Amendment Report

Application for Licence Amendment

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

Licence Number	L9089/2017/1
Licence Holder	Opalvale Pty Ltd
ACN	106 512 896
File Number	DER2017/001530
Premises	Salt Valley Road Class II Landfill Chitty Road, HODDYS WELL WA 6566 Legal description – Part of Lot 11 on Deposited Plan 34937 Certificate of Title Volume 2535 Folio 391 As defined by the coordinates in Schedule 1 of the Revised Licence
Date of Report	24 June 2021
Decision	Revised licence granted

Tracey Hassell
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Date: 2021.06.24 13:57:51 +08'00'

Tracey Hassell
Manager, Waste Industries

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

Table of Contents

Tables

Figures

1. Decision summary

Licence L9089/2017/1 is held by Opalvale Pty Ltd (Licence Holder) for Salt Valley Road Class II Landfill (the Premises), located at Lot 11 Chitty Road, Hoddys Well, Western Australia.

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 L9089/2017/1 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 9 March 2021, the Licence Holder submitted an application to the department to amend Licence L9089/2017/1 under section 59 and 59B of the *Environmental Protection Act 1986* (EP Act).

The application was submitted to comply with Condition 23, Table 10 (Specified Actions) of the existing Licence. The specified actions outlined in Condition 23 required the Licence Holder to provide final capping plans for Cells 1 and 2 and to engage a landfill gas management contractor. The landfill gas management contractor was required to produce a 'final landfill gas management plan' and a 'final design for landfill gas management infrastructure and activities for the closure of Cell 1'.

The Licence Holder also requested to amend Condition 7, Table 6 which restricts the placement of waste into Cell 2 to 10 metres above the base liner. This requirement was linked to the original landfill gas management plan which committed to installing lateral gas collection piping at 10 metres.

Supporting documentation provided with this application included:

- Closure and Post-Closure Management Plan
- Technical Specification – Phase 1 Capping Works
- Construction Quality Assurance Plan - Phase 1 Landfill Capping Works
- Capping Stability Risk Assessment

The capping and rehabilitation design, and landfill gas management measure are summarised below.

Capping and rehabilitation design

It is anticipated that the land will eventually be utilised for grazing purposes and therefore the land will be restored to native and pastoral vegetation that blends with the natural landscape. The key objective of the capping and rehabilitation design include the following:

- Design and construction of a landfill cap to prevent pollution of groundwater and degradation of air quality;
- Ensuring the seepage through the landfill cap is no more than 75% of the anticipated

seepage rate through the basal liner;

- Progressive rehabilitation of the landfill; and
- Final fill profile and slopes that are between 5% and 20%.

The final waste fill profile will have a maximum height of 311mAHD, approximately 20 metres above existing ground level at the east end of the site and approximately 30 metres above existing ground level at the west end of the site.

Based on void space modelling it is anticipated that the total lifespan of Stage 1 (Cells 1-6) will be nine years and three months. Talis (2021) has proposed to split the capping works for Stage 1 into three Phases, rather than cell by cell which was previously proposed. Phase 1 partially covers Cells 1, 2, and 4. Phase 2 partially covers cells 1 and 5 and Phase 5 partially covers Cells 1, 3, 5 and 6. It is estimated that capping works for Phase 1 will commence in September 2025.

The proposed capping system is as follows:

- 300mm sand gas collection layer
- 1.5mm linear low-density polyethylene
- Drainage layer
- Restoration layer (800mm of subsoil and 200mm of a growing medium)
- Vegetation layer

Using soil and climate data from the site it has been estimated that seepage through the cap will be 0.26L/ha/day which is below the limit of 7.5L/ha/day recommended in the Victorian 'Best practice environmental management' (BPEM) landfill guideline.

Landfill gas management

The numerical modelling software, GasSim, was used to model landfill gas generation over the sites operational and post operational lifespan. The results of the gas modelling indicate that gas production will peak in 2029 at a rate of approximately 890m^3/hr. This peak rate will coincide with the final capping of Stage 1. The model estimates that gas generation rates at the end of 2021 will be approximately 200m^3/hr (Talis, 2021).

