

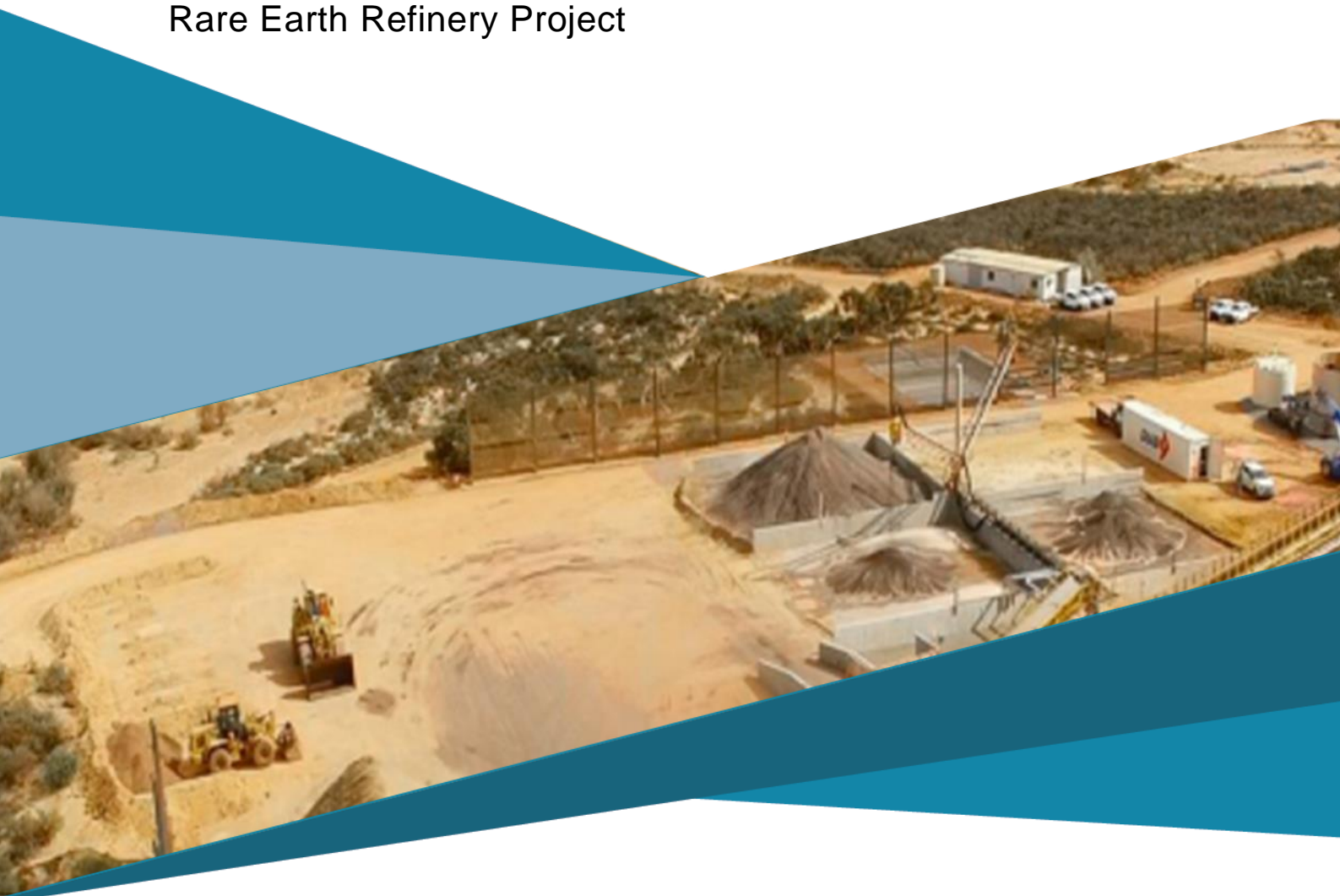


Government of **Western Australia**  
Office of the **Appeals Convenor**  
Environmental Protection Act 1986

## Appeals Convenor's Report to the Minister for Environment

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Appeal objecting to the EPA decision not to assess: Eneabba  
Rare Earth Refinery Project



|                   |  |
|-------------------|--|
| <b>Appellant</b>  | Conservation Council of Western Australia (CCWA) |
| <b>Proponent</b>  | Iluka Resources Limited                          |
| <b>Authority</b>  | Environmental Protection Authority (EPA)         |
| <b>Appeal No.</b> | 005 of 2022                                      |
| <b>Date</b>       | May 2022   |

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**Office of the Appeals Convenor**

08 6364 7990 or TTY 13 36 77 (National Relay Service)

admin@appealsconvenor.wa.gov.au

www.appealsconvenor.wa.gov.au

221 St Georges Terrace

Perth WA 6000

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**Appeals Convenor**

Emma Gaunt

**Investigating Officer**

Annarie Boer

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Cover image: Eneabba Mineral Sands Mine site (Iluka Midwest Ltd 26 October 2021; Eneabba Rare Earth Refinery, Referral Supporting Document)

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**Acknowledgement of Country**

The Office of the Appeals Convenor acknowledges the traditional custodians throughout Western Australia and their continuing connection to the land, waters and community.

