

Regulatory Triage Assessment

Title of regulatory proposal	Surface Development Restrictions for Hydraulic Fracturing
Lead Department/Agency	Department of Energy and Climate Change (DECC)
Expected date of implementation	Spring 2016
Origin	Domestic
Date	04/03/16
Lead Departmental Contact	ougo.correspondence@decc.gsi.gov.uk
RTA Rationale	Low-cost regulation (fast track)

Rationale for intervention and intended effects

Protected areas in which hydraulic fracturing will be prohibited have been set out through the draft Onshore Hydraulic Fracturing (Protected Areas) Regulations 2015, which were formally approved by both Houses of Parliament in December 2015. These will ensure that the process of hydraulic fracturing cannot take place above 1,200 metres in National Parks, Areas of Outstanding Natural Beauty, the Broads, World Heritage Sites and Source Protection Zone 1. Alongside laying the regulations in draft in July 2015, the Government restated its commitment to ensure that hydraulic fracturing cannot be conducted from wells that are drilled from the surface in specified protected areas (in such a way as to not impact on conventional drilling operations).

This measure will therefore address the potential adverse impacts (i.e. environmental or social externalities) that could arise from surface operations involving high-volume hydraulic fracturing in sensitive areas with special protection status.

In order to put this commitment into effect, the Government intends to include a licence condition in all new Petroleum, Exploration and Development Licences (PEDLs) to be awarded from the 14th Onshore Licensing Round onwards that will prevent hydraulic fracturing operations from taking place from wells that have been drilled from the surface in specified protected areas.

For existing PEDLs, the Government intends to set out in policy guidance an indication that the Secretary of State is not minded to approve any “development and production programme” where the proposed programme of works includes surface drilling from which to carry out hydraulic fracturing in specified protected areas.

In developing the policy the Government undertook a targeted consultation with existing licence holders, applicants under the 14th round and representative bodies with a particular interest in this matter and the management of the specified protected areas between 4 November and 16 December 2015.

Viable policy options (including alternatives to regulation)

There is a balance to be struck between the economic benefits from allowing hydraulic fracturing everywhere and excluding access to the hydrocarbons in some areas that are deemed to merit special protection. The proposed measure affords additional protections for National Parks, the Broads, Areas of Outstanding Natural Beauty, World Heritage Sites, Sites of Special Scientific Interest (SSSIs), Natura 2000 and Ramsar sites.

Given the industry is at an early stage of development, the introduction of tighter controls specifically for shale developments in specified protected areas is intended to assure the public that the shale industry is being taken forward in a measured and reasonable manner.

The surface restrictions will further strengthen the Protected Areas Regulations and are designed to ensure that, through the PEDL licensing regime, “associated hydraulic fracturing” (the definition of which is set out in section 4B(1) of the

Petroleum Act 1998) cannot be carried out from new or existing wells that have been drilled at the surface in specified protected areas.

Initial assessment of business impact

The policy would prohibit hydraulic fracturing from wells that are drilled from the surface of National Parks, the Broads and Areas of Outstanding Natural Beauty (AONBs), World Heritage Sites and Source Protection Zones (SPZ) 1, Sites of Special Scientific Interest (SSSIs), Natura and Ramsar sites.

Description and scale of key monetised costs by 'main affected groups'

There are no monetised costs associated from the introduction of surface restrictions on shale developments in specified protected areas. A previous IA explicitly assumed that restrictions to hydraulic fracturing in the sub-surface in "protected groundwater source areas" and "other protected areas" would also apply at the surface and provided illustrative estimates of the overall impacts. The inclusion of SSSIs, Natura 2000 and Ramsar sites is expected to have a negligible impact on available resources as the existing regulatory and planning systems already provide strong protections. In addition, although these areas are numerous they are small in size and it is therefore considered likely that the relevant surface activity could be moved to an adjacent non-protected area.

Other key non-monetised benefits by 'main affected groups'

With regards to National Parks, the Broads and AONBs, these are already afforded a high level of protection under the existing regulatory regime. Applications are required to demonstrate exceptional circumstances to justify approval. Similarly, SSSIs (and particularly Natura 2000 sites) are already protected through the planning system. The National Planning Policy Framework makes clear that development should not normally be permitted if, either individually or in combination with other developments, it is likely to have an adverse effect on a Site of Special Scientific Interest. That applies even if the development itself is outside the Site of Special Scientific Interest boundary. The net gain in landscape protection from the additional surface ban would be to restrict even those projects that had these exceptional circumstances or were in a position to demonstrate its limited impact.

