



Environmental
Defenders Office

**Submission to the Senate Inquiry into Oil and Gas
Exploration and Production in the Beetaloo Basin**

9 July 2021

About Environmental Defenders Office (EDO)

EDO is a community legal centre specialising in public interest environmental law. We help people who want to protect the environment through law. Our reputation is built on:

Successful environmental outcomes using the law. With over 30 years' experience in environmental law, EDO has a proven track record in achieving positive environmental outcomes for the community.

Broad environmental expertise. EDO is the acknowledged expert when it comes to the law and how it applies to the environment. We help the community to solve environmental issues by providing legal and scientific advice, community legal education and proposals for better laws.

Independent and accessible services. As a non-government and not-for-profit legal centre, our services are provided without fear or favour. Anyone can contact us to get free initial legal advice about an environmental problem, with many of our services targeted at rural and regional communities.

Environmental Defenders Office is a legal centre dedicated to protecting the environment.

www.edo.org.au

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Executive Summary

- 1 Environmental Defenders Office (**EDO**) welcomes the opportunity to provide comment on the *Industry Research and Development (Beetaloo Cooperative Drilling Program) Instrument 2021 (the Instrument)* prepared by the Minister for Resources, Water and Northern Australia (**Minister**).
- 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 EDO's submissions in relation to the Instrument are outlined below. In summary, EDO recommends that **the Instrument should not be allowed, as the subsequent gas exploration activities would facilitate gas extraction in the Beetaloo sub-basin which would in turn have unacceptable impacts on the local environment and communities.**¹ These impacts include contributing to climate change through the production of greenhouse gas (**GHG**) emissions, other environmental impacts, such as water take and potential contamination, and negative social impacts, particularly for local First Nations communities.
- 4 The International Energy Agency (**IEA**) report *Net Zero by 2050: Roadmap for the Global Energy Sector (IEA Roadmap)* makes it extremely clear that exploration and production of new gas in the Beetaloo Basin would be completely inconsistent with global efforts to limit global warming to levels consistent with the Paris Agreement. Instead of investing in fossil fuel production, which contributes to climate change through GHG emissions, we **recommend the Australian Government invest in developing reliable renewable energy sources**, such as utilising the high solar radiation experienced in the NT to produce solar power, and use funding for projects that align with Australia's goals under the Paris Agreement 2015 (**Paris Agreement**).
- 5 Australian governments at all levels have a duty to protect Australians, and in particular Australian children, from harm, as recognised in the recent decision in *Sharma by her litigation representative Sister Marie Brigid Arthur v Minister for the Environment* [2021] FCA 560 (**Sharma**). The Australian Government is now on notice that providing public funding to facilitate the exploitation of the Beetaloo Basin is contrary to the duty to act reasonably to protect Australian children from harm.
- 6 This submission identifies the following issues and concerns to support our recommendation:
 - A. Contribution to climate change**
 - The duty to prevent harm and to reduce GHG emissions - *Sharma v Minister for the Environment*
 - GHG emissions and the Paris Agreement
 - Gas is not a transition fuel
 - B. Other environmental concerns**
 - Hydraulic fracturing chemical additives
 - Wastewater and brine
 - Well construction and other infrastructure requirements
 - Water quality
 - Risk to flora and fauna

¹ Deloitte, 'Report on the Development of the Beetaloo Sub-basin for the Commonwealth Department of Industry, Science, Energy and Resources' (Report, November 2020) p. 19 (**Deloitte Report**).

C. Impact on First Nations communities in the Beetaloo sub-basin

Native Title holders

Risk of harm to culture and culturally significant sites

Community consultations

Introduction

- 7 On 23 June 2021, the Senate referred an inquiry into oil and gas exploration and production in the Beetaloo Basin to the Senate Environment and Communications References Committee. The Inquiry is considering oil and gas exploration and production in the Beetaloo Basin, with particular reference to the Instrument, which provides public money for oil and gas corporations.
- 8 Section 33 of the *Industry Research and Development Act 1986* (Cth) (**IRDA**) enables the Minister to prescribe the Beetaloo Cooperative Drilling Program (**the Program**). The program provides government funding for oil and gas corporations to undertake exploration activities in the Beetaloo sub-basin to support the development of the Northern Territory (**NT**) gas industry. This must be enacted by way of legislative instrument, namely, the Instrument. The purpose of the program is to encourage and facilitate gas exploration and appraisal activities for prospective shale gas resources in the Beetaloo sub-basin within a time-defined window (two years from 2021 to 2023).² This is a precursor for further development of the Beetaloo sub-basin to expand the gas industry.
- 9 It is in this context that EDO provides the following submission.

A. Contribution to climate change

The duty to prevent harm and to reduce GHG emissions - *Sharma v Minister for the Environment*³

- 10 Part A of the submission sets out Australia's obligations and imperative to reduce GHG emissions, but first we draw attention to a recent Federal Court decision that must now be front of mind for any decision maker making decisions that relate to the development of fossil fuel projects.
- 11 It is well established in science, and now in case law, that burning fossil fuels, such as gas and coal, produce GHG emissions which harm the environment.⁴ At 1.1°C warming above pre-industrial levels, Australia is already experiencing severe and devastating impacts of climate change, such as the warming and acidification of oceans, sea level rise, decreased rainfall in southern Australia, more intense rainfall patterns in the north, and increases in extreme fire weather and heatwaves.⁵ Intensifying impacts can only be mitigated by decreasing GHG emissions.⁶

² *Industry Research and Development (Beetaloo Cooperative Drilling Program) Instrument 2021* (Cth) s 5(3).

