading, which is considered to be low risk, will also be informed from this monitoring.
	Noise	Air / windborne pathway causing impacts to human health and amenity	Residents about 1,200 m west of the loading operations at the wharf Recreational users about 1,000 m southwest of the loading operations at the wharf		C = Minor L = Unlikely **Medium Risk**	Y	N/A	N/A Requirements specified under the Noise Regulations are considered sufficient to mitigate the potential impacts from this activity. The Delegated Officer notes that the proposed loading activities at the wharf are generally predicted to comply with the requirements of the Noise Regulations. The exception is a marginal exceedance predicted at residential receptor R3 under a worst-case scenario where ship loading occurs using rotainers trucked from Laydown Area 3. The likely source of noise contributing to this predicted exceedance is reach stacker operation within Laydown Area 3, which is assessed in a separate 'risk event'.
	Product-laden stormwater on wharf	Overland runoff into the marine environment causing increased turbidity and health decline of marine species and benthic habitat	Marine environment immediately adjacent to the premises boundary in Roebuck Bay, including benthic communities, seagrasses and macroalgae Threatened Ecological Communities		C = Minor L = Possible **Medium Risk**	Y	Condition 9 – Operational requirements for shiploading, including immediate clean-up of any spilled product on the wharf and access routes following shiploading events	N/A
	Mineral sands or wash water with mineral sands	Direct discharge into marine environment causing increased turbidity and health decline of marine species and benthic habitat	Marine environment immediately adjacent to the premises boundary in Roebuck Bay, including intertidal and subtidal species, benthic	Refer to Section 3.1	C = Moderate L = Unlikely **Medium Risk**	N	Condition 9 – Operational requirements for ship loading, including requirement to discharge product from the rotainer only once positioned within the vessel hold	The Delegated Officer has specified ambient marine monitoring on the licence given the long-term (about 42 years) operating life of the mining operation and therefore ship loading. The risk of smothering or toxicity impacts to species associated with an individual spill is considered low given the composition of the product, high tidal movements and low

			communities, seagrasses and macroalgae Threatened Ecological Communities in tidal zone				**Condition 12 – Ambient marine monitoring**	density of sensitive receptors in the vicinity of the ship loading, however the potential for the accumulation of impacts from a worst-case scenario of multiple spills each year over 42 years warrants ongoing monitoring of water quality, sediment, benthic communities and infauna.
Operations within Laydown Area 1 and Laydown Area 3: Truck movements and loading / unloading of rotainers using reach stacker within the laydown areas	Dust	Air / windborne pathway causing impacts to human health and amenity	Residential premises (R1, R2 and R3) within 100 m of Laydown areas 1 and 3	Refer to Section 3.1	C = Minor L = Possible **Medium Risk**	Y	N/A	N/A The level and nature of dust generated is not expected to increase significantly above existing levels given the equipment controls (enclosed containers) and that the laydown areas and roads are hardstand. No controls are considered necessary to mitigate the risk of dust impacting amenity and health of human receptors near the laydown yards or along access roads.
		Air / windborne pathway causing decline in vegetation health or damage to heritage sites	Native / remnant vegetation Aboriginal heritage sites	Refer to Section 3.1	C = Slight L = Unlikely **Low Risk**	Y	N/A	N/A The level and nature of dust generated is expected to be negligible given the equipment controls (enclosed containers) and that the laydown areas and roads are hardstand
	Noise	Air / windborne pathway causing impacts to health and amenity	Residential premises (R1, R2 and R3) within 100 m of Laydown areas 1 and 3 Recreational users or tourists staying at short-term accommodation	Refer to Section 3.1	C = Minor L = Unlikely **Medium Risk**	N	**Condition 9 – Restriction on night-time operations at Laydown Area 3**	N/A The Delegated Officer notes that the proposed loading activities at the laydown areas are generally predicted to comply with the requirements of the Noise Regulations. However, a marginal exceedance of the night-time assigned levels is predicted at residential receptor R3 under a worst-case scenario where shiploading occurs using rotainers trucked from Laydown Area 3. No noise monitoring has been undertaken to verify noise levels at this receptor during TLO under this scenario. Therefore, the Delegated Officer has specified that activities are restricted at this location at night to eliminate the risk of exceeding the assigned noise levels. The restriction on Laydown area 3 activities at night may be removed via a future amendment if evidence is provided confirming receptor R3 has become caretaker residences for the Port or other evidence is provided that R3 should no longer be considered a sensitive receptor.
	Stormwater laden with mineral sands	Overland runoff into the marine environment causing increased turbidity and health decline of marine species and benthic habitat	Marine environment immediately adjacent to the premises boundary in Roebuck Bay, including intertidal and subtidal species, benthic communities, seagrasses and macroalgae Threatened Ecological Communities	Refer to Section 3.1	C = Slight L = Unlikely **Low Risk**	Y	Condition 9 – Operational requirements, including directing stormwater to basins within each laydown area	N/A The Delegated Officer considers there is negligible risk associated with stormwater contamination from mineral sands in the laydown areas given mineral sands are to be transported and stored in sealed containers.
Wash bay located in the maintenance yard Cleaning, painting and mechanical repairing smaller marine vessels in the boat slipway	Wash-down water contaminated with paint, fuel, oil, detergent and other chemicals	Direct overland flow to the Roebuck Bay marine environment	Marine environment immediately adjacent to the premises boundary in Roebuck Bay, including intertidal and subtidal species, benthic communities, seagrasses and macroalgae Threatened Ecological Communities	Refer to Section 3.1	C = Slight L = Unlikely **Low Risk**	Y	N/A	N/A There is a risk of an overflow event should the bunding system fail. However, given the small volumes of wash water and existing controls, the Delegated Officer considers that the risks are adequately controlled by the provisions in the *Environmental Protection (Unauthorised Discharges) Regulations 2004.*

