



Application for Licence Amendment

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

Licence Number	L9176/2018/4
Licence Holder	Iluka Resources Limited
ACN	008 675 018
File Number	DER2018/001555
Premises	Cataby Mineral Sands 10437 Brand Highway Legal description – Mining tenements: M70/194, M70/195, M70/196, M70/517, M70/518, M70/696, M70/760, M70/867, M70/868, M70/869, M70/1018, M70/1086 As defined by the Premises maps attached to the Revised Licence
Date of Report	28 November 2023
Decision	Revised licence granted

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

Table of Contents

1. Decision summary	1
2. Scope of assessment	1
2.1 Regulatory framework	1
2.2 Background	1
2.3 Application summary	2
2.4 Dewatering discharge	6
2.5 Part IV of the EP Act	7
2.5.1 Background	7
2.5.2 Ministerial Statement 720	7
2.5.3 Ministerial Statement 1017	7
2.6 Other relevant approvals	8
2.6.1 Mining Act 1978 (WA)	8
2.6.2 Rights in Water and Irrigation Act 1914 (WA)	9
2.6.3 Aboriginal heritage	9
2.6.4 Planning and approvals	10
3. Risk assessment	11
3.1 Source-pathways and receptors	11
3.1.1 Emissions and controls	11
3.1.2 Receptors	11
3.2 Risk ratings	17
4. Consultation	21
5. Conclusion	22
5.1 Summary of amendments	22
References	23
Appendix 1: Summary of Licence Holder's comments on risk assessment and draft conditions	24
Appendix 2: Application validation summary	26
Table 1: Prescribed premises categories	1
Table 2: Licence Holder controls	11
Table 3: Sensitive human and environmental receptors and distance from prescribed activity	12
Table 4. Risk assessment of potential emissions and discharges from the Premises during construction, commissioning and operation	18
Table 5: Consultation	21
Table 6: Summary of licence amendments	22

Figure 1: Replacement bores	3
Figure 2: Pit 16 Irrigation Area	4
Figure 3: Cataby Mineral Sands Project Development Envelope	5
Figure 4: Aboriginal Heritage Sites.....	10
Figure 5: Distance to sensitive receptors.....	15
Figure 6: Potential Groundwater and Surface Water Dependent Ecosystems	16

1. Decision summary

Licence L9176/2018/1 is held by Iluka Resources Limited (Licence Holder) for the Cataby Mineral Sands Mine (the Premises), located at 10437 Brand Highway, Cataby.

This Amendment Report documents the assessment of potential risks to the environment and public health from proposed changes to the emissions and discharges during the construction and operation of the Premises. As a result of this assessment, Revised Licence L9176/2018/1 has been granted.

The Revised Licence issued as a result of this amendment consolidates and supersedes the existing Licence previously granted in relation to the Premises. The Revised Licence has been granted in a new format with existing conditions being transferred, but not reassessed, to the new format.

2. Scope of assessment

2.1 Regulatory framework

In completing the assessment documented in this Amendment Report, the department has considered and given due regard to its Regulatory Framework and relevant policy documents which are available at <https://dwer.wa.gov.au/regulatory-documents>.

2.2 Background

Cataby Mineral Sands is a large scale heavy mineral sands mine located on the foot slopes of the Gingin Scarp, around 150 km north of Perth, in the Shire of Dandaragan. It is currently the only active mining operation for Iluka Resources in Western Australia.

The original mining proposal was formally assessed in 2005 by the Environmental Protection Authority (EPA) via an Environmental Protection Statement (EPS) level of assessment. The proposal was approved in 2006 through Ministerial Statement 720, however the project did not immediately proceed due to market conditions. Amendments to MS 720 were subsequently approved in October 2015 through the issue of MS 1017 (refer to section 2.5).

Site construction works commenced in January 2018 following the issue of works approval W5935/2015/1 in March 2016, with full mining operations commencing in May 2019.

Table 1 describes the categories of prescribed premises the licence is subject, as defined in Schedule 1 of the EP Regulations.

Table 1: Prescribed premises categories

Classification of Premises	Description	Premises throughput
Category 8	Mineral sands mining or processing: premises on which mineral sands ore is mined, screened, separated or otherwise processed.	12,000,000 tonnes per annual period
Category 6	Mine dewatering: premises on which water is extracted and discharged into the environment to allow the mining of ore.	2.2 gigalitres per annual period

2.3 Application summary

On 21 June 2023, the Licence Holder submitted an application to the department to amend Licence L9176/2018/1 under section 59 and 59B of the *Environmental Protection Act 1986* (EP Act). The following amendments are being sought:

The Licence Holder has requested to install additional irrigation lines as required to irrigate the nominated area within Pit 16 development area. The source of water is the 'Clean Water Dam' on the existing licence L9176/2018/1. The point source emission limits to groundwater will meet the discharge criteria specified in Table 6 of the existing licence. The maximum quantity of water to be discharged at any point in time is 800m³/hr. This is a peak figure. The total quantity is limited by GWL75697(1) annual water entitlement 14,000,000 kL. The Licence Holder is not applying to increase the throughput to Category 6 that is currently 2.2 giganlitres per annual period.

The new emission point references are Pit 16 Irrigation Area as shown in Figure 2.

As part of this amendment, the Licence Holder submitted the Groundwater Operating Strategy (GOS) (Iluka, 2017) with an Addendum (Iluka, 2019).

Iluka has revised its groundwater monitoring program to:

- Remove redundant groundwater monitoring wells;
- Ensure that the monitoring requirements of Iluka's GOS with groundwater monitoring are consistent with the obligations under the Licence L9176/2018/1; and
- Identify groundwater dependent ecosystems (GDE) site monitoring wells and "Advance Warning" wells relevant to each GDE, as detailed in Section 2.2.4 (GOS, Iluka, 2017). Iluka's GDE Management Plan (Iluka 2017b) presents criteria for groundwater mounding and drawdown at "GDE Site" wells and "GDE Advance Warning" wells, that if breached, trigger implementation of response actions such as an increased monitoring, further investigation or appropriate management interventions. Similarly, Iluka's Soil Management Plan (Iluka 2018) presents criteria for groundwater chemistry focussed on detecting PASS-oxidation that, if breached trigger further monitoring, analyses and investigations.

Changes to monitoring points:

- Additional monitoring bore MW11 as shown in Figure 1 was constructed in 2018, 32mm casing with a screen depth at 23-29m, end of hold is 29m. MW11 is an existing groundwater dependent ecosystem (GDE) monitoring bore located at 357619E, 6595061N. It is proposed to add this bore to the licence to replace CM11 which is rendered unserviceable.

Premises map:

- The Licence Holder applied to extend the prescribed premises boundary to include Pit 16 Irrigation Area and GDE 4C Emissions Area, however it was noted during the assessment that the current prescribed premises boundary for licence L9176/2018/1, was not consistent with the Ministerial Statement 1017. The Licence Holder has agreed to amend this licence to be in line with the current approved development area as per Ministerial Statement 1017 (see Figure 3). This amendment now only includes the additional Pit 16 Irrigation area as this is within the approved development area.

