Application for Licence

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

Licence Number	L9344/2022/1
Applicant	Pacific Energy Australia Pty Ltd
ACN	603 809 856
File number	DER2020/000141~5
Premises	Esperance Gas -fired Power Station 121 Harbour Road CHADWICK WA 6450 Legal description Part of Lot 502 on Deposited Plan 413859 As defined by the premises maps attached to the issued licence
Date of report	03/10/2022
Decision	Licence granted

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1. Decision summary

Pacific Energy Australia Pty Ltd (the applicant, Pacific Energy) have applied to operate the Esperance Gas-fired Power Station (premises) at 121 Harbour Road Chadwick, WA about 780 metres from the town of Esperance. An application for a licence was submitted under Division 3 Part V of the *Environmental Protection Act 1986* (EP Act) on the 4 July 2022.

This decision report sets out the delegated officer's assessment of potential risks to the environment and public health from emissions and discharges during the operation of the premises.

In completing the assessment documented in this decision report, the Department of Water and Environmental Regulation (the department; DWER) 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

As a result of this assessment, licence L9344/2022/1 has been granted.

2. Scope of assessment

2.1 Application summary

The application is to seek a licence to operate a gas-fired power station at the premises. The premises relates to the category 52 – electric power generation and assessed design capacity under Schedule 1 of the *Environmental Protection Regulations 1987* (EP Regulations) which are defined in licence L9344/2022/1. The infrastructure and equipment relating to the premises category and any associated activities which the department has considered in line with *Guideline: Risk Assessments* (DWER 2020) are outlined in licence L9344/2022/1.

Contract Power Australia Pty Ltd was issued works approval W6378/2020/1 on 11 September 2020 for the construction and time-limited operations of a 22 MWe gas-fired power station. In 2022 Contract Power Australia Pty Ltd merged with Pacific Energy. Pacific Energy proposes to operate the power station 24 hours per day, 365 days per year with a maximum power production capacity of 22 MWe from eleven 2 MWe gas generators.

2.2 Background and overview of premises

Compliance of works approval W6378/2020/1

Environmental Compliance Reporting

On the 3 February 2022 Contract Power Australia Pty Ltd submitted their Environmental Compliance Report required by conditions 2 and 3 of work approval W6378/2020/1. The delegated officer considered that all infrastructure had been installed according to the design and construction / installation requirements in W6378/2020/1 condition 1.

Noise Verification Reporting

Wood (2022) prepared a Noise Verification Assessment Report (NVR) in March 2022. The NVR was provided with the application for the licence. Noise monitoring occurred at seven locations, consisting of five residential and two industrial monitoring locations. Noise levels were monitored during three periods, the day, evening, and night-time.

Assigned noise levels were determined using generic day, evening, and night-time assigned noise levels prescribed within the Environmental Protection Noise Regulations 1997 (Noise Regulations) and applying influencing factors based on each site.

The delegated officer considered that the methods, assumptions, and results for the seven monitoring stations were compliant with the day, evening, and night-time noise levels. The delegated officer considered works approval W6378/2020/1 conditions 14, 15, and 16 to be compliant.

Time Limited Operations Reporting

On the 5 August 2022, the applicant submitted a Time Limited Operations Report required by conditions 18 and 19 of works approval W6378/2020/1. The applicant reported two non-compliances within the works approval, they are:

- Condition 9 air emission sampling for each gas fired generators (A1 – A11) determined that the sample plane conformance to AS4323.1:2021 was deemed to be non-conforming due to the highest and lowest gas velocity ratio exceeding 1.6:1500 and the upstream disturbance was less than 2D from the sampling plane.

  The applicant indicated that this will be rectified through the adjustment of sample ports on each of the gas generator stacks (A1 – A11) to the required distance (duct diameters) up from the junction disturbance, to ensure future monitoring events are correct and meet with AS4323.1:2021. This issue did not apply to the air emission results for the diesel generators.

- Two spot samples taken to comply with condition 11 from the oil water separator discharge point were analysed for total petroleum hydrocarbon (TPH) and not total recoverable hydrocarbon (TRH). The results for the TPH were low and well below the 5 mg/L TRH limit. The applicant took another spot sample on 16 June 2022 for TRH. Results have not been provided.

