

Policy briefing - A seismic shift for a Frack Free UK



Figure 1 Fracking Site, Kirby Misperton, (Photo by Eddie Thornton)

Abstract

The UK's energy minister stated in parliament, "*the evidence base is not there at the moment, to suggest that low volume hydraulic fracturing activities have the same associated risks as fracking for shale gas.*" This assertion hinges on the current legislative definition of *fracking* (Hansard, 2025).

This briefing challenges that assertion, presenting evidence that *low volume hydraulic fracturing* can induce the seismicity that led to the 2019 fracking moratorium, and exposing the conflicts and tensions created by the UK's narrow, volume-based definition.

It argues that legislation should be updated so empirical evidence on induced seismicity and other impacts can be considered in decision-making, thus protecting communities and the environment while supporting the UK's Net Zero mission.

It recommends that government:

- Redefine *fracking* by purpose, function and intent
- Prohibit *fracking* for hydrocarbons
- Align legislation with *climate change* commitments
- Regulate *non-hydrocarbon* subsurface stimulation separately and transparently

Historical Context and tensions in policy

Hydraulic fracturing, or *fracking*, has been under intense scrutiny in the UK due to environmental, economic, health and political factors and faces significant public opposition (YouGov, 2025).

Fracking is described as “Hydraulic fracturing (known as *fracking*) is a technique used to extract gas or oil from subterranean rock. The process involves injecting a mixture of water, sand and chemicals (known as ‘fracturing fluid’) at high pressure into horizontally drilled boreholes to fracture the rock and release gas or oil.”

(Priestley, 2020, p.3).

In 2019, the UK Government imposed a moratorium on *fracking* after seismic events at Preston New Road (PNR) in Lancashire, acknowledging it “*is not currently possible to accurately predict the probability or magnitude of earthquakes*” (Priestley, 2020, p.6).

Despite this acknowledgement, campaigners, media and legal experts draw attention to a loophole that allows the fracturing of rocks using lower fluid volumes (Haszeldine, 2026; Friends of the Earth, 2025; Friends of the Earth, 2026; Frack Free United, 2019; Lock, 2019).

While the government has announced no new onshore licences will be issued, sixty-six Petroleum Exploration and Development Licences (*PEDLs*) remain in England. A *PEDL* grants licensees exclusive rights to explore and extract hydrocarbons within a specific area but does not permit extraction operations (Drill or Drop, 2025; NSTA, 2025).

These tensions ultimately stem from how *fracking* is defined in law and guidance, and what that definition excludes.

The flawed policy framework

The policy framework supporting the existing moratorium on *fracking* is based on the Infrastructure Act 2015 (IA2015), amending the Petroleum Act 1998 (PA1998), both of which use a *volume of fluid*-led definition (Infrastructure Act, 2015; Priestley, 2020, p.25). (Fig 2)

Section 4A: supplementary provision	
(1)	“Associated hydraulic fracturing” means hydraulic fracturing of shale or strata encased in shale which—
(a)	is carried out in connection with the use of the relevant well to search or bore for or get petroleum, and
(b)	involves, or is expected to involve, the injection of—
(i)	more than 1,000 cubic metres of fluid at each stage, or expected stage, of the hydraulic fracturing, or
(ii)	more than 10,000 cubic metres of fluid in total.

Figure 2 Extract from Section 4 of the Petroleum Act 1998

This narrow definition consequently allows for fluid volumes below this threshold and/or the targeting of different geologies to be proposed for fracturing in PEDLs across England (EDM 1506, 2025; Zalucka et al., 2021).

Ambiguity in language

The 2019 moratorium on *fracking* was triggered by seismic events at PNR, following a series of seven lower volume frack stages that were all below the thresholds set out in the current definition framework (Drill or Drop, 2019; Haszeldine, 2026).

This matters for policy because these sub-threshold stages demonstrate how lower-volume operations can still intentionally fracture rock at high pressure and produce the impacts that triggered the moratorium (Drill or Drop, 2019; Priestley, 2020).

Data from PNR-2 shows that when these lower volumes of fluid were deployed across individual stages of the treatment, the operation induced notable and regular seismicity, including a 2.9 Magnitude Local (ML) tremor approximately 62-72 hours after the seventh and final stage which used only 142 m³ volume of fluid and 3.7 tonnes of *proppant*. The largest individual frack stage recorded was 432 m³ of fluid and fifty-five tonnes of *proppant* on 21 August 2019 (Drill or Drop, 2019). (Fig 3)

