

Friends of the Earth Scotland

Response to the Scottish Government's Strategic Environmental Assessment and partial Business and Regulatory Impact Assessment on the Preferred Policy Position of 'no support' for Unconventional Oil and Gas Extraction

17 December 2018

1. What are your views on the accuracy and scope of the information used to describe the SEA environmental baseline set out in the Environmental Report?

We are broadly content with the accuracy and scope of the information used to describe the SEA environmental baseline.

2. What are your views on the predicted environmental effects as set out in the Environmental Report?

The SEA covers a far broader range of environmental impacts than the original research studies commissioned by the Scottish Government, and its conclusion of potentially significant negative impacts on numerous fronts under a business as usual scenario serves to strengthen the case for the preferred policy position (PPP), and Friends of the Earth Scotland's position that the UOG industry should be banned. We welcome the recognition in the Environmental Report of significant negative impacts in terms of air pollution, water pollution, climate change, biodiversity, public health, and landscape, under a business as usual scenario where UOG development goes ahead.

We note that the Environmental Report is – rightly – cautious about comparisons with the US throughout in determining environmental impacts, due to differing geology and regulatory systems. However, the KPMG scenarios on which the business as usual and pilot project reasonable alternatives are based use production figures from US shales that are not comparable to the Scottish shales targeted by the industry. Professor Roy Thompson of the University of Edinburgh has pointed out that comparing the complex geology of the Midland Valley with more geologically similar shales in the US results in a much less optimistic well output estimate.¹ He further notes that the KPMG scenarios significantly underestimate the number of wells that would be needed to exploit the area, suggesting that in reality many thousands of wells would be required. This analysis challenges the starting assumptions parameters of practically all the environmental impacts identified in the Environmental Report, and points to the prospect of significantly greater negative impacts under a business as usual scenario.

At 6.24 the Environmental Report states that *"typically around 25% of the water injected will return to the surface [as 'flowback water'] over a period of weeks, or potentially a few months."* We would question this figure, noting that a study by Duke University found that volumes of flowback water from shale oil and gas wells in the US between 2005 and 2014 were 84% of the volume used in the hydraulic fracturing process.² Again, while the US experience should be used with caution, the

¹ 'Scotland's geology will not allow for successful fracking, says academic' The Times, 11 February 2017 <http://www.thetimes.co.uk/edition/scotland/scotland-s-geology-will-not-allow-for-successful-fracking-says-academic-55db6tzjm> and <https://www.geos.ed.ac.uk/homes/thompson/Blog/Power.pdf>

² see <https://www.sciencedaily.com/releases/2015/09/150915135827.htm>, Kondask and Vengosh (2015) *Water Footprint of Hydraulic Fracturing* <http://pubs.acs.org/doi/10.1021/acs.estlett.5b00211>

limited UK experience of shale gas fracking demonstrates high volumes of flowback requiring specialist treatment and disposal.³

We also note that in the time since the Environmental Report was prepared the IPCC has published its Special Report on 1.5°C of Global Warming highlighting the need for urgent systemic changes within the next decade to avoid catastrophic impacts of climate change, bringing a new urgency to the need to avoid producing additional greenhouse gas emissions under the reasonable alternatives scenarios.

3. What are your views on the ‘reasonable alternatives’ outlined in the Environmental Report? Please provide any other ‘reasonable alternatives’ which you think should be considered.

As above, we note that there are flaws in the KPMG scenarios upon which the reasonable alternatives are based, which raise questions about the number of wells required in, for example, the business as usual scenario, and therefore the extent and severity of subsequent environmental impacts.

4. What are your views on the findings of the SEA and the proposals for mitigation and monitoring of the environmental effects set out in the Environmental Report?

We are broadly content with the findings of the SEA (subject to the comments above regarding the flaws in the KPMG scenarios), in that they highlight the risks and potential for significant negative environmental impacts under the business as usual and pilot project scenarios, and makes clear that these could be avoided by the preferred policy position of no support for UOG.

- **Induced seismicity**

However we note that the impacts of induced seismic activity is only addressed in terms of felt seismic activity in relation to public health. Research for the Scottish Government by the British Geological Society confirms that hydraulic fracturing operations can cause earthquakes, with the highest magnitude event caused by UOG operations recorded reaching 4.4ML (see comments below about the seismic impacts of re-injection of waste water).⁴ While the report indicated that the risk of ‘felt’ earthquakes was low, even smaller tremors can damage well integrity and thereby increase the risk of pollution. Heavy faulting and historical mine workings in the Central Belt, along with the lack of a comprehensive catalogue or a seismic monitoring network,⁵ and a lack of certainty about industry waste disposal methods, means that a clear picture of the risks of UOG induced seismic activity is still lacking following the Scottish Government’s evidence gathering programme.

