SUBMISSION TO:
WA SCIENTIFIC INQUIRY INTO HYDRAULIC FRACTURE STIMULATION IN WA 2017

Thank you for the opportunity to make this joint submission on behalf of the Anglican EcoCare and Social Responsibilities Commissions ('the Commissions') of the Anglican Diocese of Perth.

We refer to the Terms of Reference:

> "The scientific inquiry is to undertake an assessment and report on the potential impacts arising from the implementation of hydraulic fracture stimulation (fracking) on the environment of Western Australia, outside of the Perth metropolitan, Peel and South-West region."

1. BACKGROUND

1) This joint submission is made by the Anglican EcoCare (EcoCare) and Social Responsibilities Commissions (SRC).

2) EcoCare initiates and facilities advocacy, education and other activities which seek to care for God's creation and promote sustainability and awareness of environmental issues in the community, worshipping communities, schools and agencies.

3) The SRC, acting on the Christian understanding that all people are made in the image of God, facilitates advocacy, education and other activities which promote and support justice in the community, worshipping communities, schools and agencies.

4) The views expressed in this submission are only the views of EcoCare and the SRC and should not be taken to reflect the views of the Anglican Diocese of Perth.

5) This submission draws from scientific research and the Christian concern for both Creation ('the environment') and the social effects to communities and people stemming from hydraulic fracture stimulation ('fracking').

6) Christianity views the environment and humanity as inviolably linked and interconnected aspects of God's creation. Humanity is not a separate entity acting upon the environment – for good or ill – but is part of the same interwoven reality. What affects the environment affects humanity.

7) Christianity adjures us to love neighbour as self. The Commissions view any social impact of fracking not as an isolated event, but as shared experiences undergone by all people and thus is of pastoral concern to the church.

2. BACKGROUND TO 'FRACKING' IN WA

1) Unconventional gas exploration and/or production is now taking place across Australia.

2) Coal seam gas, shale gas and tight gas differ from conventional gas because they are more difficult to extract and cannot be developed with conventional processes. The gas is the same, the difference is how it is extracted from the ground

3) Different extraction techniques for conventional and unconventional gas extraction are required due to the different geology of the reservoirs from which they are extracted.

4) **Conventional gas** is found in relatively large permeable rock reservoirs. The gas can usually be extracted relatively easily via vertical well and been extracted in Australia by these methods for many decades.

5) **Unconventional natural gas** is found in less permeable deposits or spread more diffusely throughout the rock substrates. This gas is more difficult to extract and therefore requires more specialized (i.e. 'unconventional') extraction techniques and processes. The methods required for the extraction of unconventional gas include ***hydraulic fracturing*** (fracking), horizontal drilling, multiple drilling, and acidation.

6) Unconventional gas production is highly invasive. While conventional gas production generally requires single wells, shale and tight gas fields involve the industrialisation of entire landscapes as hundreds or even thousands of closely spaced gas wells are required to extract commercially viable quantities of gas.

7) Gasfields also require vast networks of access roads, gas pipelines, processing plants, compressor stations, and wastewater holding dams and treatment plants.

8) The possible number of gas wells that may be developed in Western Australia is very large: 41,720 in the Kimberley and 14,000 in the Perth Basin (reference 1.14).

9) As part of this process valuable agricultural and horticultural land is lost. Native forests and wild life are impacted.

(References 1, 2, 3, and 4.)

3. CLIMATE CHANGE

1) Fracking may lead to large fugitive emissions of methane, possibly adding to the effects of climate change (references 7).

2) Methane gas migrating to the surface due to coal seam dewatering and depressurisation for coal seam gas production is a potentially significant source of greenhouse gas (reference 7).

4. WATER

1) Fracking is an extremely water-intensive practice. (reference 4).

2) A single shale gas frack uses 11-34 million litres of water in the fracking fluids.

3) Wells are often fracked on multiple occasions, sometimes up to ten times, multiplying overall water use.

4) Some of this fluid returns to the surface as flowback, but most stays underground and is never recovered - estimates suggest 70% or more remains underground.

5) The wastewater from gas operations including flowback from fracking and 'produced' water that is present in the source rock, is often toxic. This produced water is brought to the surface during gas production. The wastewater may contain heavy metals, salts, radioactive materials and volatile organic compounds (reference 36).

6) According to a European Commission Report (reference 19) there is an overall high risk of ground and surface water contamination resulting from fracking.

7) Other research further suggests possible contamination of ground and surface water (19, 20, 21, 22).

8) Fracturing fluids can move through the environment and come into contact with humans in a number of ways, including surface leaks, spills, releases from holding tanks, poor well construction, leaks and accidents during transportation of fluids, flowback and produced water to and from the well pad, and run-off during blowouts, storms, and flooding events (references 15, 16, 17, 18).

