

Key Points from the Final Report of the Scientific Inquiry into Hydraulic Fracturing

The Expert panel has stated “that the recommendations in this Report are a complete package. That is, they must be implemented in their entirety in order to mitigate the risks associated with any onshore shale gas industry in the NT to an acceptable level. Further, if the Government lifts the moratorium, the recommendations must be implemented in a clear, timely and transparent manner.”

Chapter 7: Water

Water-related risks were the central concern raised in the submissions received by the Panel and in the community consultations.

The Panel focussed its attention on the Beetaloo Sub-basin because this is the most prospective onshore shale gas region in the NT. Current understanding of groundwater characteristics is reasonable for parts of the Beetaloo Sub-basin, but generally low for other prospective shale gas basins in the NT.

There is limited understanding of the aquatic ecology of the temporary streams and water bodies that dominate the semi-arid and arid regions of Australia or the environmental flows required to maintain most of Australia’s tropical rivers in good ecological health. One exception is the Daly River.

The Panel is not aware of any studies of stygofauna within aquifers in the NT.

The Panel has recommended that the improved understanding of the flow-ecology relationships of these systems be undertaken as part of the strategic regional environmental and baseline assessment process (SREBAS).

Many high yielding aquifers within the NT are close to full water allocation against the prescribed contingent allocations. Groundwater and surface water resources in a number of specific areas such as Alice Springs, Darwin Rural, Douglas Daly, Katherine and Mataranka are recognised as already being under pressure from resource development.

The panel has recommended that the Australian Government amends the Environmental Protection Biodiversity Conservation Act (EPBCA) to apply the ‘water trigger’ to onshore shale gas development.

The panel has recommended that the Northern Territory Water Act be amended prior to the grant of any further exploration approvals to require gas companies to obtain water extraction licences under that Act, and that the Government introduces a charge on water for all onshore shale gas activities.

Gas company Origin has suggested that it will require 50-60 ML of water for drilling and stimulation per well in the Beetaloo Sub-basin.

The Aboriginal Areas Protection Authority (AAPA) noted that the practice of shale gas hydraulic fracturing could have significant impacts on sacred sites arising from interference with either surface water or groundwater.

Analysis:

Aquifers and ground water sources are at the heart of Northern Territory communities and the existing industries that depend on them.

The panel has identified that there is insufficient information to permit a full assessment of the risks to groundwater resources from any shale gas industry established in the Beetaloo Sub-basin, and that there is a low understanding of groundwater characteristics for prospective shale gas basins elsewhere in the NT.

Fracking is a water intensive process, which will place pressure on already over-allocated aquifers. Obtaining water permits and paying for water use will likely be a prohibitive factor for the gas industry.

Chapter 8: Land

The panel heard from many Territorians who are passionate about protecting a lifestyle based on unspoiled vistas and an absence of landscape industrialisation.

The panel has identified that development of the industry will be acceptable if the following environmental objectives are achieved:

- no regional-scale impact on the terrestrial biodiversity values of affected bioregions
- there is a maintenance of overall terrestrial ecosystem health, including the provision of ecosystem services, at the regional scale
- any shale gas surface infrastructure does not become a highly visible feature of the landscape
- the volume of heavy-vehicle traffic does not impact on landscape amenity

The panel's assessment is that the likelihood of onshore shale gas development occurring in currently undocumented areas of high conservation value in the NT is 'high', given the lack of comprehensive and systematic information on the biodiversity assets of prospective regions, including virtually no information on invertebrate faunas.

The panel considers that all NT landscapes with high landscape amenity value, not already protected in national parks or other conservation reserves, should be identified then considered as possible 'no go zones' for onshore shale gas development.

The panel considers 2 km to be an appropriate minimum distance between well pads given that it is expected that 3 km (or more) long laterals will be drilled and fractured, and that this should be mandated.

The panel identified heavy-vehicle requirements for transporting equipment and supplies during any onshore shale gas development to include up to 2,000 truck trips for a high volume hydraulic fracturing event, more than 3,300 one-way truck trips for the development of each horizontal well, and between 4,300 and 6,600 total truck visits to service a six-well pad.