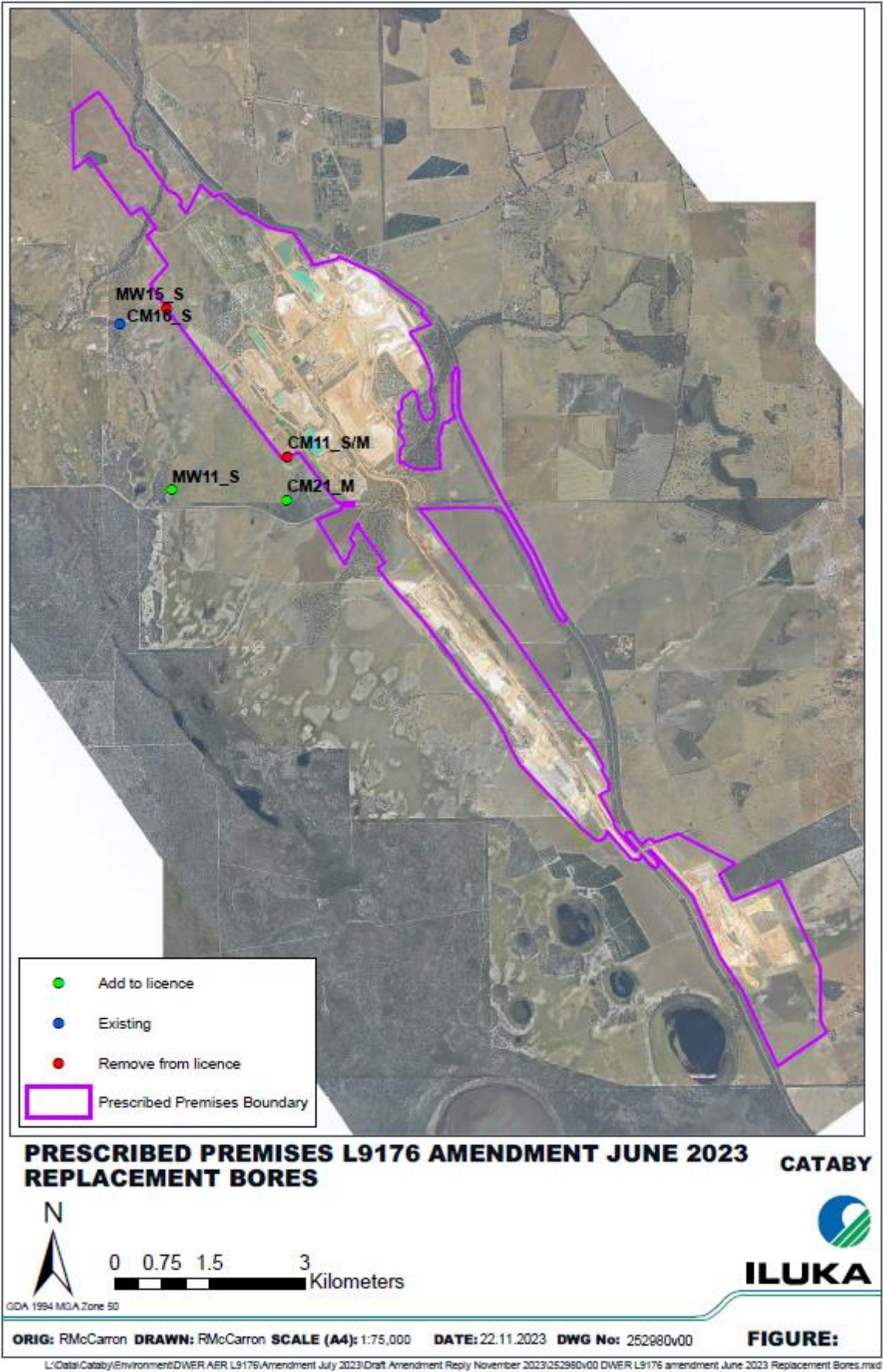


Figure 1: Replacement bores

Licence: L9176/2018/1

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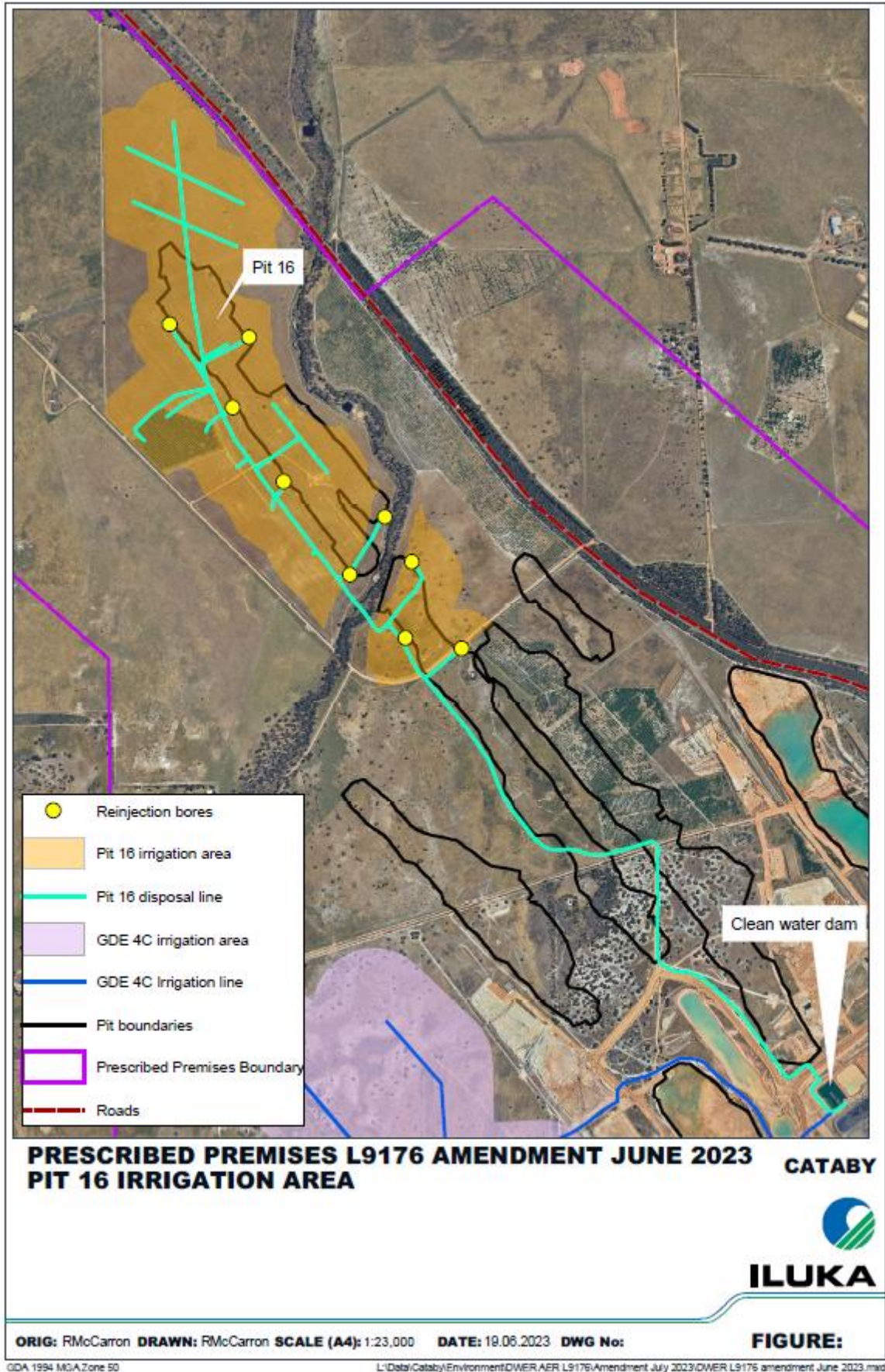


