Amendment Report

Application for Licence Amendment

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

Licence Number	L7021/1997/15
Licence Holder	City of Karratha
File Number	DER2013/000062-1~10
Premises	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
Date of Report	21 June 2022
Decision	Revised licence granted

Melissa Chamberlain

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A/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 31 May 2022, the Licence Holder submitted an application to the department to amend Licence L7021/1997/15 under section 59 and 59B of the *Environmental Protection Act 1986* (EP Act). The proposed amendment relates to the acceptance and disposal of molecular sieves used in the adsorption of gases.

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.

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
Dust	Waste acceptance, handling and disposal	Air/windborne pathway	- Existing operational and regulatory controls within Licence L7021/1997/15.
Noise	Waste acceptance, handling and disposal	Air/windborne pathway	- Existing operational and regulatory controls within Licence L7021/1997/15.
Leachate	Waste acceptance, handling and disposal	Seepage to soils and groundwater	- Existing operational and regulatory controls within Licence L7021/1997/15. - Most of the aluminium in the molecular sieve solid is tightly bound within its aluminosilicate framework and is not available for leaching. - Potential leachate generated will be collected in Class 3 cells leachate sumps, transferred, and stored in onsite Evaporation Pond 7 - Leachate infrastructure inspected and maintained.

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

Human receptors	Distance from prescribed activity
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

Environmental receptors	Distance from prescribed activity
Pilbara Groundwater Area (*RIWI Act 1914*) • Groundwater typically 6-10m below existing ground level • Hyper saline brackish	Premises mapped within this designated area
Pilbara Surface Water Area (*RIWI Act 1914*)	Premises mapped within this designated area
Threatened ecological communities • Roebourne Plains gilgai grasslands	Premises mapped within this area
Surface water lines • Seven Mile Creek	490m east of premises boundary
Nickol Bay intertidal and nearshore environs	Approximately 6.5 km northwest of premises boundary