The Weed Management Branch in DENR has identified petroleum exploration as a high-risk pathway for weed spread, through the unintentional movement of seeds, plants, plant parts, or soil containing seeds, along with disturbance to the soil that increases the probability of seeds establishing.

Analysis:

It will be impossible to prevent the shale gas industry having a regional impact - the companies are admitting they will need at least 1000 fracked gas wells to be viable, and the inquiry admits many more may be needed as the well performance diminishes.

The report is disappointing for not recommending the scientific research SREBAs to inform no go zones are completed prior to further fracking activities.

Weed spread is a high risk at the exploration phase, which is a key reason why biodiversity areas should be studied up front and put off limits prior to exploration.

Chapter 9: Greenhouse Gas Emissions

The report acknowledges that the globally devastating impacts of climate change will require substantial and sustained reductions in GHG emissions.

For any new onshore shale gas field in the NT, the Panel assessed the unmitigated risks to climate change associated with methane emissions and GHG emissions (including methane) to be either 'medium' or 'high'. The report has deemed this level of risk unacceptable, but believes it can be mitigated through carbon offsets. The final report acknowledges that a single gas field would increase Australia's emissions by 4.5% and 0.05% of global emissions.

The report recommends that baseline monitoring of methane concentrations be undertaken for at least six months prior to the grant of any further exploration approvals. In areas where hydraulic fracturing has already occurred, the baseline monitoring should be undertaken at least a year prior to the grant of any production approvals.

The report recommends 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.

Analysis:

The report has compared the life cycle emissions of a single gas field to total global emissions instead of the remaining carbon budget, which grossly understates the impact of the emissions.

It is doubtful that a 5% increase in Australian emissions can be offset, and that there could be no net increase in emissions from any onshore shale gas produced in the NT.

Northern Territory emissions have risen 28% over the last ten years. The NT must take action to reduce emissions, not raise them significantly by opening up shale gas fields.

Chapter 10: Public Health

The panels' assessment of health risks was primarily informed by published reports from international gas developments (primarily in the US) and by experiences with CSG projects in Queensland.

The panel found that the likelihood and consequence of such health risks are difficult to categorise because they are highly dependent on the scope of any proposed onshore shale gas development, as well as the stage of that development (exploration, production or decommissioning). In some cases there was insufficient information to determine the precise level of risk.

The panel recommended that formal site or regional-specific Human Health Risk Assessment (HHRA) reports be prepared and approved by the regulator prior to the grant of any production approvals.

The panel recommended that setback distances should not be less than 2 km and should apply to all exploration and production activities, in order to minimise risks identified in HHRA reports, including potential pathways for waterborne and airborne contaminants.

Analysis:

A lack of baseline and methodologically sound health studies from many of the US shale and Queensland CSG sites compromises the capacity to truly assess the risk to public health.

If there are isolated pockets of people living in closer proximity to any onshore shale gas development (for example, pastoral homesteads or Aboriginal communities), the small numbers of people may compromise the meaningfulness of any data.

Chapter 11: Aboriginal People and their Culture

The Panel acknowledges the strong connection that Aboriginal people have with their country, including water bodies, and that any interference with that connection will have significant cultural and social ramifications for Aboriginal people and their communities.

The panel states that presently, Aboriginal Areas Protection Authority is engaged too late in the assessment and approval process and has a limited opportunity to make a meaningful contribution in terms of how impacts on sacred sites can be managed. The panel recommends that gas companies be required to obtain an Authority Certificate prior to the grant of any exploration and production approvals, and that a comprehensive assessment of the cultural impacts of any onshore shale gas industry must be completed prior to the grant of any production approval and be resourced by the gas industry.

The panel recommends that interpreters be used at all consultations with Aboriginal people for whom English is a second language.