5. AIR QUALITY

1) Up to three times the background levels of methane was found in sample air near fracking sites (reference 2, 24, 25).

2) Air near fracking sites may have been polluted by higher than safe levels of: hydrocarbons (reference 22); benzene, toluene, ethylbenzene, and xylene (reference 23); and formaldehyde, hydrogen sulphide, acrylonitrile, methylene chloride, sulphuric oxide, and volatile organic compounds (VOCs) (reference 23).

6. LIVESTOCK HEALTH RISKS

1) Fracking is detrimental to livestock and domestic animals. Twenty-four case studies have been compiled of apparent harm to animals, mainly resulting from contamination of water wells, springs, ponds or creeks, some due to accidents or negligence, and others a consequence of normal operations. On seven cattle farms studied in the most detail, half the herd, on average, was affected by death or failure to breed (reference 30, 34).

2) A 2012 case study in the USA also found serious evidence of harm to domestic stock from shale gas drilling waste contamination, including cattle deaths, stillbirths and reproductive problems (reference 35).

7. REHABILITATION OF ABANDONED FRACKING SITES

1) It may not be possible to fully restore former fracking sites in sensitive areas following well completion or abandonment, particularly in areas of high agricultural, natural or cultural value (reference 6, 26).

2) In Australia substantial surface footprint of CSG infrastructure represents a serious threat to biodiversity fragmentation through direct clearing of bushland, loss of native vegetation, fragmentation of important remnant vegetation, spread of invasive species and increased fire risk (reference 29).

8. HUMAN HEALTH RISKS

1) The Compendium *of Scientific, Medical, and Media Findings Demonstrating Risks and Harms of Fracking* (Concerned Health Professionals of New York) lists 900 peer reviewed papers detailing potential harm from fracking (reference 9).

2) In Australia, of the 23 identified as commonly used 'fracking' chemicals, only 2 had been assessed for their long-term impacts on the environment and human health by the national regulator, National Industrial Chemicals Notification and Assessment Scheme (NICNAS). Neither of these were assessed for their use in coal seam gas (reference 18). These are clearly inadequate safeguards.

9. ECONOMIC IMPACTS

1) The presence of fracking mines reduces surrounding land values. Some land owners have been refused bank finance due to uncertainty of the asset caused by the presence of wells on the property. (references 37, 28, 39, 40, 41).

2) Rabobank, the world's leading specialist in food and agribusiness banking, stated risks from unconventional gas mining included reductions in farm productivity, efficiency, land values and credit availability. It also indicated that concurrent CSG mining and agricultural activities on agricultural land could result in problem loans or defaults (reference 37).

3) The Commonwealth Bank has stated that coal seam gas wells on land could make the security unacceptable for residential lending purposes (reference s 38).

4) Insurance companies have refused to insure against risks associated with unconventional gas extraction, both in Australia and in the USA. In the USA, homeowners can be confronted with uninsurable property damage for activities that they cannot control (references 39).

5) In the north west of NSW, farmers have been refused insurance cover for risks and contamination associated with unconventional gas extraction (references 40).

6) Meat and Livestock Australia has advised there is a genuine risk that landholders may ultimately be responsible for liabilities arising from unconventional gas activities if they lead to personal injury, property damage, or contamination (reference 41).

10. IMPACTS ON MENTAL HEALTH, PSYCHOSOCIAL WELLBEING AND COMMUNITY COHESION

1) Doctors for the Environment Australia note that 'water and air pollution, water shortages, permanent degradation of productive agricultural land and loss of livelihood and landscape all have mental health consequences for communities living in a gas field (reference 31).

2) The Queensland and NSW experience has shown that when an unconventional gas industry is forced upon communities against their wishes, there is potential for significant conflict and social upheaval and disruption as a result (reference 6).

3) The fracking industry may harm mental health and individual and community wellbeing (reference 9).

4) A 2013 study involving 12 workshops established that CSG operations in south west Queensland placed rural communities 'under sustained stress' (reference 32). Fracking Study participants reported that mining and CSG operations 'significantly impacted or exacerbated issues such as the health, social fabric and economy of the community', and the authors noted that local health services faced 'unsustainable pressure'.

5) A 2014 article in the Medical Journal of Australia noted that 'gas developments can have numerous and considerable social and psychological effects, which may exacerbate more direct health risks' (reference 33).

6) A survey of 378 Australian farmers, predominantly from Queensland and NSW, published in Journal of Environmental Psychology, found that farmers concerned about the impacts of coal seam gas on their health, community and the environment, were more likely to report symptoms of depression and decreased levels of wellbeing (reference 933).

