



<b>Licence Number</b>	L8918/2015/1
<b>Licence Holder</b>	Keysbrook Leucoxene Pty Ltd
<b>ACN</b>	137 091 297
<b>Registered business address</b>	Level 2, 100 Royal Street EAST PERTH WA 6004
<b>Date of amendment</b>	Thursday, 3 November 2016
<b>Prescribed Premises</b>	8: Mineral sands mining or processing 6: Mine dewatering
<b>Premises</b>	Keysbrook Mineral Sands Mine 1391 Hopelands Road NORTH DANDALUP WA 6207 Being Lot 1 on Diagram 8916, Lot 6 on Diagram 52395, Lots 52, 59, 62 & 63 on Plan 739, Lots 111, 112 & 113 on Diagram 94183 and Lot 300 on Diagram 31012

## Amendment

The Chief Executive Officer (CEO) of the Department of Environment Regulation (DER) has amended the above licence in accordance with section 59 of the *Environmental Protection Act 1986* as set out in this Amendment Notice.

Date signed: 3 November 2016

**Danielle Eyre**

**Senior Manager – Resource Industries**

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

## Amendment Notice

This notice is issued under section 59 of the *Environmental Protection Act 1986* (EP Act) to amend the 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.

## Amendment Description

The Licence Holder proposes to install an additional spiral separation stage to the existing Wet Concentrator Plant (WCP) at the Premises to improve resource recovery. The proposed works require approval under section 53(1) of the EP Act, as it involves altering the method of operation of the mineral separation process that may cause or alter the amount of waste, noise, odour or electromagnetic radiation emitted from the premises.

The main components of the application include:

- Installation of an additional annexe on the south side of the existing WCP building, with cladding on the walls and roof to the same standards as the existing;
- Additional four banks of heavy mineral separation spirals within the upper levels of the additional annexe; and
- A new 132 kW pump located on level 1 within the additional annexe.

The nearest receptors are located approximately 1.6 km and 1.8 km south-west of the WCP, and are the primary consideration with regards to any changes in emissions from the application.

## Other Approvals

Other approvals relevant to the application are outlined in Table 1 below.

**Table 1 – Relevant approvals**

Legislation	Number	Approval
<i>Environmental Protection Act 1986</i> – Part IV	Ministerial Statement 810	The Environmental Protection Authority conducted an Environmental Impact Assessment of the original proposal at the level of Public Environmental Review  Conditions 14-1 to 14-8 regulate noise emissions during mine operations
Shire of Murray – Town Planning Scheme No.4	D16/53339 P215/2016	Planning approval for the proposed upgrade was issued by the Shire of Murray on 27 October 2016 for a period of 2 years

## Location, environmental setting and potential receptors

Table 2 below lists the relevant noise sensitive receptors in the vicinity of the WCP. A map is shown in Appendix 2.

**Table 2 – Receptors and distance from prescribed activity**

Residential and Sensitive Premises	Distance from Prescribed Activity
Lot 20, 1491 Hopeland Rd	1.6 km south-west of WCP
Lot 211, 1523 Hopeland Rd	1.8 km south-west of WCP
Lot 105, 722 Westcott Rd*	1.8 km north-east of WCP
Lot 212, 1533 Hopeland Rd	2.1 km south-west of WCP
Lot 1, 1514 Hopeland Rd	2.2 km south-west of WCP
Lot 101, 720 Westcott Rd*	2.4 km north-east of WCP
Lot 12, 540 Readheads Rd	2.4 km south of WCP
Lot 102, 488 Readheads Rd	2.4 km south-east of WCP
Lot 700, 1142 Hopeland Rd	2.5 km north-west of WCP
Lot 506, 121 St Blaise Gr*	2.7 km south-east of WCP
Lot 104, 726 Westcott Rd^	2.7 km north-east of WCP
Lot 12, 540 Readheads Rd	2.7 km south of WCP
Lot 310, 1574 Hopeland Rd	2.7 km south-west of WCP
Lot 701, 1094 Hopeland Rd	2.8 km north-west of WCP
Lot 64, 603 Elliott Rd	2.8 km north of WCP
Lot 505, 122 St Blaise Gr*	2.8 km south-east of WCP
Lot 507, 113 St Blaise Gr	2.8 km south-east of WCP
Lot 56, 539 Readheads Rd	2.9 km south of WCP
Lot 82, 457 Readheads Rd	2.9 km south of WCP
Lot 81, 460 Readheads Rd	2.9 km south of WCP
Lot 5, 404 Readheads Rd	2.9 km south-east of WCP
Lot 84, 446 Readheads Rd	3.0 km south-east of WCP
Lot 95, 441 Readheads Rd	3.0 km south-east of WCP
Lot 94, 437 Readheads Rd	3.0 km south-east of WCP
Lot 75, 22 Chelsea Rd	3.0 km south of WCP
Lot 12, 1050 Hopeland Rd	3.0 km north-west of WCP
Lot 55, 541 Readheads Rd	3.1 km south of WCP
Lot 504, 102 St Blaise Gr	3.1 km south-east of WCP