Figure 2: Pit 16 Irrigation Area

Licence: L9176/2018/1

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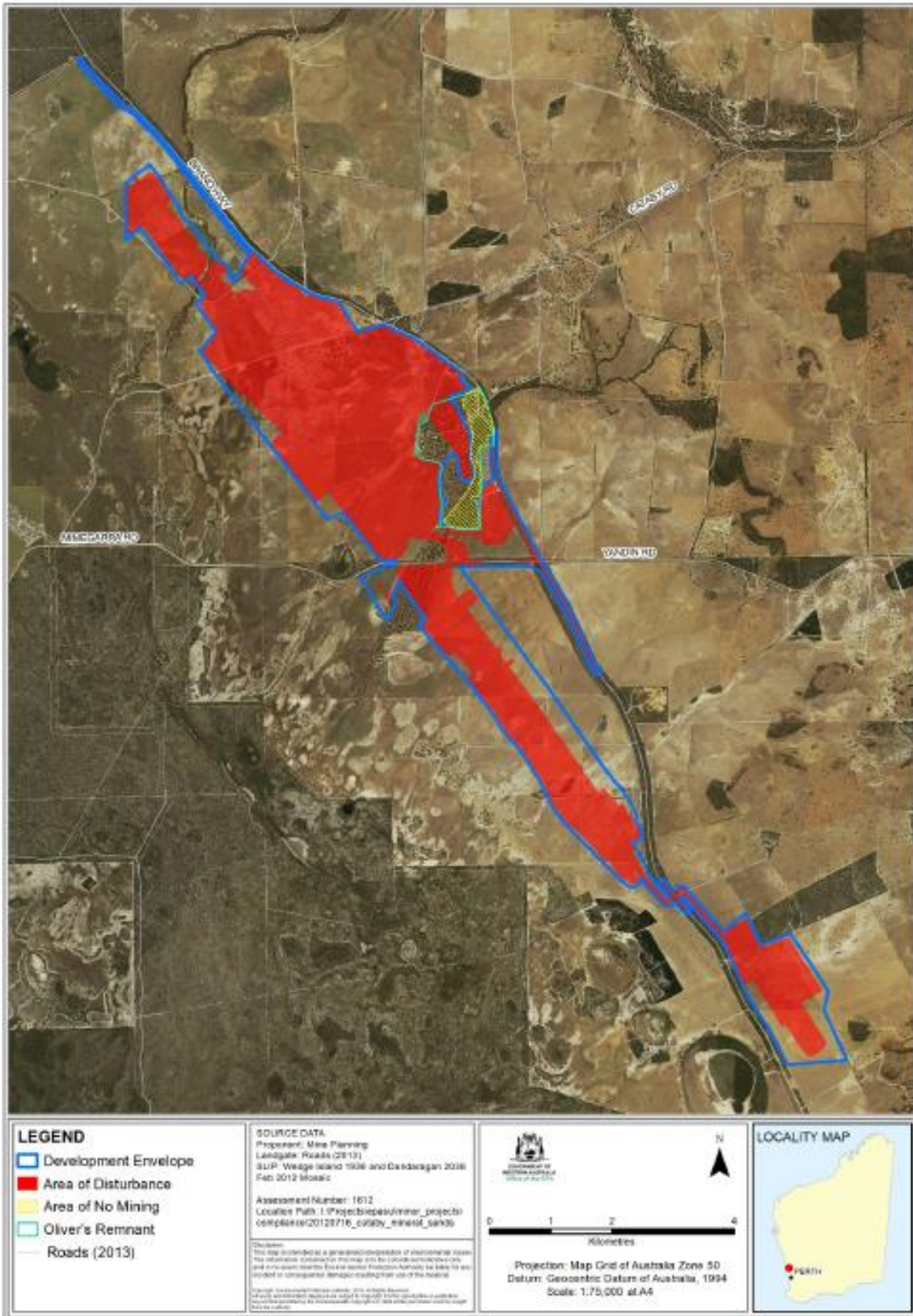


Figure 3: Cataby Mineral Sands Project Development Envelope

2.4 Dewatering discharge

When water produced from the dewatering system (i.e. the combination of groundwater pumping from production bores, dewatering bores and the water pumped from in-pit sumps) exceeds the mine water demand, the excess water requires disposal. The maximum rate of dewatering disposal in any 12-month period is predicted to be 2.2 GL/year (Jacobs, 2018).

The rate of dewatering disposal will be variable and is influenced by:

- the dewatering rate required to achieve dry mining condition;
- the rate of water consumption relative to the dewatering rate; and
- changes to the mine plan as may occur during the life-of-mine.

The water disposal strategy involves discharge of the water into infiltration basins located in the final pit void of Pit 1 and Pit 2, with direct injection into the aquifer to provide additional contingency to accommodate disposal volume and/or control mounding at disposal sites. Water is sourced from the CWD that only receives 'clean' water sourced directly from dewatering bores, therefore water quality is similar to regional groundwater quality.

Infiltration basins

The use of Pit 1 is the long-term strategy for infiltration over the life-of-mine. It has a capacity of approximately 7 million cubic metres and is anticipated to receive approximately 2.2 million cubic metres of excess water between February 2022 and January 2026. At maximum dewatering, approximately 31% of the capacity will hold standing water.

A contingency infiltration basin has also been considered in the final pit void of Pit 2, which may be used prior to Pit 1 being mined and available for discharge. It has a capacity of 530,000 cubic metres and may receive up to 300,000 cubic metres of excess water over a 2 month period between December 2021 and January 2022. At maximum dewatering, approximately 56% of its capacity will hold standing water. Disposal of excess water may be augmented by simultaneous discharge to aquifer re-injection bores, if required (see below).

Aquifer re-injection

Up to 25 mine dewatering bores that have dual capacity to be used as re-injection bores are being used to dispose of excess mine water. The primary purpose of discharge via the re-injection bores is to mitigate the impacts of groundwater drawdown within the mine path dewatering zone (excluding GDE mitigation – see below).

Nominal re-injection rates will be managed by the licence holder to ensure GDE mounding thresholds determined through groundwater modelling (Jacobs, 2014), and as provided in the Groundwater Operating Strategy (GOS) (Iluka, 2017), are not exceeded.

Groundwater Dependent Ecosystems mitigation system

As a requirement of MS 1017, the licence holder has prepared a Groundwater Dependent Ecosystem (GDE) management plan that identifies GDEs potentially at risk from drawdown impacts caused by mine dewatering and establishes a monitoring program with early-warning trigger values and a tiered management response to exceedances of those trigger values. If a monitoring trigger is exceeded, this will initiate detailed investigations to determine the significance of the threatening process and devise the most appropriate management actions required, such as the release of excess water to recharge and maintain the hydrological regime of GDEs.

2.5 Part IV of the EP Act

2.5.1 Background

The original mine proposal was referred to the EPA in March 2003 under section 38 of the EP Act, who set an EPS level of assessment in April 2003.

The proponent submitted its final EPS document to the EPA in November 2005, with the EPA providing its report and recommendations to the Minister for the Environment (Minister) in December 2005 (EPA Bulletin 1212). The Minister subsequently approved the project through the publishing of MS 720 on 18 April 2006.

In October 2015, MS 720 was replaced by MS 1017, following changes to the implementation conditions and proponent commitments.

2.5.2 Ministerial Statement 720

EPA Bulletin 1212 (December 2005) provides the EPA's assessment of the original mine proposal. The relevant environmental factors identified were generally related to the impacts of mining on flora and fauna of conservation significance from vegetation clearing and groundwater drawdown, and noise impacts. The EPA recommended the project could be managed in an environmentally acceptable manner, providing there is satisfactory implementation of proponent commitments, which addressed acid sulfate soils (ASS), dust, noise and fauna (Carnaby's Black Cockatoo).

MS 720 contained a number of conditions that related to ensuring there would be no significant impacts on Carnaby's Black Cockatoo and its breeding and feeding habitats, in addition to significant vegetation and flora communities from clearing, and groundwater-dependent ecosystems from dewatering of the Superficial aquifer. Conditions were also included to ensure noise levels from the project would be acceptable.

MS 720 also referenced a number of proponent commitments relating to the preparation of management plans for ASS and dust, in addition to implementing offsets to promote the recovery of the local Carnaby's Cockatoo population, and fencing off a 'no mining' area due to significant vegetation values (i.e. Oliver Remnants).

2.5.3 Ministerial Statement 1017

In March 2015, the proponent requested changes to implementation conditions within MS 720 under section 46 of the EP Act. The changes included an extension of the timeframe for substantial commencement of the project, and to contemporise and consolidate several of the implementation conditions and proponent commitments.

EPA Report 1555 (August 2015) provides the EPA's report into the proposed changes. As part of the assessment the key environmental factors identified in Bulletin 1212 were revised in accordance with updated EPA environmental assessment guidelines, to reflect terrestrial fauna, flora and vegetation, amenity and offsets.

MS 1017 contains a revised set of conditions, however, still retains the intent and environmental requirements of the original conditions of MS 720. The original proponent commitments were deleted as it was considered more appropriate to manage these aspects under Part V, Division 3 of the EP Act or through Ministerial Conditions. These commitments predominantly related to the management of dust and landform/soils (ASS).