Based on the results of the gas modelling, the proposed landfill gas management measures were determined. Talis (2021) used the BPEM landfill guideline to provide direction on landfill gas treatment technologies suitable for the gas generation rates predicted to occur at the premises. The anticipated landfill gas production rate of 890m^3/hr following the capping of Stage 1 indicates that an active system (flare) will be required. To date, it is estimated that the landfill gas production is at approximately 100m^3/hr, indicating an active system is not yet required.

Landfill gas management is proposed to consist of 21 vertical extraction wells installed in Stage 1 (Cells 1-6), in a grid like fashion at intervals of 50 metres. Landfill gas wells will not be installed within 5 metres of the edge of the landfill to reduce the risk of oxygen infiltration into the landfill (Talis, 2021). Wells will be drilled to 75 per cent of the waste depth at a minimum depth of 10 metres to ensure optimal gas extraction without causing leachate ingress into the system (Talis, 2021). The area around the wells will be backfilled with aggregate to protect them from the surrounding waste and allow gas to flow freely through the well.

The extraction wells will be installed prior to the construction of the landfill cap for ease of sealing around the wells.

The gas extraction wellfield design supersedes the IW Projects design which was submitted with the Works Approval, specifically it varies the proposal of use of horizontal wells at 10 metre spacing.

The landfill gas destruction infrastructure is most likely to comprise of a flare and will be

designed and maintained to be operable over an approximately 40 year period when volumes are sufficient to sustain its operation. This active system is proposed to be used at the premises whilst gas production levels exceed 100m^3/hr, which is anticipated to be between 2022 and 2061.

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 below.

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	Capping and gas extraction infrastructure works, including earth works and vehicle movements.	Air/windborne pathway	No additional controls proposed
Noise	Capping and gas extraction infrastructure works, including earth works and vehicle movements.	Air/windborne pathway	No additional controls proposed
Leachate post closure	Seepage through landfill capping system	Seepage to soils and groundwater	Detailed closure and capping design including capping with a linear low-density polyethylene (LLDPE) geomembrane with a sand drainage layer to facilitate lateral transmission of surface water away from the waste mass, reducing the risk of inundation and overall leachate generation.
Landfill gas	Degradation of putrescible waste	Air/windborne pathway	Detailed closure and capping design including capping with an LLDPE capping system and Gas Extraction Layer. This capping system will significantly reduce landfill gas migration from the cell, increasing the capture efficiency of the extraction system. By containing gas within the extraction system, the discharge locations will be predictable and manageable, and this will reduce the likelihood of fugitive gas emission.

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

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

Human receptors	**Distance from prescribed activity**
Privately owned farmland	Immediately adjacent (east and west)
Residential premises	Internal farmhouse, approximately 400m south west (excluded as a sensitive receptor)
	Approximately 1,100m north east (two properties to the north east of the premises.
	Approximately 1,700m south of the premises
	Approximately 70 houses within a 1-5km radius of the premises, predominately to the north and south.
Environmental receptors	**Distance from prescribed activity**
Department of Biodiversity, Conservation and Attractions (DBCA) Managed Lands and Waters	DBCA managed freehold land, which will be included as part of the adjacent Clackline Nature Reserve, 670m south Clackline nature reserve approximately 2.3km south east Nanamoolan Nature Reserve 2.3km east and north east.
Waterways Conservation areas	The Premises is within the Avon River Management Area.
Proclaimed surface water area under the *Rights in Water and Irrigation Act 1914* (RIWI Act).	The Premises is within the Avon River Catchment Area.
Directory of Important Wetlands of Australia	Avon River Valley, approximately 17km downstream from the closest feeding tributary to the premises. The Avon River is a registered type B2 wetland and provides high environmental value to public and the environment.
Threatened Ecological Communities and Priority Ecological Communities	A number of threatened ecological communities (wheatbelt woodlands) >5km to the north east and south east
Groundwater	Low permeability fractured rock aquifer (confined) quality is potentially suitable for domestic and non-potable use as well as stock watering. No registered users within 5km of Premises.