We pay our respects to all members of the Aboriginal communities and their cultures, and to Elders past, present and emerging.

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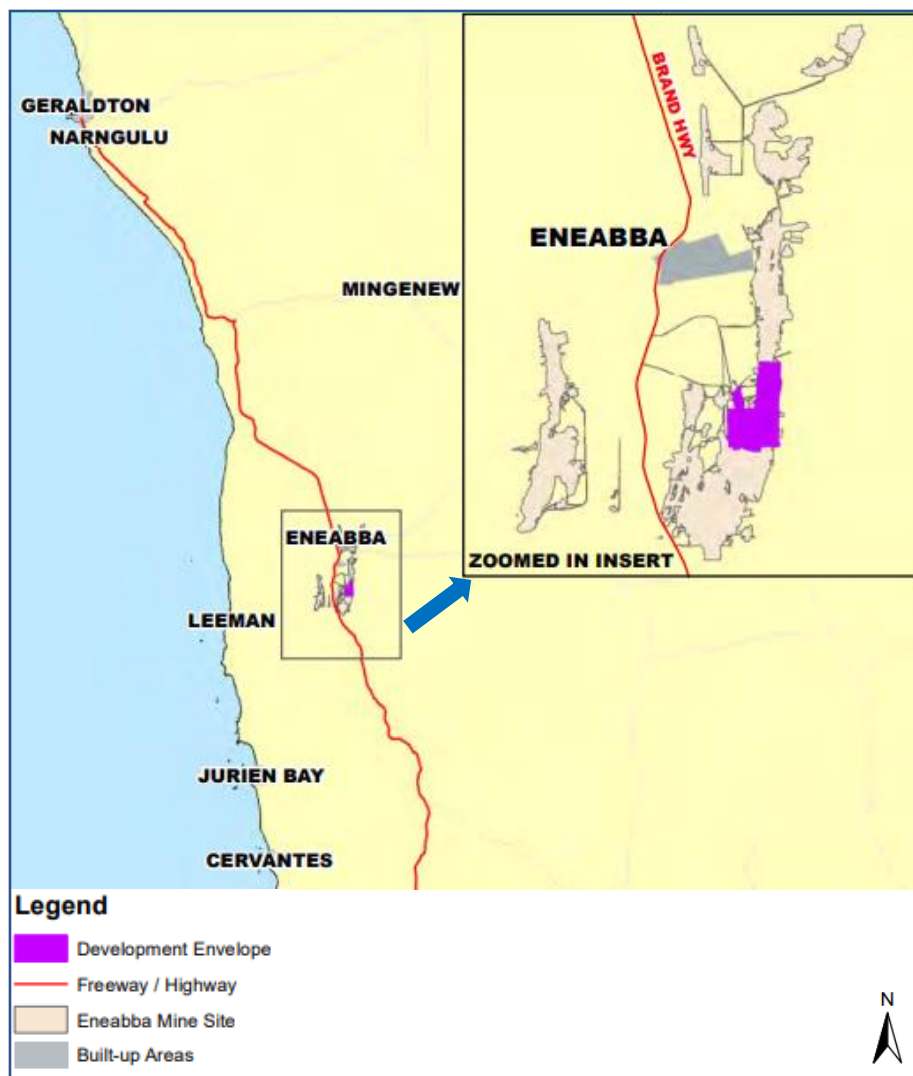
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# 1 Executive summary

This report addresses an appeal lodged in objection to the decision of the Environmental Protection Authority (EPA) not to assess a proposal by Iluka Resources Limited (proponent) to develop the Eneabba Rare Earth Refinery Project. The project is located about 5 kilometres south-east of the town of Eneabba and some 300 kilometres north of Perth within the existing Eneabba mine site (see Figure 1).

The proposal is for the construction and operation of a new rare earth refinery which will process input material from an existing by-product stockpile at the Eneabba Mineral Sands Mine site, future Iluka feedstocks and third-party feedstocks to produce individual rare earth oxides and carbonates. Products will be transported via road trains from Eneabba to the port of Fremantle for export. The refinery waste, including low levels of Naturally Occurring Radioactive Material (NORM), will be disposed of in In-Ground Tailings Storage Facilities within the proposal footprint.



**Figure 1** Proposal location and development envelope within the existing Eneabba mine site<sup>1</sup>

<sup>1</sup> Iluka Midwest Ltd 26 October 2021; Eneabba Rare Earth Refinery, Referral Supporting Document, adapted

## 1.1 Grounds of appeal and appellant concerns

The appellant is the Conservation Council of Western Australia (CCWA). The main concerns of the appellant, which are limited to the radiological aspects of the proposal, are set out in Table 1 below.

