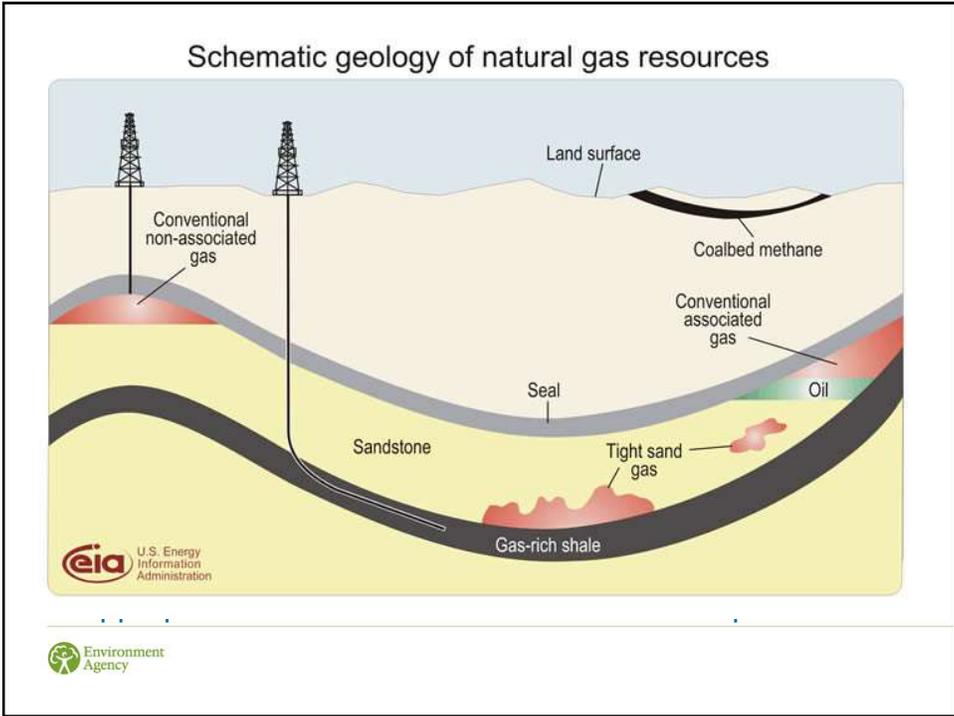


# Managing the Environmental Risks from Shale gas Exploitation

Steve Molyneux, Environment Manager, Lancashire  
July 2014

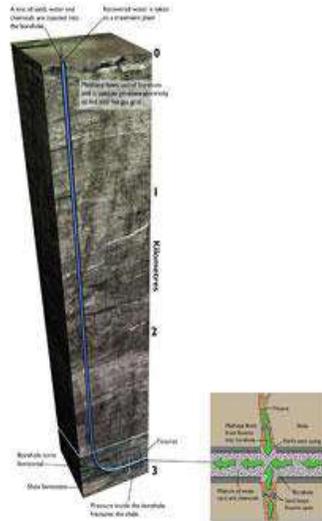
## Overview

- ➔ The Environment Agency and our role
- ➔ What are the risks to or Environment from Hydraulic Fracturing, Air, land and water?
- ➔ What is current regulation and are permits required?
- ➔ The Importance of the location, geological setting and well construction in protecting groundwater.