The EPA noted in Bulletin 1212 (2005) that mining activities are likely to directly impact on 47ha of native vegetation and indirect impacts are likely due to groundwater drawdown. In stating that the proposal can be managed to meet the EPA's environmental objectives for Flora and Vegetation, the EPA had particular regard to preparation and future implementation of a Vegetation and Flora Management Plan, a Groundwater Dependent Ecosystems Plan and a

Surface Water Management Plan.

In December 2014, the EPA Chair as the delegate for Minister for Environment approved a change to this proposal under s45C of the EP Act. As part of this approval Attachment 1 to MS720, which supersedes Schedule 1 of the MS 720 was published. Attachment 1 includes Table 1 and Figure 1, summarising the key characteristics of the Cataby Mineral Sands Project proposal including:

- the authorised extent and location of the Development Envelope of 2,626.3 hectares
- an authorised extent of native vegetation disturbance of no more than 153.1 hectares within the Development Envelope

In October 2015 the conditions in the original Ministerial Statement 720 (MS 720) were changed and proponent commitments were contemporised and consolidated under s 46 of the EP Act. MS 720 was replaced with MS 1017 which include the following:

- Schedule 1 to MS 1017 (replaced Attachment 1 to MS 720), including Table 2, Figure 1 and Schedule 2 that provide the location, authorised extent and coordinates of physical and operational elements of the proposal
- condition 8 for a Groundwater-dependent Ecosystem Management Plan
- condition 11 for a Surface Water Management Plan.

In accordance with section 57(4)(b) of the EP Act, the CEO cannot issue licence that is “contrary to, or otherwise than in accordance with, an implementation agreement or decision”. The Part V assessment process will not duplicate matters already addressed under the Part IV process.

Therefore, it is necessary to amend the existing licence L9176/2018/1 to be consistent with the approved development envelope in MS 1017.

2.6 Other relevant approvals

2.6.1 Mining Act 1978 (WA)

With the exception of land alienated before 1 January 1899, all minerals¹ are the property of the Crown, and a mining title must be obtained from the Department of Mines, Industry Regulation and Safety (DMIRS) before ground disturbing exploration activities or any mining operations may be undertaken (DMP, 2015b).

DMIRS has approved a mining proposal (Registration ID: 55412) to develop the mineral sands deposit on tenements M70/194, M70/195, M70/196, M70/517, M70/518, M70/696, M70/760, M70/791, M70/867, M70/868, M70/869, M70/1017, M70/1018 and M70/1086, all of which is over private land.

DMIRS also administer the *Mines Safety and Inspection Act 1994*, with respect to the standards of occupational safety and health. The Resources Safety Division administers occupational health (OSH) legislation for mining operations, and safety legislation and the licensing regime for dangerous goods, including regulation of the State’s major hazard facilities. This includes the requirement to lodge and have approved a Project Management Plan, reviewing structural designs and specifications of tailings storage facilities and other engineered mine-related infrastructure, etc.

Mine Closure Plan

All tenements that have an approved mining proposal on them must also have an approved mine closure plan (MCP) that has been prepared in accordance with the “Guidelines for Preparing Mine

¹ When occurring on private land, the following are not considered minerals for the purposes of the Mining Act: limestone, rock, gravel, shale, sand and clay (excluding oil shale, mineral sands, silica or garnet sand, kaolin, bentonite, attapulgitite and montmorillonite).

Closure Plans” (DMP, 2015a).

DMIRS has approved a MCP for the project (Iluka, 2015a), which pre-dated the current closure guidelines. A number of minor issues were identified that required addressing in the 2018 revision regarding closure obligations, stakeholder consultation and refinement of completion criteria. The licence holder submitted a revised MCP in 2018, which is currently being reviewed by DMIRS.

2.6.2 Rights in Water and Irrigation Act 1914 (WA)

Groundwater is a key component of the mining operation and will be used in various mining and processing facilities across the site, including potable water supply.

The Premises lies within the Gingin Groundwater Area, Wedge Island sub-area, which is less than 50% allocated when considering the Superficial aquifer system.

Groundwater abstraction in gazetted areas is regulated by DWER under section 5C of the *Rights in Water and Irrigation Act 1914*. A section 5C Licence to Take Water has been issued from the Superficial aquifer (14,000,000 kL/yr) for the purposes of mine dewatering, mineral ore processing, and dust suppression.

The Department’s Water Services were advised of this amendment and provided the following advice on 29 August 2023:

5C licenses issued under the RIWI Act are issued subject to compliance with the conditions of the licence, in this case the Licence Holder is required to comply with a groundwater operating strategy Groundwater Operating Strategy (Iluka, 2017). 5C licenses are limited to regulating abstraction and the impacts of abstraction, Water Services do not regulate how and where the water is disposed. There are monitoring conditions associated with the 5C licence which require the submission of annual monitoring reports focusing on water levels and to a lesser extent water quality issues on site – the trigger levels associated with the monitoring should align with the Ministerial statement for the project. As long as Iluka are complying with the current Groundwater Operating Strategy and remaining within their annual entitlement then they would be complying with the RIWI Act.

The licence and Operating Strategy may need to be updated if there are significant changes to the administrative details including locations of where the water is taken from for the authorised activities (new tenements etc.) or the purposes for which it is being taken, but otherwise, if there are no major changes to the monitoring criteria this is a relatively minor issue and easily dealt with through a licence amendment and Groundwater Operating Strategy Addendum.

2.6.3 Aboriginal heritage

There are a number of lodged heritage sites across the premises as shown in Figure 4. The Department of Planning Lands and Heritage (DPLH) were advised on 31 August 2023 of the amendment application. DPLH provided the following advice on 25 October 2023:

Thank you for requesting our comments on the proposed amendments to Iluka’s existing dewatering activities. We understand the proposal involves the installation of additional poly pipes on existing water lines for surface irrigation in the pit 16 area. The amendment includes emissions to land of direct surface disposal of water.

A review of the Prescribed Premises Boundary against the Aboriginal Cultural Heritage Directory confirms it intersects with the boundaries of a number of actual Aboriginal Cultural Heritage Places.

Pit 16, reinjection bores and disposal line appears to be covered by an existing S18 ministerial consent. We note that GDE 4C irrigation Line and Farm Dams are not covered by an existing s18 ministerial consent and the proponent will need to ensure it is compliant with the current Aboriginal Heritage Legislation, which is still presently the *Aboriginal Cultural Heritage Act 2021*.

The premises is covered by Native Title claims Yued Aboriginal Corporation and South West

Settlement. Both claimants were advised on 31 August 2023 of the amendment application.

DWER notes that the Licence Holder is responsible for ensuring appropriate approvals and stakeholder engagement has taken place under the *Aboriginal Cultural Heritage Act 2021*.

