



Licence Number	L8739/2013/1
Licence Holder ACN	Cable Sands (W.A.) Pty Ltd 009 137 142
File Number:	DER2014/000656
Premises	Wonnerup Mineral Sands Mine 4397 Bussell Highway YALYALUP WA 6280 Legal description – Lot 100 on Plan 65306, Mining Leases M70/785 & M70/360 and Miscellaneous Licences L70/161 & L70/159
Date of Amendment	Friday, 2 November 2018

Amendment

The Chief Executive Officer (CEO) of the Department of Water and Environmental Regulation (DWER) has amended the above Licence in accordance with section 59 of the *Environmental Protection Act 1986* as set out in this Amendment Notice. This Amendment Notice constitutes written notice of the amendment in accordance with section 59B(9) of the EP Act and follows.

Tim Gentle

**MANAGER RESOURCE INDUSTRIES
REGULATORY SERVICES**

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

Definitions and interpretation

Definitions

In this Amendment Notice, the terms in Table 1 have the meanings defined.

Table 1: Definitions

Term	Definition
ACN	Australian Company Number
Annual Period	refers to the 12 month period commencing from 1 January to 31 December in the same year
AS 3580.1.1	refers to the most recent version and the relevant parts of the Australian Standard AS 3580.1.1 <i>Methods for sampling and analysis of ambient air – Guide to siting air monitoring equipment</i>
ASS	Acid Sulfate Soils
Category/Categories	categories of Prescribed Premises as set out in Schedule 1 of the EP Regulations
CEO	Chief Executive Officer CEO for the purposes of notification means: Director General Department Administering the <i>Environmental Protection Act 1986</i> Locked Bag 33 Cloisters Square PERTH WA 6850 info@dwer.wa.gov.au
Commission/ Commissioning	refers to the process of operation and testing that verifies works and all relevant systems, plant, machinery and equipment have been installed and are performing in accordance with the manufacturer's design specification
Compliance Report	refers to a report in a format approved by the CEO and presented by the Licence Holder or as specified by the CEO (guidelines and templates available on the Department's website)
Condition	refers to a condition to which this Notice is subject under s.62 of the EP Act
Department	refers to the department established under section 35 of the <i>Public Sector Management Act 1994</i> and designated as responsible for the administration of Part V, Division 3 of the EP Act
Delegated Officer	an officer under section 20 of the EP Act
Discharge	has the same meaning given to that term under the EP Act
DWER	Department of Water and Environmental Regulation
Emission	has the same meaning given to that term under the EP Act
Environmental Harm	has the same meaning given to that term under the EP Act
EPA	Environmental Protection Authority
EP Act	<i>Environmental Protection Act 1986</i> (WA)
EP Regulations	<i>Environmental Protection Regulations 1987</i> (WA)
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i> (Cth)
Existing Licence	the Licence issued under Part V, Division 3 of the EP Act and in force prior to this Notice
FEL	Front End Loader
GL/yr	Gigalitres per year
High Wind	refers to wind conditions rating 7 or greater on the Beaufort Windforce Scale (i.e. wind speeds 50 km/h or greater)
HMC	Heavy Mineral Concentrate

Implementation Agreement or Decision	has the same meaning given to that term under the EP Act
Licence Holder	as specified at the front of this Notice
Material Environmental Harm	has the same meaning given to that term under the EP Act
Mt	Million tonnes
Noise Regulations	refers to the <i>Environmental Protection (Noise) Regulations 1997 (WA)</i>
NORM	Naturally Occurring Radioactive Material
Notice	refers to this document
PASS	Potential Acid Sulfate Soils
Prescribed Premises	has the same meaning given to that term under the EP Act
Premises	refers to the premises to which this Decision Report applies, as specified at the front of this Decision Report
Serious Environmental Harm	has the same meaning given to that term under the EP Act
SWL	Sound Power Level
Unreasonable Emission	has the same meaning given to that term under the EP Act
Waste	has the same meaning given to that term under the EP Act
Works	refers to the Works described in Schedule 2, at the locations shown in Schedule 1 of this Works Approval to be carried out at the Premises, subject to the Conditions
WCP	Wet Concentrator Plant

Amendment Notice

This amendment is made pursuant to section 59 of the *Environmental Protection Act 1986* (EP Act) to amend the Existing Licence issued under the EP Act for a Prescribed Premises as set out below. This Notice of amendment is given under section 59B(9) of the EP Act.

This Notice relates to the partial development of the Wonnerup North site. No changes to other aspects of the Existing Licence have been requested by the Licence Holder.

The following guidance statements have informed the decision made on this amendment:

- *Guidance Statement: Regulatory Principles (July 2015)*
- *Guidance Statement: Decision Making (February 2017)*
- *Guidance Statement: Risk Assessment (February 2017)*

Amendment description

The Licence Holder proposes to develop the Wonnerup North deposit, which lies immediately to the north-east of its existing Wonnerup Mineral Sands Mine (Figure 1). The proposal has been broken into two stages in response to changes in mine and market conditions, where Stage 1 defers the need to relocate the process plant and water management infrastructure in the short-term.

This amendment relates to Stage 1 of 'Wonnerup North', which is an extension of the existing Wonnerup mine site into the area south of the Abba River and within mining tenement M70/360. Ore mined within Stage 1 of M70/360 will be pumped to the existing Wonnerup mine site for processing with the existing infrastructure, with sand and clay tailings returned as backfill into mined voids. Mine water from Stage 1 dewatering activities will be managed as part of the existing Wonnerup mine water circuit.

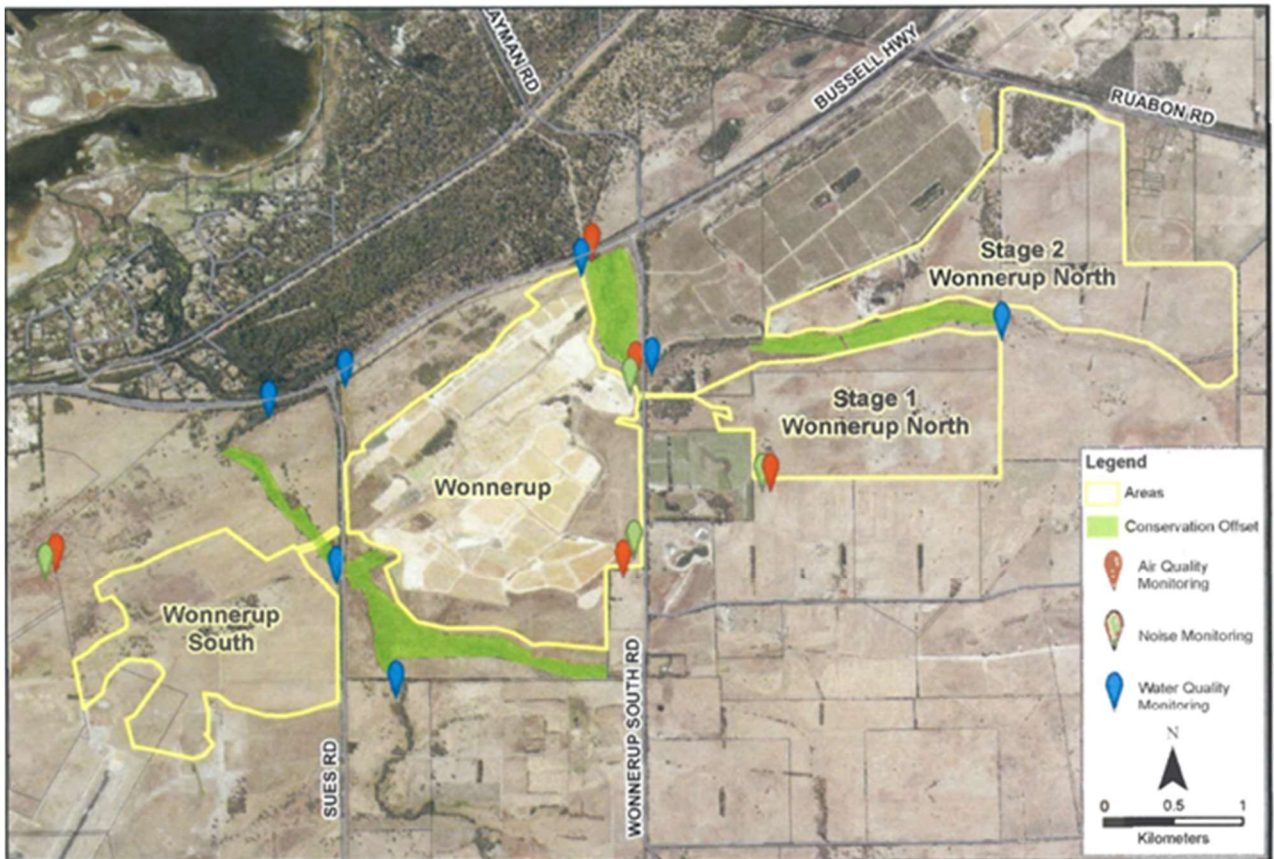


Figure 1: Wonnerup Mineral Sands Mine – current and proposed sites

Stage 1 works involve the following:

- Installation of underground pipelines beneath Wonnerup South Rd, for the purposes of:
 - supplying the proposed operation with water from the existing Wonnerup mine;
 - transporting slurried ore from the Wonnerup North orebody to the existing wet concentrator plant (WCP) at the existing Wonnerup mine;
 - pumping surplus mine water from the proposed Wonnerup North operations to the existing Wonnerup mine water circuit for treatment pending re-use or discharge to the Sabina River via the existing licensed discharge point; and
 - returning sand and clay tailings for backfilling into mine voids;
- Development of Stage 1 of the Wonnerup North orebody (M70/360) in the same manner as the existing Wonnerup mine has been developed, including:
 - clearing of native vegetation (subject to clearing permit CPS7605/1);
 - stripping and stockpiling of topsoil;
 - construction of dewatering sumps and temporary water storage ponds;
 - stripping and stockpiling of overburden;
 - relocation and stockpiling of ore, pending screening; and
 - screening of excavated ore, with the screened component being slurried with water and pumped to the existing WCP at the Wonnerup mine.
- Backfilling of excavated mine voids with wet sand tailings from the Wonnerup mine WCP, in addition to dried clay slimes and overburden; and
- Increasing the volume of mine water to be discharged off-site by up to 0.9 GL/yr, through the primary discharge point (Sabina River), and a secondary discharge point into the Abba River, during peak periods of water inflows into open mine voids.

Table 2: Summary of Wonnerup North – Stage 1 proposal

Element	Description
Proposal name	Wonnerup North – Stage 1
Mine status	Undeveloped 'greenfield'
Life of mine	8 – 12 months
Land tenure	M70/360 is held exclusively by the Licence Holder, including two freehold lots within M70/360
Ore quantity	Approximately 2 Mt at a rate of up to 2.365 Mt per annum
Overburden removed	Approximately 0.4 million bulk cubic metres
Total material disturbed	Up to 2.6 million bulk cubic metres
HMC recovered	Estimated 0.15 Mt
Pit depth	5 to 6 m below ground level
Area of disturbance	347.9 hectares
Clearing	2.0 hectares – subject to clearing permit CPS7605/1
Dewatering	Abstraction of groundwater for dewatering purposes (from the superficial aquifer), with mine water pumped to the existing Wonnerup mine water circuit for treatment and re-use or disposal (to the Sabina River)
Ore processing	Existing in-pit mining trommels, wet concentrator plant, flocculant thickener and associated infrastructure at the Wonnerup mine to be used to produce a heavy mineral concentrate
Secondary processing	To be conducted off-site at the existing North Shore MSP, with sand and clay tailings to be returned to the Premises for backfill to mine voids

Table 3 below outlines the proposed throughput capacity changes to the Licence:

Table 3: Proposed throughput capacity changes

Category	Current throughput capacity	Proposed throughput capacity	Description of proposed amendment
6 – mine dewatering	600,000 tonnes per year	2,000,000 tonnes per year	Increase in volume; additional contingency discharge point in the Abba River (emergency discharge only)
8 – mineral sands mining	2,365,200 tonnes per year	No change	N/A

Other approvals

The Licence Holder has provided the following information relating to other approvals as outlined in Table 4.

Table 4: Relevant approvals

Legislation	Number	Approval
<i>Mining Act 1978 (WA)</i>	Registration ID: 5304	Wonnerup North Mineral Sands Project – Mining Proposal
<i>Rights in Water and Irrigation Act 1914 (WA)</i>	GWL161841(9)	Combined licence for all Cristal South West Operations Licensed allocation 3.9 GL/yr from the Busselton-Capel Groundwater Area, Perth Yarragadee South aquifer, for the purpose of mineral ore processing

	GWL173523(3)	Licensed allocation 0.6 GL/yr from the Busselton-Capel Groundwater Area, Perth Superficial Swan aquifer, for the purpose of mine dewatering (excluding Wonnerup projects)
	GWL-TBA (application under assessment)	Application for dewatering 1.4 GL/yr from the Busselton-Capel Groundwater Area, Perth Superficial Swan aquifer (Wonnerup projects)
<i>Environmental Protection (Clearing of Native Vegetation) Regulations 2004 (WA)</i> ¹	CPS7605/1	Purpose permit granted by DMIRS for the clearing of up to 2 ha within M70/360 and L70/161 for the purpose of mineral production
<i>Part IV of the Environmental Protection Act 1986 (WA)</i>	N/A	Not assessed – public advice given
<i>Environment Protection and Biodiversity Conservation Act 1999 (Cth)</i>	EPBC No. 2014/7205	The proposed action to mine mineral sands from the Wonnerup North deposit was considered a controlled action and was assessed under the EPBC Act. Approval was granted in May 2015, subject to a number of conditions related to minimising impacts to the Vasse-Wonnerup System, and avoiding/mitigating potential impacts on the Western Ringtail Possum and the Carnaby's, Baudin's and Forest Red-tailed Black Cockatoos

Note 1: Delegated to Department of Mines, Industry Regulation and Safety

Amendment history

Table 5 provides the amendment history for L8739/2013/1.

Table 5: Licence amendments

Instrument	Issued	Amendment
W5174/2012/1	16/08/2012	Works approval for mine establishment (2 stages)
L8739/2013/1	17/05/2013	New licence issued with 4 year tenure
L8739/2013/1	01/08/2013	Amendment to exclude internal, temporary in-pit noise bunds from being maintained to the constructed heights at all times
L8739/2013/1	26/06/2014	Amendment to transfer authorisation for construction of remaining infrastructure under Stage 2 of W5174
L8739/2013/1	14/01/2016	Amendment to remove conditions regarding maintenance of external noise bund heights, noise targets and emissions to land
W5745/2014/1	22/01/2015	Works approval for construction of the Wonnerup South site
L8739/2013/1	29/04/2016	Amendment by notice – expiry extended to 2036
L8739/2013/1	27/10/2017	Amendment Notice 1 – amend to authorise mining operations at the Wonnerup South site
L8739/2013/1	02/11/2018	Amendment Notice 2 – amend to authorise construction and operation of Stage 1 of the Wonnerup North project (this Notice)

Location and receptors

The Premises is located in a rural area and predominantly surrounded by privately-owned freehold land. The Licence Holder has identified a number of receptors within 2 km of the Premises boundary (Table 6), which are considered to be potentially at risk of being directly or indirectly impacted by mining activities. It is noted the Licence Holder has in place amenity agreements or other arrangements with all of these receptors.

Table 6: Receptors and distance from prescribed activity

Residential and sensitive premises	Distance from Prescribed Premises
Lot 6 on Diagram 68068, 207 Wonnerup South Rd, Ruabon (R2)	0.7 km south-west of proposed pits to be mined 2019 1.1 km south-west of proposed pits to be mined 2020
Lot 107 on Plan 246012, 50 Lyle Rd, Abba River (R3)	1.1 km south of proposed pits to be mined 2019 1.4 km south of proposed pits to be mined 2020
Lot 1 on Plan 37025, 185 Lyle Rd, Ruabon (R4)	0.8 km south of proposed pits to be mined 2020 1.2 km south-east of proposed pits to be mined 2019
Lot 1270 on Plan 82481, 201 Lyle Rd, Ruabon (R5)	0.7 km south of proposed pits to be mined 2020 1.3 km south-east of proposed pits to be mined 2019
Lot 217 on Plan 246160, 1083 Layman Rd, Ruabon (R1)	1.9 km north of proposed pits to be mined 2019

Table 7 below lists the relevant environmental receptors in the vicinity of the Prescribed Premises which may be receptors relevant to the proposed amendment.

