Government of Western Australia
Department of Water and Environmental Regulation

Amendment Report

Application for Licence Amendment

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

Licence Number	L9102/2017/1
Licence Holder	Chevron Australia Pty Ltd
ACN	086 197 757
File Number	DER2017/001839
Premises	Gorgon LNG Project Part of Crown Lease L077431, Certificate of Title Volume LR3168 Folio 315, Site 1 on Deposited Plan 409277; Part of Crown Lease L077428, Certificate of Title LR3158 Folio476, Site 5 on Deposited Plan 64220; Temporary Wastewater Injection Facilities Licence LIC00554/2009_1_43; Part of Revised Service Corridor Easement L641372, Certificate of Title Volume LR3142 Folio 58, Deposited Plan 91514; Part of Construction & Operations Support Infrastructure Licence 00058/2014_A4735851; Permanent Water Disposal Wells Licence L00016_2012/1_A1991085; Part of Road Infrastructure Licence Lic 00565/2009_1_31; CO2 Injection System Pipeline Easement L819294; Part of CO2 Injection Wells System Licence LIC_00564_2009_A1744377; and Support Infrastructure Licence (Old Airport East) 00333-2016_A6042022 BARROW ISLAND WA 6712 As defined by the Premises maps attached to the Revised Licence and coordinates in DWER document: DWERDT940930
Date of Report	25 July 2024
Decision	Revised licence granted

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1. Decision summary

Licence L9102/2017/1 is held by Chevron Australia Pty Ltd (CAPL, licence holder) for the Gorgon LNG Project (the Premises), located at Barrow Island.

This Amendment Report documents the assessment of potential risks to the environment and public health from proposed changes to the emissions and discharges during the operation of the Premises. As a result of this assessment, revised licence L9102/2017/1 has been granted.

2. Scope of assessment

2.1 Regulatory framework

In completing the assessment documented in this Amendment Report, the Department of Water and Environmental Regulation (department) has considered and given due regard to its Regulatory Framework and relevant policy documents which are available at DWER Regulatory documents | Western Australian Government (www.wa.gov.au).

2.2 Application summary

On 7 November 2023, Chevron Australia Pty Ltd (CAPL, licence holder) submitted an application to the department to amend Licence L9102/2017/1 under section 59 and 59B of the *Environmental Protection Act 1986* (EP Act). The amendments being sought are as follows:

- Authorise well remediation activities at the permanent disposal wells (PWD) and the temporary wastewater injection plant (TWIP) wells, as well remediation is required to maintain deep well injection disposal capacity.
- Amend the premises boundary to include the General utilities area (GUA), bridging utilities area (BUA) and the Dangerous Goods Storage Yard, which have been excised from the premises boundary of licence L4467/1972/14 for the Barrow Island Oil and Gas Facility also held by CAPL.
- Amendments to monitoring requirements for process monitoring at the TWIP wells and to the monitoring requirements for carbon dioxide (CO_2) discharges from Drill Centre A to C Injection Wells to include allowance for daily sampling of hydrocarbon when the analysers at Train 1 to 3 are not available continuously.

Further details of each of the proposed amendments are included in the following sections. All details have been taken from the application.

2.2.1 Well remediation activities at wastewater deep well injection wells

The licence holder disposes generated wastewater from the Gorgon LNG Project through deep well injection into the Flaccourt subsurface geological formation at a depth greater than 1000 meters below ground level (bgl) using four wells: WDW1 and WDW2, known as the Temporary wastewater injection plant (TWIP) wells, and Z-WI1 and Z-WI2, known as the Permanent wastewater disposal (PWD) wells. Locations of the wells can be seen in Figure 3 of the issued licence (Map of discharge points to land and monitoring locations).

Well remediation activities are required at the TWIP and PWD wells to ensure the disposal capacities are maintained to ensure the functionality of these wells for the future of the Gorgon Project, due to CAPL observing a decline in injectivity over time. CAPL has identified seven suitable well remediation methods but noted that some identified methods fall within section 53(2)(d) of the EP Act as general maintenance activities required to maintain the efficient operation of pollution control equipment.

The licence holder is proposing a range of well remediation methods to provide flexibility and

options for the future, based on the performance of each method. Note that while CAPL have proposed multiple methods, not all will be necessary for each well. The frequency and duration of each proposed method are outlined in Table 1 below.

Table 1: Indicative frequency and durations of well remediation activities

Remediation Activity	Frequency	Duration
Well re-perforation and clay stabilisation treatment (CST)[1]	Four over the lifetime of the wells life	16 days
Dynamic underbalance treatment	After reperforation or ad hoc	10 days
Wireline applied stimulation pulse (WASP)	Ad hoc	7 days
Jet washing	Ad hoc	7 days
Well flowback	Ad hoc	7 days
Acid treatment[1]	Every 1.5 - 2 years	14 days
Well Kill[1]	Every 20 years (not required until 2035)	14 days

Note 1: Activities that require discharge of chemicals downhole.