Analysis:

Aboriginal people from regional communities who made submissions to the Panel almost universally expressed deep concern about, and strong opposition to, the development of any onshore shale gas industry on their country. The widespread perception was that if such an industry is established, irreparable harm will be done with no correlative benefits owing to affected communities.

All of the known prospective onshore shale gas areas, including the Beetaloo Sub-basin, are on areas that are either Aboriginal land under the Land Rights Act or where native title exists.

Currently many gas companies are electing not to get an Authority certificate to undertake petroleum activities. Aboriginal Areas Protection Authority submitted that, “In reviewing applications for Authority Certificates related to hydraulic fracturing for the purposes of this submission it has come to light that despite Authority Certificates being a key requirement of broader environmental approvals, a number of proponents have, upon receipt of other approvals, subsequently withdrawn their applications for Authority Certificates.”

Chapter 12: Social Impacts

The panel acknowledged that to properly identify the social and cumulative impacts that are likely to emerge from any onshore shale gas industry in the NT, an investment of resources, both time and money, is required to ensure that all Territorians are heard.

One overarching concern evident in many of the submissions made to the Panel is that the benefits of any onshore shale gas development will be short-term and flow to outside parties, including Fly In Fly Out (FIFO) workers, while the costs may be long-term and be borne by the people of the NT.

Some submissions made to the panel believed onshore shale gas industry would deliver lasting benefits to the NT by creating jobs and business opportunities and by improving infrastructure and services .

At the public hearings many people remained opposed to hydraulic fracturing in the NT and stated there is an absence of any Social License to Operate (SLO) for any shale gas industry in the Territory. Much of this opposition appears to stem from a lack of trust towards the gas industry and a lack of faith in the Government’s capacity to regulate any such industry.

The panel recommended that a strategic Social Impact Assessment (SIA), separate from an EIS, must be conducted for any onshore shale gas development prior to any production approvals being granted, and be funded by the gas industry. This must include planning for road maintenance and housing.

That gas companies must develop and implement a Social Impact Management (SIM) plan for communities, detailing how they will optimise the relationship with a community prior to the grant of any production approvals. Ongoing monitoring must occur.

Analysis:

Many of the submissions made to the Panel indicated that they believed the benefits of any onshore shale gas development would be short-term and flow to outside parties. There were fears of an influx of FIFO workers.

The Beetaloo Sub-basin Case Study identified that significant disparity exists across the Beetaloo Sub-basin between the regional service centres and remote Aboriginal communities, affecting access to services, housing, access to a functioning labour market, health and education status.

A key issue is how affected communities might realise – or not – opportunities from any onshore shale gas development. Aboriginal communities in the Beetaloo Sub-basin, in common with other remote Aboriginal populations in the NT, have young

populations. A consequence of this is a diminished capacity of the adult population to transmit cultural knowledge and information to emerging generations, and have required skills for employment.

Chapter 13: Economic Impacts

The panel examined future economic development trajectories for the NT over 25 years from 2018 to 2043, based on five different development scenarios; Baseline, Calm, Breeze, Wind and Gale.

The Gale scenario (where the moratorium is lifted, and a larger-scale development occurs (1,000 TJ/day, or 365 PJ per annum) delivers the greatest economic benefits for the NT over the 25-year modeled period, with real output estimated to be \$17.5 billion greater than under the Baseline scenario (at an average of \$674.4 million per annum).

The modeling of the scenarios was undertaken by ACIL Allen, an independent economic consultancy firm engaged by the Panel.

Many submissions that the Panel received suggested that the development of an onshore shale gas industry would have significant adverse impacts on business operations, particularly in the pastoral, agricultural, horticultural and tourism industries.

The panel recommends that in developing its' budget, the Government must have regard to the source of royalty revenue and must ensure that regions that are the source of taxation revenue benefit from any onshore shale gas extraction activity that has occurred in their region.

The panel recommended that the Government works with gas companies, Land Councils, local Aboriginal corporations, Aboriginal communities, and businesses to identify local supply and service opportunities, local employment targets, including local employment targets for Aboriginal people, implement local procurement targets, and resolve all potentially negative economic impacts of any onshore shale gas development on other industries.

