



Department
of Energy &
Climate Change

Onshore oil and gas exploration in the UK: regulation and best practice

Northern Ireland

December 2013

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Any enquiries regarding this publication should be sent to us at OnshoreOilandGasRoadmap@decc.gsi.gov.uk.

This document is also available from our website at www.gov.uk/decc.

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Introduction

This roadmap document is intended as a first point of reference for anyone seeking to understand the permitting and permissions process for exploratory work in oil and gas development, onshore in the UK. The content is primarily for unconventional oil and gas operations, (specifically shale gas and coal bed methane developments) but many of the processes described will apply equally to conventional operations.

It is intended to offer an introduction to and guidance on planning and permitting. Its content should not be considered as definitive policy statement.

The roadmap is intended as a general guide only and will be revised as legislation develops, new regulations are introduced; or when best practice evolves.

Development of the roadmap has been coordinated by the Office of Unconventional Gas and Oil (OUGO), a new UK Government office that aims to promote the safe, responsible and environmentally sound recovery of the UK's unconventional reserves of gas and oil.

The roadmap has been developed through collaboration with other Government departments, Devolved Administrations and other interested parties in order to provide UK-wide guidance on onshore gas and oil development.

The roadmap does not define timescales for the planning and permitting process or individual steps within it. Operators are advised to contact the relevant regulatory authorities to establish indicative timelines. Information will also be available on regulators' websites.

How to use this roadmap

This interactive roadmap explains the permitting and permissions process for onshore oil and gas exploration, including shale gas and coal bed methane operations.

The roadmap provides a basic, indicative overview of the process, highlighting key pieces of legislation and regulation, and identifying required actions and best practices at various stages. Relevant regulatory websites should be referenced for detailed advice.

There is a separate roadmap document for each of the countries within the United Kingdom reflecting the different legislative frameworks that apply and various regulatory bodies that have responsibility for operations in each geographical area. This particular document deals with Northern Ireland; there are separate documents for England, Wales and Scotland.

An overview diagram is presented for each country. On this diagram users can click individual boxes to access more detail. At the end of each section, users can click on a text hyperlink to take them back to the roadmap itself.

Depending on the user's version of Microsoft Word/Adobe Acrobat, all links may simply be clicked or may need the Control (Ctrl) key to be held down at the same time.

Frequently asked questions

What are the differences between conventional and unconventional oil and gas?

The oil and gas industry is well established in the UK, having focused on exploiting conventional oil and gas fields, both onshore and offshore. The industry is now in a phase of exploration for unconventional oil and gas as a result of recent technological developments. These include use of hydraulic fracturing (or fracking) for the exploration of oil and gas shales as well as coal bed methane (CBM) extraction.

Conventional oil and gas accumulations (such as in the North Sea) are contained in permeable rocks, such as sandstone.

In **unconventional hydrocarbon accumulations** the same rock layer acts as both source and reservoir rock.

Shale gas is essentially the same as North Sea gas (i.e. mostly methane) but is trapped in impermeable shale rock. Enlarging or creating fractures in the rock by hydraulic fracturing (or 'fracking') enables shale gas to flow. The fracking technique has been used in the UK for many years with conventional deposits. Improvements in horizontal drilling and hydraulic technology over the past few decades have made the exploitation of shale gas reservoirs more economical.

Exploration for shale gas presents a series of new challenges; not least the collection of data across previously little understood and poorly studied parts of hydrocarbon provinces.

Coal bed methane (CBM) wells produce gas from coal seams that act as source and reservoir to the produced gas. These wells often produce water in the initial production phase, as well as natural gas. Economic CBM reservoirs are normally shallow, as the coal tends to have insufficient strength to maintain porosity at depth.

What is the process for drilling an onshore oil or gas well?

The process of obtaining consent to drill a well is the same whether the well is targeted at conventional or unconventional gas. DECC (DETI in Northern Ireland) issues a licence that grants exclusivity to operators in the licence area to explore for and produce petroleum.

Operators wishing to drill a well must negotiate access with landowners. Permission must also be granted by the Coal Authority if the well encroaches on coal seams.

The operator then needs to seek planning permission from the local minerals planning authority (MPA), the local planning authority (LPA) if in Scotland or DOE Planning if in Northern Ireland. The operator must consult with the environmental regulator: the Environment Agency (EA) in England, Natural Resources Wales (NRW) in Wales, the Scottish Environment Protection Agency (SEPA) in Scotland or the Northern Ireland Environment Agency (NIEA) in Northern Ireland, who are also statutory consultees to the MPA/LPA/DOE. The MPA/LPA/DOE will determine if an environmental impact assessment (EIA) is required. Environmental permit(s) from the appropriate environmental agency will also be necessary.

DECC/DETI will give consent to drill only when

- The MPA/LPA/DOE has granted permission to drill and the relevant planning conditions have been discharged
- All the necessary permits from the relevant environmental agency are in place
- The Health and Safety Executive (HSE) or Health and Safety Executive Northern Ireland (HSENI) has had notice of and is satisfied with the well design.

- The operator must arrange an examination of the well design by an independent, competent well examiner.
- The British Geological Survey (BGS) or Geological Survey of Northern Ireland (GSNI) has been notified of the intent to drill.

If the well needs more than 96 hours of testing to evaluate its potential to produce hydrocarbons, the operator must apply to DECC/DETI for an extended well test (once all other consents and permissions have been granted). Permission for the extended well test will limit the quantities of gas to be produced and saved or flared.

If an operator wishes to start production from a development site, they start again with the process described above: the landowner permissions and MPA/LPA/DOE planning consent; EA, NRW, SEPA or NIEA consultation; and appropriate environmental permit and HSE/HSENI notification before DECC/DETI will consider approving the development.

How are hydraulic fracturing operations regulated?

Each application must go through the planning authority process and operators must consult with the relevant environmental agency (the Environment Agency (EA) in England; Scottish Environment Protection Agency (SEPA) in Scotland; Natural Resources Wales (NRW) in Wales; or the Northern Ireland Environment Agency (NIEA) in Northern Ireland) in order to establish the requirements for any environmental permits/authorisations that will be needed. Applications will only be granted if the relevant agency is confident that there is no unacceptable impact to the environment and, in particular, to principal aquifers that provide potable water supply. As part of this process, operators are required to disclose the content of hydraulic fracturing fluids to the relevant environment agency.

The Health and Safety Executive (HSE) or Health and Safety Executive Northern Ireland (HSENI) will scrutinise the well design for safety.

An environmental permit will be required from the relevant environment agency for any borehole drilling as well as hydraulic fracturing activities.

