



Environmental
Defenders Office

**Submission on the Northern Territory Draft
Environment Management Plan Content
Guideline: Onshore Petroleum Regulated
Activities**

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Submitted via email at HYSPetroleum.DEPWS@nt.gov.au

Executive Summary

- 1 The Environmental Defenders Office (**EDO**) welcomes the opportunity to provide comment on the draft *Environment Management Plan Content Guideline: Onshore Petroleum Regulated Activities from the Northern Territory* (**draft Guideline**) prepared by the Department of Environment, Parks and Water Security (**DEPWS**).
- 2 EDO is an independent community legal centre specialising in public interest environmental law. EDO advocates for strong environmental laws and effective compliance and enforcement of the regulatory frameworks that protect our important natural assets and unique landscapes.
- 3 We have reviewed the draft Guideline. The *Petroleum (Environment) Regulations 2016* (**PER**) require interest holders to prepare an Environment Management Plan (**EMP**) and have it approved by the Minister for Environment, prior to commencing an onshore petroleum regulated activity in the Northern Territory (**NT**). Once approved, EMPs are legally enforceable and are an important tool for the environmental regulator to monitor interest holder performance against relevant environmental outcomes, and to maintain confidence that the environment is not subject to unacceptable impacts.
- 4 They are also a tool by which interest holders can provide confidence to stakeholders and the broader public that the regulated activity will be conducted in a manner that reduces environmental impacts to as low as reasonably practicable (**ALARP**) and to acceptable levels, and in a manner consistent with the principles of ecologically sustainable development (**ESD**).
- 5 The draft Guideline details the minimum pre-requisites to fulfil EMP content requirements stipulated in the PER and the *Code of Practice: Onshore Petroleum Activities in the Northern Territory* (**Code**), while also providing guidance to assist in ensuring that EMPs are implementable, understandable and support Ministerial decision-making. It also outlines the process of EMP assessment and approval, and the environmental regulatory framework under which onshore petroleum activities may be conducted in the NT.
- 6 In providing this submission, EDO has also considered the recommendations arising out of the *Final Report of the Scientific Inquiry into Hydraulic Fracturing in the Northern Territory* (**Pepper Inquiry Recommendations**).
- 7 The EDO's submissions in relation to the draft Guideline are outlined below. In summary, it is EDO's view that, in order to reduce environmental impacts and the risks associated with climate change, and for regulated activities to be conducted in a manner consistent with the principles of ESD, it is essential that the draft Guideline be amended to provide for:
 - a. Further detail to support the assessment of environmental impacts and risks;
 - b. A clear definition of "acceptable" levels of environmental impacts and risks;
 - c. Appropriate consideration of environmental costs in the assessment of ALARP;
 - d. A clear definition of cumulative impacts, and more detailed requirements for consideration of cumulative impacts;
 - e. Minimum environmental standards and outcomes;
 - f. Comprehensive requirements for the disclosure of chemicals used in hydraulic fracturing processes;
 - g. Detailed requirements for the content of Rehabilitation Management Plans;
 - h. Adherence to recommendation 7.12 of the Pepper Inquiry Recommendations;

- i. Detailed consultation with Aboriginal communities and individuals, with a requirement to provide interpreters where necessary;
- j. Effective engagement with stakeholders and the wider community; and
- k. Greater clarity around environmental factors and objectives.

A. Further detail to be provided in EMPs to support the assessment of environmental impacts and risks.

- 8 The draft Guideline states (at 4.4.4.) that “[the] EMP must include sufficient detail on the regulated activity to support the assessment of environmental impacts and risks.” In EDO’s view, the draft Guideline does not require the provision of sufficient detail to appropriately assess the impacts, risks and proposed management measures for the following key impacts and risks.