³ *Sharma by her litigation representative Sister Marie Brigid Arthur v Minister for the Environment* [2021] FCA 560 (**Sharma**).

⁴ *Ibid* [38].

⁵ Penny D. Sackett, 'Gas is not a Transition Fuel to a Safe Climate. That Ship has Sailed' (2020) 152(2) *Journal & Proceedings of the Royal Society of New South Wales* 186, 187 (**Sackett Article**).

⁶ *Ibid*.

- 12 In *Sharma by her litigation representative Sister Marie Brigid Arthur v Minister for the Environment (No 2)* [2021] FCA 774 (**Sharma**), eight Australian children filed a class action and sought an injunction to prevent the Australian Government, through the Minister for Environment, approving an extension to the Vickery coal mine in New South Wales (**Extension Project**). The Extension Project would contribute 100 million tonnes (**Mt**) of carbon dioxide (**CO₂**) emissions, a dominant greenhouse gas (**GHG**) to the atmosphere.
- 13 The Federal Court established that the Minister for Environment owes a duty of care to Australian children to act reasonably to not cause harm resulting from the emissions from the Extension Project. In the recent judgment *Sharma*, Bromberg J made a declaration that “[The Minister] has a duty to take reasonable care, in the exercise of her powers under s 130 and s 133 of the Environment Protection and Biodiversity Conservation Act 1999 (Cth) in respect of referral EPBC No. 2016/7649, to avoid causing personal injury or death to persons who were under 18 years of age and ordinarily resident in Australia at the time of the commencement of this proceeding arising from emissions of carbon dioxide into the Earth’s atmosphere.”
- 14 The risk of harm was framed as a foreseeable risk of future injury from ‘climate hazards’. A reasonable Minister, by reference to contemporary social conditions and community standards, ought to contemplate the potential risk of harm to Australian children before approving a project that would emit 100 Mt of CO₂ emissions.⁷ This is a novel duty of care between a Minister, who has direct control over the climate change risk,⁸ and Australian children, who are extremely vulnerable to the risks of ‘climatic hazards’.⁹ This risk of harm includes both physical and psychological harms arising as a result of exposure to climatic hazards, such as severe bushfires and heatwaves.¹⁰
- 15 If global average surface temperatures are allowed to increase to 3°C above pre-industrial levels, a risk that is highly likely under current global policy settings,¹¹ one million of today’s Australian children are expected to suffer from at least one heat-stress episode, serious enough for acute care in hospital, and many thousands will suffer premature death as a result of heat-stress or bushfire smoke.¹²
- 16 *Sharma* also established the importance of the Minister considering carbon budgets and GHG emissions in administrative decision-making processes. Bromberg J relied on expert evidence to consider carbon budgets and their role in understanding the importance of reducing GHG emissions. In light of the current global average surface temperature increase of 1.1°C above pre-industrial levels and the goals of the Paris Agreement, Bromberg J noted the prediction that on current trends limiting global average surface temperatures to no more than 1.5°C above pre-industrial levels by 2100, will see significant overshoot of the 1.5°C temperature goal followed by a requirement to drawdown CO₂ from the atmosphere.¹³
- 17 As Justice Bromberg alluded to in *Sharma*, continued warming of the globe, without mitigating the increase in temperature to a maximum of 2°C above pre-industrial levels, increases the risk of

⁷ *Sharma* (n 3) [491].

⁸ *Ibid* [271].

⁹ *Ibid* [289].

¹⁰ *Ibid* [29].

¹¹ <https://climateactiontracker.org/global/cat-thermometer/>

¹² *Ibid* [291].

¹³ *Ibid* [63]-[64].

crossing ‘tipping points’ that create cascading transformations and collapses of the Earth’s subsystems, named “Hothouse Earth”.¹⁴

- 18 *Sharma* highlighted how measures to achieve even a 2°C temperature goal (which is well beyond the 1.5°C or “well below” 2°C goals set out in the Paris Agreement) would require all major emitting countries to achieve net zero GHG emissions by 2050.¹⁵ If all of the world’s current fossil fuel reserves are burnt, GHG emissions will be around 2.5 times greater than a carbon budget that would limit global warming to 2°C above pre-industrial levels,¹⁶ again noting that 2°C of warming is well beyond the Paris Agreement goal of limiting warming to 1.5°C or “well below” 2°C. Decisions regarding oil and gas in the Beetaloo Basin must be considered in this context.

