



# Amendment Notice 3

**Licence Number** L5646/1994/10

**Licence Holder** Iluka Resources Ltd

**ACN** 008 675 018

**File Number:** DER2016/000799-1

**Premises** Eneabba Mineral Sands Mine  
Brand Highway  
ENEABBA WA 6518

Legal description –  
Part of tenements AM70/2667 and M70/879

**Date of Amendment** 24 April 2019

## 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* (EP Act), 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.

**Steve Checker**

**MANAGER WASTE 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  |
| CEO                           | Chief Executive Officer<br>CEO for the purposes of notification means:<br>Director General<br>Department Administering the <i>Environmental Protection Act 1986</i><br>Locked Bag 10<br>JOONDALUP DC WA 6919<br><a href="mailto:info@dwer.wa.gov.au">info@dwer.wa.gov.au</a>   |
| Category/ Categories/<br>Cat. | categories of Prescribed Premises as set out in Schedule 1 of the EP Regulations   |
| Delegated Officer             | an officer under section 20 of the EP Act  |
| Department                    | Means 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.  |
| DWER                          | Department of Water and Environmental Regulation<br><br>As of 1 July 2017, the Department of Environment Regulation, the Office of the Environmental Protection Authority and the Department of Water amalgamated to form DWER. DWER was established under section 35 of the <i>Public Sector Management Act 1994</i> and is responsible for the administration of the <i>Environmental Protection Act 1986</i> along with other legislation |
| EP Act                        | <i>Environmental Protection Act 1986</i> (WA)  |
| EP Regulations                | <i>Environmental Protection Regulations 1987</i> (WA)  |
| Existing Licence              | the Licence issued under Part V, Division 3 of the EP Act and in force prior to this amendment   |
| Licence Holder                | Iluka Resources Ltd.   |
| Nuisance level                | as defined in Victorian EPA Protocol for Environmental Management, Mining and Extractive industries (December 2007)  |
| Notice                        | refers to this document  |
| 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  |
| TEOM                          | Continuous Ambient Particulate dust monitors   |

## Amendment Notice

This amendment is made pursuant to 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.

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

- *Guidance Statement: Regulatory Principles* (July 2015)
- *Guidance Statement: Setting Conditions* (October 2015)
- *Guidance Statement: Decision Making* (February 2017)
- *Guidance Statement: Risk Assessment* (February 2017)
- *Guidance Statement: Environmental Siting* (November 2016)

## Amendment description

In view of the sites non-operational status, with rehabilitation operations nearing completion in several areas, the Licence Holder has applied to reduce the level of environmental monitoring requirements, and other minor changes that will enable progression towards final closure and relinquishment of the site, including:

- Amendment of Bioremediation Facility permeability requirement (from  $<1 \times 10^{-9}$  m/s to  $<1 \times 10^{-8}$  m/s).
- Amendment to reflect the Licence Holders revised Dust Management Plan 2018.
- Removal of Depositional Dust Monitoring requirements at Depot Hill as rehabilitation is complete in the area and is no longer considered a source of dust emissions.
- Removal of surface water monitoring requirements along Eneabba Creek due to completion of rehabilitation in adjacent areas (Depot Hill).
- Amendment to groundwater monitoring program associated with the decommissioned Zircon Upgrade Plant (ZUP) as data demonstrates remediation has been achieved.

## Consultation

The application was referred to the Shire of Carnamah and the Department of Jobs, Tourism, Science and Innovation for comment. No comment was received.

## Amendment history

Table 2 provides the amendment history for L5646/1994/10.

