



JINGEMIA PRODUCTION FACILITY ENVIRONMENTAL PLAN PUBLIC SUMMARY

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1. Environmental Plan (EP) Summary

Subject to DMP approval Cyclone Energy Pty Ltd will become the operator of the Jingemia Production Facility (JPF) located within Production Licence L14, in the northern Perth Basin, Western Australia (WA).

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This Environmental Plan (EP) addresses environmental impacts and management measures associated with the JPF, which incorporates the oil field, associated equipment and infrastructure, the site accommodation and the remote Jingemia 9 water injection facility.

This EP covers the activities from transfer of title to the commencement of oil production. It does not include the production phase, and updated EP will be submitted for the post production phase. Activities covered under this EP include:

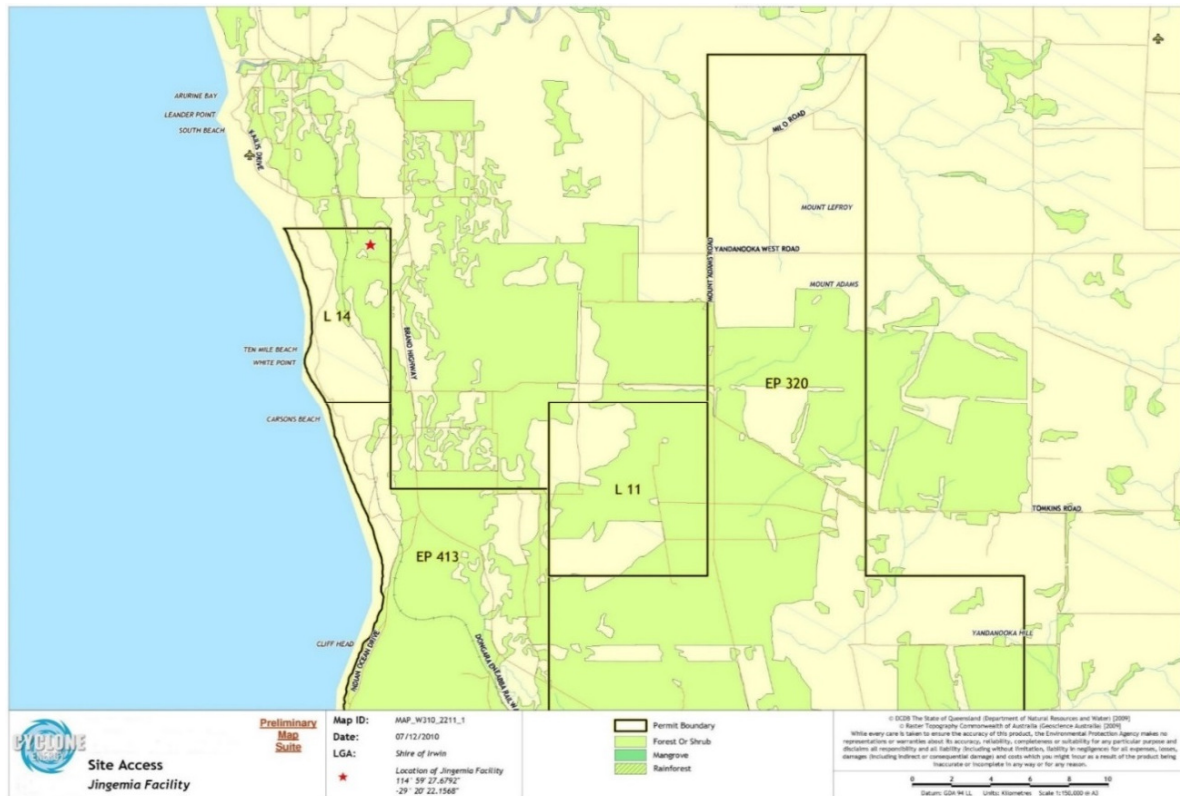
- Care and Maintenance
- Re-certification of vessels and equipment
- Return of the plant to a state ready to receive oil.

Commencement of oil production is anticipated in the second half of 2017.

2. Location of Activity

The Jingemba Production Facility is located approximately 10km South East of the Dongara Townsite.





3. Environment, Impacts and Risks

3.1 Existing Environment

The Jingemina Production Facility is located in the coastal sandhills of the Mid-West region of WA. The area is located in the Geraldton Sandplains Biogeographical Region and consists of sand dunes (both stabilised and mobile) and dense coastal scrub, close to the coast and large areas of cleared agricultural land (ANRA 2008).

