



## Application for Licence Amendment

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

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<b>Licence Number</b>	L6284/1992/10
<b>Licence Holder</b>	Santos WA Energy Limited
<b>ACN</b>	009 301 964
<b>File Number</b>	DER2013/000949-3
<b>Premises</b>	Varanus Island and East Spar Facilities CALM Act Leases 1902/100 and 2064/100 Part Reserve 33902 (Part Lot 500 on Plan 240033) VARANUS ISLAND WA 6872
<b>Date of Report</b>	29 November 2021
<b>Decision</b>	Revised licence granted

# 1. Decision summary

Licence L6284/1992/10 is held by Santos WA Energy Limited (licence holder) for the Varanus Island and East Spar Facilities (the premises), located about 70 km off the Pilbara coast in Western Australia.

This report documents the assessment of potential risks to the environment and public health from the operation of a new activated sludge bioreactor (ASBR) type wastewater treatment plant which was built in accordance with works approval W6266/2019/1 to replace the existing sewage facility. As a result of this assessment, revised licence L6284/1992/10 has been granted.

## 2. Scope of assessment

### 2.1 Regulatory framework

In completing the assessment documented in this 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 Amendment summary

On 15 July 2021 the licence holder submitted an application to the department to amend licence L6284/1992/10 under section 59 and 59B of the *Environmental Protection Act 1986* (EP Act). The following amendments are being sought:

- Approval to increase the assessed design capacity of category 85: sewage facility from 54 cubic metres per day (m<sup>3</sup>/day) to 72 m<sup>3</sup>/day.
- Approval to operate a 72 m<sup>3</sup> per day ASBR sewage facility, comprising: Influent screen; 2 x balance tanks (combined capacity of 100 m<sup>3</sup>); bioreactor (for aerobic and anoxic treatment) Tanks A and B; clarification tank (including sludge skimmer); treated effluent tank (capacity 9 kL); sludge tank (capacity 22 kL); effluent chlorination system; and treated effluent distribution system (including flowmeter and effluent sample point).
- Update to Schedule 1: Maps to reference latest aerial imagery and update the Map for the 'Sewage Facility Location and Discharge Point'.
- Removal of metals (copper, zinc, lead, mercury, nickel, and cadmium) as a parameter in monitoring requirements for point source emissions to surface water (Table 9).

This amendment is limited only to changes to Category 85 activities from the Existing Licence. No changes to the aspects of the existing Licence relating to Category 10 and 34 have been requested by the licence holder.

Table 1 below outlines the proposed changes to the existing licence.

**Table 1: Changes to prescribed throughput**

Category	Current design capacity	Proposed design capacity	Description of proposed amendment
85	54 cubic metres per day (m <sup>3</sup> /day)	72 cubic metres per day (m <sup>3</sup> /day)	Increase in design capacity due to construction of new WWTP to replace existing WWTP

### 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 receptors

The key emissions and associated actual or likely pathway during premises operation which have been considered in this report are detailed in Table 3 **Error! Reference source not found.** below. Table 3 also details the proposed control measures the licence holder has proposed to assist in controlling these emissions, where necessary.

##### 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 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 (*Guideline: Environmental siting* (DWER 2020)).

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

Environmental receptors	Distance from prescribed activity
DBCA Managed Lands and Waters	The premises is located on Varanus Island which is part of the Lowendal Islands Nature Reserve gazetted for the conservation of flora and fauna
Threatened/Priority Fauna	There are multiple reptile, bird and mammal species declared as Threatened/Priority Fauna under the Environment Protection and Biodiversity Conservation Act 1999 (Cwth) (EPBC Act) and Biodiversity Conservation Act 2016 that are known to use the Lowendal Islands, including VI, as habitat and / or breeding areas. These fauna are listed as critically endangered, endangered and vulnerable, and include migratory birds protected under international agreements. VI beaches are an important nesting and breeding habitat for Hawksbill, Flatback and Green turtles which are all classified as vulnerable under the EPBC Act and the Biodiversity Conservation Act 2016. Migratory birds known to nest on VI include Wedgetailed Shearwaters, Bridled Terns, Crested Terns and Osprey. The Great Knot is listed on Schedule 1 (Fauna that is rare or is likely to become extinct) of the Biodiversity Conservation Act 2016.