Wastewater and brine

- 9 Recommendation 5.5a of the Pepper Inquiry Recommendations focuses on wastewater, and recommends that “the framework for managing wastewater includes an auditable chain of custody system for the transport of wastewater (including by pipelines) that enables source-to-delivery tracking of wastewater”. The draft Guideline (at page 10) provides an example of wastewater regulation requirements that should be included in an EMP, but does not specify that the final disposal site for wastewater and associated brine should be identified in an EMP.
- 10 Disposal of wastewater and associated brine has been identified as posing a significant ongoing environmental risk if not managed appropriately. For example, Professor Stuart Khan of the School of Civil & Environmental Engineering at the University of NSW, in providing independent expert advice to the NSW Independent Planning Commission in relation to the Narrabri Gas Project (the largest coal seam gas proposal in NSW) (**Khan Report**), stated:¹ “when you treat water by reverse osmosis you are not destroying the chemicals and salts, you are separating the water into two components: one is a highly purified component and an equally highly concentrated component. It is managing that concentrated brine that presents a number of challenges.... Then you have a solid waste disposal problem. You have large volumes of contaminated salts that need to be disposed somewhere, usually to landfill.” Adding to these risks is the fact that brine waste does not break down and therefore requires management in perpetuity.
- 11 In the EDO’s view, the draft Guideline should be amended to include a requirement to identify a final disposal site for brine waste. This is because ordinary landfill sites are generally not designed to safely contain this type of waste. Most ordinary landfill sites are not sufficiently lined to prevent leaching of brine waste. There is a significant risk of water entering ordinary landfill sites, whether it be through groundwater or rainfall, which interacts with brine to mobilise the chemicals present in the waste, leading to the risk that highly saline, contaminated water will leach from inadequately lined landfills. If the draft Guideline does not specify that the final disposal site for brine waste should be identified and assessed for adequacy, the risks posed by the ongoing management of brine waste, in particular the leaching of contaminated brine into the environment, cannot be properly assessed. These unassessed risks could have significant and ongoing negative impacts for human health and the environment.

¹ Khan Report available at <https://www.ipcn.nsw.gov.au/resources/pac/media/files/pac/projects/2020/03/narrabri-gas-project/correspondence/edo/khan-narrabri-gas-project-ipc-advice-final.pdf>

Flaring

- 12 We note that Section 4.4.4. of the draft Guideline identifies flaring as one of the activities that is likely to be undertaken as part of a regulated activity. However, the draft Guideline provides insufficient detail about how the identity and volume of pollutants generated from flaring should be assessed in an EMP, along with the assessment of specific risks associated with the timing and duration of flaring. In the EDO's view, the draft Guideline should be amended to specify that detail in regard to these risks and impacts associated with flaring be included in an EMP.
- 13 Further, the draft Guideline should be amended to specifically address the risk of flaring and bushfires, particularly in, but not limited to, the dry season in the Northern Territory, and to specify that appropriate management measures for this risk be included in an EMP.

Well construction

- 14 In the EDO's view, the draft Guideline should be amended to require detail about the construction and integrity of wells to be included in an EMP. Detail about the construction of wells for hydraulic fracture stimulation is essential to the broader assessment of associated environmental impacts and risks. Well construction is of critical significance to the protection of groundwater, methane emissions, and workers' safety. Depending on the construction and operation of wells, there may be risk of blow outs, well failure, annular gas migration, groundwater migration, spills and leaks of wastewater, explosions, contamination of other wells, cement barrier failure, well casing degradation, and corrosion, which may lead to contamination of groundwater in turn creating increased risks for the environment and human health.
- 15 In the EDO's view, it is insufficient to leave detailed consideration of the impacts and risks associated with well construction to a later and separate assessment process. This assessment and details of associated management measures should be included in an EMP, and the draft Guideline should be amended to reflect this.

Social impacts

- 16 Social impacts are addressed at Table 3 of the draft Guideline, under "Communities and social performance". However, in the EDO's view, the discussion of risk relating to communities and social performance in the draft Guideline focuses on management of community complaints, as opposed to engagement with communities. For example, Table 3 focuses on informal, formal, or organised disapproval and action from local stakeholders, and does not set out examples of community engagement organised or initiated by interest holders. The draft Guideline is therefore at odds with appropriate practice for assessing community impacts. The draft Guideline should be amended to require an EMP to properly assess and measure the impacts of a regulated activity on community health and wellbeing, rather than simply relying on the number of community complaints as a metric of risk and impact.