**Table 1** Grounds of appeal

| Ground                                    | Main concerns the appellant submitted  |
|---|--|
| 1 Radiological risks                      | <p>The project is a 'nuclear action', which should have triggered assessment by the EPA as a controlled action/ matter of national environmental significance (MNES).</p> <p>Radiological risks may be more significant than considered as Intermediate Level Waste is expected.</p>   |
| 2 Deferral to other statutory authorities | <p>There is insufficient evidence that other statutory mechanisms were adequately considered for deferral of the proposal, including:</p> <ul style="list-style-type: none"><li>• whether those other statutory authorities can regulate radiological aspects</li><li>• opportunities for public input to assessments and conditions</li><li>• public review of radioactive wastes, including Intermediate Level Waste, to address community concerns.</li></ul> |

The appellant asked for the Minister to remit the proposal to the EPA for formal assessment at the level of Public Environmental Review.

## 1.2 Key issues and conclusion

The question for the Minister on appeal is whether, having regard for the concerns raised by the appellant, the EPA's decision not to assess the proposal was appropriate.

To answer this question, our investigation considered the grounds submitted by the appellant including the significance of potential impacts of the proposal on the environment and whether other statutory decision-making processes can mitigate these impacts in a manner that is consistent with the EPA's environmental objectives.

Our conclusions are summarised below. Section 2 provides further details about our reasons and supporting information is provided in Section 3.

### What is the risk posed by waste from the proposal?

The proposed Eneabba Rare Earth Refinery will generate a maximum of about 181,000 tonnes per annum of solid waste, which includes low levels of NORM. The solid waste will be disposed of in a number of In-Ground Tailings Storage Facilities within the proposal footprint.

The EPA advised that in making its decision, it identified the potential for Intermediate Level Waste (ILW) to be identified during maintenance activities to the refinery. The proponent advised that the waste product from the proposal is classified as Very Low Level Waste (VLLW), but acknowledged there as a small possibility that that ILW may form on certain components of the plant, although this would be in the order of kilograms for the life of the project.

The EPA sought advice on this question from the Radiological Council, which concurred with the proponent that ILW was unlikely to be produced.

The EPA advised that a commitment from the proponent to separately store any ILW for future disposal is consistent with current practice in the absence of a disposal facility for this waste within Australia.

The EPA investigated the significance of potential impacts of the proposal, including from ILW in relation to its environmental factors for human health, flora and vegetation, fauna, terrestrial environmental quality, inland waters and air quality. The EPA had regard for each of the environmental factor objectives in forming a view that the potential impacts of the proposal can be adequately managed through implementation in accordance with the referral documentation, and the proponent's management and mitigation measures.

We accept the EPA's advice and find that the significance of potential radiological impacts from the proposal, including ILW in circumstances where it is considered unlikely to occur, are not so significant as to require formal impact assessment.

### **Can the potential impacts be mitigated under other legislation?**

We conclude above that the EPA was justified to decide that the potential impacts of the proposal are not so significant that they warrant formal environmental assessment. We therefore consider it unnecessary to consider the extent to which the potential impacts can be managed under other legislation.

However, for completeness, and noting there is a small risk that some scales may occur which might be classified as ILW, we consider the EPA was justified in finding that other statutory decision-making processes can mitigate the potential impacts of the proposal on the environment under section 38G(4) of the EP Act.

We have come to this conclusion based on the EPA's advice that (among other things):

- the Radiological Council has the power to regulate the potential project radiation impacts and will do so in collaboration with the Department of Mines, Industry Regulation and Safety (DMIRS)
- the Radiation Council and Minister for Health implement the Commonwealth Code of Practice which includes requirements for the protection of human health and the environment from the effects of radioactive waste
- the Radiation Management Plan and Radiation Waste Management Plan required for this proposal includes an overall environmental impact assessment and the management of emissions, contamination waste disposal
- the management of radiation impacts on the environment, including containment of waste, are enforceable.

The EPA advised that the identified decision-making processes under legislation administered by the Radiological Council and DMIRS are likely to meet its objectives for its environmental factor for this proposal.

The EPA also advised that a commitment from the proponent to separately store any ILW for future disposal would provide for its regulation by the Radiological Council.

While we agree with both the appellant and the EPA that the identified decision-making processes are not public and do not include public appeals, given our conclusion above that the EPA was justified in forming the view that the environmental impacts associated with radiological matters were not so significant as to warrant formal assessment, the role of other decision-making authorities is not determinative. In any event, should ILW be identified once

the proposal is operational, the Radiological Council has advised the EPA that it has the power to regulate ILW and:

... such waste will be more stringent and on-site disposal will require much further consideration and detailed assessment.<sup>2</sup>

On this basis, we conclude that should ILW be identified, the volume of waste will be limited and will be managed through other legislation.

## **Conclusion**

Based on the information available on appeal, we conclude that the EPA was justified in its deciding that the proposal is not so significant as to require formal impact assessment under Part IV of the EP Act. In addition, in the low likelihood that ILW is identified during maintenance or closure, other statutory decision-making processes are available to mitigate the potential impacts from the proposal consistent with the EPA's objectives for its environmental factors.