GHG emissions and the Paris Agreement

- 19 The release of anthropogenic GHG emissions into the atmosphere since the Industrial Revolution has contributed to global warming.¹⁷ The CO₂ emissions that are not absorbed by the ocean or land carbon sinks will remain in the atmosphere for thousands of years.¹⁸ Because of the lag between the release of emissions and temperature increases, the full effect of past and present emissions are yet to be felt.¹⁹ Even if all GHG emissions were to cease tomorrow, the effects of previous emissions may be felt until at least 2035.²⁰
- 20 The Paris Agreement has been adopted by 196 countries with the goal of limiting the increase of global average temperature, relative to pre-industrial levels, to 1.5°C or “well below” 2°C.²¹ Failing to achieve this global target will bear significant consequences for the environment, such as rising sea levels, mass extinctions, and more severe and frequent weather events.²² These consequences will impact all sectors of our society, including health, the economy, and national security.²³
- 21 Shale gas is a form of natural gas that is used as a source of energy and for industry in Australia and overseas. The extraction and subsequent use of shale gas results in the emission of GHGs, namely methane and CO₂, and contributes to global warming.²⁴ Methane is more harmful as a GHG than CO₂.²⁵ The ‘Scientific Inquiry into Hydraulic Fracturing in the Northern Territory’ (**Fracking Inquiry**)

¹⁴ W Steffen et al. ‘Trajectories of the Earth System in the Anthropocene’ (2018) 115(33) *Proceedings of the National Academy of Sciences of the United States of America* 8252-8259.

¹⁵ *Ibid* [71].

¹⁶ *Ibid* [72].

¹⁷ Intergovernmental Panel on Climate Change, ‘Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the IPCC’ (Special Report, 2013) <http://www.climatechange2013.org/images/report/WG1AR5_ALL_FINAL.pdf>. (**IPCC Report 2013**).

¹⁸ *Ibid*.

¹⁹ Penny Sackett, ‘Expert Report on the Greenhouse Gas and Climate Implications of the Narrabri Gas Project (SSD-6456)’ (Report, 9 August 2020) para 10 (**Narrabri Report**).

²⁰ B H Samset, J S Fuglestedt & M T Lund, ‘Delayed Emergence of a Global Temperature Response After Emission Mitigation’ (2020) 11(1) *Nature Communications* 3261.

²¹ United Nations Framework Convention on Climate Change Conference of the Parties 21, Adoption of the Paris Agreement, ‘Annex - Paris Agreement’, Article 2 (FCCC/CP/2015/L.9/Rev.1).

²² IPCC Report 2018 (n 24).

²³ *Ibid*.

²⁴ Rachel Pepper et al., ‘Final Report of the Scientific Inquiry into Hydraulic Fracturing in the Northern Territory’ (Report, April 2018), p. 208 (**Fracking Inquiry**).

²⁵ Intergovernmental Panel on Climate Change, ‘Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the IPCC’ (Report, 2015, p. 87, Box 3.2, Table 1) (**IPCC Report 2015**).

found that over a period of 20 years, methane has been found to be 84 times more effective at trapping heat in the atmosphere than CO₂, and 28 times more effective over a 100-year period.²⁶ During the gas extraction process, methane may be released directly to the atmosphere and there are releases of CO₂ that are often not counted towards emissions targets.²⁷

- 22 The Beetaloo sub-basin covers an area of approximately 28,000 square kilometres and is estimated to hold 31 trillion cubic feet of natural gas.²⁸ If combusted for energy usage, this amount of gas would emit over 1,000Mt of additional CO₂ into the atmosphere.²⁹
- 23 Large scale development (a gas field that produces 1,240 Petajoules [**PJ**] of natural gas in one year) in the Beetaloo sub-basin would emit 99 Mt of life cycle GHG emissions per year globally.³⁰
- 24 Fracking Inquiry Recommendation 9.8 outlines that to reduce the risks associated with climate change both the NT and Australian Government should ensure no net increase in lifecycle GHG emissions from onshore shale gas developments in the NT.³¹ This is particularly important given the combustion of natural gas was the fastest growing source of CO₂ emissions into the atmosphere between 2017 and 2018.³²
- 25 The NT Government has established a target to achieve net zero GHG emissions by 2050, as outlined in the NT Government's 'Climate Change Response: Towards 2050' (**NT's Response**).
- 26 However, a recent Climate Council report concludes that keeping emissions to well below 2°C, so as to avoid the most dangerous effects of climate change, will require Australia to reduce emissions by 75% below 2005 levels by 2030 and to reach net zero emissions by 2035.³³ The report concludes that reaching this goal will require the banning of all new fossil fuel developments, including gas.³⁴
- 27 The Australian Government has outlined a goal of reducing GHG emissions by 26-28% below 2005 levels by 2030,³⁵ however this target is not consistent with an emissions reduction trajectory consistent with achieving the Paris Agreement goals.
- 28 A recent United Nations report has found Australia to be ranked last, out of 193 member countries, for climate action,³⁶ achieving an overall score 10/100 for Sustainable Development Goal 13 (Climate

²⁶ Ibid; Fracking Inquiry (n 30) p. 211.

²⁷ Narrabri Report (n 18) paras. 93-94 International Energy Agency, 'Methane Tracker 2020: Methane from Oil and Gas' (Report, March 2020) <<https://www.iea.org/reports/methane-tracker-2020/methane-from-oil-gas>>.

