



Amendment Notice 2

Licence Number L5491/1984/18

Licence Holder Woodside Energy Ltd

ACN 005 482 986

File Number: DER2013/000847

Premises
Woodside Onshore Gas Treatment Plant
De Witt Location 199 and 197
BURRUP PENINSULA WA 6714

Date of Amendment 27/11/2017

Amendment

The Chief Executive Officer (CEO) of the Department of Water and Environmental Regulation (DWER) has amended the above Licence in accordance with section 59 of the *Environmental Protection Act 1986* as set out in this Amendment Notice. This Amendment Notice constitutes written notice of the amendment in accordance with section 59B(9) of the EP Act.

Date signed: 27 November 2017

Caron Goodbourn

Manager Licensing (Process Industries)

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

Definitions and interpretation

Definitions

In this Amendment Notice, the terms in Table 1 have the meanings defined.

Table 1: Definitions

Term	Definition
ACN	Australian Company Number
AER	Annual Environment Report
Category/ Categories/ Cat.	categories of Prescribed Premises as set out in Schedule 1 of the EP Regulations
CEO	means Chief Executive Officer. CEO for the purposes of notification means: Director General Department Administering the <i>Environmental Protection Act 1986</i> Locked Bag 33 Cloisters Square PERTH WA 6850 info-der@dwer.wa.gov.au
Delegated Officer	an officer under section 20 of the EP Act
Department	means the department established under section 35 of the <i>Public Sector Management Act 1994</i> and designated as responsible for the administration of Part V, Division 3 of the EP Act.
DWER	Department of Water and Environmental Regulation
DWP	Demineralised Water Plant
EP Act	<i>Environmental Protection Act 1986</i> (WA)
EP Regulations	<i>Environmental Protection Regulations 1987</i> (WA)
Existing Licence	The Licence issued under Part V, Division 3 of the EP Act and in force prior to the commencement of and during this Review
Licence Holder	Woodside Energy Ltd
m ³	cubic metres
Prescribed Premises	has the same meaning given to that term under the EP Act.
Premises	refers to the premises to which this Decision Report applies, as specified at the front of this Decision Report.

Risk Event	as described in <i>Guidance Statement: Risk Assessment</i>
STP	Sewage Treatment Plant
TN	Total Nitrogen
TP	Total Phosphorus
TSS	Total Suspended Solids

Amendment Notice

This amendment is made pursuant to section 59 of the *Environmental Protection Act 1986* (EP Act) to amend the Licence issued under the EP Act for a prescribed premises as set out below. This notice of amendment is given under section 59B(9) of the EP Act.

Key application documents and Guidance Statements are listed in Appendix 1.

Amendment description

On 24 July 2017, Woodside Energy Ltd (the Licence Holder) submitted two Applications (Woodside 2017a and 2017b) to DWER for amendments to the Woodside Onshore Gas Treatment Plant (the Premises) Existing Licence L5491/1984/18.

The Licence Holder has applied to make the following changes at the Premises:

- Construction, commissioning and operation of a new Sewage Treatment Plant (STP) to replace the existing STP which is due for replacement; and
- Construction, commissioning and operation of a new Demineralised Water Plant (DWP) to replace the existing DWP, which is also due for replacement.

The new STP triggers approval requirements for a Prescribed Premises Category 54 sewage facility in accordance with Schedule 1 of the EP Regulations.

Table 2 below outlines the proposed changes to the Licence

Table 2: Proposed design capacity changes

Category	Current design capacity	Proposed design capacity	Description of proposed amendment
54	132m ³ per day	170m ³ per day	Replacement of existing STP with a new STP. Throughputs are estimated to remain at around 57m ³ per day based on estimated personnel levels

The new DWP does not meet any Prescribed Premises category, however is considered a change to the operation of the Premises in accordance with section 53 of the EP Act and as such, requires authorisation for construction and operation of the infrastructure. The maximum design capacity for the new DWP is 600m³ per day. The Licence Holder estimates that throughputs for the new DWP will be up to 325m³ per day.

