



Application for Licence Amendment

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

Licence Number	L7066/1997/15
Licence Holder	Shire of Carnarvon
File Number	2010/010873-1
Premises	Coral Bay Landfill Site 43 Sanctuary Road CORAL BAY WA 6701 Legal description – Crown Reserve 44763 Certificate of Title Volume LR3157 Folio 878 As defined by the Premises map attached to the Revised Licence
Date of Report	31 October 2022
Decision	Revised licence granted

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

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1. Decision summary

Licence L9066/1997/15 is held by the Shire of Carnarvon (Licence Holder) for the Coral Bay Landfill Site (the Premises), located at 43 Sanctuary Road, Coral Bay.

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 L9066/1997/15 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.

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

The Licence Holder operates a Class II putrescible landfill and solid waste depot that can accept up to 10,000 tonnes per annual period of putrescible, Inert Waste Type 1, Inert Waste Type 2, Special Waste Type 1 and Special Waste Type 2. The Premises is owned by the Shire of Carnarvon and managed by the external contractor Coral Bay Contracting. The Premises is manned for a limited period each day and is open to the public from 8:30am to 5:30pm, seven days a week.

The Premises accepts asbestos and clinical wastes, with asbestos accepted predominately due to progressive demolition and closure of temporary residences in the Coral Bay townsite. Clinical wastes are accepted from the Ambulance and Royal Flying Doctor Service only and volumes received are low.

Wastes are disposed on the Premises in landfill trenches. Landfill trenches are covered daily through the main tourist season and reduced to every two or three days during the off season. Fish offal is disposed and covered daily in a separate disposal trench with collections reduced to every second day during the off season. Green waste received at the Premises is burnt during winter after resting for a minimum of three months.

The Premises holds a 3,000 litre water tank which is mounted on a truck with a hose and pump to assist in the management of any unauthorised fires occurring at the landfill. The local fire brigade is within close proximity (<10 minutes) to assist at the landfill.

In 2015 the Licence Holder amended the licence to increase annual throughput from 5,000 tonnes per annum to 10,000 tonnes per annum as it was believed the estimated tonnage of waste acceptance had exceeded the original approved throughput. Concurrently the Licence Holder commenced the process of acquiring adjacent land to facilitate an extension of the existing Premises.

During a licence amendment in 2016, DWER identified the previously approved throughput increase posed an increased potential for leachate to contaminate groundwater and to migrate to, and impact the marine environment, however there were no correlating risk management conditions applied to the licence to monitor groundwater quality. During the licence amendment conditions were added to require groundwater monitoring. The Licence Holder initially appealed this decision, however subsequently withdrew the appeal, thereby the groundwater monitoring conditions remained on the licence.

There are no existing bores installed at Premises, therefore the Licence Holder has not conducted any of the groundwater monitoring required by the Licence.

Historically the Licence Holder records incoming volumes of waste by estimating the cubic meters on a weekly basis and converts these estimates into tonnages. Previously the accepted conversion formula was 0.5 tonnes per m³, however using the current accepted conversion formula of 0.3 tonnes per m³ the historical tonnages of waste accepted at the Premises significantly reduces (Table 1). The annual rate of waste acceptance as reported in Annual Environmental Reports varies from 3,048.5 tonnes up to 3,899.0 tonnes per annum, well below the licensed approved production capacity of 10,000 tonnes per annum.

Table 1: Rates of waste acceptance

Year	Waste acceptance m ³	Conversion rate 0.5 tonnes per m ³	Conversion rate 0.3 tonnes per m ³
2017	12,293	6,146.5	3,687.9
2018	11,422	5,711.0	3,426.6
2019	12,105	6,052.5	3,631.5
2020	10,160	5,080.0	3,048.0
2021	Unknown Reported as tonnes	Unknown Reported as tonnes	3,899.0

2.3 Amendment summary

On 9 June 2022 the Licence Holder submitted an application to the department to amend Licence L7066/1997/15 under section 59 and 59B of the *Environmental Protection Act 1986* (EP Act) requesting to remove licence conditions 15, 16 and 17 that require groundwater monitoring.

