

Approval notice and statement of reasons

Petroleum (Environment) Regulations 2016 (NT) (Regulations)

Interest holder	Origin Energy B2 Pty Ltd ABN 42 105 431 525
Petroleum interest(s)	Exploration Permit 117 (EP117)
Environment management plan (EMP) title	Beetaloo Sub-Basin Kyalla 117 N2 Multi-well Drilling, Hydraulic Fracturing and Well Testing Program
EMP document reference	ORI6-3
DEPWS EMP assessment document reference	NTEPA2019/0157-007~0005
Regulated activity	Drilling, hydraulic fracturing and well testing of an additional two onshore petroleum wells at the existing Kyalla EP117 N2 well site.
Is the EMP a new plan submitted under reg 6 or a revision of a current plan submitted in accordance with reg 18?	This EMP is a new plan submitted under regulation 6
Was the regulated activity referred ¹ for consideration of whether environmental impact assessment was required?	No
Was environmental impact assessment required and by which assessment method?	N/A
Has an environmental approval under the <i>Environment Protection Act 2019</i> been issued for the regulated activity	N/A
Has an Authority Certificate under the <i>Northern Territory Aboriginal Sacred Sites Act 1989</i> been issued for the regulated activity?	Yes Authority Certificate C2020/003
Date an EMP compliant with reg 8 was first submitted under reg 6	11 November 2020
Date within which the EMP was published for comment under reg 8A, if applicable	14 November 2020 – 12 December 2020
Date further information was required and submitted under reg 10, if applicable	Letter 1 issued 3 December 2020, EMP resubmitted 17 January 2021 (ORI6-2), further revised 11 February 2021 (ORI6-3)
Date of resubmission notice under reg 11(2)(b), if applicable	N/A
Date EMP was resubmitted under reg 11(3), if applicable	N/A
Date a notice setting out a proposed timetable for consideration of the EMP was issued under reg 11(2A) if applicable	19 January 2021
Proposed timetable given in notice under reg 11(2A) if applicable	26 February 2021
Where provided under s 29B of the <i>Northern Territory Environment Protection Authority Act 2012 (NT) (NT EPA Act)</i> , the dates the Northern Territory Environment Protection Authority (NT	Date of Minister's request for advice: 25 February 2019 Date of NT EPA Advice: 15 February 2021

¹ This means a referral under the *Environment Protection Act 2019 (NT)* or the *Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act)*.

EPA) was requested to, and provided, advice on
EMP

Date of decision 22/ 02 / 2021

Decision maker



Signature

Hon Eva Dina Lawler MLA,
Minister for Environment

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1. The EMP is approved. reg 11(2)(a)
2. The approval is subject to the following conditions: reg 12(2)

Condition 1: The interest holder must submit to the Department of Environment, Parks and Water Security (DEPWS):

- i. a timetable (including time-bound commitments) for the regulated activity prior to the commencement of the activity and each quarter thereafter; and
- ii. daily on-site reports indicating the status and progress of vegetation clearing and drilling, and the freeboard available in drilling sumps and wastewater tanks during operations; and
- iii. a five-day activity forecast for the duration of the activity during the wet season (1 October – 30 April each year); and
- iv. written notification of any halt to the activity due to wet season conditions, within 24 hours of the halt; and
- v. immediate notification of any fires potentially threatening the activity from external or internal sources.

Condition 2: In the event of any accidental release of contaminants that exceeds 200 litres (for liquids), the interest holder must provide a written report to DEPWS, via Onshoregas.DEPWS@nt.gov.au, as follows:

- i. within 24 hours, provide a written report with details of the incident specifying material facts and actions taken to avoid or mitigate environmental harm; and
- ii. within 14 days of the incident, provide a written report detailing:
 - a. the volume of impacted soil removed for appropriate disposal and the depth of any associated excavations; and
 - b. the corrective actions taken or proposed to be taken to prevent recurrence of an incident of a similar nature.

