

Approval notice and statement of reasons

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

Interest holder	Imperial Oil & Gas Pty Ltd ABN 92 002 699 578
Petroleum interest(s)	Exploration Permit 187 (EP187)
Environment management plan (EMP) title	2021-2025 EP187 Work Program
EMP document reference	EMP IMP4-3 – Imperial OG 2021-2025 EP187 Program, Rev 3, prepared by inGauge Energy Australia, dated 20 July 2021 (IMP4-3)
Regulated activity	Land clearing, earthworks, establishing access ways, wastewater flowlines, gravel pits, groundwater monitoring bores and drill pads, conducting seismic surveys, drilling, and hydraulic fracturing.
Is the EMP a new plan submitted under reg 6 or a revision of a current plan submitted in accordance with reg 18, or regs 15 and 17?	This is a new plan submitted under reg 6.
Was the regulated activity referred ¹ for consideration whether environmental impact assessment was required?	No
Was environmental impact assessment ² required?	N/A
Has an environmental approval ³ been issued for the regulated activity?	N/A
Has an Authority Certificate under the Northern Territory <i>Aboriginal Sacred Sites Act 1989</i> been issued for the regulated activity?	Yes C2021/065
Date an EMP compliant with reg 8 was first submitted under reg 6	16 April 2021
Date within which the EMP was published for comment under reg 8A, if applicable	21 April 2021 to 19 May 2021
Date further information was required and submitted under reg 10, if applicable	N/A
Date of resubmission notice under reg 11(2)(b), if applicable	24 May 2021 20 July 2021
Date EMP was resubmitted under reg 11(3), if applicable	21 July 2021
Date a notice setting out a proposed timetable for consideration of the EMP was issued under reg 11(2A), or reg 11(3)(c), if applicable	3 September 2021
Proposed timetable given in notice under reg 11(2A), or reg 11(3)(c), if applicable	2 November 2021
Where provided under s29B 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: 31 August 2021 NTEPA2020/0131-002~0001

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

² This means a requirement for an environmental impact assessment to be conducted under the EP Act and/or the EPBC Act.

³ This means an approval granted under the EP Act and/or the EPBC Act.

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

Date of decision

17/ 10/ 2021

Decision maker



Signature

Hon Eva Dina Lawler MLA,
Minister for Environment

1 Approval notice

1. This approval notice supersedes the partial approval dated 3 September 2021, which excluded approval of drilling and hydraulic fracturing.
2. I approve the EMP, subject to conditions.
3. The approval incorporates all conditions within the approval dated 3 September 2021 (which are amended and restated below) and includes additional conditions specific to drilling and hydraulic fracturing:

reg 11(3)(a)(i)

Condition 1: The interest holder must submit to the Department of Environment, Parks and Water Security (DEPWS), via Onshoregas.DEPWS@nt.gov.au the following:

- i. Notification of the commencement of hydraulic fracturing activities prior to commencement.
- ii. An updated timetable for the regulated activity that is to be provided on the last day of each quarter (being 31 March, 30 June, 30 September and 31 December each year), that identifies activities completed in the current quarter and:
 - regulated activities in the next quarter, including duration;
 - activities in the next quarter based on commitments in the EMP relevant to the stage of the activity, including duration;
 - due dates for satisfaction of Ministerial approval conditions in the next quarter; and
 - due dates for regulatory reporting in the next quarter.
- iii. During civil works (and noting civil works is taken to include any type of earth moving, land clearing, installation of gravel pits, establishment of well pads, establishment of access tracks and installation of wastewater flowlines) and seismic activities, weekly reports indicating:
 - the status and progress of vegetation clearing and civil works at each location the activity is conducted;
 - the outcome of any assessments undertaken by a suitably qualified person of geomorphic and hydrological investigations and the conclusion as to whether directional drilling is required, in advance of installing wastewater flowlines across a stream;
 - the status and progress of seismic activities;

1 Approval notice

- any fires potentially threatening the activity from external or internal sources;
 - the outcome of inspections of erosion and sediment control measures, and corrective actions taken; and
 - the outcome of inspections and risk assessments for determining suitability of use of unsealed roads by any vehicle or machinery other than a light vehicle in the wet season.
- iv. During drilling, daily on-site reports, to be consolidated and provided weekly, indicating:
- status and progress of drilling at each location;
 - freeboard available in drill cutting pits (in cm); and
 - the outcome of general site inspections relevant to drilling and waste, and corrective actions taken.
- v. During hydraulic fracturing and flowback, weekly reports indicating:
- status and progress of hydraulic fracturing;
 - weekly measurement of stored volume (in ML) and freeboard available (in cm) of wastewater storage tanks, unless operated in the wet season, during which it must be measured daily;
 - volume of wastewater transferred via wastewater flowlines, including records of inflow and outflow (in L) for each transfer; and
 - the outcome of general site inspections relevant to hydraulic fracturing and waste, and corrective actions taken.
- vi. During the wet season, weekly reports indicating:
- the outcome of inspections of erosion and sediment control measures, and corrective actions taken;
 - the outcome of daily inspections of any secondary containment in use, and corrective actions taken;
 - any halt to the regulated activity due to wet season conditions; and
 - daily measurements of freeboard available in drill cutting pits and wastewater treatment tanks (in cm) whenever operational.
- vii. For avoidance of doubt, if wastewater is present in tanks or flowlines, or drill cutting pits contain waste drill fluids and cuttings, these are considered to be operational. Reports must continue to be provided as per parts iv and v above, irrespective of whether there is manned activity occurring on site if the wastewater infrastructure is operational.
- viii. In the event that multiple regulated activities under the EMP are being conducted concurrently, the weekly submission of consolidated daily reports may be further consolidated to a single submission, but must clearly identify the locations and activities to which the information pertains, in relation to each item listed in conditions iii to vi above, inclusive.

1 Approval notice

Condition 2: 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). With respect to the reports required to be submitted in accordance with item 11(1)(b) in schedule 1 of the Petroleum (Environment) Regulations 2016 (NT):

- i. The first report must cover the 12 month period from the date of the approval, and be provided within 3 calendar months of the end of the reporting period.
- ii. Each report must align with the template and Guideline prepared by DEPWS for this purpose and be provided each year until such time a notification is made to the Minister under regulation 14 that the activity is complete, or until the EMP is revised and re-approved.