Various methods of well remediation require remediation chemicals to be discharged downhole. CAPL has applied for this amendment for the department to assess this activity, and authorise any emissions that may result from well remediation. Remediation activities will utilise positive displacement high pressure skid mounted pumps and rely on diesel generators for power. Further details on the remediation methods that may result in emissions and discharges are outlined below.

Well re-perforation and clay stabilisation treatment (CST)

The remediation method involves re-perforating the well casing by generating new tunnels to improve injectivity, using either wireline or tubing. This is followed by pumping a clay stabilisation treatment into the new perforation tunnels to mitigate the negative effects of clay swelling as the reperforation exposes untreated clays. The types of chemicals used for CST include; clay stabilizer, clay protector, oxygen scavenger, biocide, and magnesium oxide. Approximately 105 m^3 of chemicals are discharged downhole per treatment, contributing to a total fluid volume of around 1,255 m^3, inclusive of water (less than 0.01% of annual wastewater stream for downhole disposal). This process is conducted to address potential damage to the perforation tunnels and maintain optimal well performance.

Acid Treatment

Acid treatment involves injecting solvents and acids to remove accumulated materials in the wellbore and formation. Solvents dissolve organic accumulations near the wellbore, such as grease, oils, and wax, while acids like hydrochloric acid (HCl) target acid-soluble scale. CAPL note that hydroflouric acid (HF), which is the hydrated form of Ammonium bifluoride ABF is the only effective option for dissolving migrated clay fines. The estimated volume of solution to be discharged downhole is 668 m^3 inclusive of 545 m^3 of fresh water per treatment. Prior to implementing an acid treatment, CAPL propose to undertake corrosion and compatibility testing, along with core flood testing, to ensure both well integrity and retention of formation permeability. CAPL notes that hydrocarbon gas could accumulate while wells are shut-in, and any gas would be vented at the tree to the atmosphere during remediation activities.

Well Flowback

Well flow back is the process of injecting gaseous nitrogen into the well, via coiled tubing or a flexible coil hose, to facilitate the production of liquids and solids to the surface. Captured liquids are filtered, reinjected, and any remaining solids, like sand and formation fines, are

transported off the island to an appropriate facility. This process results in Nitrogen being vented into the atmosphere, CAPL approximate that nitrogen will be vented at a rate of 0.5-0.9 MMscf (per activity).

Well Kill

During a rig-assisted well workover, certain interventions may require fluids to be pumped directly into the well's formation through tubing and casing. This process, known as "well kill," regulates the pressure within the well. If required the kill fluid would be potassium chloride (KCl) mixed with fresh water, approximately 50,000 lbs of KCl (as powder) would be required per well per activity.

2.2.2 Premises boundary change

CAPL has proposed to expand their premises boundary by incorporating three adjacent areas that have been exised from the premises boundary of the Barrow Island Oil and Gas facility licence L4467/1972/14 also held by CAPL. The addition of part of the General utilities area (GUA) is to accommodate for a new WWTP authorised under works approval W6772/2023/1. Additionally, the incorporation of the bridging utilities area (BUA) and Dangerous Goods Storage Yard areas to more appropriately reflect areas where waste is generated, handled and temporarily stored prior to relocation to the waste transfer station. These additions can be seen in yellow in Figure 1 below.