**Table 2: Licence amendments**

| Instrument    | Issued     | Amendment  |
|---------------|------------|--|
| L5646/1994/10 | 14/04/2016 | Licence review and amendment to authorise disposal of monazite from Narngulu with ASS characteristics at the Eneabba Monazite Disposal Pit. Ambient monitoring conditions updated to specify the physical location. Updated to current Licence format. |
| L5646/1994/10 | 20/10/2016 | Amendment Notice 1 – relocation of ambient air monitoring station AQ2.   |
| L5646/1994/10 | 22/08/2017 | Amendment Notice 2 – reduction of environmental monitoring requirements.   |

|               |            |  |
|---------------|------------|--|
| L5646/1994/10 | 24/04/2019 | Amendment Notice 3 – reduction of environmental monitoring requirements. |
|---------------|------------|--|

## Risk Assessment

| Risk Event                             |                        |  |                             |   | Consequence rating | Likelihood rating | Risk | Reasoning   |
|--|------------------------|--|-----------------------------|---|--------------------|-------------------|------|---|
| Source/<br>Activities                  | Potential<br>emissions | Potential<br>receptors   | Potential<br>pathway        | Potential<br>impacts adverse  |                    |                   |      |   |
| Hydrocarbon<br>Bioremediation Facility | Hydrocarbons           | Groundwater dependent vegetation and ecosystems<br><br>Town of Eneabba | Infiltration to groundwater | Groundwater contamination<br><br>Impacts on health and survival of surrounding vegetation | N/A                | N/A               | N/A  | <p>The Licence Holder has applied to have the permeability of the bioremediation landfarm facility limit amended from <math>&lt;1 \times 10^{-9}</math> m/s to <math>&lt;1 \times 10^{-8}</math> m/s in response to groundwater analysis indicating low levels of hydrocarbons leaching through the landfarm liner.</p> <p>Point 1 in DWER's <i>Guidance Statement on Setting Conditions</i> states that "...conditions ...will be fairly and reasonably related to the activities within the category of prescribed premises which is the subject of the licence". The premises is licensed as a Category 63: Class I inert landfill site, and Category 8: Mineral sands mining or processing. As neither of these categories involve landfarm facilities, and these facilities are regulated under Environmental Protection (Unauthorised Discharges) Regulations 2004, to avoid regulatory duplication, the Delegated Officer has determined the removal of conditions in Table 1.2.1 relating to Bioremediation facilities from the Existing Licence.</p> |

| Risk Event                           |  |   |                      |   | Consequence rating | Likelihood rating | Risk       | Reasoning   |
|--------------------------------------|--|---|----------------------|---|--------------------|-------------------|------------|---|
| Source/<br>Activities                | Potential<br>emissions                             | Potential<br>receptors  | Potential<br>pathway | Potential adverse<br>impacts  |                    |                   |            |   |
| <b>Dust monitoring at Depot Hill</b> | Dust   | Town of Eneabba   | <b>Air</b>           | Human health and amenity  | <b>N/A</b>         | <b>N/A</b>        | <b>N/A</b> | <p>The completion of rehabilitation at North Mine (including Depot Hill), means there is no longer a source of dust- majority of air quality monitoring data has fallen below the Nuisance Level since July 2017 with the exception of a couple of anomalies which have been accounted for.</p> <p>The Licence Holder has revised their <i>Dust Management Plan 2018</i> for the Eneabba site to reflect the rehabilitation of Depot Hill- revisions include the removal of TEOM and dust monitoring stations at Depot Hill/ North Mine.</p> <p>The Delegated Officer considers the risk of removing the air monitoring points AQ3, AQ6, and AQ9-11 as negligible considering the rehabilitation of Depot Hill and there is a new background monitoring point (AQ1) as in the amended Table 3.3.3.</p> <p>The Delegated Officer has amended Table 2.3.2 to align with the updated Dust Management Plan.</p> |
| <b>Runoff from Depot Hill</b>        | Contaminated runoff<br><br>Erosion from Depot Hill | Eneabba Creek<br><br>Surrounding vegetation and ecosystems<br><br>Town of | <b>Runoff</b>        | Contamination to surface water along Eneabba Creek.<br><br>Impacts to fauna that rely on the waterway.<br><br>Impacts on health and | <b>Minor</b>       | <b>Rare</b>       | <b>Low</b> | <p>The completion of rehabilitation efforts at the North Mine area at Eneabba which includes the Depot Hill site reduces the risk of erosion or contaminated runoff entering the Eneabba Creek. Depot Hill has been successfully returned to pasture land and no longer poses a risk of</p>   |

