

# Onshore Petroleum Activity – NT EPA Advice

## ORIGIN ENERGY B2 PTY LTD (ORI8-2) – ENVIRONMENT MANAGEMENT PLAN (EMP) FOR BEETALOO W-1, EXPLORATION PERMIT (EP117) BEETALOO SUB-BASIN NT

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### BACKGROUND

The Minister for Environment has formally requested under section 29B of the *Northern Territory Environment Protection Authority Act 2012* (NT EPA Act) that the Northern Territory Environment Protection Authority (NT EPA) provide advice on all Environment Management Plans (EMPs) received under the Petroleum (Environment) Regulations 2016 (the Regulations).

That advice must include a recommendation on whether the EMP should be approved or not, supported by a detailed justification that considers:

- whether the EMP is appropriate for the nature and scale of the regulated activity to which the EMP relates (regulation 9(1)(b))
- whether the EMP demonstrates that the activity will be carried out in a manner by which the environmental impacts and environmental risks of the activity will be reduced to a level that is as low as reasonably practicable and acceptable (regulation 9(1)(c))
- the principles of ecologically sustainable development sustainable development (regulation 2(a)), as set out in sections 18 to 24 of the *Environment Protection Act 2019*, and
- any relevant matters raised through the public submission process; for this EMP, no public consultation was required.

In providing that advice, the NT EPA Act provides that the NT EPA may also have regard to any other matters it considers relevant.

### ACTIVITY

Subject	Description
Interest holder	Origin Energy B2 Pty Ltd
Petroleum interest(s)	Exploration Permit 117 (EP117)
Environment Management Plan (EMP) title	Beetaloo W-1 Environment Management Plan EP117 - Beetaloo Sub-Basin, NT
EMP document reference	ORI8-2
Regulated activity	The EMP proposes ongoing exploration and appraisal activities for the Beetaloo W site, which includes site and well maintenance and a diagnostic fracture injection test (DFIT) of the Beetaloo W-1 well, in order to understand the technical and commercial viability of the Velkerri dry and Kyalla wet gas shale resource. W-1 is located approximately 53 km NE of Elliott in the centre of EP117 in the Beetaloo Sub-basin.

Subject	Description
	<p>The regulated activity is as follows:</p> <ul style="list-style-type: none"> <li>• civil maintenance of the Beetaloo W-1 well site through erosion and sediment controls (ESC) on the access track, lease pad and access tracks</li> <li>• sub-surface data collection, including a DFIT on the Velkerri and Kyalla shale members</li> <li>• extended pressure monitoring of the Beetaloo W-1 well</li> <li>• operation of a temporary camp, offices and equipment storage areas</li> <li>• maintenance and monitoring of infrastructure on the Beetaloo W-1 site, including well interventions, work overs, completion and general well maintenance and diagnostic activities</li> <li>• reservoir testing and data acquisition using reservoir evaluation tools</li> <li>• suspension and/or abandonment of the Beetaloo W-1 well</li> </ul> <p>The regulated activities do not require any new ground disturbance and the existing lease pad, camp pad and access tracks will be used.</p> <p>Progressive site decommissioning and rehabilitation will commence on or before Quarter 3 2026. A rehabilitation plan is included as Appendix C of the EMP.</p>
Public consultation	Public consultation on the EMP was not required under regulation 8A(1)(b); as the EMP does not propose drilling or hydraulic fracturing.

Origin conducted an Exploration drilling program in 2015 and 2016 in EP98 and EP117. <sup>1</sup> Three vertical wells (Kalala S-1, Amungee NW-1 and Beetaloo W-1) and one horizontal well (Amungee NW-1H) were drilled. The Beetaloo W-1 exploration well was spudded on the 22 July 2016 to a total depth of 3,184 m below ground level (mbgl). The well was suspended in September 2016 and the site was demobilised.

The EMP is new, and covers the changes in legislation since the original EP, including the requirements of the Petroleum (Environment) Regulations 2016 and the Code of Practice for Onshore Petroleum Activities within the Northern Territory (Code of Practice). The key outcomes from the regulated activity will be used to manage the existing Beetaloo W-1 site.