This region consists of three broad physiographical units and the facility lies within the Swan Coastal Plain. The Swan Coastal Plain is an elongated strip approximately 40km wide and runs along the coast bounded to the east by the Gingin Scarp and the west by the Indian Ocean. The region is typically low lying, gentle undulating area covered by quaternary coastal dunes and marine deposits (ANRA 2008).

3.2 Impacts and Risks

Potential environmental impacts are minimal due to the facility being in existence and the on-production phase of activity.

The activities assessed in the EP are listed below:

- Storage and handling of crude oil, produced water, fuels, chemicals and hazardous materials;
- Generation and handling of liquid and solid wastes;
- Transportation of staff and equipment;
- Extraction of groundwater;
- Management and reinjection of process and rain water; and
- Plant refurbishment, inspection and re-certification for planned re-commencement of production.

A risk assessment identified five potential risk events, as listed below:

- Inadequate disposal of liquid and solid wastes;
- Site activities resulting in loss of containment of fuels, chemicals and hazardous materials;
- Amenity (noise, dust, light, odour emissions) impacts;
- Impacts associated with Naturally Occurring Radioactive Materials (NORMs); and
- Initiation of bushfire.

The Formal Risk Assessment for the care and maintenance phase undertaken by the previous operator (Origin Energy) did not identify any High or Extreme environmental risks. The Risk Assessment conducted by Cyclone Energy confirmed the Origin findings and eliminated one of the risks.

4. Facility and Activity Summary

4.1 Description

When the Jingemia Production Facility (JPF) is in production, it receives reservoir fluids from the producing wells and separates the water and gas from the oil. The oil is exported via road tanker. The gas is used as fuel for power generation, the remaining gas is flared. The water produced from the reservoir is used as power fluid for artificial lift or disposed of via re-injection into the reservoir to maintain the formation pressure.

The JPF is currently operated in care and maintenance mode and Cyclone Energy's main activities on site are the care and maintenance of equipment, inspection and re-certification, and recommissioning, as required, of vessels, tanks, piping, instrumentation and process equipment at the JPF.

4.2 Activities

Routine activities undertaken during care and maintenance of the JPF include:

- Well site inspections and general maintenance such as wireline operations, replacing worn or malfunctioning equipment, painting and cleaning equipment;
- Flowline inspections and maintenance;
- Plant inspections and maintenance;
- Access road maintenance;
- Firebreak maintenance and clearing;
- Occasional reinjection of rain water runoff from site bunds which flows into the drain sump and water treatment tank;
- Delivery of diesel for onsite fuelling; and
- Waste storage and disposal

Additionally to the above care and maintenance activities, Cyclone Energy will perform will be performing plant refurbishment, inspection and re-certification for subsequent re-commencement of production. Significant activities that will occur during this phase include:

- Driving to and from site by operations and contract personnel;
- The use of vehicles within the facility by site and contract personnel;
- The use of a diesel-fired generator for onsite power;
- Wellhead cleaning, visual inspection and general maintenance, including testing and servicing temperature and pressure monitoring devices;
- Investigation of well integrity, including monitoring, pressure bleed off and wireline operations if necessary;
- Visual and ultrasonic thickness (UT) testing of production, power fluid and water injection flowlines using hand-held non-IS equipment;
- Cleaning, visual and NDT inspections of process and plant piping, vessels and tanks;
- Repair or replacement of pipework as required;
- Cleaning, inspection and test running electrical and diesel powered rotating equipment;
- Repair and maintenance of rotating equipment as required;
- Inspecting, testing and servicing of pressure relief devices;
- Cleaning, inspection and servicing of the tanker load-out bay;



- Actuating, servicing and replacing valve as required;
- Testing and repair/replacement of electrical equipment and instrumentation;
- Movement and storage of lubricants and chemicals;
- Periodic biocide treatment of liquids in the drain sump;
- Occasional downhole injection of biocide treated drains liquids;
- Entry and cleaning of segregation tank and water treatment tanks;
- Visual, UT (ultrasonic thickness) and MFL (magnetic flux leakage) inspections of segregation tank and water treatment tanks;
- Visual and UT inspections of the crude storage tanks
- Maintenance as required of site building;
- Refurbishment of the site laboratory and other ancillary building; and
- Spraying of herbicide for weed control.

5. Chemical Disclosure

Regulation 15(9) of the *Petroleum and Geothermal Energy Resources (Environment) Regulations 2012* requires an EP to include details of all chemicals and other substances in or added to any drilling fluids or treatment fluids or introduced into a well, reservoir or subsurface formation in the course of an activity.