Lot 12, 1050 Hopeland Rd	3.1 km north-west of WCP
Lot 92, McMahon Rd	3.1 km south-east of WCP
Lot 74, Chelsea Rd	3.1 km south of WCP
Lot 508, 65 St Blaise Gr	3.1 km south-east of WCP
Lot 16, 405 Readheads Rd	3.1 km south-east of WCP
Lot 90, McMahon Rd	3.2 km south of WCP
Lot 54, 123 Avoca Rtt	3.2 km south of WCP
Lot 89, McMahon Rd	3.2 km south-east of WCP
Lot 6, 278 Readheads Rd	3.3 km south-east of WCP
Lot 3, 260 Readheads Rd	3.7 km south-east of WCP
Lot 57, 367 Elliott Rd	3.8 km north-east of WCP
Lot 100, 556 Atkins Rd	3.9 km south-east of WCP
Lot 104, 77 Page Rd*	4.7 km north-east of WCP
Lot 52, 100 Atkins Rd*	4.7 km north-east of WCP
Lot 301, 389 Atkins Rd*	4.8 km east of WCP

\*denotes an agreement pursuant to Statement 810 condition 14-1 with owner/occupiers in place  
^owned by MZI Resources

## Risk Assessment

Tables 3 and 4 below apply a risk assessment for the potential emissions which may arise from the application. Both tables identify whether these emissions present a material risk requiring regulatory controls.

**Table 3 – Risk assessment for proposed amendments during construction**

Activity	Potential emission	Potential receptors	Potential pathway	Potential impacts	Material risk	Reasoning
Construction of additional annexe and installation of spirals	<b>Dust:</b> associated with construction activities	<b>Nearby residents:</b> 2 residents within 2 km of WCP	<b>Air:</b> Particulate matter (fugitive dust)	Public health and amenity impacts to nearby receptors	No	The Delegated Officer considers the material risk of fugitive dust emissions from the premises to remain unchanged during construction works, given the small project footprint (72 m <sup>2</sup> ), short duration of construction works (<5 days) and distance to nearby receptors (<1.7 km). Ambient air quality (dust) was considered a key environmental factor as part of the Part IV approvals process, and Statement 810 includes conditions to regulate this aspect of the mine.
	<b>Noise</b> associated with construction activities		<b>Air:</b> Noise generated by the operation of construction machinery and equipment	Amenity impacts to nearby noise sensitive receptors	No	The Licence Holder has an ongoing legislative requirement to comply with the prescribed standard for noise emissions, as set out in Regulation 7 of the Noise Regulations, during construction works. Regulation 13 (regarding exemptions for construction sites) does not apply, as the premises does not meet the definition of a construction site. The Licence Holder is also required to comply with the requirements of Statement 810 during the construction period. The Delegated Officer considers the material risk of noise emissions from the construction of the upgrades to the WCP to remain unchanged, given the short timeframe for construction (3 to 4 weeks), the scheduling of all construction works during daytime hours, and the existence of regulatory controls including Statement 810 and the Noise Regulations.