The Licence Holder considers the following to be mitigating factors to justify the removal of these conditions:

- The waste facility is over 700 m from the coastline;
- The waste facility is 400+ m from a priority drinking water source area and the public drinking water and existing irrigation bores in Coral Bay are approximately 800 m deep;
- The waste facility is in an arid area with evaporation rates 11 times the annual rainfall and the facility is bone dry for most of the year.
- The waste facility doesn't dispose of liquid wastes and there is no water at the site other than for emergency fire response. Waste oil is held in a double-bunded purpose-built oil holding facility which is itself located in an earthen bunded and plastic lined area and is emptied by a licensed contractor.

On 29 September 2022 the Licence Holder requested to reduce the approved production capacity for waste acceptance, from 10 000 tonnes per annum down to 5 000 tonnes per annum, to accurately reflect waste acceptance at the premises and to facilitate the removal of the requirement to monitor groundwater.

The Licence Holder has advised the current landfill premises has approximately 2 years remaining in operation before it will be decommissioned. The acquisition of land adjacent to the current Premises is not viable, so they are now seeking an alternative location adjacent to the Coral Bay Wastewater Treatment Plant to construct a new landfill Premises. It is

anticipated the new landfill will be operational within 2 years.

This amendment is limited only to removal of the groundwater monitoring conditions. There are no requested changes to Category 62 activities from the previously assessed Existing Licence, as outlined in Table 2.

Table 2: Assessed production capacity

Category	Current production capacity	Proposed production capacity
Category 62 Solid waste depot: premises on which waste is stored or sorted, pending final disposal or re-use, other than in the course of operating — (a) a refund point (as defined in the <i>Waste Avoidance and Resource Recovery Act 2007</i> section 47C(1)) (a refund point); or a facility or other place (an aggregation point) for the aggregation of containers that have been returned to refund points until those containers are accepted for processing or disposal.	500 tonnes per annual period	500 tonnes per annual period
Category 64: Class II putrescible landfill site: premises (other than clean fill premises) on which waste of a type permitted for disposal for this category of prescribed premises, in accordance with the <i>Landfill Waste Classification and Waste Definitions 1996</i> , is accepted for burial.	10 000 tonnes per annual period	5 000 tonnes per annual period

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 operation which have been considered in this Amendment Report are detailed in Table 3 below. Table 3 also details the proposed control measures the Licence Holder has proposed to assist in controlling these emissions, where necessary.

Table 3: Licence Holder controls

Sources	Emission	Potential pathways	Proposed controls
Operation of landfill	Leachate	Subsurface seepage	Siting controls: <ul style="list-style-type: none"> Over 700 m from the coastline; Over 400 m from a priority drinking water source area and the public drinking water and existing irrigation bores in

Sources	Emission	Potential pathways	Proposed controls
			<p>Coral Bay are approximately 800 m deep;</p> <ul style="list-style-type: none"> • Within an arid area with evaporation rates 11 times the annual rainfall and the facility is bone dry for most of the year. • No acceptance of liquid wastes and no water at the site other than for emergency fire response. • Waste oil is held in a double-bunded purpose-built oil holding facility located in an earthen bunded and plastic lined area and emptied by a licensed contractor.

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 4 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 4: Sensitive human and environmental receptors and distance from prescribed activity

Human receptors	Distance from prescribed activity
Townsite of Coral Bay	2.7 km west of the Premises boundary
Environmental receptors	Distance from prescribed activity
Public drinking water source areas	<p>Coral Bay Water Reserve Priority 1 zone is located 340 m south of the Premises boundary</p> <p>The depth to groundwater within the Birdrong aquifer is between 750 m and 850 m below ground level.</p>
Groundwater bores	Three groundwater bores are located within a 1 km radius of the Premises boundary, the closest being 300 m north west.
<i>Conservation and Land Management Act 1984</i> managed lands	Ningaloo Marine Park and Maud Sanctuary Zone is as close as 700 m to the north west and south west of the Premises boundary
<i>Rights in Water and Irrigation Act 1914</i>	Within the Pilbara Surface Water Area
<i>Rights in Water and Irrigation Act 1914</i>	Within the Gascoyne Groundwater Area
Threatened fauna	One critically endangered bird species, one endangered bird species, one vulnerable bird species, one vulnerable reptile species, fifty migratory bird species protected under an international agreement, one otherwise specially protected bird species and one bird species listed as Priority 4 rare or near threatened, have been located within 1 km of the Premises boundary.

3.1.3 Groundwater sources

Coral Bay depends entirely on groundwater for its water supply. Its groundwater is sourced from the Birdrong aquifer, which is part of the Carnarvon Artesian Basin. This is a confined sandstone aquifer that is recharged in the Gregory Range east of Coral Bay.