During care and maintenance and recertification phase of the project, biocides will be used to treat the water in the sump, before it is disposed of via injection into the water disposal wells. No other chemicals will be injected downhole. Other chemicals will be brought to site and stored in preparation for the recommencement of production operations.

Product Name	Supplier	Purpose	Product in System (%)	Toxicity and Ecotoxicity	SDS
EC73385	Nalco Champion	Biocide	Batch Dosing	<p><u>Acute environment toxicity:</u> <i>Component 1 (30-60%)</i> Non-hazardous according to NOHSC, non-dangerous goods according to ADG</p> <p><i>Component 2 (1-10%)</i> PLONOR</p> <p><i>Component 3 (30-60%)</i> Fish LC50(96hr): 64 mg/L (<i>Scophthalmus maximus</i>) Crustacean LC50(48hr): 0.22 mg/L (<i>Acartia tonsa</i>) Algae EC50(96hr): 1.2 mg/L (<i>Skeletonema costatum</i>)</p> <p><u>Chronic toxicity:</u> <i>Component 3 (30-60%)</i> Respiratory and skin sensitizer.</p> <p><u>Biodegradation / bioaccumulation:</u> <i>Component 1 (30-60%)</i> Non-hazardous according to NOHSC, non-dangerous goods according to ADG</p> <p><i>Component 2 (1-10%)</i> PLONOR</p> <p><i>Component 3 (30-60%)</i> Log Pow: 0 (OECD 107(1996)) Biodegradation (28d): 71.4% (OECD 306)</p>	Yes
EC6733A	Nalco Champion	Biocide	Batch Dosing	<p><u>Acute toxicity:</u> <i>Component 1 (10-30%)</i> Fish LC50(96hr): 1.7 mg/L (<i>Sheepshead minnow</i>) Crustacean LC50(48hr): 0.4 mg/L (<i>Acartia tonsa</i>) Algae EC50(96hr): 0.26 mg/L (<i>Skeletonema costatum</i>)</p> <p><i>Component 2 (60-90%)</i> LD50 (Oral, rat): 575 mg/kg (75% active ingredient in water) LD50 (Dermal, rat): >2000 mg/kg (75% active ingredient in water) LC50 (Inhalation, rat): 0.591 mg/l (4 hrs) (75% active ingredient in water) Fish LC50(96hr): 72 mg/L (<i>Scophthalmus maximus</i>) Crustacean LC50(48hr): 0.6 mg/L (<i>Acartia tonsa</i>) Algae EC50(96hr): 0.16 mg/L (<i>Skeletonema costatum</i>)</p> <p><i>Component 3 (0-1%)</i> Fish LC50(96hr): 611 mg/L (<i>Scophthalmus maximus</i>) Crustacean LC50(48hr): 38 mg/L (<i>Acartia tonsa</i>) Algae EC50(96hr): 4.1 mg/L (<i>Skeletonema costatum</i>)</p> <p><u>Chronic toxicity:</u> <i>Component 2 (60-90%)</i> Skin sensitizer. Reproductive toxicant to rabbits/rats at 50mg/kg/day.</p>	Yes



Product Name	Supplier	Purpose	Product in System (%)	Toxicity and Ecotoxicity	SDS
				<p><i>Component 3 (0-1%)</i> Skin sensitizer. Risk of cancer, IARC Group 1 Carcinogen.</p> <p><u>Biodegradation / bioaccumulation:</u> <i>Component 1 (10-30%)</i> Log Pow: 2.28 (theoretical) Biodegradation (28d): 34% (BODIS)</p> <p><i>Component 2 (60-90%)</i> Log Pow: 0 Biodegradation (28d): 61% (OECD 306)</p> <p><i>Component 3 (0-1%)</i> Log Pow: <0 (OECD 117) Biodegradation (28d): 83% (OECD 306)</p>	
Water	Onsite water storage tank	Water disposal to water injection well	>99.9%	No hazard	No



6. Implementation Strategy

The JPF operations team are required to abide by and implement this EP. Resources will be allocated as required to ensure effective environmental management.

This EP is incorporated into the induction and a controlled copy is available at the Jingemia site office.

6.1 Competency, Training and Inductions

All staff and contractors working at the JPF will be trained and competent to undertake their roles.

6.1.1 Contractor Pre-qualification

Prior to working for Cyclone Energy, the contractor must be pre-qualified. The Contractor Pre-Qualification Procedure (CE-P-HSE-008) specifies that contractors working on site must adhere to Cyclone Energy's HSE management system.