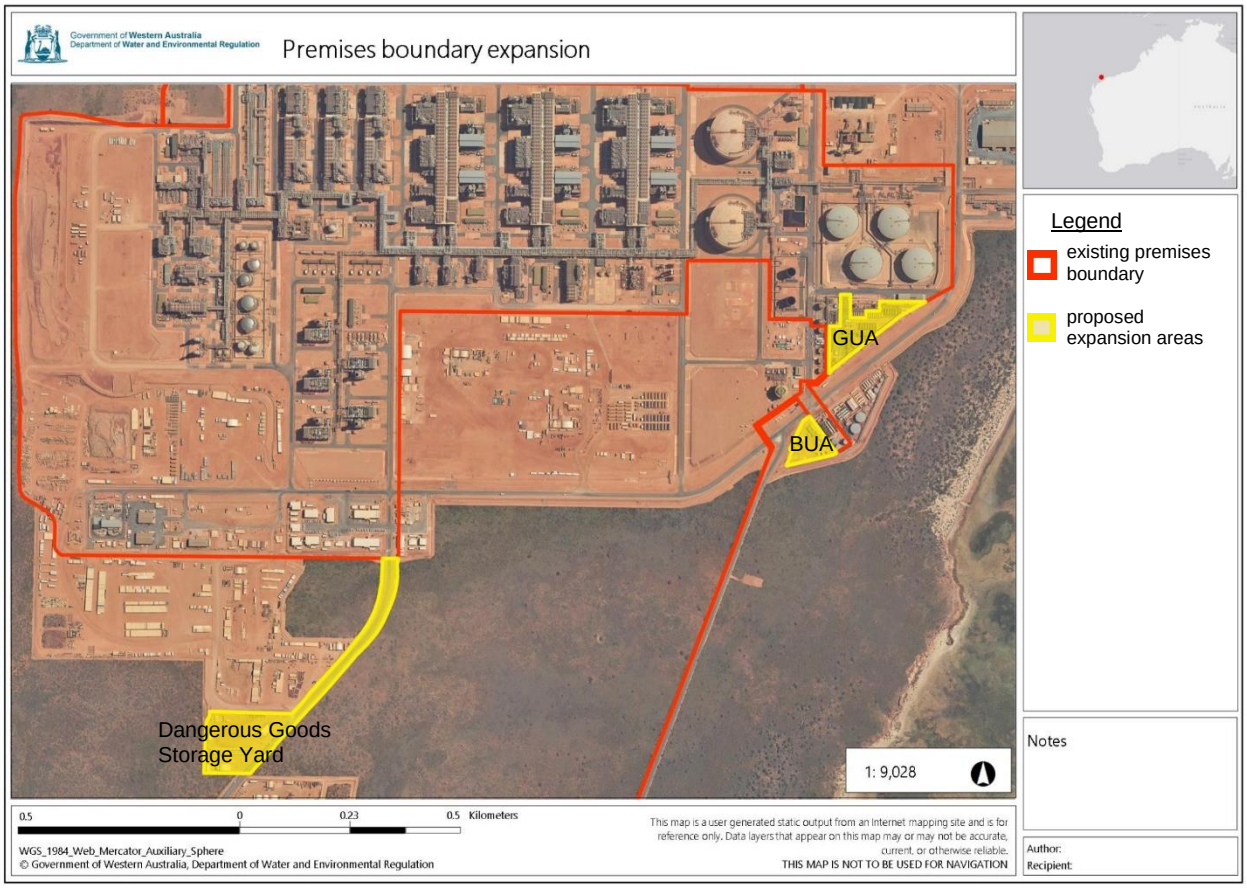

Figure 1: Proposed premises boundary additions

2.2.3 Monitoring amendments

CO_2 discharge monitoring

Reservoir CO_2 is removed from the incoming gas to the GTP and is injected into the Dupuy Formation 2,000 to 2,300 m below the surface of Barrow Island by the premises CO_2 injection

system via a series of nine injection wells. Licence L9102/2017/1 authorises the discharge of the reservoir CO_2 to land subject to limits on the volume and composition of the reservoir CO_2. The licence also includes requirements for monitoring of the volume and composition of the reservoir CO_2 discharged to land via the reservoir CO_2 injection wells in order to verify compliance with the limits specified in the licence. The monitoring requirements include continuous monitoring for hydrocarbon (including BTEX). Monitoring is undertaken by online analysers on GTP Trains 1 to 3 which measure the composition fed into the CO_2 compression unit. The licence defines continuous as 'operates with an availability greater than 90 percent on a calendar monthly basis'.

CAPL have reported five non-compliances with the requirement for continuous monitoring of hydrocarbon (including BTEX) discharged to land since 2019 due to reduced availability of the analyser due to technical issues following maintenance, equipment failure or intermittent outages. For periods where the availability of the CO_2 analysers was below the required 90%, CAPL implemented manual lab sampling to ensure monitoring of the CO_2 gas stream continues. CAPL is therefore proposing to amend table 14 to authorise daily sampling for hydrocarbons when the CO_2 analysers are unavailable. CAPL has previously sought a similar amendment in 2020 for weekly sampling, which was denied by the Delegated Officer due to concerns it could deter appropriate maintenance and improvements to the continuous monitoring system (DWER, 2021). CAPL has outlined various investigations and improvement works undertaken to increase availability of the analysers since the last amendment. They maintain that they are committed to improving the availability of the analysers and state that daily sampling aligns with the intent of continuous monitoring. CAPL make note that their CO_2 disposal management plan under section 13 of the *Barrow Island Act 2003 (WA)* refers to daily injection data of the hydrocarbon composition of the CO_2 stream and weekly sampling in the event the CO_2 analyser is unavailable.

TWIP pressure monitoring

Daily monitoring of wellhead and A Annulus pressure is conditioned within the licence in order to detect deviations from expected well behaviour, as a reliable indicator of potential well integrity loss. CAPL has proposed to introducing flexibility regarding the frequency of this monitoring to account for extenuating circumstances. The proposal is to remove the requirement of daily monitoring and specify monitoring frequency to exceed 90% of days over any 12 consecutive calendar months. This request was prompted by CAPL following them reporting two non-compliances with the condition 14 in 2022 and 2023 where daily monitoring was unable to be undertaken due to access restrictions caused by unsafe weather conditions.