Date	Type	Stage	Fluid volume (M3)	Proppant (Tonne)	Additives %	Max rate (l/s)	Flowback (m3)
13-Aug	Minifrac		2.5	0	0		
15-Aug	Frac	1	303.4	30.4	0.02%	78	8.5
16-Aug	Frac	2	411	52.5	0.02%	80	3.9
17-Aug	Frac	3	422.8	55	0.02%	78	2.2
19-Aug	Frac	4	370.2	55	0.02%	78	1.0
20-Aug	Frac	5	401.3	55	0.02%	78	1.1
21-Aug	Frac	6	432	37.5	0.05%	78	7.5
23-Aug	Frac	7	142	3.7	0.06%	53	6.8
Totals			2,485.2	289.1			31

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Figure 3 2019 fluid data at PNR-2 fracking logs leading to seismicity (Drill or Drop)

An official analysis by the then Oil & Gas Authority (OGA) subsequently concluded that it was not possible to rule out larger earthquakes in future operations and that

forecasting the timing or magnitude of such events with precision was impossible (UK Government, 2019; Priestley, 2020, p.6).

Europa Oil and Gas Ltd has stated it will inject fluid into the Cloughton formation at Burniston in North Yorkshire at pressures sufficient to fracture rock in what it defines as a *proppant squeeze*, insisting that it is not *fracking* (Drill or Drop, 2025).

Although presented as distinct from *fracking*, a *proppant squeeze* is typically described as part of the wider stimulation process after the geology has been fractured. *Proppants*, small ceramic beads or sand, are carried in fluid and injected at pressure into the geology to keep the fractures open, allowing hydrocarbons to escape (Europa Oil & Gas, 2024).

However, in an email obtained by a Freedom of Information request to the North Sea Transition Authority (NSTA), the company referred to this *proppant squeeze* as *fracking*, illustrating the ambiguity and scope for “gaming” created by the volume-based definition (Drill or Drop, 2025) (*Fig 4*).

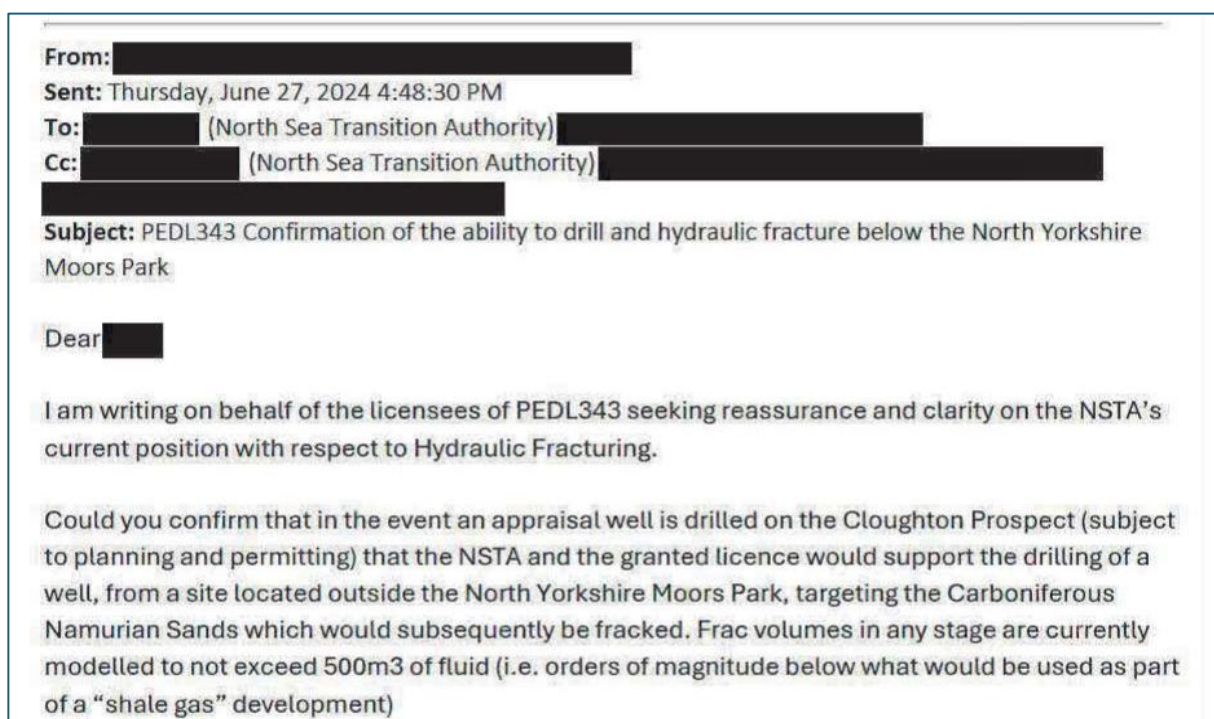


Figure 4 Extract of an email obtained by Fol to the NSTA

The environmental permit application for the Burniston site states that the *proppant squeeze* will be carried out as a “*multi-stage treatment*,” with up to four treatments consisting of fluid volumes for a single stage up to 500m³, higher than the volumes that caused earthquakes at PNR (Europa Oil and Gas Limited, 2025, p. 36).