All other requirements were reported and deemed compliant by the delegated officer.

Operation of premises

Key power station infrastructure and equipment include:

- 1x1 2 MWe gas fired generators
- 3x 1 MWe diesel generators
- 2x 2 MWe battery energy storage system
- 14x 100 L oil make up tanks
- 1x 70 kL self-bunded diesel tank
- 1x 10 kL self-bunded waste oil tank
- 1x self-bunded hydrocarbon storage is for up to 1 kL of intermediate bulk containers (IBC)
- 1x oil water separator

Gas generators

Eleven 2 MWe gas generators are installed on a concrete pad with each generator housed within an acoustic container with exhaust silencers to control noise emissions. Air emissions are directed to an 8.6 m high exhaust stack. Gas is fed to the power station by a pipeline. Nine gas generators will be operating at any one time with two gas generators reserved for standby, backup or maintenance.

Diesel generators

Three installed 1 MWe diesel generators will be used for emergency situations when there are gas interruptions or supply failure. The generators will be operated for one hour each month, and / or up to 50 hours per year to ensure they are fully functioning. The diesel generators are installed on concrete pads within individual acoustic containers with exhaust silencers to control noise emissions. Diesel is stored within a self-bunded 70 kL tank.

Emergency standby generators do not meet the definition of category 52 – electric power generation under the *Environmental Protection Regulations* 1987 (EP Regulations) and therefore do not require assessment under this decision report. The applicant has included emergency standby generators in their application, emission and discharges from the infrastructure have been considered so the infrastructure can be included as authorised discharge points on the premises and authorised

emergency operational use conditioned.

Stormwater Management

Potentially contaminated stormwater will be collected from the concrete pads and bunded areas to be treated in an oil water separator to less than 5 mg/L of total recoverable hydrocarbons (TRH) and then a puraceptor unit. Once the treated stormwater meets TRH criteria the treated stormwater is infiltrated to ground though onsite soak wells. Hydrocarbons collected within the treatment systems is collected by a licensed contractor and disposed of off-site.

3. Air quality modelling and monitoring review

Golder Associates Pty Ltd (Golder) supplied an Air Quality Impact Assessment (AQIA) with the works approval application and submitted a revised Air Quality Impact Assessment (AQIA) in July 2020. The applicant submitted stack emission test results for all 11 gas and 3 diesel generators as a requirement for works approval W6378/2020/1 time-limited operations for monitoring and reporting.

The delegated officer determined that the applicants 2020 air quality assessment meets the requirements of the department's air quality modelling guidance note (DWER Guideline: Air Emissions 2019), and the emission estimation used in the modelling is conservative compared to the recent stack emission measurements.

The AQIA and submitted stack emission testing results indicate that the predicted ground level concentrations associated with emissions from the premises will comply with the relevant criteria (NEPM 2021) at all sensitive receptors when operating. In most cases, the emissions from the premises make up a small proportion of the cumulative emissions, with existing background concentrations being significantly higher.

4. 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 that 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.

4.1 Source-pathways and receptors

Emissions and controls

The key emissions and associated actual or likely pathway during premises operation which have been considered in this decision report are detailed in Table 1 below. Table 1 also details the control measures the applicant has proposed to assist in controlling these emissions, where necessary.

Table 1: Proposed applicant controls

Emission	Sources	Potential pathways	Proposed controls
Operation			
Noise	Operation of gas and diesel generators	Air / windborne pathway	• Each generator is located within an enclosed acoustic container with exhaust silencers. • Each gas generator emits noise at 85 dB at 1 m from casing. • Implement manufacturer maintenance schedule • Maximum of nine gas generators operating at any one time.