6.1.2 Jingemia Site HSE induction

All staff and contractors working at the JPF must complete a site specific web-based HSE induction and questionnaire. The results of the questionnaire will be reviewed and if found to be unsatisfactory may result in refusal of entry to site.

6.2 Environmental Emergency Planning and Response

An Emergency Response Plan (CE-J-HSE-006) has been developed for the JPF. In the event of an environmental emergency, the response will follow the procedures set out in the Emergency Response Plan (ERP).

Environmental Emergencies covered in the ERP include, but are not limited to:

- Pollutant/Spill;
- Major Structural/Mechanical Failure;
- Bush fire;
- Vehicle Accident; and
- Fire/Explosion.

The Emergency Response Plan (CE-J-HSE-006) details how incidents are managed, including any escalation of response for any incidents not capable of onsite management.

6.2.1 Oil Spill Contingency Plan

Appendix C to the EP provides an Oil Spill Contingency Plan (OSCP). The OSCP outlines the response structure and considers the four key aspects of prevention, preparedness, response and recovery. An OSCP is required to set out the following:

- Preparations are on hand for the possibility of an oil spill;
- Emergency response arrangements are implemented if an oil spill occurs; and
- Recovery arrangements are implemented if an oil spill occurs.

6.2.2 Drills and exercises

Emergency response drills are conducted periodically at the JPF. These are coordinated and documented by the PIC. Additionally, a major desktop Emergency Exercise and one major field exercise is carried out every year.

6.3 Environmental Inspections and Auditing

Regulation 15(6) of the *Petroleum and Geothermal Energy Resources (Environment) Regulations 2012* requires operators to have an EP that contains an implementation strategy that provides for

the “monitoring of, audit of, management of non-compliance with, and review of the operator’s environmental performance”.

Monthly HSE inspections will be undertaken by suitably trained onsite personnel to ensure environmental commitments with respect to routine cares and maintenance activities for the JPF are being met.

In addition to monthly HSE inspections, HSE audits listed in **Error! Reference source not found.** will be undertaken.

Table 11.1: Schedule of Environmental Audits

Audit frequency	Requirement	Environmental Performance Standard
12 Monthly	Annual review of DFES approvals in September.	40-01
	Annual HSE audit of the facility, initial audit within 1 month of transfer.	35-1, 36-1, 36-4 37-2, 40-1
	Review incident reports to determine if any hot work has been undertaken in non-compliance with the Permit to Work Procedure.	40-2
	Annual review of Radiation Management Plan.	37-1
	Initial groundwater test conducted within 1 months of transfer. Groundwater sampling in accordance with industry standard protocols (e.g. AS/NZS 5667.11:1998 - Water Quality Sampling - Guidance on Sampling of Groundwater). Confirmation of no contamination.	36-5
	Annual testing of cathodic protection	36.3
2 yearly	Review staff training records to determine if fire suppression training is current.	40-3
	Review licensing for fuel and chemical transport companies to determine if it is current and appropriate for the materials being delivered to the facility	36-2
	2 yearly contractor assurance audits.	35-2, 36-2

6.4 Environmental Reporting

This section outlines internal and external reporting to be undertaken by the JPF. All routine external reports and incident reports to the DMP are to be sent to the following email address and copied to the relevant DMP officer.

- petroleum.environment@dmp.wa.gov.au

6.4.1 Routine External Reports

6.4.1.1 Annual Environmental Report

An annual environmental report will be compiled and submitted to DMP by the 30th March of each year. The annual environmental report will contain the following as per the DMP Guideline *Auditing and Reporting Requirements for Petroleum Activities in Western Australia* (DMP 2012):

- Summary of activities conducted throughout the reporting period;
- Statement for each environmental performance objective and environmental performance standard included in the EP describing whether the objective or standard has been met;
- For any objective or standard that has not been met, the annual report should describe actions taken/planned to ensure the objective or standard is met in a timely manner;
- Summary and outcomes of audits of environmental performance;

- Summary of environmental incidents (including unplanned emissions and discharges) that occurred during the reporting period;
- Planned emissions and discharges and strategies for continuously reducing the impacts of planned emission and discharges to as low as practical (ALARP);
- Environmental and rehabilitation monitoring results and review;
- Risk assessment review with resultant risks to be included in the annual report identifying new or increased risks and status of accepted or planned EP revisions;
- Summary of training and competencies provided, refreshed or upgraded during the reporting period;
- Summary of emergency response exercises undertaken on site during the reporting period; and
- Summary of consultations conducted throughout the reporting period.