Changes to EMP

- 17 Section 4.4 of the draft Guideline states, "A regulated activity or component of a regulated activity not described in an EMP is not part of the EMP and cannot be undertaken." However, Section 4.4 also states, "Where the exact scale and extent of the regulated activity is subject to change, this should be indicated." In EDO's view, this creates an internal inconsistency within the draft Guideline. Section 4.4 of the draft Guideline provides no indication of any limits that may apply to

changes or modifications to a regulated activity before an application for a new EMP will be required. The EDO suggests that the draft Guideline should be amended to address this uncertainty and inconsistency. Further, the draft Guideline should specify that any permitted changes to a regulated activity should be limited to those that will not create different or greater impacts or risks than those assessed in the EMP for the regulated activity.

B. A clear definition of “acceptable” levels of environmental impacts and risks.

- 18 The EDO notes that the draft Guideline leaves it to proponents to define ‘acceptable’ levels of environmental impacts and risks: “It is the interest holder’s responsibility to demonstrate that all sources of environmental impact and risk arising from conduct of the regulated activity, including cumulative impacts, are identified and can be managed to minimise environmental impacts and risks to ALARP and acceptable”.²
- 19 In the EDO’s view, ‘acceptable levels’ must be able to be objectively measured and assessed in an EMP. In this regard, the draft Guideline should provide clear guidance on the level of ongoing environmental impact or risk that will be considered acceptable. Further, the draft Guideline should be amended to specify what types of environmental impacts or risks will be considered unacceptable having regard to the nature of the regulated activity.
- 20 In the absence of clear guidance on what constitutes acceptable or unacceptable impacts from petroleum activities, other metrics that guide decision-making, such as the requirement that impacts and risks be reduced “as low as reasonably practicable,” cannot be measured objectively.
- 21 Further, in EDO’s view, the draft Guideline should specify that the assessment of whether impacts and risks will be of an acceptable level should include consideration of the environmental management history of the proponent, and whether they have the technical capability to conduct the proposal.
- 22 Finally, the draft Guideline should specify that the assessment of the acceptability of an impact or risk should be premised on a positive obligation to ensure such assessment is consistent with the principles of ESD, not on “ensur(ing) such principles are not compromised” as indicated in Section 4.6.2.5. of the draft Guideline.

C. Appropriate consideration of environmental costs in the assessment of ALARP.

- 23 The draft Guideline specifies that “Reducing impacts and risks to ALARP centres on the construct of reasonable practicability; the weighing up of the magnitude of the impact or risk against the cost of reduction. A risk reduction measure can be considered as being reasonably practicable if the costs to implement it are not grossly disproportionate to the reduction in risk achieved.”³ In EDO’s view, this approach necessitates the proper consideration of all environmental costs (and the associated benefits of avoiding those costs). Therefore, the draft Guideline should specify that the true environmental cost of projects should be assessed in an EMP, including the costs associated with dangerous climate change that new fossil fuel projects will invariably increase (in the absence of carbon offsetting or other abatement), and the costs associated with ensuring intergenerational equity in relation to fossil fuel project impacts.

² Draft Guideline, p 19.

³ Draft Guideline, p 26.