## **1.3 Recommendation to the Minister**

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We conclude that the EPA was justified in its decision not to assess the proposal and recommend that the appeal be dismissed.

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<sup>2</sup> EPA, Response to Appeal 005/22, 18 March 2022, page 2.



## 2 Reasons for recommendation

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### 2.1 What is the risk posed by waste from the proposal?

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We note that solid waste from the proposal will include radioactive material, which is classed as 'very low level waste' (VLLW) and that the proponent proposes storing this waste in tailings storage facilities designed for higher risk 'low level waste' (LLW). We accept the EPA's advice that Intermediate Level Waste (ILW) is possible, but not expected in the waste stream, noting confirmation of the same from the Radiological Council.

We conclude that the EPA was justified in forming the view that the risks to the environment and public health from the proposal are low and not so significant as to require formal impact assessment.

#### **The proposal will reprocess monazite feedstock**

The Eneabba Mine Site contains the world's highest grade rare earth containing monazite stockpile located close to key infrastructure, capable of providing direct feed to a rare earths refinery. The monazite concentrate is rich in neodymium (Nd) and praseodymium (Pr), essential in permanent magnets used in electric vehicles, wind turbines and other sustainable energy technologies.<sup>3</sup>

The proposal is to construct a new rare earth refinery (the Eneabba Rare Earth Refinery) which will use roasting, leaching and purification processes followed by solvent extraction and product finishing to produce approximately 17,500 tpa of individual rare earth oxides and carbonates. The proposal will utilise the existing Eneabba monazite concentrate, future Iluka feedstocks and third-party feedstocks.<sup>4</sup>

#### **Processing monazite will generate very low level radioactive waste**

In response to the appeal, the proponent advised the proposal:

... will generate waste that is classified as Very Low Level Waste (VLLW) only, this is primarily the gypsum and iron phosphate residues disposed of within the Tailings Storage Facility.<sup>5</sup>

The proponent advised that there are no current or future waste streams that would be classified as ILW.<sup>6</sup>

VLLW is defined by Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) as material that:

- contains low levels of short-lived radioactivity
- can be safely disposed of in existing industrial or commercial landfill-type facilities with limited regulatory control.<sup>7</sup>

#### **Solid waste disposed to tailing storage facilities**

Solid waste from the proposal (including VLLW) will be disposed of to purpose-built tailings storage facilities (TSFs):

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<sup>3</sup> Iluka Midwest Ltd 26 October 2021; Eneabba Rare Earth Refinery, Referral Supporting Document, page ii.

<sup>4</sup> Ibid.

<sup>5</sup> Iluka Midwest Ltd 25 February 2022, letter to Appeals Convenor, page 1.

<sup>6</sup> Iluka Midwest Ltd 25 February 2022, letter to Appeals Convenor, page 1.

<sup>7</sup> ARPANSA, <https://www.arpansa.gov.au/understanding-radiation/radiation-sources/more-radiation-sources/radioactive-waste-safety> accessed 16 May 2022.



Waste material will be pumped as a slurry to the TSF at a solids concentration of approximately 24%, measured by weight. The slurry will be deposited into the TSF by multiple spigots and will consolidate to an initial dry density of approximately 0.99 t/m<sup>3</sup>. Conceptual diversion drains, and bunds are included within the design.

The containment system within the TSF will comprise the following:

- A low permeability clay layer will be used for the base of the facility. This layer is used as a HDPE liner foundation and provides puncture resistance and a low-permeability barrier should the liner system rupture or leak.
- The synthetic liner system will consist of HDPE, Geofabric, GeoGrid or Flownet leakage detection, Geofabric and HDPE (Secondary layer)<sup>8</sup>

A leak detection system will be included.

## Rehabilitation and closure

At closure, the proponent advises that:

A primary design objective for the closure of the TSF is to minimise surface water infiltration to reduce any movement of water through tailings and ultimately limiting pressure on the containment system. The overall closure capping thickness above the tailings will range between 4m and 9 m...

Management of potential exposure to the Naturally Occurring Radioactive Material (NORM) within the tailings is a closure design objective. The presence of NORM requires a minimum capping thickness of at least 4 m to ensure exposure from gamma radiation to potential occupants on the surface are below annual dose rate. An intrusion prevention layer will be considered to prevent human, fauna, and flora intrusion into the waste materials.<sup>9</sup>

ARPANSA more specifically advised that VLLW:

... needs a moderate level of containment and isolation, and therefore is suitable for disposal in a near-surface, industrial or commercial landfill-type facility with limited regulatory control. Such landfill type facilities may also contain other hazardous waste. Typical waste in this class includes soil and rubble with low activity concentration levels. Concentrations of longer-lived radionuclides would generally be very limited.<sup>10</sup>

## Intermediate level waste possible but not expected

The proponent's documentation suggests that ILW may occur through the development of alpha and gamma 'scales' as part of processing:

... scale characterisation is dependent on the rare earth-bearing feed mineral phase; the amount of thorium and uranium present; and the ratio between thorium and uranium. Monazite feed is dominant in the thorium decay chain with Ra-228 mainly a gamma emitter, thereby accumulating as predominantly a gamma scale. Feed material with a higher component of the uranium decay chain (relative to thorium) could accumulate Ra-226 in a larger proportion, potentially giving rise to an additional alpha scale. The actual formation of such scales within Plant 3 leach section can however only be confirmed once in operation.<sup>11</sup>

ARPANSA defines ILW as containing 'higher levels of long lived radioactivity' than low level waste and 'can be safely disposed of at greater depths (up to a few hundred metres).'<sup>12</sup>

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<sup>8</sup> Iluka Midwest Ltd September 2021; Eneabba Rare Earth Refinery Radiation Management and Waste Management Plan, page 53.

<sup>9</sup> Iluka Midwest Ltd September 2021; Eneabba Rare Earth Refinery Radiation Management and Waste Management Plan, pages 54-55.

<sup>10</sup> ARPANSA, Managing Radioactive Waste in Australia, 2010

[https://www.arpansa.gov.au/sites/default/files/legacy/pubs/radwaste/Issues92\\_woollett.pdf](https://www.arpansa.gov.au/sites/default/files/legacy/pubs/radwaste/Issues92_woollett.pdf)

<sup>11</sup> Iluka Midwest Ltd September 2021; Eneabba Rare Earth Refinery Radiation Management and Waste Management Plan, page 58.

<sup>12</sup> ARPANSA, <https://www.arpansa.gov.au/understanding-radiation/radiation-sources/more-radiation-sources/radioactive-waste-safety> accessed 16 May 2022.

The proponent advised that the reference to ILW in the referral documentation was ‘an inadvertent mischaracterisation’ and that it ‘has no current or future waste streams that would be classified as ILW.’<sup>13</sup> The proponent explained that the reference to ILW:

... relates to the potential existence of scales and/or accretion needing to be handled during maintenance and/or demolition of the refinery. The streams, which are process streams only, would be collected and captured by the process plant, meaning that their fate is the TSF as VLLW. These possible process streams are miniscule relative to the process flows within the process plant, the order of kilograms generated over the life of the Project. Possible sources of this material would be the washed off scale from pipework, and materials penetrating rubber lined steel, and cleaned from the surfaces.

Whilst Iluka have not specifically identified any such material, it has flagged the potential existence of this material throughout the life of the Project as a precautionary measure. This is to ensure that should these materials, if and when they are identified, are handled with a heightened level of awareness, and the reintroduction of the material into the process occurs safely. Iluka has experience in dealing with this occurrence via the operation of its Nargulu Synthetic Rutile refinery.<sup>14</sup>

The proponent stated that the possibility of ILW occurring was included as a conservative step to limit potential radiation exposure of workers to as low as reasonable, even without any specific sources of the potential being identified.<sup>15</sup>

In its response to the appeal, the EPA confirmed there is the potential for scales to be removed from processing equipment during maintenance, but that they are not expected:

The Radiological Council have [sic] confirmed that “council members were aware the ILW was briefly mentioned in the version of the Radiation Management Plan that was provided as an appendix to the environmental referral documentation. However, this is still in discussion between Council, Iluka Resources and the Department of Mines, Industry Regulation and Safety. It appears likely the Iluka may not produce waste which would be classified as ILW”.<sup>16</sup>

### **EPA considers significance of impacts in deciding whether to assess a proposal**

Under its Administrative Procedures, the EPA will have regard to the following matters when considering whether or not to assess a referred proposal:

- the potential impacts of the proposal on the environment
- the significance of those impacts having regard to the EP Act environmental principles and the EPA’s objectives for environmental factors
- whether the implementation of the proposal is likely to be consistent with the EPA’s objectives for environmental factors.<sup>17</sup>

Noting the above, in this instance we find that the EPA was justified in forming the view that the risks to the environment and public health from the proposal are low and not so significant as to require formal impact assessment.

## **2.2 Can the potential impacts be mitigated under other legislation?**

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We conclude above that the EPA was justified to decide that the potential impacts of the proposal are not so significant that they warrant formal environmental assessment. We

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<sup>13</sup> Iluka Midwest Ltd 25 February 2022, letter to Appeals Convenor, page 1.

<sup>14</sup> Iluka Midwest Ltd 25 February 2022, letter to Appeals Convenor, page 1.

<sup>15</sup> Iluka Midwest Ltd 25 February 2022, letter to Appeals Convenor, page 2.

<sup>16</sup> EPA, Response to Appeal 005/22, 18 March 2022, page 2.

<sup>17</sup> EPA, Environmental Impact Assessment (Part IV Divisions 1 and 2) Administrative Procedures 2021, Section 2.2.

therefore consider it unnecessary to consider the extent to which the potential impacts can be managed under other legislation.