Condition 3: In support of clause D.6.2 of the *Code of Practice: Onshore Petroleum Activities in the Northern Territory*, 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 from conduct of the regulated activity estimated and reported under the Commonwealth *National Greenhouse and Energy Reporting Act 2007* versus predicted emissions in the EMP.⁴ The emissions report should include:

- i. a summary of all regulated activities conducted which have contributed to greenhouse gas emissions during the reporting period; and
- ii. explanation of differences between actual and predicted emissions with reference to all parts of the regulated activity with potential to create greenhouse gas emissions.

Condition 4: Audits of compliance must be undertaken by a suitably accredited, qualified and independent person and the audit report provided to DEPWS via Onshoregas.DEPWS@nt.gov.au, no later than 4 weeks after the completion of the audits. The following must be adhered to:

- i. An audit focussed on implementation of the Erosion and Sediment Control Plan must be conducted no later than 2 weeks after the establishment of the first well pad, and again no later than 2 weeks after the establishment of another well pad.
- ii. An audit focussed on key controls listed in the EMP relevant to drilling activities must be commenced in the 24 hours prior to commencement of drilling of the first exploration well, and again in the 24 hours prior to commencement of drilling another exploration well.
- iii. An audit focused on key controls listed in the EMP relevant to management of wastewater and containment of contaminants, including the Wastewater Management Plan and the Spill Management Plan, must be conducted during flowback and extended production testing on the first exploration well hydraulically fractured, and again on another exploration well hydraulically

⁴ 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.

1 Approval notice

fractured.

- iv. The first audit for each of the Erosion and Sediment Control Plan, drilling and hydraulic fracturing audits must:
 - be conducted by an independent auditor; and
 - include a field-based inspection by the independent auditor to verify implementation of controls.
- v. Audits must focus on implementation of the EMP.
- vi. Audit reports must be prepared in accordance with any published guidance issued by DEPWS and at a minimum must:
 - include audit objectives, scope and audit methods used;
 - include the audit criteria used for determining compliance with the commitments in the EMP;
 - provide detail of the evidence used for determining compliance with the commitments in the EMP (noting for clarity, actual evidence does not need to be provided);
 - include photographic evidence from the field-based components of the audit;
 - include clear identification of opportunities for improvement, compliances and non-compliances, as determined by the audit; and
 - include recommended corrective actions for any identified non-compliances.

Condition 5: In support of clause B.4.17.2 of the *Code of Practice: Onshore Petroleum Activities in the Northern Territory*, the interest holder must:

- i. undertake quarterly groundwater monitoring at each control and impact monitoring bore for a minimum of three years after establishment, unless otherwise advised by DEPWS;
- ii. provide to DEPWS, via Onshoregas.depws@nt.gov.au, the results of quarterly groundwater monitoring, within one month of collection, in a format to be determined by DEPWS;
- iii. provide to DEPWS, via Onshoregas.depws@nt.gov.au, an interpretative report of groundwater quality based on the groundwater monitoring required to be conducted at the well site(s) in accordance with Table 6 of the *Code of Practice: Onshore Petroleum Activities in the Northern Territory*. The interpretative report must be provided annually within 3 months of the anniversary of the approval date of the EMP and include:
 - demonstration that there is no change to groundwater quality or level attributable to conduct of the regulated activity at the well site(s);
 - interpretation of any statistical outliers observed from baseline measured values for each of the analytes;
 - discussion of any trends observed; and
 - a summary of the results including descriptive statistics.
- iv. develop site-specific performance standards for groundwater quality and

1 Approval notice

interquartile ranges for analytes at each of the impact monitoring bores established, based on the first 3 years of groundwater monitoring, and provide to DEPWS, via Onshoregas.depws@nt.gov.au within 6 months of the 3 year anniversary of approval of the EMP.

Condition 6: The ground-truthing committed to in the EMP must be undertaken one week in advance of commencement of ground-disturbing activities by a qualified and experienced ecologist with experience in Gouldian finch habitat requirements to ensure alternative routes are identified in the field prior to commencement of clearing.

Condition 7: Prior to the commencement of ground-disturbing activities, the interest holder must engage an ecologist with experience in Gouldian Finch habitat requirements to prepare a map of potential Gouldian Finch breeding habitat that could be impacted by the regulated activity. The potential Gouldian Finch breeding habitat mapping must:

- i. be provided to DEPWS via Onshoregas.dewps@nt.gov.au in advance of commencement of ground-disturbing activities; and
- ii. quantify the proportion of the regulated activity footprint that consists of potential Gouldian Finch breeding habitat.

Condition 8: Clearing of vegetation within mapped potential Gouldian Finch breeding habitat for access tracks, wastewater flowlines, gravel pits and well pads must avoid removal of trees with hollows with a diameter of >25 cm at breast height, to the maximum extent practicable.

Condition 9: In support of schedule 1, item 11 of the Petroleum (Environment) Regulations 2016 (NT) and clause A.3.5 of the *Code of Practice: Onshore Petroleum Activities in the Northern Territory*, the interest holder must provide geospatial files to DEPWS, via Onshoregas.DEPWS@nt.gov.au, within 2 months of completion of each ground-disturbing or land clearing activity, as specified in Figure 3.2 of the EMP (Project schedule), which must:

- i. include information on how the data was obtained;
- ii. meet the requirements specified by DEPWS at <https://nt.gov.au/property/land-clearing/freehold-land/apply-to-clear-freehold-land/spatial-data-for-clearing-applications>;
- iii. include riparian zones, areas of high value vegetation (which includes potential Gouldian Finch breeding habitat), areas of high density of hollow-bearing trees and the buffers applied as a result of ground-truthing activities, as polygons and with metadata indicating the area in hectares;
- iv. include any resultant deviations to the location of the regulated activity;
- v. include the location of any listed species sighted during ground-truthing; and
- vi. include the proposed and actual areas of vegetation cleared, as polygons and with metadata indicating the area in hectares.