The exploration activities covered in the EMP include: site access and civil maintenance; exploration well monitoring and maintenance; exploration well data collection; installation of groundwater monitoring bores; camp operations; well suspension and decommissioning; and site rehabilitation. A further breakdown of these activities is listed in Table 7 of the EMP. The proposed DFIT consists of:

- conducting a cement bond log and casing pressure test to ensure the integrity of the cement and steel casing of the well
- injecting small volumes of water, sodium chlorine and biocide into the well to create a small fracture in the target interval
- shutting-in the well and monitoring the fall-off in pressure.

<sup>1</sup> [https://depws.nt.gov.au/\\_data/assets/pdf\\_file/0010/258607/Origin-2015-Environmental-Plan-SummaryBeetaloo-Sub-Basin.PDF](https://depws.nt.gov.au/_data/assets/pdf_file/0010/258607/Origin-2015-Environmental-Plan-SummaryBeetaloo-Sub-Basin.PDF)

The pressure monitoring will continue over 12-24 months after the DFIT. The purpose of the DFIT will be to collect data from the Beetaloo W-1 well to understand the gas and water rates from the Velkerri and Kyalla shale formations to obtain information on reservoir properties. DFIT activities differ from hydraulic fracturing as it involves only small volumes of water (< 1 ML) and salt, and no proppant or sand.

An example of the equipment setup required for a DFIT is provided in Figure 1.



Figure 1: Image of equipment utilised to perform a DFIT, including wireline unit, water truck and pump trucks.

## NT EPA ADVICE

### 1. Is the EMP appropriate for the nature and scale of the regulated activity (regulation 9(1)(b))

Information relating to the nature and scale of the regulated activity is provided in the EMP in a clear format. The technical works program includes a DFIT and related exploration activities during 2021 – 2026 (including rehabilitation) on the existing EP117 Beetaloo W-1 well site. No drilling or hydraulic fracturing activities are proposed in the EMP. On completion of the DFIT the well will either be suspended for future re-entry or decommissioned with permanent cement plugs and rehabilitated in accordance with the WOMP and requirements outlined in the Code of Practice: Onshore Petroleum Activities in the Northern Territory (the Code).

The total footprint for the regulated activity is 7 ha, consisting of a pre-existing lease pad, camp pad gravel pits and access track. There is no additional land clearing proposed in this EMP. Decommissioning and rehabilitation are planned for (or before) Quarter 3 2026. A rehabilitation plan has been developed for the activity, to return the disturbed land to an environment similar to the pre-disturbance conditions. Table 1 provides an overview of the key components of the regulated activity. The Schedule of activities proposed in the EMP is listed in Appendix 1.

Table 1: Key components of the proposed Origin DFIT program

COMPONENT	REGULATED ACTIVITY
Wells (#)	1 (pre-existing) Beetaloo W-1
Groundwater extraction licence	GRF 10285
Total area of exploration lease (EP117)	6,375 km <sup>2</sup>
Number of lease pads	1 (pre-existing)
Number of groundwater monitoring bores	3 impact and 3 control (proposed)
Number of gravel pits	3 (pre-existing)
Number of creek crossings	Nil
Timing of works	Q3/4 2021 (with ongoing maintenance,

COMPONENT	REGULATED ACTIVITY
	rehabilitation and monitoring until Q3 2026)
Camp capacity and workforce	~20 persons during operations. Existing camp pad to be utilized where required
Peak traffic movements (per day)	<10 vehicles per day peak during mobilisation and demobilisation.  Likely to be restricted to several days over a 1-2 week period per year
Estimated total groundwater usage (ML)	~< 1ML
Estimated potable water usage (kL) per day	5
Diesel (kL)	50
Greenhouse gas emissions (tCO <sub>2</sub> -e)	~46
Rehabilitation (ha)	7

A rehabilitation plan (Appendix C) has been developed for the activity, to minimise the risk of site erosion and return the disturbed land to the original conditions long term, in accordance with clause A.3.5 of the Code. Progressive rehabilitation of the drill lease pad, camp area, access track, gravel pits and associated infrastructure will be implemented within 12 months of the completion of petroleum activities. The timing of completion will be dependent upon the outcomes of the DFIT and pressure monitoring (for 12-24 months post DFIT):