Table 7: Environmental receptors and distance from activity boundary

Environmental receptors	Distance from Prescribed Premises
Abba River	Premises is located within the Abba River surface water catchment, with the river flowing from south to north through the middle of both mining tenements. The river is ephemeral in nature, with flow predominantly taking place in winter. Mining is not permitted within 100 m of the river banks
Sabina River	The river flows through the south-west corner of the existing Wonnerup mine, with the headwaters located approximately 1 km south of Wonnerup North tenements. Surplus mine water is discharged through existing licence conditions
Vasse-Wonnerup Wetland	Listed under the RAMSAR convention as a wetland of international importance (as migratory bird habitat). Located approximately 2 km downstream of the Premises
Ludlow State Forest, Tuart National Park	Located approximately 1 km north-west of the proposal area, north of the Bussell Highway
Ecological communities	None recorded within the proposal area
Threatened / priority flora	A Declared Rare Flora species was recorded adjacent to Wonnerup South Rd near to where it crosses the Abba River. Four Priority flora species have been recorded within, or vicinity of, the proposal area
Threatened / priority fauna	Five conservation significant fauna species (i.e. two mammals, three birds) were recorded during a field survey within the proposal area

Consultation

The amendment application was referred to the landholder, several public authorities and nearby residents. A summary of responses is provided in Table 8 below.

Table 8: Direct interest stakeholder submissions

Submitter	Comment
Department of Mines, Industry Regulation and Safety	<p>A revised Mining Proposal and Mine Closure Plan (Reg ID 53504) was approved for the Wonnerup North project on 15 June 2015. The assessment under the Mining Act was for the whole Wonnerup North project, including Stage 1, and DMIRS considered it to adequately address the environmental management of the operations.</p> <p>One of Cristal’s management measures to control erosion, sedimentation and potential water contamination involves clearing in stages with progressive rehabilitation as the mine progresses, which is considered appropriate.</p> <p>During assessment of the Mining Proposal the former Department of Water advised that the specification of “agreed key chemical parameters” in regards to the quality of surface water and groundwater should occur prior to mining commencing in 2018.</p>
City of Busselton	Prior to the commencement of the project, Cristal will need to finalise arrangements for access to the City’s road network.
Nearby landowner 1	<p>Concerns were raised about water supply for the mine and potential drawdown impacts on existing bores for surrounding land owners. (This matter is outside the scope of the Part V assessment)</p> <p>There is concern that dust and noise from the mine may impact on nearby residents.</p>
Nearby landowner 2	A number of concerns were raised, including impacts on the Vasse-Wonnerup estuary from the discharge of mine water into the Abba River, altering the flow of watercourses within the mine footprint, loss of local flora and fauna values, damage to the Wonnerup South Rd fauna corridor, amenity impacts from haul truck movements, and the location of the proposed N5 noise monitoring station.

Risk assessment

Tables 9 and 10 below describe the Risk Events associated with the amendment consistent with the *Guidance Statement: Risk Assessments*. Both tables identify whether the emissions present a material risk to public health or the environment, requiring regulatory controls.

Table 9: Risk assessment for proposed amendments during construction

Risk Event					Consequence rating	Likelihood rating	Risk	Reasoning	Regulatory controls	
Source/Activities	Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts						
Site preparation and other pre-mining works	Civil excavation/ earthworks/ vehicle movements on unsealed roads	Noise	5 residences within 2 km radius, of which 3 are within 700 m of the works	Air / wind dispersion	Amenity impacts/ human health impacts	Minor	Possible	Medium	Based on the short duration of the works and distance to receptors, low level impacts to amenity from noise and dust are possible at a local scale	Hours of operation for construction works have been restricted to day time hours only
		Fugitive dust				Minor	Unlikely	Medium		An additional 3 air monitoring stations are to be established to enable monitoring during operations
	Clearing of native vegetation, topsoil stripping and O/B removal	Noise, fugitive dust	Remnant vegetation, including rare and priority flora species	Air / wind dispersion	Soil contamination, suppression of photosynthetic and respiratory functions	Minor	Rare	Low	Based on the short duration of the works and distance to sensitive remnant vegetation, low level impacts would only occur in exceptional circumstances	N/A
			Local residences (see above)			Minor	Rare	Low	Clearing does not directly relate to the primary activity – regulated under clearing permit issued by DMIRS	N/A
			Remnant vegetation (see above)			Minor	Rare	Low	Low risk for the reasons stated above	N/A

Table 10: Risk assessment for proposed amendments during operation

Risk Event					Consequence rating	Likelihood rating	Risk	Reasoning	Regulatory controls			
Source/Activities	Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts								
Category 8: Mineral sands mining or processing: premises on which mineral sands ore is mined, screened, separated or otherwise processed	Mining and processing of ore	Noise	Local residences (see above)	Air / wind dispersion	Amenity impacts/ human health impacts	Moderate	Possible	Medium	Refer to detailed "Risk assessment – Noise emissions" below	Noise controls regulated through condition 2.5.1. Includes updated controls for noise bunding and location of the mining unit during active mining operations		
		Fugitive dust				Minor	Unlikely	Medium			Based on the location and distance to receptors, and management of dust from operations to date at the existing Wonnerup site, low level impacts to amenity from dust are unlikely at a local scale	Existing ambient air quality program to be expanded to include monitoring at the 3 new locations
		Remnant vegetation (see above)				Minor	Rare	Low			Low risk for the reasons stated above	N/A
	Transport of slurrified ore to the WCP via pipeline	Oxidation of Acid Sulfate Soils from physical disturbance of ASS material	Groundwater, groundwater dependent vegetation	Leaching from in-situ material	Groundwater contamination (acidification)	Moderate	Unlikely	Medium	ASS soil investigation (Aurora, 2014) indicates the risk of sulfide hazard occurring at the site is low. An ASS management plan is in place that details field testing during active mining and details management options for any ASS that may be encountered at the site	Regulated under existing condition 1.3.4		
		Contaminated stormwater runoff	Abba River Vasse-Wonnerup wetland system	Direct discharge	Contamination of surface waters, wetlands, soil, inhibiting vegetation growth and survival and health impacts to fauna	Moderate	Unlikely	Medium	All drainage flows within the disturbance area will be directed to collection points for treatment as part of the existing mine water circuit	Regulated under existing condition 2.2.1		
		Rupture of pipeline causing ore slurry discharge to land or water	Abba River Remnant vegetation (see above)			Minor	Possible	Medium	Ore pipelines will be contained within bunded service corridors designed to contain any spills or leaks in the event of a pipe failure	Regulated under existing condition 1.3.2		
Disposal of sand tailings (mine void)	Seepage of water entrained within sand tailings to	Groundwater, groundwater dependent vegetation	Through base of mine void	Groundwater contamination	Minor	Unlikely	Medium	Sand tailings (consisting principally of silica sand) to be returned to the mine void will have undergone wet separation only and are unlikely to contain contaminants that might otherwise be present in sand tailings that have undergone secondary processing (i.e. mostly clean sand)	Regulated under existing condition 2.3.1			

