

Amendment Report

Application for Licence Amendment

Part V Division 3 of the Environmental Protection Act 1986

Licence Number	L5366/1972/14
Licence Holder	Electricity Generation and Retail Corporation
File Number	2010/007578-4
Premises	Kwinana Power Station
	22 Leath Road NAVAL BASE WA 6165
	Legal description –
	Part of Lot 22 on Diagram 72310, Weston Street; Part of Lot 218 on Plan 215932; Part Lot 230 on Plan 240259, Part Lot 229 on Plan 240259, and Part Lot 4552 on Plan 220690
	As defined by the Premises maps attached to the Revised Licence
Date of Report	20/09/2021
Decision	Revised licence granted

Chris Malley Manager, Process Industries an officer delegated under section 20 of the *Environmental Protection Act 1986* (WA)

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1. Decision summary

Licence L5366/1972/14 is held by Electricity Generation and Retail Corporation T/A Synergy (Licence Holder) for the Kwinana Power Station (the Premises), located at 22 Leath Road, Naval Base.

This Amendment Report documents the assessment of potential risks to the environment and public health from changes requested by the Licence Holder in its 3 June 2021 licence amendment application. As a result of this assessment, Revised Licence L5366/1972/14 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. The revised licence has been granted in a new format with existing conditions beyond the scope of the licence amendment application being transferred, but not reassessed, to the new format.

2. Scope of assessment

2.1 Regulatory framework

In completing the assessment documented in this Amendment Report, the Delegated Officer has considered and given due regard to the Department's Regulatory Framework and relevant policy documents which are available at <u>https://dwer.wa.gov.au/regulatory-documents</u>.

2.2 Application summary

On 3 June 2021, the licence holder submitted an application to the department to amend Licence L5366/1972/14 under section 59 and 59B of the *Environmental Protection Act 1986* (EP Act). The following amendments are being sought:

- Amendment to condition 2.2.4 to change the management conditions in the event of a failure of NOx water injection;
- Amendment of condition 3.3.1 to allow for continuous monitoring for chlorine to stop when no chlorine dosing is taking place;
- Amendment to condition 3.3.1 to allow ceasing of continuous temperature monitoring when no cooling water is being discharged;
- Amendment to condition 3.3.4 to include monitoring of dosing of hypochlorite; and,
- Amendment to condition 5.3.1 to include the hypochlorite monitoring in the Annual Environmental Report.

This amendment is limited only to changes to Category 52 from the existing licence. No changes to the aspects of the existing licence relating to Category 61, or 73 have been requested by the Licence Holder. The following sections discuss the individual amendments requested by the Licence Holder in more detail.

2.2.1 Condition 2.2.4

The licence holder operates two High Efficiency Gas Turbines (HEGT) at Kwinana Power Station. The two turbines are operated remotely by the Australian Energy Market Operator (AEMO) and are frequently used to provide for network stability.

Power system stability is the ability of the electric power system, for a given initial operating condition, to regain a state of operating equilibrium after being subject to a physical of electrical disturbance with system variables bounded so that practically the entire power system remains intact. In simple words, the power generation at the Premises fluctuates frequently to keep the electricity network stable.

When the turbines are providing network stability, the licence holder advises it is not practicable to shut them down immediately (e.g. if emissions are exceeding the existing NOx licence limit), without causing disruption to the electricity network. The licence holder is seeking an alternative management framework involving a short-term NOx limit exemption in the event that the NOx water system fails, and the turbines are required for network stability. The licence holder proposed a 2-hour limit is proposed to allow enough time to either remediate the problem with the NOx water injection or for AEMO to use a different electricity generator to provide the required load.

The Department contacted AEMO who confirmed in writing that that immediate shutdown is not possible without the risk of compromising stability of the South West Interconnected System, increasing the risk to the power system security and reliability. It advised that two hours is generally an appropriate time for it to arrange other generators to be brought online to support reduced output with the Premises, if other generators are available to do so. In the unlikely event of insufficient generation, load would need to be reduced.

NOx emissions are limited by the operation of the turbines themselves and the licence holder has advised that during the last failure of NOx water injection, the emissions peaked at a concentration of 96 mg/m³ with a mass emission rate of 16 g/s.

NOx emissions from the turbines were modelled in 2009 prior to the construction of the HEGT units for both natural gas and low sulphur distillate and reported to DWER as *Verve Energy* – *High Efficiency Gas Turbine Air Dispersion Modelling Analysis, Environ 2009.* The modelling used and emission rate of 18g/s for distillate which predicted maximum ground level concentrations (GLC) of 56 μ g/m³ or 25% of the NEPM 1 hour standard of 226 μ g/M³.

