



## Application for Licence Amendment

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

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<b>Licence Number</b>	L7021/1997/15
<b>Licence Holder</b>	City of Karratha
<b>File Number</b>	DER2013/000062-1
<b>Premises</b>	Seven Mile Waste Disposal Facility Seven Mile Road GAP RIDGE WA 6714  Legal description –  Lot 85 on Plan 180017 and Lot 552 on Plan 71049  As defined by the Premises map attached to the Revised Licence
<b>Date of Report</b>	18 August 2023
<b>Decision</b>	Revised licence granted

**MANAGER WASTE INDUSTRIES  
REGULATORY SERVICES**

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

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## 1. Decision summary

Licence L7021/1997/15 is held by the City of Karratha (licence holder) for the Seven Mile Waste Management Facility (the Premises), located on Seven Mile Road, Gap Ridge.

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 operation of the Premises. As a result of this assessment, Revised Licence L7021/1997/15 has been granted.

## 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 Application summary

On 29 May 2023, the Licence Holder submitted an application to the department to amend Licence L7021/1997/15 under sections 59 and 59B of the *Environmental Protection Act 1986* (EP Act). The proposed amendment relates to the active flaring of landfill gas within Cell 0 for a trial period of 12 months.

As part of the application, the licence holder provided a construction quality assurance report for the Cell 0 capping works on 29 May 2023 in accordance with the requirements specified in conditions 6 to 10 of the existing licence. The department assessed the document and determined that it met the requirements of those specified conditions, providing correspondence to the licence holder on 23 June 2023, and as such, those conditions will be removed from the licence as part of this amendment. It is noted that the vertical gas wells installed as specified in Table 2 of the licence were setup as an active system, with a temporary flare being included in the gas management system, rather than with aspiromatic cowls which have the capacity to be converted to an active gas extraction system. This issue is discussed in further detail in section 2.3.

This amendment is limited only to changes to Category 64 activities from the Existing Licence. No changes to the aspects of the existing Licence relating to Category 57, 61, 61A, 62 and 67A have been requested by the Licence Holder.

### 2.3 Landfill gas management system overview

When preparing the Landfill Closure Plan for the premises, the licence holder undertook a landfill gas modelling exercise using GasSim to estimate the production of landfill gas over the premises' lifetime. The results of this modelling showed that, at the time of capping Cell 0, landfill gas production would be on the cusp of being suitable for active management, and onsite verification of gas production rates would be required to determine if an active or passive system would be most appropriate. A one-year trial period was proposed to follow the capping works, during which time, landfill gas rates at the premises would be measured to establish if a passive or active system would be the most suitable management option. As such, the licence amendment of 28 August 2020 provided for the installation of a passive system for the initial management of landfill gas for a long-term decision to be determined following the trial period.

However, during the capping works, an active landfill gas system was installed and connected to a temporary flare, which has subsequently been in operation since 2 February 2023, with

the flare's performance proposed to be assessed by the licence holder at the end of the trial to determine if its use should be continued for landfill gas management, or if the wells should be converted to a passive system until the next phase of capping works occurs. The operation of the flare will continue following the submission of the landfill gas management plan to allow for the implementation of the proposed recommendations through an appropriate licence amendment application if necessary.

The installation of the active landfill gas system occurred otherwise than in accordance with the requirements of Table 2 of the existing licence.

The installed landfill gas flare is a Gasco Pty Ltd candlestick biogas flare, rated at 500 m<sup>3</sup>/hr, consisting of:

- A flare stack;
- LPG pilot burner and valve train;
- Biogas burner and valve train;
- Local control system; and
- Biogas booster.

The flare's local control system includes the following key components:

- Ignition of the LPG Pilot burner;
- Monitoring of the pilot flame by temperature sensor thermocouple;
- Burner nozzle individual trim valves and VSD speed knob for landfill gas flow control;
- Pressure switch;
- Flame trap with a Type K thermocouple to detect flame flashback within the landfill gas system;
- Low biogas methane content trip; and

### 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 *Guidance Statement: Risk Assessments* (DER 2017).

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 operation which have been considered in this Amendment Report are detailed in Table 1. Table 1 also details the proposed control measures the Licence Holder has proposed to assist in controlling these emissions, where necessary.

