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13th October 2014

**The Environment Agency
PO Box 4404
Sheffield
S9 9DA**

Dear Sirs

Reference: EPR/NB3595DJ/A001

Ebberston Moor South Well site, Common Lane, Snainton, North Yorkshire YO13 0LW

Hi David

This is a formal objection from Frack Free Ryedale and Frack Free North Yorkshire to the application for an Environmental Agency Permit (EAP) application as outlined above.

Firstly, we would like to say that it has been extremely unhelpful that so little information relating to the technical assessment is in the public domain. Most of the information used to prepare our objection has come from the permit application itself, or from documentation held in the public domain relating to the planning application on the same site. We are disappointed that supporting information, in particular details of the technical analysis, has been withheld.

Not only is Ebberston Moor South located in a National Park and a sensitive environmental setting, but it is also in Zone 2 of a source protection zone, within 250 metres of Zone 1 of the same source protection zone, and on the principal aquifer of the region, known as the Corallian aquifer. All the produced water is highly saline and will have some Non-Organic Radioactive Materials (NORMs) in its composition, along with other chemicals associated with drilling.

All drilling comes with a risk of blow-out, which would be catastrophic in this nationally protected environment. There are also various other low level risks associated with drilling, such as rupture or degradation of drill-casings over time. Were such pollution to occur in this environment, the effects on the aquifers in the region could be very serious, particularly given that the chemistry of the produced water is highly saline and radioactive, with many chemical parameters exceeding drinking water or environmental quality standards by several orders of magnitude.

The reinjection of the produced (waste) water into a different strata (in this case the Sherwood Sandstone Layer) from the gas producing strata (in this case the Kirkham Abbey Formation) is a new method of waste water disposal. As such for onshore development,

there is little data available to judge the effects and risks of such a method. Furthermore, no evidence is presented in the documentation that disposal of radioactive waste water into a different strata to the gas-producing strata has now become BAT or BPEO. This cannot be claimed to be the case when no comparative analysis of other waste water disposal methods has been included to support this assertion.

It is also noted that in most other applications in the locality (of which there have been quite a few), re-injection has never been the chosen method of waste water disposal, except at the well-site at Ebberston A, where permission for waste water re-injection was granted on appeal. All other previous applications have involved pipelining produced waste water for treatment, before then being transferred to a third party processor to ensure the water is treated appropriately and recycled.

We therefore assert that Third Energy's claim that re-injection is BAT/BEOA is driven by financial rather than environmental considerations, and the re-injection option seems to have been chosen on the basis that it maximises profitability for the company, not because it provides the most effective environmental protection for the nearby aquifers and the sensitive environment in general.

We therefore consider it to be unproven by the applicant that this method is now regarded as BAT/BPEO, particularly from an environmental point of view, and we would therefore request that you reject this assertion of BAT/BPEO that underpins this application.

Based on the documentation relating to the planning application, it is clear that the detailed geological appraisal has been based purely on a desk-top study. Furthermore, there is no evidence of it having been peer-reviewed. It is difficult to understand why there is no well-specific data as this site, which has been an exploratory site for some time now, included within the application.

Furthermore, the company's argument that 'the natural geology controls risk' is unproven. The area is known to be extremely difficult to drill in, and there is extensive faulting and broken rock in the strata to be used for the reinjection. Major faults mapped by the British Geological Survey show a large number of east-west trending faults in the Vale of Pickering Fault Zone, the nearest being 3.6 km to the south. It is known that problems were encountered on drilling at the 'Ebberston B' wellsite which lies roughly 2.8 miles to the north-east of this site.

In fact, even Third Energy's consultants, Barton Willimore, state that 'drilling in the Ebberston area is more difficult than in many other areas due to faulting and associated extensively fractured rocks'. However, despite their own consultant's assessment of the geology, the applicant argues that the re-injected waste water can't migrate laterally due to 'significant geological faulting', while at the same time claiming that re-injected waste water cannot migrate upwards due to an unbroken layer of impermeable rock. These two positions are clearly contradictory and appear to ignore the varied and extensive faulting that lies underground.

Given this challenging underground terrain, we do not concur with the view that the company can say with any degree of certainty that 'natural geology controls risk'. On the contrary, the natural geology shows clearly that there would be considerable risk of migration of waste water, given the extensive faulting present.

We also note that The Environment Agency have failed to conduct any independent survey or analysis of the geology or water composition in the area, and are simply relying on data that is presented to them by the applicant. We would strongly urge the EA to undertake such analysis, particularly as the re-injection well would be in a National Park, and feel such independent analysis should be a prerequisite for such an important application.

As this is an application for a re-injection well in a protected area where the geological and hydrological considerations are so complex, Frack Free Ryedale and Frack Free North Yorkshire have commissioned an independent report from a hydro-geologist with seventeen years' experience in the field. Please find her report attached/enclosed.

The report concludes that the supporting information supplied with the permit application and planning application is either silent or contradictory in several important aspects that have a direct bearing in environmental protection, and raises important questions pertaining to the conclusions drawn by the applicant.

We would in particular like to draw your attention to the bullet points at the end of the report, which list the conditions that the independent expert considers necessary to be sought or implemented prior to any application decision being made. We have copied them below for reference:

1. Baseline groundwater quality data should be provided in order for environmental performance to be monitored in the future.
2. The role of faults in migration of pollution should be assessed.
3. Piezometric elevations of the relevant aquifer units should be provided and implications for long term aquifer management assessed.
4. Full details of borehole design construction operation decommissioning and restoration should be provided.
5. Disclosure of events surrounding abandonment of drilling at the Ebberston B site should be made.
6. A quantified site water management plan detailing the arrangements for management of rainwater, run-off, and produced water, including any treatment and storage systems should be provided.
7. An environmental monitoring plan to include monitoring of groundwater quality at the site, at local groundwater abstractions, and of any site discharges should be provided.
8. Site-specific environmental management and pollution response procedures should be provided.
9. Further details of plans to maintain the integrity of the bentonite mat during construction should be provided.

10. The permit application and planning application should be consistent with regard to injection volumes, and the Ebberston A permit rescinded or transferred appropriately.
11. A technical assessment of the appropriate injection pressures should be provided.
12. An assessment of potential hydroseismicity under low and planned injection pressures should be made.
13. Independent monitoring of seismicity should be undertaken throughout the operation.
14. A BAT assessment should be undertaken to include pre-treatment of produced water.

In conclusion, we feel that The North York Moors National Park should not be used as a testing ground for potentially dangerous new procedures, particularly in such an environmentally sensitive and heavily faulted area.

The applicant cannot be in any way certain that waste water won't travel into nearby aquifers over time, particularly after such a large amount of water has been injected into the Sherwood Sandstone layer under pressure and given the 'extensive faulting' identified by their consultants, Barton Willimore.

We therefore request that you reject this application and request that the conditions set out in points 1-14 above are addressed by the applicant.

We would be grateful if you could acknowledge receipt of our objection and will keep us informed as to the outcome of the Environmental Permit Application.

Yours faithfully

Chris Redston and David Davis

On behalf of Frack Free Ryedale and Frack Free North Yorkshire

Att – Ebberston Moor South wellsite – Hydrogeological review by H Fraser Consulting Ltd