- If there is no requirement to keep the Beetaloo W-1 well to support future exploration and appraisal activities the well will be decommissioned. As part of this, cement plugs will be installed as permanent barriers to flow prior to cutting off the wellhead. The cement plugs will be set and tested prior to decommissioning as per Origin Standards and Section B.4.15.2 of the Code of Practice. All surface infrastructure and waste will be removed from site and disposed of in accordance with the Regulations and specifically the Waste Management and Pollution Control Act 1999 (WMPC Act).
- If the well is suspended, barriers will be installed as per B.14.5 of the Code of Practice, with cemented well casing and a wellhead being the minimum requirement. Well pressure will be routinely monitored as per Origin's Well Integrity Management Plan (WIMP) to confirm well integrity is intact. The W-1 site will undergo civil maintenance in accordance with the principles outlined in the NT Land Clearing Guidelines (2019). Well abandonment is scheduled for Q3 2026.

The EMP identifies wastewater as water generated from well testing, dust suppression and camp activities. Flowback or drilling wastewater will not be generated from the proposed activities in the EMP. Minor volumes (~ 0.1 ML) of ancillary wastewater generated through well intervention activities (such as completion fluids used for well control/ maintenance) will be managed in accordance with the Code and WMPC Act. The interest holder proposes several management strategies for incidental wastewater management, which include:

- storing wastewater in enclosed tanks on the well pad with secondary containment
- daily monitoring of water level during operations
- weekly tank inspections
- transporting wastewater to an existing wastewater storage area within the Beetaloo Basin for evaporation/treatment or to a licensed offsite wastewater disposal facility.

Information on the location and scale of the proposal is included in the EMP. The existing environment has been adequately described through baseline surveys and is suitably understood. There are no areas of high conservation value in the vicinity of the regulated activity. Areas of cultural significance have been identified in EP117 from cultural heritage surveys. These will be protected through:

- the implementation of restricted work area protocols, in accordance with the provisions outlined in the Aboriginal Areas Protection Authority (AAPA) Authority Certificate C2020/003

The nearest restricted work area (RWA) is located at a chain of lagoons along Newcastle Creek approximately 8 km from the Beetaloo lease pad. A RWA is also located on the access track to Beetaloo W-1. Minor maintenance may be completed in the access track RWA in accordance with the AAPA certificate. No work is proposed in the RWA's in the vicinity of Newcastle Creek.

- all staff to be inducted covering restricted work areas and cultural heritage
- implementation of an “unexpected finds” procedure.

The interest holder has identified the impacts and risks associated with the regulated activity (47 in total). Mitigations outlined in the risk register, Appendix F are classified based on the hierarchy of controls, and impacts and risks should be reduced to an acceptable level through the proposed mitigation and management measures. Environmental performance standards and measurement criteria have been provided in the EMP (section 6).

The level of detail and the quality of information provided in the EMP is sufficient to inform the evaluation, assessment and management of environmental impacts and risks, and meets the approval criteria under Regulation 9 for the Minister’s decision about approval of the environment management plan.

## **2. Principles of ecologically sustainable development (regulation 2(a))**

### **2.1 Decision-making principle (s 18 *Environment Protection Act 2019*)**

The revised EMP adequately assesses the environmental impacts and risks associated with the regulated activity and outlines appropriate avoidance and mitigation measures. The impacts and risks associated with the EPT program have been assessed. All of the 47 identified risks are assessed as ‘low’ if carried out in accordance with the mitigations and controls proposed in the EMP. Wet season contingencies and controls are proposed to mitigate potential erosion and sediment impacts associated with runoff from disturbed areas, off-site wastewater release, or transport of chemicals and wastewater. These controls have been assessed by NT Government agencies and deemed adequate.

The interest holder has demonstrated ongoing stakeholder engagement (e.g. communications log) for the regulated activity in the EMP as required by the Regulations, with identified, directly affected stakeholders.

### **2.2 Precautionary principle (s19 *Environment Protection Act 2019*)**

The NT EPA considers there is a low risk of serious or irreversible damage from the regulated activity. The regulated activity will be conducted in compliance with the Code, and the EMP provides measurable performance standards to ensure that environmental outcomes are met.