2.2.2 Condition 3.3.1

The current licence requires the continuous monitoring of total residual chlorine in the cooling water discharge. The licence holder has requested an amendment to allow the monitoring to cease when no hypochlorite is being dosed in the cooling water.

In a similar way, the licence requires continuous monitoring of the cooling water temperature change from inlet to outlet even when cooling water is not being used. The licence holder has requested an amendment to allow the monitoring to cease when no cooling water is being used. The existing licence allows for no monitoring when not discharging, however a change of wording will clarify the difference between temperature and chlorine monitoring.

These amendments would allow time for maintenance or replacement of the monitoring equipment at a time when they are not required.

2.2.3 Conditions 3.3.4 and 5.3.1

The licence holder has applied to amend condition 3.3.4 to include the requirement for monitoring of hypochlorite dosing of cooling water. In addition the licence holder requested an amendment to condition 5.3.1 to require the reporting of the dosing of hypochlorite.

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 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 contro	Table	1: Licence	Holder	controls
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Emission	Sources	Potential pathways	Existing controls
NOx	Combustion of natural gas	Air/windborne pathway	Water injectionLow NOx burners
Wastewater from water treatment plant	Wastewater treatment plant	Direct discharge to Cockburn	NA
Seawater cooling water	Gas turbines' cooling system	Sound	NA

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 Premises

Human receptors	Distance from Premises
Residential premises	4 km SE from the Premises boundary
Environmental receptors	Distance from Premises
·	

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 incomplete they have not been considered further in the risk assessment.

Where the Licence Holder has proposed mitigation measures/controls (as detailed in Section 3.1), these have been considered when determining the final risk rating. Where the Delegated Officer considers the Licence Holder's proposed controls to be critical to maintaining an acceptable level of risk, these will be incorporated into the licence as regulatory controls.

Additional regulatory controls may be imposed where the Licence Holder's controls are not deemed sufficient. Where this is the case the need for additional controls will be documented and justified in Table 3.

The Revised Licence L5366/1972/14 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).

Risk Event			Risk rating ¹					
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Licence Holder's controls	C = consequence L = likelihood	Licence Holder's controls sufficient?	Conditions ^{2, 3} of licence	Reasoning
Operation								
Generation of Electricity	Potential short term exceedance of licence limits due to failure of NOx water system.	Air/windborne pathway causing impacts to health and amenity	Adjacent industry and residential premises 4 km SE	Refer to Section 3.1.1	C = Minor L = Unlikely Medium Risk	Y	Condition 1, 5, 6 and 7	Modelling shows that emissions will cause ground level concentrations of less than 25% of ambient standard.
	Cooling water and reject water from wwtp	Direct discharge	Cockburn sound	NA	C = Minor L = Unlikely Medium Risk	Y	Condition 1, 2, 8, 9 and 10	No significant change in risk for ceasing discharge when discharge is not occurring.

Table 3. Risk assessment of potential emissions and discharges from the Premises operation

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.

Note 3: Refers to condition numbers in the revised licence as amendments included alteration of the condition numbering format

4. Consultation

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

Table 4: Consultation

Consultation method	Comments received	Delegated Officer response
Draft decision provided to the Licence Holder for comment 13/09/2021	Comments received 15/9/21. The licence holder requested that the decision report and licence does not refer to NOx water injection pump because there may be other reasons for the failure of NOx water injection than just the pump.	Change of wording accepted as wording was intended to broadly relate to failures of the NOx injection system, not just a specific pump failure.

5. Decision

The licence holder's requested amendments were assessed consistent with the Department's Regulatory Framework and the Delegated Officer determined to amend licence L5366/1972/14. The determined amendments related to consideration of the application and summary reasons for the decision are further outlined below.

1. NOx limit and exemption events (condition 2.2.4 / condition 7)

The Delegated Officer amended the licence to include an additional NOx limit exemption with specified management actions. In the event that the HEGT's are gas-fired and the NOx water injection fail caused a limit exceedance, the licence holder will have two hours to troubleshoot and recommence normal operation of the NOx water injection or otherwise reduce turbine load to ensure that continuously monitored NOx emissions comply with the specified NOx limit. The Delegated Officer considered that:

- Short-term peak emissions of NOx associated with a two hour NOx water injection system failure are expected result in receptor ground level concentrations that remain well below the 1-hour NEPM standard for NOx.
- The exemption addresses complexities with respect to immediate shutdown that may otherwise result in network stability and reliability issues.
- The exemption is limited to two hours for troubleshooting (including arrangements for other generators to be brought online) after which time the licence holder is required to reduce load to ensure compliance with the limit.