Condition 3: The interest holder must provide an annual report to DEPWS via Onshoregas.DEPWS@nt.gov.au on its environmental performance, in accordance with item 11(1)(b) in schedule 1 of the Petroleum (Environment) Regulations 2016 (NT). The first report must cover the 12 month period from the date of the

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approval, and be provided within three calendar months of the end of the reporting period. The annual environmental performance report must align with the template prepared by DEPWS for this purpose.

Condition 4: An emissions report must be provided to DEPWS by 30 September each year via Onshoregas.DEPWS@nt.gov.au, which summarises actual annual greenhouse gas emissions reported under the Commonwealth *National Greenhouse and Energy Reporting Act 2007*² versus predicted emissions in the EMP.

Condition 5: The interest holder must provide to DEPWS within 6 weeks of completion of well flowback operations at the Kyalla N2 well site on EP117, a report on the risk assessment of flowback wastewater from the hydraulic fracturing phase. The risk assessment must be:

- i. prepared by a suitably qualified person³; and
- ii. prepared in accordance with the monitoring wastewater analytes specified in Section C.3 of the Code of Practice: Onshore Petroleum Activities.

² Clause D.6.2(b) of the Code requires annual actual greenhouse gas emissions to be provided even where emissions are below the NGERs threshold of 25 ktCO₂-e for scope 1 and scope 2 emissions reporting.

³ As classified in the Definitions table in the Code.

2 Material considered

1. The following material has been taken into account in making this decision:
 - a. Beetaloo Sub-Basin Kyalla 117 N2 Multi-well Drilling, Stimulation and Well Testing Program EMP, dated 11 February 2021
 - b. The principles of ecologically sustainable development (ESD) referenced in the *Environment Protection Act 2019* (NT)
 - c. The NT EPA advice provided at my request under s 29B of the NT EPA Act;
 - d. The Authority Certificate issued under the *Northern Territory Aboriginal Sacred Sites Act 1989* (NT) and associated response provided by the Aboriginal Areas Protection Authority
 - e. The Code of Practice: Onshore Petroleum Activities in the Northern Territory (Code) as defined in regulation 4A
 - f. All public comments submitted under reg 8B.

3 Statement of reasons

1. The EMP meets the approval criterion in regulation 9(1)(a), because it contains all the information required by Schedule 1 of the Regulations. reg 9(1)(a)
2. The EMP meets the approval criterion in regulation 9(1)(b) for the following reasons: reg 9(1)(b)
 - a. The nature of the regulated activity is as follows:
 - i. drilling of the Kyalla 117 N2-2H and Kyalla 117 N2-3H horizontal exploration and appraisal (E&A) wells (which includes the vertical component of the well)
 - ii. hydraulic fracture stimulation of two (2) horizontal E&A wells
 - iii. completion and testing of an additional two (2) E&A wells
 - iv. suspension and decommissioning of two (2) E&A wells
 - v. stimulation and well testing of two (2) proposed E&A wells
 - vi. maintenance and monitoring works on two (2) E&A wells.
 - b. The scale of the regulated activity is as follows:
 - i. construction of up to an additional two E&A petroleum wells at the existing approved Kyalla EP117 N2 well site, located approximately 300 km south-east of Katherine in the Beetaloo Sub-basin.
 - ii. use of the existing well pad and infrastructure, including but not limited to access tracks, helipad, grey water irrigation area and accommodation camps.
 - iii. use of an estimated 75 - 110 ML of groundwater (1.3 ML per stage), which is less than the interest holder's maximum water entitlement under the existing groundwater extraction licence GRF 10285 (175 ML/annum).
 - iv. estimated peak maximum traffic flow increase associated with the regulated activity of 44 vehicles per day during the demobilisation of equipment from site regulated activity.
 - v. estimated greenhouse gas (GHG) emissions of between 25,000 and 61,000 tonnes carbon dioxide equivalent (tCO₂-e) based on maximum flaring of between 3 - 6 months.
 - c. The EMP contains an appropriate level of detail for the nature and scale of the activities proposed. The regulated activity is clearly described. The description of

the existing environment is informed by adequate field surveys and desktop assessments. Uncertainty relating to environmental data is clearly stated. The identification of environmental impacts and risks is comprehensive and contains a sufficient level of detail to inform the assessment. The EMP provides detail on environmental outcomes and performance standards, implementation strategy, personnel, emergency response plan, stakeholder engagement, legislative requirements, recording, monitoring, reporting and notifications, to an appropriate level of quality and applicability.