The risk assessment clearly classifies the hierarchy of controls for the mitigations applied to each risk (e.g. eliminate, substitute, engineering, administrative and personal protective equipment). Uncertainty in relation to the environmental features was assessed, with no areas of environmental uncertainty identified. The EMP outlines the interest holder’s investigations into the physical, biological and cultural environment and demonstrates a sound understanding of the environment at the location, providing a satisfactory scientific basis to assess potential environmental impacts and risks for the activity, and to identify measures to avoid or minimise those impacts and risks.

Measures for managing risks during wet season operations include:

- chemicals, fuels, equipment, tanks and materials required for ongoing operations will be preferentially stored on-site prior to the onset of the wet season to minimise transportation risks
- chemicals storage areas will be bunded, with covers (where safe and appropriate) to prevent rain ingress and bund overflows

- no wastewater (from drilling or flowback) will be generated from the activity or stored on site
- ancillary wastewater generated from well intervention activities (e.g. completion fluid for well control/maintenance) are expected to be minor (~ 0.1 ML) and will be managed in accordance with the Code of Practice and Waste Management and Pollution Control Act.
- no transportation of wastewater or chemicals during the wet season unless a task specific risk assessment is completed prior to the transport (to ensure site conditions are constantly updated) that demonstrates the risk is ALARP and acceptable (as per the Code of Practice).

The NT EPA is of the view the precautionary principle has been considered in assessing the regulated activity and has not been triggered, due to the low threat of serious or irreversible damage and a satisfactory scientific basis to assess potential impacts and risks. In addition, the environmental monitoring commitments contained in the EMP are compliant with the Code and should provide performance measures to ensure that the environmental outcomes are met.

### **2.3 Principle of evidence-based decision-making (s20 *Environment Protection Act 2019*)**

The EMP proposes that exploration activities, including the DFIT and associated minor civil works and progressive rehabilitation are planned to commence during 2021 and continue over a five year period to Q3 2026. These activities will be conducted during the dry season wherever possible and wet weather contingencies to be implemented if activities continue into the wet season (October to April inclusive).

A certified Erosion and Sediment Control Plan (ESCP) (Appendix D) contains design and management controls to mitigate potential erosion under sheet flow conditions. The layout for the Beetaloo W-1 pad and access tracks is provided in the ESCP.

Traffic impacts were assessed as being low and short in duration, reflecting the limited size and scope of the activity. The camp is located away from the Carpentaria Highway with most vehicle movements between the camp and well site. The peak traffic volume from the activity on the Carpentaria Highway is estimated at < 10 vehicles per day during mobilisation and demobilisation, which is insignificant compared to the Level of Service of the highway (more than 700 vehicles/day). The interest holder has considered additional mitigation controls such as limiting drive in/drive out workers.

The NT EPA has assessed the potential for spills from chemicals and hydrocarbons (e.g. diesel) stored in designated bunded areas at the accommodation camp and on the Beetaloo W-1 pad. The mitigation controls described in the EMP include: secondary containment for all chemical storage and handling areas; double walled containment of hydrocarbons, self-bunded diesel tank; and spill prevention and response procedures for hazardous spill prevention, monitoring, assessment, response and clean-up.

The NT EPA has recommended the Minister applies an approval condition that requires the interest holder maintain a spill register, the contents of which are to be reported/submitted annually to DEPWS.

The NT EPA is of the view that the evidence-based decision-making principle has been considered in assessing the regulated activity.

### **2.4 Principle of intergenerational and intra-generational equity (s21 *Environment Protection Act 2019*)**

The potential environmental impacts and risks associated with the regulated activity can be adequately avoided or managed through the management measures and monitoring programs proposed in the EMP.

The GHG emissions from the activity is approximately 46 tonnes of carbon dioxide equivalent (tCO<sub>2</sub>-e), generated, comprising approximately 43 tCO<sub>2</sub>-e from diesel combustion from transportation activities and 3 tCO<sub>2</sub>-e from diesel combustions from well testing activities. This represents less than 0.01% of the 2019 NT estimated GHG emissions (20.6 million tCO<sub>2</sub>-e).<sup>2</sup> The

<sup>2</sup> Source: DISER 2020. *State Greenhouse Gas Inventory*. <https://ageis.climatechange.gov.au/SGGI.aspx>.