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

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

6. Consultation

A summary of the applicant's comments on the draft decision report and licence is provided in Appendix 1 and a summary of consultation undertaken by the department is provided in Appendix 2.

7. Conclusion

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

Registration R2548/2023/1 held by the applicant for Category 86 bulk material loading at the premises will be relinquished on the licence issue date given the licence will authorise the same prescribed activity at a higher production throughput under Category 58. Registration R2432/2016/1, held by the applicant for Category 82 boat maintenance, will also be relinquished and incorporated into licence L9445/2024/1.

References

1. ARPANSA 2019, Code for the Safe Transport of Radioactive Material, Radiation Protection Series C-2 (Rev. 1)
2. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
3. Department of Water and Environmental Regulation (DWER) 2020a, *Guideline: Risk Assessments*, Perth, Western Australia.
4. Department of Water and Environmental Regulation (DWER) 2020b, *Guideline: Environmental Siting*, Perth, Western Australia.
5. Environmental Technologies & Analytics (ETA) 2021, *Thunderbird Mineral Sands Project - Air Quality Assessment*, Prepared for Kimberley Mineral Sands.
6. MBS Environmental 2021, *Thunderbird Mineral Sands Project Section 45C Application, prepared for Thunderbird Operations Pty Ltd*, December 2021.
7. SLR Consulting Australia 2024a, *Operational Acoustic Assessment*, Prepared for Kimberley Ports Authority.
8. SLR Consulting Australia 2024b, *Laydown Acoustic Assessment*, Prepared for Kimberley Ports Authority.
9. SLR Consulting Australia 2025, *Review of Meteorological and Air Quality Monitoring Requirements Draft Licence L9445/2024/1 - Mineral Sands Bulk Loading Operations,* Prepared for Kimberley Ports Authority.

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

Condition	Summary of applicant's comment	Department's response
Comments on 1st Draft Instrument package provided on 27 February 2025		
9 (Table 1)	It is noted that not all laydown areas currently have stormwater basins and KPA request that a provision be included in the Licence that stormwater basin installation is required prior to the commencement of the wet season (December-April), in a given year.	The Delegated Officer has agreed to amend this requirement to capture all laydown areas within the premises and provide flexibility to allow the directing of stormwater to basins or equivalent infrastructure that may be located outside of laydown areas. However, given rain may occur outside of the wet season, it will remain an outcome-based operational condition applicable throughout the year.
10 (Table 2)	A noise bund is not required as receptor R3 is a caretaker and hence the Noise Regulations are not applied.	The Delegated Officer does not agree that receptor R3 meets the definition of 'caretaker'. A definition of 'caretaker' is not provided in the EP Act or Noise Regulations, therefore the department has adopted the definition provided in the *Planning and Development (Local Planning Schemes) Regulations 2015* which define a 'caretaker's dwelling' as a dwelling on the same site as a building, operation or plant used for industry, and occupied by a supervisor of that building, operation or plant. Therefore, although the applicant is the 'lessor' of the property and a Residential Tenancy Agreement is in place, the Delegated Officer considers that the calculated night-time 'assigned' levels still apply and an exceedance at receptor R3 has potential to cause impact and trigger. regulatory action. Given the predicted exceedance is marginal and only applies to a night-time scenario, the Delegated Officer has removed the requirement for construction of a noise bund and instead specified that activities at Laydown area 3 are to cease during the time of day that the night-time assigned levels apply (as specified in the Noise Regulations). The restricted activities relate to night operation of the reach stacker unloading empty rotainers and loading filled rotainers onto B-double trucks at Laydown area 3.
-	Dust deposition was completed during Works Approval TLO and is	Dust deposition was not included as a parameter for air monitoring in the draft