One-in, Three-out status

The One-in, Three-out (OI3O) rule ensures that any new regulatory measure that is expected to result in a direct net cost to business and civil society organisations must be offset by compensatory deregulatory measures providing savings to business of at least triple that amount. All direct impacts on businesses have already been accounted for in an earlier IA which considered sub-surface restrictions within protected areas.

There are several reasons as to why there are no additional impacts of this policy. Firstly, the additional areas excluded are marginal in terms of size and therefore would be unlikely to have any additional impact. Second, the prior assessment explicitly assumed that surface activities in the same areas were excluded. Finally, under existing planning and environmental protections, the activities would likely be prohibited anyway. This extra protection is intended to provide public reassurance that detrimental impacts in these areas will not occur.

Therefore there are no additional direct impacts of this policy and so whilst it is in scope of OI3O, the EANCB is scored as zero to avoid double counting.

Rationale for Triage rating

This policy qualifies for the Fast Track due to the impacts on business being less than £1 million. As discussed a previous IA explicitly assumed that restrictions to hydraulic fracturing in the sub-surface in “protected groundwater source areas” and “other protected areas” would also apply at the surface and provided illustrative estimates of the overall impacts.

Since the costs on business are therefore £0 this policy is suited for the Fast Track scheme.

Evidence Base

Problem under consideration

1. The shale industry in the UK is still at a very early stage of development. The Government supports the development of domestic energy sources in a safe and sustainable manner. Through the Infrastructure Act 2015, we have been putting in place a range of measures to provide the public with confidence that the industry is being taken forward in a balanced way. This includes a ban of hydraulic fracturing in all land above a depth of 1,000 metres, and additional restrictions on hydraulic fracturing in groundwater protection zones and other protected areas, terms which have been defined by the draft Onshore Hydraulic Fracturing (Protected Areas) Regulations 2015 (“the Regulations”),¹ which were formally approved by both Houses of Parliament in December 2015.
2. While the Infrastructure Act 2015 and the Regulations address hydraulic fracturing which occurs underground, the Government has been clear that similar safeguards should also be applied to associated surface activities in specified protected areas. Alongside the Regulations, the Government therefore also set out its commitment to ensuring that hydraulic fracturing cannot be conducted from wells that are drilled at the surface in specified protected areas. This is not intended to impact on conventional drilling operations. The measure will therefore address the potential adverse impacts (i.e. environmental or social externalities) that could arise from surface operations involving high-volume hydraulic fracturing in sensitive areas with special protection status.

Rationale for intervention

3. The UK has a strong regulatory system which provides a comprehensive regime for petroleum exploratory activities. Reviews of the existing evidence and UK regulatory system, such as reports by the Royal Society and Royal Academy of Engineering,² and Public Health England,³ have concluded that shale can be developed while protecting the environment, provided that operational best practices are implemented and enforced through regulation. The UK has been successfully regulating gas and oil drilling for over 50 years and has tough regulations in place enforced by dedicated and independent environmental regulators to ensure on-site safety, prevent water contamination, and mitigate seismic activity and air pollution. The measures will address the potential externalities, whereby the wider costs of production within restricted areas would fall upon society rather than the shale industry. This could include impacts on environmental, landscape or heritage characteristics within restricted areas.
4. The shale industry is still in an early stage of development and the Government recognises that there is a high level of public concern around hydraulic fracturing, in particular in protected areas of significance due to their environmental, landscape or heritage characteristics.

¹ See http://www.legislation.gov.uk/ukdsi/2015/9780111137932/pdfs/ukdsi_9780111137932_en.pdf.

² Shale gas extraction in the UK: a review of hydraulic fracturing, see <https://royalsociety.org/~media/policy/projects/shale-gas-extraction/2012-06-28-shale-gas.pdf>.

³ Review of the potential public health impacts of exposures to chemical and radioactive pollutants, see https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/332837/PHE-CRCE-009_3-7-14.pdf.