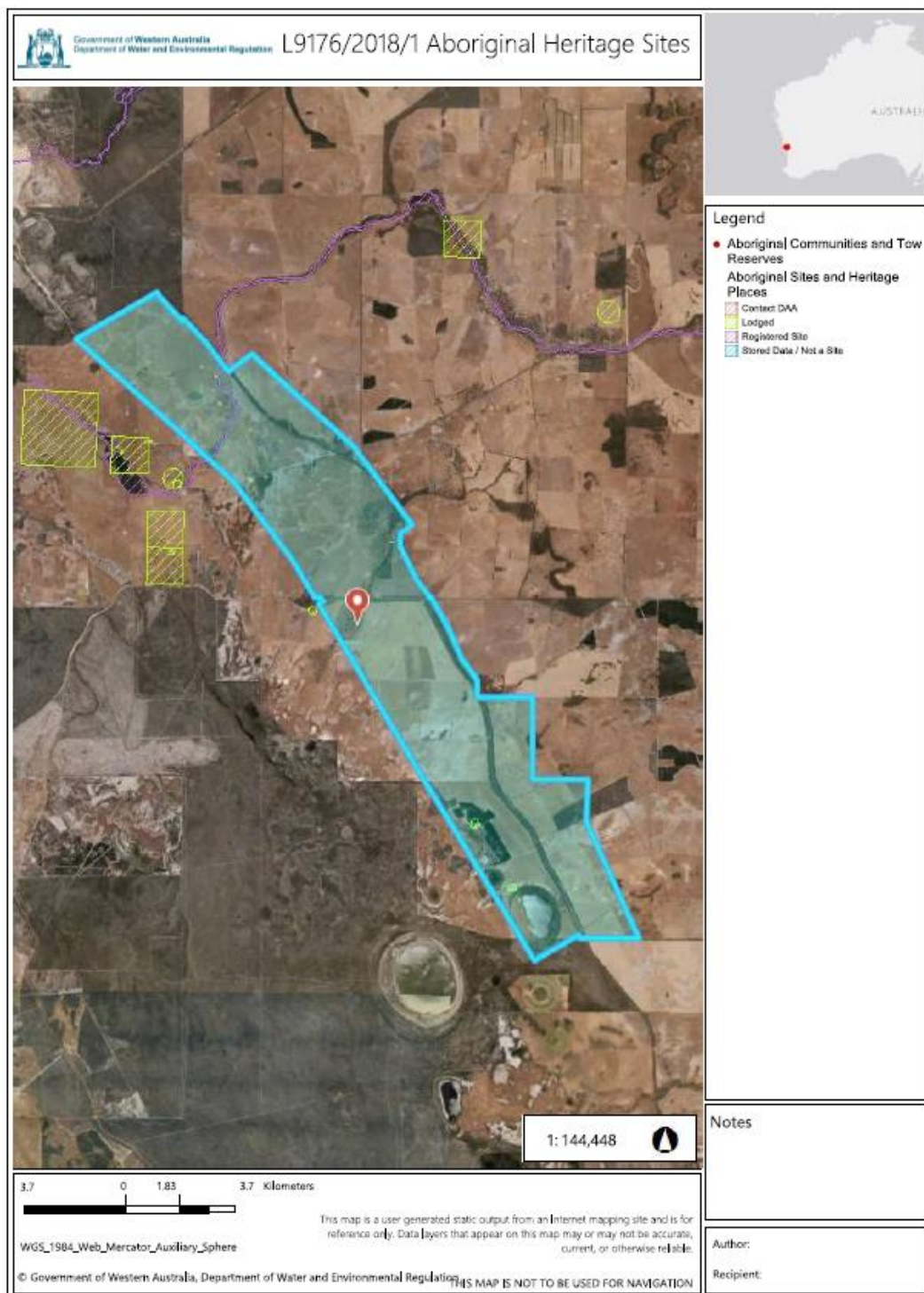


Figure 4: Aboriginal Heritage Sites

2.6.4 Planning and approvals

The Shire of Dandaragan has advised that planning approval is not required for the proposal.

3. Risk assessment

The department assesses the risks of emissions from prescribed premises and identifies the potential source, pathway and impact to receptors in accordance with the *Guideline: Risk assessments* (DWER 2020).

To establish a Risk Event there must be an emission, a receptor which may be exposed to that emission through an identified actual or likely pathway, and a potential adverse effect to the receptor from exposure to that emission.

3.1 Source-pathways and receptors

3.1.1 Emissions and controls

The key emissions and associated actual or likely pathway during premises construction and operation which have been considered in this Amendment Report are detailed in Table 2 below.

Table 2 also details the proposed control measures the Licence Holder has proposed to assist in controlling these emissions, where necessary.

Table 2: Licence Holder controls

Emission	Sources	Potential pathways	Proposed controls
Dust	Construction of new irrigation lines and discharge points.	Air/windborne pathway	No additional controls proposed.
Noise	Construction of new irrigation lines and discharge points.	Air/windborne pathway	No additional controls proposed.
Groundwater mounding	Discharge of excess mine dewater and reinjection.	Direct discharge to land.	Iluka Resources Limited Groundwater Operation Strategy, June 2017. The Ground Water Operations Strategy has a detailed trigger-response management framework. Tier 1 - Monitoring and Evaluation: Tier 2 - Detailed investigations: Tier 3 - Management intervention:
Groundwater or surface water contamination	Discharge of excess mine dewater and reinjection.	Direct discharge to land.	Iluka Resources Limited Groundwater Operation Strategy, June 2017. Tier 1 - Monitoring and Evaluation: Tier 2 - Detailed investigations: Tier 3 - Management intervention:

3.1.2 Receptors

In accordance with the *Guideline: Risk assessments* (DWER 2020), the Delegated Officer has excluded employees, visitors and contractors of the Licence Holder's from its assessment. Protection of these parties often involves different exposure risks and prevention strategies, and is provided for under other state legislation.

Table 3 below provides a summary of potential human and environmental receptors that may be impacted as a result of activities upon or emission and discharges from the prescribed premises (*Guideline: Environmental siting* (DWER 2020)).

Table 3: Sensitive human and environmental receptors and distance from prescribed activity

Human receptors	Distance from prescribed activity
Two roadhouses located along the Brand Highway	Within the premises boundary
Liberty Roadhouse (includes a licensed hotel and is owned by the Licence Holder)	Immediately adjacent to Pit 9/12
6 properties are within the premises boundary. *Two roadhouses are located along the Brand Highway and within the Premises boundary, with each of these including motel-style accommodation. The Liberty Roadhouse, which is located immediately adjacent to Pit 9/12 includes a licensed hotel and is owned by the licence holder.	6 properties are within the premises boundary.
Environmental receptors	Distance from prescribed activity
<u>Groundwater:</u>	<u>Groundwater depth:</u> Groundwater levels vary in relation to topography. To the east of the Gingin Scarp, levels can be quite deep (20 – 45 mbgl), where to the west groundwater is significantly shallower and in the order of 10 – 15 mbgl. <u>Groundwater quality:</u> Groundwater generally has total dissolved solids (TDS) of less than 2,000 mg/L, with higher concentrations known to occur along some drainage lines and wetlands bodies where evaporation is active, and also near streams (e.g. Minyulo Brook) which receive saline runoff from farming areas. <u>Groundwater flow direction:</u> The hydrology of the local area comprises a throughflow system, with groundwater flowing in a west to south-west direction toward the coast.
Gingin Groundwater area	Within premises boundary
TECs/PECs – Banksia dominated woodlands of the Swan Coastal Plain	Within premises boundary
Groundwater dependent ecosystems (GDS).	Within and adjacent to the Premises GDEs are found on the coastal plain to the west of the Premises where the water table is shallow, particularly at the foot of the scarp where there is enhanced recharge and a change of topographic slope. Wetlands and lakes generally occur in topographic

	<p>lows where the ground surface dips below the water table. Some wetlands including a number of brooks, occur above the water table and are formed as perched systems on low permeability clay-rich sediments and lateritic deposits that hinder the vertical movement of water in the unsaturated zone. Many of these features are rainfall and runoff dependent and recede with dry weather.</p> <p>Based predominately on depth to groundwater, a total of 33 terrestrial and wetland remnants with the Cataby project have been identified as being potential GDEs that are at risk of mining impacts, with sites to the west of the Premises likely to have a greater dependence on groundwater, given the shallower depth to the watertable in this area.</p> <p>Several wetlands identified as GDEs occurring to the west of the Premises are also dependent of surface water inflows and therefore may be impacted by changes to surface water flow regimes.</p> <p>The location of potential GDEs in relation to the Premises are shown in Figure 6.</p>
Threatened and priority flora	<p>The Premises is characterised by cleared pasturelands that are used to graze cattle and sheep. Remaining native vegetation is fragmented across the landscape and often completely degraded as a result of grazing. The Premises is adjacent to a number of regionally significant conservation reserves.</p> <p>One area identified as the 'Oliver Remnant' has been recognised as having high conservation value, despite its degraded condition, due to its floristic features (presence of threatened and priority species) and as a breeding area for the endangered Carnaby's Black Cockatoo. The 'Oliver Remnant' contains both flora and fauna of the mixed Wandoo/Marri woodland complex that follows the channel of the Cataby Brook.</p>
Threatened fauna	Within premises boundary
Surface water bodies	1km west of the premises boundary
PDWSA/RAMSAR wetlands	Dandaragan Water Reserve 15km northeast of the premises boundary
Dandaragan water reserve	15km northeast of the premises boundary
Aboriginal Sites and Heritage Places	Distance from activity / prescribed premises
Minyulo Brook	700m west of the premises boundary
Minyulo Brook (Bilya)	Within premises boundary
Dandaragan (artefacts)	600m west of the premises boundary
Caro-minor blowouts	1.4km west of the premises boundary