2.3 Part IV of the EP Act

Ministerial Approval for the revised and expanded Gorgon Gas Development was granted on 10 August 2009 subject to conditions outlined in Ministerial Statement 800 (MS 800). MS 800 superseded Ministerial Statement 748 for the initial proposal, providing approval for both the initial, and the revised and expanded Gorgon Gas Development. The approval authorises the construction and operation of three 5 mtpa LNG processing trains, associated infrastructure and a CO_2 injection system to inject reservoir CO_2 into the Dupuy Formation on Barrow Island. Since the revised and expanded Gorgon Gas Development was approved, further minor changes have also been made and/or approved and updates to MS 800 made as necessary. This includes updates to MS 800 via MS 1002 which approves a fourth LNG train and a new Onshore Feed Gas Pipeline System located within the existing Onshore Feed Gas Pipeline Systems Corridor.

MS 800 contains conditions that need to be considered in the assessment of emissions and discharges from the premises and the imposition of regulatory controls. Ministerial conditions relevant to the assessment of emissions and discharges and the imposition of regulatory controls associated with stormwater and runoff management and wastewater disposal are

detailed in the Table 2 below.

Table 2: Consideration of MS 800 conditions relevant to this application

Overview	Delegated Officer considerations
Condition 7 Requires the submission and implementation of a Terrestrial and Subterranean Environment Protection Plan (TSEPP). The objectives of the Plan are to: i. To reduce the adverse impacts from the construction and operation of the terrestrial facilities as far as practicable; and ii. To ensure that construction and operation of the terrestrial facilities does not cause Material or Serious Environmental Harm outside the Terrestrial Disturbance Footprint, including below the surface of the land.	The delegated officer has reviewed the TSEPP and noted that the plan sets out management measures to minimise environmental impacts including but not limited to solid and liquid waste management, surface water management, leak and spill management, and light, noise and vibration management. The plan outlines key design requirements for chemical, hydrocarbon, and hazardous waste storage areas inclusive of temporary and permanent bunding, operating procedures and fauna protection measures. The Delegated Officer has considered these plans, in addition to the outcome of the risk assessment in determining regulatory controls relating to potential impacts to the terrestrial and subterranean environment.
Condition 30 Requires the submission and implementation of a Solid and Liquid Waste Management Plan (SLWMP). The objectives of the Plan are to: i. ensure all proposal-related solid and liquid wastes are either removed from Barrow Island or, if not, that all practicable means are used to ensure that waste disposal does not cause Material or Serious Environmental Harm to Barrow Island and its surrounding waters'; ii. ensure discharges from any wastewater treatment plant, reverse osmosis plant, or other process water are disposed of via deep well injection, unless otherwise authorised by the Minister; and iii. ensure any deep well injection of Proposal related liquid wastes is conducted in a manner that will not cause Material or Serious Environmental Harm to subterranean fauna and their habitats on Barrow Island.	The delegated officer has reviewed the SLWMP and notes that the plan references the Part V licence as a regulatory instrument for injection of liquid waste via deep well disposal. The operational licence L9107/2017/1 has conditions relating to minimising the risk of contaminated water impacting the freshwater aquifer. This includes a high-pressure alarm system for the PWD wells and pressure monitoring at the PWD and TWIP wells. The waste management measures detailed in the plan have been considered in the determination of the risk associated with waste management related to the application. Waste management measures specified in the plan will not be included on the licence to avoid duplication with MS 800.
Condition 16 Requires the submission and implementation of a Long-term Marine Turtle Management Plan (LTMTMP). a key objective of the plan is to: - Specify design features, management measures and operating controls to manage, and where practicable, avoid adverse impacts to marine turtles, with specific reference to reducing light and	The delegated officer has reviewed the Long-term Marine Turtle Management Plan and noted that the plan specifies design features, management measures and operating controls to minimise lighting, noise and vibration emissions as far as practicable to prevent adverse impact on marine turtles. The plan also specifies an annual monitoring program to detect impacts on turtle populations as well as management triggers and reporting requirements. The plan details common lighting

noise emissions as far as practicable.	design principles including when lighting is required, types of lighting to be used and procedures for reducing light spill/glow. The delegated officer considers the primary instrument for regulating the impacts on marine turtles from light, noise and vibration emissions is MS 800 and the Long-term Marine Turtle Management Plan. As such, to avoid regulatory duplication, no further assessment or management is required under Part V of the EP Act.

3. Risk assessment

The department assesses the risks of emissions from prescribed premises and identifies the potential source, pathway and impact to receptors in accordance with the *Guideline: Risk assessments* (DWER 2020).

To establish a Risk Event there must be an emission, a receptor which may be exposed to that emission through an identified actual or likely pathway, and a potential adverse effect to the receptor from exposure to that emission.

3.1 Source-pathways and receptors

3.1.1 Emissions and controls

The key emissions and associated actual or likely pathway during premises operation which have been considered in this Amendment Report are detailed in

Table 3 below.

Table 3 also details the proposed control measures the Licence Holder has proposed to assist in controlling these emissions, where necessary.