5. Accordingly, and in order to assure the public that the shale industry is being taken forward in a measured and reasonable manner, the Government believes that it is right to proceed with some caution and to introduce tighter controls specifically for shale development in specified protected areas. The Government's view is that the most suitable way to do so is through the petroleum licensing process.

Policy Objective

6. The policy objective is to ensure that hydraulic fracturing cannot be conducted from new or existing wells that have been drilled at the surface in specified protected areas. This is not intended to impact on conventional drilling operations. The measures will further strengthen the safeguards set out in the Petroleum Act 1998 and the Regulations and would be designed to ensure that, through the PEDL licensing regime, "associated hydraulic fracturing" (the definition of which is set out in section 4B (1) of the Petroleum Act 1998) cannot be carried out from new or existing wells that have been drilled at the surface in specified protected areas.

Options Considered

Option 1 - Prohibit hydraulic fracturing from wells that are drilled from the surface in specified protected areas.

7. The Government will apply the surface restriction to the "protected groundwater source areas" (Source Protection Zones 1) and "other protected areas" (National Parks, the Broads, Areas of Outstanding Natural Beauty, and World Heritage sites) as defined in the Regulations
8. In addition, recognising that surface activities are of greatest public concern, the Government will apply the restrictions to additional sensitive areas (Sites of Special Scientific Interest (SSSIs), Natura 2000, and Ramsar sites). This will mean that the restrictions will apply and prohibit hydraulic fracturing from wells that are drilled from the surface in the following areas:
- **National Parks, the Broads and Areas of Outstanding Natural Beauty (AONBs)** – representing landscapes with the highest level of protection from damaging development within the planning system.
 - **World Heritage sites** - the highest international heritage designation.
 - **Source Protection Zones (SPZ) 1** - the areas close to a drinking water source where the risk associated with groundwater contamination is at its greatest.
 - **Sites of Special Scientific Interest (SSSIs)** - areas designated by the statutory nature conservation agencies in accordance with the Wildlife and Countryside Act 1981 in order to provide protection for specific flora, fauna, or geological or physiographical features. Around 70% of Sites of Special Scientific Interest carry a European designation which means that the protections in the Conservation of Habitats and Species Regulations 2010 must be observed (see below).

- **Natura 2000** - an EU-wide network of nature protection areas established under the 1992 Habitats Directive⁴ in order to protect biodiversity. Natura 2000 sites are comprised of Special Areas of Conservation (SAC) and Special Protection Areas (SPAs) designated by Member States under the Habitats Directive and the 1979 Birds Directive respectively.

Under the UK Regulations⁵ which implement the Habitats Directive, special consideration must be given to any proposed plan or project that is likely to have a significant effect on a European site. Before permitting such plans or projects the decision maker must carry out a Habitats Regulations Assessment (HRA) in order to analyse the possible impacts on the site in view of the site's conservation objectives.

- **Ramsar sites** - areas designated as Wetlands of International Importance in accordance with the Ramsar Convention. They are afforded the same protection as Natura 2000 sites under current Government policy (see above).

All terrestrial Natura 2000 and Ramsar sites in England and Wales are also designated as SSSIs. The current Habitats Regulations Assessment consultation for the 14th Licensing Round⁶ proposed that conditions be attached to some licences following the outcome of an ecological assessment of each block for which a licence application has been taken forward. The conditions will prohibit certain activities at or near the surface within the areas of the block that are European site(s)⁷, in order to prohibit activities that would cause an Adverse Effect on Integrity (AEOI) from taking place in the licensed area to ensure that there will be no AEOI on European sites.

9. The measures cover both new and existing onshore Petroleum, Exploration and Development Licences in England and Wales. As the licensing of onshore oil and gas extraction underlying Scotland and Wales will be devolved to the Scottish Parliament and Welsh Assembly respectively, the Government originally proposed to implement the changes in England only. However, in their response to the consultation, the Welsh Government noted that as the surface restrictions are intended to complement sections 4A and 4B of the Petroleum Act 1998 and the Protected Areas Regulations, both of which apply to England and Wales, they should be applied consistently. The Government considered this a reasonable argument and will therefore extend the scope of the surface restrictions to include Wales.
10. The measures will apply only to the activity of "associated hydraulic fracturing", the definition of which is contained in section 4B(1) of the Petroleum Act 1998 (as inserted by section 50 of the Infrastructure Act 2015)⁸. These will not apply to drilling for conventional hydrocarbon resources, which has been conducted safely for decades, including, for example, in National Parks and AONBs. This is a well-established industry and existing evidence shows that it can comply with the strict requirements that are already in place for protected areas. These will also not apply to the production of other unconventional

⁴ Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora.