However, for completeness, and noting there is a small risk that some scales may occur which might be classified as ILW, we consider the EPA was justified in finding that other statutory decision-making processes can mitigate the potential impacts of the proposal on the environment under section 38G(4) of the EP Act.

### **EPA can consider other decision-making processes in deciding whether to assess a proposal**

Section 38G(4) of the EP Act provides that:

In making its decision [on whether or not to assess a referred proposal] the Authority may take into account other statutory decision-making processes that can mitigate the potential impacts of the proposal on the environment.

In its decision not to assess the proposal, the EPA identified the following statutory decision-making processes that could mitigate the impacts of the proposal:

- Department of Water and Environmental Regulation – Part V of the EP Act – Division 3 – Prescribed Premises, Works Approval and Licence
- Department of Water and Environmental Regulation – Part V of the EP Act – Division 3 – Clearing of Native Vegetation
- Department of Water and Environmental Regulation – *Rights in Water and Irrigation Act 1914* – 5C Groundwater Licence
- Radiological Council - *Radiation Safety Act 1975* – Radiation Management Plan and Radiation Waste Management Plan
- Radiological Council – *Radiation Safety (Transport of Radioactive Substances) Regulations 2002* – Approval of carrier's radiation protection program.

The EPA advised that it also had regard for the regulatory responsibilities that DMIRS has under the *Mines Safety and Inspection Act 1994* and *Mines Safety and Inspection Regulations 1995* in its decision not to assess the proposal and acknowledged that this should have been reflected in the public notice.<sup>18</sup> The EPA advised that, subject to the outcome of the appeal, it would prepare an updated notice to reflect its consideration of DMIRS' statutory responsibilities.

### **Processes identified by the EPA generally consistent with guidelines**

The EPA published *Interim Guidance - Taking decision making processes into account in EIA*<sup>19</sup> that sets out the matters that it may consider in relation to other statutory decision-making processes in this decision.

The EPA's advice on consideration of the identified statutory decision-making processes in relation to the matters in the interim guidance is summarised as follows:

- ability of other decision-making processes to consider the impacts of the proposal:
  - radiation impacts relevant to each of the EPA's factor objectives are within the scope of both the Acts and associated Regulations.
  - Radiological Council confirmed that the Council has the power to regulate the potential impacts associated with radiation for the project and will continue to do so in collaboration with DMIRS.

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<sup>18</sup> EPA January 2022; Public record pursuant to s39(1) of the Environmental Protection Act 1986, Eneabba Rare Earth Refinery Project

<sup>19</sup> EPA October 2021; Interim Guidance - Taking decision making processes into account in EIA

- DMIRS confirmed that it regulates the mining, processing, storage and disposal of naturally occurring radioactive materials through the approval of a Radiation Management Plan and Radiation Waste Management Plan.
- process the other decision-making processes used to consider the potential environmental impacts:
  - Acts and regulations considered are not public processes and do not include public appeals.
- relevant considerations the other decision-making processes can take into account:
  - all environmental elements relevant to radiation are within the scope of the identified decision-making processes, noting that the Radiation Council and Minister for Health implement the Commonwealth Code of Practice<sup>20</sup> under its functions. The Code includes requirements for the protection of human health and the environment from the effects of radioactive waste from mining and mineral processing.
- conditions which may be applied:
  - the proponent is required to implement a proposal specific Radiation Management Plan and Radiation Waste Management Plan
  - the joint plan includes the management radon emissions, dust emissions, groundwater, surface water, surface/soil contamination, waste disposal and impacts to plants and animals, as well as an overall environmental impact assessment.
  - requirements for the management of radiation impacts on the environment, including containment of waste, are enforceable.<sup>21</sup>

The EPA advised that the Radiological Council's advice in relation to potential Intermediate Level Waste states:

The Council has the power to regulate Intermediate Level Waste ... should it be determined that Iluka has Intermediate Level Waste, the requirements for dealing with such waste will be more stringent and on-site disposal will require much further consideration and detailed assessment.

### **Lack of public review under other legislation not a deciding factor**

Part of the interim guidance is whether the other legislation includes an opportunity for the public to comment on the decision-making and whether there are appeal rights in respect to that process.

In response to the appeal, the EPA noted:

... that the *Radiation Safety Act 1975* and the *Mines Safety and Inspection Act 1994* and *Mines Safety and Inspection Regulations 1995* are not public processes and do not include public appeals. However the EPA considered that consultation by the proponent on the proposal, and the fact the EPA required further information on these decision-making processes be published with the referral, was sufficient in this case.<sup>22</sup>

We agree with the appellant that the *Radiation Safety Act 1975*, the *Mines Safety and Inspection Act 1994* and *Mines Safety and Inspection Regulations 1995*, considered for the mitigation of radiation impacts of the proposal, do not provide opportunities for public input to assessment and conditions.

However, given our conclusion above that the EPA was justified in forming the view that the environmental impacts associated with radiological matters were not so significant as to

<sup>20</sup> ARPANSA, 2005; Radiation Protection and Nuclear Safety Agency (ARPANSA) Code of Practice and Safety Guide for Radiation Protection and Radioactive Waste Management in Mining and Mineral Processing

<sup>21</sup> EPA, Response to Appeal 005/22, 18 March 2022, pages 5-7.