Emission	Sources	Potential pathways	Proposed controls
			• Generators will be rotated to allow for regular scheduled maintenance. • Diesel generators emits noise at 83 dB at 1 m from the casing at 75 % load.
Air emissions		Air / windborne pathway	• Implement manufactures maintenance schedule • Maximum of nine gas generators operating at any one time. • Generators will be rotated to allow for regular scheduled maintenance. • Daily visual inspections of the plant. • Diesel generators are not used under normal operating conditions, only in emergency situations. • Diesel generators will be run for 1 hour a month up to 50 hours per year. • Gas stacks are 8.6 m and diesel stacks are 3.3 m high. • Sample ports on each stack installed accordingly with AS4323.1 • Premises is registered and will report air emissions to National Pollutant Inventory annually.
Leaks and spills contaminating stormwater	Operation of the power station	Leaks and spills contaminating soil and infiltrating and leaching to groundwater	• Bunded areas have sumps to collect stormwater which are processed through the oily water separator system prior to discharge to soak wells. • All collected stormwater and any oily water will be processed through the oily water separator system (oily water separator and puraceptor). • Discharge from oily water separator must be below 5 mg/L of TRH • Hydrocarbon waste from oily water separator system will be removed off site by a licensed contractor. • All hydrocarbons will be stored according to AS1940-2004 Storage and handling of flammable and combustible liquids. • Hydrocarbons are stored in bunded area with 110% volume to retain spills and stormwater. • Chemical and hazardous materials stored to AS relevant to the storage of chemicals and dangerous goods. • Spill control equipment will be stored and maintained at critical spill locations. • Personnel will be trained in how to use spill kits on site. • Daily visual inspections of the plant.

Receptors

In accordance with the *Guideline: Risk Assessment* (DWER 2020), the delegated officer has excluded the applicant's employees, visitors, and contractors 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 because 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

Human receptors	**Distance from prescribed activity**
Esperance residential suburb	780 m southeast of the premises boundary.
Nulsen residential suburb	760 m south southwest from the premises boundary
Castletown residential suburb	1.4 km east of the premises boundary
Esperance Primary School	1.5 km south from the premises boundary
Esperance High School	1.6 km southwest of the premises boundary
Special rural residential	800 m northwest of the premises boundary
Industrial	30 to 360 m in all directions from the premises boundary
Environmental receptors	**Distance from prescribed activity**
Esperance Water Reserve (Esperance drinking water supply) Public drinking water source proclaimed under the C*ountry Areas Water Supply Act 1947*.	At its closest point, the boundary of the proclaimed area is 110 m west (cross gradient) and around 500 m south (down gradient) of the premises. Groundwater flow south, southeast.
Esperance Groundwater Area Managed under the *Rights in Water and Irrigation Act 1914.*	Ground water flow south, southeast and between 2- 20 mbgl. Licence bore 380m down gradient for industrial purposes. Licenced bore 620m down gradient for public open space and recreational irrigation. Closed residential bore 1.1 km down gradient.

4.2 Risk ratings

Risk ratings have been assessed in accordance with the *Guideline: Risk Assessments* (DWER 2020) for each identified emission source and considers potential source-pathway and receptor linkages as identified in Section 4.1. Where linkages are in-complete they have not been considered further in the risk assessment.

Where the applicant has proposed mitigation measures/controls (as detailed in Section 4.1), these have been considered when determining the final risk rating. Where the delegated officer considers the applicant'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 applicant's controls are not deemed sufficient. Where this is the case the need for additional controls will be documented and justified in Table 3.

Licence L9344/2022/1 that accompanies this decision report authorises emissions associated with the operation of the premises i.e. power station activities.