- d. Having regard to the above, the information in the EMP is appropriate for the nature and scale of the regulated activity to which it relates.
3. The EMP meets the approval criterion in regulation 9(1)(c) for the following reasons: reg 9(1)(c)
- a. In making my decision, I have considered regulation 5A, which requires that I give fundamental consideration to the principles of ESD, including the decision-making principle (s 18 *Environment Protection Act 2019* (NT)) as follows:
 - i. Conduct of the regulated activity is spread over four years, is small scale and constrained to one location, and will inform decision-making about longer-term petroleum activities.
 - ii. The regulated activity includes drilling and hydraulic fracturing, and the EMP was made available for public comment for 28 days, in addition to ongoing stakeholder engagement conducted by the interest holder. Stakeholder feedback has informed the EMP development and public comments have been considered when making the approval decision.
 - iii. In carrying out the regulated activity, there is no particular contest between economic, social and environmental considerations that requires further mention. Environmental considerations have been considered through the use of the existing well site to minimise impacts.
 - iv. I believe the information regarding the proposed regulated activity adequately enables the integration of both long-term and short-term environmental and equitable interests, and has regard to community input.
 - b. In making my decision, I have considered regulation 5A, which requires that I give fundamental consideration to the principles of ESD, including the precautionary principle (s 19 *Environment Protection Act 2019* (NT)) as follows:
 - i. The EMP outlines the interest holder's previous investigations into the physical, biological and cultural environment and demonstrates a sound understanding of the environment at EP117 N2, 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.
 - ii. The interest holder has adopted mitigations and controls to manage risks and the EMP demonstrates adherence to the Code that establishes best practice management measures for conduct of the regulated activity.
 - iii. The EMP includes the assessment of impacts and risks for wet season operations and management strategies, including measures such as halting activities and ongoing inspection of erosion and sediment control measures and access roads, if there is significant rainfall.
 - iv. The EMP describes how the 10 m well separation has been determined, including a description of subsurface risk management controls to mitigate potential subsurface communication with the existing N2-1H well at the site.

