ntepa Northern Territory Environment Protection Authority

Onshore Petroleum Activity – NT EPA Advice

PEAK HELIUM PTY LTD (PKH1-6) – ENVIRONMENT MANAGEMENT PLAN (EMP) FOR 2021 SEISMIC EXPLORATION, EXPLORATION PERMIT (EP134) AMADEUS BASIN NT

BACKGROUND

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

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

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

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

ACTIVITY

Subject	Description
Interest holder	Peak Helium Pty Ltd
Petroleum interest(s)	Exploration Permit 134 (EP134)
Environment Management Plan (EMP) title	2021 Seismic Exploration Environment Management Plan EP134 – Amadeus Basin, NT
EMP document reference	PKH1-6
Regulated activity	The EMP proposes 120 km of two dimensional (2D) seismic survey for helium gas exploration on Idracowra and Horseshoe Bend pastoral leases over a seven week period in 2022. The seismic survey will occur entirely within EP134. The project area is located approximately 170km south of Alice Springs in the Amadeus basin. The regulated activity is as follows:

Subject	Description
	• a two dimensional (2D) seismic survey over eight survey lines for a total length of 120 km x 5 m • vegetation clearing along seismic lines (8 ha) • maintenance works of existing access tracks • rehabilitation of seismic survey lines The seismic survey will not be conducted within sites of conservation significance (SOCS) Seismic lines will be progressively rehabilitated concurrent with completion of the survey along each line. Ongoing monitoring will be conducted until Quarter 4 2026. A rehabilitation plan is included as Appendix I of the EMP. No drilling or hydraulic fracturing is proposed in the EMP.
Public consultation	Public consultation on the EMP was not required under regulation 8A(1)(b); as the EMP does not propose drilling or hydraulic fracturing.

NT EPA ADVICE

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

Information relating to the nature and scale of the regulated activity is provided in the EMP in a clear format. The seismic program will take place within EP134, approximately 170 km south of Alice Springs. The seismic program will take approximately seven weeks and consists of:

- Seismic line clearing, survey and pointing (~ 3 weeks)
- 2D seismic ground survey (~ 3 weeks), with:
    - 8 lines for a total length of 120 km
- Seismic line rehabilitation (~ 1 week)

The project footprint is approximately 60 ha and consists of 8 seismic lines, covering a length of 120 km x 5 m.

The seismic survey involves land clearing of up to 8 ha of native vegetation along 5 m wide seismic tracks. This is equivalent to approximately 7% of the total footprint area.

Table 1 provides an overview of the key components of the regulated activity.

Table 1: Key components of the proposed Peak Helium seismic program

COMPONENT	REGULATED ACTIVITY
Groundwater extraction licence	N/A (usage is < 5 ML)
Total area of exploration permit (EP134)	15,320 km^2
Seismic lines	8 lines 120 km
Number of creek crossings	5 (along seismic lines) 8 (along existing tracks through SOCS)
Activity duration	Seven weeks over Q1 2022
Camp capacity and workforce	30 Personnel accommodated off-site

COMPONENT	REGULATED ACTIVITY
Peak traffic movements	10 light vehicles per day peak during the seismic program; 12 truck movements during mobilisation and demobilisation; 4 truck movements during seismic line clearing and acquisition
Estimated total groundwater usage (ML)	~ 0.1 ML
Estimated potable water usage (kL) per day	N/A (no camp)
Diesel (kL)	47
Emissions (tCO_2-e)	201
Total area of rehabilitation (ha)	8

In accordance with clause A.3.5 of the Code, a progressive rehabilitation plan (Appendix I) has been developed for the activity, to minimise erosion and return the disturbed land to an environment similar to the pre-disturbance condition. Progressive rehabilitation along seismic lines will occur immediately after the completion of the seismic survey along each line.

The project footprint adjoins the Karinga Creek paleo-drainage system Site of Conservation Significance (SOCS). The seismic survey described in the EMP will be conducted outside of the 2 km buffer zone of the SOCS. The interest holder will transit through the SOCS along existing roads and pastoral tracks to access the seismic lines.

Areas of cultural significance have been identified in the project footprint from cultural heritage surveys. These will be protected through:

- the implementation of restricted work area protocols, in accordance with the provisions outlined in the Aboriginal Areas Protection Authority (AAPA) Authority Certificate C2021/080
- all staff being inducted for restricted work areas and cultural heritage

The interest holder has identified the impacts and risks associated with the regulated activity (30 in total). Mitigations outlined in the risk register are classified based on the hierarchy of controls, and impacts and risks should be reduced to an acceptable level through the proposed mitigation and management measures. Environmental performance standards and measurement criteria have been provided in the EMP (section 7).