| Risk Event   |  |  |  |  | Consequence rating | Likelihood rating | Risk       | Reasoning   |
|--|--|--|--|--|--------------------|-------------------|------------|---|
| Source/<br>Activities  | Potential<br>emissions   | Potential<br>receptors   | Potential<br>pathway   | Potential adverse<br>impacts   |                    |                   |            |   |
|  |  | Eneabba  |  | survival of surrounding vegetation.  |                    |                   |            | <p>contaminated runoff associated with mine activities. The land is in the process of being returned to the owner.</p> <p>Surface water quality data provided by the Licence Holder indicates there have been no water quality issues in the creek since mining ceased in 2013.</p> <p>Given that all data from downstream of the site since 2013 represent low impact and the completion of rehabilitation of Depot Hill, the Delegated Officer has approved the removal of Table 3.3.1- Surface water monitoring.</p>   |
| <b>Removal of groundwater monitoring at ZUP (points GQ1-7)</b> | Residual contamination from historic ZUP operation including sulfate, metals, and radionuclides. | Surrounding vegetation and ecosystem;<br><br>Contamination to soil | <b>Groundwater</b><br>Superficial aquifer in the vicinity of the ZUP | <p>Low level groundwater contamination of the superficial aquifer.</p> <p>Impacts on health and survival of surrounding vegetation</p> | <b>Minor</b>       | <b>Rare</b>       | <b>Low</b> | <p>The Licence Holder states the following with regard to the bioremediation efforts at the ZUP: <i>"An internal review was completed by Iluka in 2018, which was submitted to the DWER Contaminated Sites branch in August 2018. This concluded that groundwater historically impacted by metals, sulphate and radionuclides as a result of chemical processing at the ZUP, has been successfully remediated."</i></p> <p>Advice from DWER's Contaminated Sites (CS) branch is that further information is required to confirm the status of the remediation, however as the source of the contamination (ZUP Plant) has been removed from site, issues are more appropriately</p> |

| Risk Event            |                        |                        |                      |                              | Consequence rating | Likelihood rating | Risk | Reasoning  |
|-----------------------|------------------------|------------------------|----------------------|------------------------------|--------------------|-------------------|------|--|
| Source/<br>Activities | Potential<br>emissions | Potential<br>receptors | Potential<br>pathway | Potential<br>impacts adverse |                    |                   |      |  |
|                       |                        |                        |                      |                              |                    |                   |      | <p>managed under the CS Act going forward. CS have support the requirement to monitor groundwater quality being removed from the licence.</p> <p>The Delegated Officer notes CS advice that the requirements related to the ZUP Plant contamination should be removed from the licence and managed under the CS Act. The Delegated Officer therefore considers it acceptable to amend the Licence to remove monitoring points GQ1-7.</p> |



## Decision

The Delegated Officer has considered the rehabilitation status of North Mine, including Depot Hill, and has arrived at the following conclusions:

- The Existing Licence places conditions on the Permeability requirements of Eneabba's Hydrocarbon Bioremediation Landfarm Facility, however, it is noted that point 1 in DWER's Guidance Statement on Setting Conditions (<https://www.der.wa.gov.au/images/documents/our-work/licences-and-works-approvals/gs-setting-conditions.pdf>) states that "...conditions ...will be fairly and reasonably related to the activities within the category of prescribed premises which is the subject of the licence". The premises is licensed as a Category 63: Class I inert landfill site, and Category 8: Mineral sands mining or processing. As neither of these categories involve landfarm facilities, and these facilities are regulated under *Environmental Protection (Unauthorised Discharges) Regulations 2004*, to avoid regulatory duplication, the Delegated Officer has removed the conditions in Table 1.2.1 relating to Bioremediation facilities from the Existing Licence.
- With the cessation of mining operations at the Eneabba site and rehabilitation nearing completion at several sites, the revised edition of the Licence Holder's Dust Management Plan 2018 for the Eneabba site is considered to be sufficient for the managing and monitoring of dust emissions. The revised edition includes the removal of TEOM and dust monitoring stations at Depot Hill/ North Mine due to the completion of rehabilitation in the area. This area is no longer considered a source of dust emissions, and as such, the Delegated Officer has amended Table 2.3.2 to align with the updated Dust Management Plan.
- Due to the completion of rehabilitation at Depot Hill/ North Mine, the Depot Hill Open Area no longer presents a dust source-receptor pathway as indicated by air quality data recorded below the Nuisance level (as defined in Victorian EPA Protocol for Environmental Management, Mining and Extractive industries (December 2007)) since July 2017. The Delegated Officer considers the risk of removing the air monitoring points AQ3, AQ6, and AQ9-11 as negligible considering the new background monitoring point will be AQ1 as in the amended Table 3.3.3.
- Due to the completion of rehabilitation at Depot Hill/ North Mine, there is no longer significant risk of erosion or poor quality run-off affecting the Eneabba Creek. The Licence Holder has provided sufficient evidence demonstrating there has been no water quality issues in the creek since 2013. Given that all data from downstream of the site since 2013 represent low impact and the completion of rehabilitation of Depot Hill, the Delegated Officer has approved the removal of Table 3.3.1- Surface water monitoring.
- Between The Licence Holder's ZUP cessation in 2002 and 2013, a DEP approved remediation strategy was implemented involving the use of bore water to accelerate the dispersion of the groundwater plume. The applicant asserts that Monitoring data demonstrates that all sulfate concentrations since 2004 have been below guideline values with concentrations across all bores nearing background levels. Advice from CS concluded that the requirement to monitor groundwater quality related to ZUP Plant contamination should be removed from the licence and managed under the CS Act. The Delegated Officer has approved the removal of GQ1-7 from the Table 3.3.2.

## Licence Holder's comments

The Licence Holder was provided with the draft Amendment Notice on 27/02/2019. Comments received from the Licence Holder have been considered by the Delegated Officer as shown in

## Appendix 2.

### Amendment

- Table 1.2.1 of the Existing Licence is amended by the deletion of the text shown in strikethrough:

| Table 1.2.1: Containment infrastructure                     |  |   |
|---|--|---|
| Infrastructure  | Material                                 | Infrastructure description / requirements   |
| Mined out voids, cells within operating pits, external TSFs | Sand and clay/slimes tails               | <ul style="list-style-type: none"> <li>Constructed as an erosion resistant, non-polluting structure which is stable in the long-term;</li> <li>Decant overflow drains to the process water pond;</li> <li>Water levels to be maintained at least 500 mm below the top of the wall;</li> <li>Material shall only be disposed within voids, cells or TSFs as depicted on the Tailings map in Schedule 1.</li> </ul> |
| Process water pond  | Process water <sup>1</sup>               | <ul style="list-style-type: none"> <li>None specified.</li> </ul>   |
| <del>Bioremediation facilities</del>                        | <del>Hydrocarbon-contaminated soil</del> | <ul style="list-style-type: none"> <li><del>Lined to achieve a permeability of at least <math>&lt;1 \times 10^{-9}</math> m/s (or equivalent); and</del></li> <li><del>Leachate and stormwater runoff that has come into contact with the soil is directed to a suitably lined collection sump which is capable of storing runoff from a 1:100 year, 72 hour storm event.</del></li> </ul>                        |

Note 1: Tails return water, recycled process water.