Iluka Cataby 08	0.13km west of the premises boundary
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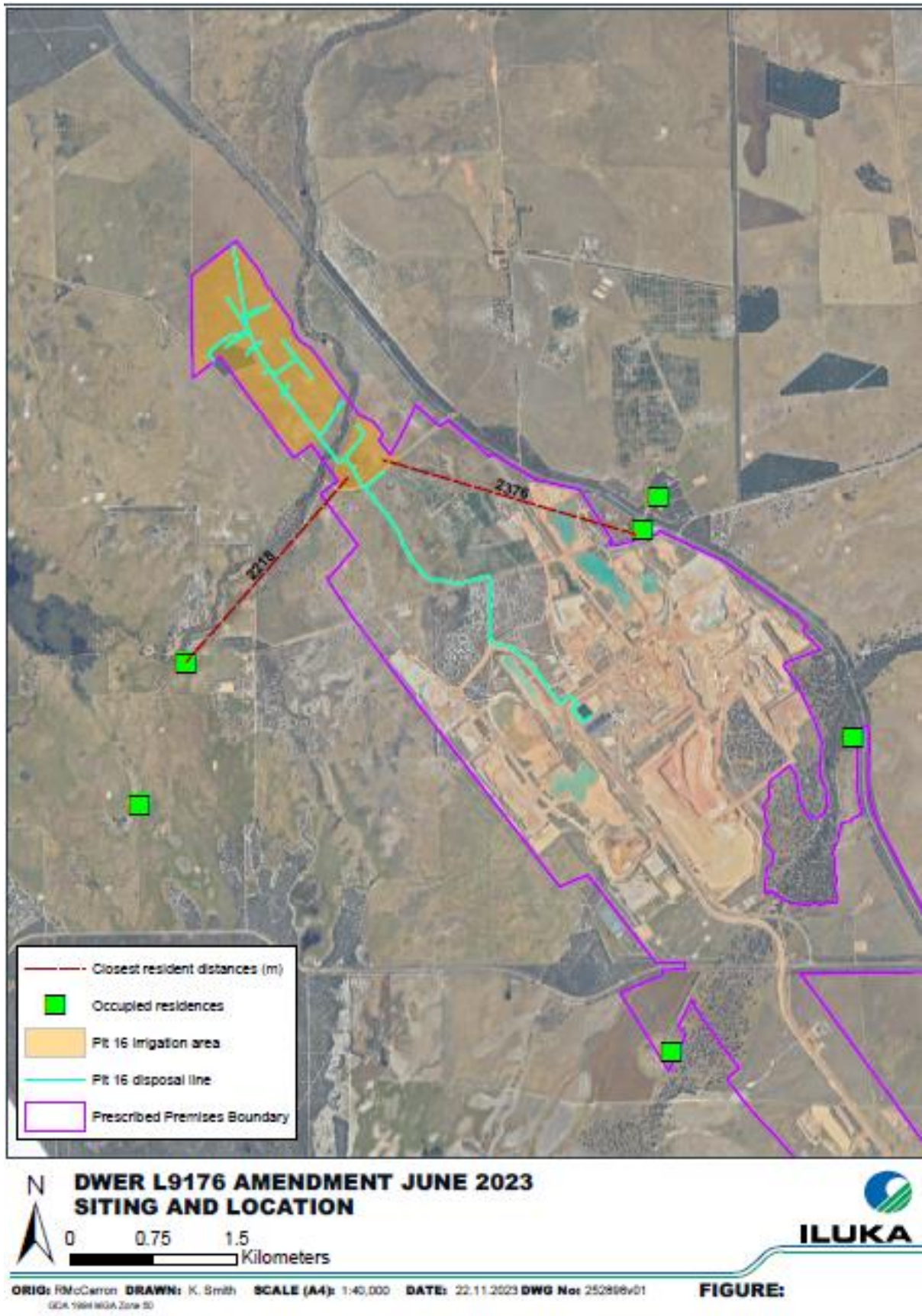


Figure 5: Distance to sensitive receptors

3.2 Risk ratings

Risk ratings have been assessed in accordance with the *Guideline: Risk Assessments* (DWER 2020) for those emission sources which are proposed to change and takes into account potential source-pathway and receptor linkages as identified in Section 3.1. Where linkages are incomplete they have not been considered further in the risk assessment.

Where the Licence Holder has proposed mitigation measures/controls (as detailed in Section 3.1), these have been considered when determining the final risk rating. Where the Delegated Officer considers the Licence Holder's proposed controls to be critical to maintaining an acceptable level of risk, these will be incorporated into the licence as regulatory controls.

Additional regulatory controls may be imposed where the Licence Holder's controls are not deemed sufficient. Where this is the case the need for additional controls will be documented and justified in Table 4.

The Revised Licence L9176/2018/1 that accompanies this Amendment Report authorises emissions associated with the operation of the Premises i.e. mine dewatering activities.

The conditions in the Revised Licence have been determined in accordance with *Guidance Statement: Setting Conditions* (DER 2015).

Table 4. Risk assessment of potential emissions and discharges from the Premises during construction, commissioning and operation

Risk Event					Risk rating ¹ C = consequence L = likelihood	Licence Holder's controls sufficient?	Conditions ² of licence	Justification for additional regulatory controls
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Licence Holder's controls				
Construction								
Construction of additional irrigation spigots to existing poly water lines	Dust	Air/windborne pathway causing impacts to health and amenity		Refer to Section 3.1	C = Minor L = Unlikely Medium Risk	Y	<u>Existing licence conditions:</u> Condition 9 Condition 16 ambient air quality monitoring. Condition 17 ambient air limit exceedance response table.	Condition 9 and Table 7 of the existing licence L9176/208/1 has actions and requirements for managing dust on site.
	Noise							
Operation (including time-limited-operations operations)								
Dewatering	Excess mine water	Direct discharge – irrigation (aquifer reinjection) causing groundwater contamination or groundwater mounding.	Groundwater, groundwater dependent vegetation	Refer to Section 3.1	C = Moderate L = Unlikely Medium Risk	Y	<u>Existing licence conditions:</u> Condition 3: Clean water dam is HDPE-lined and received clean water from production bores. Condition 8 point source emission limits to	The Delegated Officer notes that there has been a significant emphasis on potential impacts from dewatering drawdown on the shallow groundwater resources and nearby environmental values, and that this aspect has been subject to rigorous assessment under Part IV (regarding protection of GDEs) and the RIWI Act. In order to offset drawdown impacts, re-infiltration and re-injection of

Licence: L9176/2018/1

Risk Event					Risk rating ¹ C = consequence L = likelihood	Licence Holder's controls sufficient?	Conditions ² of licence	Justification for additional regulatory controls
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Licence Holder's controls				
							<p>groundwater.</p> <p>Table 9 Dewatering trigger values table.</p> <p>Conditions 11 – 14 monitoring requirements.</p> <p><u>New / updated conditions:</u></p> <p>Condition 7 has been updated to include the emission point references 'Pit 16 Irrigation Area'.</p> <p>Condition 18 ambient groundwater monitoring has been updated to include the additional monitoring bores.</p>	<p>mine water is proposed as key mitigation strategy.</p> <p>Groundwater modelling (Jacobs 2014) has considered all potential sources of recharge (including seepage from ModCod cells) and a detailed tiered trigger response management framework has been developed through the GDE Management Plan and the Groundwater Operating Strategy (GOS) (Iluka, 2017), to ensure that only acceptable water quality is discharged and that unacceptable mounding does not occur from the recharge activities. There have been no changes to the proposed source or water quality to be discharged as part of this amendment.</p> <p>The Addendum to the Groundwater Operating Strategy includes updates to the groundwater monitoring program to :</p> <ul style="list-style-type: none"> • Remove redundant wells; • Ensure that the groundwater monitoring program is consistent with licence L9176/2018/1; and • Identify GDE site monitoring wells and 'advance warning' wells relevant to each GDE. <p>The Delegated Officer is therefore satisfied the potential for groundwater mounding and</p>