The HSE/HSENI then monitors progress on the well. The HSE/HSENI is also notified of any unplanned events. If it is deemed necessary, inspections may be undertaken by HSE/HSENI to inspect specific well operations on-site.

What is the UK's approach to regulation?

The UK has a goal-setting approach to regulation that requires operators to ensure and demonstrate to regulators that the risks of an incident relating to oil and gas operations are reduced to 'as low as reasonably practicable'. This encourages operators to move beyond minimum standards in a continuous effort for improvement.

In February 2013, the United Kingdom Onshore Operators Group (UKOOG), the representative body for UK onshore oil and gas companies, published [industry guidelines covering best practice for shale gas well operations in the UK](#). HSE and EA helped develop these guidelines.

Best practice guidance, which has been adopted by DECC, is set out in [Shale gas extraction in the UK: a review of hydraulic fracturing](#), Royal Society and Royal Academy of Engineering report, June 2012.

Which phases of an oil and gas development does this roadmap cover?

The exploitation of oil and gas resources typically occurs in four key phases:

- Exploration
- Appraisal
- Development and production
- Decommissioning, restoration and aftercare.

This roadmap covers only the exploration and appraisal phases.

Exploration is the use of seismic surveys to provide information about geological structures and exploratory drilling to verify the presence or absence of oil or gas reserves.

Appraisal is the assessment of exploration prospects using extended well tests and additional drilling to determine if reservoir development is economically feasible.

Development and production cover the development of field infrastructure and the production of hydrocarbons from the reservoir until economically feasible reserves are depleted. Development and production can only be initiated by the operator once a field development plan has been submitted to and approved by DECC/DETI, as technically shale gas does not involve conventional fields.

Decommissioning, restoration and aftercare refer to operations for the abandonment of wells, the removal of surface installations and the restoration of the site.

What is the history of hydraulic fracturing and unconventional gas development in the UK?

The UK has experience of hydraulic fracturing and directional drilling for non-shale gas applications.

The first UK well to encounter shale gas (accidentally) was drilled in West Sussex in 1875 (Netherfield) and in 1895 the nearby Heathfield well produced enough gas to light the local railway station until well into the 20th century.

Advances in directional drilling (involving record-breaking offsets up to 11km) have enabled the development of the Wytch Farm field onshore and offshore Dorset. Discovered by British Gas in the 1970s and now operated by Perenco, the field is responsible for the majority of UK onshore oil production and is a giant oil field, with over 200 wells drilled and reserves of 500 million barrels of oil. Drilling vertically onshore then horizontally out to sea has proved more cost-effective and environmentally sensitive than building offshore platforms. Horizontal drilling has also allowed the operator to choose drilling locations away from environmentally sensitive areas.

The first hydraulic fracturing of onshore conventional UK wells was done in the late 1950s, and it has been a common field operation to increase flow rates since then.

Offshore, tight (low permeability) sandstone wells are also now commonly hydraulically fractured. In the 1990s, several wells were also fractured in the UK to improve coal bed methane flow rates, but this is not always necessary for CBM.

In the mid-1980s research began into the potential for gas production from UK shales.

In 2008, 97 petroleum exploration and development licences were awarded for exploration in the 13th Round of Onshore Licensing. A 14th licensing round is being considered for 2014.

What opportunities are there for public consultation?

Public consultation is part of every oil and gas application for planning permission, which is required for each stage of exploration, appraisal and production.

The Environment Agency will carry out public consultation for the issue of environmental permits. The length of time for these consultations varies from 4 to 12 weeks, depending on the complexity of the application. They would be advertised in the most appropriate way, depending on the circumstances. Often this will be done through local media and the Environment Agency's website, alongside targeted e-mails to interested parties.

Minerals planning authorities (MPAs) will also advertise and consult on individual planning applications.

The MPA gives notice that it has validated and accepted a planning application by writing to residents and businesses near the application site, putting up a site notice or placing an advertisement in a local newspaper. Information about the application must also be available on the relevant local authority website.

As a matter of best practice, UKOOG's charter also sets out that communities must be engaged from the very start of the planning application process, where shale gas is being developed. For a more specific indication of when, where and how consultation will take place, please check the relevant MPA's website or contact them directly. In addition, the Government encourages pre-application consultation for all kinds of developments, including shale gas.

Pre-drilling approvals checklist

Before commencing drilling operations for onshore oil and gas development the operator must have

- Obtained a petroleum exploration and development licence (PEDL) from DECC or petroleum licence (PL) from DETI
- Secured a lease from the landowner
- Submitted relevant PON notifications to DECC/DETI (<https://www.gov.uk/oil-and-gas-petroleum-operations-notices>)
- Satisfied DECC/DETI that effective operational and environmental management systems are in place
- Secured planning permission from the MPA/LPA/DOE
- Discharged any relevant conditions placed on the planning permission by the MPA/LPA/DOE
- Obtained a permit from the Coal Authority if the well will encroach on coal seams (excluding NI)
- Informed the BGS/GSNI of the intention to drill
- Completed the necessary consultation processes with all the statutory/relevant consultees
- Obtained all the necessary permits from the relevant environmental agency (EA/NRW/SEPA/NIEA)
- Notified the HSE/HSENI of the intention to drill (minimum 21 days' notice)
- Provided HSE/HSENI with details of the proposed well design that have been examined by an independent and competent well examiner (minimum 21 days' notice)
- Agreed data-reporting methods with DECC/DETI
- Agreed a method for monitoring induced seismicity and fracture growth height with DECC/DETI, where hydraulic fracturing is planned
- Received approval for an outline hydraulic fracturing programme from DECC /DETI, where hydraulic fracturing is planned.