Sewage Treatment Plant (STP)

The new STP will be constructed alongside the existing STP and will be connected to the same sewage collection and pumping system. Construction of the new STP entails completing civil and concrete works adjacent to the existing STP, installation of the STP, equalization tank and associated pipework in addition to cabling for power and control systems and trenching between the new STP and battery limit tie-in points. The new STP will then be commissioned and the existing STP will be decommissioned and major equipment removed (tanks, and most piping / pumps etc.).

The new STP uses Membrane Bio Reactor (MBR) technology and will incorporate an equalization / flow buffer tank to regulate high and low flow rates to ensure a consistent inflow. Biomass in the system can be maintained or re-grown through the addition of sucrose. This maintains the treatment quality when there are low flow rates or during maintenance activities.

The typical quality of the treated sewage effluent that will be discharged from the new STP is shown in Table 3 below.

Table 3: Typical treated effluent quality

Parameter	Concentration
pH	6.5 – 8.5
Total Suspended Solids	<50 mg/L
Biochemical Oxygen Demand	<20 mg/L
Chemical Oxygen Demand	<125 mg/L
Total Nitrogen (as N)	<10 mg/L
Total Phosphorus (as P)	<2 mg/L
Total coliforms	<500 CFU/100mL (Both total coliforms and E coli are typically near zero)
Heavy metals	Below detection limit

The treated effluent will be discharged to No Name Creek via the concrete lined Admin Drain, along with other irregular flows from the Premises stormwater system and the DWP as shown in Attachment 1. This is the same discharge location approved under the Existing Licence for current discharges from the existing STP.

Approximately 15kL of sludge produced by the STP will be removed every one to three months by a licensed waste contractor.

Demineralised Water Plant (DWP)

The gas treatment process at the Premises requires a DWP to treat potable scheme water supplied to the Karratha Gas Plant to produce demineralised water for various make up and washing purposes. The existing DWP is nearing the end of its design life and requires replacement. The new STP is a modularized package of similar dimensions to a standard shipping container and will arrive at the Premises fully assembled. Civil and concrete works will be required to install the new STP adjacent to the existing DWP. Installation will include pipework and support racks, power and control cabling and trenching between the new DWP and battery limit tie-in points. The new DWP will then be commissioned and the existing DWP will be isolated and drained.

The new DWP will utilise Reverse Osmosis (RO) membrane technology and will reduce the requirement for hazardous corrosive chemicals currently required to regenerate resin beds associated with the existing DWP.

The new DWP will be constructed close to the existing DWP and will utilise the same effluent discharge points approved on the Existing Licence for operation of the existing DWP (No Name Creek). The RO membranes are sensitive to salinity, silica / carbonates, particulates and chlorine which is contained in the scheme water supply at varying levels depending on source and time of the year. Regular back flushing of membranes is required to reduce build-up of these parameters on the RO membranes, which results in reject wastewater (brine) that requires disposal. Depending on the incoming quality of the supplied scheme water, between 10-25% of incoming water will be rejected as brine to No Name Creek via the Admin Drain. An alternative discharge location can be via the oil contaminated water network. Up to 81.25m³/day of reject brine (concentrated scheme water salts) will be discharged to No Name Creek, which flows into No Name Bay (see Attachment 1). The quality of the brine is dependent on the incoming water and the recovery rate. TDS levels in the reject brine to be discharged will be no more than 4,000mg/L.

Due to the RO membranes' sensitivity to chlorine the application of sodium bisulphate is required to oxidise the chlorine that is present in supplied scheme water. Around 10mg/L of 30% active sodium bisulfate will be added to the demineralized water to oxidise chlorine, which will result in the formation of benign sodium sulfate in the discharge water.

The STP is also sensitive to high temperature water and as such, the pipes leading to the STP may require purging during hot weather. Approximately every six months the RO membranes will require cleaning with dilute acid or alkaline detergents. All wastes, including the detergents, are captured in the "Clean in place" tank (22.5kL poly tank) which will then be disposed offsite by a licensed contractor.

The Existing Licence has conditions requiring monthly sampling and analysis and recording of volumes of wastewater (comprising stormwater plus any discharges from the STP and DWP) discharged from the Admin Drain to No Name Creek.

Amendment history

Table 4 provides the amendment history for L5491/1984/18.