- v. I have imposed a condition requiring the interest holder to periodically provide to DEPWS an updated schedule of works and immediate written notification of any halt to the regulated activity due to the wet season.
 - vi. The precautionary principle has been considered in assessing the regulated activity. The regulated activity does not pose a threat of serious or irreversible environmental damage arising from the regulated activity and there is a satisfactory scientific basis to assess potential impacts and risks.
- c. In making my decision, I have considered regulation 5A, which requires that I give fundamental consideration to the principles of ESD, including evidence-based decision-making principle (s 20 *Environment Protection Act 2019* (NT)) as follows:
- i. The EMP demonstrates an adequate understanding of the environment in which the regulated activity will be undertaken, and considers all relevant aspects of the environment that have potential to be affected. The EMP does not propose any land clearing. As the EMP proposes drilling, hydraulic fracturing and well testing in both the wet and dry season, particular focus is placed on prevention of erosion and sedimentation, site design to avoid flooding impacts, including wet season and dry season freeboard on all sumps and wastewater storage infrastructure (1,300 mm and 300 mm, respectively).
 - ii. The EMP includes additional Tier 2 toxicity screening of the cumulative risks to workers from chemicals of potential concern through exposure pathways such as aboveground storage and handling of flowback water. The information in the EMP confirms that the calculated risks associated with chemicals of potential concern in flowback water, drilling fluids, chemical tracers and combination hydraulic fracturing fluid systems are considered low and acceptable. The information in EMP further indicates there are no potentially complete exposure pathways from hydraulic fracturing chemicals to impact potable groundwater sources in proximity to the regulated activity.
 - iii. The EMP has undergone review and assessment by NT Government agencies. Feedback from NT Government agencies was forwarded to the interest holder and has been adequately addressed, including amendments to the EMP. In addition, the interest holder has undertaken stakeholder engagement with landholders and land managers, traditional owners and the Northern Land Council, in accordance with regulation 7.
 - iv. The interest holder undertakes continual monitoring and maintenance of erosion and sediment controls under an existing approved plan, which provides mitigations for avoiding mobilisation of soils during the wet season. The interest holder has committed to undertaking six (6) monthly site stability inspections through the implementation of environmental performance standards and outcomes S-4 and S-5.
 - v. A Bushfire Management Plan (BMP) is in place and has been included in the EMP (Appendix D). The BMP incorporates mitigation controls already used by the interest holder in the Beetaloo Sub-basin and is considerate of regional fire management strategies. The BMP includes collaboration on fire management with pastoralists.
 - vi. The Wastewater Management Plan (Appendix F) includes the sources and estimated volume of wastewater to be generated in conduct of the regulated activity, and establishes use of drilling sumps that can cater a 1 in 1,000 year rainfall event.
 - vii. The Rehabilitation Management Plan (Appendix M) establishes a five-year monitoring program to determine rehabilitation success. The interest holder commits to undertaking progressive rehabilitation when sites are no longer

required for future operations. The RMP includes measurement criteria such as flora abundance and canopy cover; weed species and density; plant establishment rates; surface disturbance from cattle, feral animals and fire, across rehabilitation stages.

- viii. Potential impacts and risks from spills are adequately mitigated through the Spill Management Plan (Appendix I), which includes bunding, containment of hydrocarbons in double-lined diesel storage tanks and spill prevention and response procedures for hazardous spill prevention, monitoring, assessment, response and clean-up. The Emergency Response Plan (Appendix T) considers procedures and processes for large spills and leaks, and all spills are to be remediated.
 - ix. I have imposed a condition requiring that the interest holder must report, in writing, any spill incidents that exceed 200 litres within 24 hours of the incident being detected.
 - x. A traffic impact assessment has been completed, including traffic flow and composition. The impact has been assessed to be negligible. The peak maximum anticipated traffic flow increase is approximately 44 vehicles per day, during rig and heavy equipment demobilisation from the site. This is a short duration increase in traffic and not materially different to traffic impacts previously assessed.
 - xi. The proposed environmental outcomes are likely to be achieved based on the best available information on the nature and scale of the activity, and the environment in which the regulated activity will be conducted. The studies undertaken by the interest holder to inform the EMP affords the interest holder with a detailed and reliable knowledge of the potential environmental impacts and risks and the most appropriate measures for mitigation of those impacts and risks.
 - xii. I believe the information regarding the proposed regulated activity adequately provides the best available evidence in the circumstances that is reliable and relevant to the decision-making process.
- d. In making my decision, I have considered regulation 5A, which requires that I give fundamental consideration to the principles of ESD, including the principle of intergenerational and intra-generational equity (s 21 *Environment Protection Act 2019* (NT)) as follows:
- i. 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, to ensure no long-term adverse impacts to the environment in which the activity is conducted, if carried out in accordance with the EMP.
 - ii. 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. Appropriate measures are in place for the management of items of heritage value should they be discovered through implementation of the "unexpected heritage finds procedure".
 - iii. The proactive measures included in the EMP regarding bushfire and weed management (such as fuel monitoring, and weed surveys and control) will

have an overall positive impact on the condition of the environment for future generations.