**Table 4 – Risk assessment for proposed amendments once operational**

Activity	Potential emission	Potential receptors	Potential pathway	Potential impacts	Material risk	Reasoning
Operation of upgraded WCP	<b>Noise:</b> associated with operation of the additional pump and spirals	<b>Nearby residents:</b> 2 residents within 2 km of WCP	<b>Air:</b> Noise generated by the operation of the WCP	Amenity to nearby noise sensitive receptors	No	The Delegated Officer considers the material risk of noise emissions from the upgraded WCP to remain unchanged. The noise level emitted from the WCP building (as an isolated noise source) is predicted to increase by up to 1.5 dB as a result of the proposed upgrades. However, the installation of partial cladding on the walls and roof of the annexe building is predicted to result in a minor reduction of noise levels at the nearest residence. Noise was considered a key environmental factor as part of the Part IV approvals process, and Statement 810 includes conditions to regulate this aspect of the mine during operations.

## Noise emissions

Noise modelling (of the WCP only) has been undertaken by the applicant to predict and assess the change in noise levels at the nearest noise sensitive receptors associated with the proposed changes, including an assessment of the likelihood that intrusive or dominant noise characteristics will be present in the noise received at the nearest noise sensitive receptors.

The results indicate that without applying any noise control measures, the contribution of the expanded WCP to received noise levels at the closest noise sensitive receptors to the south of the building will increase by up to 1.5 dB. However, by extending the cladding on the WCP to ground level on selected facades, the overall noise levels received at the closest noise sensitive receptors to the south are predicted to decrease by up to 2.7 dB.

The Delegated Officer notes that conditions 14-1 to 14-8 of MS 810 require the Licence Holder to manage noise emissions from the mine to comply with the Noise Regulations, unless otherwise agreed in writing with the owner of any noise sensitive premises within 1,500 m of the mine. The Delegated Officer has therefore determined that impacts from noise emissions from the mine have been considered, and are subsequently regulated, by the OEPA under Part IV of the EP Act and DER under the Noise Regulations.

## Public Submissions

The application was referred to nearby residents, whom the Delegated Officer considered to have a direct interest in the mine, for comment. Four submissions were received and express opposition to the proposed upgrade based on opinion that:

- Noise from the mine is having a detrimental effect on neighbours;
- The amendment should not be permitted because of current breaches of the Noise Regulations;
- The noise modelling has demonstrable flaws and is not reliable;
- Additional sensitive receptors have not been identified in the application;
- Construction has commenced without approval; and
- Additional water use and dust emissions will occur.

All issues raised have been considered by the Delegated Officer shown through Appendix 3.

## Decision

The Delegated Officer has determined that the key emissions associated with the proposed upgrades during construction works are fugitive dust and noise emissions, and noise emissions during operation of the upgraded WCP.

The Delegated Officer has determined that fugitive dust and noise may have minor and short term impacts on the amenity of nearby receptors during construction works and therefore considers the consequence to be **Minor** and the likelihood of this consequence occurring to be **Unlikely**, with an overall risk rating of **Moderate**. The Delegated Officer considers that fugitive dust and noise emissions will not result in a

material increase in emissions from the Premises generally due to the small footprint, short-term nature of the works, distance to nearby receptors and existing requirements through Ministerial Statement 810 to reduce dust and noise emissions through a range of management measures and monitoring for impacts.

The Delegated Officer is aware the overall existing noise emission levels from the Premises may have exceeded the night time assigned levels at times, and that these compliance matters are being addressed independent of this application.

The noise impact assessment (i.e. modelling) and site measurements taken by DER since the mine started operations indicate that the WCP building is one of several noise sources from the site, i.e. noise from the mining operation also contributes to the overall noise emission levels. The noise modelling submitted with the application indicates that noise generated by the upgrades would not significantly increase the noise emissions from the WCP building, due to the relatively low sound power levels of the equipment items when compared to the existing sources. The proposed cladding on the WCP building should reduce the overall noise emissions from the WCP, and ensure there will be no net increase in noise emissions at the closest receptors due to the proposed upgrades.

The Delegated Officer considers the proposed upgrades will not result in a material change to the risk of overall noise emissions from the Premises. The consequence of noise emissions from the upgrades is therefore considered to be **Minor** and the likelihood of this consequence occurring to be **Unlikely**, with an overall risk rating of **Moderate**.

In addition, the Licence Holder has an obligation to comply with the existing requirements through Ministerial Statement 810 with respect to noise management.