Table 4: Licence amendments

Instrument	Issued	Amendment
L5491/1984/18	26/09/2013	Licence issued
L5491/1984/18	13/06/2016	Amendment Notice 1 Licence amendment to reinstate the requirement to monitor for the parameter total oil in wastewater discharges.
L5491/1984/18	27/11/2017	Amendment Notice 2 Licence amendment to approve construction and operation of new Sewage Treatment Plant and Demineralised Water Plant.

Location and receptors

Table 5 below lists the relevant sensitive land uses in the vicinity of the Prescribed Premises which may be receptors relevant to the proposed amendment.

Table 5: Receptors and distance from activity boundary

Residential and sensitive premises	Distance from Prescribed Premises
Hearson's Cove: a popular public recreation and fishing beach	3.7km southeast
Town of Dampier	9km southwest
Town of Karratha	17km southeast

Table 6 below lists the relevant environmental receptors in the vicinity of the Prescribed Premises which may be receptors relevant to the proposed amendment. Specified Ecosystems are defined in the *Guidance Statement: Environmental Siting* (DER 2016).

Table 6: Environmental receptors and distance from activity boundary

Environmental receptors	Distance from Prescribed Premises
Murujuga National Park (Specified Ecosystem)	300m east
Mangroves at Northeast Creek (Specified Ecosystem)	600m northeast of DWP and 1,100m northeast of STP
No Name Bay (including Mangrove Community: not a Specified Ecosystem)	900m west of the STP and 1,400m west of the DWP

Risk assessment

Table 7 below describes the Risk Events associated with the amendment consistent with the *Guidance Statement: Risk Assessments*. Both tables identify whether the emissions present a material risk to public health or the environment, requiring regulatory controls.

Table 7: Risk assessment for proposed amendments during operation

Risk Event					Consequence rating	Likelihood rating	Risk	Reasoning
Source/Activities	Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts				
<p>Category 10 oil or gas from wells</p>	<p>Operation of DWP</p>	<p>Controlled discharge of reject brine water</p>	<p>No Name Creek and No Name Bay: mangrove community and marine environment</p>	<p>Direct discharge</p>	<p>Increasing local levels of salinity and stratification in No Name Bay impacting marine organisms (growth/development of species, survival of larva and breeding and reproductive traits)</p>	<p>Minor: minimal offsite impacts at the local scale</p>	<p>Unlikely: the risk event will probably not occur in most circumstances</p>	<p>Medium</p> <p>No Name Bay is a shallow embayment that experiences significant flushing from tidal movements and a surrounding mangrove community. Up to 81m³/day of brine reject water (concentrated scheme water salts) will be discharged to No Name Creek, which will combine with discharges of treated effluent from the STP and clean stormwater flows from the Premises. The Delegated Officer considers that the relatively low volumes of brine discharge and dilution with treated effluent from STP and stormwater will result in minimal offsite impacts at the local scale. Therefore, the consequence rating of brine discharges from the DWP has been assessed as minor. The Delegated Officer considers that impacts to No Name Bay will probably not occur, and therefore considers impacts to be unlikely.</p>

									The overall risk of brine discharges from the DWP impacting No Name Bay is therefore considered medium .
		Spills/leaks of high-pH chemicals to environment	None	Direct discharge	No receptor present	N/A	N/A	N/A	The largest credible loss of chemicals from the DWP is 205L of sodium hydroxide solution (largest tank volume). Coarse backfill material surrounds the DWP area. A floor sump in the DWP modules (shipping containers) holds >110% of the volume of the largest chemical storage container. The chemical tanks each have level sensors and are installed within suitable bunds. In the event of a spill, any contamination would flow north to the Road 14 drains and be intercepted by at least two weirs in the stormwater system. These drains are very large and have over 600kL capacity. The Delegated Officer notes the lack of any receptors nearby and considers that sufficient controls are in place to manage the risk of any leaks or spills from the DWP.