The conditions in the issued licence, as outlined in Table 3 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 events					Risk rating [1] C = consequence L = likelihood	Applicant controls sufficient?	Conditions [2] of licence	Justification for additional regulatory controls
Sources / activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Applicant controls**				
Operation								
Operation of power station	Air emissions	Air / windborne pathway causing impacts to health and amenity	Residences, 780m southeast, 760 m south-southwest and 800m northwest, and industrial premises 30 to 360 m in all directions from premises boundary.	Maximum of nine gas generator operating at any one time. Generators rotated to allow for manufacturers maintenance schedule. Diesel generator only operate under emergency situations. Diesel will run up to 50 hours per year for maintenance. All generators have stacks that have sample ports installed to AS4323.1. Report emission to NPI. Refer to Section 3.1	Public health consequence criteria are likely to be meet and low-level local scale impacts to amenity. C = Minor The risk event will probably not occur in most circumstances L = Rare **Low Risk**	**Y**	Condition 1	The delegated officer has considered the distance to receptors, the stack emission data, air emission modelling, registration, and annual reporting of air emissions to the national pollutant inventory (NPI), and the applicant's controls including rotation of generators, maximum number of generators operating at any one time, generator maintenance and assessed the risk as low. The delegated officer calculated greenhouse gas emissions for CO_2 and NO_2 based on the submitted time-limited operations (for W6378/2020/1) stack monitoring data and determined that the emissions were low (CO_2-0.2 tonnes/year and NO_2 – 24.15 tonnes/year). The delegated officer determined that emissions were well below the Environmental Protection Authority (EPA) 100,000 tonnes/annum aligned to scope 1 emissions, which is the threshold criteria for large facilities for a carbon offset, and emission reduction requirements under the Australian Government's Safeguard Mechanisms. The applicants' controls were assessed and considered sufficient. The delegated officer applied the applicant's controls and considered that they were critical for maintaining an acceptable level of risk as conditions within the licence for minimising air emissions. The applicant's controls to be conditioned are: • No more than nine gas generators must be operated at any one time. • Each diesel generator must not be operated for more than 50 hours per annual period for maintenance. • Diesel generators must only be operated for maintenance or emergency situations. • Generators must be rotated to be maintained to the manufacturer's specification.
	Noise	Air / windborne pathway causing impacts amenity		Each generator is located within an enclosed acoustic container with exhaust silencers. Gas generators emit noise at 85dB at 1 m from casing, diesel generators emit noise at 83 dB at 1m from the casing at 75 % load. Maximum of nine gas generators operating at any one time. Diesel generators are used for emergency back up only. Generators are rotated to allow for regular scheduled maintenance and maintained to manufactures recommends. Refer to Section 3.1	Minimal amenity impacts at local scale C = Slight The risk event will probably not occur at some time L = Unlikely **Low Risk**	**Y**	Condition 1	The delegated officer reviewed the noise verification study and determined that the noise level complied with the EP Noise Regulations at all sensitive residential receptors for day, evening, and night-time levels. The delegated officer has considered the distance to receptors, the noise verification study, and the applicant's controls including generators operating within enclosed acoustic containers, exhaust silencers, number of gas generators operating at any one time, and diesel generators are used only for emergency and maintenance only and assessed the risk as low. The applicants' controls were assessed and considered sufficient. The delegated officer applied the applicant's controls and considered that they were critical for maintaining an acceptable level of risk as conditions within the licence for minimising air emissions. The applicant's controls to be conditioned are: • No more than nine gas generators must be operated at any one time. • Each diesel generator must not be operated for more than 50 hours per annual period for maintenance. • Diesel generators must only be operated for maintenance or emergency situations. • Generators must be rotated to be maintained to the manufacturer's specification.
	Leaks and spill contaminating stormwater	Potentially contaminated stormwater contaminating soil and leaching to groundwater causing contamination impacts to down gradient users.	Groundwater is unknown depth (between 2-20 mbgl.) licenced bore users 380 m down gradient. Esperance public drinking town water	All hydrocarbons are stored to AS1940-204. All bunded areas have sumps and all collected stormwaters are direct to oily water separator. Personnel are trained in using spill equipment that is located at critical locations. Any discharge to land from oily water spectator must be below 5 mg/L of TRH. Refer to Section 3.1	Low level onsite impact, minimal local offsite impacts C = Minor The risk event will probably not occur at some time. L = Unlikely **Medium Risk**	**N**	Condition 1 Condition 2 Condition 3 **Condition 4**	The delegated officer has considered the distance to groundwater, bore users down gradient, the proximity of the Esperance public drinking town water supply, and the applicant's controls including TRH discharge limit, sumps, bunded areas, and the stormwater oily water separator system, spill equipment availability and assessed the risk as medium. The applicant's controls were assessed and were considered insufficient to mitigate the risk of leaks and spills contaminating stormwater and impacting sensitive water resources. The delegated officer considered that the following condition was required to be regulated to manage the risk to sensitive receptors by demonstrating compliance with TRH discharge limits. This is: • TRH is to be sampled twice each year to determine compliance against the TRH discharge limit from the oily water separator system. The delegated officer applied the applicant's controls and considered that they were critical for maintaining an