Licence: L9176/2018/1

Risk Event					Risk rating ¹ C = consequence L = likelihood	Licence Holder's controls sufficient?	Conditions ² of licence	Justification for additional regulatory controls
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Licence Holder's controls				
								<p>contamination from discharge/recharge activities has been risk assessed as part of the operating strategies for managing the potential impacts of mine dewatering and excess water disposal on GDEs and that these issues can be adequately managed under the existing provision of the GOS.</p> <p>Controls have been imposed on the existing licence to specify the authorised discharge locations (infiltration basins and re-injection bores) in addition to the discharge quality criteria based on background data. Groundwater monitoring condition was also imposed to enable oversight of potential mounding and contamination issues, and additional conditions may be imposed, should the provisions of the GOS become ineffective.</p> <p>Two conditions on the licence have been updated to include the new emission point reference Pit 16 and the new monitoring location.</p>

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

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

4. Consultation

Table 5 provides a summary of the consultation undertaken by the department.

Table 5: Consultation

Consultation method	Comments received	Department response
Department of Planning Lands and Heritage advised of the application on 31 August 2023	<p>DPLH provided the following response on 25 October 2023:</p> <p>Thank you for requesting our comments on the proposed amendments to Iluka's existing dewatering activities. We understand the proposal involves the installation of additional poly pipes on existing water lines for surface irrigation in the pit 16 area. The amendment includes emissions to land of direct surface disposal of water.</p> <p>A review of the Prescribed Premises Boundary against the Aboriginal Cultural Heritage Directory confirms it intersects with the boundaries of a number of actual Aboriginal Cultural Heritage Places.</p> <p>Pit 16, reinjection bores and disposal line appears to be covered by an existing S18 ministerial consent. We note that GDE 4C irrigation Line and Farm Dams are not covered by an existing s18 ministerial consent and the proponent will need to ensure it is compliant with the current Aboriginal Heritage Legislation, which is still presently the <i>Aboriginal Cultural Heritage Act 2021</i>".</p>	The Department will notify the Licence Holder of their responsibilities under the <i>Aboriginal Cultural Heritage Act 2021</i> .
Yued Indigenous Land Use Agreement and South West Settlement were advised of the application on 31 August 2023	No comments received	N/A
Licence Holder was provided with draft amendment on 16 November 2023.	The Licence Holder provided the following response on 23 November 2023 as discussed in Appendix 1.	As discussed in Appendix 1.

5. Conclusion

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

5.1 Summary of amendments

Table 6 provides a summary of the proposed amendments and will act as record of implemented changes. All proposed changes have been incorporated into the Revised Licence as part of the amendment process.

Table 6: Summary of licence amendments

Condition no.	Proposed amendments
Condition 7, Table 5	Authorised emission points to groundwater, Pit 16 Irrigation Area included on emission point reference.
Condition 8, Table 6	Point source emission limits to groundwater, Pit 16 Irrigation Area included on emission point reference.
Condition 18, Table 13	Monitoring bore MW11 has been included in this table. Monitoring bore CM11 S/M has been removed and replaced with CM21_M. Monitoring bore MW_15S has been removed and replaced with existing bore CM16_S
Schedule 1 Maps	Map: Premises map has been updated to show the new prescribed premises boundary. Map – Emission points to land have been updated to show new emission points.

References

1. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
2. Department of Water and Environmental Regulation (DWER) 2020, *Guideline: Environmental Siting*, Perth, Western Australia.
3. DWER 2020, *Guideline: Risk Assessments*, Perth, Western Australia.
4. Jacobs, November 2014. *Cataby Mineral Sands Project – GDE Impact Assessment*. Prepared for Iluka Resources Ltd by Jacobs Group (Australia) Pty Ltd.
5. Jacobs, May 2018. *Cataby Mineral Sands Mine – Groundwater Modelling Report*. Prepared for Iluka Resources Ltd by Jacobs Group (Australia) Pty Ltd (Jacobs 2018).
6. Jacobs, November 2014. *Cataby Mineral Sands Project – GDE Impact Assessment*. Prepared for Iluka Resources Ltd by Jacobs Group (Australia) Pty Ltd (Jacobs 2014).
7. Iluka Resources Ltd, June 2017. *Groundwater Operating Strategy – Cataby Mineral Sands Project*. Rev2
8. Iluka Resources Ltd, 2018. *Cataby Mineral Sands Project. Soil Management Plan. Revision 2*. Prepared by Iluka Resources Ltd, Perth Western Australia. October 2018.
9. Iluka Resources Ltd, June 2015. *Mining Proposal – Cataby Mineral Sands Project*.
10. Iluka Resources Limited, May 2019. *Addendum to Groundwater Operating Strategy, Cataby Mineral Sands Project*.
11. Report and recommendations of the Environmental Protection Authority – Cataby Mineral Sands Project, Iluka Resources Limited (December 2005).
12. DMP, October 2015. *Mining Act Guidelines – Basic Provisions*. Department of Mines and Petroleum, Perth.
13. DMP, May 2015. *Guidelines for Preparing Mine Closure Plans*. Department of Mines and Petroleum, Perth.
14. Report and Recommendations of the Environmental Protection Authority – Cataby Mineral Sands Project, Iluka Resources Limited (December 2005), EPA Bulletin 1212.
15. Report and recommendations of the Environmental Protection Authority – Cataby Mineral Sands Project, Cataby, Shire of Dandaragan – inquiry under s46 of the *Environmental Protection Act 1986* to amend Ministerial Statement 720, Iluka Resources Limited (August 2015) EPA Report 1555.

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

Condition	Summary of Licence Holder's comment	Department's response								
Front cover of Licence	Iluka can confirm it holds the following mining tenements relevant to the licence L9176/2018/4: M70/194, M70/195, M70/196, M70/517, M70/518, M70/696, M70/760, M70/867, M70/868, M70/869, M70/1018 and M70/1086	Mining tenements confirmed and updated.								
Licence and works approval history table on Licence	Please change the wording to the following within summary of changes text: Licence amendment – to amend the prescribed premises boundary and include an additional area (this amendment).	The summary of changes wording has been amended as requested.								
Table 5 page 6 of Licence	Please separate the Infiltration basin and Pit 16 Irrigation are into distinct line items as per below within Table 5. <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Source</th> <th>Emission Point Reference</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Clean water dam</td> <td>Infiltration Basin – Pit 16</td> <td>Open Mine void</td> </tr> <tr> <td>Pit 16 irrigation area</td> <td>Irrigation area as shown schedule 1 area</td> </tr> </tbody> </table>	Source	Emission Point Reference	Description	Clean water dam	Infiltration Basin – Pit 16	Open Mine void	Pit 16 irrigation area	Irrigation area as shown schedule 1 area	The emission point references have been amended as requested.
Source	Emission Point Reference	Description								
Clean water dam	Infiltration Basin – Pit 16	Open Mine void								
	Pit 16 irrigation area	Irrigation area as shown schedule 1 area								
Table 6 page 7 of Licence	Iluka can confirm the wording in yellow is correct and can remain unchanged.	The department notes this.								
Table 13 pages 10 and 11 of Licence	<ul style="list-style-type: none"> • CM11_S/M will be replaced by CM21_M • Please remove CM13 as an additional bore as MW15_S will be replaced by CM16_S which is already a licensed bore. • MW11_S will be added. 	The monitoring bores have been updated as requested.								
Schedule 1 Maps of Licence	Please see the accompanying map 252865v01 to illustrate the prescribed premises boundary change in line with Ministerial Statement 1017.	The prescribed premises boundary map has been replaced.								