⁵ Conservation of Habitats and Species Regulations 2010 (SI 2010/490)

⁶ See <https://www.gov.uk/government/consultations/habitats-regulations-assessments-of-14th-onshore-oil-and-gas-licensing-round>. The consultation closes on 29 September 2015.

⁷ For the purpose of the Habitats Regulations Assessment consultation for the 14th Licensing Round, the term "European site" also includes sites listed or proposed under The Convention on Wetlands of International Importance, called the Ramsar Convention, and possible/proposed SPAs and candidate SACs as UK planning policy accords the same level of protection to these sites.

⁸ See <http://www.legislation.gov.uk/ukpga/2015/7/section/50/enacted>.

resources, such as coal bed methane, which do not use high-volume hydraulic fracturing.

Impact of Policy Options

Summary of the estimated impacts from sub-surface restrictions

11. The Impact Assessment⁹ (IA) that accompanied the Regulations estimated the direct net costs to business from the designation of subsurface protected areas and also from the conditions imposed by section 4A of the Petroleum Act. As summarised in Table 1 below, the analysis on the preferred option explicitly assumed that the restrictions to hydraulic fracturing would apply to both the spatial extent (i.e. surface) and vertical limit (i.e. depth) in the designated protected areas.

Table 1: Scope of IA analysis on draft Onshore Hydraulic Fracturing (Protected Areas) Regulations 2015

		Protected Groundwater Source Area ¹⁰	Other Protected Areas
Preferred option (Option 1)	Scope/Horizontal Extent	SPZ1 only	National Parks, The Broads, AONBs, World Heritage Sites
	Vertical Extent	Introducing a depth limit of 1200m	Introducing a depth limit of 1200m

12. The impact of the Regulations was assessed to be very small as a result of the existing regulations and planning policies already preventing shale developments in most of the protected areas through planning guidance (this includes Areas of Outstanding Natural Beauty, World Heritage Sites, National Parks and the Broads). Furthermore, the Environment Agency would not permit drilling in groundwater Source Protection Zone 1 areas.

13. Under the central case, the illustrative reduction in economic activity from implementing the restrictions was assumed to be 1 per cent of baseline activity, which resulted in an estimated cost to business of £10.2 million (NPV, 2015 prices) and an Equivalent Annual Net Cost to Business (EANCB) of £0.7 million over an appraisal period of 20 years (2016-2035) at a discount rate of 3.5% real. The cost would arise from the forgone surplus of revenue over costs from the activity lost relative to the baseline as a result of designating the protected areas. The key assumptions which are documented in the IA were therefore the change in the level of activity, production levels, gas prices and finding and development costs¹¹.

14. The IA recognised the significant uncertainty attached to the key parameters underlying the central estimate in that most if not all assumptions are subject to a

⁹ <http://www.legislation.gov.uk/ukdsi/2015/9780111137932/impacts>

¹⁰ See *Groundwater protection: Principles and practice (GP3)* (Environment Agency, August 2013, online at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/297347/LIT_7660_9a374_2.pdf). SPZ = Source Protection Zone.

¹¹ The methodology used was consistent with that adopted in two prior IAs (New Shale-Friendly Model Clauses for Landward Areas¹¹ and Underground Access Rights clauses in 2014 Infrastructure Bill – impact on oil and gas activities¹¹) but the price and present value base years were moved forward to 2015 and various assumptions were updated (including on gas prices and development costs).