Risk events					Risk rating [1] C = consequence L = likelihood	Applicant controls sufficient?	Conditions [2] of licence	Justification for additional regulatory controls
Sources / activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Applicant controls**				
			supply 500m down gradient.					acceptable level of risk as conditions within the licence for minimising the contamination water resources from contaminated stormwater from leaks and spills. The applicant's control to be conditioned are: • TRH discharge limit from oily water separator system to soak wells is 5 mg/L. • All hydrocarbons and chemical storage to be stored within the dedicated building, tank, or vessel. • All hydrocarbon liquids must be stored within self-bunded tanks or bunded area to AS 1970-2004. • All collected stormwater and any oily water must be directed to the oily water separator and puraceptor (oily water separator system). • All waste oil must be removed off-site by an authorised waste contractor.

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

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

5. Consultation

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

Table 4: Consultation

Consultation method	Comments received	Department response
Application advertised on the department's website on 20 August 2021	None received	N/A
Shire of Esperance advised of the proposal on 22 August 2022.	The Shire of Esperance replied on 29 August 2022 confirming that all planning approvals were valid, and that the power plant was compliant with local planning scheme No. 24.	The delegated officer notes this information.
Applicant was provided with draft documents on 20 September 2022	Applicant responded with no comments and waivered the comment period on the 27 September 2022.	The delegated officer notes this information.

6. Decision

The delegated officer has considered the application for a licence and undertaken a risk assessment of emissions and discharges where necessary. The following summaries the delegated officer's decision.

Air emissions: The delegated officer reviewed submitted air emission stack sampling data the AQIA and applicant controls and determined that they were reasonable and assessed the risk as low. The delegated officer determined that the applicant's controls were conditioned to maintain an acceptable level of risk to minimise air emissions. The delegated officer considered greenhouse gas emissions and calculated the emissions for CO_2 and NO_2 to be low and under the threshold requiring carbon offset. The delegated officer noted that the premises is registered and will be required to submit air emissions to the National Pollutant Inventory (NPI). The delegated officer deemed that the annual NPI emission reporting would be suitable for determining emissions estimates for annual licensing requirements.

Noise emissions: The delegated officer reviewed the noise verification study and applicant controls and determined that the operation of the premises met the day, evening, and night-time levels under the Noise Regulations and assessed the risk as low. The delegated officer determined that the applicant's controls were conditioned to maintain an acceptable level of risk to minimise the noise emissions.

Spill and leaks contaminating stormwater: The delegated officer determined that the proposed controls for the capture of leaks, spills, and contaminated stormwater to be reasonable and assessed it to be a medium risk. The risk assessment concluded that the proposed discharge limit of treated wastewater through the oily water separator and puraceptor (oily water separator system) of 5 mg/L was reasonable, however, there was no mechanism to validate this limit. The delegated officer determined to add twice-yearly monitoring of the oily water separator system discharge to soak wells to validate the effectiveness of the treatment system and to validate emission limit compliance. Furthermore, the delegated officer determined that the applicant's operational storage controls for hydrocarbons and chemicals were critical for maintaining an acceptable level of risk and were conditioned.

7. Conclusion

Based on the assessment in this decision report, the delegated officer has determined that a licence will be granted, subject to conditions commensurate with the determined controls and necessary for administration and reporting requirements.

References

1. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
2. Department of Water and Environmental Regulation (DWER) 2019*, Guideline: Air emissions,* Perth, Western Australia
3. DWER 2020, *Guideline: Risk Assessments*, Perth, Western Australia.
4. DWER 2020, *Works Approval W6378/2020/1 – Esperance Gas-fired Power Station, Contract Power Australia Pty Ltd,* Perth, Western Australia.
5. DWER 2020, *Decision Report - W6378/2020/1 – Esperance Gas-fired Power Station, Contract Power Australia Pty Ltd,* Perth, Western Australia.
6. Pacific Energy Australia Pty Ltd 2022, *Application for a licence and supporting documents*, Kingsway, Western Australia.