- iv. The EMP commits the interest holder to progressive rehabilitation throughout the life of the activity which, combined with the Code requirements, is considered to reduce the risks to biodiversity and soil contamination to as low as reasonably practicable and acceptable levels.
 - v. Interactions between the regulated activity and landholder operations have been assessed and the interest holder is committed to regular engagement on the progress of activities. Ongoing engagement and the level of satisfaction with the interest holder's activities shows the interest holder is committed to not leaving a lasting negative legacy for future generations.
 - vi. The environmental burdens of the regulated activity will not disproportionately affect particular stakeholders. Cumulative GHG emissions generated by the regulated activity are not considered significant when considering the regulated activity will result in an overall increase in NT GHG emissions of approximately 0.4%, based on six (6) months flaring.
 - vii. The interest holder has included an assessment of the maximum combined cumulative greenhouse gas emissions from the regulated activity and previously approved regulated activities, which are approximately 184,000 tCO₂-e⁴ over a 2 – 3 year period. This represents approximately 1.2% increase in annual Northern Territory emissions reported for 2018-19.⁵
 - viii. I consider that cumulative emissions are not significant when considered in context of 2018-19 NT and Australian emissions, which were approximately 16.0 million tonnes and 537.4 million tonnes respectively.
 - ix. The environmental values will be protected in the short and long term from the activities outlined in the EMP and the health, diversity and productivity of the environment will be maintained for the benefit of future generations. Accordingly I do not believe that the carrying out of the regulated activity in accordance with the EMP would have an effect contrary to the principle of inter or intra-generational equity.
- e. In making my decision, I have considered regulation 5A, which requires that I give fundamental consideration to the principles of ESD, including sustainable use of natural resources (s 22 *Environment Protection Act 2019* (NT)) as follows:
- i. I note the findings of the Scientific Inquiry into Hydraulic Fracturing (HFI) in the NT that states: "*... in the short to medium term, the Australian National Energy Market is likely to require higher levels of flexible, gas-fired generation, which can provide a reliable, low emissions substitute for ageing coal-fired generation, and essential security services to complement variable renewable electricity generation.*"⁶
 - ii. I also note the NT Government's commitment to implementing all the recommendations of the HFI, including seeking to ensure that there is no net increase in life cycle GHG emitted in Australia from any onshore petroleum produced in the NT.
 - iii. Cumulative impacts of groundwater extraction from the Gum Ridge Formation have been assessed by the interest holder and are considered insignificant. Annual cumulative groundwater extraction from the Gum Ridge

⁴ Less than 100 ktCO₂-e per annum.

⁵ DISER 2020. State Greenhouse Gas Inventory. <https://ageis.climatechange.gov.au/SGGI.aspx>.

⁶ Refer section 9.7.4 of the [Scientific Inquiry into Hydraulic Fracturing in the Northern Territory](#); p 233.

Formation from all licenced bores (approximately 850 ML) is currently well below the storage ranges of 1,766,000 to 3,532,000 GL.⁷