²⁸ L S Hall et al. 'Petroleum Prospectivity of the Beetaloo Sub-basin: Technical Appendix for the Geological and Bioregional Assessment Program: Stage 2' (Report, 2020) <<https://www.bioregionalassessments.gov.au/assessments/geological-and-bioregional-assessment-program/beetaloo-gba-region>> p. 1.

²⁹ Ibid p. 9.

³⁰ Fracking Inquiry (n 30) p. 228.

³¹ Fracking Inquiry (n 30) pp. 3 and 239.

³² Friedlingstein Article (n 29) 1810.

³³ Climate Council, 'Aim High, Go Fast: Why Emissions Need to Plummet this Decade' (Report, May 2021) <<https://www.climatecouncil.org.au/wp-content/uploads/2021/04/aim-high-go-fast-why-emissions-must-plummet-climate-council-report-210421.pdf>> (**Climate Council Report**).

³⁴ Ibid p. 55.

³⁵ Australia's 2030 Target Report (n 41) p. 1.

³⁶ Jeffrey Sachs et al., 'Sustainable Development Report 2021: The Decade of Action for the Sustainable Development Goals' (Report, 14 June 2021) (**SDG Report 2021**); Lisa Cox, 'Australia Ranks Last for Climate

Action).³⁷ Continued investments of public funding into new fossil fuel projects by the Australian Government are clearly out of step with the effort required to meet the goals set out in the Paris Agreement.

- 29 Further, a 2020 article by Professor Penny Sackett (**Sackett Article**) confirms that Australia’s current climate change policies would increase national production of fossil fuels, which subsequently increases GHG emissions.³⁸
- 30 Scientific evidence has repeatedly demonstrated that limiting global warming to 1.5°C or well below 2°C above pre-industrial levels requires Australia to reduce consumption of all fossil fuels by 75% of 2005 levels by 2030.³⁹ Further, Australia must recognise that all GHG emissions that arise from the exploitation of fossil fuels within Australia will contribute to the harm caused to Australian people and our environment.
- 31 **Any claim that GHG emissions arising from exported gas (Scope 3 emissions), such as gas that may be developed in the Beetaloo sub-basin and exported, are not Australia’s responsibility are insupportable from a scientific and legal perspective.**
- 32 The cumulative effects of GHG emissions must be recognised to adequately assess the detrimental impacts of GHG emissions released from gas fields.⁴⁰ The cumulative effects of a mine’s GHG emissions have been summarised by the New South Wales Law and Environment Court:
- “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.”⁴¹*
- 33 Similarly, the cumulative effects of GHG emissions from gas exploration, and further potential developments, in the Beetaloo sub-basin must be considered in the context of global GHG emissions and in light of the targets put forth by the Paris Agreement, the NT’s Response and Recommendation 9.8 of the Fracking Inquiry. There is simply no more room for new gas exploration and production at this time, and as such, governments that intend to put public resources into such endeavours can no longer be said to be acting reasonably.
- 34 EDO submits that increasing gas development is not a viable approach to maintaining a reasonably safe climate and further approval of any new fossil fuel projects, including gas projects, is inconsistent with our obligations under the Paris Agreement. **EDO submits that no new gas developments should be supported, and no public funding should be given to developing new**

Action among UN Member Countries’ *The Guardian* (online, 1 July 2021) <<https://www.theguardian.com/environment/2021/jul/01/australia-ranks-last-for-climate-action-among-un-member-countries>>.

³⁷ SDG Report 2021 (n 52) p. 112.

³⁸ Sackett Article (n 5) 186.

³⁹ Climate Council Report (n 44) p. 6.

⁴⁰ *Ibid* para. 33.

⁴¹ *Gloucester Resources Limited v Minister for Planning* [2019] NSWLEC 7 [525].

gas basins, for Australian governments to meet our commitments to limit global warming to 1.5°C or well below 2°C in line with the Paris Agreement.⁴²

- 35 Instead, Australia needs to further incentivise investments into renewable energy, rather than investing in and subsidising new fossil fuel projects.⁴³

Gas is not a transition fuel

- 36 In 2020, 25 of Australia’s leading climate scientists wrote to Chief Scientist, Alan Finkel (**Scientists’ Letter**)⁴⁴ outlining their concerns with the concept of “use of gas as a transition fuel”. The Scientists’ Letter argues against any *expansion of any fossil fuel infrastructure*, in particular *the proposed expansion of the gas industry*.⁴⁵
- 37 First, the Scientists’ Letter states that “natural gas is now the fastest growing source of carbon dioxide in the atmosphere”.⁴⁶ Second, the scientists are concerned about impacts from the high levels of “methane leakage from the full gas economy, from exploration through to end use”.⁴⁷ Third, the Scientists’ Letter states that to “achieve net zero emissions by 2040-2050 ... leaves no room for expansion of the gas industry”.⁴⁸ Finally, they find that since “CCS (Carbon Capture and Storage) ... [and] hydrogen production ... is far from technologically and economically viable ... renewable energy alternatives are ... technologically ready, less expensive, ... more widespread ... and capable of delivering economic and employment benefits across regional and rural Australia”.⁴⁹
- 38 In the Sackett Article, Professor Penny Sackett similarly confronts the issue of viewing gas as a transition fuel. Professor Sackett argues that although *gas-fired electricity emissions can be lower than coal-fired* it is now necessary to reduce all *fossil fuel consumption including gas in this decade*.⁵⁰ This is because globally governments are planning to create “50% more fossil fuels by 2030” that are “consistent with a 2-degree pathway”⁵¹ (noting again that the Paris Agreement sets goals of 1.5°C and “well below” 2°C). This is the subject of a report by the Swedish Environmental Institute,⁵² in which it is argued that current plans for fossil fuel development or extension are incompatible with the Paris Agreement and will not limit global warming to 1.5°C or 2°C.⁵³ Therefore, all current plans for expansion or development of fossil fuels should be re-evaluated to ensure commitment to the Paris Agreement and other targets to reduce GHG emissions.