		groundwater			Groundwater mounding	Minor	Possible	Medium	It is expected that some seepage will occur from deposited sand tailings, which will offset impacts from dewatering drawdown Groundwater bores will be monitored regularly to enable early detection of rising groundwater levels	Monitoring is conducted in accordance with the Wonnerup Groundwater Operating Strategy
		Rupture of pipeline causing mine tailings discharge to land or waters	Abba River Remnant vegetation (see above)	Direct discharge	Contamination of surface waters, etc. (see above)	Minor	Possible	Medium	Tailings pipelines will be contained within bunded service corridors designed to contain any spills or leaks in the event of a pipe failure	Regulated under existing condition 1.3.2
	Disposal of clay slimes (solar drying ponds)	Seepage of water entrained within clay slimes to groundwater	Groundwater, groundwater dependent vegetation	Through base of mine void	Groundwater contamination	Minor	Unlikely	Medium	The volumes of seepage is expected to be low as the initial clay layer will create a natural lining of the pond floor	Regulated under existing condition 1.3.1. Note: Table 1.3.1 has been amended to specify construction requirements (reference to the SEP Construction & Management Plan has been deleted)
					Groundwater mounding	Minor	Unlikely	Medium		
		Rupture of pipeline causing slimes discharge to land or waters	Remnant vegetation (see above)	Direct discharge	Contamination of surface waters, etc. (see above)	Minor	Unlikely	Medium	Tailings pipelines will be contained within bunded service corridors designed to contain any spills or leaks in the event of a pipe failure	Regulated under existing condition 1.3.2
		Dust lift-off	Local residences (see above)	Air / wind dispersion	Amenity impacts/ human health impacts	Minor	Unlikely	Medium	Low risk due to the location of the solar drying ponds on the site. Any dust lift-off is expected to be localised and considered unlikely to impact on off-site receptors	Regulated under existing condition 2.4.3
		Overtopping/ breach of containment causing discharge to land or waters	Remnant vegetation (see above)	Direct discharge	Contamination of surface waters, etc. (see above)	Minor	Rare	Low	Solar drying ponds are designed with weir boxes to capture supernatant water for recycling within the mine water circuit, so as to not allow overtopping Any breaches of pond walls are expected to be contained within the mine footprint	Regulated under existing condition 1.3.1
		Naturally Occurring Radioactive Materials (NORM)	Seepage to groundwater	Groundwater, groundwater dependent vegetation	Lateral or vertical seepage through base of mine void	Groundwater contamination	Moderate	Unlikely	Medium	Tailings returned to the mine for disposal from secondary processing may contain low levels of NORM; however the majority of NORM (i.e. monazite) is separated out during secondary processing for sale as a product. The risk is therefore significantly less than if the secondary tails contained a higher concentration of monazite
Category 6: Mine dewatering: premises on which water is extracted and discharged into the environment to allow mining of ore	Dewatering	Disposal of excess mine water	Abba River Vasse-Wonnerup wetland system	Direct discharge	Impacts on water quality	Minor	Unlikely	Medium	The surface water impact assessment (RPS, 2014) indicates there may be two peaks in groundwater inflow to the open pit over the life of mine (full Wonnerup North project) that will require controlled discharge of 3,500 – 5,000 kL/d to the Abba River during these peaks (3 – 6 months) Average annual flow in the Abba River is ~40,000 kL/d, therefore a discharge of 3,500 – 5,000 kL/d would represent a 10% increase in flow, which is not considered significant Existing conditions stipulate discharge criterion to ensure minimal impacts to water quality	Regulated under existing condition 2.2.1 Note: Tables 2.2.1 and 2.2.2 have been updated to include secondary discharge point W2 (Abba River). Note: Condition 2.2.4 has been updated to specify the circumstances in which discharge to the secondary discharge point W2 may occur
					Impacts to stream flow	Minor	Unlikely	Medium		

Risk assessment – Noise emissions

Noise model

The Licence Holder has undertaken a noise impact assessment for the Wonnerup North project using the noise modelling software *SoundPlan 7.1*, to predict noise levels at each nearby receptor under a number of operating conditions. The CONCAWE algorithms were selected for the model, for consistency with previous noise modelling of the Wonnerup operations (SVT, 2018).

Results

The model predicts that noise emissions have the potential to exceed the assigned levels at four of the closest receptors under worst-case weather conditions during the initial construction works, which are proposed to be conducted during the daytime only.

The predicted exceedances mainly result from applying a 5 dB(A) tonality adjustment, as required by the Noise Regulations. Absolute noise levels (excluding tonality adjustment) under worst-case weather conditions are predicted to exceed the assigned levels at the closest receptor to the south-west with mobile equipment, particularly the scrapers, being the dominant noise source.

Compliance is predicted at all noise sensitive receivers for both of the operational scenarios modelled, which includes daytime and night time scenarios. These results have been achieved through several changes to the mining methods/plan including installation of temporary noise bunds, increasing the height of longstanding noise bunds, and optimisation of the mining methods.

Licence Holder noise controls

The modelling indicates that compliance with the Noise Regulations can be achieved through implementing one or more of the following noise controls:

- Progressive installation of strategic internal noise bunds which the mining unit will operate closely behind, to provide an effective bund of 6 m above the natural ground level;
- Limiting the number of items of earthmoving equipment or other equipment in operation under specific weather conditions; and
- Continuous monitoring of noise emissions, via the existing site noise monitoring network and procedures for exceedance of internal noise triggers.

Amenity agreements (or other arrangements) are also in place with most receptors in the Lyle Rd area, as an additional management tool.

DWER technical review

DWER's review of the updated Environmental Noise Impact Assessment (SVT, 2018) provided as part of the Application identified that:

- The selection of input data and assumptions made are accepted as presenting reliable conclusions on the predicted noise levels and compliance with the assigned levels at noise sensitive receptors under all likely operational scenarios;
- The updated noise model predicts lower noise levels due to the different modelling scenarios, where the mining unit and loaders are now being proposed at least 1.5 m below ground level within the pit and 30 m behind a 6 m high internal noise bund, in addition to a 4 m high noise bund along the southern boundary. The lower location of the equipment items below ground level and closer to the noise bunds can result in lower noise emission levels; and
- It is noted the FELs used in the initial noise model included two CAT 980H, however one of these has been replaced by a CAT 982M in the updated model. According to CAT's specifications for these two FELs, they are about the same SWL – in the range of 109 –

112 dB(A). The updated model quotes 106.2 dB(A) which is closer to the SWL quoted for the CAT 980H.

Key Findings:

1. Updated noise modelling indicates that full, but marginal, compliance with the Noise Regulations can be achieved through implementation of several noise management strategies, including:
 - Operating the mining unit and loaders at least 1.5 m below ground level within the pits, and 30 m behind a 6 m high internal noise bund;
 - Construction of a 4 m high noise bund along the entire southern boundary of M70/360;
 - Limiting the number of earthmoving equipment in operation under specific weather conditions; and
 - Continuous monitoring of noise emissions via the existing site noise monitoring network, and procedures for exceedance of internal noise triggers.
2. The Licence Holder has in place amenity agreements with all receptors that may be impacted by noise. However, this does not absolve the Licence Holder from complying with the Noise Regulations and DWER may require verification of noise compliance at neighbouring residences if a noise complaint is received.

Decision

DWER has previously assessed the risk of mining operations at the Wonnerup and Wonnerup South sites and considers Stage 1 of the Wonnerup North expansion as an addendum to the existing risk assessments. The environmental performance of the Licence Holder during past and current mining operations at the site has also been considered as part of this risk assessment.

It is acknowledged the proposed expansion will bring the overall Wonnerup mining operation closer to receptors in the Lyle Rd area. However, the risk of potential impacts to amenity for nearby receivers is considered to be acceptable, based on updated noise modelling that indicates operations can comply with the Noise Regulations, in addition to current environmental performance and the implementation of operational and management controls (including amenity agreements).

Conditions are required to authorise mine development works as specified by the Licence Holder in the Application. Additional operational and management controls are required to ensure noise levels are acceptable during mining operations.

Conditions in the Existing Licence capture operational emissions relating to contaminated surface water, collected surface water and recovered groundwater, disposal of mine tailings (sand tailings and clay slimes), acid sulfate soils, and control of noise and fugitive dust from site operations. These conditions have been updated to include Wonnerup North (Stage 1).

DWER is proposing to undertake a detailed risk review of the Wonnerup operations within the next 12 months, with the aim of aligning the Existing Licence with its risk-based Regulatory Framework. The full risk-based review will consolidate the amendments in this Notice (and previous notices) into a fully revised licence.

Licence Holder's comments

The Licence Holder was provided with the draft Amendment Notice on 9 August 2018. A summary of comments and DWER's response is provided in Appendix 2 of this Notice.

Amendment

1. The 'Premises address' on the covering page of the Existing Licence is amended by the insertion of the red text shown in underline below:

Wonnerup Mineral Sands Mine
 4397 Bussell Highway
 YALYALUP WA 6280
 Being Lot 100 on Plan 65306, Mining Leases M70/785 and part of M70/360 and Miscellaneous Licences L70/159 and L70/161, as depicted in Schedule 1.
2. The 'Premises map', 'Map of emission points' and 'Map of monitoring locations' in the Existing Licence are replaced by the maps in Schedule 1 of this Notice.
3. The Existing Licence is amended by the insertion of the following Definitions:

'Professional Engineer' means a person holding current certification from the Institution of Engineers Australia (IEAust);

'Mining Operations' means the removal of overburden and excavation of ore, and subsequent in-pit screening, slurring and processing of mined ore.
4. The Existing Licence is amended by the insertion of the following Conditions:

Infrastructure and equipment

1.2.2 *The Licence Holder must install and carry out the Works for the infrastructure and equipment relating to the Wonnerup North site (M70/360):*

 - (a) *specified in Column 1;*
 - (b) *to the requirements specified in Column 2; and*
 - (c) *in the general location specified in Column 3;*

of Table 1.2.2 below.