6.4.1.2 Quarterly emissions reporting

Regulation 34 of the *Petroleum and Geothermal Energy Resources (Environment) Regulations 2012* requires that the operator of an activity must monitor all emissions and discharges to any land, air, groundwater, subsurface or inland waters environment. The emissions and discharges report also includes waste generation and disposal. The operator must submit to DMP a written report of emissions and discharges three months after the approval of an EP and a period of every three months thereafter.

6.4.2 Routine Internal Reports

Hard copies of the Monthly HSE inspection reports and any actions identified will be stored onsite. Electronic copies will be stored on the Cyclone Energy maintenance system.

6.4.3 Incidents

Any environmental incident, near miss or observation will be reported and recorded on the CE incident reporting system.

All personnel are encouraged to report minor events to act as an alert to environmental risks and to maintain a program of continual improvement.

6.4.3.1 Recordable Incidents

Regulation 4 of the *Petroleum and Geothermal Energy Resources (Environment) Regulations 2012* defines a recordable incident as an incident arising from an activity that "breaches an environmental performance objective or environmental performance standard in the Environment Plan" and is not a reportable incident. Regulation 30 of the *Petroleum and Geothermal Energy Resources (Environment) Regulations 2012* requires Cyclone Energy to submit a written report to DMP of all recordable incidents occurring within a calendar month no later than 15 days after the end of that calendar month.

Regulation 30(5) requires that, "if no recordable incidents occurred during the month, a report is provided to DMP which includes a statement to that effect".

6.4.3.2 Reportable Incidents

Regulation 4 of the *Petroleum and Geothermal Energy Resources (Environment) Regulations 2012* defines a reportable incident as "an incident that is classified as a reportable incident under the Environment Plan" and "an incident arising from the activity if the incident has caused, or has the potential to cause, an adverse environmental impact; and under the environmental risk assessment process described in the Environment Plan for the activity, that the environmental impacts is categorised as moderate or more serious than moderate."

Under Regulation 28 of the *Petroleum and Geothermal Energy Resources (Environment) Regulations 2012* Cyclone Energy must notify DMP as soon as practicable, and in any case not later than **two hours of the incident occurring or within two hours of becoming aware of the reportable incident**. Reportable incidents should be reported to DMP via the 24 hour duty phone 0419 960 621.



A written report must be submitted as soon as practicable and, in any case, not later than three days after the initial incident or when the operator became aware of the incident.

Environmental incident/spill reporting will be in accordance with regulatory guidelines and the process for reporting environmental incidents/spills to DMP will be displayed in the JPF site office.

The following incidents are reportable:

- Bushfire initiated by site activities.
- Destruction of rare or threatened flora/fauna or cultural heritage sites.
- In addition, reportable incidents described in Section 290 of the Schedule of Onshore Petroleum Exploration and Production Requirements 1991 are as follows:
- Spills of hydrocarbons or hazardous materials in excess of 500L.
- Spills of hydrocarbons or hazardous materials that affect a ground surface area of greater than 100m²
- An unplanned gaseous release to atmosphere of 500m³ or more.
- Additional reportable incidents identified in the DMP document Guidelines for the Preparation and Submission of an Environmental Plan (DMP 2012) are listed below
- Death or injury to individuals from a Listed Species during an activity.
- Unplanned impact caused to a matter of national environmental significance during an activity.

The incident report will include details on;

- all material facts and circumstances concerning the reportable incident that is known at the time of the incident reporting;
- actions taken to avoid or mitigate any adverse environmental impacts of the reportable incident; and
- actions taken, or proposed to be taken, to prevent a similar reportable incident.

6.5 Consultation

Minimising and mitigating the potential environmental impacts associated with the JPF is assisted by the engagement of key stakeholders to ensure all issues are identified and addressed. CE have consulted the following relevant stakeholders in order to address issues and implement management measures:

- Department of Mines and Petroleum
- Department of Water - Midwest Region
- Shire of Irwin
- Department of Aboriginal Affairs
- Native Title Tribunal
- WA Radiation Council
- Local Police
- Dongara Medical Centre
- Landowner of the Access Road

Key stakeholder consultation will continue throughout the full lifecycle of the operation of the JPF.



6.6 Native Title

Correspondence with Indigenous Parties to date has not revealed any comments or issues of concern in respect to the JPF. Cyclone Energy will liaise with the Native Title Applicants in respect to operation of the JPF as appropriate.

6.7 Ongoing Consultation

Cyclone Energy will continue to engage with identified key stakeholders throughout the operational life of the JPF.