- 24 In EDO's view, an assessment of risk should also inform consideration of ALARP. However, the risk matrix set out in the draft Guideline at Table 4 inappropriately links risk to frequency. For example, an 'unlikely' event is defined as one that "Typically occurs in 100 - 1,000 years". This type of measure, and the timescales involved, is completely meaningless in the context of an industry that is relatively new to operating in the Northern Territory. In EDO's view, the risk matrix should also include a stronger focus on risks arising as a consequence of scientific uncertainty, rather than the separate approach set out in the draft Guideline, which states that scientific uncertainty "may" be incorporated in risk assessment (Section 4.6.3.).
- 25 EDO also disagrees with the assumption in Section 4.6.2.4. of the draft Guideline, which states that, "Where the implemented controls to mitigate environmental impacts and risks follow the mandatory and preferred requirements of the Code, they are considered to be ALARP and acceptable (cl 1)". In EDO's view, the requirements of the Code should be considered the minimum standard applicable. It is highly likely that in many circumstances the requirements of the Code will not be sufficient to appropriately manage relevant impacts and risks. The draft Guideline should therefore specify that ALARP must be considered in each individual circumstance to ensure that the specific circumstances of individual projects and the environments in which they operate are adequately assessed.
- 26 Further, in EDO's view, consideration of ALARP should not be based on the consideration of the measures that have been undertaken, but on the outcomes that will be achieved as a consequence of those measures. This should be reflected in the draft Guideline.

D. A clear definition of cumulative impacts and detailed requirements for consideration of cumulative impacts.

- 27 As a preliminary point, EDO notes that the second sentence in Section 4.6.5 of the draft Guideline appears to be incomplete. It states, "an assessment of cumulative impacts requires consideration of (to the extent the information is publicly available)." The draft Guideline should be amended to correct this error.
- 28 More substantively, EDO considers that the assessment of cumulative impacts should not be limited to information that is publicly available. The draft Guideline should specify that cumulative impacts and risks should be assessed and managed in an EMP on the basis of all relevant information (regardless of whether it is in the public domain or not).
- 29 In EDO's view, the draft Guideline should include a more comprehensive description of the requirement for consideration of cumulative impacts and risks. In this regard, EDO recommends that the draft Guidelines include the wording of Schedule 1, Item 3(2)(b) of the PER: "[the assessment in the EMP must include] the cumulative effects of those impacts and risks when considered with each other and in conjunction with any other activities or events that occurred or may occur in or near the permit area for the regulated activity."
- 30 Further, data collection and monitoring will be required in order to establish a frame of reference to compare and track cumulative impacts over time. The draft Guideline should reflect this need, and specify that an EMP should include strategies to develop environmental data collection and monitoring processes, environmental accounts systems and measurable strategic environmental goals. The inclusion of these tools in an EMP makes environmental costs and benefits more visible to decision-makers. In turn, this makes the concept of cumulative impacts more tangible and

permits decision-makers to more accurately consider the principles of ESD in the context of the regulated activity.

- 31 In this context, EDO recommends that the draft Guideline should:
- a. contain stronger links to regional plans, goals and solid baseline environmental data;
 - b. recognise the significant cumulative effects of small and large projects; and
 - c. address the lack of Territory-wide environmental goals and environmental accounts.
- 32 In general, EDO considers that there are insufficient references to cumulative impacts in the draft Guideline. Cumulative impacts, particularly in relation to water and landscape impacts, are necessary and important considerations in an EMP given the scale of existing and proposed petroleum development in the Northern Territory. In EDO's view, the draft Guideline should clearly specify the minimum standards required for the assessment of all aspects of cumulative impacts in an EMP, in particular:
- a. groundwater and surface water usage and management;
 - b. habitat fragmentation and consequent loss of landscape function; and
 - c. emissions of methane and the gas industry's contribution to climate change.
- 33 The draft Guideline should be amended such that the definition of cumulative impacts should encompass the direct and indirect effects of the past, present and likely direct and indirect effects of the future. It should encompass the impacts of a particular project, the impacts of all other activities within a license area, and the impacts of other relevant mining and gas activities across the impacted region.
- 34 Further, the consideration of cumulative impacts is crucial to effectively assess the contribution of regulated activities to global greenhouse emissions and the impacts of climate change. All sources of greenhouse gases contribute to climate change regardless of their origin or nature, which makes scope 3 greenhouse gas emissions relevant in calculating cumulative impacts in an EMP. In this regard, the draft Guideline should adopt the approach of the NSW Land and Environment Court in *Gloucester Resources Limited v Minister for Planning* [2019] NSWLEC 7 (**Rocky Hill**), which recognised the contribution of local fossil fuel projects to cumulative global greenhouse gas emissions and climate impacts. That approach is set out below and should be reflected in the draft Guideline:

There is a causal link between the [mine's] cumulative GHG emissions and climate change and its consequences. The [mine's] cumulative GHG emissions will contribute to the global total of GHG concentrations in the atmosphere. The global total of GHG concentrations will affect the climate system and cause climate change impacts. The [mine's] cumulative GHG emissions are therefore likely to contribute to the future changes to the climate system and the impacts of climate change.