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

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

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

The EMP adequately assesses the environmental impacts and risks associated with the regulated activity and outlines appropriate avoidance and mitigation measures. Of the 30 risks identified, four were assessed as 'medium' and 26 as 'low' – if carried out in accordance with the mitigations and controls proposed in the EMP. Wet weather and bushfire contingencies and controls are proposed to mitigate potential erosion and sediment impacts and bushfire risks associated with the regulated activity. These controls have been assessed by NT Government agencies and deemed adequate to ensure the risks are ALARP and acceptable.

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

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

The NT EPA considers there is a low risk of serious or irreversible damage from the regulated activity. The regulated activity will be conducted in compliance with the Code, and the EMP provides measurable performance standards to ensure that environmental outcomes are met. The EMP outlines the interest holder's investigations into the physical, biological and cultural environment and demonstrates a sound understanding of the environment at the location, providing a satisfactory scientific basis to assess potential environmental impacts and risks for the activity, and to identify measures to avoid or minimise those impacts and risks. The risk assessment clearly classifies the hierarchy of controls for the mitigations applied to each risk. Uncertainty in relation to the environmental features was assessed, with no areas of environmental uncertainty identified.

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

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

The environmental considerations of the project footprint were informed by a baseline assessment with desktop and field-based information for those areas where the regulated activities were proposed. An ecological assessment was conducted within a 1 km wide corridor along the seismic lines, which included weeds, landforms (e.g. dunes), erosion, sensitive vegetation communities and threatened species. The assessment included proposed realignments of the survey lines where applicable, to minimise the impact of the activity on environmental values. These proposed measures were incorporated into the EMP risk register and included avoiding crossing drainage lines or using the least sensitive crossing point, bypassing trees (weaving), and minimising dune crossings and avoiding longitudinal movement along dunes. All potential stream crossings along the seismic lines were assessed, and control measures were included in the risk register to mitigate possible impacts from the activity.

A desktop survey and assessment was conducted for the sections of existing pastoral access tracks through the SOCS that will be used to travel between seismic lines. The survey identified environmental features that may be impacted by the activity, such as stream crossings and existing erosion. Based on the assessment, mitigation measures were included in the risk register to minimise the potential impact from using and maintaining tracks through the SOCS and demonstrate that the activity is ALARP and acceptable.

A certified erosion and sediment control plan (ESCP) has been developed which outlines erosion control measures, monitoring and maintenance to be undertaken. These measures include: implementing clearing activities that are consistent with the NTG Land Clearing Guidelines; constructing crossing at right angles in locations where the stream is straight; stabilising ground surface before the onset of the wet season (November to March); and only using existing roads and tracks between seismic lines (no new access tracks).

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.

The spill management plan outlines a satisfactory monitoring and response regime for spills and includes reporting requirements. The mitigation controls described in the EMP include: portable bunding; containment of hydrocarbons in double-walled tanks; and provision of sufficient spill clean-up material at each work site and on vehicles/plant where hazardous materials or hydrocarbons are utilised.

The NT EPA is of the view that the evidence-based decision-making principle has been considered in assessing the regulated activity and that in the circumstances, decisions can be based on best available evidence that is relevant and reliable.

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

The potential environmental impacts and risks associated with the regulated activity can be adequately avoided or managed through the management measures and monitoring programs proposed in the EMP. The greenhouse gas emissions from the activity is approximately 201 tonnes of carbon dioxide equivalent (tCO_2-e), from diesel combustion for seismic lines (42 k) and 88t CO_2-e from land clearing (8 ha). This represents less than 0.001% of the 2019 NT estimated greenhouse gas emissions (20.6 million tCO_2-e).[1]

Protection of cultural interests is achieved through compliance with the requirements of Authority Certificates issued by the Aboriginal Areas Protection Authority under the *Northern Territory Aboriginal Sacred Sites Act 1989* (NT) and the previously completed archaeological assessment at the site to avoid archaeological heritage impacts. The regulated activity will be subject to requirements of an existing Aboriginal Areas Protection Authority (AAPA) Authority Certificate (C2021/080), which covers all activities in the current EMP.