National vs local policy tensions

The application will be decided by North Yorkshire Council, guided by the York and North Yorks Minerals and Waste Joint Plan, but the National Planning Policy Guidance definition adopted within the plan conflicts with the IA2015 framework definition (York and North Yorkshire Council, 2022) (Fig 5).

PPG Planning for Hydrocarbon Extraction Annex A para 129):


Hydraulic fracturing is the process of opening and/or extending existing narrow fractures or creating new ones (fractures are typically hairline in width) in gas or oil-bearing rock, which allows gas or oil to flow into wellbores to be captured.

Figure 5 National Planning Policy Guidance: Annex A para 129.

Using the IA2015 thresholds prompted feedback, including, “(it) would narrow it down so much... applications that just miss that threshold would [still] require all of the same level of consideration... We also believe it is necessary to have something clear to the public in terms of what is understood by ‘hydraulic fracturing’” (House of Commons, 2019, p.8).

The House of Commons Housing, Communities & Local Government Committee concluded that the definition used in IA2015 was “*unsuitable*” for planning purposes and ‘*should not be used*’ in its current liquid volume-based form (House of Commons, 2019).

The minerals plan came into force in 2022, but not before significant concessions from the government that the requirement to “*recognise*” the IA2015 definition of



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‘The definition of hydraulic fracturing used in the Plan is related to the PPG definition in that it does not rely on a minimum volumetric threshold. Similarly, it is considered that where hydraulic fracturing is proposed for the purposes of supporting the production of conventional gas resources, there is potential for this to give rise to a generally similar range of issues and potential impacts, although it is acknowledged that fracturing for stimulation of conventional gas production would be likely to involve generally lower volumes and/or pressures. In these circumstances whilst it is appropriate that such development is subject to the same policy approach:

It is not the intention of the Mineral Planning Authorities to unreasonably restrict activity typically associated with production of conventional resources, which is a well-established industry in the Plan area. Where hydraulic fracturing is proposed in association with development of conventional hydrocarbons, the authorities will consider exceptions to the more restrictive approach set out in Policy M16 part b) where it is satisfied that, based on the circumstances of the specific proposal, it would not result in unacceptable impact on the protected area and full compliance with other relevant elements of the Plan can be demonstrated.’

Figure 6 Extract from the NYCC council meeting 15th February 2022 *fracking* did not require planning authorities to “*apply*” it, thus creating the tension between local and national policy (Crowd Justice, 2018) (Fig 6).

Environmental, Social and Economic impacts

Beyond the specific policy tensions, evidence of *fracking*'s impacts remains relevant in this debate. The immediate concern has been induced seismicity yet other proven environmental concerns remain, including potential groundwater contamination from either methane migration or the chemicals in *fracking* fluid (EDM 1303, 2018).

Studies have concluded there is risk in complex drilling and extraction scenarios or undetected faults providing pollution pathways, methane leaks, flaring and air pollution alongside social concerns in communities hosting developments (Wilde, Shona E, 2023; Environment Agency, 2022; Howarth, 2019; Mikulka, 2019).

The National Audit Office also noted a lack of accountability for onshore well decommissioning and emissions, raising concern that expanding onshore drilling could leave long-term liabilities for the taxpayer (National Audit Office, 2019)

Globally, *climate change* is a globally significant threat to society, with fossil fuels as the dominant factor in greenhouse gas emissions, primarily from fugitive methane during production and distribution and carbon emissions from use, with the proliferation of *fracking* being “*responsible for Carbon Bombs*” across the world (Client Earth, 2025; The Guardian, 2022; Beament, 2021; Howarth, 2015).

The IPCC warns that fossil fuel emissions must be reduced considerably if global warming is to be limited to 1.5°C, yet recent reports from the UN show that globally “*governments still plan to produce more than double the amount of fossil fuels in 2030 than would be consistent with limiting warming to 1.5°C,*” putting a well-managed and equitable transition at risk (SEI et al., 2025, p.2; IPCC, 2019).

Taken together, these impacts strengthen the case that policy should regulate the activity by what it *does* and what it is *for*, not by a volume threshold that can exclude relevant evidence and undermine public confidence.

Conclusion and Recommendations

Evidence from the UK shows induced seismicity remains a material risk from hydraulic fracturing for hydrocarbons, and that earthquake size and timing can be unpredictable, including from lower-volume treatments (Haszeldine, 2026; Priestley, 2020; UK Government, 2019; Drill or Drop, 2019).