7) As is common in with other mining leases, Land owners have no rights to prevent access by the mining company.

11. MEASURES ALREADY IN PLACE IN AUSTRALIA AND OVERSEAS

1) Other Australian states already limit fracking, as a response to concerns similar to those raised in this submission (references 11, 12, 13).

2) Parts of NSW are protected from unconventional gas development following legislation that prohibits all unconventional gas activities within 2km of residential areas, and the Upper Hunter equine and viticulture critical industry clusters (reference 11, 12, 13).

3) Internationally, jurisdictions with some form of ban or moratorium in place include Scotland, Wales, Germany, Bulgaria, Romania, the Netherlands, Northern Ireland, Wales, the Czech Republic, Luxembourg and France as well as the US States of New York, Maryland, Florida and Vermont and the Canadian Provinces of New Brunswick, Newfoundland, Nova Scotia and Quebec (references 6, 7, 11).

4) Across Australia there have been more than 450 communities who have declared themselves coal or gasfield free (reference 13). In WA, these communities include Brunswick, Stratham, Dandaragan, Greenough, Cervantes, North Boyanup, Moora, The Vines, Forest Grove, Stirling Estate, Quedjinup, Caversham East, Leeman, Greenhead, Exmouth, Irwin, Jurien, Carnamah and Chittering.

5) The Country Women's Association of WA, representing a large sector of the rural community, passed a motion at its 2017 Annual Conference calling for an end to fracking and unconventional gasfields in WA. This follows a similar ban passed by the NSW branch of the CWA earlier in the year. (reference 10)

12. NEGOTIATIONS WITH AUSTRALIAN FIRST NATIONS PEOPLES

1) Reports that Australian First Nations peoples may have been misled as to the potential risks posed by fracking (references 5 and 10).

13. CONCLUSIONS AND RECOMMENDATIONS

1) In this submission the Commissions do not consider they are presenting an expert opinion.

2) The research presented however indicates wide-ranging and sustained concern of the impacts of fracking upon the environment and human society.

3) The level of this concern prompts the Commission to request the Inquiry to carefully consider and respond with compassion to each of the items listed in points 3-12.

4) In particular, if there is no banning of fracking in WA, the Commissions call for the following measures to be implemented:

5) **Responding to Section 8 - Human Health Risks**

   i. The creation of a consultative inquiry to be conducted by the WA Health Department and appropriate other agencies to consider the increased health needs of communities impacted by fracking.

   ii. This inquiry should consult local communities, First Peoples' representatives, local area health services and investigate if the financial costs of increased health needs should, at least in part, be borne by the mining company or companies involved.

   iii. The recommendations of this inquiry be adopted by the WA Government.

6) **Responding to Section 9 – Economic Impacts**

   i. The creation of a consultative inquiry to be conducted by the WA Government Treasury and appropriate other agencies to consider the negative financial impact, both directly and indirectly, borne by communities impacted by fracking.

   ii. This inquiry should consult local communities, First Peoples' representatives, local area councils and community organisations and services and investigate if the financial impact should be ameliorated via compensation borne by the mining company or companies involved.

   iii. The recommendations of this inquiry be adopted by the WA Government.

7) **Responding to Section 10 – Impacts on Mental Health, Psychosocial Wellbeing and Community Cohesion**

   i. The creation of a consultative inquiry to be conducted by the WA Health Department and appropriate other agencies to consider the increased mental health and spiritual needs of communities impacted by fracking.

   ii. This inquiry should consult local communities, local churches, ministers of religion, First Peoples' representatives, local area health services and investigate if the financial costs of increased mental health needs should, at least in part, be borne by the mining company or companies involved.

   iii. This inquiry should also determine the mechanisms whereby legislation or regulation may be enacted which requires companies engaging in fracking within a community to provide funds to employ chaplains to provide for the spiritual and religious needs of the community.

iv. This inquiry should also determine the mechanisms whereby legislation or regulation may be enacted which requires mining company personnel entering free-hold land for fracking purposes to be in possession of a National Police Clearance and where appropriate, Working with Children Check.

v. The recommendations of this inquiry be adopted by the WA Government.

8) **Responding to Section 9 – Negotiations with Australian First Nations Peoples**

i. The creation of consultative inquiry to be conducted by the WA Aboriginal Affairs Coordinating Committee and appropriate other agencies to determine Western Australia First Nations Peoples' views and concerns in relation to fracking, paying particular attention to their understanding of its potential effect on the spiritual dimensions of the land.

ii. The recommendations of this inquiry be adopted by the WA Government.

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