Condition	Summary of applicant's comment	Department's response
	no longer considered to be required, as agreed by DWER. Please remove from Licence.	licence.
12 (Table 3)	$PM_{2.5}$ was risk assessed under the Works Approval and agreed by DoH to not be required due to the low risk and lack of receptors. This is consistent with other Ports exporting mineral sands only being required to monitor PM_{10} even with closer residential receptors compared to Broome.	The Delegated Officer has determined to remove $PM_{2.5}$ from dust monitoring requirements in the licence. As noted in the risk event table (Table 8), $PM_{2.5}$ monitoring is more relevant to human health than PM_{10} and was specified to validate the air modelling results provided in the application and quantify the site-specific $PM_{2.5}$ component in dust. However, the likelihood of impact was considered 'unlikely' given separation distance between the unloading activities and receptors and that PM_{10} concentrations were reported below the NEPM 24-hour human health criteria for all but three days during the TLO period. In their response to the draft licence package, the applicant provided a Technical Memorandum (SLR 2025) that estimated $PM_{2.5}$ concentrations by applying a $PM_{2.5}$:PM_{10} ratio of 1:3 to the PM_{10} concentrations recorded at Location L1 during TLO. The results indicated $PM_{2.5}$ concentrations were also below the daily and annual NEPM criteria during TLO. The Delegated Officer considers the adopted $PM_{2.5}$:PM_{10} ratio of 1:3 to be reasonable, given ratios at comparable regional monitoring locations in Port Hedland, Dampier and Karratha have ranged from 1:0.21 to 1:0.24. In consideration of the recorded PM_{10} results, estimated $PM_{2.5}$ concentrations and separation distance, the Delegated Officer has determined to remove $PM_{2.5}$ from dust monitoring requirements in the licence
13	Marine monitoring was discussed and agreed with DWER to sit outside the Part V Licence during the Works Approval process. KPA is committed to the ongoing program and will implement the MEMMP as part of their ongoing Port operations, which is reflective in other Port operations throughout WA. KPA is open to providing the results of the MEMMP monitoring to DWER. Of note is the negligible risk of bioavailability in the product characterisation detailed below and	The Delegated Officer has determined to specify ambient marine monitoring of waters, sediments, benthic communities and benthic infauna and the annual reporting of results and interpretation. This is to ensure there is some regulatory oversight of the monitoring program which is considered necessary to monitor and detect any potential short term or long-term impacts from shiploading on the marine environment.

Condition	Summary of applicant's comment	Department's response
	attached, indicating that bioaccumulation studies should not be required to be included in the MEMMP, or the Licence. Further, based on the product characterisation and assessment by MBS Environmental, no additional COPC were identified as required for inclusion in the MEMMP.	
19, 20	Full product characterisation has been undertaken as part of the KMS Part IV process with the impacts of product transport and export covered under this process. With the provision of this information, below and attached, KPA requests removal of these conditions	The Delegated has reviewed the product characterisation study and agrees that further characterisation is not required. The risks associated with the mineral sands products to the marine environment can be managed through ambient marine monitoring specified in condition 12.
Comments on 2nd Draft Instrument package provided on 6 June 2025		
10 (Table 2)	Request flexibility that either operations are limited to the hours stipulated in the draft licence or an appropriate buffer e.g. stacked containers is in place to ensure that the noise regulations are met at the nearest receptors.	The Delegated Officer has determined to keep the time-restriction on operations in Laydown Area 3 given it provides immediate protection to the receptor. The licence holder may apply for an amendment to remove this condition supported by evidence that it is no longer necessary, such as evidence of a noise buffer being constructed or the provision of noise monitoring data.