Bibliography

[*UK onshore shale gas well guidelines*](#)

Exploration and appraisal phase, UKOOG, Issue 1 February 2013

[*Shale gas extraction in the UK: a review of hydraulic fracturing*](#)

Royal Society and Royal Academy of Engineering report, June 2012

[*Bowland Shale Gas Study – Main Report*](#)

The Carboniferous Bowland Shale gas study: geology and resource estimation. DECC

[*Background note on induced seismicity in the UK and its relevance to hydraulic stimulation for exploration for shale gas*](#)

Professor Peter Styles (Keele University) and Dr Brian Baptie (British Geological Survey), April 2012

[*Regulatory guidance: Coal bed methane and shale gas*](#)

Scottish Environment Protection Agency

[*Parliamentary briefing paper on unconventional gas*](#)

Postnote, Number 374, April 2011

[*Extended well tests*](#)

DECC

[*Guidance note: Regulation of exploratory shale gas operations*](#)

Environment Agency

[*Government response to Royal Academy of Engineering and Royal Society report on “Shale gas extraction in the UK: a review of hydraulic fracturing”*](#)

Version: Final A04- 10 December 2012

[*What is shale gas?*](#)

DECC

[*Shale gas background note*](#)

Prepared for DECC by Dr C. Green of G Frac Technologies Ltd

[*Planning practice guidance for onshore oil and gas*](#)

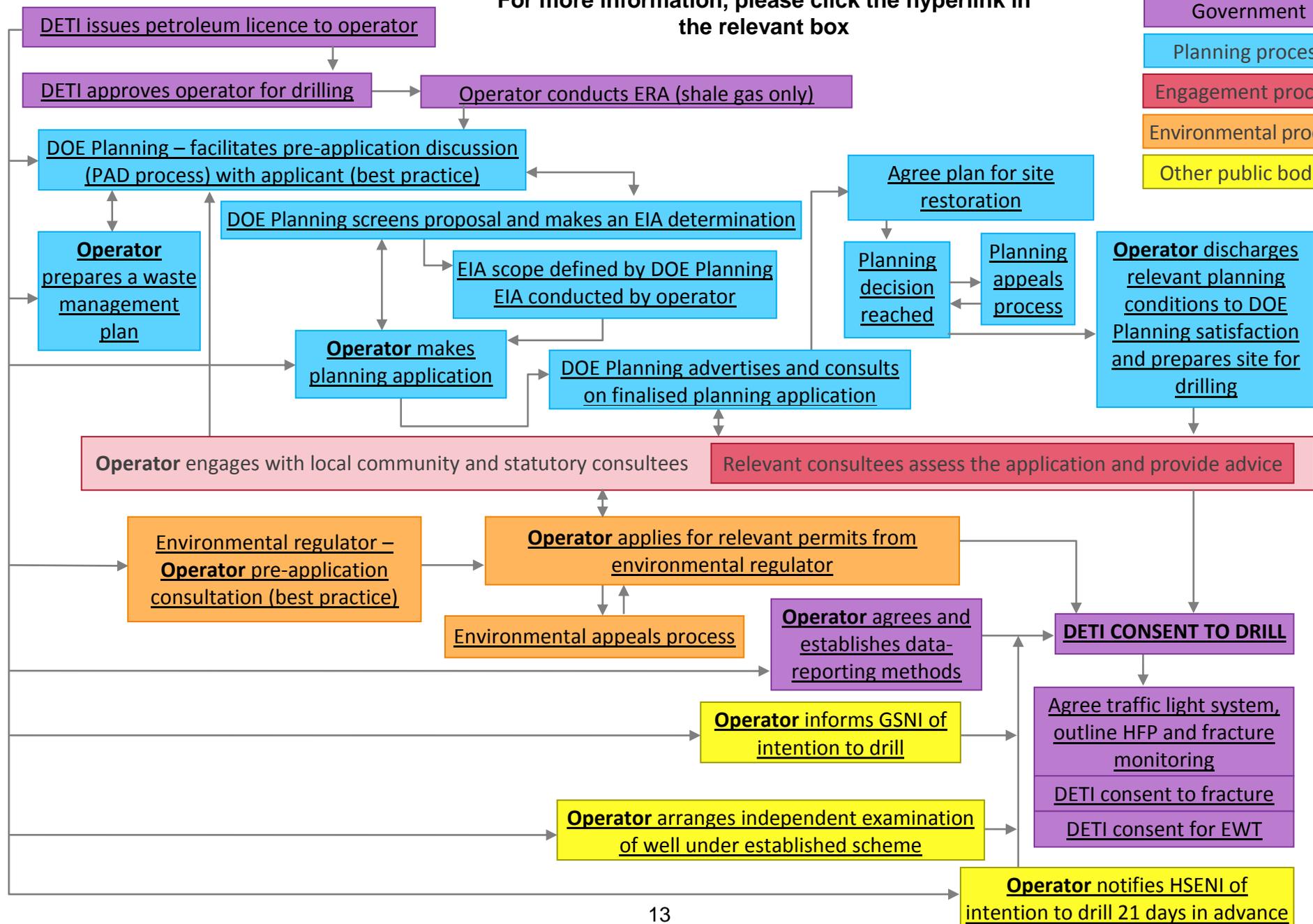
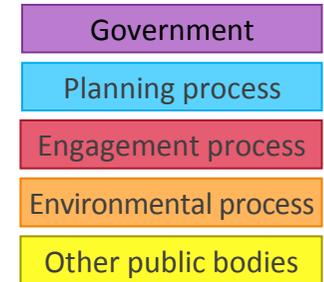
Department for Communities and Local Government, July 2013

Glossary

ALARP	as low as reasonably practicable
BGS	British Geological Survey
BSOR	borehole sites and operations regulations
DCLG	Department for Communities and Local Government
DECC	Department of Energy and Climate Change
DETI	Department of Enterprise, Trade and Investment (NI)
DOE	Department of the Environment (NI)
EA	Environment Agency
EIA	environmental impact assessment
ERA	environmental risk assessment
ES	environmental statement
EWT	extended well test
GSNI	Geological Survey of Northern Ireland
HFP	hydraulic fracturing plan
HPA	Health Protection Agency
HSE	Health and Safety Executive
HSENI	Health and Safety Executive Northern Ireland
ISO	International Organization for Standardization
LPA	local planning authority
MPA	mineral planning authority
NIEA	Northern Ireland Environment Agency
NRW	Natural Resources Wales (formed by merger of the Countryside Council for Wales, Environment Agency Wales and the Forestry Commission Wales)
PAD	pre-application discussions (NI)
PEDL	petroleum exploration and development licence
PL	petroleum licence (NI)
PPC	pollution prevention and control
SEPA	Scottish Environment Protection Agency
UKOOG	United Kingdom Onshore Operators Group

Roadmap

For more information, please click the hyperlink in the relevant box



DETI issues PL to licensee

Lead agency	DETI
Actions	<ul style="list-style-type: none"> • Petroleum licence (PL) granted through open-door system • Under licensing agreement, operator agrees to follow good oilfield practice • As part of the licensing process, DETI will assess operator competency, safety management systems, well examination scheme and financial capability. In the case of drill or drop work programmes, competency in well operations will be assessed when licensee informs DETI of decision to drill • Operators must have clearly defined operational and environmental management systems • Operator submits relevant PON notification(s)
Key legislation and guidance	Petroleum (Production) Act (Northern Ireland) 1964 Petroleum Production Regulations (Northern Ireland) 1987 Petroleum Production (Amendment) Regulations (Northern Ireland) 2010 Hydrocarbons Licensing Directive Regulations (Northern Ireland) 2010
Operator input	Proof of relevant management systems
Engage stakeholder	No
Relevant consultees	–
Decision/output	PL

Petroleum licensing framework

The Department of Enterprise, Trade and Investment (DETI) grants petroleum licences “to explore for, bore for and get” petroleum in Northern Ireland under powers granted by the Petroleum (Production) Act (Northern Ireland) 1964.