Condition 10: To support clause C.7.2 of the *Code of Practice: Onshore Petroleum Activities in the Northern Territory*, all accidental releases of liquid contaminant or hazardous chemical must be immediately recorded in a site spill register, including all spills or leaks from the wastewater flowlines, regardless of volume. The spill register

1 Approval notice

and geospatial files specifying the location of the spill must be submitted to DEPWS via Onshoregas.DEPWS@nt.gov.au three months after the 12 month anniversary of the approval of the EMP each year while the EMP is in force. The register must include:

- i. the location, source and volume of the spill or leak;
- ii. volume of impacted soil removed for appropriate disposal and the depth of any associated excavation;
- iii. the corrective actions taken or proposed to be taken to prevent recurrence of an incident of a similar nature; and
- iv. GPS co-ordinates of the location of the spill.

Condition 11: In support of clause 16 of the *Water Act 1992* (NT) and clause B.4.2 of the *Code of Practice: Onshore Petroleum Activities in the Northern Territory*, the interest holder must undertake groundwater level/pressure monitoring at each impact monitoring bore established, using a logger to record water level for 2 weeks prior to, during, and 4 weeks after completion of hydraulic fracturing operations at each new well pad established under the EMP. Data logging should record at a minimum of every 4 minutes for the duration of the recording period. The logging data should be provided to DEPWS via Onshoregas.DEPWS@nt.gov.au within 2 weeks of completion of groundwater level monitoring in each impact monitoring bore.

Condition 12: The interest holder must undertake monthly surface water monitoring in accordance with section C.8 of the *Code of Practice: Onshore Petroleum Activities in the Northern Territory* upstream and downstream of streams which are crossed by wastewater flowlines, while those flowlines contain wastewater during the wet season. The interest holder must prepare and implement a Surface Water Sampling and Analysis Plan, 2 months in advance of commencement of any wet season during which it is proposed to use wastewater flowlines that cross streams, and include:

- i. the location and number of proposed monitoring points;
- ii. the method for sample collection; and
- iii. quality control and chain of custody procedures.

Condition 13: All freshwater used to flush the wastewater flowlines must be treated as contaminated wastewater until such time it is demonstrated that the water used to flush the flowlines has a quality consistent with uncontaminated groundwater:

- i. This is to be demonstrated by:
 - undertaking analysis of the flushing water against the wastewater analytes in clause C.8 of the *Code of Practice: Onshore Petroleum Activities in the Northern Territory*; and
 - simultaneous measurement of electrical conductivity using calibrated field instrumentation, which must be calibrated prior to use each time; and
 - statistical analysis of data to demonstrate a significant correlation between the presence of contaminants and electrical conductivity.
- ii. If part i above provides a clear demonstration that electrical conductivity can be used as a surrogate for contaminants, the interest holder may thereafter

1 Approval notice

- use field-based measurement of electrical conductivity, using instrumentation that must be calibrated prior to use each time, to demonstrate the flushing water is free from contaminants.
- iii. All records of measurement of the flushing water must be maintained in an auditable form.
 - iv. Whenever a flowline that has been left for a period of more than 3 months with groundwater in it (post flushing) must be assumed to be contaminated and treated as wastewater.
 - v. No flushing water may be released to ground.

Condition 14: The interest holder must prepare and implement a Rapid Response Site Demobilisation and Stabilisation Plan that details the strategy for managing environmental risks, including management of drill cuttings and wastewater that may result in the event a flood inundates access and/or a well pad, within 2 months of approval of the EMP. The Plan should:

- i. include response strategies, including options for removal of drill cuttings and removal, covering and/or transfer of wastewater in open treatment tanks;
- ii. identify personnel who would implement;
- iii. identify equipment required, including pumping capacity and number of pumps for the transfer of wastewater from open to enclosed tanks;
- iv. identify access constraints that would affect the response and how this would be managed;
- v. specify the timeframes for responses and demonstrate they are as low as reasonably practicable; and
- vi. include a commitment to commence site preparation and wet season planning by 31 July each year following EMP approval.

Condition 15: Prior to the commencement of drilling, the interest holder must provide to DEPWS, via Onshoregas.DEPWS@nt.gov.au, bowtie diagrams that demonstrate how potential loss of containment of wastewater will be managed, inclusive of preventative and mitigative controls, that:

- i. consider loss of containment from wastewater treatment and storage tanks, drill cutting pits and wastewater flowlines;
- ii. consider wet and dry season conditions; and
- iii. consider the location of a loss of containment event.

Condition 16: The interest holder must provide to DEPWS, via Onshoregas.DEPWS@nt.gov.au, a cementing report for the surface casing through the Gum Ridge Formation and the Bukalara Formation, as soon as practicable but not more than 14 days after completion of the cementing job for each well.

Condition 17: In support of clause C.4.1.2 of the *Code of Practice: Onshore Petroleum Activities in the Northern Territory*, the interest holder must provide to DEPWS, via Onshoregas.DEPWS@nt.gov.au, no later than 3 months of completion of the drilling

1 Approval notice

program on one well pad north and one well pad south of the Carpentaria Highway, a report that:

- i. provides the outcome of assessment and leachability testing of residual drill fluids and drill cuttings; and
- ii. provides the recommended disposal option.

Condition 18: The interest holder must ensure at all times there is sufficient capacity to enclose the complete volume of flowback fluid and produced water on the well pad in above-ground infrastructure that meets the requirements of clauses A.3.8 and C.4.2.2(b) of the *Code of Practice: Onshore Petroleum Activities in the Northern Territory*.

Condition 19: Prior to the commencement of hydraulic fracturing at any new exploration well, the interest holder must provide an updated Stakeholder Engagement Log (Appendix 11) which demonstrates engagement that was postponed as a result of COVID-19 travel restrictions has been completed. Any required amendments to the EMP resulting from assessment of an objection or claim from a stakeholder must be submitted to DEPWS via Onshoregas.DEPWS@nt.gov.au in accordance with regulation 22 or 23 of the Petroleum (Environment) Regulations 2016 (NT), as applicable.

