



ReFINE: A case study for geoethics

Rachel Brown (1), Sarah Clancy (1), Richard Davies (1), and Fred Worrall (2)

(1) Newcastle University, Earth, Ocean and Planetary Sciences, United Kingdom (rachel.brown@ncl.ac.uk), (2) Durham University, Earth Sciences, United Kingdom (fred.worrall@durham.ac.uk)

Hydraulic fracturing (fracking) for shale gas is a controversial issue in the United Kingdom (UK). There are many environmental concerns, for example, water contamination, impacts from infrastructure, and induced seismicity, like that experienced at Preese Hall site in 2011 and more recently at the Preston New Road site in 2018. In 2013 ReFINE (Researching Fracking) was set up as an independent and unbiased research consortium to investigate public concerns of the potential environmental and social impacts of fracking with the overarching ambition of using good science to provide information to decision makers, the public and regulators.

First, ReFINE abides by a unique, innovative research mode comprising a collaboration of 7 research institutions, jointly led by Newcastle and Durham Universities; sponsored by a range of funders including regulators and a UK research council. However, most of the funding has come from industry – oil and gas producers who are seeking to make the most financial gain from fracking in this country. Over the last 5 years we have been funded by Chevron, Total, Shell, GDF Suez, Centrica and INEOS. Therefore, paramount to the success of the project was the early development of policies and procedures to ensure that the project delivers research that is impartial and transparent. This included establishing an Independent Science Board to ensure ethical best practice, comprising scientific experts from across Europe and US. When established, the consortium took advice from Durham University's Ethics Advisory Committee and UK Research Integrity Office. Now the project is based between Newcastle University and Durham University, and the project continues to be assessed on an annual basis by Newcastle University Ethics Committee.

We have worked hard over the last 5 years to engage with all interested stakeholders and we have sought support from UK government departments, the Royal Society and Geological Society of London. To date 15 peer-reviewed studies have been published by ReFINE researchers from across the globe with many others currently underway. ReFINE recognises it has a responsibility towards society to research the potential environmental and social impacts of fracking, so a greater understanding of the subject area can be achieved. Thus, if fracking were to go forward within Europe, or specifically the UK, the appropriate mitigation strategies can be put in place.