<p>Mangrove community (high value ecosystem providing habitat and shelter for birds, fish and other marine species and breeding sites for a number of fish and crustaceans).</p>	<p>A white mangrove (<i>Avicennia marina</i>) community occurs along the southern portion of a sandy beach on the west coast of VI.</p>
<p>Barrow Island Marine Management Area (high value ecosystem)</p>	<p>The boundary of the Marine Management Area is located to the north, west and south of VI. At its closest point, the Marine Management Area is around 1.6km west of the VI lease area boundary</p>

### 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. Where linkages are in-complete they have not been considered further in the risk assessment.

Where the licence holder has proposed mitigation measures/controls, 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 L6284/1992/10 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 C = consequence L = likelihood	Applicant controls sufficient?	Conditions of licence	Justification for additional regulatory controls
Source/Activities	Potential emissions	Potential pathways and impact	Receptors	Applicant controls				
Category 85: Sewage facility	Odour - Treatment of sewage	Air / wind dispersion	No residences or other odour sensitive receptors in proximity. Closest residence is 12km west and 70km southeast	An odour control system (using carbon filters to remove odours) is to be installed at the inlet screen and balance tanks of the sewage facility.	N/A	Y	Delegated officer does not reasonably foresee off-site receptors being impacted by odour due to the adequate separation distance to nearby receptors	N/A

Category 85: Sewage facility	Untreated/partially treated sewage (nutrient rich)	Direct discharge to soils and marine environment from ruptured pipes or overflows from sewage treatment tanks, impacts to vegetation and marine biota health from high nutrients	Vegetation and soils adjacent to discharge area. Marine environment (high water tide mark ~ 20m south of sewage facility)	Concrete hardstands, bunded areas, containerised ASBR system, commissioning process, regular inspections	<b>Low risk</b> C= minor L= rare	Y	Applicant controls acceptable	N/A
	Discharge of treated sewage to the environment (low levels of TN, TP, BOD, E. Coli, TSS and Chlorine)	Direct discharge to marine environment causing adverse health impacts to marine species inhabiting the area	Marine species inhabiting the area surrounding outfall discharge pipe	WWTP designed to cope with variable effluent loads and quality, marine outflow pipe submerged to facilitate dispersion, daily checks, quarterly testing to validate discharge water quality	<b>Medium risk</b> C= moderate L= unlikely	Y	Acceptable subject to proponent controls which are conditioned	The existing licence has conditions relating to the operation of the existing sewage facility, including: <ul style="list-style-type: none"> <li>the sewage facility shall be operated and maintained such that overtopping of tanks does not occur;</li> <li>the integrity of containment infrastructure is maintained;</li> <li>discharge of treated effluent to the marine environment shall only occur through the approved discharge point; and</li> <li>a volumetric discharge limit applies.</li> </ul>

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

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

## 4. Decision

### Wastewater treatment plant upgrade

The delegated officer has reviewed the construction compliance and commissioning documentation relating to the new WWTP and is satisfied the works have been constructed in accordance with W6266/2019/1. The existing licence L6284/1992/10 will therefore be amended to include the necessary authorisation for operation of the new infrastructure.

The department's assessment of emissions and discharges arising from operation of the new WWTP infrastructure (refer to decision report for W6266/2019/1) indicated that existing controls on the licence are sufficient for ensuring an acceptable level of risk is maintained for all assessed risk events. Existing licence conditions will be amended, where required, to include the new WWTP infrastructure; otherwise, no new or additional controls are required to be imposed on the licence.

### Request to amend monitoring requirements

The licence holder has requested to remove the requirement to continue the monitoring of metals (copper, zinc, lead, mercury, nickel, and cadmium) in the treated wastewater, to align the existing licence L6284/1992/10 with the monitoring requirements of works approval W6266/2019/1.

The delegated officer notes that due to the nature of the treated wastewater stream and the sensitivity of the receiving environment, the requirement to monitor for metals and metalloids in treated wastewater should have been included on the works approval, to allow for the collection of baseline data. The omission of this aspect from the works approval is not sufficient justification for removing this requirement from the licence.

Additionally, a review of previous Annual Environmental Reports for the premises indicates that levels of copper and zinc have consistently exceeded relevant guideline values for the receiving environment (Tropical Australia – Slightly Disturbed Ecosystems - Marine Inshore Environments) (*Australian Water Quality Guidelines for Fresh and Marine Water Quality, 2000*) and that these exceedances have continued following commissioning of the new WWTP. According to the licence holder these exceedances are due to high metal concentrations found in potable water used on site, however further information is required to enable the department to substantiate this.