Condition	Summary of Licence Holder's comment	Department's response
Schedule 1: Maps of Licence	Please see the accompanying map 252950v01 to illustrate Pit 16 irrigation area with associated prescribed premises boundary change in line with Ministerial Statement 1017.	The Pit 16 irrigation map has been included in the licence.
Front cover of Amendment Report	Iluka can confirm it holds the following mining tenements relevant to the licence L9176/2018/4: M70/194, M70/195, M70/196, M70/517, M70/518, M70/696, M70/760, M70/867, M70/868, M70/869, M70/1018 and M70/1086	Mining tenements confirmed and updated.
Section 2.3 page 2 of Amendment Report	Please alter to the following: "The Licence holder has requested to install irrigation lines as required to irrigate the nominated area within the Pit 16 development area". Please remove the statement regarding installation of the reinjection bores. No additional reinjection bores are requested, the reinjection bores highlighted within the amendment are existing.	The wording has been updated as requested.
Figure 1 page 3 of Amendment Report	Please see accompanying map 25298v00 to illustrate bore changes required within the amendment with updated boundary in line with Ministerial Statement 1017.	Figure 1 has been updated.
Section 2.4 page 6 of Amendment Report	Iluka can confirm no changes to reinjection bores are required in this amendment.	The Department notes this.
Figure 5 page 16 of Amendment Report	Please see accompanying map 252896v01 to illustrate siting and location of activities relative to the closest occupied residences prescribed premises boundary change in line with Ministerial Statement 1017.	Figure 5 has been updated.

Appendix 2: Application validation summary

SECTION 1: APPLICATION SUMMARY				
Application type				
Works approval	<input type="checkbox"/>			
Licence	<input checked="" type="checkbox"/>	Relevant works approval number:		None <input type="checkbox"/>
		Has the works approval been complied with?	Yes <input type="checkbox"/> No <input type="checkbox"/>	
		Has time limited operations under the works approval demonstrated acceptable operations?	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	
		Environmental Compliance Report / Critical Containment Infrastructure Report submitted?	Yes <input type="checkbox"/> No <input type="checkbox"/>	
		Date Report received:		
Renewal	<input type="checkbox"/>	Current licence number:		
Amendment to works approval	<input type="checkbox"/>	Current works approval number:		
Amendment to licence	<input checked="" type="checkbox"/>	Current licence number:	L9176/20181	
		Relevant works approval number:		N/A <input type="checkbox"/>
Registration	<input type="checkbox"/>	Current works approval number:		None <input type="checkbox"/>
Date application received	21 June 2023			
Applicant and Premises details				
Applicant name/s (full legal name/s)	Iluka Resources Limited			
Premises name	Cataby Mineral Sands Mine			
Premises location	Cataby Mineral Sands Mine 10437 Brand Highway Cataby WA 6507			
Local Government Authority	Shire of Dandaragan			
Application documents				
HPCM file reference number:	DER2018/001555~3			
Key application documents (additional to application form):	Proposed activities List of amendments Emissions area Premises map overview			
Scope of application/assessment				

<p>Summary of proposed activities or changes to existing operations.</p>	<p><i>Licence amendment</i></p> <p>Operation of Category 8 Mineral Sands mining or processing and Category 6: Mine dewatering.</p> <p>“Install additional poly pipe on existing water lines for surface water irrigation in the pit 16 area. Amendment includes emissions to land of direct surface disposal of water. Point source emission limits to groundwater still apply as per Table 6 of L9176. Operation will be as per existing controls in the Groundwater Operating Strategy (section 6.3)”.</p> <p>“Addition of application of water to surface as an emission to land. The source of the emission to land is the clean water dam as per Table 5”.</p> <p>“Although this disposal method was previously described in the submitted groundwater modelling it has not been captured in the licence as an emission to land”.</p> <p>The emission point references will be the Pit 16 irrigation area and GDE 4c irrigation area.</p> <p>Premises Maps:</p> <p>There are three updated premises maps. The overall premises boundary has been updated to reflect current activities. Two additional maps are included showing emission points to land Pit 16 irrigation area and GDE 4c irrigation area.</p> <p>Changes to monitoring points.</p> <p>The following bores are to be replaced in Table 13 of L9176</p> <table border="1"> <tr> <td>Current</td> <td>Replacement</td> </tr> <tr> <td>CM 11</td> <td>CM21s</td> </tr> <tr> <td>MW15</td> <td>CM13</td> </tr> </table> <p>Additional monitoring points.</p> <p>Bore MW11 will also need to be added as a monthly monitoring point in Table of 13 L9176.</p>	Current	Replacement	CM 11	CM21s	MW15	CM13
Current	Replacement						
CM 11	CM21s						
MW15	CM13						

Category number/s (activities that cause the premises to become prescribed premises)

Table 1: Prescribed premises categories

Prescribed premises category and description	Assessed production or design capacity	Proposed changes to the production or design capacity (amendments only)
Category 6: Mine dewatering	2.2 gigalitres per annual period	No changes proposed
Category 8: mineral sands mining or processing	12,000,000 tonnes per annual period	No changes proposed

Legislative context and other approvals

Has the applicant referred, or do they intend to refer, their proposal to the EPA under Part IV of the EP Act as a significant proposal?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Referral decision No: Managed under Part V <input type="checkbox"/> Assessed under Part IV <input type="checkbox"/>
Does the applicant hold any existing Part IV Ministerial Statements relevant to the application?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Ministerial statement No: EPA Report No: MS 1017
Has the proposal been referred and/or assessed under the EPBC Act?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Reference No: Clearing has been authorised under Part IV, MS 1017
Has the applicant demonstrated occupancy (proof of occupier status)?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Certificate of title <input checked="" type="checkbox"/> General lease <input type="checkbox"/> Expiry: Mining lease / tenement <input checked="" type="checkbox"/> Expiry: Other evidence <input type="checkbox"/> Expiry:
Has the applicant obtained all relevant planning approvals?	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>	Approval: Expiry date: If N/A explain why? Part IV
Has the applicant applied for, or have an existing EP Act clearing permit in relation to this proposal?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	CPS No: N/A Clearing has been authorised under Part IV, MS 1017
Has the applicant applied for, or have an existing CAWS Act clearing licence in relation to this proposal?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Application reference No: N/A Licence/permit No: N/A Clearing has been authorised under Part IV, MS 1017
Has the applicant applied for, or have an existing RIWI Act licence or permit in relation to this proposal?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Application reference No: Licence/permit No: GWL207243(1)
Does the proposal involve a discharge of waste into a designated area (as defined in section 57 of the EP Act)?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Name: Gingin Groundwater Area Moore River and certain Tributaries Type: RIWI Act – Surface Water Areas and Irrigation Districts RIWI Act – Groundwater area Has Regulatory Services (Water) been consulted? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A <input type="checkbox"/> Regional office:

<p>Is the Premises situated in a Public Drinking Water Source Area (PDWSA)?</p>	<p>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>	<p>Name: N/A Priority: N/A Are the proposed activities/ landuse compatible with the PDWSA (refer to WQPN 25)? Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/> PDWSA 15km northeast of the premises</p>
<p>Is the Premises subject to any other Acts or subsidiary regulations (e.g. <i>Dangerous Goods Safety Act 2004, Environmental Protection (Controlled Waste) Regulations 2004, State Agreement Act xxxx</i>)</p>	<p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>	<p><i>Mining Act 978</i> <i>Rights in Water and Irrigation Act 1914</i> <i>Radiation Safety Act 1975</i></p>
<p>Is the Premises within an Environmental Protection Policy (EPP) Area?</p>	<p>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>	
<p>Is the Premises subject to any EPP requirements?</p>	<p>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>	
<p>Is the Premises a known or suspected contaminated site under the <i>Contaminated Sites Act 2003</i>?</p>	<p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>	<p>Classification: decontaminated (Decon) Date of classification: 19/12/2008</p>