Petroleum licences in Northern Ireland consist of three periods of 5, 5 and 20 years known as the initial term, second term and production period, respectively. These terms correspond to the exploration, appraisal and production phases of a conventional oil or gas development and the licensee must fulfil the agreed work programme and satisfy the requirements of the legislation to progress from one term to the next. Licence applications may include a firm drilling commitment or a two-part “drill or drop” work programme for the initial term. In the case of the latter, the licensee has until the end of year three to make a decision to commit to drilling a well in the initial term or to relinquish the licence.

Exploration may begin with geochemical and geophysical (including seismic reflection) surveys to identify prospective structures. DOE Planning normally regards such work as an activity that does not require planning permission or as permitted development. Licence holders must notify landowners, DOE Planning and DETI of plans to conduct seismic surveys in the licence area. The operator must notify the Roads Service if the survey is undertaken on highways. Seismic

surveys require DETI's approval and the licensee must submit its seismic programme so that the proposals are discussed with DOE Planning, NIEA and other relevant organisations, and assessments under the Habitats and Birds Directives of potential impacts on Natura 2000 sites are carried out for screening or later stages, as required.

Management systems

Operators' management systems should be developed and applied to all operations, including any pre-drilling operations such as seismic acquisition work.

Operators should also operate in accordance with a suitable environmental management system that conforms to the principles in ISO 14001.

Useful links

Petroleum licensing in Northern Ireland:

www.detini.gov.uk/deti-energy-index/minerals-and-petroleum/petroleum_licensing_2.htm

UKOOG onshore shale gas well guidelines

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/185935/UKOOG_ShaleGasWellGuidelines.pdf

PON notification

<https://www.gov.uk/oil-and-gas-petroleum-operations-notice>

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DETI approves operator for drilling

Lead agency	DETI
Actions	<ul style="list-style-type: none"> As part of the licensing process, DETI will assess operator competency to manage the firm commitments of the licence work programme. In the case of drill or drop work programmes, the licensee nominates the operator at the same time as it informs DETI that it is making a firm commitment to drill an exploration well during the initial term. DETI's approval of operator is subject to assessment of competency Operators must have clearly defined operational and environmental management systems covering well operations
Key legislation and guidance	Petroleum (Production) Act (Northern Ireland) 1964 Petroleum Production Regulations (Northern Ireland) 1987 Petroleum Production (Amendment) Regulations (Northern Ireland) 2010 Hydrocarbons Licensing Directive Regulations (Northern Ireland) 2010
Operator input	<p>Informs DETI of commitment to drill exploration well and nominates operator for drilling operations</p> <p>Proof of operational and environmental management systems</p>
Engage stakeholder	No
Relevant consultees	–
Decision/output	Licensee commitment to drill. Approval of licence operator for drilling operations

Nomination and approval of licence operator for drilling programme

At the time of licence application, the proposed work programme will either include a firm commitment to drill an exploration well (a standard work programme) or have a drill or drop well commitment. For the former, the operator will be nominated and competency assessed by DETI for exploration operations, including drilling during the licensing process. In the latter case, Part I of the programme for years one to three consists of pre-drilling exploration; Part II consists of an exploration well in petroleum licences with drill or drop programmes, licensees are required to decide whether they wish to carry out Part II of the work programme, i.e., to drill an exploration well, or drop the licence. The licensee must inform DETI in writing of its decision before the end of year three.

If the licensee commits to drill a well, it must nominate an operator for the drilling programme and submit documentary evidence of the operational and environmental management systems covering well operations.

License holders are obliged to seek permission from DETI before they start well operations (application for consent to drill).

Management systems

Effective risk-based, systematic management of well integrity, the integrity of the surface equipment used in fracturing/flowback operations and of other associated operations is critical to ensuring the safety of the well operations and environmental protection.

Operators' management systems should be developed and applied to all operations, including any pre-drilling operations such as seismic acquisition work.

Operators should also operate in accordance with a suitable environmental management system that conforms to the principles in ISO 14001.

Useful links

UKOOG onshore shale gas well guidelines

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/185935/UKOOG_ShaleGasWellGuidelines.pdf

Operator conducts ERA

Lead agency	DETI
Actions	<ul style="list-style-type: none">• The environmental risk assessment (ERA) is a first-stage risk assessment to be conducted for proposed shale gas operations where hydraulic fracturing is planned• DETI requires compilation of an ERA as a matter of good practice• The ERA process is recommended as a starting point for early engagement with the DOE Planning, other regulators and local communities• DECC is consulting other regulators to develop agreed guidance for operators in the preparation of suitable ERAs. DETI will use the results of this process to develop ERA guidance for Northern Ireland
Key legislation and guidance	–
Operator input	Completed ERA
Engage stakeholder	Yes
Relevant consultees	–
Decision/output	ERA report

Environmental risk assessment

Licensees will be required to carry out an overview assessment of environmental risks, including risks to human health, covering the full cycle of the proposed operations, including well abandonment, with the participation of stakeholders, including local communities. This should be done as early as practicable in the development of their proposals.

Detail

An environmental risk assessment (ERA) is required for all shale gas operations involving hydraulic fracturing, as a matter of good practice. It should involve the participation of stakeholders including local communities at the earliest possible opportunity. The ERA should be undertaken as early as practicable and in any case before application for planning consent.

The ERA should assess risks across the entire life cycle of the planned shale gas activities, including the disposal of wastes and well abandonment, and risks of induced seismicity.

The ERA can subsequently inform other assessments, such as the environmental impact assessment (EIA), where this is required following screening by the relevant planning authority.

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DOE Planning–operator pre-application consultation

Lead agency	Department of the Environment (DOE) Planning
Actions	Pre-application discussions (PAD) with DOE Planning is considered best practice for potential applicants
Key legislation and guidance	Planning and General Development (NI) Order 1993 Planning (NI) Order 1991 Planning (Environmental Impact Assessment) Regulations (NI) 2012
Operator input	Engage with relevant consultees
Engage stakeholder	Yes
Relevant consultees	DOE Planning will involve relevant consultees
Decision/output	–

Pre-application discussion process

Information on DOE Planning’s PAD process is available from Information Leaflet 14 below.