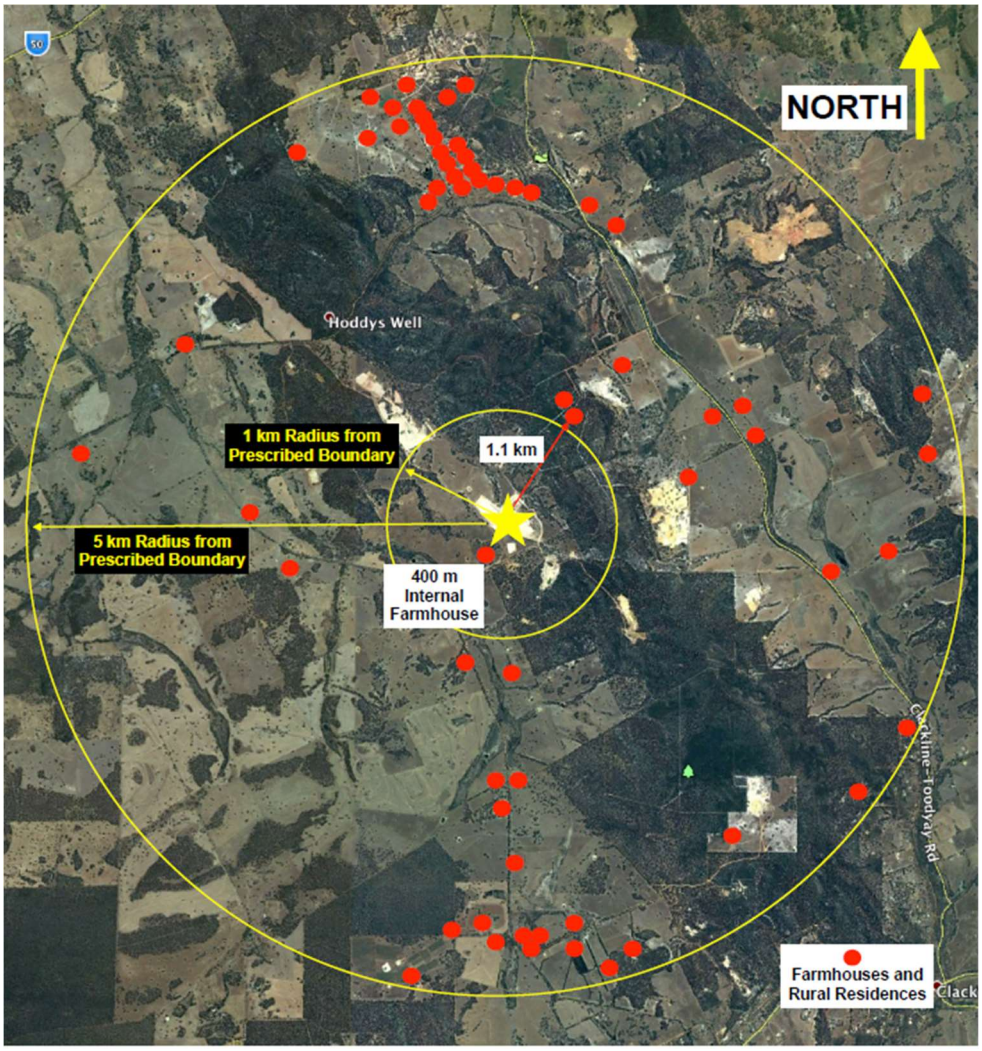

Figure 1: Proximity of residential properties surrounding the premises

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.

In identifying potential receptors, the department has excluded employees, visitors and contractors of the Licence Holder, as protection of these parties often involves different exposure risks and prevention strategies are provided for under other State Legislation i.e., *Occupational Safety and Health Act 1984*.

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 L9089/2017/1 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 construction 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								
Earthworks associated with capping and landfill gas works.	Dust	Air/windborne pathway causing impacts to health and amenity	Nearest residential receptor located approximately 1,100m north east	Refer to Section 3.1.1	C = Minor L = Unlikely **Medium Risk**	Y	Conditions 9, 10 and 22	No additional controls added. The works will be short term, therefore dust and noise emissions can be controlled under existing licence conditions.
	Noise			Refer to Section 3.1.1	C = Minor L = Unlikely **Medium Risk**	Y	Condition 6	
Operation/Post Operation								
Infiltration of water through capping system	Leachate	Seepage (through landfill liner) or overland flow (from over topping of ponds) causing degradation of surface and groundwater quality	Avon River Catchment Area (proclaimed area under the RIWI Act)	Refer to Section 3.1.1	C = Moderate L = Unlikely **Medium Risk**	Y	Condition 8, 10, 23, 24, **25 and 26**	Condition 24 (Schedule 5) is added to the Licence to ensure that the capping system is constructed as proposed in Talis' Closure and Post-Closure Management Plan. Conditions 25 and 26 are added to certify that the infrastructure was constructed as per the specifications.