Condition 20: Condition 20: The interest holder must provide to DEPWS within 6 weeks of completion of well flowback operations at each new exploration well established under the EMP a report on a comprehensive risk assessment of flowback wastewater from the hydraulic fracturing phase, via Onshoregas.DEPWS@nt.gov.au. The risk assessment must be:

- i. prepared by a suitably qualified person; and
- ii. prepared in accordance with the monitoring wastewater analytes specified in section C.8 of the *Code of Practice: Onshore Petroleum Activities in the Northern Territory*.
- iii. assess degradation of hydraulic fracturing chemicals in the wastewater; and
- iv. consider the impacts and risks on fauna and potential for soil and water contamination from a loss of containment, based on the analytical results obtained

2 Material considered

1. The following material has been taken into account in making this decision:
 - a. 2021-2025 Work Program EP187 Environment Management Plan, dated 20 July 2021 (IMP4-3).
 - b. The principles of ecologically sustainable development referenced in reg 5A and the approval criteria set out in reg 9(1).
 - c. The NT EPA advice provided at my request under s29B of the *Northern Territory Environment Protection Authority Act 2012* (NT).
 - d. The Department of Industry, Tourism and Trade advice that the Well Operations Management Plan approved for the regulated activity meets the requirements of the *Code of Practice: Onshore Petroleum Activities in the Northern Territory*.
 - e. The Authority Certificate issued under the *Northern Territory Aboriginal Sacred Sites Act 1989*.
 - f. The *Code of Practice: Onshore Petroleum Activities in the Northern Territory* (the Code) as set out in reg 4A.
 - g. All public comments submitted under reg 8B.

3 Statement of reasons

1. The EMP meets the approval criterion in reg 9(1)(a), because it contains all the information required by Schedule 1 of the Regulations. reg 9(1)(a)
2. I have taken into account the approval criterion in reg 9(1)(b) by noting the nature and scale of the regulated activity and bearing it in mind during my consideration of the impacts and risks. In particular, I note that: reg 9(1)(b)
 - a. The nature of the regulated activity is as follows:
 - i. The regulated activity is a complete exploration program, presented in a single EMP, rather than multiple smaller EMPs.
 - ii. The regulated activity includes:
 - seismic acquisition, as an infill program for previous seismic acquisition in the same location
 - establishment of an accommodation camp and civil works associated with establishing well pads, access tracks and wastewater flowlines
 - installation of impact and control groundwater monitoring bores
 - drilling and hydraulic fracturing of new exploration wells
 - potential for establishment of multiple wells per well pad, with a maximum of four wells on a single pad, and a commensurate reduction of the number of well pads required to be constructed
 - evaluation, logging, testing and coring of the seven new wells, including diagnostic fracture injection testing
 - completion, workover and maintenance of the seven new wells, including non-routine flaring during production testing and well completion activities
 - if identified as required, suspension and/or decommissioning of any of the seven new wells

- rehabilitation.
 - iii. The nature of the regulated activity is adequately defined and comparable to other instances of regulated activities that have occurred in the Northern Territory across multiple EMPs.
- b. The scale of the regulated activity is as follows:
- i. collection of 166 km of seismic data
 - ii. construction of up to six well pads and up to six gravel pits
 - iii. construction of up to 50 km of access tracks within EP187, using some of the current proposed and previous seismic lines, as well as existing cleared pastoral tracks, and upgrade of a single intersection on the Carpentaria Highway
 - iv. installation of up to 57 km of buried, low pressure wastewater flowlines, which, if implemented, will lead to a reduced size of some well pads
 - v. extended production testing for up to 90 days for each new well
 - vi. clearing of up to 166 hectares, and subsequent rehabilitation
 - vii. use of approximately 125 ML of groundwater per annum
 - viii. generation of up to approximately 80,000 tCO₂e- per annum
 - ix. requirement for a peak workforce of approximately 65 personnel for drilling and testing of two wells simultaneously
 - x. establishment of a 40 person temporary accommodation camp on the existing Carpentaria-1 well pad
 - xi. peak vehicle movement of 50 per day across all activities, 10-30 on average during drilling and 1-10 for remainder of time
 - xii. peak heavy vehicle movement of 75 for two weeks, on four occasions over five years.
2. The approval criteria in reg 9(1)(c) requires that I be satisfied 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 both as low as reasonably practicable and acceptable. In assessing whether the EMP meets the approval criteria, I note that my decision is a prescribed decision (under reg 5A) for s 6A of the *Petroleum Act 1984* (NT), and as such requires me to consider and apply the principles of ecologically sustainable development. In accordance with reg 12(3), I provide the following information about how the EMP meets the approval criteria, and the manner in which I have taken into account the principles of ecologically sustainable development when considering whether or not the plan meets the approval criteria. reg 9(1)(c)
3. The principles of ecologically sustainable development are defined in sections 18-24 of the *Environment Protection Act 2019* (NT), and I address each in turn:
- a. The decision-making principle (s 18 *Environment Protection Act 2019*) requires effective integration of long-term and short-term environmental and equitable considerations, and for processes to provide for community involvement in relation to decisions and actions that affect the community. Related to this, I note the following:
 - i. The regulated activity is low impact and with discrete activities staged over five years. The regulated activity 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 comment has been considered when making the approval decision. I am satisfied that the community has had a reasonable opportunity to be involved in processes in relation to this decision.
 - iii. Next, I have considered short-term and long-term environmental impacts of carrying out the regulated activity. Environmental impacts include direct and indirect effects on the physical, biological, economic, cultural and social aspects of the environment, and may include cumulative impacts or occur over time.
 - iv. The information before me suggests short-term environmental impacts are manageable with the proposed mitigations in place.
 - v. The information before me suggests long-term environmental impacts are unlikely with the requirement for rehabilitation and requirements under the Spill Management Plan.
 - vi. There is no particular contest between economic, social and environmental considerations that requires further mention.
 - vii. Taking an integrated view of long-term and short-term environmental and equitable considerations, I am satisfied that the considerations on balance and taken together support approval of the EMP.
- b. The precautionary principle (s 19 *Environment Protection Act 2019*) applies when there are threats of serious or irreversible environmental damage, and requires that lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. I am satisfied that the regulated activity does not pose a threat of serious or irreversible environmental damage. While conduct of the regulated activity will likely result in minor and short-term impacts, I am satisfied the measures identified by the interest holder are effective to prevent a threat of serious or irreversible environmental damage.
- i. On the basis that the threat does not warrant the application of the principle, it is not necessary to consider if there is a significant degree of uncertainty as to the nature and scope of the environmental damage that may occur. In relation to the regulated activity under consideration, scientific uncertainty is able to be addressed through implementation of the commitments in the EMP. On this basis, I do not consider that the threat involves scientific uncertainty of a degree that triggers the application of the precautionary principle.
 - ii. Even if I was not satisfied that the threat is not real, the EMP contains the following precautionary measures:
 - (1) Ground-truthing by an ecologist prior to ground disturbance to build on baseline assessments already conducted and:
 - (a) confirm the presence or absence of listed species
 - (b) confirm the extent of riparian zones and apply the required buffers
 - (c) determine the location, density and use of mature hollow-bearing trees
 - (d) confirm the extent of potential Gouldian Finch breeding habitat.