Industry charter for local community engagement

UKOOG has defined standards for community engagement. Operators will

- Engage with local communities, residents and other stakeholders at each stage of operations – exploration, appraisal or production, beginning in advance of any operations and in advance of any application for planning permission
- Ensure there is a continued point of contact for local communities and that they provide sufficient opportunity for comment and feedback on initial plans, listen to concerns and respond appropriately and promptly
- Have a strategy or plan for engagement that is developed early and links to all statutory processes.

Useful links

PAD process

www.planningni.gov.uk/index/advice/advice_leaflets/leaflet14.htm

UKOOG Community Engagement Charter

<http://www.ukoog.org.uk/elements/pdfs/communityengagementcharterversion6.pdf>

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DOE Planning screens for EIA

Lead agency	Department of the Environment (DOE) Planning division
Actions	<ul style="list-style-type: none">• DOE Planning reviews formal application to determine if there is a need for a full EIA• Applicants may apply for a screening opinion as to whether the development is to be subject to an EIA before submitting a full planning application• If DOE planning fails to provide a screening opinion for the proposed development, a subsequent grant of planning permission could be challenged
Key legislation and guidance	Planning (Environmental Impact Assessment) Regulations (NI) 2012
Operator input	Operator may request an EIA determination
Engage stakeholder	Pre-application discussions
Relevant consultees	DOE Planning will consult relevant consultees
Decision/output	Decide if EIA is required

Screening and scoping

Operators can request a screening opinion from DOE Planning at any time.

A screening request should include a location plan identifying the land, a brief description of the nature and purpose of the proposed development and the possible effects on the environment, and any other additional information or representation.

Once a screening opinion has been made, DOE Planning will send written confirmation stating whether it requires an EIA.

Where an EIA is required, developers are encouraged to ask DOE Planning for an opinion as to the scope and level of detail that should be covered before submitting any application for planning permission. In such cases and to ensure that all relevant environmental issues are identified and addressed, DOE Planning will consult other relevant bodies before an opinion is given.

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EIA scope defined by DOE Planning; EIA conducted by operator

Lead agency	Department of the Environment (DOE) Planning division
Actions	DOE Planning defines the required scope of EIA, operator commissions a full EIA that has regard for any ERA previously undertaken
Key legislation and guidance	Planning (Environmental Impact Assessment) Regulations (NI) 2012
Operator input	Yes
Engage stakeholder	Yes
Relevant consultees	DOE Planning will consult relevant consultees
Decision/output	EIA scoping report

EIA scope

An EIA should draw together in a systematic way an assessment of the likely significant environmental effects of the proposed development.

Where a proposed scheme is determined to be “EIA development”, the developer can ask DOE Planning for advice on the scope of the information to be gathered. Operators are expected to draw upon the content of the ERA when completing an EIA.

An EIA must cover the geographical area where the impacts occur, both above and below ground. This is likely to be a broader area than the application area.

Environmental statement

Once the EIA has been carried out, the information should be systematically presented in the environmental statement (ES).

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Waste management plan conducted by operator

Lead agency	Department of the Environment (DOE) Planning division
Actions	Operator prepares a waste management plan for submission with the full planning application
Key legislation and guidance	Planning (Management of Waste from Extractive Industries) Regulations (Northern Ireland) 2010
Operator input	Yes
Engage stakeholder	–
Relevant consultees	–
Decision/output	Waste management plan

Waste management plan

The Planning (Management of Waste from Extractive Industries) Regulations (Northern Ireland) 2010 transpose the Mining Waste Directive into Northern Ireland statute and require the preparation of a waste management plan to be submitted in support of a planning application.

Further information

DOE Planning should be contacted in relation to further information on the preparation of the plan.

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Operator makes planning application

Lead agency	Department of the Environment (DOE) Planning division
Actions	DOE Planning receives planning application from operator
Key legislation and guidance	Planning and General Development (NI) Order 1993 Planning (NI) Order 1991 Planning (Environmental Impact Assessment) Regulations (NI) 2012 Planning (Management of Waste from Extractive Industries) Regulations (Northern Ireland) 2010
Operator input	Yes
Engage stakeholder	–
Relevant consultees	DOE Planning will consult relevant consultees
Decision/output	Planning application documents

Planning application

Companies seeking to undertake exploratory investigations and to subsequently test for and possibly extract onshore oil or gas, including shale gas, must apply for planning permission. Some exploratory activities may be subject to permitted development rights provided the specific criteria are met.

Operators are encouraged to define the minimum and maximum expected extent of operations (e.g. number of wells and duration) during the exploration phase and to apply on this basis. This will make for a clearer consultation process and help to establish the limits of any planning permission that is granted.

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DOE Planning advertises and consults on finalised planning application

Lead agency	Department of the Environment (DOE) Planning division
Actions	DOE Planning advertises the planning application in local media and consults relevant consultees
Key legislation and guidance	Planning and General Development (NI) Order 1993 Planning (NI) Order 1991 Planning (Environmental Impact Assessment) Regulations (NI) 2012 Planning (Management of Waste from Extractive Industries) Regulations (Northern Ireland) 2010
Operator input	Yes
Engage stakeholder	Yes
Relevant consultees	DOE Planning consults relevant consultees
Decision/output	Consultation responses from consultees

Content of the planning application package

Along with the full planning application there may be a requirement to submit an environmental statement and a waste management plan. DOE Planning should be contacted for more information.

Planning statement

It is necessary to provide DOE Planning with sufficient information to be able to determine the application. This may include the submission of a planning statement, which may include information detailing the operations proposed, phasing, equipment, timescales and the need for the development.

Public access to information

Operators will be required to make the information about their plans and proposals available to the public in accordance with procedures.

Useful links

www.planningni.gov.uk

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Environmental regulator – operator pre-application consultation (best practice)

Lead agency	Northern Ireland Environment Agency (NIEA)
Actions	Operators are strongly advised to discuss the requirements of all the relevant permissions with the NIEA at the pre-application stage and to twin-track planning and environmental permission applications
Key legislation and guidance	Water (NI) Order 1999 Water Abstraction and Impoundment Regulations (NI) 2006 Waste Management Licensing Regulations (Northern Ireland) 2003 Pollution Prevention and Control Regulations(Northern Ireland) 2003 Radioactive Substances Act 1993 and the Radioactive Substances Act 1993 (Amendment) Regulations (Northern Ireland) 2011 Conservation (Natural Habitats, etc.) Regulations (NI) 1995
Operator input	Engage with NIEA
Engage stakeholder	Yes
Relevant consultees	NIEA
Decision/output	NIEA advice

Pre-application consultation

NIEA advises operators to contact them as soon as possible and before submitting any applications for environmental permissions. As part of the pre-application stage, NIEA can advise on the information that must be submitted with any application. If the correct information is submitted with an application, it will enable the agency to fully assess any application and come to a timely decision. Failure to include relevant information will delay any determination.