<sup>22</sup> EPA, Response to Appeal 005/22, 18 March 2022, page 7.

warrant formal assessment, the role of other decision-making authorities is not a determinative matter in this case. In any event, it is noted that should ILW be identified after the proposal is operational, the Radiological Council has advised the EPA that it has the power to regulate ILW and:

... such waste will be more stringent and on-site disposal will require much further consideration and detailed assessment.<sup>23</sup>

On this basis, we conclude that should ILW be identified, the volume of waste will be limited and will be managed through other legislation.

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<sup>23</sup> EPA, Response to Appeal 005/22, 18 March 2022, page 2.

## 3 Supporting information

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### 3.1 Analysis of EPA considerations

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The EPA advised that proposal information was considered in identifying the relevant environmental factors, including:

- Air quality
- Human health
- Terrestrial fauna
- Flora and vegetation
- Inland waters
- Terrestrial environmental quality

The potential impacts from radiation associated with the proposal specifically considered in relation to the above environmental factors and objectives, are provided in Table 2 below.

The EPA's advice on consideration of the identified statutory decision-making processes is set out in Table 3 below.

**Table 2** The EPA's consideration of proposal information against environmental factors and objectives

| Environmental Factor                     | Objective  | Potential impacts from radiation to environmental factors  |
|--|--|--|
| <b>Air quality</b>                       | <i>maintain air quality and minimise emissions so that environmental values are protected</i>                                    | Pathway for radiation exposure   |
| <b>Human health</b>                      | <i>protect human health from significant harm.</i>   | Adverse impacts to human health from radiation<br>Public health including pathways (air quality, native vegetation (including from bushtucker), groundwater) |
| <b>Terrestrial fauna</b>                 | <i>protect terrestrial fauna so that biological diversity and ecological integrity are maintained.</i>                           | Adverse impacts on fauna as a result of radiation emissions from waste disposal  |
| <b>Flora and vegetation</b>              | <i>protect flora and vegetation so that biological diversity and ecological integrity are maintained.</i>                        | Adverse impacts on vegetation as a result of radiation emissions from waste disposal   |
| <b>Inland waters</b>                     | <i>maintain the hydrological regimes and quality of groundwater and surface water so that environmental values are protected</i> | Contamination of inland waters from spills   |
| <b>Terrestrial environmental quality</b> | <i>maintain the quality of land and soils so that environmental values are protected.</i>  | Contamination of soils by process wastes as a result of spills or incorrect disposal.  |



**Table 3** The EPA's consideration of other DMA processes

| Statutory decision-making process identified   | Consideration of process   | EPA's consideration  |
|--|--|--|
| <i>Radiation Safety Act 1975 and Mines Safety and Inspection Act 1994 and Mines Safety and Inspection Regulations 1995</i> | <p>The <b>ability</b> of the DMA to consider the impact of the proposal</p>                                    | <p>Radiation impacts relevant to each of the EPA's factor objectives are in the scope of both the Acts and associated Regulations identified.</p> <p>Both Acts require a proposal specific Radiation Management Plan (RMP) and Radiation Waste Management Plan (RWMP). The EPA specifically noted:</p> <ul style="list-style-type: none"> <li>the requirements of RMPs and RWMPs are tailored to the specific circumstances of the proposal</li> <li>the RMP and RWMP require annual reporting of performance through the annual environmental radiation report</li> <li>once mining operations cease, the site will remain registered under the <i>Radiation Safety Act 1975</i> until the Radiological Council approves the release of the site and terminates the registration</li> <li>the RWMP also has specific requirements for the decommissioning, rehabilitation and closure.</li> </ul> |
|  | <p>The <b>process</b> that the DMA uses to assess the potential impacts of the activity on the environment</p> | <p>Specific consideration of the proposal and its impacts is required in the above processes.</p> <p>The EPA noted the fact that the <i>Radiation Safety Act 1975</i> and the <i>Mines Safety and Inspection Act 1994</i> and <i>Mines Safety and Inspection Regulations 1995</i> are not public processes and do not include public appeals.</p>  |
|  | <p>The <b>relevant considerations</b> which the DMA can take into account in decision-making</p>               | <p>No environmental elements relevant to radiation were outside of the identified decision-making processes.</p> <p>The EPA noted that the Radiation Council and Minister implement the Commonwealth Code of Practice under its functions under the <i>Radiation Safety Act 1975</i> - Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) <i>Code of Practice and Safety Guide for Radiation Protection and Radioactive Waste Management in Mining and Mineral Processing</i></p>   |