⁴² EDO, Submission on the NT Draft GHG Emissions Management for New and Expanding Large Emitters, para. 4 (**EDO Submission NT Draft GHG Emissions**).

⁴³ IEEFA Report (n 55) pp. 2-3.

⁴⁴ Royal Society of NSW, ‘A Letter from 25 Scientists to the Chief Scientist, Alan Finkel’ (2020) 153(2) *Journal & Proceedings of the Royal Society of NSW*, 181-183 <<https://royalsoc.org.au/images/pdf/journal/153-2-PCP-25letter.pdf>> (**Scientists’ Letter**).

⁴⁵ *Ibid* 182.

⁴⁶ *Ibid* 181.

⁴⁷ *Ibid*.

⁴⁸ *Ibid* 182.

⁴⁹ *Ibid* 181.

⁵⁰ Sackett Article (n 5).

⁵¹ *Ibid*.

⁵² Swedish Environmental Institute, ‘The Production Gap Report’ (Special Report, 2020) <<https://productiongap.org/2020report>>.

⁵³ *Ibid* p. 19.

- 39 This position is now supported by the International Energy Agency (**IEA**) of which Australia is a member country. The IEA which is an intergovernmental organisation established within the framework of the OECD. The IEA Roadmap states that by 2021 there will be “no new oil and gas fields approved for development; no new coal mines or mine extensions”.⁵⁴
- 40 Importantly, the IEA Roadmap also states that “no new natural gas fields are needed ... beyond those already under development. Also not needed are many of the liquefied natural gas (**LNG**) liquefaction facilities currently under construction or at the planning stage”. According to the IEA Roadmap, before 2050, LNG demand will fall by 60% and LNG delivered through pipeline will fall by 65%. It further states that “during the 2030s, global natural gas demand declines by more than 5% per year on average, meaning that some fields may be closed prematurely or shut down temporarily”.⁵⁵
- 41 **EDO submits that to achieve the Paris Agreement goals of limiting temperature increases to 1.5°C or well below 2°C, Australia must at a minimum adopt the IEA Roadmap which states clearly that no new gas fields are needed nor should be approved. Australian Government funding for exploration and production in the Beetaloo Basin is inconsistent with this scenario.**

B. Other environmental concerns

- 42 Given the large number of potential negative environmental and social impacts arising from gas extraction that was identified by the Fracking Inquiry, and the lack of scientific certainty in relation to the extent of potential harm to the environment particularly in relation to water take and contamination, decision-makers should utilise the precautionary principle in making any decisions that relate to the expansion of the gas industry in the NT.⁵⁶
- 43 Below, EDO expands on a number of environmental concerns that will arise as a consequence of further gas development in the NT. In light of these risks, and the current climate crisis, the appropriate response is to prevent, rather than facilitate, expansion of the gas industry.

Hydraulic fracturing chemical additives

- 44 A Geological and Bioregional Assessment was undertaken in the Beetaloo sub-basin region to investigate the potential impacts of unconventional gas developments within the region. The Stage 2 Assessment Report found that a total of 116 chemicals used for hydraulic fracturing required for gas developments in the Beetaloo sub-basin include 33 chemicals of ‘potentially high concern’, 41 chemicals of ‘potential concern’ and 42 chemicals of ‘low concern’.⁵⁷ There is significant uncertainty in relation to the impacts arising from the interactions of these chemicals in the environment,⁶⁹ but risks include impacts on local water supplies and the surrounding physical environment.

⁵⁴ International Energy Agency, ‘Net Zero by 2050: A Roadmap for the Global Energy Sector’ (Special Report, 17 May 2021) p. 21 (**IEA Roadmap**).

⁵⁵ Ibid pp. 102-103.

⁵⁶ EDO NT, Submission to the Independent Scientific Inquiry into Hydraulic Fracturing (Submission 213, 2017) (**EDO NT Submission 213**).

⁵⁷ Bioregional Assessments, ‘Geological and Environmental Baseline Assessment for the Beetaloo GBA Region: Stage 2 Chemical Screening Report’ (Government Report, May 2020) <<https://www.bioregionalassessments.gov.au/assessments/geological-and-bioregional-assessment-program/beetaloo-gba-region>> (**Beetaloo GBA Stage 2 Chemical Report**).