Experts, NGOs and Minerals Planning Authorities describe the volume-based definition as “*very strange*” and “*open to abuse*”, noting it “*does not reflect the technologies on the ground*” (House of Commons, 2019; Zalucka et al., 2021).

Defining *fracking* primarily by injected fluid volume creates a policy mirage: applicants can argue that permeability-enhancing stimulation is “not fracking” by staying below thresholds, even where the underlying technique and risks are similar, creating scope to game planning and regulatory processes (Haszeldine, 2026; The Independent, 2025; Friends of the Earth, 2017).

As Professor Stuart Haszeldine warns, ‘*Regulatory permission for low volume fracking does not remove the risk of unpredictable earthquakes*’

This narrowing of what “counts” as *fracking*, as reinforced by the minister’s assertion, can produce *epistemic injustice* where relevant scientific and community evidence is excluded or devalued in decision-making because it falls outside the technical, specific volume-based definition. (Byskov, 2021).

The new expert statement from Professor Stuart Haszeldine addresses this by updating and clarifying the available UK evidence that low-volume stages can still induce seismicity and demonstrate how current proposals can be re-labelled to avoid the “fracking” category. This establishes all evidence into a legible and current account for policymakers, thus strengthening the case for redefining and regulating stimulation by *purpose* and/or *effect* (Haszeldine, 2026; Drill or Drop, 2019; UK Government, 2019).

The definition in the policy framework is narrow and specific and also omits any reference to alternative geologies in which the technique is used, as in other countries (Liu et al., 2022).

Therefore government should:

- **Redefine fracking by purpose, function and intent**

Amend the definition in the PA1998 and IA2015, so that onshore operations that intentionally fracture rock for hydrocarbons is classified as hydraulic fracturing, regardless of the fluid volume or geology. *Suggestion: Hydraulic fracturing (fracking)*

means any operation that intentionally stimulates any subsurface rock for the purpose of exploring for or recovering hydrocarbons.

- **Prohibit *fracking* for hydrocarbons**

Under the new definition, impose a clear prohibition on *fracking* for the purpose of producing hydrocarbons onshore. *Suggestion: No person shall carry out, or cause to be carried out, any hydraulic fracturing (fracking) in connection with onshore exploration, appraisal, or production of hydrocarbons.*

- **Align legislation with *climate change* commitments**

Update policy to include the ban as a contributing factor to reduce and prevent damaging greenhouse gas emissions, making it clear that no hydrocarbon development requiring *fracking* will take place. This will align policy with strategies to meet carbon budgets (UK Government, 2025).

- **Regulate *non-hydrocarbon* subsurface stimulation separately and transparently**

Non-hydrocarbon subsurface stimulation, such as some geothermal projects, can involve rock stimulation and should not be inadvertently captured by a hydrocarbon focused prohibition. This is why a separate, transparent regulatory regime for non-hydrocarbon stimulation is also recommended.

The existing flawed policy framework gives power for companies over communities, who are forced to organise and use considerable *human capital* to respond to the well-resourced, complicated planning applications.

Evidence from across the world shows the impact of fossil fuels emissions threatens to overwhelm multiple global systems. The UK's Net Zero commitment to reduce these emissions is in direct conflict with any legislation that allows *fracking* in the UK, with the definition of *fracking*, acting as the brake for change.

The 2019 moratorium forced a rethink of UK energy policy, and a similar feedback loop can be regenerated, reinforcing public trust in the government's Net Zero mission (*Fig 7*).

As society moves into the mid-21st century, better, more sustainable policies are needed to prevent climate change from further eroding the biosphere’s ability to support humanity for a just and sustainable future.

Furthermore, such a precautionary principle will protect human rights and communities from new fossil fuel infrastructure as part of a *just transition* to clean energy (UN Development Program, 2022; Herrera, 2019). The recommendations close the loophole, supporting a transformative system shift in energy policy, restore public trust, protect the environment and confirm political resolve (Sky News, 2025).

Ban Fracking - Sustainability in practice and policy	
Economy	<ul style="list-style-type: none"> Net Zero alignment Shift more focus onto renewables, Energy supply transition, Stimulate new industries such as geothermal for heat and power. Green investment Green jobs Support and protecting existing rural economic drivers, such as tourism and farming.
Environment	<ul style="list-style-type: none"> Less seismic risk No GHG emissions from new fossil fuels development Cleaner environment Prevent air pollution in rural settings.
Society	<ul style="list-style-type: none"> Improved wellbeing More public trust by redefining the power from fossil fuel company to communities Protect communities from new fossil fuels developments, as part of a ‘Just Transition’ Communicate climate change the need to shift focus. Policy clarity Credibility and leadership Communicate and redefine the political ecology around fossil fuels.

Figure 7 Ban fracking: Sustainability in practice and policy.

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