The first hydraulic fracturing activities for shale gas in the UK, at Preese Hall, caused two earthquakes measuring 2.3ML and 1.5ML and led to the suspension of Cuadrilla’s operations at that site. A further 48 seismic events were recorded in the area over a two month period following the injections that caused the quakes.⁶ Doubt has been cast over the findings of the DECC commissioned review of the incident that well casing deformity from the quakes had not resulted in

³ The only available real life data from hydraulic fracturing in the UK, at Cuadrilla’s Preese Hall site, demonstrated approximately 70% flowback rates. See Alan Watson rebuttal of evidence 2.6
<http://programmeofficers.co.uk/Cuadrilla/Proofs/NWFOE/FOE2.4.pdf>

⁴ British Geological Survey (2016) *Unconventional Oil and Gas Development: Understanding and Monitoring Induced Seismic Activity*, <http://www.gov.scot/Resource/0050/00509318.pdf>

⁵ British Geological Survey (2016)

⁶ Green, Styles and Baptie, *Preese Hall Shale Gas Fracturing: Review and Recommendations for Induced Seismic Mitigation* (2012) https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/48330/5055-preese-hall-shale-gas-fracturing-review-and-recomm.pdf

loss of integrity of the well: a Greenpeace Energy Desk investigation found that Cuadrilla has had to repeatedly address problems at the well, and independent engineers have indicated that what happened at the site could indeed amount to well failure with the risk of leakage.⁷ Since Cuadrilla started fracking at Preston New Road in October this year, 36 tremors have been recorded, with 4 of these at or over the level at which regulations require fracking to be suspended.⁸

We are broadly content with the proposals for mitigation and monitoring set out in the Environmental Report. However we are concerned that at 6.69 *“Injection of the wastewater into an empty gas field”* is identified as a potential mitigation measure against water contamination from produced and flowback water, with no reference to the risk of induced seismicity as a result. The practice of re-injecting oil and gas industry waste fluids for disposal is understood to be responsible for a substantial increase in seismic activity in some US states: *“almost a millenium’s worth”* of quakes in only 2 years in previously geologically stable Oklahoma has been linked to re-injection of waste fluids from the oil and gas industry,⁹ including a quake of 5.7ML that destroyed 14 homes.¹⁰

- **Post decommissioning monitoring**

We would also emphasise the need for long term monitoring after decommissioning to avoid impacts of leakage. Under the preferred policy position, it is logical that outstanding Planning Appeals PPA-240-2032 and PPA-390-2029 related to coalbed methane development at Letham Moss will be refused. This will require decommissioning and long term monitoring of the 16 wells already drilled in PEDL133. Additionally, decommissioned wells in former PEDL159 at Canonbie will also require long term monitoring.

5. Do you have any views on the proposals contained within the Scottish Government’s preferred policy position statement? There is no need to restate views already expressed in relation to the Talking “Fracking” public consultation as these have been, and will continue to be, taken into account as we move towards finalising the Scottish Government’s policy position.

We support the Scottish Government’s preferred policy position of no support for UOG, and consider that the policy should move forward to finalisation on this basis. We support the proposal to include the PPP in the next iteration of the National Planning Framework, and to discharge recently devolved onshore oil and gas licensing powers in line with this policy; however we urge the Scottish Government to go further and use these new powers to legislate to ban UOG on the basis that the policy approach outlined in the PPP could be overturned by a future Scottish Government without the approval of the Scottish Parliament.

6. What are your views on the opportunities and challenges that each of the 3 options set out in the partial BRIA could have for businesses?

Option 1

- **Certainty for interested parties**

We agree that concluding the decision making process around UOG could provide certainty for interested parties, and note that this is particularly important for those communities living in areas

⁷ <https://unearted.greenpeace.org/2015/06/15/energy-files-cuadrillas-preese-hall-fracking-well-had-to-be-plugged-again-after-more-issues/>

⁸ <https://drillordrop.com/2018/11/29/cuadrillas-partner-reveals-strategies-to-deal-with-fracking-earth-tremors/>

⁹ <http://www.theguardian.com/environment/2016/jan/10/fracking-earthquakes-oklahoma-colorado-gas-companies>

¹⁰ British Geological Survey (2016)

currently under licence (PEDLs 133 and 162), and therefore the threat of UOG development in their area. However limiting the implementation of the preferred policy position to inclusion in the next NPF and discharge of onshore oil and gas licensing powers does not provide certainty for these communities, but risks the issue being reopened under a future administration, and the policy of no support being overturned without the approval of Parliament. In this context we re-iterate our position that the Scottish Government should use newly devolved powers over onshore oil and gas licensing to legislate to ban UOG.