**Table 1: Licence Holder controls**

Emission	Sources	Potential pathways	Proposed controls
Landfill gas	Decomposition of wastes in the capped landfill cell	Air/windborne pathway	<ul style="list-style-type: none"> <li>- Previously assessed in the 28 August 2020 amendment for the closure and capping of Cell 0.</li> <li>- Condition 6 of existing licence L7021/1997/15: Capping works specifications.</li> <li>- The flare’s local control system includes the following key components: <ul style="list-style-type: none"> <li>- Ignition of the LPG Pilot burner;</li> <li>- Monitoring of the pilot flame by temperature sensor thermocouple;</li> <li>- Burner nozzle individual trim valves and VSD speed knob for landfill gas flow control;</li> <li>- Pressure switch;</li> <li>- Flame trap with a Type K thermocouple to detect flame flashback within the landfill gas system;</li> <li>- Low biogas methane content trip; and</li> <li>- Manually operated water drains at condensate trap points.</li> </ul> </li> </ul>
Leachate	Decomposition of wastes in the capped landfill cell	Seepage and overland runoff	<ul style="list-style-type: none"> <li>- Previously assessed in the 28 August 2020 amendment for the closure and capping of Cell 0.</li> <li>- Condition 6 of existing licence L7021/1997/15: Capping works specifications</li> <li>- Conditions 30 and 31 of existing licence L7021/1997/15: surface water and pond management</li> </ul>

### 3.1.2 Receptors

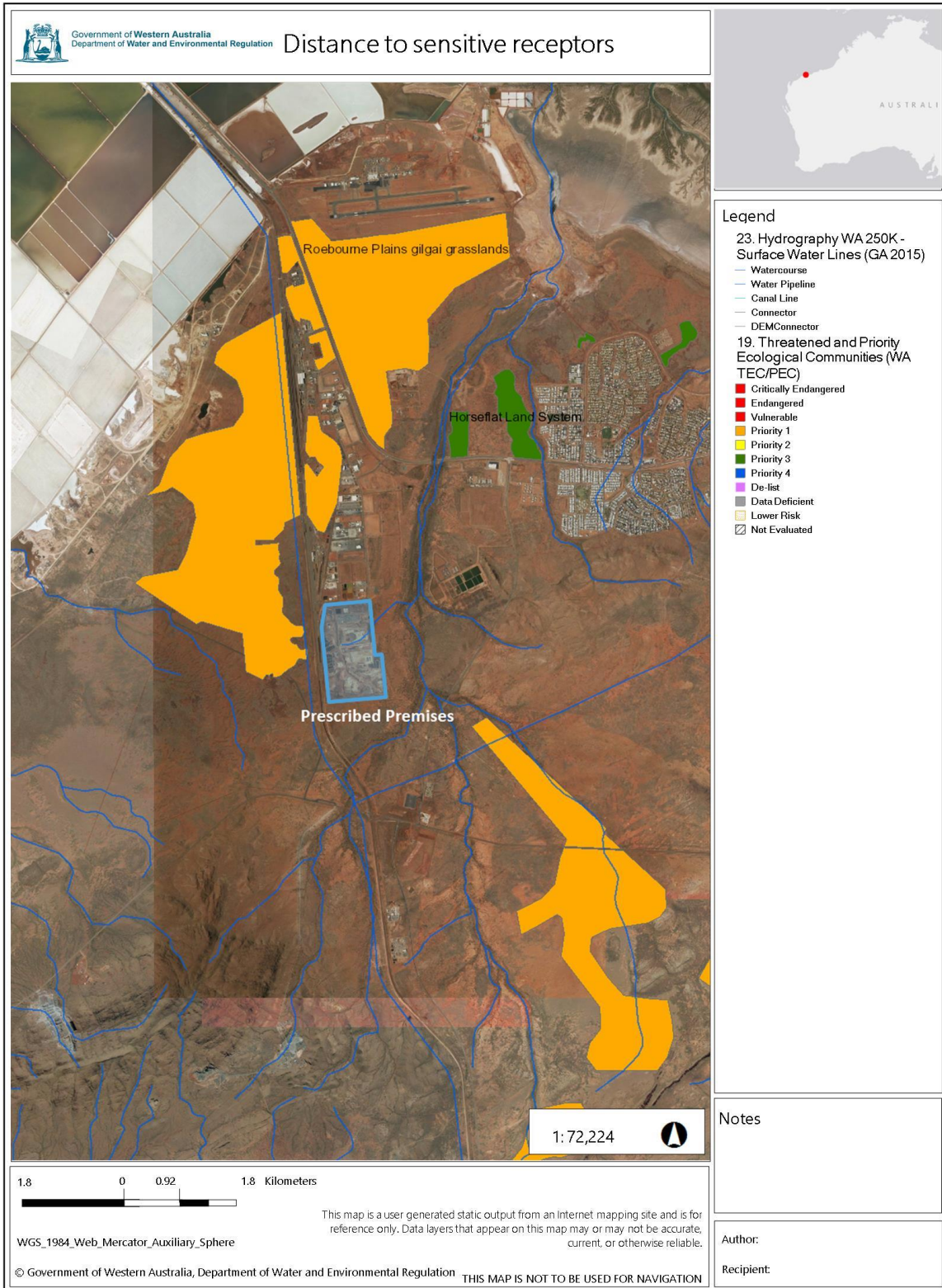
In accordance with the *Guidance Statement: Risk Assessment* (DER 2017), the Delegated Officer has excluded employees, visitors and contractors of the Licence Holder’s from its assessment. Protection of these parties often involves different exposure risks and prevention strategies, and is provided for under other state legislation.