Appendix 2: Summary of stakeholder consultation and department response

Table 9 Consultation

Consultation method	Comments received	Department response
Application advertised on the department's website on 5 August 2024	None received	N/A
Local Government Authority (Shire of Broome) advised of proposal on 2 August 2024	The Shire of Broome responded 21 September 2024 noting dust management measures and that they support ongoing monitoring and evaluation to ensure compliant and appropriate operations. The Shire also noted support of Kimberley Port Authority discontinuing the sensitive premises (residential houses) from the Port Authority boundaries.	N/A
Habitat Resort Broome (HRB) was advised of the proposal on 2 August 2024, submitting comments 28 August 2024	HRB expressed concerns about needing to provide comment at two stages of authorisation (licence and works approval) and associated works approval amendments, the level of detail that needs to be assessed and that statutory processes for providing comment don't allow sufficient time. HRB noted the opportunity to comment on the licence application occurs while the activity has already commenced under time limited operations.	Current statutory processes for approvals require the department seek comment from direct interest stakeholders in accordance with section 54 of the EP Act upon validation of applications for both works approvals and licences to allow for consideration of construction, commissioning, limited operations and ongoing operations associated with each instrument. The nominal comment period is 21 calendar days; however, extension can be sought by the stakeholder where extra time is required. The Delegated Officer advises that this process was followed during the assessment of the works approval application for the premises. The links below provide further information regarding processing and determination of licences and works approvals and the transition of a prescribed premises from a works approval to a licence. https://www.wa.gov.au/government/publications/procedure-prescribed-premises-works-approvals-and-licences

		https://www.wa.gov.au/service/building-utilities-and-essential-services/integrated-essential-services/guideline-industry-regulation-guide-licensing
	HRB raised that the application fails to identify and take into account their premises as a residential facility, suggesting it is several hundred metres from a proposed laydown area; and is concerned with potential noise impacts given the high volume of truck and ship movements, and their potential 24-hour occurrence until 2060. It was also raised that temporal fluctuations in noise weren't considered. HRB recommend that any approval given is conditional on actual acoustic measurements conducted on an annual basis and compared to the proposed results on the application. Any resulting variation should undergo stakeholder consultation.	HRB (receiver R6) is considered in the Laydown Acoustic Assessment since it is shown in Figure A and appears in Tables E and H. It is situated about 1,600 metres from the nearest laydown area (area 3). The department notes the acoustic consultant considered receiver R4 in their "reverse propagation" calculation on the basis this receiver is closest and most impacted, being 1,200 metres closer than HRB. Once noise barrier designs were determined, noise levels were predicted at all the relevant receivers within results. This method is considered suitable for all applicable conditions. Current and potential noise emissions have been risk assessed as part of this application and suitable controls have been placed on the licence to mitigate this risk, including construction of acoustic attenuation barriers.
Conservation Council of WA (CCWA) was advised of the proposal on 2 August 2024, submitting comments 15 August 2024	**Respirable dust** CCWA state that the proposal will produce an unacceptable risk of human and environmental health impacts from dust emissions, raising that dust will be generated during transfer from rotainer to shipping vessel at the wharf. CCWA notes the applicant's recognition of the potential for respirable dust release at the point of unloading, suggesting that the risk should be eliminated rather than minimised for silica dust due to its increased potential health impacts.	Potential dust emissions have been risk assessed as part of this application and suitable controls have been placed on the licence to mitigate this risk to an acceptable level. Accordingly, the applicant is required to undertake a comprehensive air quality management and monitoring program. The Department of Health advised that the risk of respirable crystalline silica in dust impacting receptors is low given the component weight percentages shown in the safety data sheets for the product and that monitoring of respirable crystalline silica was not warranted. The Delegated Officer further notes that separation distances to receptors further reduces the risk from the identified source at the wharf. On-site risks to human health from dust is regulated by DEMIRS.

	Naturally-Occurring Radioactive Materials CCWA is concerned that Naturally-Occurring Radioactive Materials (NORM) within the mineral sands will pose an unacceptable risk to human and marine health.	Radiological risks are regulated under the *Radiation Safety Act 1975* and the *Mines Safety and Inspection Act 1994,* which are overseen jointly by the Department of Energy, Mines, Industry Regulation and Safety (DEMIRS) and the Radiological Council. There is a possibility of Naturally Occurring Radioactive Material (NORM) within mineral sands products, which is typically associated with low levels of uranium and thorium. Mineral sands at the Thunderbird Mineral Sands Project, the source of the product being exported, have NORM of less than the 1 Bq/g definition of a radioactive substance (0.71 Bq/g Uranium and 0.26 Bq/g Thorium). These levels are expected to be low enough to be exempt from transport regulations for radioactive material. A Radiation Management Plan has been developed for the Thunderbird Mineral Sands Project as required by the Radiological Council and the DEMIRS, which specifies monitoring of environmental radiation levels at the Thunderbird Mineral Sands Project, including baseline monitoring. These will be benchmarked against the background levels measured in the soil, sediment and airborne dust. The Delegated Officer has determined that NORM monitoring in the ambient environment surrounding the premises is not necessary due to the low risk of spills associated with the enclosed loading system, low NORM content in the product, highly tidal nature of the environment which increases the dilution of any material lost via spills or dust lift-off from the vessel hold and the licence requirement to monitor benthic communities, infauna and mangroves to detect impacts to species.