E. Minimum environmental standards and outcomes.

- 35 The draft Guideline states, "The Regulations require that an EMP must include environmental performance standards intended to validate the controls put in place to manage the

environmental risks of the activity and that in aggregate deliver environmental outcome commitments”.⁴

- 36 In this regard, EDO considers that the draft Guideline should specify minimum environmental standards and outcomes in order to provide clarity and certainty for industry, and provide greater environmental protection. The value of a legally enforceable tool of this nature is discussed in the *Interim Report of the Samuel Review of the Environment Protection and Biodiversity Conservation Act 1999* (Cth). EDO recommends that environmental standards to be included in the draft Guideline must be robust, evidence-based, the subject of stakeholder consultation, and enforceable at the individual project level.

F. Comprehensive requirements for hydraulic fracturing chemical disclosure.

- 37 The draft Guideline states (at Section 4.6.7) that an EMP must specify all chemicals and other substances that are to be used in the activity, and lists requirements for chemical disclosure. However, the draft Guideline does not specify that the purpose of the chemical should be identified, despite the same requirement being set out in Schedule 1, Item 4A of the PER. EDO recommends that Section 4.6.7 be amended to explicitly include a requirement for interest holders to specify the purpose of each chemical or other substance that may be in, or added to, any treatment fluids to be used in the course of a regulated activity, to ensure the draft Guideline accurately reflects the requirements set out in Schedule 1 of the PER.
- 38 EDO also considers that it is crucial to determine the impact of chemicals interacting with each other in treatment fluids to create new, potentially harmful chemicals. Given that the interaction of these chemicals may create impacts that will not be created by the impacts alone, such as an assessment is critical to understanding the risks involved in allowing these chemicals to be released into the local environment. Accordingly, the draft Guideline should specify that an EMP should include an assessment of potential risks and impacts of chemical interaction.

G. Detailed requirements for information to be included in Rehabilitation Management Plans.

- 39 The draft Guideline specifies (at Section 4.7.7.) the information that should be included in a Rehabilitation Management Plan. EDO supports the inclusion of information detailing monitoring and maintenance programs, and a schedule for progressive rehabilitation. However, the draft Guideline should also specify that that a Rehabilitation Management Plan should include information about the management of impacts and risks that may exist in perpetuity (e.g. the management of brine waste). Further, the draft Guideline should specify that details of security bonds be provided for particular activities such as drilling and hydraulic fracturing, where inappropriate rehabilitation methods can pose long term environmental risks.
- 40 As noted above, an example of the need to detail risk management procedures in perpetuity arises in relation to the containment of wastewater and brine waste. In this regard, the Khan Report states (at page 6),⁵ “a risk of loss of containment exists for perpetuity [as] the salt does not break down and will require ongoing management”. The draft Guideline should specify that a

⁴ Draft Guideline, p 32.

⁵ Khan Report available at

<https://www.ipcn.nsw.gov.au/resources/pac/media/files/pac/projects/2020/03/narrabri-gas-project/correspondence/edo/khan-narrabri-gas-project-ipc-advice-final.pdf>

Rehabilitation Management Plan provide an upfront plan for the management of this waste, and a requirement for the proponent to maintain responsibility for the cost of managing this waste in-perpetuity. EDO considers that this would reflect appropriate implementation of the polluter pays principle and prevent future generations from being impacted or otherwise burdened by the requirement to manage and dispose of wastewater and brine waste.