EMP also refers to the cumulative GHG emissions from the regulated activity and the interest holder's previously approved regulated activities since the commencement of activities in 2019. The total emissions for Origin's current approved, remaining and proposed activities are anticipated to be 8,130 tCO<sub>2</sub>-e in 2021, increasing to 57,622 tCO<sub>2</sub>-e in the 2023 period. The potential emissions of Origin's activities represent between 0.05% and 0.36% of the total NT GHG emissions for 2020 or 0.0015% to 0.01% of Australia's total emissions.

Protection of cultural interests is achieved through compliance with the requirements of Authority Certificates issued by the Aboriginal Areas Protection Authority under the *Northern Territory Aboriginal Sacred Sites Act 1989* (NT) and the previously completed archaeological assessment at the site to avoid archaeological heritage impacts. The regulated activity will be subject to requirements of an existing Aboriginal Areas Protection Authority (AAPA) Authority Certificate (C2020/003), which covers all activities in the current EMP.

The interest holder has identified relevant stakeholders and carried out stakeholder engagement in accordance with regulation 7. Interactions between the regulated activity and pastoral operations have been assessed; the interest holder is committed to regular engagement with pastoralists via progress updates.

The NT EPA considers that environmental values will be protected in both the short term and long term, and that the health, diversity and productivity of the environment will be maintained for the benefit of future generations.

## **2.5 Principle of sustainable use (s22 *Environment Protection Act 2019*)**

Origin has an existing groundwater extraction licence (WEL GRF 10285) to conduct activities under this EMP with a maximum water entitlement of 175 ML/year from the Gum Ridge Formation. The interest holder proposes to extract water from RN41132 on the Kyalla 117 N2 site (on the adjacent Hayfield/Shenandoah Station) and trucked to the Beetaloo W-1 site. All groundwater take will be metered with continuous flow meters. The interest holder estimates that approximately 1 ML of water will be extracted from the Gum Ridge Formation per year to support the maintenance and monitoring program.

The cumulative impact associated with current and future groundwater takes were addressed in the Water Extraction Licence (WEL) GRF 10285 statement of reason, which was assessed to be well within the sustainable yield of the Gum Ridge Formation (1,412,800 to 2,825,600 GL).

The interest holder has demonstrated a commitment to reuse, recycle, and minimise the use of natural resources wherever possible, without introducing significant environmental impacts and risks.

The NT EPA is of the view that the sustainable use principle has been considered in assessing the regulated activity.

## **2.6 Principle of conservation of biological diversity and ecological integrity (s23 *Environment Protection Act 2019*)**

The EMP for the regulated activity has been informed by a number of sources, including:

- two land condition assessments in August 2014 and August 2018 that reviewed the physical, natural and cultural heritage environment of the existing Beetaloo W site
- a baseline weed survey in August 2018 and follow-up surveys every six months thereafter
- an archaeological assessment in August 2017 of sites within EP 117, including Beetaloo W.

The Beetaloo W site is located within open *Eucalyptus* woodland, which is characterised by a dense shrub and grass layer on sandy and earthy soils. This vegetation community is regionally extensive across the tropical savannas of the Northern Territory. There are no threatened vegetation

communities listed or likely to occur within or in proximity to the Beetaloo W site. The closest areas of conservation significance to the site are:

- the Bullwaddy Conservation Reserve, located ~80 km north-east from the proposed activity area
- the EPBC Listed Lake Woods, located ~60 km south-west from the proposed activity area and is listed on the National Directory of Important Wetlands.

The EMP identifies 12 fauna species listed as threatened under the Australian Government *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and/or the NT *Territory Parks and Wildlife Conservation Act 1976* (TPWC Act). An assessment of the likelihood of occurrence indicates five listed threatened species that are likely to occur based on habitat suitability and previous records:

1. Gouldian Finch *Erythrura gouldiae* (Endangered EPBC Act, Vulnerable TPWC Act).
2. Grey Falcon *Falco hypoleucos* (Vulnerable TPWC Act).
3. Crested Shrike-tit (northern) *Falcunculus frontatus whitei* (Vulnerable EPBC Act, Near Threatened TPWC Act).
4. Plains Death Adder (*Acanthopsis hawkei*) (Vulnerable EPBC Act, Vulnerable TPWC Act).
5. Yellow-spotted Monitor (*Varanus panoptes*) (Vulnerable TPWC Act).