The Delegated Officer has imposed conditions to authorise the construction and operation of the proposed upgrades to the WCP (including additional cladding to the lower levels of the annexe building), to ensure there is no net increase in noise emissions from the Premises, and to further reduce the risk of noise non-compliances.

## Amendment History

**Table 5 – Licence history**

Instrument	Issued	Amendment
L8918/2015/1	03/11/2016	Amendment Notice 1 Upgrades to Wet Concentrator Plant to include additional spiral circuit.

## Licence Holder Comments

The Licence Holder was provided a copy of the draft Amendment Notice on 2 November 2016, and waived the consultation period with no comments.

## Amendment

1. The licence is amended by the insertion of the following conditions:

1.1.5 *The Licensee must ensure that the works specified in Column 1 of Table 1.1.1 meet or exceed the specifications in Column 2 for the infrastructure in each row of Table 1.1.1.*

1.1.6 *The Licensee must not depart from the specifications in Column 1 and 2 for the infrastructure in each row of Table 1.1.1 except:*

- (a) *where such departure is minor in nature and does not materially change or affect the infrastructure;*
- (b) *where such departure improves the functionality of the infrastructure and does not increase risks to public health, public amenity or the environment; and*
- (c) *is in accordance with all other conditions in the Licence.*

<b>Table 1.1.1: Works specifications</b>	
<b>Column 1</b>	<b>Column 2</b>
<b>Infrastructure</b>	<b>Specifications (design and construction)</b>
Wet Concentrator Plant - building annexe	<p><i>Construction to include:</i></p> <ol style="list-style-type: none"> <li>1. <i>Addition of 4 banks of heavy mineral separation spirals within the upper levels of the new annexe;</i></li> <li>2. <i>132 kW pump located on Level 1 of the new annexe; and</i></li> <li>3. <i>Additional cladding, of the same standard as the existing building, to be extended to the lower levels of the following plant facades:</i> <ol style="list-style-type: none"> <li>a) <i>South face of the new annexe;</i></li> <li>b) <i>50% of the south-west face of the new annexe (allowing an opening for a maintenance crane beam); and</i></li> <li>c) <i>South face of the existing building to the west of the new annexe.</i></li> </ol> </li> </ol> <p><i>The additional cladding is to extend fully from the bottom of the existing cladding to the floor of Level 1 with no gaps, and incorporate vibration isolation from the structure.</i></p>

5.3.2 *The Licensee shall submit a compliance document to the CEO, following the construction of the works outlined in Table 1.1.1 and prior to commissioning of the same.*