- Table 2.3.2 of the Existing Licence is amended by the deletion of the text shown in strikethrough and the insertion of the red text shown in underline below:

| Table 2.3.2: Management Plans |   |   |
|-------------------------------|---|---|
| Management plan reference     | Parts   | Date of document                          |
| Dust Management Plan          | <ul style="list-style-type: none"> <li><del>4.0 – Implementation Strategy and Management Actions – Table 2 Management Actions for Dust</del></li> <li><u>5.0 Implementation Strategy and Management Actions – Table 1 Summary of Management Actions for Dust</u></li> <li><u>6.0 Monitoring – Table 2 Summary of Dust Monitoring Program</u></li> </ul> | <del>June 2009</del><br><u>April 2018</u> |

- Table 3.3.3 of the Existing Licence is amended by the removal of the existing tables and replacement with the tables below:

| Table 3.3.3: Monitoring of ambient air quality |           |                  |            |                |              |
|--|-----------|------------------|------------|----------------|--------------|
| Monitoring point Reference                     | Parameter | Units            | Frequency  | Average Period | Method       |
| AQ1,2,4,5,7,8                                  | TSP       | g/m <sup>2</sup> | Continuous | Monthly        | AS 3580.10.1 |

| Table 3.3.3 - Ambient air monitoring point references |          |                 |           |                                |
|---|----------|-----------------|-----------|--------------------------------|
| Monitoring point reference                            | Iluka ID | Area            | Parameter | Frequency                      |
| AQ1 (New background)                                  | ENE1     | Allied Tails    | TSP       | Continuous (deposition gauges) |
| AQ2   | ENE2     | 03 Concentrator |           |                                |
| AQ4   | ENE4     | Brand HWY South |           |                                |
| AQ5   | ENE5     |                 |           |                                |
| AQ7   | ENE7     | Allied Tails    |           |                                |
| AQ8   | ENE8     | Eneabba Town    |           |                                |

- The Existing Licence is amended by the deletion of the following Table 3.3.1 as shown in strikethrough:

| Table 3.3.1: Monitoring of ambient surface water quality |                                     |       |                  |                           |
|--|-------------------------------------|-------|------------------|---------------------------|
| Monitoring point reference                               | Parameter                           | Units | Averaging period | Frequency                 |
| WQ1 – WQ3 <sup>1</sup>                                   | pH <sup>2</sup>                     | -     | Spot sample      | Fortnightly, when flowing |
|  | Electrical conductivity @ 25°C      | µS/cm |                  |                           |
|  | Total dissolved solids <sup>2</sup> | mg/L  |                  |                           |
|  | Total suspended solids              |       |                  |                           |

Note 1: Upstream of, downstream of, and at the Eneabba Creek bridge.

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

5. Table 3.3.2 of the Existing Licence is amended by the deletion of the text shown in strikethrough and the insertion of the red text shown in underline below:

| Table 3.3.2: Monitoring of ambient groundwater quality |  |         |                  |   |
|--|--|---------|------------------|---|
| Monitoring point reference <sup>1</sup>                | Parameter  | Units   | Averaging period | Frequency   |
| GQ1 – GQ7<br>GQ8 - GQ10                                | Standing water level <sup>2,3</sup>  | mAHD    | Spot Sample      | 6 monthly (GQ1-<br>GQ7)<br>Quarterly<br>GQ8 – GQ10) |
|  | pH <sup>2</sup>  | No unit |                  |   |
|  | Electrical conductivity @ 25°C   | µS/cm   |                  |   |
|  | Major ions: bicarbonate, calcium, chloride, magnesium, potassium, sodium, sulfate, total dissolved solids <sup>2</sup>   | mg/L    |                  |   |
|  | Metals and metalloids: aluminum, arsenic, chromium (as CrVI and total Cr), cobalt, copper, iron, mercury, nickel, radium, radon, selenium, thallium, uranium, zinc |         |                  | Annual  |

Note 1: See cross reference of monitoring point reference with Iluka bore ID in Schedule 1.