Table 2 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 (*Guidance Statement: Environmental Siting* (DER 2016)).

**Table 2: Sensitive human and environmental receptors and distance from prescribed activity**

<b>Human receptors</b>	<b>Distance from prescribed activity</b>
Commercial and Industrial Premises	Immediately adjacent to premises boundary
Stayover Kingfisher Village	Approximately 1.4 km south-east of premises boundary
Civeo Karratha Village	Approximately 2.3 km north-east of premises boundary
Residential Baynton properties	Approximately 2.7 km northwest of premises boundary
Baynton West Primary School & Baynton West Park	Approximately 3.4 km northwest of premises boundary
<b>Environmental receptors</b>	<b>Distance from prescribed activity</b>
Pilbara Groundwater Area ( <i>RIWI Act 1914</i> ) <ul style="list-style-type: none"> <li>• Groundwater typically 6-10m below existing ground level</li> <li>• Hyper saline brackish</li> </ul>	Premises mapped within this designated area
Pilbara Surface Water Area ( <i>RIWI Act 1914</i> )	Premises mapped within this designated area
Threatened ecological communities <ul style="list-style-type: none"> <li>• Roebourne Plains gilgai grasslands</li> </ul>	Premises mapped within this area
Surface water lines <ul style="list-style-type: none"> <li>• Seven Mile Creek</li> </ul>	490m east of premises boundary
Nickol Bay intertidal and nearshore environs	Approximately 6.5 km northwest of premises boundary





**Figure 1: Distance to sensitive receptors**

### 3.2 Risk ratings

Risk ratings have been assessed in accordance with the *Guidance Statement: Risk Assessments* (DER 2017) 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 in-complete 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 3.

The Revised Licence L7021/1997/15 that accompanies this Amendment Report authorises emissions associated with the operation of the Premises.

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

**Table 3. Risk assessment of potential emissions and discharges from the Premises during operation**

Risk Event					Risk rating <sup>1</sup> C = consequence L = likelihood	Licence Holder’s controls sufficient?	Conditions <sup>2</sup> of licence	Justification for additional regulatory controls
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Licence Holder’s controls				
<b>Operation</b>								
Decomposition of wastes in the capped landfill cell	Landfill gas: arising from the degradation of the waste mass	Air/windborne pathway causing impacts to health and amenity	Commercial Premises adjacent to Premises Stayover Kingfisher village 1.4 km south-east of Premises Civeo Karratha Village 2.3 km north-east of Premises Residential Baynton properties 2.7 km north-west	Refer to Section 3.1	C = Moderate L = Possible <b>Medium Risk</b>	Y	Existing condition 39 Conditions 35, 36 and 37 <b><u>Condition 38</u></b>	The Delegated Officer considers the risk profile is unchanged from the 28 August 2020 licence amendment assessment for the closure and capping of Cell 0, noting that the active system with a temporary flare does not increase the risks associated with landfill gas emissions as compared to the passive venting system.