- iv. Accordingly, I am satisfied that the concept of sustainable use of natural resources has been taken into account.
- f. In making my decision, I have considered regulation 5A, which requires that I give fundamental consideration to the principles of ESD, including the conservation of biological diversity and ecological integrity (s 23 *Environment Protection Act 2019* (NT)) as follows:
 - i. I believe the information I have regarding the existing biodiversity and ecosystems that are to be affected by the regulated activity, the effects that are likely, and the mitigation measures reasonably available, are sufficient.
 - ii. Site selection for conduct of the regulated activity was informed by a previous detailed ecological assessment and supports the establishment of one lease pad for a multi-well configuration, thus minimising impacts from additional land clearing.
 - iii. The proposed location for the regulated activity does not include groundwater dependent ecosystems; nor is it within proximity to a declared ecological community under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act).
 - iv. The regulated activity poses a low risk to the ecosystem within the Sturt Plateau bioregion and does not pose a significant risk to any regional populations of threatened species. Land clearing has been approved via a separate EMP (Origin Beetaloo Basin Civil Construction EP117 N2 EMP, approved 6 June 2019); no additional clearing is proposed under this EMP. Three threatened species were identified as having a 'medium' likelihood of occurrence within the regulated activity area. Due to the management strategies outlined in the EMP and the relatively small area of impact, it is unlikely that the regulated activity will pose a risk to the identified threatened species. Impacts and risks to flora, fauna, and ecosystems have been mitigated to an acceptable level.
 - v. The DEPWS Flora and Fauna Division is satisfied the proposed activities do not pose a significant risk to threatened species or significant habitats and vegetation types.
 - vi. The EMP outlines measures to minimise impacts on affected environmental values, including the management of threatening processes such as erosion, weeds and fire through implementation of existing management plans, monitoring and corrective actions.
 - vii. The conservation of biological diversity and ecological integrity is vital to the achievement of ecologically sustainable development. Given the fundamental nature of this consideration, I have given central importance to the conservation of biodiversity and ecological integrity in weighing whether I am satisfied the approval criterion in regulation 9(1)(c) has been met.
 - viii. If carried out in accordance with the EMP, the risks of the regulated activity to the conservation of ecological integrity and biological diversity are considered to be mitigated to an acceptable level.

⁷ Tickell, SJ & Q Bruwer, 2019. *Georgina Basin Groundwater Assessment: Daly Waters to Tennant Creek*. Water Resources Division, Report 17/2017 (Version 2, April 2019).

- g. In making my decision, I have considered regulation 5A, which requires that I give fundamental consideration to the principles of ESD, including the promotion of improved valuation, pricing and incentive mechanisms (s 24 *Environment Protection Act 2019* (NT)) as follows:
- i. In accordance with the 'polluter pays principle':
 - (1) The interest holder has committed to the remediation of impacts of the regulated activity, as is set out in the EMP.
 - (2) If the interest holder fails to remediate the impacts, an environmental rehabilitation bond will be provided by the interest holder, which is considered to be adequate to cover the resulting costs.
 - (3) As with any business undertaken in the NT, the interest holder is required to pay full life cycle costs for goods and services used.
 - (4) The EMP commits to progressive rehabilitation when sites are no longer required for future operations.
 - ii. I do not believe that the carrying out of the regulated activity in accordance with the EMP would have an effect contrary to the principle of improved valuation, pricing and incentive mechanisms.
- h. The NT EPA did not require the EMP to be referred under the *Environment Protection Act 2019* (NT), as the regulated activity does not have the potential to cause a significant impact to the environment. reg 9(3)
- i. The NT EPA has provided the following in relation to the regulated activity and the EMP:
- i. In accordance with my request under s 29B of the NT EPA Act, the NT EPA reviewed the EMP for the regulated activity against the approval criteria in regulations 9(1)(b), 9(1)(c) and 9(2)(a) of the Regulations and other matters the NT EPA considered relevant, and has provided advice about the EMP. Relevantly:
 - (1) The NT EPA recommended that should the EMP be approved, it be subject to five conditions. The NT EPA's recommendations have informed the conditions of this approval. All conditions are outlined in section 1(2) of this Approval Notice.
 - (2) The NT EPA concluded that the EMP for the regulated activity, subject to the recommended approval conditions, is appropriate for the nature and scale of the regulated activity and demonstrates that the regulated activity can be carried out in a manner that environmental impacts and environmental risks of the activity will be reduced to a level that is as low as reasonably practical and acceptable.
 - ii. I have considered the NT EPA's advice and recommendations and these have been incorporated where relevant into the comments in this statement of reasons and the conditions in the Approval Notice.
- j. The existing environment along with its particular values and sensitivities is appropriately identified in Section 4 of the EMP, and to the extent I do not agree or there is some uncertainty, I have imposed conditions to address the relevant risk or risks. reg 9(1)(c)
- k. I agree with the risk assessment set out in Appendix K of the EMP, and to the extent I do not agree I have imposed a condition or conditions to address the relevant risk or risks. The cumulative effects of the regulated activity have been identified and assessed to the extent possible.