H. Adherence to recommendation 7.12 of the Pepper Inquiry Recommendations.

- 41 Recommendation 7.12 of the Pepper Inquiry Recommendations states, “well pad site[s] must be bunded to prevent any runoff of wastewater, and be treated (for example, with a geomembrane or clay liner) to prevent the infiltration of wastewater spills into underlying soil.” The Northern Territory Government’s Action Items website (<https://hydraulicfracturing.nt.gov.au/action-items>), which sets out “a plan for implementing [the Pepper Inquiry Recommendations]” indicates that recommendation 7.12 has been implemented “100%”. However, the requirements of Recommendation 7.12 are not explicitly set out in either the PER or the Code. Further, the draft Guideline appears to refer to bunding as optional risk mitigation measure. In this regard, the draft Guideline states (at page 33) that, “Bunding around well pad to prevent overtopping event from leaving well pad (xx ML)” is a mitigative control that is not specified in the Code. EDO considers that for Recommendation 7.12 to be “100%” implemented, the requirement to bund well pads should be explicitly set out in the draft Guideline.
- 42 In addition, the draft Guideline (at page 33) lists the “use of open treatment tanks for dry season evaporation of wastewater” as an “Existing Control”. This is also at odds with Recommendation 7.12 of the Pepper Inquiry Recommendations which also states that, “enclosed tanks must be used to hold all wastewater”. This further demonstrates that Recommendation 7.12 has not been “100%” implemented by the Northern Territory Government.

I. Detailed consultation with Aboriginal communities and individuals with interpreters present.

- 43 EDO recommends that the draft Guideline should be amended to place more importance on consulting with Aboriginal people and communities.
- 44 It is noted that Land Councils are an example of a Stakeholder. However, there is no specific emphasis placed in the draft Guideline on the special circumstances associated with consulting with Aboriginal communities, and the cultural context that requires particular consultation approaches to be undertaken.
- 45 Based on our experiences with the Environmental Impact Assessment (**EIA**) process in the Northern Territory, and advising and representing Aboriginal individuals and communities impacted by major development, we consider that it is critical that the draft Guideline clearly emphasises that Aboriginal individuals and communities are broadly impacted by, and must be consulted on a wide range of matters in the EMP development process, as is the case with any other community.
- 46 This means Aboriginal individuals and communities must be consulted on the broad range of interests and concerns that they may have, including impacts on Country and the environment. All Aboriginal people and communities impacted by regulated activities must be consulted on all matters relevant under the PER and Code, as articulated in an EMP, that are of concern to them.

Consultation cannot be limited to tenure-related rights, nor impacts on cultural heritage and sacred sites alone, notwithstanding that these are critical matters.

- 47 Recommendation 11.5 of the Pepper Inquiry Recommendations states that “interpreters be used at all consultations with Aboriginal people for whom English is a second language. Interpreters must be appropriately supported to ensure that they understand the subject matter of the consultation”. EDO recommends that the requirements of Recommendation 11.5 be included in the draft Guideline.

J. Effective engagement with stakeholders and the wider community.

- 48 EDO considers that the Draft Guideline’s example of “Other interested persons or organisations” including “representative groups facilitating access to its members”⁶ is too restrictive, in that it does not specifically refer to environmental groups or community organisations, both of which have and continue to engage with the wider community in relation to regulated activities. The draft Guideline should specify that interest holders should attempt to engage with the wider community in order to gain a more complete view of affected interests.
- 49 The draft Guideline should specify that steps to genuinely engage with the wider community be taken (such as through public seminars or information sessions, including with remote and Aboriginal communities). Consulting only with key stakeholders places a heavy obligation on environmental and community groups that represent these communities, and means that interest holders and decision-makers do not obtain the benefit of hearing directly from those impacted by regulated activities.
- 50 The draft Guideline should specify that community engagement happen at an early stage in the development of an EMP. Information about regulated activities should be made easily available and use plain language that is accessible to members of the community, including those whose first language may not be English.
- 51 Further, EDO considers that it is not acceptable for the draft Guideline to state: “It is not recommended that stakeholders be provided with draft EMPs, as much of the information may not be relevant.” Information provided to stakeholders should be complete and sufficient for stakeholders to properly understand all impacts and risks of the regulated activity, and to ensure that they can effectively engage in the consultation process. The draft Guideline should not encourage interest holders to withhold relevant information from stakeholders, as this would counteract the objective of the consultation process. Instead, EDO recommends that the draft Guideline specify that stakeholders should be provided with complete draft EMPs to enable them to properly understand all relevant impacts and risks of the regulated activity, and to provide comment on them through the consultation process.