5.3.3 *The compliance document shall:*

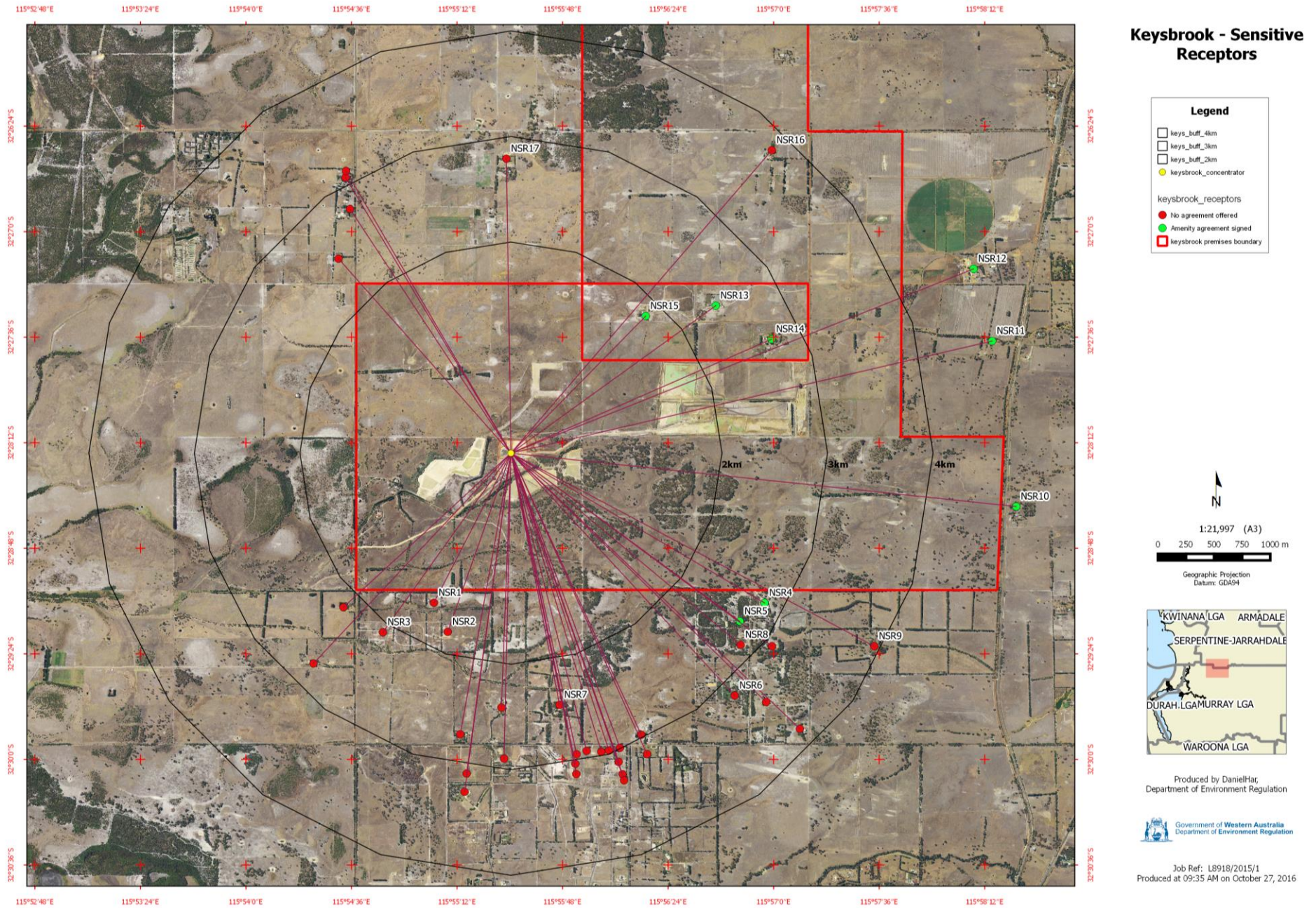
- (a) *certify that the works were constructed in accordance with the conditions of the Licence; and*
- (b) *be signed by a person authorised to represent the Licensee and contain the printed name and position of that person within the company.*



## Appendix 1 – Key Documents

	Document title	Availability
1	DER, 2015, <i>Guidance Statement: Regulatory Principles</i> , Department of Environment Regulation, Perth.	<a href="http://www.der.wa.gov.au/our-work/regulatory-reform">www.der.wa.gov.au/our-work/regulatory-reform</a>
2	DER, 2015, <i>Guidance Statement on Setting Conditions</i> . Department of Environment Regulation, Perth.	
3	DER, 2015, <i>Guidance Statement on Licence duration</i> . Department of Environment Regulation, Perth.	
4	DER, 2015, <i>Guidance Statement on Licensing and Works Approval Processes</i> . Department of Environment Regulation, Perth.	
5	EPA, Oct 2007, <i>Keysbrook Mineral Sands Mine – Olympia Resources Limited, Bulletin 1269</i> . Environmental Protection Authority, Perth.	<a href="http://www.epa.wa.gov.au">www.epa.wa.gov.au</a>
6	Minister for Environment, Oct 2009, Statement No. 810: <i>Statement that a proposal may be implemented pursuant to the provisions of the Environmental Protection Act 1986 – Keysbrook Mineral Sands Mine</i> . Government of Western Australia, Perth.	<a href="http://www.epa.wa.gov.au">www.epa.wa.gov.au</a>
7	Keysbrook Mineral Sands Project: Environmental Licence Amendment Application L8918/2015/1. Prepared by MBS Environmental for Keysbrook Leucoxene Pty Ltd. August 2016	DER record A1171357
8	Wet Concentrator Plant – Environmental Noise Impact Assessment Report – Keysbrook Leucoxene Pty Ltd. Prepared by SVT Engineering Consultants for Keysbrook Leucoxene Pty Ltd. September 2016.	