- l. The interest holder's risk assessment is applicable to activities in all seasons and the outcomes are reflected in the EMP that includes a weed management plan; bushfire management plan; wastewater management plan; rehabilitation management plan; emergency response plan; stakeholder engagement management plan; spill management plan; compliance with the existing erosion and sediment control plan; and a methane emissions management plan. This is consistent with the requirements of the Code that allows for the regulated activity to occur in the wet season months when contingency planning is provided.
- m. Public consultation on the EMP was required under the Petroleum (Environment) Regulations 2016, as the EMP proposes drilling and hydraulic fracturing activities. The EMP was made available for public comment for 28 days from 11 November – 12 December 2020.
- n. DEPWS received 364 public submissions on the EMP, consisting of 359 form letters via internet campaigns, and 5 submissions via the advertised Departmental public engagement modes. NT submissions represent approximately 35% of the total number of submissions received and interstate submissions represent approximately 41%. Less than 1% of submissions (3) were received from overseas. The balance of the submissions (23%) were from undisclosed geographical regions. The submissions received did not identify new issues that have not already been addressed in this or previously approved EMPs, or the HFI. The NTG agencies and NT EPA Onshore Gas Committee comments were addressed by the interest holder via an updated EMP.
- o. I note the issues raised in public submissions across the following broad environmental themes:

Theme	Overview of issue raised
Flora and fauna (environment)	<ul style="list-style-type: none"> • toxicity of hydraulic fracturing chemicals to aquatic life • ingestion of contaminated wastewater/materials impacting, for example, reptiles, birdlife in general and threatened species – e.g. Gouldian Finch • potential ignition sources and flaring on total fire ban days
Social and cultural	<ul style="list-style-type: none"> • impacts to public and tourism from increased traffic • concerns as to the extent of stakeholder engagement • damage to cultural heritage sites, land and waters
Climate change	<ul style="list-style-type: none"> • greenhouse gas emissions
Water	<ul style="list-style-type: none"> • potential impacts to downstream Lake Woods from spills and/or loss of containment, particularly during the wet season resulting in contamination of soils • contamination of groundwater caused by well corrosion • impacts to the Moroak Sandstone
Waste	<ul style="list-style-type: none"> • use of open tank wastewater storages • transportation of toxic waste interstate, as opposed to treatment options in the NT
Human health	<ul style="list-style-type: none"> • toxicity of chemicals including: acute toxicity, respiratory irritation, tissue damage, burns, and cancer
Regulation and compliance	<ul style="list-style-type: none"> • fragmented, piecemeal approvals • development by stealth • lack of transparent and scientific scrutiny

- p. The specific issues of concern raised in public submissions have been addressed in the NT EPA Advice which I have considered. I recognise the importance the community places overall, on assessment of cumulative impacts, environmental protection and ensuring decisions are based on the principles of ecologically sustainable development. I have taken into account any public submissions in making my decision. The EMP appropriately identifies the risk and potential impacts from the regulated activity and commits to mitigation, management and monitoring measures to address these risks and potential impacts.
- q. The EMP demonstrates how the interest holder will comply with relevant requirements of the Code in undertaking the regulated activity. This includes reference to applicable Australian and international standards that have been adopted for the regulated activity, as applicable. The EMP cross references relevant sections of the Code that apply to the mitigation and management measures to enable the reviewer to identify and confirm that the proposed regulated activity complies with the Code, as applicable. The EMP provides management plans that meet the requirements of the Code.
- r. There are no environmental impacts or environmental risks relating to the proposed regulated activity that I consider to be unacceptable.
- s. Overall, having regard to the above, I am satisfied that the EMP demonstrates that the regulated activity is to be carried out in manner by which the environmental impacts and environmental risks are reduced to a level that is:
 - i. as low as reasonably practicable; and
 - ii. acceptable.