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

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

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

At this stage, the interest holder does not require a groundwater extraction licence as groundwater take from an existing bore is expected to be well below the 5 ML per year threshold. The land access agreement includes permission of bore owners to use production bores within the permit area.

Land disturbance will be limited and avoid large trees and/or culturally and environmentally sensitive areas. All land disturbed during seismic surveys will be rehabilitated immediately after the activity to minimise erosion and promote early regeneration of the natural vegetation.

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

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

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

- a desktop review of the environmental context of the project area and surrounds (e.g. land systems, land use, surface water, climate and bioregions)
- field survey of the seismic lines (and buffer area) in June 2021 that assessed land condition, waterway crossings, the presence of sensitive habitats and vegetation, and a baseline weed survey
- an archaeological assessment in June 2021, that was conducted concurrently with the environmental survey
- a desktop assessment of the condition of the sections of existing pastoral access tracks that intersect the Karinga Creek SOCS

The project footprint is located in the Finke bioregion, which has an arid to semi-arid climate. The landforms in this bioregion are comprised of a complex mix of low sandstone ranges, weathered tablelands and rounded metamorphic hills. The vegetation is dominated by hummock grasslands,

[1] Source: DISER 2020. *State Greenhouse Gas Inventory*. https://ageis.climatechange.gov.au/SGGI.aspx.

acacia shrublands and saltbush/bluebush open shrublands. These vegetation communities are regionally extensive across the southern region of the Northern Territory.

The project footprint adjoins the Karinga Creek paleo-drainage system Site of Conservation Significance. This system provides vital migratory stop-over grounds for migratory shorebirds, including internationally significant records of Banded Stilt, Red-capped Plover, and Sharp-tailed Sandpiper. The Karinga Creek paleo-drainage system provides important temporary salt pans and lakes, which support a diverse assemblage of flora and fauna species in an otherwise arid landscape.

No habitats of importance (salt lakes and clay pans) in the SOCS will be impacted by the activities in the EMP. The seismic activities will be conducted outside of a 2 km buffer around the habitats of importance. Minor maintenance and works may be required for some sections of track within the SOCS. Maintenance of the tracks will be only undertaken so as to reduce potential impacts of the vehicles transiting the site.

To protect against threatening processes to environmental values such as introduction and spread of weeds, the interest holder has proposed an additional mitigation requiring that all tracks and seismic lines be inspected by the dedicated weeds officer prior to declaring them open for use.

The nearest national park or reserve to the project footprint is Chamber's Pillar Historical Reserve, located approximately 30 km to the north.

The EMP identified 33 fauna and flora species (three of which are considered extinct) listed as threatened under the Australian Government *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and/or the NT *Territory Parks and Wildlife Conservation Act 1976* (TPWC Act). An assessment of the likelihood of occurrence within the project footprint indicated three listed threatened species that have a medium to high likelihood based on habitat suitability and previous records:

1. Desert Quandong *Santalum acuminatum* (Vulnerable TPWC Act).

2. Princess Parrot *Polytelis alexandrae* (Vulnerable EPBC Act, Vulnerable TPWC Act).

3. Itjaritjari/Southern Marsupial Mole *Notoryctes typhlops* (Vulnerable TPWC Act).

The remaining species (including all migratory species) were assessed as having a low or no likelihood of occurring within the project footprint.

The EMP outlines measures to minimise impacts on affected environmental values, including the management of threatening processes such as erosion, weeds and fire through the implementation of management plans, monitoring and corrective actions. Where relevant, management measures for the threatening process are consistent with the requirements of the Code, the *NT Land Clearing Guidelines* and *Weed Management Planning Guideline: Onshore Petroleum Projects* and Commonwealth thread abatement plans and advice.

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

The DEPWS Flora and Fauna Division is satisfied that that the regulated activity does not pose a significant risk to threatened species, important habitats or significant vegetation types. Further, the mitigation controls identified in the EMP are adequate to reduce risks associated with potential impacts on biodiversity, such as noise, vehicle strike, dust, erosion and spills to be as low as reasonably practicable. The NT EPA considers that implementation of, and compliance with the EMP will ensure the conservation of biological diversity and ecological integrity is not impacted by the regulated activity.