In 2005 the Water Corporation constructed deep artesian bore 1/04 about 1.5 km south of the town. The bore intercepts the Birdrong aquifer at a depth of about 800 m. Although the quality of this water source is not ideal (salinity is in the range of 5000 – 5200 mg/L TDS), it is suitable for desalination.

The depth and confined nature of the aquifer provide a high level of water quality protection. The potential risks to water quality posed by the land uses and activities in the water reserve (drinking water treatment facilities) are considered to be negligible.

The recommendations of the *Coral Bay Water Reserve drinking water source protection plan* (2010) have since been implemented to protect water quality within the proposed Coral Bay Water Reserve:

- the boundaries of the proposed water reserve, which reflect the boundaries of the water treatment plant compound, should be proclaimed under the *Country Areas Water Supply Act 1947* (WA);
- the water reserve should be managed for Priority 1 source protection; and
- the water reserve and Priority 1 area should be recognised in the Shire of Carnarvon local planning scheme.

Given the aquifer's confined nature and the depth of the bore (> 800 m) that accesses it, the risk of water in the aquifer being contaminated is negligible. Existing and future land uses such as the Coral Bay power station, a quarry, a landfill site and pastoral station surrounding the proposed Coral Bay Water Reserve should have a minimal effect on the public drinking water source.

Key Finding:

1. The Delegated Officer notes the prescribed premises is not located within the Priority 1 Public drinking water source protection area, and that the water source protection plan states the prescribed premises should have a minimal effect on the protection area.



Figure 1: 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 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 5.

The Revised Licence L7066/1997/15 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 5. 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								
Operation of landfill	Leachate	Subsurface seepage Impacts to groundwater quality and marine environments	Beneficial groundwater uses P1 zone of the PDWSA Ningaloo Marine Park	Refer to Section 3.1	See Section 3.3	No	Conditions 13, 14, 20 and 21 <u>Conditions 1, 15 and 16</u>	See Section 3.3

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.

3.3 Detailed risk assessment for leachate

3.3.1 Potential adverse impacts

Putrescible wastes by nature produce leachates as the wastes decompose over time. The total volume of waste landfilled at a Premises, combined with environmental factors such as rainfall, is in direct correlation to the volume of leachate that can potentially be produced, and soil types can either mobilise or hinder the movement of leachate via subsurface seepage. As the volume of waste increases, the potential volume of leachate emissions also increases.

Annual evaporation rates are more than eleven times the annual rainfall rates, which will assist in reducing production of leachate.

The Coral Bay area consists of coastal flats and dunes with the landfill soil type described as 'calcarenes and limestone' formations which are karstic in nature and readily allow for the mobility of leachates through the soil profile.

As the landfill cells are not lined, there is no control in place to prevent leachate emissions out of the Premises. As there are no groundwater monitoring bores installed at the Premises, the Licence Holder is unable to determine if or when leachate is being emitted from the Premises and potentially contaminating groundwater sources.

The Licence Holder advises the premises will be closed within the next two years. A Landfill Post-closure Rehabilitation Plan has not been lodged with DWER to ensure the cells are adequately capped and stormwater diversion methods are in place, to minimise the creation of leachate.

3.3.2 Licence Holder controls

See section 3.1 for Licence Holder controls.

3.3.3 Key findings

The Delegated Officer has reviewed the information regarding leachate emissions and has found:

1. The requirement for monitoring of groundwater bores was imposed upon the licence in response to the Licence Holder's request to increase the approved licensed waste acceptance capacity from 5,000 tonnes per annum up to 10,000 tonnes per annum, thereby increasing the risk of leachate emissions.
2. The annual waste tonnage accepted for landfilling at the Premises is considerably below the current licensed threshold of 10,000 tonnes per year, and below the previously licensed threshold of 5,000 tonnes per year.
3. A Landfill Post-Closure Management Plan is required to be lodged to manage the landfill after closure and for rehabilitation.

3.3.4 Consequence

In response to the reduction in waste acceptance to 5,000 tonnes per annum, the Delegated Officer has determined that the potential consequence of leachate generation may cause low level on-site impacts and minimal off-site impacts, with wider scale impacts not detectable. Therefore, the Delegated Officer considers the consequence of leachate generation from a reduced waste acceptance rate to be **Minor**.