Environmental permissions

In addition to the key legislation and guidance outlined, other requirements may apply. The specific suite of regulations that will apply will be on a case-by-case basis, specific to each individual operator's proposed activities, working practices and location. It is therefore imperative that operators contact NIEA as early as possible to discuss their projects.

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Operator applies for permits from environmental regulator

Lead agency	Northern Ireland Environment Agency
Actions	Operators are strongly advised to discuss the requirements of all the relevant permissions with the NIEA at the pre-application stage and to twin-track planning and environmental permission applications
Key legislation and guidance	Water (NI) Order 1999 Water Abstraction and Impoundment Regulations (NI) 2006 Waste Management Licensing Regulations (Northern Ireland) 2003 Pollution Prevention and Control Regulations(Northern Ireland) 2003 Radioactive Substances Act 1993 and the Radioactive Substances Act 1993 (Amendment) Regulations (Northern Ireland) 2011 Conservation (Natural Habitats, etc.) Regulations (NI) 1995
Operator input	Yes
Engage stakeholder	Yes
Relevant consultees	–
Decision/output	Application documents, NIEA permissions There are appeal provisions in the event of applications being rejected

Environmental permissions

In addition to the key legislation and guidance outlined, other requirements may apply. The specific suite of regulations that will apply will be on a case-by-case basis, specific to each individual operator's proposed activities, working practices and location. It is therefore imperative that operators contact NIEA as early as possible to discuss their projects.

Application process

The application process takes four months for most permissions to be determined. It is therefore imperative that the operator contacts NIEA early and that it has timetabled this period into the project plans.

Issuing a decision

Applications for environmental permissions will be assessed and determined on a case-by-case basis. There is no guarantee that a permission will be granted.

Useful links

Northern Ireland Environment Agency
www.doeni.gov.uk/niea/

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Environmental appeals process

Lead agency	Northern Ireland Environment Agency
Actions	Operators can appeal against rejection of environmental permit applications
Key legislation and guidance	Water (NI) Order 1999 Water Abstraction and Impoundment Regulations (NI) 2006 Waste Management Licensing Regulations (Northern Ireland) 2003 Pollution Prevention and Control Regulations(Northern Ireland) 2003 Radioactive Substances Act 1993 and the Radioactive Substances Act 1993 (Amendment) Regulations (Northern Ireland) 2011 Conservation (Natural Habitats, etc.) Regulations (NI) 1995
Operator input	Yes
Engage stakeholder	No
Relevant consultees	–
Decision/output	Resolution of appeal

Appeals process

Operators who wish to challenge an NIEA decision regarding their application, or an action that NIEA has taken, should contact the unit they have been dealing with or which is responsible for the matter.

Useful links

Northern Ireland Environment Agency
www.doeni.gov.uk/niea/

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Agree plan for site restoration

Lead agency	DOE Planning
Actions	Operator presents plans for restoring the development site after abandonment as part of the full planning application
Key legislation and guidance	Planning (NI) Order 1991
Operator input	Yes
Engage stakeholder	Yes
Statutory consultees	DOE Planning consults relevant consultees
Decision/output	Site restoration plan

Planning for site abandonment

Operators need to present a plan for restoration of the planned development site to DOE Planning. This will outline actions that the operator proposes to take once operations have reached a conclusion.

Well suspension/decommissioning/abandonment

On completion of drilling operations, a well may be suspended to allow for future testing. If it is concluded that there is no petroleum present or not in commercial quantities then the well will be abandoned, in accordance with the latest Oil and Gas UK standard.

Once a well has been abandoned, the site will be restored and a period of aftercare conducted to ensure the land returns to a state that is the same or better than it was prior to operations commencing.

Restoration will involve the removal of all equipment that was not originally at the site and which had been brought in to conduct the operations.

Health and safety legislation requires a well to be designed and constructed such that, so far as reasonably practicable, there is no unplanned escape of fluids from it. DOE Planning is responsible for ensuring the wells are abandoned and the site is restored.

There is a requirement for the operator to notify HSENI when wells are abandoned and to show that the process complies with Oil and Gas UK guidelines.

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Planning decision reached

Lead agency	DOE Planning
Actions	DOE Planning reaches a planning decision following consultation
Key legislation and guidance	Planning (NI) Order 1991
Operator input	Yes
Engage stakeholder	Yes
Statutory consultees	–
Decision/output	Planning approved or rejected

Exploration decision

In the first instance, DOE Planning can only grant planning permission for the exploration of hydrocarbons. Should adequate reserves be found and it is viable to exploit them, a separate planning permission would be required to extract the oil or gas.

Community liaison committees

Operators are encouraged to develop links with the local community by establishing community liaison committees.

UKOOG has defined standards for community engagement. Operators will ensure there is a continued point of contact for local communities and that they provide sufficient opportunity for comment and feedback on initial plans, listen to concerns and respond appropriately and promptly.

Post-planning-approval requirements

If DOE Planning grants planning permission, DETI will consider an application to drill. DETI requires operators to establish arrangements for controlling induced seismicity, venting and flaring where required.

Period of notice for HSENI

At least 21 days before drilling is planned, the HSENI must be notified of the well design and operation plans to ensure that major accident hazard risks to people from the well and well-related activities are properly controlled.

The operator has to notify HSENI of its well abandonment programme, which has to be examined and has to comply with Oil and Gas UK guidelines.

HSENI regulations require that the well programme is examined by an independent and competent well examiner.

NIEA permissions

Several environmental permissions may be required, depending on the planned activities, working practices and location of the proposal.

Geological Survey Northern Ireland (GSNI)

The operator must also inform the GSNI of an intention to drill a borehole.

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Planning appeals process

Lead agency	DOE Planning
Actions	If DOE Planning rejects a planning application, the operator has a right of appeal
Key legislation and guidance	Planning (NI) Order 1991
Operator input	Yes
Engage stakeholder	No
Statutory consultees	–
Decision/output	Appeal decision

Appeals process

DOE Planning will advise of the options for appeal on a case-by-case basis.