1.2.3 *The Licence Holder must not depart from the requirements specified in Column 2 of Table 1.2.2 except:*

 - (a) *where such departure does not increase risks to public health, public amenity or the environment; and*
 - (b) *all other Conditions of the Existing Licence are still satisfied.*

1.2.4 *Subject to Condition 1.2.2, within 28 days of the completion of the Works specified in Column 1 of Table 1.2.2, the Licence Holder must provide to the CEO certification from a Professional Engineer confirming each item of infrastructure or component of infrastructure specified in Column 1 of Table 1.2.2 below has been constructed with no material defects and to the requirements specified in Column 2.*

1.2.5 *Where a departure from the requirements specified in Column 2 of Table 1.2.2 occurs and is of a type allowed by Condition 1.2.3, the Licence Holder must provide to the CEO a description of, and explanation for, the departure along with the report required by Condition 1.2.4.*

Table 1.2.2: Works, infrastructure and equipment requirements table for the Wonnerup North site (M70/360)		
Column 1	Column 2	Column 3
Infrastructure/ Equipment	Requirements (design and construction)	Site plan reference
<i>Initial overburden/ topsoil stripping</i>	<i>None specified</i>	<i>N/A</i>

<i>and stockpiling</i>		
<i>Construction of initial dewatering sumps and water storage ponds</i>	<i>None specified</i>	<i>N/A</i>
<i>Pipelines carrying clay slimes, sand tailings and return water on M70/360</i>	<p><i>Constructed with:</i></p> <ul style="list-style-type: none"> • <i>Automatic cut-outs in the event of a pipe failure; OR</i> • <i>Secondary containment sufficient to contain any spill for a period equal to the time between routine inspections; OR</i> • <i>Telemetry systems and pressure sensors along pipelines to allow detection of leaks and failures</i> 	<i>N/A</i>
<i>Noise monitoring locations AN5 & AN6</i>	<p><i>Must be established:</i></p> <ul style="list-style-type: none"> • <i>In the vicinity of the south-eastern and south-western corners of M70/360, respectively, in locations readily accessible to the Licence Holder and can be used to continuously measure, and in conjunction with existing noise monitoring station AN1 predict the noise levels received at the closest Noise Sensitive Premises to the south of the mine;</i> • <i>Prior to commencing Mining Operations relating to the Wonnerup North site (M70/360);</i> • <i>With a directional noise monitoring system capable of supplying continuous real-time data to allow real-time monitoring of noise emissions, including spectral statistics; and</i> • <i>In compliance with Part 3 (as applicable) of the Noise Regulations</i> 	<i>'AN5' and 'AN6' on map in Schedule 1</i>
<i>Ambient air quality monitoring stations AQ5, AQ6 & AQ7</i>	<p><i>Must be established:</i></p> <ul style="list-style-type: none"> • <i>In the vicinity of the south-eastern and south western corners of M70/360, and north of the Abba River in the vicinity of the avocado farm, in locations readily accessible to the Licence Holder;</i> • <i>Prior to commencing Works relating to the Wonnerup North site (M70/360); and</i> • <i>Siting in accordance with AS 3580.1.1.</i> 	<i>'AQ5', 'AQ6' and 'AQ7' on map in Schedule 1</i>
<i>Noise bunding</i>	<p><i>Must construct:</i></p> <ul style="list-style-type: none"> • <i>A 4 m high topsoil noise bund along the entire length of the southern boundary of M70/360; and</i> • <i>Prior to commencing Mining Operations relating to the Wonnerup North site (M70/360)</i> 	<i>'Perimeter southern bund' on map in Schedule 1</i>
	<p><i>Must construct:</i></p> <ul style="list-style-type: none"> • <i>A 6 m high ore noise bund along the entire length of, and approximately 140 m north of, the southern boundary of M70/360; and</i> • <i>Prior to commencing Mining Operations relating to the Wonnerup North site (M70/360)</i> 	<i>'Southern bund' on map in Schedule 1</i>
	<p><i>Must construct:</i></p> <ul style="list-style-type: none"> • <i>A 6 m high ore noise bund at least 700 m long and approximately 400 m north of the southern boundary of M70/360; and</i> 	<i>'Central bund' on map in Schedule 1</i>

	<ul style="list-style-type: none"> • Prior to commencing Mining Operations relating to the Wonnerup North site (M70/360) 	
	<p>Must construct:</p> <ul style="list-style-type: none"> • A 6 m high ore noise bund at least 350 m long and approximately 600 m north of the southern boundary of M70/360; and • Prior to commencing Mining Operations relating to the Wonnerup North site (M70/360) 	'Northern bund' on map in Schedule 1

Hours of operation

1.2.6 The Licence Holder must only carry out initial mine pit development works relating to the Wonnerup North site (M70/360) between the hours of 7:00 AM and 7:00 PM Monday to Saturday (excluding public holidays).

Commissioning

1.2.7 The Licence Holder must notify the CEO:

- at least 7 days prior to the commencement date; and
- within 7 days of the completion date;

of Commissioning relating to the Wonnerup North site (M70/360).

1.2.8 The Licence Holder must provide to the CEO a summary report on Commissioning works relating to the Wonnerup North site (M70/360) along with the report required by Condition 1.2.4.

Emissions (general)

2.1.2 The Licence Holder must not cause any Emissions from the Works relating to the Wonnerup North site (M70/360) except for specified Emissions and general Emissions described in Column 1 of Table 2.1.1, and subject to the exclusions, limitations or requirements specified in Column 2 of Table 2.1.1.

Table 2.1.1: Authorised Emissions table for the Wonnerup North site (M70/360)	
Column 1	Column 2
Emission type	Exclusions/Limitations/Requirements
Specified Emissions	
Disposal of mine tailings	Only to solar drying ponds or mine voids, and subject to compliance with Condition 1.3.1
Discharges to Air – fugitive dust	Subject to compliance with Conditions 2.4.1 – 2.4.3
Ambient noise	Subject to compliance with Condition 2.5.2
General Emissions	
Emissions which arise from undertaking the Works	<ul style="list-style-type: none"> • Unreasonable Emissions; or • Emissions that result in, or are likely to result in, Pollution, Material Environmental Harm or Series Environmental Harm; or • Discharges of Waste in circumstances likely to cause Pollution; or • Emissions that result, or are likely to result in, the Discharge or abandonment of Waste in water to which the public has access; or • Emissions or Discharges which do not comply with an Approved Policy, prescribed standard, or the conditions in an Implementation Agreement or Decision; or • Emissions or Discharges the subject of offences under regulations prescribed under the EP Act, including materials discharged under the Environmental Protection (Unauthorised Discharges) Regulations 2004

Premises operation

5. Condition 1.3.1 of the Existing Licence is amended by the deletion of the text shown in strikethrough below and the insertion of the red text shown in underline below:

1.3.1 *The Licence Holder must ensure that materials listed in Column 2 of Table 1.3.1 are only discharged into the infrastructure detailed in Column 1 of Table 1.3.1 and to the infrastructure requirements specified in Column 3 of Table 1.3.1.*

Table 1.3.1: Containment infrastructure		
Column 1	Column 2	Column 3
Infrastructure	Material	Infrastructure requirements
Solar evaporation ponds	Thickener underflow (clay fines)	<ul style="list-style-type: none"> Constructed to the specifications outlined in the SEP Construction & Management Plan <u>Pond floors to be constructed with a minimum slope of 1:300</u> <u>Ponds to be constructed with overburden material or sand tailings with angle of repose for the outer pond wall being no steeper than 1.0:1.5 (V:H)</u> <u>Pond wall height not to exceed 5.0 m above the natural ground level</u> <u>Pond walls ≥ 2.5 m must be track rolled with a dozer</u> Decant overflow drains to the process water ponds A minimum top of embankment (total) freeboard of 500 mm is maintained on <u>ponds with wall heights ≤ 2.5 m</u> <u>A minimum top of embankment (total) freeboard of 1.0 m is maintained on ponds with wall heights ≥ 2.5 m</u>
Process water ponds	Process water (dewater effluent, tails return water, fines decant, recycled process water), rainwater and harvested stormwater	<ul style="list-style-type: none"> Weir boards installed on overflow points, to control flow and/or storage capacity pH probe installed on overflow points Flow metering device installed on overflow points