**Note:** *DWER will liaise with the licence holder separate to this application on this aspect.*

The licence holder also requested the licence be amended to permit in-field analysis of free chlorine as chlorine (total, free or residual), as the laboratory holding time for NATA accredited analysis is often exceeded due to the location of the premises. The Australian Drinking Water Guidelines encourage in-field sampling of some parameters, such as free and total chlorine, for small and remote sites, as sample storage times and conditions can affect the reliability of sampling results unless analysis can be undertaken within a short time of sampling. Given the remote location of the premises, the delegated officer considers that field testing is the only method of deriving representative results for free and total chlorine and has therefore included this provision within the revised licence.

## 5. Consultation

The application was referred to relevant stakeholders associated with the operation of the premises, including the Shire of Ashburton, DBCA and DMIRS on 18 July 2019 upon application for works approval W6266/2019/1. Comments were received from the following stakeholders:

- DMIRS advises that due to the new sewage facility resulting in improved environmental outcomes (improved discharge water quality), DMIRS does not have any issues with the application;

- DBCA noted the increase in sewage throughputs associated with the proposed new facility and the capacity for DWER to apply appropriate regulatory measures for management of the facility under Part V of the EP Act;
- No response was received from the Shire of Ashburton within the requested timeframe.

The licence holder was provided with the draft report on 28/10/2021. The licence holder comments are outlined in Appendix 1.

## 6. Conclusion

Based on the assessment in this 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.

### 6.1 Summary of amendments

Table 3 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 3: Summary of licence amendments**

Condition no.	Proposed amendments
Cover letter	Increase of design capacity of category 85: sewage facility from 54 cubic metres per day (m <sup>3</sup> /day) to 72 m <sup>3</sup> /day
Table 2	Updated infrastructure table from three crude oil storage tanks to two crude oil storage tanks following decommissioning of one tank in Q4, 2021.
Table 5	Change of treated effluent emission limit to <72m <sup>3</sup> /day
Table 9	Change to permit in field non-NATA accredited analysis of free chlorine in point source emissions to surface water
Schedule 1: Maps	Update to Sewage Facility Location and Discharge Point map to show new WWTP infrastructure and relocated monitoring point



## References

1. ANZECC 2000. *Australian Water Quality Guidelines for Fresh and Marine Waters*, National Water Quality Management Strategy. Australian and New Zealand Environment and Conservation Council, Canberra
2. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
3. Department of Water and Environmental Regulation (DWER) 2020, *Guideline: Environmental Siting*, Perth, Western Australia.
4. Department of Water and Environmental Regulation (DWER) 2020, *Guideline: Risk Assessments*, Perth, Western Australia.

## Appendix 1: Summary of licence holder's comments on risk assessment and draft conditions

Comments received on 3 November 2021.

Condition no.	Licence holder's comments	Department's response
Table 2: Infrastructure and equipment controls table. Column 2. <i>Bulk Crude / Condensate Storage Tanks</i>	Please note there are now two (not three) crude oil storage tanks. One of the crude oil tanks was decommissioned and demolished in Q4 2021. This change occurred post licence amendment submission.	Table 2 updated to reflect reduction in the number of crude oil storage tanks.
Table 8: Monitoring of WWTP inputs. Table heading.	Table heading notes 'inputs' yet condition relates to 'outputs'	Table 8 heading updated from "inputs" to "outputs" to correct administrative error.
Table 10: Annual Environmental Report requirements. Conditions 8 and 9 – requirements.	Note that there is no condition to monitor inflow volumes. Due to system design, incorporating system recirculation, this information is not readily available and will incur significant plant modifications. The outflow volume is metered and reported which aligns with potential environmental impact assessment.	Table 10 updated to reflect changes to reporting requirements (removal of requirement to measure inflow volumes)
Table 12: Infrastructure and equipment. Prescribed Activity Category 85 – facility description.	Please update for new installed infrastructure	Table 12 updated to reflect changes to infrastructure.
Draft amendment report Section 3.1.1 and Table 3	Administrative table reference errors	Text corrected to reflect correct Table number and referencing.
Draft amendment report Table 2	Please note update required from Wildlife Conservation Act 1950 (WA) (WC Act) to the Biodiversity Conservation Act 2016.	Text corrected to reflect updated legislation.