CCWA	**Marine Monitoring** CCWA perceives deficiencies in the proposed monitoring program, stating that ongoing marine monitoring is not appropriately selected for emissions associated with mineral sands, no cumulative environmental impact studies are proposed (including bioaccumulation of toxicants in marine indicator species), marine monitoring rounds are too broadly spaced to react to emission events, there is insufficient management of contamination within containers on the wharf. CCWA highlights the need to reevaluate risks to the environment from dust according to a different standard, which accounts for not only the acutely toxic elements, but also the risk from bio-accumulation, changes to levels of suspended solids in the marine environment, and from smothering of receptors. CCWA state there is no assessment of contamination (e.g., metals) uptake by flora and fauna assemblages within the marine ecosystem or evaluation of bioaccumulation or cumulative impact.	The licence holder currently undertakes annual marine monitoring and has committed to revising the ongoing marine monitoring plan to ensure ongoing port operations and developments are continued to be assessed against the values and objectives of the Environmental Protection Authority's (EPA) technical guidance 'Protecting the Quality of Western Australia's Marine Environment (EPA2016). The licence holder has also stated that the marine monitoring that the licence holder has undertaken for the last 5 years will also continue in perpetuity as a voluntary measure to confirm that there is minimal environmental impact from the operations. The level of risk to marine receptors from dust and spillage events was assessed (refer to section 5.2) and suitable controls have been placed on the licence to mitigate this risk. Although the risk of unplanned spills impacting to benthic communities and species is considered low, the Delegated Officer has determined to add bio-accumulation monitoring to the marine monitoring program and capture existing water quality, sediment, benthic community habitat and benthic infauna monitoring set out Ongoing Marine Monitoring Program on the licence.
	Spill Management CCWA questions the proposed bunding and spill management for capture and processing of wastewater and washdown water to prevent degradation of the marine environment; noting also that wastewater processing presently only screens oils, prior to discharge to the environment. CCWA notes additional information on wastewater management is not provided for the licence application and calls for re-evaluation of stormwater management standards.	The mineral sands are transported and stored in sealed containers. The Department considers there is negligible risk associated with stormwater contamination from mineral sands in the laydown areas and during storage and transportation. Wash-water from laydown areas, the wharf and spillway are considered in this assessment and under the obligations of the *Environmental Protection (Unauthorised Discharges) Regulations 2004*.

	Matters of National Environmental Significance CCWA asserts that the applicant has not adequately demonstrated that the Proposal will not have an impact on Matters of National Environmental Significance (MNES) in the vicinity of the Port of Broome and submits that the Proposal should be reassessed for risks to MNES at this location and for a much wider MNES list.	The licence risk assessment did not identify significant impacts on species or conservation areas listed as MNES under the EPBC Act. Roebuck Bay Marine Park and the Roebuck Bay RAMSAR site were the closest identified conservation areas and were screened out as receptors during the assessment due to separation distance from the proposed activities.
	MNES Increased shipping CCWA states there has been no assessment of the risks to marine species listed as MNES from extra shipping movements. For example, the assessment of operations or shipping routes during marine fauna migration times.	An assessment of the potential impact of increased ship activities on marine wildlife and marine migration is beyond the scope of regulation under Part V of the EP Act, which is restricted to assessment of emissions and discharges from the premises. The export of mineral sands from the Premises has approval under MS 1080.
	Air Quality CCWA states that the location and other details of air quality monitoring stations is not provided, denoting a green dot for AQ Monitoring Location on the map legend, but these do not appear anywhere on the map. They call for public evaluation of the of the location of the dust monitors, provision of standards for dust levels that protect sensitive receptors and silica dust monitoring for the life of the proposal.	Potential emissions to air including dust have been risk assessed as part of this application and suitable controls have been placed on the licence to mitigate risk on receptors. The risk of impact from the proposed activities is low to medium, with Licence holder controls generally determined to be suitable. The air quality monitoring program has been expanded to include a 12-month campaign to monitor PM2.5 at the monitoring station within the premises. The risk of respirable crystalline silica in dust impacting receptors (excluding on-site contractors, employees and visitors) was found to not require regulatory control.
Dinosaur Coast Management Group was advised of the proposal on 2 August 2024	None received	N/A
Roebuck Bay Working Group was advised of the proposal on 2 August 2024	None received	N/A