wide margin for error. In particular, the UK shale gas industry is in its infancy and it is unclear how much production will occur and at what cost. As such the impact on gas prices is itself highly uncertain. It is possible that shale gas will not prove to be commercially exploitable in England and Wales (especially if gas prices were to remain low) but equally it is possible that gas prices will be much higher than assumed in the central case or the average well might be much more productive or less costly. For illustrative purposes, sensitivity analysis using low and high gas prices was also undertaken to show the possible outcomes under alternative assumptions regarding one of the key parameters. The lower and higher gas price assumptions were intended to give a feel for how sensitive the analysis is to this parameter. It should be noted that, unless costs fell, development of shale gas would not be commercially attractive at gas prices much below the low level used illustratively in the analysis. The estimated costs to business under each case (low, central, high) are summarised in the table below. It should be noted that the figures reflect only the estimated costs to business in terms of the economic activity forgone as a result of introducing the sub-surface restrictions and do not include the estimated administrative costs to business from complying with section 4A obligations in the Infrastructure Act.

Table 2: Estimated cost to business from sub-surface restrictions, £m 2015 prices (2016-35).

	Low	Central	High
Net Present Value (NPV)	£1.3m	£10.2m	£37.2m
Equivalent Annual Net cost to Business (EANCB)	£0.1m	£0.7m	£2.6m

Estimated Impacts of Surface Development Restrictions

15. As stated above, the previous IA explicitly assumed that the restrictions to hydraulic fracturing would apply to both the spatial extent (i.e. surface) and vertical limit (i.e. depth) in the designated protected areas. That assessment provides the baseline for assessing the potential costs and benefits associated with the proposed surface area restrictions.
16. Recognising that surface activities are of greatest public concern, the Government will apply the restrictions to additional sensitive areas (Sites of Special Scientific Interest (SSSIs), Natura 2000, and Ramsar sites). Including these areas in the surface ban is expected to have a negligible impact on available resources as the existing regulatory and planning systems already provide strong protections. In addition, SSSIs, though numerous, are typically small in area compared to “protected groundwater source areas” and “other protected areas” and it is therefore considered likely that the relevant surface activity could be moved to an adjacent spatial area. All terrestrial Natura 2000 and Ramsar sites in England and Wales are also designated as SSSIs.
17. It is therefore considered reasonable to assume that the restrictions on hydraulic fracturing operations at the surface in the defined protected areas will result in

zero additional loss of economic activity to that previously assessed i.e. an illustrative reduction of 1% relative to the baseline. As any actual reduction in activity is likely to be very minor and reflected in the range of uncertainty around the prior assessment, it is not thought to be proportionate to quantify the potential impact. As outlined previously, the original assumptions were subject to a high degree of uncertainty and sensitivity analysis was undertaken using low/high gas prices to illustrate the impact that this would have on the estimated loss of economic activity.

Small and Micro Business Assessment (SMBA)

18. The exact number of small or micro-businesses (defined as having up to 49 FTE and 10 FTE employees respectively, as per BIS Better Regulation Framework Manual) that will be active in the UK shale gas industry or likely to enter the market in coming years is unknown. However, both types of business are currently active in onshore oil and gas exploration and production in England and Wales. There are currently fewer than 30 groups of companies operating onshore licences¹². Some of these are likely to be small businesses in terms of direct employment; a small number are thought to be micro-businesses in terms of direct employment. Small or micro-businesses may also be non-operator licensees. Hydraulic fracturing is not likely to be undertaken by the smaller companies or, if they are involved, it would probably be as co-venturers. Small and micro-businesses are no more likely than larger businesses to be affected by the policy changes. There are frequent changes of licensee including as a consequence of a lack of activity by current licensees who consequently have to relinquish their acreage so the current structure of the industry may not be reflective of its composition over future decades, especially if a significant level of hydraulic fracturing is seen in practice.
19. In prohibiting hydraulic fracturing from wells that are drilled from the surface in specified protected areas, the changes will reinforce the existing regulatory regime and ensure that the development of shale gas proceeds in a safe and environmentally sound way. Given the intended purpose of the measures, the Government does not believe there is any rationale for exempting businesses or developments of a certain size i.e. allowing surface development by small or micro-businesses from which operators could hydraulically fracture in protected areas. The level of public concern around these activities is unrelated to the size of the business or the number of employees undertaking development activity. The administrative burden on business as a result of the measures is expected to be negligible and therefore very little prospect of a disproportionate impact on small or micro-businesses in this respect.