- (2) Inclusion of adaptive management practices in relation to land clearing and alignment of linear infrastructure.
 - iii. As a further measure, I have imposed conditions requiring the interest holder to prepare a surface water quality sampling and analysis plan for monitoring of surface water quality whenever a wastewater flow line is in use and crossing a stream in the wet season, and a requirement for the ground-truthing to be conducted a week prior to ground disturbing activities, and informed by desktop mapping of potential Gouldian Finch habitat.
 - iv. With these measures in place, the consequence of conducting the regulated activity on the environment is reduced to levels which avoid serious or irreversible environmental damage.
 - v. I have carefully evaluated the proposed precautionary measures against the risk-weighted consequences of impacts given the options available, and with a view to avoiding serious or irreversible damage to the environment wherever practicable. I am satisfied the EMP, combined with the conditions I have imposed, mitigates risks of serious or irreversible damage due to lack of full scientific certainty to a level that is both as low as reasonably practicable and acceptable.
- c. The principle of evidence-based decision-making (s 20 *Environment Protection Act 2019*) requires decisions to be made on the best available evidence in the circumstances that is relevant and reliable. I am of the view that the evidence before me satisfies this requirement for the following reasons:
- i. The EMP was developed with input from two experienced environmental engineers, an archaeologist and an ecologist. Both the archaeologist and the ecologist have experience in the Beetaloo Sub-Basin and McArthur Basin.
 - ii. The interest holder employed a comprehensive process to obtain relevant information including baseline assessments, archaeological assessments, stakeholder engagement and consultation with relevant NT government agencies.
 - iii. The EMP has undergone review by a multi-disciplinary team in the NT EPA with expertise in environmental science, engineering and risk management options for the regulated activity and they have provided advice to me on the strengths and limitations of the EMP.
 - iv. The interest holder has amended the EMP to address areas of uncertainty or requiring clarification.
 - v. Public consultation on the EMP was required under regulation 8A. The EMP was advertised for public comment on Have Your Say and made available for 28 days from 21 April 2021 to 19 May 2021. A total of 1,620 submissions were received, of which 1,608 were form letters from a public campaign. 137 submissions (10.7%) were identified as originating from the NT, noting 606 submissions (37.4%) did not identify their origin.
 - vi. Public submissions raised a range of concerns regarding the proposed regulated activity which I must consider under the principle of evidence-based decision-making. I now turn to consideration of these concerns:
 - (1) Concern was raised about the adequacy of stakeholder engagement and protection of Aboriginal Sacred Sites. The EMP includes a stakeholder engagement report, which demonstrates the interest holder has engaged with a range of stakeholders, that is, individuals whose rights and activities may be directly affected by the environmental impacts of conducting the regulated activity, as defined in regulation 7(3) of the

Regulations. This has included direct engagement with leaseholders and Aboriginal stakeholders, as well as engagement conducted through the Northern Land Council (as an agent for Aboriginal stakeholders). The interest holder has also committed to ongoing engagement with all stakeholders. Two archaeological assessments have been undertaken with Aboriginal Traditional Owners present and the interest holder commits to maintain their involvement during ground disturbing activities. The EMP includes a chance find procedure should heritage items be located and strict requirements to avoid movement outside of approved areas. I note this EMP can only be approved if an Authority Certificate is issued by the Aboriginal Areas Protection Authority, which provides the strongest protection for Sacred Sites under Australian law.

- (2) Comments were also made about the 28 day comment period for public comments and provision of a Notice for public comments on the Have Your Say website, administered by the NT government. I am satisfied use of online media allows for a wider range of stakeholders to be informed that an EMP is available for public comment. The 28-day public comment period is a legislated period.
- (3) Concern was also raised about impact to other road users. The EMP includes a detailed traffic impact assessment, estimating vehicle and truck movements for different stages of the regulated activity. The interest holder will obtain approval of its Traffic Management Plan, prior to commencement of the regulated activity. Further, the interest holder proposes to upgrade an intersection with the Carpentaria Highway to ensure safe egress and ingress to the location of the regulated activity.
- (4) Concern was raised about the sufficiency of baseline surveys and the EMP has been amended to clarify the scope of work undertaken for those baseline surveys. In addition, I have included a condition requiring potential Gouldian Finch breeding habitat mapping to be undertaken to inform the ground-truthing activities committed to in the EMP.
- (5) Concern was raised about land clearing leading to habitat fragmentation, edge effects and increase in weeds and feral animal predation, as well as concern about indirect impacts outside of the footprint of the regulated activity. I am satisfied that the nature and scale of the activity is such that the clearing is limited to narrow linear corridors and isolated well pads and, combined with the requirement for rehabilitated areas to be ecologically integrated with the surrounding environment, will not lead to long-term impacts to ecological integrity. The Weed Management Plan includes stringent weed hygiene measures, and requirements for annual weed control and monitoring to occur. There is no evidence to suggest that onshore petroleum activities have resulted in the spread of, or increase in, feral animals. It is highly unlikely that offsite impacts to wildlife will be created as a result of noise, light or vibration and the interest holder has taken into account the sensitivity of the Grey Falcon to noise. Surface water monitoring during use of wastewater flowlines across streams in the wet season will assist in demonstrating the low likelihood for downstream impacts should a leak occur.
- (6) Concern was raised about impacts to both water quality and sustainable use of groundwater. The assessment of sustainable use of groundwater is a key component of granting water extraction licences, and the proposed use of groundwater for this regulated activity is considered

sustainable. The well integrity requirements of the Code, combined with requirements for non-toxic drilling fluids and establishment of two barriers when drilling through aquifers, are an effective means for preventing contamination of groundwater from drilling and hydraulic fracturing such that the risk of groundwater contamination is reduced to ALARP and acceptable levels.