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Operator discharges relevant planning conditions and prepares site for drilling

Lead agency	DOE Planning
Actions	Operator completes required work to meet the terms of planning conditions
Key legislation and guidance	Planning (NI) Order 1991
Operator input	Yes
Engage stakeholder	–
Statutory consultees	–
Decision/output	DOE Planning confirmation that all necessary conditions have been met

Discharging relevant planning conditions

Before operations can begin at the site, the operator must satisfy DOE Planning that it has discharged all relevant planning conditions (i.e. those conditions that apply before operations commence).

Typically, planning conditions may be imposed to control any impact on local amenity (such as noise).

Some planning conditions may apply once operations have started or after they have finished. DOE Planning has enforcement powers to ensure that all required conditions are met.

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Operator informs GSNI of intention to drill

Lead agency	Geological Survey of Northern Ireland (GSNI)
Actions	Operator is required to inform the GSNI of intention to drill
Key legislation and guidance	Minerals (Miscellaneous Provisions) Act Northern Ireland 1959 , as amended by the Mineral Development Act (Northern Ireland) 1969 Petroleum Production Regulations (Northern Ireland) 1987 , as amended by the Petroleum Production (Amendment) Regulations (Northern Ireland) 2010
Operator input	Yes
Engage stakeholder	Yes
Statutory consultees	–
Decision/output	Record of notification

Geological Survey of Northern Ireland (GSNI)

The Minerals (Miscellaneous Provisions) Act (Northern Ireland) 1959, as amended by the Minerals Development Act (Northern Ireland) 1969, made provision for the establishment of the Geological Survey of Northern Ireland (GSNI) by the Ministry of Commerce (a predecessor of DETI). This act also provides for notification of intent to sink boreholes and shafts, and the subsequent provision of information to DETI. GSNI administers the collection and archiving of such information on behalf of DETI and requires information on any borehole that is intended to penetrate to a depth greater than 15m or the deepening of an existing well.

Further provisions for the supply of information to DETI/GSNI, the retention of samples and confidentiality provisions are included in the Petroleum Production Regulations (Northern Ireland) 1987, as amended by the Petroleum Production (Amendment) Regulations (Northern Ireland) 2010. The standard confidentiality period for information supplied to DETI is four years, although there is an option to extend this under certain circumstances.

Operators carrying out such operations are required to keep a record of the operations in the form of logs and cores or fragments for a period of five years and to allow authorised officers of the GSNI access at all reasonable times.

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Operator arranges independent examination of well design under established scheme

Lead agency	HSENI
Actions	<ul style="list-style-type: none">• The HSENI requires the operator to have a well examiner scheme in place• The HSENI must be satisfied by the proposed design of the well
Key legislation and guidance	Health and Safety at Work (Northern Ireland) Order 1978 Offshore Installations and Wells (Design and Construction, etc.) Regulations (NI) 1996
Operator input	Yes
Engage stakeholder	–
Statutory consultees	HSENI
Decision/output	Well plan that confirms full life cycle up to and including abandonment Assessment of well programme by independent and competent person

Role of the HSENI in onshore oil and gas developments

The HSENI monitors onshore oil and gas operations from a well integrity and site safety perspective. The HSENI oversees the adoption of safe working practices by onshore operators as required under the [Health and Safety at Work \(Northern Ireland\) Order 1978](#) and regulations made under the Act.

The Offshore Installations and Wells (Design and Construction, etc.) Regulations (NI) 1996 (DCR) apply to all wells drilled with a view to the extraction of petroleum regardless of whether they are onshore or offshore. These regulations are primarily concerned with well integrity.

HSENI will work closely with the Northern Ireland Environment Agency (NIEA) and the DETI to share relevant information on such activities and to ensure that there are no material gaps between the safety, environmental protection and planning authorisation considerations, and that all material concerns are addressed.

Requirements on operators

HSENI regulations require that the well design is examined by an independent and competent well examiner.

The well examiner should also review daily activities.

The well should be designed with abandonment in mind. Well abandonment proposals have to comply with Oil and Gas UK guidelines.

The HSENI will review pre-drilling activity via the wells notification process.

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Operator notifies HSENI of intention to drill 21 days in advance

Lead agency	HSENI
Actions	<ul style="list-style-type: none"> • HSENI requires the operator to give advance notice (at least 21 days) of intention to drill and to have a well examiner scheme in place • HSE must be satisfied by the proposed design of the well
Key legislation and guidance	Health and Safety at Work (Northern Ireland) Order 1978 Borehole Sites and Operating Regulations (NI) 1995
Operator input	Yes
Engage stakeholder	–
Statutory consultees	HSENI
Decision/output	Record of notification to HSENI

Notification to HSENI

The Borehole Sites and Operations Regulations (NI) 1995 (BSOR) applies to conventional and unconventional oil and gas operations, including shale gas and coal bed methane developments. These regulations are primarily concerned with the health and safety management of the site.

Requirements on operators

At least 21 days before drilling is planned, the HSENI must be notified of the well design and operation plans to ensure that major accident hazard risks to people from the well and well-related activities are properly controlled.

The operator is required to establish a site safety document.

HSENI regulations require that the well design is examined by an independent and competent well examiner.

HSENI will review pre-drilling activity via the wells notification process.

HSENI must be notified of well abandonment.

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Operator agrees and establishes data-reporting methods

Lead agency	DETI
Actions	Operator supplies agreed information to key consultees, including DETI, NIEA, HSENI and GSNI
Key legislation and guidance	UKOOG onshore shale gas well guidelines (best practice)
Operator input	Yes
Engage stakeholder	–
Statutory consultees	DETI, NIEA, HSENI and GSNI
Decision/output	Data-reporting agreement and ongoing provision of operational information by operator

Data reporting

Operators of onshore oil and gas wells are required to share certain information about the operation with key regulatory bodies, including DETI, the NIEA, HSENI and GSNI.

Data exchange standards

There are standard formats for data exchange within the oil and gas industry. The wellsite information transfer standard markup language (WITSML), for example, provides a standard for transmitting technical data between organisations such as energy companies, service companies, drilling contractors, application vendors and regulatory agencies.

Operators will also be expected to communicate with DETI using the established system of oil and gas petroleum operations notices (PON).

Fracturing information

In addition to statutory reporting, operators of shale gas wells who will be conducting hydraulic fracturing operations should keep records of the following information for regulatory inspection purposes:

- Geological information, including the predicted depth(s) of the top and the bottom of the formation into which well fracturing fluids are to be injected
- Information concerning water supply, usage, recycling and reuse
- A detailed description of the well fracturing design and operations
- A detailed post-fracture job report.