3.3.5 Likelihood

The Delegated Officer has determined that the likelihood of leachate generation occurring from a reduced waste acceptance rate will probably not occur in most circumstances. Therefore, the Delegated Officer considers the likelihood of leachate generation from a reduced waste acceptance rate to be **Unlikely**.

3.3.6 Overall risk rating of leachate emissions

The Delegated Officer has compared the consequence and likelihood ratings described above with the risk rating matrix and determined that the overall rating for the risk of leachate generation from a reduced waste acceptance rate is **Medium**.

3.3.7 Additional regulatory controls

The risk assessment has determined that additional controls will be applied to the Licence to reduce the risk of leachate generation. This includes:

- Addition of the requirement to prepare a landfill post-closure management plan.

4. Consultation

Table 6 provides a summary of the consultation undertaken by the department.

Table 6: Consultation

Consultation method	Comments received	Department response
Licence Holder provided with draft amendment (3/10/2022)	None	N/A

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 7 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 7: Summary of licence amendments

Condition no.	Previous condition no.	Proposed amendments
N/A	N/A	Assessed production capacity for Category 64 reduced to 5,000 tonnes per annual period.
1	1	Rate at which all waste types are received amended to 5,000 tonnes per annual period.
N/A	15 Table 7	Condition deleted from the licence as requested.
N/A	16	Condition deleted from the licence as requested.
N/A	17	Condition deleted from the licence as requested.
15	N/A	Condition added to licence for preparation and submission of a landfill post-closure rehabilitation plan.
16	N/A	Condition added to licence to specify details required within the landfill post-closure rehabilitation plan.
17	20	Row (c) amended to remove reference to condition 15.
19	22	AACR submission date amended in accordance with the Notice of Amendment of Reporting Requirements (16/05/2022).
20 Table 7	23 Table 8	Environmental Reporting submission date amended to 1 March 2024 and then biennially thereafter in accordance with the Notice of Amendment of Reporting Requirements (16/05/2022).
Definitions Table 9	Definitions Table 10	Definitions updated to include approved form and condition.

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.

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 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:	L7066/1997/15	
		Relevant works approval number:		N/A <input type="checkbox"/>
Registration	<input type="checkbox"/>	Current works approval number:		None <input type="checkbox"/>
Date application received	9 June 2022			
Applicant and Premises details				
Applicant name/s (full legal name/s)	Shire of Carnarvon			
Premises name	Coral Bay Landfill Site			
Premises location	43 Sanctuary Road CORAL BAY WA 6701			
Local Government Authority	Shire of Carnarvon			
Application documents				
HPCM file reference number:	DWERDT615834			
Key application documents (additional to application form):	Location maps			
Scope of application/assessment				
Summary of proposed activities or changes to existing operations.	Licence amendment Removal of groundwater monitoring conditions			

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 62 Solid waste depot: premises on which waste is stored or sorted, pending final disposal or re-use, other than in the course of operating — (a) a refund point (as defined in the <i>Waste Avoidance and Resource Recovery Act 2007</i> section 47C(1)) (a refund point); or (b) a facility or other place (an aggregation point) for the aggregation of containers that have been returned to refund points until those containers are accepted for processing or disposal.	500 tonnes per annual period	N/A
Category 64: Class II putrescible landfill site: premises (other than clean fill premises) on which waste of a type permitted for disposal for this category of prescribed premises, in accordance with the <i>Landfill Waste Classification and Waste Definitions 1996</i> , is accepted for burial.	10 000 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 <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Does the applicant hold any existing Part IV Ministerial Statements relevant to the application?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Has the proposal been referred and/or assessed under the EPBC Act?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Has the applicant demonstrated occupancy (proof of occupier status)?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Certificate of title
Has the applicant obtained all relevant planning approvals?	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>	
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"/>	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"/>	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 type="checkbox"/> No <input checked="" type="checkbox"/>	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 <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Is the Premises situated in a Public Drinking Water Source Area (PDWSA)?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Is the Premises subject to any other Acts or subsidiary regulations (e.g. <i>Dangerous Goods Safety Act 2004</i> , <i>Environmental Protection (Controlled Waste) Regulations 2004</i> , <i>State Agreement Act xxxx</i>)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Is the Premises within an Environmental Protection Policy (EPP) Area?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Is the Premises subject to any EPP requirements?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Is the Premises a known or suspected contaminated site under the <i>Contaminated Sites Act 2003</i> ?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	