Cat 54 Sewage Facility	Operation of STP	Odour: associated with effluent treatment and disposal	None The nearest sensitive receptor is Hearson's Cove, 3.7km southeast	Air	Amenity	N/A	N/A	N/A	No receptor present. The STP treatment process occurs within enclosed tanks to reduce potential for odour emissions. The Delegated Officer considers that the provisions of section 49 of the EP Act are sufficient to regulate odour emissions at the STP during operation.
		Controlled discharge of treated effluent	No Name Creek and No Name Bay: mangrove community and marine environment	Direct discharge	Contamination of No Name Creek and No Name Bay with nutrients, sediment and E Coli. Eutrophication of creek and marine environment impacting growth and development of marine species.	Minor: minimal offsite impacts at the local scale	Unlikely: the risk event will probably not occur in most circumstances	Medium	Up to 170m ³ per day of treated effluent will be discharged from the STP (average throughputs estimated at 56m ³ /day). The Delegated Officer considers that the relatively low volumes of effluent to be discharged, combined with stormwater flows and discharges from the DWP will result in minimal offsite impacts at the local scale. Therefore, the consequence rating of effluent discharges from the STP has been assessed as minor . The Delegated Officer considers that impacts to No Name Bay will probably not occur, as discharge quality specifications from the new STP are sufficiently low in sediment (TSS), nutrients (TN and TP)

									and coliforms such that impacts to human health and the environment are unlikely . The overall risk of treated effluent discharges from the STP impacting No Name Bay is therefore considered medium .
		Biosolids (sewage sludge)							All processing activities at the STP will occur in enclosed containers constructed on concrete hardstands. Coarse backfill material surrounds the STP area. The STP area has a security fence around it and concrete bollards to prevent collisions with tanks. An alarm system is in place to prevent overflows and initiate operator response in the event of system malfunction. Surface drainage travels along swales located northeast of the STP, and pools in a depression (one of several swales that surround the site) 35m northeast of the STP. Any spills/leaks from the STP would not reach the Admin Drain, which is located 140m northwest of the STP. Sewage sludge will be regularly removed by a licensed contractor.
		Overflows of sewage from tanks / rupture of pipelines	None	Direct discharge from unplanned events such as leaks / spills / malfunctions of storage infrastructure	No receptor present	N/A	N/A	N/A	

									The Delegated Officer notes there are no receptors that would be impacted from overflows or leaks of sewage at the STP, and considers there are sufficient controls in place to manage any spills / leaks that may occur during operations.
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Decision

The Delegated Officer has determined the Application by granting of this Notice to give effect to an amendment to the conditions of the Existing Licence.

The Delegated Officer has added works specification conditions in the Licence to include construction requirements for the new infrastructure, approved design capacities of the STP and DWP and the discharge specifications for the STP (conditions 11 and 12). The Licence Holder is also required to submit construction compliance documentation once the new infrastructure has been installed (conditions 13 and 14).

Monitoring of the volumes and quality of the discharge to No Name Creek via the Admin Drain is already a requirement on the Existing Licence (conditions 4 and 5) and will remain in force to ensure the discharge quality remains acceptable. Reporting of monitoring results is required annually via an AER in accordance with Licence condition 8.

Licence Holder's comments

The Licence Holder was provided with the draft Amendment Notice on 30 October 2017. Comments received from the Licence Holder have been considered by the Delegated Officer as shown in Appendix 2.

Amendment

1. The Licence is amended by the insertion of the following Conditions 11, 12, 13 and 14:
 11. The Licence Holder must install and undertake the Works for the infrastructure and equipment:
 - (a) specified in Column 1;
 - (b) to the requirements specified in Column 2; and
 - (c) at the location specified in Column 3 of Table 3 below.
 12. The Licence Holder must not depart from the requirements specified in Column 2 of Table 3 except:
 - (a) where such departure does not increase risks to public health, public amenity or the environment; and
 - (b) all other Conditions in this Licence are still satisfied.
 13. Subject to Condition 11, within 30 days of the completion of the Works specified in Column 1 of Table 3, the Licence Holder must provide to the CEO a report/engineering/building certification from a suitably qualified professional confirming each item of infrastructure or component of infrastructure specified in Column 1 of Table 3 below has been constructed with no material defects and to the requirements specified in Column 2.
 14. If Condition 12 applies, the Licence Holder must provide to the CEO a description of, and explanation for, the departure along with the certification required by Condition 13 **Error! Reference source not found..**