2. Cooling water dosing and monitoring (condition 3.3.1 / 20)

The licence was amended to include provision that continuous total residual chlorine monitoring may cease one hour after cessation of hypochlorite dosing ceases. Temperature is to be continuous for the duration of any cooling water discharge.

These amendments do not change the emissions risk profile and considered reasonable so that the licence holder has opportunity for maintenance or replacement of the monitoring equipment at a time when they are not required (i.e. not cooling water discharge).

3. Hypochlorite dosing monitoring and reporting (conditions 3.3.4 and 5.3.1 / 22)

The licence was amended to require that the licence holder maintain a record of when dosing of hypochlorite is on or off, however the Delegated Officer did not agree that it was necessary to report records in the annual environmental report. The licence already requires the licence holder to maintain records, information, reports and data. The Delegated Officer notes that the Department is able to request this information if required, or otherwise may opt to review the

record as part of routine compliance inspection processes.

6. 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.

6.1 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.

Condition no.	Proposed amendments
2.2.4	Insert exception to licence for limit compliance for 2 hours in event of NOx water failure and renumbered to condition 7
3.3.1	Reworded to allow for suspension of continuous monitoring for free chlorine when dosing is not taking place and temperature of cooling water when discharge is not taking place. Renumbered to condition 20.
3.4.1	Require the monitor and recording of whether dosing is on or off. Renumbered to condition 22.

 Table 5: Summary of licence amendments

Table 6: Consolidation of licence conditions in this amendment

Existing condition	Revised licence condition	Condition summary	Conversion notes
N/A	N/A	Prescribed Premises Category table	Revised to current licensing format. Moved to Schedule 2: Primary Activities Table 10
1.1.1 1.1.2	N/A Interpretation section, Definitions	Interpretation and definitions	Revised to current licensing format.
1.1.3	N/A Interpretation section, Definitions	Australian or other standard	Redundant condition. Revised to current licensing format.
1.1.4	N/A Interpretation section, Definitions	Reference to code of practice	Redundant condition. Revised to current licensing format.
1.2.1	NA	Emissions	Redundant condition. Revised to current licensing format.
1.2.2	N/A	Pollution control and monitoring equipment	Redundant condition. Adequately covered by alternative existing conditions. Deleted from licence.
1.2.3	N/A	Storage of environmentally hazardous materials	Redundant condition. Adequately regulated by the Dangerous Goods

Existing condition	Revised licence condition	Condition summary	Conversion notes
			Safety Act 2004. Deleted from licence.
1.2.4	N/A	Recovery and removal of spills	Redundant condition. Adequately covered by EP (Unauthorised Discharges) Regulations 2004. Deleted from licence.
1.2.5	N/A	Prevention of contamination and containment of contaminated stormwater	Redundant condition. Adequately covered by alternative existing conditions and proposed new conditions. Deleted from licence.
1.3.1 Table 1.3.1	Covered in Conditions 1 and 3 Tables 1 and 2	Waste acceptance	Revised to current licensing format.
1.3.3	Condition 3 Table 2	Oily water separator	Revised to current licensing format
2.1.1	Condition 28	Record and investigate exceedances of limits or targets	Revised to current licensing format
2.2.1 Table 2.2.1	Condition 5 Table 3	Authorised emission points discharges to air	Revised to current licensing format.
2.2.2 Table 2.2.2	Condition 6 Table 4	Limits emissions to air	Revised to current licensing format.
2.2.3 and 2.2.4 Table 2.2.3	Condition 7 Table 5	Exceptions to limits to emissions to air	Revised to current licensing format
2.3.1 Table 2.3.1	Condition 8 Table 6	Authorised emission points discharge to water	Revised to current licensing format
2.3.2 Table 2.3.2	Condition 9 Table 7	Limits to discharge to water	Revised to current licensing format
2.3.3 and 2.3.4	Condition 10 Table 8	Exemption to limits on discharges to water	Revised to current licensing format
3.1.1 to 3.1.5	Condition 11 to Condition 15	General Monitoring	Revised to current licensing format
3.2.1 Table 3.2.1	Condition 16 Table 9	Monitoring of point source emissions to air	Revised to current licensing format
3.2.2 to 3.2.4	Conditions 17 to 19	Conditions for monitoring point source emissions to air	Revised to current licensing format
3.3.1	Condition 20	Monitoring point source emissions to water	Revised to current licensing format