Point source emissions to surface water

6. Condition 2.2.1 of the Existing Licence is amended by the deletion of the text shown in strikethrough below and the insertion of the red text shown in underline below:

2.2.3 *The Licensee Licence Holder shall must ensure that where waste is emitted to surface water from the emission points listed in Column 1 of Table 2.2.1 and identified on the map of emission points in Schedule 1, it is done so in accordance with the conditions of this Licence.*

Table 2.2.1: Emission points to surface water		
Column 1	Column 2	Column 3
Emission point reference	Description	Source including abatement
W1	<u>Primary off-site</u> discharge point to the Sabina River. Water is allowed to overflow via gravity from the process water ponds into an on-site drainage channel, which then	Production water and stormwater, treated with flocculating and neutralising agent

	flows off-site through a culvert under Sues Rd and into the river	<u>(where required to achieve discharge criterion listed in Table 2.2.2)</u>
<u>W2</u>	<u>Secondary off-site discharge point to the Abba River. Water is pumped from the process water ponds to a designated discharge point in the river</u>	

7. Condition 2.2.3 of the Existing Licence is amended by the deletion of the text shown in strikethrough below and the insertion of the red text shown in underline below:

2.2.3 The Licensee Licence Holder shall ~~must not~~ cause or allow point source emissions to surface water that do not meet the limits specified in Table 2.2.2.

Table 2.2.2: Point source emission limits to surface water			
Emission point reference	Parameter	Limit (including units)	Averaging period
<u>W1 – W2</u>	pH	5.5 <u>(lower)</u> 8.5 <u>(upper)</u>	Spot sample
	Electrical conductivity @ 25°C	2,500 µS/cm	
	Total dissolved solids	1,500 mg/L <u>(upper)</u>	
	Total suspended solids	80 mg/L <u>(upper)</u>	
	Total titratable acidity (TTA)	65 mg/L <u>(upper)</u>	
	Total alkalinity (TAlk)	50 mg/L (lower) 10 mg/L <u>(lower)</u>	
<u>W2</u>	<u>Volumetric flow rate</u>	<u>5,000 kL/d (upper)</u>	<u>N/A</u>

8. Condition 2.2.4 of the Existing Licence is replaced by the Condition below:

2.2.4 The Licence Holder must only cause or allow point source emissions through the secondary off-site discharge point 'W2' in the following circumstances:

- during peak periods of water inflow into open mine voids, and where discharge is required to actively prevent the banking up of water at the primary off-site discharge point 'W1'; and
- the discharge does not cause erosion at the discharge point or downstream of the discharge point within the Abba River.

Fugitive dust controls

9. Condition 2.4.2 and Table 2.4.1 of the Existing Licence are replaced by the Condition and table below:

2.4.2 The Licence Holder is exempt from compliance with the limit specified in Condition 2.4.1 if in the case of an event in Table 2.4.1:

- the corresponding management action is taken; and
- there is sufficient evidence to demonstrate that the exceedance is not attributed to operations on the Premises.

Table 2.4.1: Management actions		
Monitoring point reference	Event	Management action
AQ1 – AQ7	Exceedance of the limit specified in Condition 2.4.1	Undertake an investigation of the exceedance, including but not limited to: <ol style="list-style-type: none"> the root cause analysis for the exceedance; and any common or contributory factors for the exceedance.

Noise controls

10. The Existing Licence is amended by the insertion of the following Condition 2.5.2:
- 2.5.2 *The Licence Holder must implement the noise controls specified in Table 2.5.2 whilst conducting Mining Operations relating to the Wonnerup North site (M70/360).*

Control	Action/Requirements
Heavy earthmoving equipment	<ul style="list-style-type: none"> • Must use the quietest equipment reasonably available; • Must use broadband reversing alarms (squawkers or quackers) on all earthmoving fleet instead of beepers; • The Sound Power Level of in-pit front end loaders used on the Premises during night time Mining Operations must not exceed 107 dB(A)
Noise bunding and location of mining unit	<ul style="list-style-type: none"> • Must maintain a 4 m high secondary noise bund along the southern boundary of M70/360 during Mining Operations on M70/360; • An effective 6 m high noise bund, measured from the base of the mining unit, must be constructed, as required, in order to maintain a minimum of 100 m of bund in advance of the mining unit, during Mining Operations on M70/360
Location of mining unit	<ul style="list-style-type: none"> • Base of mining unit must be located within 30 m north of an effective 6 m high ore bund during the western and eastern mining scenarios
Cessation of activities	<ul style="list-style-type: none"> • Mining equipment must be relocated if noise monitoring indicates activities on the Premises are significantly contributing to noise levels that are likely to exceed the Noise Regulations at nearby receptor(s); • Mining Operations must be suspended if equipment relocation or adjustment fails to reduce the likelihood of noise non-compliance at nearby receptor(s) and an amenity agreement is not in place with the affected receptor(s)

Monitoring of point source emissions to surface water

11. Condition 3.2.1 of the Existing Licence is amended by the deletion of the text shown in strikethrough below and the insertion of the red text shown in underline below:
- 3.2.1 *The Licence Holder must undertake the monitoring in Table 3.2.1 according to the specifications in that table.*

Monitoring point reference	Parameter	Units	Frequency¹
SW1 & SW2 – weir boxes on process water dams <u>SW1 & SW2 – weir boxes on process water dams v-notch (magflow meters)</u>	Volumetric flow rate	m ³ /d	Continuous, whilst discharging
W2 – secondary off-site discharge location			
<u>W1 – W2</u>	pH ²	No unit	Weekly, <u>whilst discharging</u>
	Total dissolved solids ²	mg/L	
	Total suspended solids ²		

	Total titratable acidity		Monthly, <u>whilst discharging</u>
	Total alkalinity		
	Sulfate		
	Metals and metalloids: aluminum, arsenic, chromium, copper, lead, manganese, nickel, zinc, total recoverable hydrocarbons, ammonium		

Note 1: Sampling must occur on the first day of discharge for the season, then weekly/monthly thereafter.

Note 2: In-field non-NATA accredited analysis permitted.

Note 3: Availability >90% of the measurement intervals on a monthly basis.

Ambient environmental quality monitoring

12. Tables 3.4.1 – 3.4.2 of the Existing Licence are amended by the deletion of the text shown in strikethrough below and the insertion of the red text shown in underline below:

Monitoring point reference	Parameter	Sound measuring equipment	Units	Frequency
AN1 – AN4 <u>AN1 – AN6^{3,4,5}</u>	L_{AS90,30min} L_{AS10,30min} L_{Aeq(20Hz-500Hz),30min} <u>Audio recording²</u>	Non-directional system	dB(A) -	Continuous ¹
AN2 – AN4	<u>L_{Aeq,1min} one-third octave spectral data</u>	<u>Directional system</u>	<u>dB(A)</u>	

Note 1: Availability >90% of the measurement intervals on a monthly basis.

Note 2: During internal target exceedances.

Note 3: Monitoring at AN4 only required whilst Mining Operations occur on the Wonnerup South site (M70/785).

Note 4: Monitoring at AN5 – AN6 only required whilst Mining Operations occur on the Wonnerup North site (M70/360).

Note 5: Monitoring at AN2 – AN3 only required whilst Mining Operations occur on the Wonnerup site (Lot 100).

Monitoring point reference	Parameter	Units	Frequency	Sampling duration	Method
AQ1 – AQ4 <u>AQ1 – AQ7²</u>	TSP	$\mu\text{g}/\text{m}^3$	Monthly, commencing 1 October and ending 31 May the following year	24 hours	AS 3580.9.3
	<u>PM₁₀</u>		<u>Minimum of 2 samples between 1 October and 31 May the following year</u>	<u>Minimum of 14 days continuous logging with 15 minute sampling averages¹</u>	<u>None specified</u>

Note 1: Availability >90% of the measurement intervals on a monthly basis.

Note 2: Monitoring at AQ5 – AQ7 to commence prior to the start of works relating to the Wonnerup North site (M70/360).