Table 3: Infrastructure and equipment requirements table

Column 1	Column 2	Column 3																		
Infrastructure/Equipment	Requirements (design and construction)	Site plan reference																		
New Sewage Treatment Plant	<ul style="list-style-type: none"> To have maximum design capacity of 170m³ per day; Treated effluent to be discharged to No Name Creek via the Premises concrete lined Admin Drain; and Discharge design specifications to meet the following water quality parameters: <table border="1"> <thead> <tr> <th>Parameter</th> <th>Concentration</th> </tr> </thead> <tbody> <tr> <td>pH</td> <td>6.5 – 8.5</td> </tr> <tr> <td>Total Suspended Solids</td> <td><50 mg/L</td> </tr> <tr> <td>Biochemical Oxygen Demand</td> <td><20 mg/L</td> </tr> <tr> <td>Chemical Oxygen Demand</td> <td><125 mg/L</td> </tr> <tr> <td>Total Nitrogen (as N)</td> <td><10 mg/L</td> </tr> <tr> <td>Total Phosphorus (as P)</td> <td><2 mg/L</td> </tr> <tr> <td>Total coliforms</td> <td><500 CFU/100mL</td> </tr> <tr> <td>Heavy metals</td> <td>Below detection limit</td> </tr> </tbody> </table>	Parameter	Concentration	pH	6.5 – 8.5	Total Suspended Solids	<50 mg/L	Biochemical Oxygen Demand	<20 mg/L	Chemical Oxygen Demand	<125 mg/L	Total Nitrogen (as N)	<10 mg/L	Total Phosphorus (as P)	<2 mg/L	Total coliforms	<500 CFU/100mL	Heavy metals	Below detection limit	New STP as shown in Attachment 1
Parameter	Concentration																			
pH	6.5 – 8.5																			
Total Suspended Solids	<50 mg/L																			
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Chemical Oxygen Demand	<125 mg/L																			
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Total Phosphorus (as P)	<2 mg/L																			
Total coliforms	<500 CFU/100mL																			
Heavy metals	Below detection limit																			
New Demineralised Water Plant	<ul style="list-style-type: none"> To have maximum design capacity of 600m³ per day; and Reject brine to be discharged to No Name Creek via the concrete lined Admin Drain. 	New DWP as shown in Attachment 1																		

Attachment 1

Premises map

The locations of the new Sewage Treatment Plant and Demineralised Water Plant as defined in Table 3 are shown below.



Appendix 1: Key documents

	Document title	In text ref	Availability
1	Licence L5491/1984/18 – Woodside Onshore Gas Treatment Plant	L5491/1984/18	accessed at www.dwer.wa.gov.au
2	Amendment Application Form completed by Woodside Energy Ltd. New STP	Woodside 2017a	DWER record A1486622
3	Amendment Application Form completed by Woodside Energy Ltd. New DWP	Woodside 2017b	
5	DER, July 2015. <i>Guidance Statement: Regulatory principles.</i> Department of Environment Regulation, Perth.	accessed at www.dwer.wa.gov.au	
6	DER, October 2015. <i>Guidance Statement: Setting conditions.</i> Department of Environment Regulation, Perth.		
7	DER, November 2016. <i>Guidance Statement: Environmental Siting.</i> Department of Environment Regulation, Perth.		
8	DER, February 2017. <i>Guidance Statement: Decision Making.</i> Department of Environment Regulation, Perth.		
9	DER, February 2017. <i>Guidance Statement: Risk Assessments.</i> Department of Environment Regulation, Perth.		

Appendix 2: Summary of Licence Holder comments

The Licence Holder was provided with the draft Amendment Notice on 30 October 2017 for review and comment. The Licence Holder responded on 23 November 2017. The following comments were received on the draft Amendment Notice.

Condition	Summary of Licence Holder comment	DWER response
N/A	<ul style="list-style-type: none"> • The Licence Holder confirmed that the majority of infrastructure comprising the existing STP will be decommissioned and removed from the Premises; • The Licence Holder provided clarification with regard to existing drainage infrastructure surrounding the STP and DWP and spill prevention/detection mechanisms in place to mitigate risk of sewage or chemicals entering the environment during operation of the STP and DWP. 	<p>Amendment Description section (above) updated.</p> <p>Table 7 has been updated to include drainage infrastructure and prevention / detection mechanisms incorporated in the design of the STP and DWP.</p>