| Statutory decision-making process identified | Consideration of process   | EPA's consideration  |
|--|--|--|
|  |  | (2005). The Code establishes requirements for radiation protection in mining and mineral processing industries and for protection of human health and the environment from the effects of radioactive waste from mining and mineral processing (ARPANSA 2022)  |
|  | The <b>conditions</b> that may be applied as a result of the decision-making process | <ul style="list-style-type: none"> <li>• A proposal specific Radiation Management Plan (RMP) and Radiation Waste Management Plan (RWMP) are required to be implemented. In this case the joint plan includes management of radon emissions, dust emissions, groundwater, surface water, surface/soil contamination, waste disposal and impacts to plants and animals, as well as an overall environmental impact assessment</li> <li>• The RMP also addresses additional requirements of the conditions of the proponent's site radiation registration and licences</li> <li>• enforceable requirements for management of radiation impacts on the environment, including containment of waste, arise under the <i>Radiation Safety Act</i>, and the RMP and RWMP due to Div. 2 part 16.7 of the <i>Mine Safety and Inspection Regulations and Radiation Safety</i></li> <li>• Concurrent operation of the <i>Mines Safety and Inspection Act 1994</i> and <i>Mines Safety and Inspection Regulations 1995</i> ensure comprehensive regulation of radiation in a mining context</li> </ul> |
|  | <b>Likely outcomes</b>   | The joint radiation management plan includes consideration of radon emissions, dust emissions, groundwater, surface water, surface/soil contamination, waste disposal and impacts to plants and animals, as well as an overall environmental impact assessment.  |
|  | <b>Overall conclusion</b>  | The EPA advised that its objectives for environmental factors in respect of radiation impacts were likely to be met through the other statutory decision-making processes.   |

## 3.2 Radioactive waste

ARPANSA's published information<sup>24</sup> states that the Australian classification scheme for disposal of radioactive waste is based on the safety of disposal pathways, taking into account the radioactivity level and the time it will take for the radioactivity to decay (half-life). Radioactive waste classification within Australia currently includes:

**Table 4** Radioactive waste classification

| Radioactive waste categories   | Details and disposal pathways  |
|--------------------------------|--|
| Exempt Waste (EW)              | <p>Contains very low levels of radioactivity where safety measures are not required.</p> <p>Can be safely disposed of in the same way as non-radioactive waste.</p> <p>Very Short Lived Waste (VSLW)</p>   |
| Very Low Level Waste (VLLW)    | <p>Contains low levels of short lived radioactivity.</p> <p>Can be safely disposed of in existing industrial or commercial landfill-type facilities with limited regulatory control.</p>   |
| Low Level Waste (LLW)          | <p>Contains higher levels of short lived radioactivity and low levels of long lived radioactivity.</p> <p>Can be safely disposed of in an engineered near-surface (3-10 metres) facility.</p>  |
| Intermediate Level Waste (ILW) | <p>Contains higher levels of long lived radioactivity.</p> <p>Can be safely disposed of at greater depths (up to a few hundred metres).</p>  |
| High Level Waste (HLW)         | <p>Contains levels of radioactivity high enough to generate significant amounts of heat during the radioactive decay process.</p> <p>Disposal in deep, stable geological formations (several hundred metres below the surface) is recognised as the safest disposal pathway.</p> |

<sup>24</sup> <https://www.arpana.gov.au/understanding-radiation/radiation-sources/more-radiation-sources/radioactive-waste-safety>, accessed April 2022

## Appendix 1 Appeal process

### The Minister assesses the merits of a decision

Environmental appeals follow a merits-based process. This means the Minister can consider all the relevant facts, law and policy aspects of the decision and decide whether it was correct and preferable.

For appeals in relation to an EPA decision not to assess, the Appeals Convenor considers questions of environmental significance, relevance of factors, additional information not considered by the EPA, and whether other statutory decision-making processes can adequately address the relevant environmental factors without the need for formal assessment by the EPA. The level of public interest may also be relevant.

### We report to the Minister, as does the decision-making authority

To decide an appeal's outcome, the Minister for Environment must have a report from both:

- the Appeals Convenor [see section 109(3) of the EP Act], and
- the authority that originally made the decision under appeal [see section 106(1)].

To properly advise the Minister in our report, our investigation included:

- a review of the appeals, the EPA's decision, and the proponent's referral information
- meeting with the proponent (22 February 2022)
- meetings with the appellant (29 March 2022; 4 April 2022)
- reviewing other information, policy and guidance as needed.

**Table 5** Documents we reviewed in the appeals investigation

| Document   | Date           |
|--|----------------|
| EPA Public record pursuant to s39(1) of the Environmental Protection Act 1986, Eneabba Rare Earth Refinery Project | January 2022   |
| Proponent response to Appeal 005/22  | February 2022  |
| EPA Response to Appeal 005/22  | March 2022     |
| Iluka Midwest Ltd; Eneabba Rare Earth Refinery, Referral Supporting Document                                       | October 2021   |
| MBS Environmental; Radiation Impact Assessment Eneabba Phase 3 Project – Eneabba Rare Earth Refinery               | October 2021   |
| Iluka Resources Limited, Eneabba Rare Earth Refinery Radiation Management and Waste Management Plan                | September 2021 |