- **Climate change**

Under option 1 benefits the partial BRIA states: *“Current holders of PEDLs in Scotland may consider changing the hydrocarbon resource they wish to target, with the agreement of Scottish Ministers as licensing authority, allowing them to continue to take advantage of their investment to date in the licence.”* We note that this is entirely at odds with the rationale behind the PPP in relation to climate change: *“the development of an onshore unconventional oil and gas industry in Scotland would make achieving our energy and climate change commitments more challenging. Whilst acknowledging the important role of gas in the transition to a low carbon energy future, Scotland is a net exporter of natural gas and the addition of an onshore unconventional oil and gas industry would not promote our ability to meet our greenhouse gas emissions targets or objectives in relation to protecting and enhancing the environment.”* Therefore there should be no option to target different resources or use different techniques to extract oil and gas under these licenses, and the Scottish Government should not offer any additional licenses, in order to deliver on national and international climate change obligations.

- **Decommissioning costs**

The partial BRIA notes the liability for decommissioning and aftercare costs that current licence holders would incur should they wish to surrender licences on the basis of the preferred policy position being adopted as a finalised policy position, and seeks further engagement with licence holders on this matter. We note that finalising and approving the preferred policy position of no support for UOG will logically result in a decision to refuse planning permission to INEOS for the Letham Moss CBM development, currently the subject of Planning Appeals PPA-240-2032 and PPA-390-2029. Such a decision would likely result in a need to decommission existing CBM wells in PEDL133 related to this application, regardless of whether the licence holder wishes to pursue conventional oil and gas alternatives in the licence area or relinquish the licence.

We note the granting of a PEDL licensing does not guarantee the granting of subsequent permissions and licences necessary to developing a UOG site from exploration through to production phases. The PEDL system has been described as ‘highly prospective’ in nature by Lord Justice Holgate;¹¹ the operator takes on a certain degree of financial risk in securing and developing a licence. Therefore, existing licence holders must be expected to bear any costs relating to decommissioning, aftercare and monitoring, where developments are affected by the adoption of the preferred policy position.

Options 2 & 3

- **Impacts on other sectors**

The partial BRIA states that *“a policy of no support for unconventional oil and gas in Scotland may result in an increase in the attractiveness of investment opportunities in Scotland for some sectors,”* however options 2 and 3 do not detail the knock on impact on other sectors of developing the UOG industry. UOG development could have a detrimental impact on local businesses, agriculture and

¹¹ R (Dean) v Secretary of State for Business, Energy and Industrial Strategy [2017] 4 WLR 158

tourism – industries with far greater value to the Scottish economy than the potential value presented by UOG – because of the health and environmental risks it poses as well as its visual impact. These impacts were not assessed in the KPMG study, and are therefore not taken into account in the jobs and GVA figures therein. A business as usual approach could also have a detrimental impact on the renewable energy industry in Scotland, as highlighted by the International Energy Agency and the UK Committee on Climate Change amongst other commentators.¹² We note further that a Defra report and an investigation by journalists at the Ferret news website, have suggested that UOG could have an adverse impact on house prices, estimating house prices may be reduced by up to 10%.¹³

- **Regulatory regime**

It is clear from the vast number of recommendations across the 6 studies commissioned by the Scottish Government that a regulatory system appropriate to the risks and challenges presented by the UOG industry is not in place here in Scotland.¹⁴

The Environmental Report notes at 5.70 that *“technologies for limiting and monitoring fugitive methane emissions [from UOG]..... can be costly, lowering economic profitability. As a result, uptakes of measures for limiting emissions have been relatively low in the US due to the high costs of emission prevention and mitigation.”*

We would therefore highlight the importance of ensuring a robust and mandatory regulatory regime under a business as usual or pilot project, despite the likely impact on economic viability of the industry. However, we note that a review of regulation in the UOG industry finds that *“the evidence base for robust regulation and good industry practice is currently absent. There are multiple serious challenges surrounding location, scale, monitoring and data deficits facing regulators overseeing onshore UGE and fracking in the UK.”*¹⁵

We further note the upfront costs of developing such a regime that would fall on the regulatory authorities, at a time when public bodies are under intense budgetary pressure, and may not subsequently be recouped in the not unlikely event that the industry stalls, and fails to reach profitability.

¹² UK Committee on Climate Change (12 September 2012) *The need for a carbon intensity target in the power sector* <http://www.theccc.org.uk/wp-content/uploads/2013/02/EMR-letter-September-12.pdf>

¹³ Defra (2014) *Draft Shale Gas Rural Economy Impacts paper* https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/440791/draft-shale-gas-rural-economy-impact-report.pdf and ‘Fracking could cut house prices 10%, say experts’,

The Ferret, December 2015 <https://theferret.scot/fracking-property-prices-scotland/>

¹⁴ An *Overview of the Current Regulatory Framework* (2016) is at <http://www.gov.scot/Resource/0050/00509369.pdf> and a *Summary of Observations on Regulation from Independent Research* from the Note of a Workshop on UOG Regulation held in October 2016 at <http://www.gov.scot/Resource/0051/00510364.pdf> includes recommendations from across the 6 studies commissioned by the Scottish Government.

¹⁵ Watterson and Dinan (2016) “A rapid evidence assessment of regulation and regulatory practices involved in fracking and its public health implications” <http://www.regulatingScotland.org/report/frackingandregulation.pdf>