Information

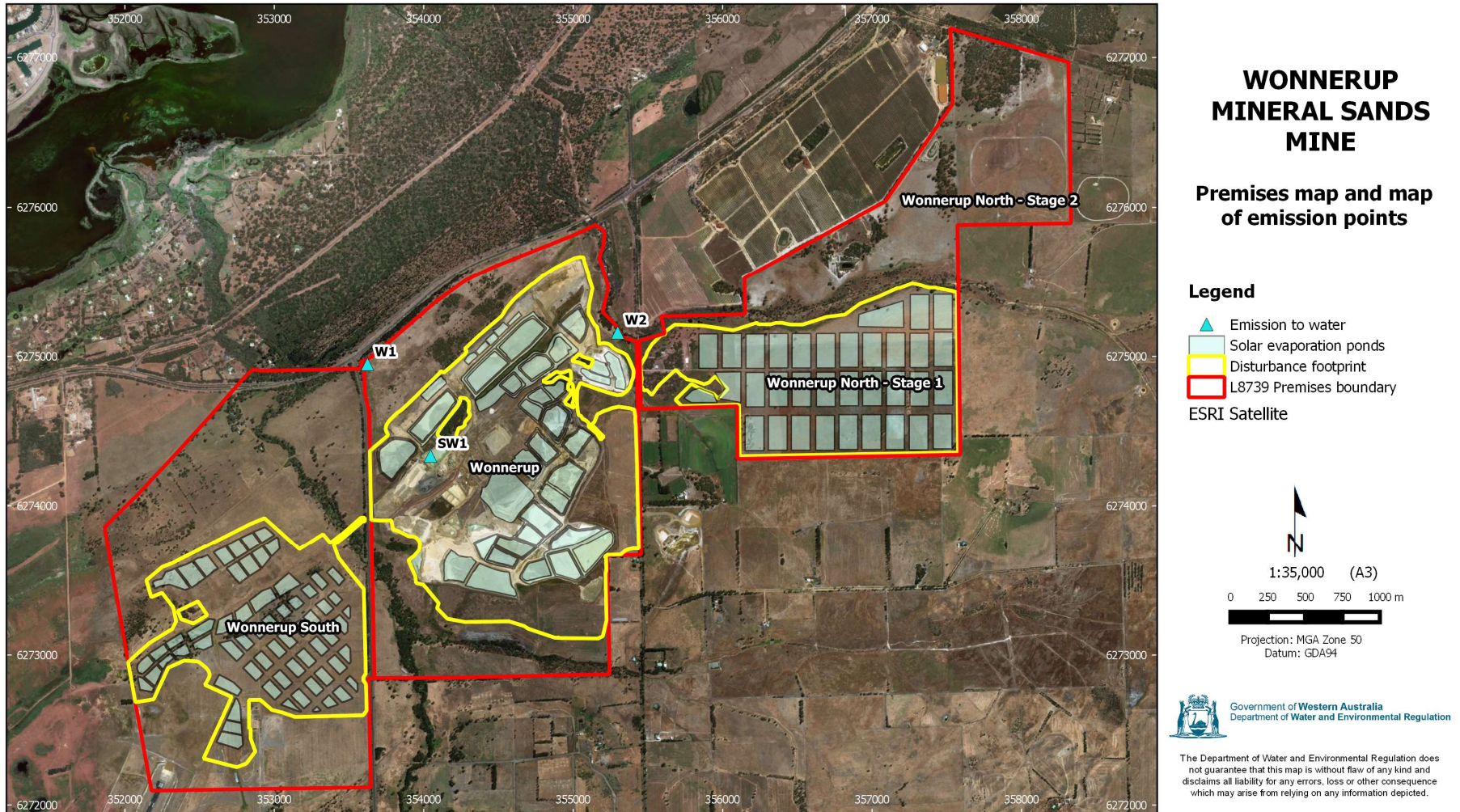
13. Condition 4.1.2 of the Existing Licence is replaced by the following Condition:
 4.1.2 *The Licence Holder must submit to the CEO, no later than 31 March in each year, a Compliance Report indicating the extent to which the Licence Holder has complied with the Conditions in this Licence for the preceding Annual Period.*
14. Table 4.2.1 of the Existing Licence is amended by the deletion of the text shown in strikethrough below:

Table 4.2.1: Annual environmental report		
Condition or table	Parameter	Format
-	<i>Summary of any failure or malfunction of any pollution control equipment or any environmental incidents that have occurred during the year and any action taken</i>	<i>None specified</i>
-	<i>Amount of overburden removed, ore processed, HMC produced, tails returned to mine voids, North Shore Tails returned to the mine for blending and disposal</i>	
-	<i>A copy of the annual groundwater monitoring results required by Licence to Take Water GWL173523</i>	
1.3.4	<i>Premises annual water balance</i>	
4.1.3	<i>Annual Audit Compliance Report</i>	<i>AAGR</i>
4.1.4	<i>Complaints summary</i>	<i>None specified</i>
Table 3.2.1	<i>Monitoring of point source emissions to surface water</i>	
Table 3.3.1	<i>Process monitoring</i>	
Table 3.4.1	<i>Summary of ambient noise levels, assessed against the Noise Regulations</i>	
Table 3.4.2	<i>Monitoring of ambient air quality</i>	
Table 3.4.3	<i>Monitoring of ambient surface water quality</i>	

Schedule 1: Maps

Premises map and map of emission points

The Premises and all authorised emission points are shown in the map below. The red line depicts the Premises boundary.



Map of monitoring locations

The location of all monitoring points are shown in the map below.

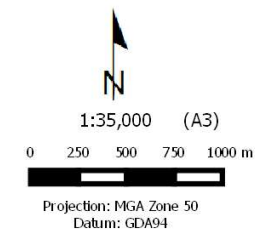


WONNERUP MINERAL SANDS MINE

Map of monitoring locations

Legend

- ◆ Surface water monitoring
- Noise monitoring
- Ambient air monitoring
- L8739 Premises boundary
- ESRI Satellite



The Department of Water and Environmental Regulation does not guarantee that this map is without flaw of any kind and disclaims all liability for any errors, loss or other consequence which may arise from relying on any information depicted.

Map of noise bund locations

The location of all noise bunds to be constructed on M70/360 are shown in the map below.