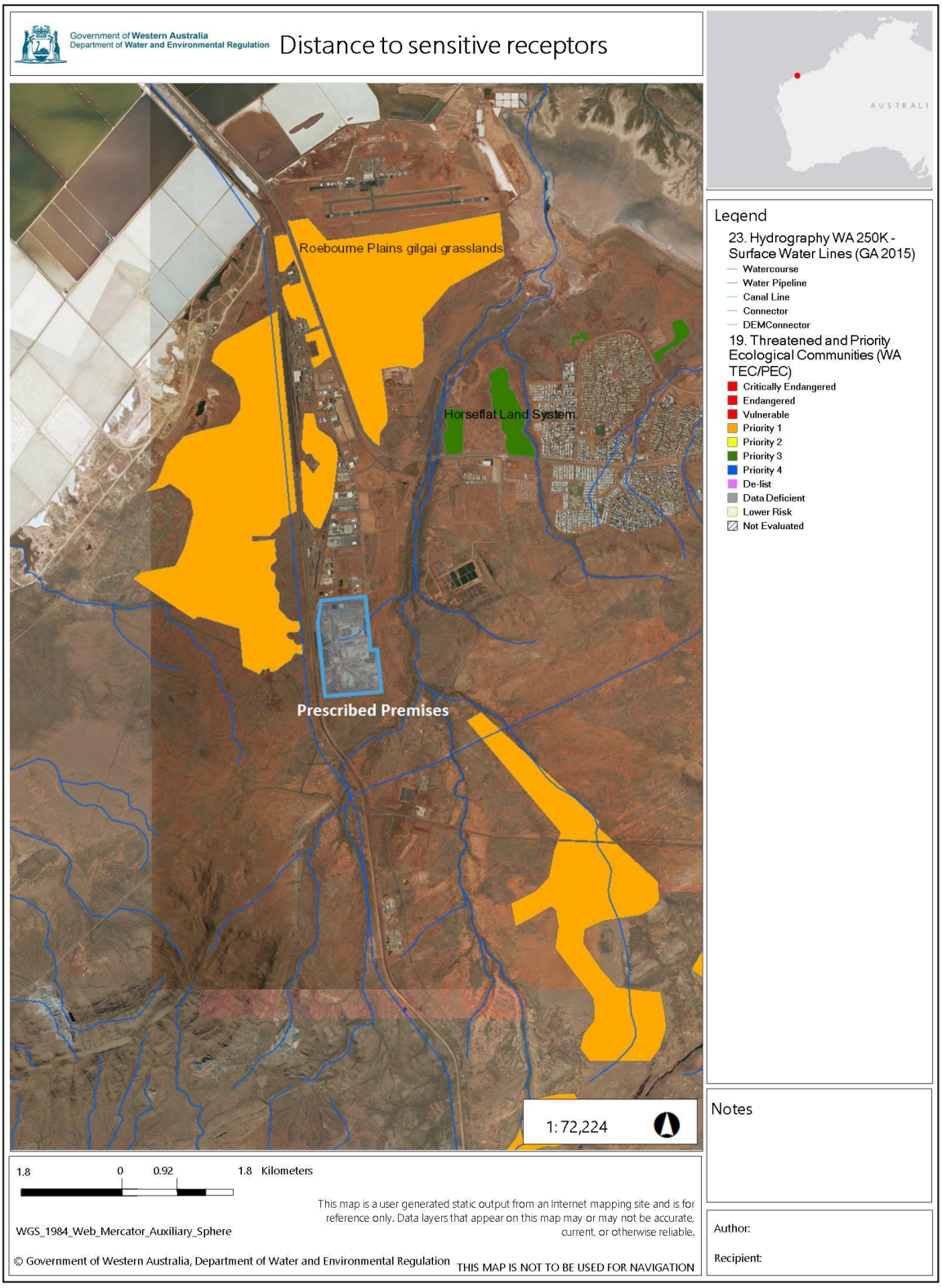

Figure 1: Distance to sensitive receptors

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[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**				
Operation								
Molecular sieve waste acceptance, handling and disposal	Dust	Air/windborne pathway causing impacts to health and amenity	- Commercial properties adjacent to the premises - Stayover Kingfisher Village, 1.4 km south-east of premises	Refer to Section 3.1	C = Minor L = Unlikely **Medium Risk**	Y	Conditions 14 to 17	The Delegated Officer considers that the existing conditions of L7021/1997/15 are sufficient to regulate dust emissions from the acceptance and disposal of molecular sieve waste.
	Noise			Refer to Section 3.1	C = Minor L = Unlikely **Medium Risk**	Y	Condition 50	The Delegated Officer considers that that the acceptance and disposal of molecular sieve waste will not adversely affect the noise emissions currently generated by the premises. The Delegated Officer considers that the provisions of the *Environmental Protection (Noise) Regulations 1997*

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**				
								are sufficient to regulate noise emissions from the acceptance and disposal of molecular sieve waste.
	Leachate	Infiltration through soil to groundwater and receiving ecosystems and groundwater users	Seven Mile Creek (490 m east of Premises) Groundwater	Refer to Section 3.1	C = Moderate L = Unlikely **Medium Risk**	Y	**Conditions 11, 15, 17 and 36**	Refer to Section 3.3.

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.

3.3 Detailed risk assessment for leachate from molecular sieve waste

Molecular sieves are a group of chemical compounds that consist predominantly of aluminium, silicon and oxygen atoms which are arranged to model natural zeolite minerals. In manufactured molecular sieves, the zeolite structure is engineered to have holes of specific sizes to optimise the adsorption of specific chemical compounds. The molecular sieves used in the processing of natural gas are mostly used to remove water from the produced gas stream.

Aluminium is currently listed in DWER's *Landfill Waste Classification and Waste Definitions 1996 (As amended 2019)* [LWCWD] with a contaminant threshold (CT) and concentration limit (CL) value, but it does not have a Leachable Concentration (ASLP) limit.

As specified within the LWCWD, acceptance criteria published in the LWCWD may be varied for individual landfills in accordance with specific licence conditions. As such, an amendment application to licence L7021/1997/15 was submitted to allow for the acceptance criteria deviation from the LWCWD.

In assessing criteria for the acceptance of molecular sieve waste, the department determined that the use of aluminium concentration limits in solids as waste acceptance criteria for this metal was not appropriate as most of the aluminium in the solid is tightly bound within its aluminosilicate framework, and is not available for leaching.

In determining an appropriate leachable criterion, the department has adopted the methodology that was developed by the New Zealand Ministry for Environment (the Ministry). The Ministry's Module 2: Hazardous Waste Guidelines Landfill Waste Acceptance Criteria and Landfill Classification[1] provides the following leaching criteria for aluminium in Class A landfills:

- Class A landfills (Concentration in leachate): 40 mg/L.

In this instance, Class A landfills are sited in areas that reduce the potential for adverse environmental effects, have engineered systems designed to provide a degree of redundancy for leachate containment, and collect landfill leachate and landfill gas. The department considers that the Class III cells within the premises meet the requirements, or are equivalent to, a 'Class A landfill' as defined above. A leachable concentration limit of 40 mg/L is therefore considered acceptable in relation to aluminium concentrations within molecular sieve waste for disposal to Class III landfill cells at the premises.

It is however noted that leachate from used molecular sieve materials may contain elevated concentrations of other chemical constituents that are of much greater environmental concern than aluminium. Of particular concern is the risk that leachate from these materials could contain elevated concentrations of mercury.

Laboratory analysis of the molecular sieve materials provided to the department demonstrated that other chemical constituents, including mercury, met the criteria for Class III disposal. To provide regulatory control, the licence will specify that molecular sieve waste must meet the acceptance criteria for Class III landfills for all parameters other than aluminium.