# Appendix 2 – Map of sensitive receptors in proximity to the WCP



## Appendix 3 – Summary of Public Submission comments

Comment	DER Response
The noise assessment of the original application was based on the WCP being mobile and located on Lot 59, which is 3 km away from its actual permanent location on Lot 62. The noise assessment and predictions have not been updated to reflect the change in location and the impacts on nearby receptors at the new location.	DER is satisfied the Noise Impact Assessment submitted with the application is current and assesses noise emissions from the WCP on Lot 62 and the received noise levels at the closest receptors from this location.
The applicant has stated they will discuss the proposed upgrades with the closest receptors. We have not been consulted.	The applicant has advised it 1) sent out update letters to project stakeholders, 2) conducted targeted mail out to direct neighbours with an extended invite to meet and discuss, and 3) conducted an annual community briefing event on 26/10/2016 which was attended by neighbours and the upgrade works were discussed at length.
The upgrades do not have planning approval.	Planning approval for the upgrade was issued by the Shire of Murray on 27 October 2016.
The predictions of the original noise model have been found to be inaccurate based on noise monitoring undertaken by DER.	DER's regulatory role with respect to this application relates to whether the proposed upgrades will cause or increase noise emissions from the WCP and the mining site as a whole. Noise emissions from the Premises in general are regulated by the OEPA under Statement 810.
The noise modelling for the proposed upgrade is based on computer simulation and not real life. All assumptions are not based on the actual environmental setting.	Sound power levels of the existing WCP and the proposed upgrade components were obtained from actual measurements. The results are in agreement with DER's site measurements. The Delegated Officer has determined that the modelling is based on reasonable inputs and assumptions and therefore the conclusions are reliable.
The noise modelling does not include noise emissions from other noise sources, so the predicted noise levels being received at the closest receptors is flawed.	DER agrees the noise model does not include emissions from other noise sources. The assessment of the noise impact due to the new annexe has focused on whether noise from the new addition will increase noise emission levels from the WCP or not. The issue with noise emissions from other sources is being addressed separate to this application.
The closest receptors are experiencing tonality from the current operation, which does not appear to be considered in the noise assessment for the upgrade.	Noise at the closest receptor may contain a tonal component, which would attract a 5 dB penalty in calculating assigned levels. However, as discussed above, the assessment of the noise impact due to the proposed upgrade is to ensure that noise emissions from the WCP and the mining site as a whole will not increase.
The applicant has not complied with the Noise Regulations in its current processing format, and expanding the WCP will not make it any quieter.	The Noise Impact Assessment predicts a marginal decrease in the received noise levels at the closest receptors to the south of the WCP with the installation of additional cladding to the lower levels of the building. DER acknowledges the predicted decrease is unlikely to address potential existing noise non-compliance at the Premises, which are being addressed separate to this application.
Night time noise exceedances have been confirmed through DER monitoring throughout 2016.	The existing noise non-compliance matters from the Premises are being addressed separate to this application.
The EPA Guidance Statement No.3 recommends a 3000 – 5000 m separation to a mineral sands site.	The 3000 – 5000 m separation distance referenced within EPA Guidance Statement No.3 is from a synthetic rutile plant and is not applicable to mineral sands wet concentrator plants. EPA Guidance Statement No. 3 provides general guidance on separation distances and also provides for site-specific assessment of emissions within separation distances. In this instance, site-specific assessment of noise emissions from the WCP upgrade determines that noise emissions will not increase, if the proposed controls are adopted.
The Minister's appeal determination of 2007 stated if the mine does not comply with the Noise Regulations then it should revert to day time operations only. The DER noise monitoring has proven the mine cannot comply with the Noise Regulations at all times.	DER's regulatory role with respect to this application relates to whether the proposed upgrades will cause or increase noise emissions from the WCP and the mining site as a whole. Noise emissions from the Premises in general are regulated by the OEPA under Statement 810.
Several noise sensitive receptors have not been identified in the noise assessment, and are being subjected to noise, water and dust issues.	The Noise Impact Assessment has focused on the closest receptors to the WCP, as these are likely to be the most susceptible to noise impacts. The noise assessment predicts a marginal decrease in the current received noise levels at the closest receptors. The Delegated Officer considers that this is likely to decrease further for receptors that are located further away from the WCP.