Risk Event					Risk rating <sup>1</sup> C = consequence L = likelihood	Licence Holder's controls sufficient?	Conditions <sup>2</sup> of licence	Justification for additional regulatory controls
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Licence Holder's controls				
Decomposition of wastes in the capped landfill cell	Leachate: arising from the degradation of the waste mass	Seepage and overland runoff potentially causing ecosystem disturbance or impacting surface water quality	Seven Mile Creek and minor non perennial water sources – 490 m east of Premises  Pilbara Surface Water Area – Premises within designated area  Pilbara Groundwater Area - Premises within designated area  Threatened ecological communities (Roebourne Plains gilgai grasslands) – mapped within Premises area	Refer to Section 3.1	C = Moderate L = Possible <b>Medium Risk</b>	Y	Existing conditions 28, 29 and 30  <b><u>Condition 34</u></b>	The Delegated Officer considers the risk profile is unchanged from the 28 August 2020 licence amendment assessment for the closure and capping of Cell 0, noting that the active system with a temporary flare does not increase the risks associated with leachate emissions as compared to the passive venting system.

Note 1: Consequence ratings, likelihood ratings and risk descriptions are detailed in the *Guidance Statement: Risk Assessments* (DER 2017).

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 4 provides a summary of the consultation undertaken by the department.

**Table 4: Consultation**

Consultation method	Comments received	Department response
<p>Licence Holder was provided with draft amendment on 10 July 2023</p>	<p>The Licence Holder provided comments on 1 August 2023, requesting:</p> <ul style="list-style-type: none"> <li>• The ability to continue flare operation post 12-month period. Flare lead times are 12-24 months and gas analyser lead time are 36 months.</li> <li>• Condition 36 - In case of emergency or when flare is not operational, venting pressure to allowed through the gas manifold.</li> <li>• Condition 37 - Landfill gas parameters to be provided as a monthly/annual average.</li> <li>• Condition 38 – Submission of the Landfill Gas Management Plan by 30/06/2024.</li> </ul>	<p>The Delegated Officer considers the Licence Holder’s comments acceptable to the extent that:</p> <ul style="list-style-type: none"> <li>• The operation of the active flaring of landfill gas will not have a definitive period of operation. Rather, the submission of the Landfill Gas Management Plan by 30 June 2024 will determine whether the flare should be continued for landfill gas management, or if the wells should be converted to a passive system until the next phase of capping works occurs. The operation of the flare will continue following the submission of the landfill gas management plan to allow for the implementation of the proposed recommendations through an appropriate licence amendment application if necessary.</li> <li>• Condition 36 has been amended to note that flaring of landfill gas may not occur in certain circumstances.</li> <li>• The frequency of monitoring requirements of Condition 37 have remained. However, the Annual Environmental Report requirements of Condition 49 have been amended such that the reporting of landfill gas monitoring may be averaged monthly based on the 15-minute interval measurements.</li> <li>• The due date of the Landfill Gas Management Plan submission in Condition 38 has been amended to allow for appropriate assessment following the initial 12 month operation of the flare.</li> </ul>

## 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 5 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 5: Summary of licence amendments**

Condition no.	Proposed amendments
6	Cell 0 capping works specifications removed due to completion of works and requirements being met.
7	Cell 0 capping works specifications removed due to completion of works and requirements being met.
8	Cell 0 capping works specifications removed due to completion of works and requirements being met.
9	Cell 0 capping works construction quality assurance report requirements removed due to submission of document and requirements being met.
10	Cell 0 capping works construction quality assurance report requirements removed due to submission of document and requirements being met.
35	Addition of landfill gas collection system.
36	Addition of landfill gas flare discharge point.
37	Addition of monitoring requirements for landfill gas.
38	Amendment of the due date for the Landfill Gas Management Plan.
39	Amendment to the requirements of the Landfill Gas Management Plan.
Table 19, Definitions	Removal of definitions related to the completed Cell 0 capping works.
Schedule 1	Removal of obsolete figures and addition of the Cell 0 gas collection system.

## References

1. Department of Environment Regulation (DER) 2017, *Guidance Statement: Risk Assessments*, Perth, Western Australia.
2. DER 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
3. Department of Water and Environmental Regulation (DWER) 2019, *Guideline: Decision Making*, Perth, Western Australia
4. DWER 2019, *Guideline: Industry Regulation Guide to Licensing*, Perth, Western Australia

## Appendix 1: Application validation summary

SECTION 1: APPLICATION SUMMARY				
Application type				
Works approval	<input type="checkbox"/>			
Licence	<input 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 checked="" 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:	L7021/1997/15	
		Relevant works approval number:	N/A	<input type="checkbox"/>
Registration	<input type="checkbox"/>	Current works approval number:	None	<input type="checkbox"/>
Date application received	29 May 2023			
Applicant and Premises details				
Applicant name/s (full legal name/s)	City of Karratha			
Premises name	Seven Mile Waste Disposal Facility			
Premises location	Seven Mile Road GAP RIDGE WA 6714			
Local Government Authority	City of Karratha			
Application documents				
HPCM file reference number:	DER2013/000622-1~12			
Key application documents (additional to application form):	CQA Validation Report - Phase 1 Capping Works			
Scope of application/assessment				