Existing condition	Revised licence condition	Condition summary	Conversion notes
Table 32.3.1	Table 10		
3.3.2	Condition 21	Availability of monitoring point source emissions to water	Revised to current licensing format
3.4.1	Condition 22	Monitoring of cooling water	Revised to current licensing format
Table 3.4.1	Table 11		
4.1.1 to 4.1.4	NA	Works	Redundant conditions deleted
5.1.1	Conditions 25 and 26	Records	Revised to current licensing format
5.1.2	NA	Persons left in charge of premises access to licence	Redundant condition deleted
5.1.3	Condition 24	AACR	Revised to current licensing format
5.1.4	Condition 23	Complaints	Revised to current licensing format
5.2.1	Condition 27 Table 12	Annual Environmental report	Revised to current licensing format
5.2.2 to 5.2.4	Conditions 28 to 30	Additional AER conditions	Revised to current licensing format
5.3.1	Condition 31	Notifications	Revised to current licensing format
Schedule 1: Maps	Schedule 1: Maps	Premises map	New naming convention, Figure 1 has been updated.
			Figure 3 redundant has been deleted
Schedule 2	N/A	Form N1 Notification	Redundant attachment. Deleted from Licence
notifications			Forms accessed at www.dwer.wa.gov.au

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.
- 4. Synergy 2021 Application for licence amendment and supplementary information
- 5. Environ 2009 Verve Energy High Efficiency Gas Turbine Air Disperion Modelling Analysis Perth Western Australia

Appendix 1: Application validation summary

SECTION 1: APPLICATION SUMMARY							
Application type							
Amendment to licence	\boxtimes	Current licence number:	L5366/1	1972/14			
		Relevant works approval number:			N/A		
Date application received		3 June 2021					
Applicant and Premises details							
Applicant name/s (full legal name/s)		Electricity Generation and Retail Corporation					
Premises name		Kwinana Power Station					
Premises location		22 Leath Road, Naval Base					
Local Government Authority		City of Kwinana					
Application documents							
HPCM file reference number:		2010/007578-4~6					
Key application documents (additional to application form):		Supporting documentation with explanatory notes					
Scope of application/assessment							
Summary of proposed activities or changes to existing operations.		Licence amendment					
		Operation of high energy gas turbines					
		Amendments to conditions 2.2.4, 3.3.1, 3.4.1, and 5.3.1. Changes relate to reporting and monitoring requirements.					
Category number/s (activities that cause the premises to become prescribed premises)							
I able 1: Prescribed premises categories							
Prescribed premises category and description	pro ca	oduction or design bacity	I	Proposed changes to the production or design capacity (amendments only)			
Category 52: Electric Power Generation	220) MW		NA			
Category 61: Liquid waste facility	11,	500 tonnes per ann	um	NA			
Category 73: Bulk storage of chemicals	188	3,655 m ³		NA			
Legislative context and other approvals							

Has the applicant referred, or do they intend to refer, their proposal to the EPA under Part IV of the EP Act as a significant proposal?	Yes □ No ⊠	Referral decision No: Managed under Part V □ Assessed under Part IV □	
Does the applicant hold any existing Part IV Ministerial Statements relevant to the application?	Yes □ No ⊠	Ministerial statement No: EPA Report No:	
Has the proposal been referred and/or assessed under the EPBC Act?	Yes 🗆 No 🖂	Reference No:	
Has the applicant demonstrated occupancy (proof of occupier status)?	Yes ⊠ No □	Certificate of title General lease 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: N/A No clearing is proposed.	
Has the applicant applied for, or have an existing CAWS Act clearing licence in relation to this proposal?	Yes 🗆 No 🛛	Application reference No: N/A Licence/permit No: N/A No clearing is proposed.	
Has the applicant applied for, or have an existing RIWI Act licence or permit in relation to this proposal?	Yes 🗆 No 🛛	Application reference No: Licence/permit No: Licence / permit not required.	
Does the proposal involve a discharge of waste into a designated area (as defined in section 57 of the EP Act)?	Yes □ No ⊠	Name: N/A Type: 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 <u>WQPN 25</u>)?
	Yes 🗆 No 🗆 N/A 🗆
Yes □ No ⊠	
Yes ⊠ No □	
Yes □ No ⊠	
Yes ⊠ No □	Classification: contaminated – remediation required (C–RR) Date of classification: N/A
	Yes □ No ⊠ Yes ⊠ No □ Yes □ No ⊠ Yes ⊠ No □