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**				
Decomposition of buried waste	Landfill gas	Air/windborne pathway causing impacts to health and amenity and destruction of nearby ecosystems from fire.	Nearest residential receptor located approximately 1,100 m north east Clackline Nature Reserve located 670 m south.	Refer to Section 3.1.1	C = Minor L = Unlikely **Medium Risk**	Y	Condition 24, **25, 26** and 35	Condition 24 (Schedule 4) is added to the Licence to ensure that the landfill gas management infrastructure is constructed as proposed in Talis' Closure and Post-Closure Management Plan. Conditions 25 and 26 are added to certify that the infrastructure was constructed as per the specifications.

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
Local Government Authority advised of proposal on 6 April 2021.	No comments received	n/a
Public Stakeholders advised of proposal on 6 April 2021.	No comments received	n/a
Licence Holder was provided with draft amendment on 3 June 2021.	Comments received from the Licence Holder via email on 4 June 2021. Refer to Appendix 1 for a summary of comments.	Refer to 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 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
Definitions	Definition of 'phase' added Definition of 'Suitably qualified engineer' added to support new condition 26
7, Table 6	The following text has been removed: "The placement of waste into Cell 2 cannot exceed above 10 metres above the base liner". This text was added during the previous licence amendment to ensure that lateral gas extraction pipework was installed during landfill filling. The landfill gas management plan and infrastructure design have since been updated and lateral wells will no longer be used.

Condition no.	Proposed amendments
8(e)	Part (e) of this condition has been deleted and incorporated into Condition 24. Notes: 'cell or stage' has been replaced with 'phase'. To ensure there is no uncertainty about what a phase is, a definition of phase has been added to the definition table at the beginning of the Licence. The Licence Holder had requested to amend 6 months to 12 months, however the department has decided not to amend this aspect of the condition. The department is of the opinion that 6 months is sufficient to make a start on the works.
10 (d)	The condition required waste to be covered with a final cover of one metre, and two metres for Special Waste Type 1. Condition 7, Table 6 already restricts Special Waste Type 1 form being buried within two metres of the tipping surface of the landfill. Therefore, requiring an additional two metres of cover on top of that as part of the final cover could result in an undulating surface of the capped landfill. Condition 10 (d) has been deleted as final capping requirements are now specified in Condition 24 (Schedule 4).
23, Table 10	The requirement to provide a final capping plan Cell 1 has been removed as the applicant now proposes to rehabilitate the landfill in phases rather than cell by cell. Although the applicant has changed its rehabilitation design to phases the department still expected that the final capping plan be provided within the specified timeframe. It is unclear whether this timeframe was met. The requirement to provide a final capping plan for Cell 2 has been removed and has been replaced with the requirement to provide a capping and rehabilitation design plan for Phases 2 and 3. The Licence Holder proposed to provide these plans 'within 3 months of achieving the final fill height', however the department has changed the condition to require reports to be provided '3 months prior to achieving the proposed fill heights'. The department has also changed 'finished survey levels' to 'proposed fill height', this was done to allow the Licence Holder time to provide the required plan prior to the final fill height being achieved. The requirement to engage a landfill gas management contractor has been removed as this part of the condition has been met. The requirement to provide a completion report for the installation of the landfill cap has been removed from Table 10 as new conditions 25 and 26 outline the reporting requirements for the landfill gas and capping works.
24	Condition 24 (inclusive of Schedules 4 and 5) has been inserted to outline the specifications relating to landfill gas management and capping works that must be met.
25 and 26	Conditions 25 and 26 have been inserted to require the Licence Holder to certify that the specification outlined in condition 24 have been met.
24 onwards	Condition numbers have all changed.
35	Monitoring requirements added to ensure that landfill gas production is monitored post construction of the infrastructure. This will determine when an active landfill gas destruction system must be employed.
42, Table 18	Reporting requirement added for landfill gas management system.
Schedule 1	Figures S1-2 and S1-3 added.

Condition no.	Proposed amendments
Schedules 4 and 5	Added to support condition 24.