- (7) The EMP comprehensively considers cumulative impacts from conduct of the regulated activity, such that I am satisfied the cumulative impacts are manageable for this exploration phase. Cumulative emissions across all current onshore petroleum activities are a fraction of the total emissions for the NT in 2019. Concerns raised about climate change have been considered, and I note that the predicted emissions equate to an increase of approximately 0.24% per year over the whole program for NT emissions, based on conservative estimates of emissions from fuel combustion, land clearing, flaring and fugitive emissions. It is also noted that emissions in an exploration phase are generally higher than, and not reflective of, emissions in a production phase. The NT government has a Climate Change Response, a Climate Action Plan and is undertaking research to inform an emissions reduction strategy. Government is developing an emissions reduction strategy and has developed a policy for managing emissions from new and expanding large emitters. Government is also developing a draft greenhouse gas emissions offset policy and has committed to working with the Australian Government to implement recommendation 9.8 of the HFI, which relates to the offsetting of GHG from the onshore petroleum industry in the NT.
- (8) Concerns were raised about impacts to fauna from use of open wastewater storage tanks. The Code does not allow for open storage of wastewater, and treatment tanks, which may be open are above ground and have vertical sides to prevent ingress from ground-dwelling fauna. Similar operations conducted in the NT and other jurisdictions have found impacts to birdlife from open cuttings pits are considered low due to the saline nature of the water not being attractive or injurious to bird species.
- (9) Public submissions included concerns about the state of knowledge of aquifers in the location of the regulated activity. Groundwater monitoring has already commenced in the Gum Ridge Formation and preliminary data has been collected from the Bukalara Formation. This and future monitoring continues to provide valuable information for understanding of water resources in the region. I am satisfied there is a sound understanding of the depth of the local aquifers, their storage yield and direction of groundwater flow such that potential impacts to groundwater can be managed to ALARP and acceptable levels. The interest holder relocated one well pad, to ensure it meets the required separation distance of 1 km, which is consistent with the recommendation in the HFI Final Report as a measure to avoid drawdown impacts on other groundwater users.
- (10) Offsite impacts were raised as a concern, as a result of use of wastewater flowlines. As the Code requires an immediate response to any contamination detected, a Spill Management Plan for spills of hazardous materials, and primary and secondary containment for all potentially hazardous materials stored, the risk of causing offsite contamination of surface waters is considered unlikely. In addition, an

assessment of the potential for a spill to spread and infiltrate to groundwater in Appendix 07 of the EMP concluded that a catastrophic release (defined as 1 ML, which is greater than the largest possible release from a flowline) would affect an area of 300 m radius and would take approximately 158 years to infiltrate 50 m below ground level in siltstone, or 115 days in fractured limestone.

- (11) Overtopping of wastewater treatment tanks was also raised as a concern. I am satisfied that maintenance of a 1 in 1000 year event freeboard on all wastewater infrastructure is sufficient to manage the risk of overtopping. In addition, the interest holder has committed to an additional 0.5 m bund around the drill cuttings sumps and uses a telemetered monitoring system to measure freeboard availability. I have included a condition clarifying requirements in relation to capacity of wastewater storage requirements that will be applicable to drilling and hydraulic fracturing.
- (12) Concern was raised about transport of chemicals in the wet season and generally. Transportation of chemicals and wastewater during the wet season is dependent on an assessment of road conditions prior to mobilisation on any unsealed roads, which includes daily assessment during the wet season. In addition, the Spill Management Plan (Appendix 07) and Emergency Response Plan (Appendix 14) consider spill responses in relation to loss of containment during transport.
- (13) Concerns about the toxicity of chemicals and the adequacy of the chemical risk assessment were also raised. The Chemical Risk Assessment (Appendix 06.01) includes a full range of chemicals that could be used in hydraulic fracturing and was conducted by an independent third party, based on national standards for chemical risk assessments and human health risk assessments. The species used in such assessments are used as representatives for different avian groups, and are sufficient to develop an understanding of the potential toxicity, without requiring the specific local species to be subjected to toxicity testing.
- (14) Submissions made about the potential for corrosion of wells from hyper-salinity, high temperature and sulphate-reducing and sulphur oxidising bacteria have been raised previously, and no substantive new issues were raised. All onshore shale gas wells (including exploration wells constructed for the purposes of production testing) have mandatory requirements for well construction, with cementing extending up to at least the shallowest problematic hydrocarbon-bearing, organic carbon rich or saline aquifer zone. The interest holder must have a WOMP accepted by the Minister for Mining and Industry prior to commencement of the regulated activity that will be implemented for the drilling program design.
- (15) Concerns were raised about consideration of ecologically sustainable development precautionary principle and the principle on intergenerational equity. I have considered these in making this decision.
- (16) The EMP was viewed by some submissions as indicative of exploration creep. This EMP is the first EMP to holistically describe the full exploration program proposed, which addresses previous public

comments regarding lack of transparency of the full exploration program, and meets NT EPA expectations for full-scope EMPs.