[1] Module 2: Hazardous Waste Guidelines Landfill Waste Acceptance Criteria and Landfill Classification

4. Consultation

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

Table 4: Consultation

Consultation method	Comments received	Department response
Licence Holder was provided with draft amendment on 17 June 2022	The Licence Holder requested the removal of molecular sieve waste being limited to molecular sieves used in the production of natural gas. The molecular sieves are rather used in the processing of natural gas, with similar applications in other industries whereby natural gas is passed through an adsorption vessel to remove moisture.	The Delegated Officer considers the request acceptable, given that the molecular sieve waste must meet the acceptance criteria for Class II landfills as defined in the *Landfill Waste Classification and Waste Definitions 1996* (as amended 2019), with the exception of aluminium, being limited to a leachable concentration of 40 mg/L. These requirements apply regardless of the source of the molecular sieve waste.

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
11	Inclusion of molecular sieve waste to the waste acceptance table, with acceptance specifications applied.
14	Inclusion of molecular sieve waste to the waste processing table, with disposal limited to operational Class III cells.
17	Cover requirements added for molecular sieve waste.
36	Monitoring of the total amount of molecular sieve waste accepted to the premises added.
Table 19, Definitions	Definition of molecular sieve waste added.

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	☐				
Licence	☐	Relevant works approval number:		None	☐
		Has the works approval been complied with?		Yes ☐ No ☐	
		Has time limited operations under the works approval demonstrated acceptable operations?		Yes ☐ No ☐ N/A ☐	
		Environmental Compliance Report / Critical Containment Infrastructure Report submitted?		Yes ☐ No ☐	
		Date Report received:			
Renewal	☐	Current licence number:			
Amendment to works approval	☐	Current works approval number:			
Amendment to licence	☒	Current licence number:	L7021/1997/15		
		Relevant works approval number:		N/A	☐
Registration	☐	Current works approval number:		None	☐
Date application received		31 May 2022			
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:		DWERDT611486			
Key application documents (additional to application form):		Laboratory analysis reports			
Scope of application/assessment					

Summary of proposed activities or changes to existing operations.	Licence amendment - Proposed inclusion of acceptance criteria for molecular sieve waste, relating to aluminium level deviations from the *Landfill Waste Classifications and Waste Definitions 1996 (as amended 2019*). - The premises is already authorised to accept and dispose of Class III waste. - Laboratory analysis provided for leachability shows the following levels: • Aluminium: 0.26-15 mg/L • Mercury: < 0.0001 mg/L The mean plus 1 standard deviation for aluminium is 8.4 mg/L (due to outlier of 15 mg/L).

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 64: Class II or III putrescible landfill site	150,000 tonnes per annual period	N/A
Category 57: Used tyre storage (general)	200, 000 tyres	N/A
Category 61: Liquid waste facility	116,500 tonnes per annual period	N/A
Category 61A: Solid waste facility	10,000 tonnes per annual period	N/A
Category 62: Solid waste depot	20,000 tonnes per annual period	N/A
Category 67A: Compost manufacturing and soil blending	5, 000 tonnes per annual period	N/A

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 ☐ No ☒	Referral decision No: Managed under Part V ☐ Assessed under Part IV ☐
Does the applicant hold any existing Part IV Ministerial Statements relevant to the application?	Yes ☐ No ☒	Ministerial statement No: EPA Report No:
Has the proposal been referred and/or assessed under the EPBC Act?	Yes ☐ No ☒	Reference No:

Has the applicant demonstrated occupancy (proof of occupier status)?	Yes ☒ No ☐	Certificate of title ☐ General lease ☐ Expiry: Mining lease / tenement ☐ Expiry: Other evidence ☒ Previously supplied
Has the applicant obtained all relevant planning approvals?	Yes ☐ No ☐ N/A ☒	Approval: Expiry date: Previously supplied
Has the applicant applied for, or have an existing EP Act clearing permit in relation to this proposal?	Yes ☐ No ☒	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 ☐ No ☒	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 ☐ No ☒	Application reference No: Licence/permit No: Licence / permit not required.
Does the proposal involve a discharge of waste into a designated area (as defined in section 57 of the EP Act)?	Yes ☐ No ☒	Name: N/A Type: Proclaimed Groundwater Area/Surface Water Area Has Regulatory Services (Water) been consulted? Yes ☐ No ☐ N/A ☐ Regional office:
Is the Premises situated in a Public Drinking Water Source Area (PDWSA)?	Yes ☐ No ☒	Name: N/A Priority: P1 / P2 / P3 / N/A Are the proposed activities/ landuse compatible with the PDWSA (refer to WQPN 25)? Yes ☐ No ☐ N/A ☐
Is the Premises subject to any other Acts or subsidiary regulations (e.g. *Dangerous Goods Safety Act 2004, Environmental Protection (Controlled Waste) Regulations 2004, State Agreement Act xxxx*)	Yes ☒ No ☐	*Environmental Protection (Controlled Waste) Regulations 2004*

Is the Premises within an Environmental Protection Policy (EPP) Area?	Yes ☐ No ☒	
Is the Premises subject to any EPP requirements?	Yes ☐ No ☒	
Is the Premises a known or suspected contaminated site under the *Contaminated Sites Act 2003*?	Yes ☒ No ☐	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