References

1. Department of Environment Regulation (DER) 2016, *Guidance Statement: Environmental Siting*, Perth, Western Australia.
2. DER 2017, *Guidance Statement: Risk Assessments*, Perth, Western Australia.
3. DER 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
4. Department of Water and Environmental Regulation 2019, *Guideline: Industry Regulation Guide to Licensing*, Perth, Western Australia.
5. Talis Consultants Pty Ltd 2021. Closure and Post-Closure Management Plan, Salt Valley Road Class II Landfill, Perth, Western Australia.

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

Condition	Summary of Licence Holder's comment	Department's response
24, Table 11	Work specifications (landfill gas extraction infrastructure) Opalvale requested to extend the timeframe for which construction of the landfill gas well holes had to commence from 6 months to 9 months stating that although they intended to commence construction in 6 months, delays might be caused in winter or by retaining the services of contractors who are based in the eastern states.	The Delegated officer acknowledges the constraints in the timing of the construction of the infrastructure and has agreed to increase the timeframe to 9 months to allow for capping works to be completed prior to installation of the gas extraction and management infrastructure. The Department notes that the timing constraints that the applicant has raised are directly related to the way that the applicant has designed the closure, capping and gas extraction works and that other options may have been considered in the planning of the works. The Department also notes that the risk assessment provided for the original licence highlights the need for progressive capping to prevent leachate generation and fugitive emissions of landfill gas. Condition 15 requires the licence holder to manage leachate within the leachate management system to prevent overfilling of the system.

Condition	Summary of Licence Holder's comment	Department's response
24, Table 11	Works specifications (landfill gas destruction infrastructure) Alternate wording was proposed. The alternate wording aimed to make it clearer that landfill gas production rates cannot be accurately measured until the wells have been constructed.	The Delegated Officer has agreed to adopt the proposed alternate wording. It is noted that the monitoring of fugitive gas emissions from areas of the landfill covered with intermediate cover may be required for the mitigation of risk to onsite workers under other legislation. The scope of the risk assessment conducted for this assessment relates to risk to public health and the environment from potential emissions and discharges from the activity only. The Department may require any future Stages to be planned with detailed closure plans and schedules provided at the application stage to ensure that progressive landfill capping, gas management and closure are achieved within a reasonable timeframe of final waste height being achieved.
25	Opalvale requested that the audit and compliance report be submitted within 45 calendar days or 30 working days, instead of 30 calendar days. This was proposed to enable adequate time for testing and report compilation and submission, particularly if waiting for data to be provided by a third-party.	The Delegated officer acknowledges the restraints and has amended the timeframe to 45 calendar days.

Appendix 2: Application validation summary

SECTION 1: APPLICATION SUMMARY (as updated from validation checklist)					
Application type					
Amendment to licence	☒	Current licence number:	L9089/2019/1		
		Relevant works approval number:	W5800/2015/1	N/A	☐
Date application received		9/03/2021			
Applicant and Premises details					
Applicant name/s (full legal name/s)		Opalvale Pty Ltd			
Premises name		Salt Valley Road Class II Landfill			
Premises location		Lot 11, Chitty Road, HODDYS WELL WA 6566			
Local Government Authority		Shire of Toodyay			
Application documents					
HPCM file reference number:		DER2017/001530			
Key application documents (additional to application form):		Closure and Post-Closure Management Plan Capping stability assessment – Closure and rehabilitation Technical specification – Phase 1 capping Construction Quality Assurance Report			
Scope of application/assessment					
Summary of proposed activities or changes to existing operations.		Progressive installation of landfill capping and landfill gas extraction infrastructure. Documents have been provided in accordance with Condition 23, Table 10 (Specified actions).			

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 putrescible landfill	150,000tpa	n/a

Legislative context and other approvals		
Has the applicant referred, or do they intend to refer, their proposal to the	Yes ☐ No ☒	Referral decision No:

EPA under Part IV of the EP Act as a significant proposal?		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 ☐ Expiry:
Has the applicant obtained all relevant planning approvals?	Yes ☒ No ☐ N/A ☐	Approval: Expiry date: If N/A explain why?
Has the applicant applied for, or have an existing EP Act clearing permit in relation to this proposal?	Yes ☐ No ☒	CPS No: 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: Within the Avon River catchment Area
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: 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 ☐	N/A
Is the Premises within an Environmental Protection Policy (EPP) Area?	Yes ☐ No ☒	N/A
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: Date of classification: N/A