- (17) Concern was raised about how I consider a WOMP when making an approval decision. I have received advice from technical experts and I am satisfied that the WOMP accepted by the Minister for Mining and Industry. Technical experts in DITT have assessed the WOMP and certified that it meets the requirements of the Code and demonstrates how the risks to the integrity of the petroleum well will be reduced to ALARP. The WOMP also demonstrates that the interest holder will construct, operate, maintain and decommission the petroleum wells identified in the WOMP to minimum acceptable standards designed to achieve long-term well integrity, the protection of aquifers and minimisation of fugitive greenhouse gas emissions.
- vii. I believe the information regarding the proposed regulated activity adequately provides the best available evidence in the circumstances that is relevant and reliable to the evidence-based decision-making process.
- d. The principle of intergenerational and intra-generational equity (s 21 *Environment Protection Act 2019*) requires that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of present and future generations. I have given consideration to the impact on present and future generations as follows:
- i. This criterion requires me to turn my mind to whether the benefits of the proposal disproportionately burden present or future generations, or particular groups or communities of present or future generations.
 - ii. I have considered the use of groundwater and am satisfied that the proposed use will not result in either short-term or long-term impacts to other groundwater users.
 - iii. I have considered the protection of cultural heritage and am satisfied that conduct of the regulated activity will not impact on preservation of cultural heritage for the benefit of future generations.
 - iv. I have considered the long term use of the subject land, and note that it is Aboriginal land leased for pastoral purposes, and am satisfied that the regulated activity will not materially affect current or future use of the land for these purposes.
 - v. I have considered the potential benefit for future generations from increased economic activity in the region and am satisfied that exploration is a necessary precursor for future economic gains that may be achieved through a viable onshore petroleum industry.
 - vi. I have considered whether the health, diversity and productivity of the environment is maintained or enhanced for the benefit of each of these relevant groups and conclude that on balance, the health, diversity, and productivity of the environment is not reduced by the regulated activity for each identified group or community.
 - vii. The environmental burdens of the regulated activity will not disproportionately affect particular stakeholders.
 - viii. I have considered the effect of greenhouse gas emissions and note that the contribution from this activity is negligible. Emissions generated in a petroleum exploration phase are typically higher than the production phase

- and therefore are not an indicator of future emissions should production proceed.
- ix. I consider that cumulative emissions (249,893 tCO₂-e) are not significant when considered in context of 2019 NT and Australian emissions, which were approximately 20.65 and 518.9 million tCO₂-e, respectively.
 - x. Cultural values relating to sacred sites will be protected through the application of an Authority Certificate issued to the interest holder under the Northern Territory *Aboriginal Sacred Sites Act 1989* and measures for reporting on discovery of archaeological sites during conduct of the regulated activity.
 - xi. 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. The principle of sustainable use (s 22 *Environment Protection Act 2019*) requires that natural resources should be used in a manner that is sustainable, prudent, rational, wise and appropriate. In applying this principle, I have considered the following:
- 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.*”⁵
 - ii. I note the NT Government’s commitment to implementing all the recommendations of the HFI, including working with the Australian Government to seek to ensure that there is no net increase in lifecycle GHG emitted in Australia from any onshore petroleum produced in the NT.
 - iii. I consider the cumulative extraction of groundwater for conduct of the regulated activity (peak use of approximately 125 ML) is not significant when considered in the context of the Gum Ridge Aquifer storage ranges of 1,766,000 to 3,532,000 GL and the sustainable extraction rate of 14,128,000 ML per annum, and significantly lower than estimates of stock water required at approximately 8,900 ML per annum. I note an additional groundwater extraction licence is required for the regulated activity, as the current licence allows a maximum of 85 ML.
 - iv. Accordingly, I am satisfied that the concept of sustainable use of natural resources has been taken into account.
- f. The principle of biological diversity and ecological integrity (s 23 *Environment Protection Act 2019*) requires that biological diversity and ecological integrity should be conserved and maintained. I have applied this principle 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, is sufficient and where there is uncertainty I have set conditions.
 - ii. The regulated activity is not proposed to be conducted in Petroleum Reserved Blocks.

⁵ Refer section 9.7.4 of the *Scientific Inquiry into Hydraulic Fracturing in the Northern Territory*; p 233. Available at: <https://frackinginquiry.nt.gov.au/inquiry-reports?a=494286>

- iii. The EMP considers the potential for impact on riparian zones and their buffers from land clearing for the establishment of access lines and wastewater flowlines. The proportion of these habitat areas that may be cleared is conservatively estimated to be 0.06% (0.23 hectares) of available riparian vegetation in the area surrounding the location of the regulated activity (approximately 375 hectares) and the interest holder has committed to ground-truthing the extent and quality of riparian zones in advance of any clearing activities, to enable alternative route selection where required.
- iv. The EMP considers the potential for impact to habitat of Grey Falcons and Gouldian Finches, particularly in relation to breeding habitat. The interest holder has developed a decision tree for determining when a tree with a hollow may be removed that ensures that removal of hollow-bearing trees is minimised to the greatest extent possible. The interest holder has also committed to presence or absence surveys for listed species in advance of clearing with a focus on actively used tree-hollows. I have set a condition requiring the interest holder to provide additional information on potential breeding habitat for the Gouldian Finch.
- v. The EMP considers the potential for impact to habitat of the Merten's Water Monitor and the Yellow-spotted Monitor and concludes that less than 260 m of the total 425 km of streams in the area surrounding the location of the regulated activity, is likely to be disturbed for establishment of access tracks and installation of wastewater flowlines. The interest holder has also committed to presence or absence surveys for these species in advance of disturbing a stream habitat. The EMP also includes a control preventing crossing of waterways containing water without a risk assessment being conducted and specific authorisation.
- vi. The EMP considers the proximity of terrestrial groundwater dependent ecosystems and the baseline assessment identified potential habitat is present along Relief Creek. It is also noted that groundwater dependent ecosystems generally rely on shallow groundwater (< 20 m) whereas the depth to groundwater in the location of the regulated activity is > 20 m, and therefore generally inaccessible to terrestrial groundwater dependent ecosystems.
- vii. The EMP considers the potential for impacts to aquatic groundwater dependent ecosystems such as stygofauna from extraction of groundwater and contamination of groundwater. While the EMP recognises that stygofauna may be present in the Gum Ridge Formation, the proposed controls effectively mitigate the potential for impacts. These controls include avoiding use of toxic drilling fluids when drilling through aquifers, use of two levels of casing and cementing through aquifers, well integrity and barrier verification testing and monitoring for changes to groundwater quality.
- viii. The interest holder has committed to minimising its clearing footprint and avoiding clearing of large trees (> 25 cm diameter at breast height) such that impacts to biodiversity are managed to ALARP and acceptable levels. The interest holder has also committed to progressive rehabilitation of disturbed areas not in use and annual weed survey and control programs, to minimise impact on ecological integrity.
- ix. It is often the case that the conservation of biological diversity and ecological integrity is vital to the achievement of ecologically sustainable development. By their nature, ecosystems are complex and interdependent systems and relationships; this needs to be considered in relation to what preserves their integrity. Biological diversity also represents a wealth of potential natural