Table 3: Licence Holder controls

Emission	Sources	Potential pathways	Proposed controls
Noise	Remediation activities(pumping units, use of explosives downhole, venting of Nitrogen)	Air / windborne pathway	• None proposed.
Liquid and solid waste (formation fines, sand and debris)	Capture and storage of wastes from well flowback activities.	Containment breach (overtopping of storage tanks, pipeline or connection leak/rupture) causing direct discharge to land and infiltration to groundwater or overland flow to surface receptors.	• Secondary containment of hazardous liquids • Waste storage containers that have the potential to attract fauna or create windblown rubbish will be covered/closed at all times
Remediation chemicals	Discharge of chemicals downhole	Mechanical integrity failure of the disposal wells causing direct discharge to the near surface aquifer.	• No additional controls proposed.

Emission	Sources	Potential pathways	Proposed controls
		Fracturing of the receiving formation and overlying confining units leading to penetration into the near surface aquifer	
	Storage tanks, skid mounted pumps, containment bunds and connections	Containment breach (overtopping of storage tanks, pipeline or connection leak/rupture) causing direct discharge to land and infiltration to groundwater or overland flow to surface receptors.	• Secondary containment of hazardous liquids and stationary pumps. • A physical barrier is in place to prohibit vehicle access to the wellhead exclusion zone, thus reducing the likelihood vehicle interactions with the wellhead.
Diesel	Generators and associated storage tanks		• Generator will be located with a secondary containment bund that: • Has the capacity to contain 110% of the generator tank volume and • Is sufficiently impervious to retain and enable the recovery of any spillage

3.1.2 Receptors

In accordance with the *Guideline: Risk assessments* (DWER 2020), the Delegated Officer has excluded employees, visitors and contractors of the Licence Holder's from its assessment. Protection of these parties often involves different exposure risks and prevention strategies, and is provided for under other state legislation.

Table 4 below provides a summary of potential human and environmental receptors that may be impacted as a result of activities upon or emission and discharges from the prescribed premises *(Guideline: Environmental siting* (DWER 2020)).

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

Human receptors	Distance from prescribed activity
Varanus Island oil and gas facility (inclusive of workers accommodation camp)	18km north east of the Gas treatment plant (not considered a sensitive receptor)
Environmental receptors	**Distance from prescribed activity**
Managed lands and waters	The Gorgon Gas Project is located within the Barrow Island Nature Reserve, a Class A Nature Reserve. Marine waters surrounding the north, west and south sides of Barrow Island form part of the Barrow Island Marine Management Area (including the Bandicoot Bay Conservation Area ~13 km to the south of the GGTP). An exclusion zone exists on the east side of the island adjacent to the GGTP for

	the Barrow Island Port Area. The Barrow Island Marine Park is located on the west side of the island (~10 km from the GGTP) and incorporates the Western Barrow Island Sanctuary Area.
Threatened Ecological Communities and Priority Ecological Communities	The BINR is listed as a Priority Ecological Community. Smaller areas identified as Priority Ecological Communities are located at the GGTP site as well as to the north, south and west of the premises.
Threatened / priority flora	Three species of priority flora are located on Barrow Island west of the premises.
Threatened / priority flora and fauna (terrestrial and marine)	A considerable number of threatened and priority fauna are known to occur on Barrow Island including a number species that are listed under the Biodiversity Conservation Act 2016 (WA) (BC Act) and the Threatened (Vulnerable) Species list of the EPBC Act. Some of these species are known to occur within or adjacent to the premises. Green and flatback turtles (both listed as vulnerable under the BC Act and EPBC Act) nest on Barrow Island. Flatback turtle rookies are recorded near the premises (300 m away). (Adequately managed under MS800)
Threatened / priority fauna (subterranean)	Barrow Island is recognized as being of high conservation significance for subterranean fauna communities at state, national and international levels. The subterranean fauna demonstrates high level of endemicity and species diversity and includes one of only two stygal vertebrate species occurring in Australia (Blind Gudgeon). Twelve of the species are listed under the BC Act and the Blind Gudgeon is listed as vulnerable under the EPBC Act. 13 stygofauna taxa were recorded in monitoring bores at the terminal tanks (approximately 1 km north of the GTP and 2.5 km north of the PWD wells). The karstic limestone layer which is believed to be Giralia Calcarenite is known to contain many cavities and solution tubes that provide habitat for stygofauna. It is located beneath the surficial soil layer at the premises. Beneath this layer is a band of siliceous silty sand which creates a barrier for subterranean fauna as there are no cavities or large pore spaces to allow movement. It is considered unlikely to encounter populations of subterranean fauna beneath this layer.
Groundwater	There is one shallow unconfined freshwater aquifer predominantly within Tertiary limestone on Barrow Island. This freshwater aquifer forms a lens of relatively fresher groundwater floating upon denser, saline ground water at depths between 9 m and 53 m. The aquifer supplies domestic water for oil and gas operations and supports subterranean. The groundwater system is linked to the marine ecosystem (<100 m from the 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 in-complete they have not been considered further in the risk assessment.