Analysis

ACIL Allen regularly consult to the gas industry, having worked for Santos, ExxonMobil, Chevron, APPEA, etc. and are known to overestimate benefits to these industries in reporting.

ACIL found that there was “very high” probability that an unconventional gas industry in the NT would “fail to commercialise”. A large-scale industry was assessed as having low to very low probability, however the final report did not mention these results.

Economists consider gas production to be ‘capital intensive’ – it involves a lot of machinery, pipelines, etc. but doesn’t actually employ many people. Under the most likely scenario, which is ‘calm’, an average of just 5 jobs would be created, with ultimately zero jobs in the industry. Even the maximum production ‘gale’ scenario sees average NT employment increase by just 524 jobs.

Under the calm scenario the industry would generate zero extra revenue. The least likely gale scenario would generate \$69 million in royalties per year – around 1% of

NT government revenue.

ACIL's estimates show even with a major unconventional gas industry NT government revenue would increase by around 2%. This increase in revenue would come with considerable environmental and social costs that would likely outweigh any benefits.

Chapter 14: Regulatory Reform

The final report states that the community expressed an acute lack of confidence in the current regulatory framework. It is the Panel's view that this concern is justified and that the regulatory regime in the NT must be reformed to ensure that any onshore shale gas industry develops in accordance with community expectations and properly reflects and operationalises the principles of Environmental Sustainable Development.

The panel acknowledges the design and implementation of a robust regulatory framework is the primary way that the Government can ensure that any onshore shale gas industry develops in a way that protects the environment, is safe to humans, and meets community expectations.

The panel provided a host of environmental regulatory recommendations in its final report including:

- the use of regional or area based assessments to evaluate cumulative impacts, in addition to project based assessment.
- inclusion of civil enforcement proceedings to allow a member of the public to enforce a potential or actual breach or non-compliance with any Act governing shale gas industry.
- recommendation for a separate agency responsible for promoting and regulating
- chain of responsibility legislation so that gas companies cannot avoid their environmental responsibilities.

The panel does not consider it necessary that SREBA is completed prior to exploration approvals, acknowledging that this will take many years. However it does provide a complete list of reforms that must occur prior to exploration approvals, including 6 months of baseline methane monitoring prior to exploration.

Analysis

The inquiry has called for a complete restructuring of petroleum and environmental law in the Northern Territory. Unless the Government commits entirely to implementing the full range of changes then risks will remain unmitigated and unacceptable

Environmental regulatory reform is one of the most significant reform agendas before the current Government. Amending all the acts and introducing all the reform will be a timely process, over more than three years.

The shortest time under the recommendations before any further approving of exploration fracking would be six months, to allow monitoring of methane concentrations.

Chapter 15: Strategic regional environmental and baseline assessment

The panel acknowledges the need for a robust baseline assessment has been raised in most submissions (both written and verbal) received from environmental groups, the community, industry, Land Councils and government agencies, especially in relation to the biophysical (water, land and air) risks presented by any onshore shale gas industry.

The lack of adequate pre-development assessment and environmental baseline data is routinely cited as one of the biggest issues associated with the rapid development of the shale gas industry in the US and the CSG industry in Queensland.

The aquatic biodiversity of the NT is not well known, the distributions of its species is uncertain, even for fish, and the locations of key refugia, sensitive assemblages, and isolated populations are poorly documented.

The Panel's assessment is that the risk of inappropriate location of any onshore shale gas development would be both 'low' and acceptable, provided that a SREBA of terrestrial biodiversity values is undertaken to ensure that the development is excluded from any identified areas of high conservation value.

Analysis

The Panel finds that, without detailed baseline data, it is not possible to understand the key sensitivities in any region proposed for any onshore shale gas industry.

The fact that most surface waters of the NT have been poorly studied highlights the need for detailed surveys before the production phase of a regionally extensive industry, such as onshore shale gas, commences.

Find the Full Report at: <https://frackinginquiry.nt.gov.au/inquiry-reports/final-report>