The DEPWS Flora and Fauna Division is satisfied that that the regulated activity does not pose a significant risk to threatened species, important habitats or significant vegetation types. Further, the mitigation controls identified in the EMP are adequate to reduce risks associated with potential impacts on biodiversity, such as noise, vehicle strike, dust, erosion and spills to be as low as reasonably practicable.

The NT EPA has recommended the interest holder provide to DEPWS an updated rehabilitation plan, concurrent with submission of an annual environment performance report.

The EMP outlines measures to minimise impacts on affected environmental values, including the management of threatening processes such as weeds and fire. Where relevant, management measures for the threatening process are consistent with the requirements of the Code, NT Land Clearing Guidelines and Weed Management Planning Guideline: Onshore Petroleum Projects.

The NT EPA considers that implementation of, and compliance with the EMP will ensure the conservation of biological diversity and ecological integrity is not impacted by the regulated activity.

## **2.7 Principle of improved valuation, pricing and incentive mechanisms (s24 *Environment Protection Act 2019*)**

The interest holder will be required to prevent, manage, mitigate and make good any contamination or pollution arising from the regulated activity, including contamination of soils, groundwater and surface waters through accidental spills.

All stages of the regulated activity, including progressive rehabilitation of all disturbed areas to an acceptable standard, will be at the cost of the interest holder. The interest holder is required to provide an adequate environmental rehabilitation security bond to indemnify the NT Government. This is based on an assessment by DEPWS of the estimated rehabilitation cost submitted by the interest holder.

The NT EPA is of the view the principle of improved valuation, pricing and incentive mechanisms has been considered in assessing the regulated activity and is based on the interest holder bearing any environmental costs for the activity.

### **3. Environmental impacts and risks reduced to a level that is as low as reasonably practicable and acceptable (regulation 9(1)(c))**

The interest holder has undertaken measures to avoid impacts on environmental values, informed by a detailed understanding of site conditions, obtained through baseline studies and surveys conducted on EP117.

The EMP demonstrates a systematic identification and assessment of environmental impacts and risks associated with the regulated activity. The key environmental impacts and risks considered in the EMP are:

- soil erosion and compaction from cleared areas (access tracks, lease pads, gravel pits and camp pads) impacting sensitive receptors and leading to loss of long-term soil productivity and viability
- soil contamination due to leaks of chemicals or wastes on-site or from transportation accidents off-site
- introduction and spread of weeds
- accidental ignition of fire from exploration activities (site preparation, slashing and general access) and site activities (site preparation, slashing and grinding)
- poor rehabilitation of the site reducing the quality of regional habitat and promoting weed invasions

The EMP also considers cumulative impacts to groundwater, flora and fauna, greenhouse gases, traffic and social, and concludes the cumulative impacts are not significant.

The EMP has considered the hierarchy of controls (elimination, substitution, engineering, administration) and demonstrated that the controls to be implemented are considered ALARP and acceptable. Of the 47 environmental risks identified by the interest holder, all are considered 'low' risk, and therefore are ALARP.

Key risk mitigations include:

1. *Soil erosion and compaction from cleared areas, impacting sensitive receptors and leading to loss of long-term soil productivity and viability:* No land clearing is proposed, and the existing site has an established erosion and sediment control plan in place; the existing features at the site will be maintained, with erosion and sediment controls kept in working order; pre- and post-wet season sediment control inspections will be conducted; and maintenance will be performed on areas where erosion is occurring or where sediment controls are ineffective.
2. *Soil contamination due to leaks of chemicals or wastes on-site or from transportation accidents off-site:* A limited volume of chemicals or fuels are proposed to be stored onsite to support operations, which also reduces transportation risk; all chemical, fuel and waste storage and high risk spill handling areas are to have secondary containment, with an impermeable liner with coefficient of permeability of less than  $10^{-9}$  m/s; no chemical storage areas to be left onsite unattended over the wet season; all wastes to be transported in accordance with the NT Waste Management and Pollution Control Act; and a risk assessment will be completed for all wet season transportation of chemicals and wastes.
3. *Introduction and spread of weeds:* All equipment and vehicles to be washed-down and have a Biosecurity Declaration Certificate prior to access to site; activity will be restricted to the lease pad and camp pad; the interest holder has committed to six monthly monitoring around infrastructure to detect the spread/ introduction of weed species; and weed infestations will be treated in accordance with the Weed Management Plan where they associated with the activities of the interest holder.
4. *Accidental ignition of fire from exploration activities and site activities:* No major civil works or flaring are proposed in the EMP; a bushfire management plan will be implemented to prevent and respond to bushfires including establishment of communication and fire response protocols with pastoralists; bushfire awareness will be included in site inductions; firefighting equipment will be available to deal with fires; fire breaks have been constructed around the exploration

lease and camp pads; daily monitoring of bushfires will be conducted in the region during periods of high fire danger; and fire hazard reduction strategies (such as back burning) to be implemented to reduce the risk of fire ignition/ impact as required.

5. *Poor rehabilitation of the site reduces regional habitat and promotes weed invasions:* The interest holder has developed a site specific rehabilitation plan, which will be implemented progressively; areas will have infrastructure and wastes removed, topsoil respread and vegetation re-introduced; rehabilitation timing will consider seasonal constraints, with rehab completed prior to the wet season to maximise revegetation chance; and rehabilitation monitoring to be undertaken to track rehabilitation progress.

The measures provided are appropriate to the nature and scale of the activity, and if implemented, the residual risk to the environment is likely to be acceptable.

The NT EPA considers that all reasonably practicable measures will be used to control the environmental impacts and risks, considering the level of consequence and the resources needed to mitigate them. The NT EPA considers that the environmental impacts and risks will be reduced to an acceptable level, considering the sensitivity of the local environment, relevant standards and compliance with the Code.

#### **4. Other relevant matters**

Regulation 9 requires that an EMP provides a comprehensive description of the regulated activity, including provision of a detailed timetable for the activity. The EMP includes a schedule (Table 14 and Figure 12), outlining the sequencing of works. Figure 12 is reproduced in Appendix 1. The NT EPA has provided advice that the interest holder be required to submit an updated timetable for the regulated activity prior to commencement. The timetable should address all aspects of the activity and include, but not be limited to, dates for the implementation of commitments and should be updated monthly or as other constraints, such as seasonal weather forecasts or travel restrictions emerge.

#### **CONCLUSION**

The NT EPA considers that, subject to the Minister applying EMP approval conditions, the EMP:

- is appropriate for the nature and scale of the regulated activity
- demonstrates that the regulated activity can be carried out in a manner such that the environmental impacts and risks of the activity will be reduced to a level that is as low as reasonably practicable (ALARP) and acceptable.

In providing this advice the NT EPA has considered the principles of ecologically sustainable development.

## RECOMMENDATIONS

The NT EPA recommends that, should the EMP for Origin Energy B2 Pty Ltd Beetaloo W-1 EP117 be approved, the Minister considers approval conditions to achieve the following outcomes:

1. Provision of regular timetable updates so that the regulator is aware of status of activities.
2. Recording of all spills in an internal register that includes location, source and volume of the spill and corrective actions to ensure subject land is free from contamination to meet rehabilitation requirements and ensure no long-term environmental impacts.
3. Submission of an annual performance report to DEPWS to demonstrate the interest holder has met environmental outcomes and complied with the requirements set out in the Regulations, the Code, the ministerial conditions and the EMP.
4. Submission of an updated rehabilitation plan (concurrent with the annual performance report) to support and document progressive rehabilitation and ensure full rehabilitation is achieved during the term of the plan.
5. Publication on the company website available for viewing by the public of the following information:
  - a. List of chemicals used in diagnostic fracture injection test;
  - b. Summary of the annual performance report;
  - c. Summary of progress and outcomes in rehabilitation.



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CHAIRPERSON

NORTHERN TERRITORY ENVIRONMENT PROTECTION AUTHORITY

12 OCTOBER 2021