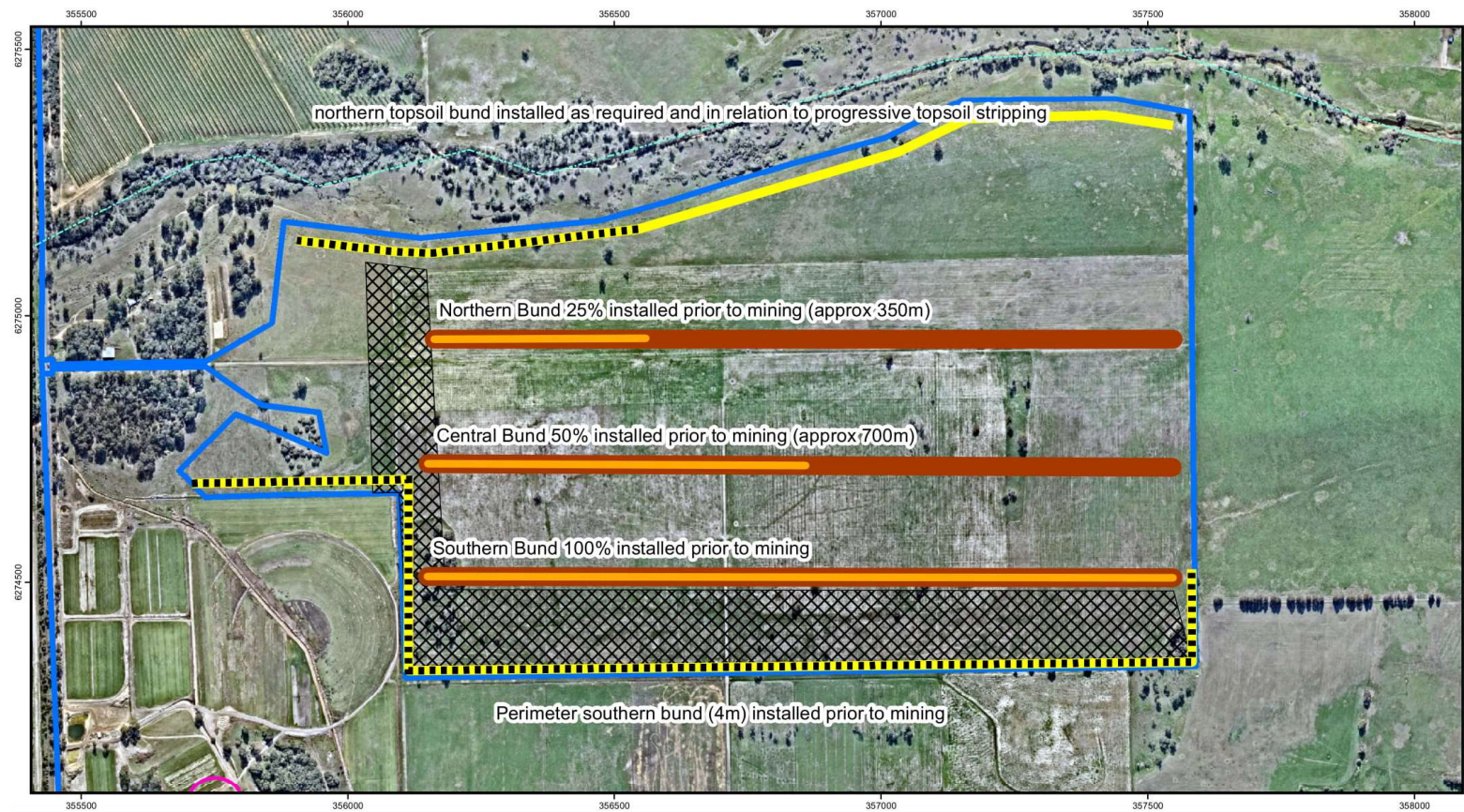


FIGURE 5 - REV1

WONNERUP NORTH AMENDMENT NOISE MANAGEMENT

		Legend	
		One Relocation	L8739_Premises_Boundary_WNS1
Meters 1:10,000 Projection: MGA Zone 50 Datum: GDA94		WON_Noise_Bunds_PreMining	WON_Noise_Bunds_FULL
		4m	4m
		6m	6m
Department: --	Date: 19/09/2018	Drawn by:	Status: REV1
Figure: --	Internal Reference:	Requested by:	Sheet Size: A4

Appendix 1: Key documents

	Document title	In text ref	Availability
1	Licence L8739/2013/1 – Wonnerup Mineral Sands Mine	L8739/2013/1	accessed at www.dwer.wa.gov.au
2	Amendment Notice 1 – Wonnerup South extension	Amendment Notice 1	
3	Wonnerup North Mineral Sands Project – Revised Mining Proposal, Revision 2, 28 May 2015. Prepared by Cristal Mining Australia Pty Ltd.	Mining Proposal	accessed at: www.minedexext.dmp.wa.gov.au
4	SVT, 2018. Environmental Noise Impact Assessment for the Proposed Wonnerup North Mineral Sands Project, Rev 3 – 12 September 2018. Prepared by SVT Engineering Consultants for Cristal Mining Australia Pty Ltd	SVT, 2018	DWER records A1733698
5	RPS, 2014. Wonnerup North Mineral Sands Project – Surface Water Assessment. Prepared by RPS Group for Cristal Mining Australia Pty Ltd	RPS, 2014	DWER records A1733710
6	DER, July 2015. <i>Guidance Statement: Regulatory principles</i> . Department of Environment Regulation, Perth.	DER, 2015a	accessed at www.dwer.wa.gov.au
7	DER, February 2017. <i>Guidance Statement: Risk Assessment</i> . Department of Environment Regulation, Perth.	DER, 2017a	
8	DER, February 2017. <i>Guidance Statement: Decision Making</i> . Department of Environment Regulation, Perth.	DER, 2017b	

Appendix 2: Key documents

	Section	Licence Holder comment	DWER response
1	Table 1.2.2 – construction requirements for initial solar drying ponds on M70/360	Not applicable as the existing SEPs at the Wonnerup site will be used initially. New SEPs will be constructed as shallow dams on top of tailed voids.	Noted. SEP construction requirements removed from works Table 1.2.2 and put into containment infrastructure Table 1.3.1 for ponds to be constructed during mining operations.
2	Table 1.2.2 – establishing noise monitoring sites prior to commencing works on M70/360	This is technically difficult to comply with as written and is not practical in relation to the risks associated with noise. Prior to commencing mining is more appropriate, and relative to the risk of noise based on the updated noise modelling.	Noted. Condition updated to require establishment of AN5 and AN6 prior to commencing mining operations, instead of prior to construction works.
3	Table 1.2.2 – establishing air quality monitoring sites capable of continuous monitoring	Not proportionate to the level of risk of dust. Continuous monitoring of dust is not required at Wonnerup.	Noted as an oversight by DWER. Changes made where necessary.
4	Table 2.2.2 – update to discharges to water emission point reference	Discharge to the Abba River needs to be considered as a secondary discharge option, instead of a contingency, based on updated surface water runoff modelling. This is required to safely discharge excess water during winter, due to an increase in the surface water catchment over the 3 stages of the Wonnerup project. Request W2 added as an authorised discharge point, with the same discharge limits to apply.	Risk has been determined to be low, therefore W2 has been authorised as a secondary discharge point. However, it is DWER's preference that discharge only occurs through the primary discharge point where possible. A daily discharge limit of 5,000 kL has been imposed through W2.
5	Table 2.2.2 – change of limit for TTA	It is unclear why the discharge limit for TTA has been reduced from 65 mg/L to 40 mg/L.	The current limit for TTA is based on statistical data provided during the 2013 works approval assessment. This is to be reviewed during the full licence review.
6	Table 2.4.1 – update to monitoring point reference for air quality monitoring stations	Dust monitoring is proposed at all locations, including the new sites to be established, AQ6 and AQ7.	Noted and updated.
7	Table 2.5.2 – increase to SWL of in-pit loaders	With updated noise management strategies being proposed, noise compliance can still be achieved using a bigger (louder) FEL, with SWL 107 dB(A).	Noted and updated. Refer to detailed risk assessment – noise emissions.

8	Table 2.5.2 – remove 'cessation of activities' requirement	With updated noise management strategies being proposed, noise compliance can still be achieved during NE and NW wind conditions at night without the need to cease mining operations.	Noted and updated. Refer to detailed risk assessment – noise emissions.
9	Table 2.5.2 – changes to proposed noise bunding	Updated noise management strategies now include operating the mining unit behind a temporary 6 m high noise bund, in addition to a permanent 4 m high noise bund along the entire southern boundary of M70/360.	Noted and updated. Refer to detailed risk assessment – noise emissions.
10	Table 3.2.1 – correction to surface water monitoring point reference	The discharge point is actually a weir box with a magflow meter, not a v-notch weir.	Noted and updated to correct discharge point description.
11	Table 3.2.1 – authorised discharge points to water	It is suggested that off-site monitoring requirements be extended to include W2.	Noted and table updated to include W2.
12	Table 3.2.1 – monitoring parameters	Table needs to be updated to delineate parameters that can be measured in field.	Noted and updated for in-field parameters.
13	Table 3.4.1 – noise monitoring requirements	Some flexibility to undertake noise monitoring in relation to the risk to nearby receptors is requested, i.e. when mining is occurring in the vicinity of the monitors.	Noted and updated to allow flexibility for using existing noise monitoring equipment across the Premises, to be located relative to active mining activities.
14	Premises description	Suggest the premises description includes L70/161 to cover pipelines running underneath Wonnerup South Road, and L70/159 to cover pipelines running underneath Sues Road	Noted and updated to include both miscellaneous licences.
15	Definitions	Suggest a definition of 'mining operations' be added to avoid confusion in relation to the noise management conditions.	Noted and updated to include a definition for mining operations.
16	Table 1.3.1 – changes to SEP construction requirements	SEPs will be constructed with pond wall heights no greater than 5 m above the natural ground level, but typically less than 2.5 m. It is requested that only ponds with wall heights greater than 2.5 m be required to be track rolled with a dozer. It is also requested that the minimum top of embankment freeboard of 500 mm apply to ponds with wall heights <2.5 m, and 1.0 m on ponds with wall heights >2.5 m. The process water circuit will also now consist of 2 water storage ponds to handle and treat additional volumes of water.	Noted and updated to include provision for the different sized ponds, freeboard requirements.
17	Table 2.2.1 – treatment of	If water quality meets licence parameters, then treatment is not	Noted and updated to add provision for

	production water	required in all cases.	treatment only if required.
18	Table 2.5.2 – noise bunding requirements	The noise modelling is based on an average pit depth of 1.5 m, however there are areas where the pit will be shallower. The intent is to locate the mining unit base at least 6 m below the top of any bund. Where the pit is shallower, the bund will be made higher so the minimum effective bund height will be 6 m at any time.	Changes to the wording of the condition, to require the mining unit operates behind an effective noise bund of at least 6 m high.