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

Note 3: SWL to be determined prior to the collection of other samples.

| Table 3.3.2 – Groundwater monitoring point references |                  |                                |                      |                  |                      |                     |
|---|------------------|--------------------------------|----------------------|------------------|----------------------|---------------------|
| Monitoring point reference                            | Iluka ID         | Area                           | SWL                  | pH, TDS, EC      | Major ions           | Radionuclides       |
| <del>GQ1</del>  | <del>EM14</del>  | <del>Allied Tails</del>        | <del>6 monthly</del> |                  | <del>6 monthly</del> | <del>Annually</del> |
| <del>GQ2</del>  | <del>EM25A</del> | <del>Allied Tails</del>        | <del>6 monthly</del> |                  | <del>6 monthly</del> | <del>Annually</del> |
| <del>GQ3</del>  | <del>EM28</del>  | <del>IPL Central</del>         | <del>6 monthly</del> |                  |                      |                     |
| <del>GQ4</del>  | <del>EM28A</del> | <del>IPL Central</del>         | <del>6 monthly</del> |                  |                      |                     |
| <del>GQ5</del>  | <del>EM29</del>  | <del>IPL Central</del>         | <del>6 monthly</del> |                  |                      |                     |
| <del>GQ6</del>  | <del>EM29A</del> | <del>IPL Central</del>         | <del>6 monthly</del> |                  |                      |                     |
| <del>GQ7</del>  | <del>EM36</del>  | <del>Sth Eneabba Wetland</del> | <del>6 monthly</del> |                  |                      |                     |
| <del>GQ8</del>  | <del>EM46</del>  | <del>Allied Tails</del>        | <del>6 monthly</del> |                  | <del>6 monthly</del> | <del>Annually</del> |
| <del>GQ9</del>  | <del>EM47</del>  | <del>Allied Tails</del>        | <del>6 monthly</del> |                  | <del>6 monthly</del> | <del>Annually</del> |
| <del>GQ10</del>                                       | <del>EM48A</del> | <del>Allied Tails</del>        | <del>6 monthly</del> |                  | <del>6 monthly</del> | <del>Annually</del> |
| <u>GQ8</u>  | <u>EM78</u>      | <u>Monazite Pit</u>            | <u>Quarterly</u>     | <u>Quarterly</u> | <u>Quarterly</u>     | <u>Annually</u>     |
| <u>GQ9</u>  | <u>EM90</u>      |                                |                      |                  |                      |                     |
| <u>GQ10</u>   | <u>EM91</u>      |                                |                      |                  |                      |                     |

## Appendix 1: Key documents

|   | Document title  | In text ref   | Availability   |
|---|---|---------------|--|
| 1 | Licence L5646/1994/10   | L5646/1994/10 | accessed at <a href="http://www.dwer.wa.gov.au">www.dwer.wa.gov.au</a> |
| 5 | DER, July 2015. <i>Guidance Statement: Regulatory Principles</i> . Department of Environment Regulation, Perth. | DER 2015a     | accessed at <a href="http://www.dwer.wa.gov.au">www.dwer.wa.gov.au</a> |
| 6 | DER, October 2015. <i>Guidance Statement: Setting Conditions</i> . Department of Environment Regulation, Perth. | DER 2015b     |  |
| 7 | DER, August 2016. <i>Guidance Statement: Licence Duration</i> . Department of Environment Regulation, Perth.    | DER 2016a     |  |
| 8 | DER, November 2016. <i>Guidance Statement: Risk Assessments</i> . Department of Environment Regulation, Perth.  | DER 2016b     |  |
| 9 | DER, November 2016. <i>Guidance Statement: Decision Making</i> . Department of Environment Regulation, Perth.   | DER 2016c     |  |

## Appendix 2: Summary of Licence Holder comments

The Licence Holder was provided with the draft Amendment Notice on 09 April 2019 for review and comment. The Licence Holder responded on 10 April 2019 waiving the remaining comment period (until 2 May 2019). The following comments were received on the draft Amendment Notice.

| Condition   | Summary of Licence Holder comment   | DWER response   |
|-------------|---|---|
| Table 3.3.2 | The table included in the draft amendment notice was a historic table from a previous version of the Licence. | The amendment notice was amended to include the relevant table from Amendment Notice 2, rather than the original granted licence. |