- 45 The chemicals used in the hydraulic fracturing process create inherent risks for surrounding environments, if mechanical failure or human error leads to spillages of the chemical fluids.⁵⁸
- 46 Even if used safely, once fracking fluids have been used at least some of the chemicals will be contained in wastewater which must be managed and ultimately disposed of, the process of which creates risks of the chemicals being released into the local environment.⁵⁹

Wastewater and brine

- 47 Wastewater and associated brine that has been created as a result of the hydraulic fracturing process pose significant environmental risks if mismanaged.
- 48 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:⁶⁰

“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.”⁶¹

- 49 If the concentrated wastewater and brine components are incorrectly disposed of, there is significant risk that it will interact with rainwater and contaminate surrounding areas.⁶² For example, salt sent to landfill could be subject to permeation which could be detrimental to local soils and groundwater systems and could pollute drinking water or other beneficial use water resources.⁶³ These risks have the potential for severe and ongoing negative impacts for public health and physical environments.⁶⁴
- 50 The Fracking Inquiry identified eight main ways that wastewater and brine solutions from hydraulic fracturing processes may contaminate surrounding surface and/or groundwater supplies, which all involve mechanical or human errors.⁶⁵ These potential risks to the environment, such as overtopping or failure of wastewater storage ponds, and spills during road or pipeline transport of chemicals, remain insufficiently assessed.⁶⁶

Well construction and other infrastructure requirements

⁵⁸ EDO NT Submission 213 (n 74) p. 23.

⁵⁹ EDO, Submission on the Northern Territory Draft Environmental Management Plan Content Guideline: Onshore Petroleum Regulated Activities, para. 38 (**EDO Submission EMP Guidelines**).

⁶⁰ 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>

⁶¹ Ibid p. 2.

⁶² EDO Submission EMP Guidelines (n 77) para 10.

⁶³ NSW Government, ‘Independent Review of Coal Seam Gas Activities in NSW: Managing Environmental and Human Health Risks from CSG Activities’ (Government Report, September 2014) p. 20 (**NSW Independent Review**).

⁶⁴ Ibid.

⁶⁵ Fracking Inquiry (n 30) p. 144.

⁶⁶ Ibid.

- 51 Understanding the details of well construction and other infrastructure required for gas exploration, and subsequent gas developments in the Beetaloo sub-basin, are essential for determining the level of risk to the surrounding environment.⁶⁷ The practice of hydraulic fracturing, as well as poorly constructed wells, carry the risk of creating conduits which may result in hydraulic fracturing fluid, flowback water (a mixture of water and hydraulic fracturing fluid) or drilling chemicals entering the groundwater system. Depending on the construction and operation of wells, there may be risk of blow outs, well failure, annular gas migration, groundwater migrations, 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.⁶⁸
- 52 If the proposed gas exploration of the Beetaloo sub-basin leads to full-scale gas developments, around 200 drilling pads, more than 1,000 wells and thousands of kilometres of roads and pipelines may be constructed to facilitate these developments.⁶⁹ This may accumulate into larger production developments, whereby approximately 6,250 wells are constructed, which facilitates the production of 1,240 PJ of gas per year.⁷⁰ This will involve significant damage to the physical environment, flora and fauna of the Beetaloo sub-basin.
- 53 These infrastructure requirements will have long-term consequences for the surrounding environment and overall GHG emissions. If the gas development expands within the sub-basin, this will increase transportation needs, using rail and/or road transport to facilitate gas operations within the region.⁷¹ These transportation needs will further increase GHG emissions, contributing to NT's and overall GHG emissions.
- 54 If gas developments eventuate in the sub-basin as a result of preliminary results from the proposed gas exploration, gas companies may have to further expand operations within the region to remain profitable. This will cause further impact to the physical environment.

Water quality

- 55 The Beetaloo sub-basin contains finite groundwater sources and surface waters that would be required to operate gas exploration and potential further gas developments.⁷²
- 56 The Fracking Inquiry recognised the fragility of the surface water supply in the Beetaloo sub-basin and recommended (Recommendation 7.6) that prior to the grant of any further exploration approvals, the use of all surface water resources for any onshore shale gas activity in the NT be prohibited.⁷³
- 57 There are an estimated 800 registered water bores in the sub-basin that extract approximately 6,000ML of groundwater per year, most of which is required for stock watering in the region.⁷⁴

⁶⁷ EDO Submission EMP Guidelines (n 77) para. 14.

⁶⁸ Ibid.

⁶⁹ Fracking Inquiry (n 30) p. 99.

⁷⁰ Ibid p. 228.

⁷¹ Ibid p. 99.

⁷² Ibid p. 128.

⁷³ Ibid p. 135.

⁷⁴ Ibid p. 125.