<p>Summary of proposed activities or changes to existing operations.</p>	<p>Licence amendment</p> <p>Operation of the landfill gas management system (network of 46 gas extraction wells interconnected through lateral mains and manifold pipe) and flare for Cell 0 for a trial period of 12 months beginning from commissioning on 2 February 2023.</p> <p>The current licence authorises the passive venting of gas wells but does not authorise the active flaring of the gas. The licence amendment of 28 August 2020 provided for the installation of a passive system for the initial management of landfill gas for a long-term decision to be determined after a 6 month monitoring program.</p> <p>Following the 12-month monitoring period, an interim report will be prepared to assess the effectiveness of the flare to date. This interim report will summarise the findings from the operation of the flare and will make recommendations on whether to continue with an active system or converting to a passive landfill gas management system.</p> <p>This interim report will be provided to DWER and will inform the development of the Landfill Gas Management Plan.</p> <p>Talis was appointed by the City of Karratha to provide Construction Quality Assurance (CQA) and Superintendent services during the construction of the Phase 1 Capping Works, incorporating landfill gas extraction system, temporary flare, and surface water management system for the Cell 0 landfill.</p> <p>Section 3 of the CQA outlines the landfill gas management infrastructure currently installed for the trial period, the monitoring procedures that are currently in place, and the operational management measures that are being implemented.</p> <p style="text-align: center;"><b>Table 3-1: Key Characteristics of Flare Data Captured Between 7/02/2023 – 12/04/2023</b></p> <table border="1"> <thead> <tr> <th>Parameter</th> <th>Maximum</th> <th>Minimum</th> <th>Mean</th> </tr> </thead> <tbody> <tr> <td>Methane Concentration (%)</td> <td>58.4</td> <td>44.9</td> <td>53.0</td> </tr> <tr> <td>Instantaneous LFG flow rate (m<sup>3</sup>)</td> <td>242</td> <td>141</td> <td>176</td> </tr> <tr> <td>Flame Temperature (°C)</td> <td>818.1</td> <td>371.0</td> <td>756.1</td> </tr> </tbody> </table>	Parameter	Maximum	Minimum	Mean	Methane Concentration (%)	58.4	44.9	53.0	Instantaneous LFG flow rate (m <sup>3</sup> )	242	141	176	Flame Temperature (°C)	818.1	371.0	756.1
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Category number/s (activities that cause the premises to become prescribed premises)

Table 1: Prescribed premises categories

Prescribed premises category and description	Proposed production or design capacity	Proposed changes to the production or design capacity (amendments only)
6. No changes proposed to any categories	7.	
8.		

Legislative context and other approvals

<p>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?</p>	<p>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>	<p>Referral decision No:          Managed under Part V <input type="checkbox"/>          Assessed under Part IV <input type="checkbox"/></p>
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Does the applicant hold any existing Part IV Ministerial Statements relevant to the application?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Ministerial statement No: EPA Report No:
Has the proposal been referred and/or assessed under the EPBC Act?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Reference No:
Has the applicant demonstrated occupancy (proof of occupier status)?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Certificate of title <input type="checkbox"/> General lease <input type="checkbox"/> Expiry: Mining lease / tenement <input type="checkbox"/> Expiry: Other evidence <input type="checkbox"/> Expiry: Previously provided
Has the applicant obtained all relevant planning approvals?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	Approval: Expiry date: Previously provided
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 No clearing is proposed.
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 No clearing is proposed.
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: 201359 Groundwater Licence for the extraction of 50,000 kL per annual period. Expiry 24 May 2028
Does the proposal involve a discharge of waste into a designated area (as defined in section 57 of the EP Act)?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Name: N/A Type: Has Regulatory Services (Water) been consulted? Yes <input type="checkbox"/> No <input 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: P1 / P2 / P3 / N/A  Are the proposed activities/ landuse compatible with the PDWSA (refer to <a href="#">WQPN 25</a>)?  Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/></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 type="checkbox"/> No <input checked="" type="checkbox"/></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 possibly contaminated – investigation required (PC–IR)  Date of classification: Aug 13, 2020  1762 - Crown Reserve 32987  Seven Mile Tip Road, Gap Ridge, landfill. Form 1</p>