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

Additional regulatory controls may be imposed where the licence holder's controls are not deemed sufficient. Where this is the case the need for additional controls will be documented and justified in Table 5.

The Revised Licence L9102/2013/1 that accompanies this Amendment Report authorises emissions associated with the operation of the Premises i.e. well remediation activities. The conditions in the Revised Licence have been determined in accordance with *Guidance Statement: Setting Conditions* (DER 2015).

Table 5. Risk assessment of potential emissions and discharges from the Premises during operation

Risk Event					Risk rating[1] C = consequence L = likelihood	Licence Holder's controls sufficient?	Conditions[2] of licence	Justification
Source/Activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Licence Holder's controls**				
Operation								
Well remediation activities described in section 2.2.1 inclusive of the operation of diesel generators	Noise	Air/windborne pathway causing disturbance impacts	Fauna within the Class A Nature Reserve	None proposed	C = Moderate L = Rare **Low Risk**	NA	N/A	The delegated officer considers potential disturbance to fauna from noise and occasional venting of nitrogen/hydrocarbon gas associated with the remediation activities are insignificant considering the short duration and infrequency of activities proposed are negligible in relation to the existing operations within the gas treatment plant. The licence has been amended to include the PWD and TWIP wells as authorised discharge points to air for gases associated with well remediation activities.
	Gaseous Nitrogen and Hydrocarbon gas			None proposed	C = Moderate L = Rare **Low Risk**	NA	N/A	
	Remediation Chemicals	Mechanical integrity failure of the disposal wells causing direct discharge to the near surface aquifer. Fracturing of the receiving formation and overlying confining units leading to penetration into the near surface aquifer.	Flora and fauna within the Class A Nature Reserve Groundwater ~ 9m below surface	None proposed	C = Major L = Rare **Medium Risk**	Y	N/A	The risk of deep well injection impacting the shallow freshwater aquifer and subterranean fauna has been previously assessed for the grant of L9102/2017/1. Although the original assessment did not consider well remediation chemicals being disposed downhole. Produced water from the Gorgon and Jansz fields makes up 53% of the water injected downhole consisting of contaminants such as: BTEX compounds, hydrocarbons, MEG and H_2S. Noting that well remediation chemicals to be discharged downhole are predicted to contribute less than 0.01% of total waste stream (per activity) per year the delegated officer does not consider well remediation activities will alter the assessed risk profile for deep well injection. No additional controls relating to this activity have therefore been included in the licence and well remediation chemicals have been included as authorised emissions for the injection wells during well remediation. In making this decision the delegated officer also noted advice from DEMIRS that the proposed remediation works

Risk Event					Risk rating[1] C = consequence L = likelihood	Licence Holder's controls sufficient?	Conditions[2] of licence	Justification
Source/Activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Licence Holder's controls**				
								are reflective of industry best practice and comparable to other remediation works CAPL has conducted previously.
	Remediation Chemicals and Fuel	Containment breach (overtopping of storage tanks, pipeline or connection leak/rupture) Causing direct discharge to land and infiltration to groundwater or overland flow, leading to contamination of soil, groundwater, and/or health impacts to flora and fauna.		Refer to Section 3.1	C = Minor L = Rare **Medium Risk**	Y	N/A	The delegated officer considers that the risk of containment breach to be adequately managed under the Terrestrial and Subterranean Environment Protection Plan (Chevron, 2014). Management measures included in the plan cover bunding and curbing requirements for hazardous material storage areas, spills and leak protection devices, clean up protocols, and fauna protection measures where practicable. The delegated officer considers the risk of the activity is acceptable subject to the regulatory controls within MS 800.
	Solid and liquid wastes							

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. Consultation

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

Table 6: Consultation

Consultation method	Comments received	Department response
Department of Energy Mines, Industry Regulation and Safety (DEMIRS) advised of proposal on 1 December 2023	DEMIRS replied on 25 January 2024 and advised that: - the wells are not regulated by DEMIRS under the Petroleum and Geothermal Energy Act 1967, and DEMIRS has not conducted an assessment of the application - the proposed remediation works is reflective of industry best practice and comparable to other remediation works CAPL have conducted previously - associated risks may be able to be suitably managed by CAPL via the proposed controls and under management plans in accordance with MS 800. - stated they had no concerns with the proposed amendment. - CAPL is licensed for the storage of explosives and detonators at Barrow Island and recommends contacting the licence holder regarding details about this dangerous goods licence.	The Delegated Officer noted this advice.
Department of Biodiversity, Conservations and Attractions (DBCA) advised of proposal on 1 December 2023	DBCA replied on 19 December 2023 and advised that: - Additional operations within the Gorgon footprint may increase risk to terrestrial and marine fauna - Chevron should implement best practice management for lighting, including following the National Light pollution Guidelines (DCCEEW, 2023) to minimise impacts to fauna - If night works are required they should be scheduled outside of the turtle nesting and hatching season (October – March), DBCA note that further consultation with	The delegated officer acknowledges DBCA's general advice and notes that: - As per section 2.2 of this report the delegated officer considers the primary instrument for regulating the impacts on marine turtles from light, noise and vibration emissions is MS 800 and the approved Long-term Marine Turtle Management Plan. - As per the risk assessment the delegated officer does not consider the disposal of remediation chemicals alters the risk profile of deep well injection due to the small volume in comparison to