Useful links

Oil and gas: GB onshore exploration and production

www.gov.uk/oil-and-gas-onshore-exploration-and-production#resumption-of-shale-gas-exploration

UKOOG guidance for onshore shale gas wells

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/185935/UKOOG_ShaleGasWellGuidelines.pdf

PON notifications

<https://www.gov.uk/oil-and-gas-petroleum-operations-notices>

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DETI consent to drill

Lead agency	DETI
Actions	<ul style="list-style-type: none">• DETI will assess operator competency and financial stability• DETI grants consent to drill only once all permits are in place and all relevant consultees, including DETI, DOE Planning, NIEA, HSENI and GSNI, have been notified
Key legislation and guidance	Terms of licences issued under the Petroleum (Production) Act (NI) 1964 UKOOG guidance for onshore shale gas wells
Operator input	Yes
Engage stakeholder	–
Statutory consultees	NIEA, DOE Planning, HSENI, GSNI
Decision/output	Drilling consent

Pre-drilling checklist

Licence holders are obliged to seek permission from DETI before they start well operations (application for consent to drill).

DETI may provide consent to drill once the operator has

- Satisfied DETI that effective operational and environmental management systems are in place
- Secured planning permission from DOE Planning
- Discharged any relevant conditions placed on the planning permission by DOE Planning
- Informed the GSNI of intention to drill
- Completed the consultation process.
- Obtained all necessary permits from the Northern Ireland Environment Agency (NIEA)
- Agreed a system for monitoring conditions and emissions with NIEA
- Notified the HSENI of intention to drill (minimum 21 days' notice but recommended to liaise with HSENI well in advance of proposed spud date)
- Provided HSENI with details of proposed well design that has been checked by an independent and competent person (minimum 21 days' notice but recommended to liaise with HSENI well in advance of proposed spud date)
- Agreed data-reporting methods with DETI
- Agreed method for monitoring induced seismicity with DETI (where hydraulic fracturing is planned)

- Received approval for outline hydraulic fracturing programme from DETI (where hydraulic fracturing is planned).

Bundling of consents

If operators plan to conduct hydraulic fracturing operations on a specific well they have the option to bundle their requests for drilling consent and fracturing consent. Whether consent for fracturing is sought before or after drilling of the well, operators must receive DETI approval before fracturing commences.

Useful links

UKOOG guidance for onshore shale gas wells

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/185935/UKOOG_ShaleGasWellGuidelines.pdf

Northern Ireland Environment Agency

www.doeni.gov.uk/niea/hydraulic_fracturing.htm

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DETI approval for outline hydraulic fracturing plan and agreed method for monitoring induced seismicity

Lead agency	DETI
Actions	<ul style="list-style-type: none"> • Operators must establish arrangements to control seismicity and provide a detailed plan for monitoring hydraulic fracturing operations • Before granting consent for shale gas operations that include hydraulic fracturing, DETI will require that a fracturing plan be submitted for consideration. DETI will expect operators to demonstrate a full understanding of the risks of hydraulic fracturing • Operators will need to evaluate the historical and background seismicity and the in situ stress regime, and delineate faults in the area of the proposed well to identify the risk of activating any fault by hydraulic fracturing • The fracturing plan should also include appropriate plans to monitor seismicity before, during and after the well operations
Key legislation and guidance	Terms of licences issued under the Petroleum (Production) Act (NI) 1964 UKOOG guidance for onshore shale gas wells
Operator input	Yes
Engage stakeholder	–
Statutory consultees	–
Decision/output	Monitoring agreed as part of fracture plan

Traffic light monitoring systems for induced seismicity

Traffic light monitoring systems will be required to enable operations to mitigate induced seismicity.

The remedial action level for the traffic light system (that is, the “red light”) will be set at magnitude 0.5 (far below a perceptible surface event, but larger than the expected level generated by the fracturing of the rock). This will apply to the first set of hydraulic fractures and will be subject to review.

Traffic light monitoring systems are affected by natural delays within geological systems such as the slow movement of fluids through faults, so it is important that the trigger levels are low enough to detect the smaller induced seismic events that may be an indication of or precursor to a larger induced seismic event later.

By using sophisticated seismic monitoring algorithms, it is possible to discriminate these very small events from background surface-induced vibrations. In addition the fracture plan should also include provision to monitor fracture growth height.

Useful links

UKOOG guidance

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/185935/UKOOG_ShaleGasWellGuidelines.pdf

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DETI consent to fracture

Lead agency	DETI
Actions	<ul style="list-style-type: none">• As part of the PL licence process, an outline hydraulic fracturing plan (HFP) is reviewed and approved by DETI• Operator granted right to start hydraulic fracturing operations in line with outline HFP and agreed monitoring arrangements
Key legislation and guidance	Terms of licences issued under the Petroleum (Production) Act (NI) 1964 UKOOG guidance for onshore shale gas wells
Operator input	Yes
Engage stakeholder	–
Statutory consultees	–
Decision/output	Outline fracture plan agreed

Hydraulic fracture plan

Operators should develop an outline HFP based on the risk assessment that describes the control and mitigation measures for fracture containment and for any potential induced seismicity.

The proposed design of the fracture geometry should be included in the HFP, including (fracturing) target zones, sealing mechanism(s) and aquifers (fresh and saline), so as not to allow fracturing fluids to migrate from the designed fracture zone(s).

Disclosure of chemical additives

Operators will disclose the chemical additives of fracturing fluids on a well-by-well basis.

A public disclosure of fracture fluid form is downloadable from www.ukoog.org.uk

Useful links

UKOOG guidance

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/185935/UKOOG_ShaleGasWellGuidelines.pdf

Government guidance on shale gas extraction in the UK

www.gov.uk/government/uploads/system/uploads/attachment_data/file/49541/7269-government-response-sg-report-.pdf

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DETI consent for extended well test (EWT)

Lead agency	DETI
Actions	<ul style="list-style-type: none"> • Operator applies for permission to conduct extended well test to assess productivity • DETI requires operators to establish arrangements for controlling venting and flaring activities during the EWT
Key legislation and guidance	Terms of licences issued under the Petroleum (Production) Act (NI) 1964 UKOOG guidance for onshore shale gas wells
Operator input	Yes
Engage stakeholder	–
Statutory consultees	–
Decision/output	Consent for EWT

Extended well test

If the well needs more than 96 hours of testing to evaluate its potential to produce hydrocarbons, the operator can apply to DETI for an EWT once all other consent and permissions have been granted that limit the quantities of gas to be produced and saved or flared.

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Department of Energy & Climate Change
3 Whitehall Place
London SW1A 2AW
www.gov.uk/decc
URN 13D/329