- resources that may provide options for present and future generations. I have born this in mind when considering the weight to be given to the evidence before me regarding the potential impacts of the regulated activity on biodiversity and ecological integrity.
- x. The measures to conserve and maintain biological diversity and ecological integrity in the EMP are appropriate, given the nature and scale of the regulated activity.
 - xi. If carried out in accordance with the EMP, the risks of the regulated activity to the conservation of biological diversity and ecological integrity are considered to be mitigated to an acceptable level.
- g. The principle of improved valuation, pricing and incentive mechanisms (s 24 *Environment Protection Act 2019*) requires that environmental factors should be included in the valuation of assets and services, through application of the 'polluter pays' principles, consideration of full life cycle costs of providing goods and services, and pursuing environmental goals in the most cost-effective way. I have applied the principle as follows:
- i. The pollution and waste that will be generated by the regulated activity in the general course of its operation includes domestic waste, drilling waste, wastewater from hydraulic fracturing and emissions.
 - ii. I am satisfied that both hazardous and non-hazardous waste will be disposed of in accordance with the requirements of the *Waste Management and Pollution Control Act 1988* (NT) and the *Radiation Protection Act 2004* (NT) by the interest holder at its own cost, as outlined in the Waste and Wastewater Management Plan, and emissions are minimised to the greatest extent possible for an exploration phase activity, through avoidance of planned venting and a leak detection monitoring program, as outlined in the Methane Emissions Management Plan.
 - iii. In relation to the risks of a pollution event that may occur unintentionally during the operations of the regulated activity, I consider that adequate measures are in place to ensure the interest holder bears the costs of containment, avoidance, and abatement. This includes:
 - (1) impacts and risks associated with loss of containment of wastewater, which are managed through secondary containment measures, maintenance of freeboard on open treatment tanks and drill cuttings pits, installation of leak detection systems, and monitoring for leaks associated with the wastewater flowlines
 - (2) impacts and risks associated with contamination of soil, surface water and groundwater, which are managed through meeting mandated requirements for well integrity, clean-up of spills and leaks and remediation of impacted soil, and monitoring surface water quality in the event of a leak from a wastewater flowline.
 - iv. As a precautionary measure I have included a condition applicable to drilling and hydraulic fracturing requiring monitoring of surface water whenever a wastewater flowline is operational and crossing a stream in the wet season.
 - v. In relation to full life cycle costs, it is expected that the regulated activity will have a life cycle of five years, and at the end of this cycle the interest holder will take action to remove any residual pollution and waste as detailed by the EMP.
 - vi. In addition, the interest holder is required to provide an environmental security sufficient to allow third party intervention for rehabilitation and

- remediation should it be required, ensuring the interest holder bears the costs of pollution.
- vii. The Spill Management Plan includes commitments to immediately remediate spills and leaks, so as to reduce the risk of long-term contamination of the environment and avoid environmental impact legacies.
 - viii. With these measures in place, I am satisfied that the EMP ensures that environmental costs are not left as externalities to be paid for by Territory taxpayers or the local community. They will be fairly paid for by those who stand to benefit from the regulated activity, such as the interest holder, and consumers who choose to purchase the interest holder's products.
 - ix. I believe approval of the EMP with the conditions I have imposed is consistent with the principle of improved valuation, pricing and incentive mechanisms.
 - h. The NT EPA has not made a decision whether to refer the regulated activity under Part 4, Division 3 of the *Environment Protection Act 2019* (NT). 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 against the approval criteria in regulation 9(1) 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 this approval include drilling and hydraulic fracturing once technical experts in DITT confirm that the WOMP meets the Code requirements.
 - (2) The NT EPA recommended that should the EMP be approved, it be subject to 21 conditions. I have not accepted the condition recommended by the NT EPA for publishing of reports on the interest holder's corporate website as the information is already publically available. The NT EPA's recommendations have informed the conditions of this approval. All conditions are outlined in section 1(3) of this Approval Notice.
 - (3) 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 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 Appendix 01 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 04 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.
 - 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, a Bushfire Management Plan, a Waste and Wastewater Management Plan,

inclusive of a Chemical Risk Assessment, a Rehabilitation Management Plan, an Emergency Response Plan, a Methane Emissions Management Plan, a Spill Management Plan and an Erosion and Sediment Control 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 and minimum freeboard in wastewater infrastructure is maintained.

- m. The anticipated environmental impacts are appropriately identified in Appendix 04 of the EMP. The regulated activity is an extension of previously approved regulated activities and cumulative effects have been identified and assessed.
- n. 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 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 activities comply with the Code, as applicable. The EMP provides water management commitments and management plans that meet the requirements of the Code.
- o. I am satisfied that the interest holder has conducted ongoing stakeholder engagement in accordance with the Regulations. The EMP provides details of stakeholder engagement that meets Regulation 7 and Schedule 1, Clause 9 of the Regulations (Section 8.0 and Appendix 11). Stakeholder engagement records (Appendix 11) demonstrate that where stakeholders raised objections about environmental impacts of the proposed activity that required specific changes from the interest holder, these were addressed. The EMP provides details of written feedback and input from stakeholders as part of the stakeholder engagement records. I note the impact of COVID-19 travel restrictions within the Northern Territory has necessarily prevented engagement in some instances, but these are identified and the interest holder has committed to continue engagement activities. The risk assessment in the EMP details the potential environmental impacts of the activity and proposed environmental outcomes to manage impacts on social and cultural surroundings.
- p. I recognise the importance the community places on the protection of water, human health, management of chemicals and waste, stakeholder engagement, social impacts and regulation and compliance. The EMP appropriately identifies the risks and potential impacts from the regulated activity and commits to mitigation and management measures to address these risks and potential impacts.
- q. There are no environmental impacts or environmental risks relating to the proposed regulated activity that I consider to be unacceptable.
- r. Overall, having regard to the above, I am satisfied that the EMP is appropriate for the nature and scale of the activity, and 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.