However, particularly to the northern area of the Beetaloo sub-basin, there are townships, such as Katherine, that use groundwater sources that are connected to those within the sub-basin.⁷⁵

- 58 Groundwater extracted for stock watering and townships is generally closer to the surface than groundwater extracted as part of gas exploration and extraction.⁷⁶ However, the process of extracting this water creates risk of contamination for shallower groundwater, including through well faults or human error during operations.⁷⁷
- 59 Identified risks from gas exploration and extraction include contamination of surface or shallow groundwater used by townships (including for drinking water), reduction in available groundwater, impact on groundwater dependent ecosystems, and impacts on soil and hence food quality and yield.⁷⁸ If contamination eventuates within the Beetaloo sub-basin, there could be detrimental impacts on the health of communities, pastoralists and the flora and fauna that rely on safe groundwater. Further, as the consequences of climate change increase in severity, it is likely that an increased burden on the supply of groundwater in the sub-basin will cause decline in of groundwater resources due to a reduction in recharge.⁷⁹

Risk to flora and fauna

- 60 The Beetaloo sub-basin has several conservation areas in and around the basin that host fragile flora and fauna. These include the Bullwaddy Conservation Reserve, Lake Woods and Historical Frew Ponds Overland Telegraph Line Memorial Reserve.⁸⁰ These areas have not been extensively studied for flora and fauna, but there are reports of 14 threatened species in the greater Beetaloo sub-basin region, including the grey falcon and floodplain monitor.⁸¹ With more assessment, these numbers may increase.
- 61 The maintenance of biodiversity and landscape functions requires large areas of undisturbed land.⁸² Development related to exploration and potential production of gas in the Beetaloo sub-basin would have a significant impact on the region's local flora and fauna.
- 62 The infrastructure requirements of gas developments would create habitat loss, edge effects and habitat fragmentation for flora and fauna.⁸³ Through the development of infrastructure such as roads, pipelines, drilling pads and wells, habitats of many flora and fauna may become disconnected and impact on their behaviour, which may lead to a lower chance of survival. As transportation into these remote regions within the Beetaloo sub-basin increases, so too does the risks of introducing weed infestations, which would be devastating for local flora, who already compete for very limited water resources.

⁷⁵ Ibid.

⁷⁶ Ibid p. 127.

⁷⁷ Ibid.

⁷⁸ NSW Independent Review (n 81) pp. 13-14.

⁷⁹ Matthew J. Collof, 'Submission to the Scientific Inquiry into Hydraulic Fracturing in the Northern Territory' (Report, 2017) p. 7.

⁸⁰ Fracking Inquiry (n 30) p. 178.

⁸¹ Bioregional Assessments, 'Geological and Environmental Baseline Assessment for the Beetaloo GBA Region: Stage 2 Protected Matters Report' (Government Report, May 2020) <<https://www.bioregionalassessments.gov.au/assessments/geological-and-bioregional-assessment-program/beetaloo-gba-region>> p. 1.

⁸² EDO NT Submission 213 (n 74) p. 19.

⁸³ Ibid, p. 20.

C. Impact on First Nations communities in the Beetaloo sub-basin

Native Title holders

- 63 The Beetaloo sub-basin lies on First Nations land under the *Aboriginal Land Rights (Northern Territory) Act 1976* (NT) or Native Title.⁸⁴ Gas companies must inform and consult with the Traditional Owners in respect of exploration and development on their land.⁸⁵ These statutory processes also require the Traditional Owners to balance economic returns of developments against cultural concerns.⁸⁶ Economic benefits flow to the statutorily recognised Traditional Owners and Native Title holders, and not the broader First Nations community.⁸⁷
- 64 Under the *United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP)*, the First Nations communities affected by the proposed gas developments should first give free, prior and informed consent so they can properly exercise their self-determination of what occurs on their land.⁸⁸ This includes giving free, prior and informed consent to companies to store any hazardous materials on their land, such as wastewater and brine solutions.⁸⁹ Meaningful free, prior and informed consent must be premised on the right to say no to resource development on their land and uphold Native Title recognitions such that the power in any negotiations with First Nations is not sitting with the resource company and government only. These internationally recognised guidelines to protect the rights of First Nations people and communities are not legally binding in Australia, but the rights contained within UNDRIP derive from pre-existing human rights and international laws developed under treaties to which Australia is a party, and are therefore binding.⁹⁰ In allowing gas projects to be undertaken, the government is removing Native Title recognition of First Nations.

Risk of harm to culture and culturally significant sites

- 65 EDO lawyers have assisted First Nations clients around Australia in their efforts to protect their cultural heritage from destruction. These submissions are based on this experience in working with State, Territory and Commonwealth laws designed to provide some level of protection to cultural heritage. We have worked with First Nations clients who have interacted with cultural heritage laws in many different ways, from litigation, engaging in law reform processes, through to broader First Nations-led environmental governance of country projects.⁹¹
- 66 There are numerous First Nations communities within the Beetaloo sub-basin.⁹² The main concerns expressed by these communities to the Fracking Inquiry were contamination of and reduction in groundwater supply and damage to sacred sites.⁹³

⁸⁴ Ibid p. 269.

⁸⁵ Ibid p. 267.

⁸⁶ Ibid.

⁸⁷ Ibid.

⁸⁸ *United Nations Declaration on the Rights of Indigenous Peoples*, UN Doc A/RES/61/295 (2 October 2007), art 32.2 (**UNDRIP**).

⁸⁹ Ibid, Art 29.2.

⁹⁰ EDO, Submission to the Inquiry into the Destruction of 46,000-year-old Caves at Juukan Gorge in the Pilbara Region of Western Australia (14 August 2020) para. 4.