	DBCA is required if night works are scheduled during turtle nesting and hatchling season as disturbance to threatened fauna may be considered 'take' under the *Biodiversity Conservation Act 2016* and require section 40 authorisation - DBCA notes that the application does not identify or discuss the risks of spills and leaks from the injection wells into the shallow aquifer which supports threatened subterranean fauna and notes they expect adequate controls will be in place to manage and minimise the risk of spills and leaks including integrity checks of the wells to ensure upper levels are sealed to protect the high biodiversity value of the subterranean fauna	other discharges. Deep well injection has been previously assessed and existing licence conditions require daily pressure monitoring at the wells and an alarm system for the PWD wells to allow for detection of pressure changes which may be indicative of integrity issues requiring investigation.
Licence Holder was provided with draft amendment on 21 May 2024	Licence Holder provided comments on the draft amendment documents on 13 June 2024 which are summarised in Appendix 1	See Appendix 1

5. Decision

The delegated officer has determined that the proposed well remediation activities at the PWD and TWIP wells do not alter the assessed risk profile for deep well injection on the premises and the activities are necessary to ensure continued performance of deep well injection. The proposed controls described in section 2.3 of this report fall within CAPL's management plans required under MS800. No additional controls are deemed necessary to be conditioned within the licence for well remediation activities. Consequently, the licence has been amended to include the PWD and TWIP wells as authorised discharge points to air for gases and to land for well remediation chemicals for discharges associated with well remediation activities.

Additionally, the delegated officer has amended the premises boundary to include the three proposed areas; the Bridging utilities area, General utilities area and the Dangerous goods storage yard area. These areas have been excised from the premises boundary of licence L4467/1972/14 for the Barrow Island Oil and Gas Facility and now fall within the operational control of the Gorgon GTP.

The delegated officer determined to amend the monitoring requirements for CO_2 discharges from Drill Centre A to C injection wells to specify that daily sampling of hydrocarbons is permitted when the CO_2 analysers at Train 1 to 3 are not continuously available. CAPL has demonstrated a commitment to improving analyser availability and the delegated officer notes that the proposed amendment is also in accordance with CAPL's CO_2 Disposal Management Plan required under the *Barrow Island Act 2003.* The plan specifies allowance for manual weekly sampling of hydrocarbon in instances where the analysers are not available continuously. Thus, the allowance for daily sampling in these instances is considered acceptable.

The delegated officer determined not to amend the licence to change the requirement for daily process monitoring at the TWIP wells to "daily to achieve readings greater than 90% over any 12 consecutive calendar months". It is noted that a specification of 90% availability for monitoring relates to the definition for continuous in the *Guideline: Continuous Emissions Monitoring System (CEMS) Code*, (DWER, 2016) and is therefore appropriate in the context of continuous monitoring. Given the TWIP process monitoring only occurs daily rather than continuously, allowing for daily monitoring to occur 90% of the time is not considered sufficiently frequent.

Daily process monitoring of the TWIP wells was conditioned in the licence to ensure sufficient frequency of monitoring for early detection of well integrity issues and is considered an essential control to maintain an acceptable level of risk for this activity. The proposed change would reduce the required monitoring frequency and allow for periods of time when monitoring isn't required to occur. Reports of non-compliance with licence conditions which are received by the department are assessed in accordance with DWER's *Compliance and Enforcement Policy (2021)*. This policy guides the department's handling of such matters, outlining a range of approaches. Notably, actions taken to mitigate the impact of a non-compliance and the severity of an alleged offence are considered. It is also noted that the department has not pursued enforcement actions regarding previously reported non-compliances related to missed monitoring events when unsafe conditions or access restrictions prevented the monitoring from occurring.

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 7 provides a summary of the proposed amendments and will act as record of implemented changes. All proposed changes have been incorporated into the Revised Licence as part of the amendment process.