Wider impacts

20. All significant oil and gas operations, such as drilling, hydraulic fracturing or production, require planning permission and are subject to operational regulation by the relevant Environmental Regulator (i.e. the Environment Agency or Natural Resources Wales, as the case may be). When commenced, section 50 of the

¹² See <https://itportal.decc.gov.uk/eng/fox>.

Infrastructure Act 2015 will amend the Petroleum Act 1998 so that the Secretary of State cannot issue consent for associated hydraulic fracturing activity unless the environmental impact of the development which includes the relevant well has been taken into account by the local planning authority. Planning permission will be granted only where the proposed activity is acceptable in terms of land use planning, and the conduct of permitted operations will have to meet the environmental requirements specified by the Environmental Regulator.

21. DECC conducted a Strategic Environmental Assessment on the potential environmental effects of the activities which might be consented subsequent to the issue of new licences¹³ which was published for public consultation (which closed on 28 March 2014). The results of the assessment, and the views received in the consultation, were considered before the decision was taken to launch a new onshore licensing round¹⁴
22. A September 2013 report by Professor David MacKay and Dr Tim Stone¹⁵ concluded that we can develop shale and keep emissions low – shale emissions are likely to be lower than the liquefied natural gas it is likely to replace. In addition, a report published in June 2014 by Public Health England¹⁶ concluded that “currently available evidence indicates that the potential risks to public health in the vicinity of shale gas extraction sites will be low if shale gas extraction is properly run and regulated”. Further to this, in 2012 the Royal Academy of Engineering and the Royal Society conducted an independent review of the scientific and engineering evidence on the risks associated with hydraulic fracturing for shale gas¹⁷. They concluded that the risks can be managed effectively in the UK, provided that operational best practices are implemented and enforced through regulation.

There are robust regulations in place to ensure on-site safety, prevent water contamination and mitigate seismic activity and air pollution. The policy will not change any of these existing requirements.

Summary and preferred option with description of implementation plan

23. The Government’s approach to prohibiting hydraulic fracturing from wells that are drilled from the surface in specified protected areas reflects existing planning guidance and affords an enhanced level of protection to these areas in a manner that is consistent with the Government’s wider energy security and economic policy objectives and minimises the impact on business.

Implementation will be progressed as follows:

- **For new licences:** The Government intends to insert into any new PEDL a condition which prevents “associated hydraulic fracturing”, as defined in

¹³ Strategic Environmental Assessment for further onshore oil and gas licensing: environmental report, December 2013, available online at <https://www.gov.uk/government/consultations/environmental-report-for-further-onshore-oil-and-gas-licensing>.

¹⁴ See <https://www.gov.uk/government/speeches/outcome-of-the-strategic-environmental-assessment> and <https://www.gov.uk/government/news/new-onshore-licensing-round-opens>.

¹⁵ See <https://www.gov.uk/government/publications/potential-greenhouse-gas-emissions-associated-with-shale-gas-production-and-use>.

¹⁶ See <http://www.hpa.org.uk/Publications/Environment/PHECRCEReportSeries/PHECRCE009/>.

¹⁷ See <https://royalsociety.org/~media/policy/projects/shale-gas-extraction/2012-06-28-shale-gas.pdf>.

4B(1) of the Petroleum Act 1998, from taking place from new and existing wells that have been drilled at the surface in specified protected areas. The introduction of this condition would be consistent with section 4(1) (e) of the Petroleum Act 1998, which enables a PEDL to be granted with modified model clauses in any particular case. The Government proposes that the licence condition would adopt the definition of the specified protected areas as set out in paragraph 10 above in order to restrict where surface activities can take place. This condition would be inserted into any new PEDL awarded under the 14th onshore licensing round.

- **For existing licences:** The Government intends to set out a policy guidance statement indicating that the Secretary of State is not minded to grant consent for any programme which includes “associated hydraulic fracturing”, as defined by 4B(1) of the Petroleum Act 1998, from wells that have been drilled at the surface in specified protected areas. Again, it is intended that the policy statement will adopt the definition of specified protected areas as set out in paragraph 10 above in order to restrict where surface activities can take place.

24. In terms of enforcement, checks for both new and existing licences would be carried out under the programme on an individual basis.