K. Greater clarity around environmental factors and objectives in Appendix D.

- 52 Appendix D of the draft Guideline lists environmental factors and objectives. EDO notes that many of the objectives are focused on a standard of ‘maintained’. However, a standard requiring the

⁶ Draft Guideline, p 41.

maintenance of existing environmental conditions is only sufficient where the baseline or benchmark standard is “good condition”.

- 53 EDO notes that there is likely to be limited data in the Northern Territory to support an analysis of baseline or benchmark environmental conditions. Accordingly, EDO considers that Appendix D should provide greater clarity around how this standard will be measured in relation to each objective. Otherwise, the objectives will have limited utility.
- 54 With respect to the various environmental factors and objectives listed in Appendix D, we provide the following comments:
- a. Terrestrial ecosystems – this objective should consistently adopt modern terminology, i.e. biodiversity (rather than flora and fauna), across all columns to ensure that it includes all relevant ecosystem components (fungi, bacteria, etc). This objective also needs to reflect the role of connectivity and ecosystem functionality. Conservation of biodiversity cannot be assessed at sites or regions in isolation as this would not take into account the distribution and/or populations of flora and fauna, and movement corridors or migration pathways that span two or more bioregions. EDO notes that Strategic Regional and Environmental Baseline Assessment (**SREBA**) is still being undertaken, and while it is incomplete, the draft Guideline should provide strong guidelines for an EMP to provide for the protection of biodiversity, including threatened species. There should also be a requirement for on-ground surveys across all seasons and a requirement that if threatened species habitat exists there is an assumption that the species may be present, regardless of whether the species was identified during on-ground surveys, in line with the precautionary principle.
 - b. Hydrological processes – this objective should refer to groundwater/surface water interactions and should acknowledge that restoration may be a more suitable goal in some circumstances (e.g. rivers, water tables, etc).
 - c. Inland water environmental quality – this objective appears to include potential contradictions (e.g. ecological health and land uses), with no indication of how to determine which values will be prioritised to be ‘maintained’.
 - d. Air quality – this objective should address both the environmental and health impacts linked to air quality.
 - e. Atmospheric processes – EDO strongly supports the inclusion of an objective focusing on reducing greenhouse gas (**GHG**) emissions. However, as currently framed, the target of net zero emissions by 2050 is meaningless unless it is linked to emissions reduction trajectories that are in line with the 1.5 / well below 2 degree temperature goals of the Paris Agreement. For this reason, a reference to the Paris temperature goals should be explicitly included in the draft Guideline to ensure the net zero goal is effective. Recommendation 9.8 of the Pepper Inquiry Recommendations states that *“the NT and Australian governments seek to ensure that there is no net increase in the life cycle GHG emissions emitted in Australia from any onshore shale gas produced in the NT”*. The objective in the draft Guideline should be to avoid or minimise emissions to ensure the NT contributes to meeting Paris Agreement temperature targets and will have net zero emissions by 2050. We also consider that there should be an explicit reference to the reduction of Scope 3 emissions where relevant. Finally, we note that the adaptation component referenced in Appendix D includes a focus on adapting social structures to a changing environment, which appears to be more appropriate as a ‘communities and economy’ objective.
 - f. Communities and economy – this objective should reflect a ‘triple bottom line’ approach, given the potential for conflict between various values that needs to be reconciled. This objective should also reflect the need to internalise the full social and environmental costs of

regulated activity across its lifecycle (e.g. public health consequences, carbon emissions, polluter-pays incentives, rehabilitation costs, etc).