⁹¹ Ibid.

⁹² Fracking Inquiry (n 30) p. 267.

⁹³ Ibid pp. 267 and 333.

- 67 Gas developments have the potential to desecrate sacred sites and cause conflicts with First Nations communities. Unfortunately, what legislation defines as ‘sacred’ is different to what First Nations communities consider sacred.⁹⁴ For example, groundwater structures from gas companies disrupt connections of First Nations communities during kujika song cycles, which are central to major ceremonies that connect different First Nations groups across the region.⁹⁵ The song links people with sites in their landscape, celebrating the ancestral beings that travelled above and below the ground.
- 68 Gas developments may also create conflicts between First Nations communities and the NT Government. Only certain communities would receive royalties from gas developments on Native Title Land, creating significant income disparity between the communities.⁹⁶
- 69 Passing along cultural traditions relating to Native Title land onto the next generation is important to ensure continued land ownership rights.⁹⁷ This is already a difficult proposition in First Nations communities within the Beetaloo sub-basin, who are predominately young, meaning there are fewer Elders to pass along knowledge to an increasing number of young people.⁹⁸ Gas exploration and development in these regions may cause further difficulties in passing along knowledge if the communities cannot freely access all of their lands or any cultural traditions are disrupted.
- 70 The behaviour of many resource companies has demonstrated a lack of respect for sacred land. This can be seen by Rio Tinto’s 2020 destruction of a 46,000-year-old First Nations’ sacred site in Western Australia for an iron ore mine.⁹⁹ The most practical way to prevent any additional destruction of First Nations land, specifically in the Beetaloo sub-basin, is to avoid gas developments, including exploration, in the region altogether.

Community Consultations

- 71 EDO’s experiences in the NT have concluded that there is ineffective consultation with First Nations communities. Best practice culturally appropriate consultations should be undertaken on a wide range of matters during the development process of any project in the NT, particularly any potential gas developments in the Beetaloo sub-basin.
- 72 All consultations with First Nations communities should include interpreters where English is a second language.¹⁰⁰ The interpreters must be properly supported to ensure they understand the matter of the consultation and can correctly convey that information to the local community.
- 73 Recent consultations with First Nations communities have been inadequate and resulted in further confusion.¹⁰¹ Even after government, land council and industry consultations, many First Nations

⁹⁴ Ibid p. 267.

⁹⁵ Ibid p. 276.

⁹⁶ Ibid p. 333.

⁹⁷ Ibid p. 267.

⁹⁸ Ibid p. 326.

⁹⁹ Calla Wahlquist, ‘Rio Tinto Blasts 46,000-year-old Aboriginal Site to Expand Iron Ore Mine’ *The Guardian* (online, 26 May 2020) < <https://www.theguardian.com/australia-news/2020/may/26/rio-tinto-blasts-46000-year-old-aboriginal-site-to-expand-iron-ore-mine>>.

¹⁰⁰ EDO Submission EMP Guidelines (n 77) para. 45.

¹⁰¹ EDO NT Submission 213 (n 74).

people have been provided with insufficient information in a culturally appropriate way to be able to appropriately engage in discussions around CSG and shale gas, mining and shale gas operations, and conventional and unconventional gas extraction.¹⁰² This was a result of cultural and language barriers and NT's geographic size and climate that makes effective and proper consultations challenging, time consuming and expensive.¹⁰³

- 74 The 2020 Final Report of the *Independent Review of the Environment Protection and Biodiversity Conservation Act 1999* identified that First Nations views and knowledge are not fully valued in decision-making processes, and that First Nations communities are seeking stronger protection of their cultural heritage. The Review made recommendations for national consultation and reform to better recognise and strengthen the role of First Nations peoples in environmental decision-making.¹⁰⁴
- 75 EDO submits proper consultation with First Nations communities is vital to ensure any developments on First Nations land are properly understood, and all risks to culture and environment are fully understood before activities that will lead to gas exploration and exploitation are proposed for approval. This is a basic human right and should be upheld.

Conclusion

- 76 In summary, EDO recommends that the Instrument should not be allowed, as the subsequent gas exploration activities would facilitate gas extraction in the Beetaloo sub-basin which would have unacceptable impacts on the local environment and communities.
- 77 These impacts include contributing to climate change through the production of GHG emissions, other environmental impacts such as water take and potential contamination, and negative cultural impacts, particularly for local First Nations communities.
- 78 Instead of investing in fossil fuel production, EDO recommends that the Australian Government invest in developing reliable renewable energy sources, such as utilising the high solar radiation experienced in the NT to produce solar power, and use funding for projects that align with Australia's goals under the Paris Agreement.

¹⁰² Ibid p. 29.

¹⁰³ Ibid.

¹⁰⁴ Graeme Samuel, 'Independent Review of the Environment Protection and Biodiversity Conservation Act 1999' Final Report is available at: [Final report | Independent review of the EPBC Act \(environment.gov.au\)](#)
See Chapter 2: [Chapter 2 - Indigenous culture and heritage | Independent review of the EPBC Act \(environment.gov.au\)](#)