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

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

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

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

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

The interest holder has identified measures to avoid impacts on environmental values, informed by a detailed understanding of site conditions, obtained through baseline studies and surveys. The EMP demonstrates a systematic identification and assessment of environmental impacts and risks associated with the regulated activity. The key environmental impacts and risks considered in the EMP are:

- clearing or disturbing vegetation that a) removes habitat for threatened species or b) removes significant habitat (consequence: major; likelihood: unlikely)
- vehicles and plant causing direct mortality or impacts to fauna (consequence: minor; likelihood: possible)
- fire (consequence: moderate; likelihood: possible)
- erosion due to stream crossing works (consequence: minor; likelihood: unlikely)
- use of and critical maintenance of existing access tracks within SOCS area (consequence: minor; likelihood: rare)

Cumulative impacts have been considered for groundwater, flora and fauna, greenhouse gases, traffic and social surroundings, and found to be negligible. The EMP has considered the hierarchy of controls and demonstrated that the controls to be implemented are considered ALARP and acceptable. Of the 30 environmental risks identified by the interest holder, four are considered to be a ‘moderate’ risk, with the remaining 26 considered ‘low’ risk, and therefore are ALARP.

Key risk mitigations include:

1. *Clearing or disturbing vegetation that removes habitat for threatened species or removes significant habitat*: undertaking selective clearing, such as only clearing when an alternative route is unavailable, and avoiding all large trees (especially patches of Desert Oak) and minimise impacts to shrub patches; avoid clearing Desert Quandong (threatened species) within the project footprint; minimise disturbing dune crests and sand ridges as these areas are favourable habitat for a variety of threatened and endemic species, including the Itjaritjari (Southern Marsupial Mole); and avoid Coolabah swamps and clay pans to preserve the biodiversity within the region.
2. *Vehicles and plant causing direct mortality or impacts to fauna*: site inductions to ensure that all personnel are aware of their obligations and know the correct procedures for fauna encounters; vehicle movement restricted to existing access tracks and seismic lines; driving on site restricted to daytime hours, wherever possible; site personnel to stay within designated access roads and work areas; and seismic acquisition equipment fitted with large floatation tyres for operating on minimal tracks and reducing ground pressure.

3. *Fire*: coordination with the landholder and other land users and consistency with the landholder's fire management obligations and strategies; monitoring of seasonal conditions and fuel loads; communication system for monitoring bushfire alerts in the area; fire extinguishers fitted to all vehicles; and regular clean out of vehicle engine bay, with special attention paid on red alert days, to prevent grass igniting on the hot vehicle components.
4. *Erosion due to stream crossing works*: ground surface to be stabilised before the onset of the wet season (November to March); use existing station tracks to avoid having to make cuts; deviate seismic lines to avoid cuts to drainage lines and avoid trees; avoid temporary stockpiling of soil, equipment and materials within watercourses, or on adjacent banks and floodplains (unless integral to drainage control requirements); seismic acquisition equipment fitted with large floatation tyres to minimise ground pressure; and works will cease if there is a forecast for 50 mm of rain or more within the next 48 hours.
5. *Use of and critical maintenance of existing access tracks within SOCS area*: no new tracks will be created within the SOCS; implement an ESCP developed by a qualified professional; seismic acquisition equipment fitted with large floatation tyres to minimise ground pressure; and no maintenance of tracks to occur when the area is wet from previous rainfall.

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

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

4. Other relevant matters

Regulation 9 requires that an EMP provides a comprehensive description of the regulated activity, including provision of a detailed timetable for the activity. The EMP includes a schedule (Table 3-5), outlining the sequencing of works.

CONCLUSION

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

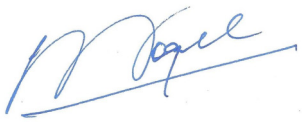
- is appropriate for the nature and scale of the regulated activity
- demonstrates that the regulated activity can be carried out in a manner such that the environmental impacts and risks of the activity will be reduced to a level that is as low as reasonably practicable (ALARP) and acceptable.

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

RECOMMENDATIONS

The NT EPA recommends that should the EMP for Peak Helium Pty Ltd 2021 Seismic Exploration be approved, the Minister considers approval conditions to achieve the following outcomes:

1. Submission of an annual performance report to DEPWS each year for the term of the EMP to demonstrate the interest holder has met environmental outcomes and complied with the requirements set out in the Regulations, the Code, the ministerial approval conditions and the EMP.
2. Submission of an updated rehabilitation plan (concurrent with the annual performance report) to support and document progressive rehabilitation to a defined acceptable standard and ensure full rehabilitation is achieved during the term of the EMP.



DR PAUL VOGEL AM

CHAIRPERSON

NORTHERN TERRITORY ENVIRONMENT PROTECTION AUTHORITY

15 DECEMBER 2021