Table 7: Summary of licence amendments

Condition no.	Proposed amendments
Cover page	Legal description of the premises has been updated.
Definitions	Added definitions for acid treatment and clay stabilisation chemicals to specify these broader well remediation chemicals as per the application.
Condition 2	Added the TWIP (WDW1 and WDW2) an PWD (Z-WI1 and Z-WI2) wells as authorised discharge points for air.
Condition 7 Table 4: Authorised discharged to land	Amended the emission description for the stormwater holding pond from wastewater to potentially contaminated stormwater to reflect the discharge more accurately.
	Amended to authorise discharge of well remediation chemicals at the TWIP and PWD wells in the context of well remediation as described in this decision report.
Schedule 1	Update premises boundary map to include parts of the BUA, GUA and Dangerous goods storage yard area.
	Remove premises boundary coordinates due to dataset being too large - updated coordinated are within DWER document: DWERDT940930, referenced on the cover page

Condition no.	Proposed amendments
	Update map of discharge points to air and monitoring locations to include TWIP and PWD discharge points
Schedule 3: Monitoring Table 14: Monitoring of discharges to land	Added footnote for frequency of hydrocarbon monitoring for Drill Centre A to Drill Centre C injection wells to permit daily sampling when the CO_2 analysers are not continuously available.

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. DWER 2021, Compliance and Enforcement Policy, Perth, Western Australia
5. Chevron Australia 2023, Well remediation licence amendment application, Perth, Western Australia

Appendix 1: Summary of Licence Holder's comments on risk assessment and draft conditions

Condition	Summary of Licence Holder's comment	Department's response
Cover page	Licence holder confirmed legal description of premises details	The legal description has been updated accordingly.
Definitions	Licence holder requests that nitrogen, surfactants and friction reducers are added to the definition of "clay stabilisation chemicals" due to a newly identified remediation treatment method being coil tubing, a type of clay stabilisation treatment involving the aforementioned chemicals.	The delegated officer does not consider these chemical groups to increase the assessed risk of the activity and has included them within the definition of clay stabilisation chemicals.
	Licence holder has requested to include the term "for example" to preface the chemical groups listed for defined terms, acid treatment chemicals and clay stabilisation chemicals. This is to allow flexibility as the chemicals are subject to change as new techniques, chemicals and methods become available.	The delegated officer considers including some flexibility with the chemical groups for both activity's acceptable given that as per the risk assessment all chemicals will be appropriately stored in accordance with Chevron's TSEPP. Additionally, the volumes of chemicals to be discharged downhole are expected to remain consistent with the volumes proposed in section 2.2.1 in that they are marginal to the produced water/other wastewater streams authorised to be disposed of. The delegated officer has determined it more appropriate to include "and other chemicals of a similar nature" within both definitions rather than the requested "for example" which is considered too vague for enforceability of the related conditions.
Table 4	Licence holder has requested to change potassium chloride in the list of well remediation chemicals to "Brine Fluid" to provide operational flexibility. Brine fluid is to be defined as "Potassium Chloride or other suitable soluble salt"	The delegated officer has substituted potassium chloride with brine fluid in the list of well remediation chemicals and doesn't consider it necessary to include a definition for brine fluid within the licence.
Table 4 (footnote 1)	Licence holder requests minor change to footnote wording replacing in with when.	Change is not material and has been updated.
Table 9 Process monitoring	As the delegated officer's draft decision was not to amend the existing daily requirement to "daily to achieve readings greater than	The proposal for continuous pressure monitoring at a later date is a new proposal, not within the scope of the original application hence

Condition	Summary of Licence Holder's comment	Department's response
	90% over any 12 consecutive calendar months". The licence holder has conducted further investigation into monitoring options and exploring the possibility of remote analysers that would provide continuous pressure monitoring at the TWIP wells. As such the licence holder is proposing to change the footnote to "Daily monitoring of parameters until continuous monitoring is available (~ end Q4 2024) at which point continuous monitoring will be the preferred method for process monitoring at the TWIP wells. In instances where continuous monitoring is not available, daily monitoring is permitted."	was not within the scope of the assessment and accordingly will not be integrated within the licence at this time. The delegated officer considers continuous monitoring of wellhead and A annulus pressure a higher level of control to daily manual sampling and notes that in future if a continuous monitoring system is installed and operational it will satisfy the existing daily monitoring requirement as it will be in excess of the licence requirements.
Decision Report	Licence holder has requested all references to the Oliver bund area to be updated to the "Dangerous Goods Storage Yard" for consistency, as it is the official name for the area used within the Terrestrial and Subterranean Environmental Protection Plan.	All references to the Oliver bund area have been updated within the decision report to the Dangerous goods storage yard.
	The licence holder provided further clarity on the use of ammonium bifluoride (ABF) for acid treatment, describing that it is the precursor for hydrofluoric acid (HF). ABF is shipped in powdered form to the premises and then hydrated to form hydrofluoric acid which is what is pumped downhole.	Additional detail has been included within the decision report to reflect this clarification.
	Licence holder confirmed that the nitrogen venting rate is per well per remediation activity.	Decision report updated to reflect this clarification.
	Licence holder requested the decision section to be updated to reflect the requested changes from Table 9 outlined above.	As the delegated officer determined not to make the requested change, the requested updates have not been made to the decision report.