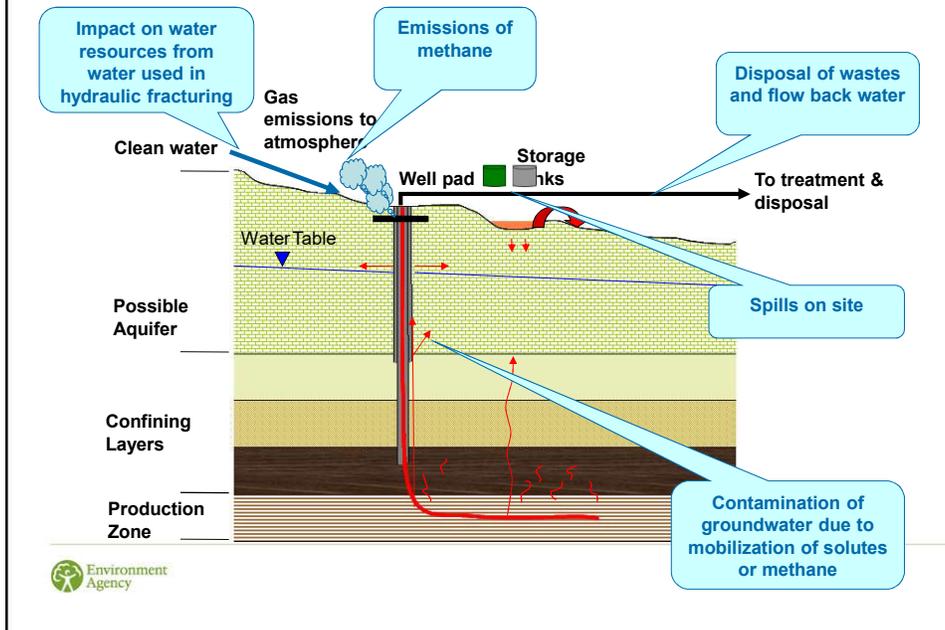


## Process involved in exploratory shale gas operations

- Developing a well pad & sinking a borehole to the target rock
- Hydraulically fracturing the rock through the pressurised injection of a mixture of water, sand & chemicals to allow gas to come to the surface.
- Flow-back of the used fracturing fluid potentially containing natural gas - predominantly methane) salts, metals and NORM.
- Treatment & disposal of waste flow-back water.
- Suspension or decommissioned.



## Environmental risks from shale gas extraction



## Open and transparent regulation

- ⇒ Principal Environmental Regulator (England)
- ⇒ Environmental permits are needed before drilling
- ⇒ Risk based & Site specific – one size doesn't fit all
- ⇒ Permits are consulted upon and public interest may be important
- ⇒ Inspection and check monitoring in line with national standards & open to scrutiny

## Applying regulation

- ➔ Approval of components of fracturing fluids
- ➔ Permit requirements where a groundwater resource is at risk
- ➔ Management of drilling waste, flow back water and flared gases require agreed waste management plan.
- ➔ Management plans required where dissolved Naturally Occurring Radioactive Material in Flow back
- ➔ Flaring standards and methods set out under the Industrial Emissions Directive



## Applying Regulation

- ➔ Site conditioning and permit surrender
- ➔ Use of water: abstraction licence needed if take in excess of 20m<sup>3</sup> per day.
- ➔ Planning advice and flood Risk assessment



# Permit compliance & inspection

## ➔ On site inspection throughout operations

Focus on

- site set up
- drilling & well construction
- mini frack
- fracking
- and flow back



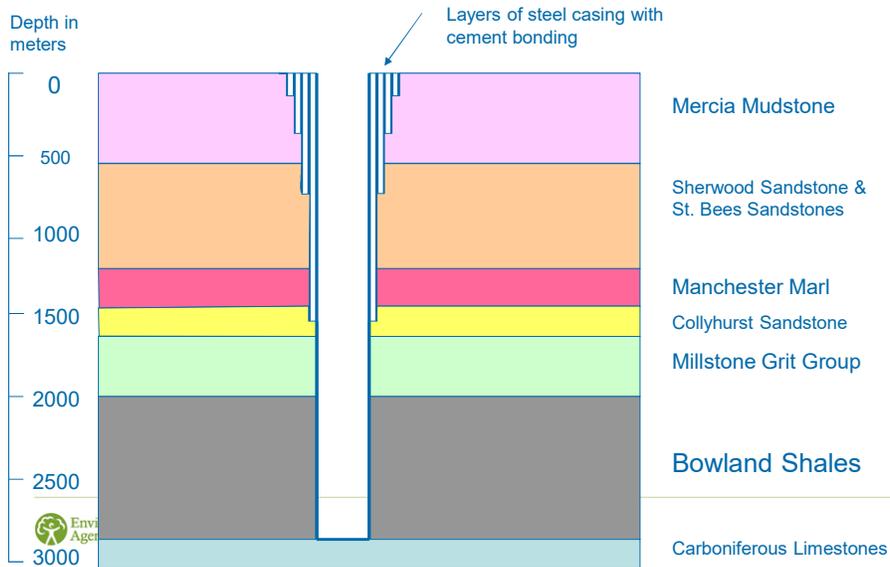
## ➔ Joint inspection with HSE

## ➔ Compliance records open to the public

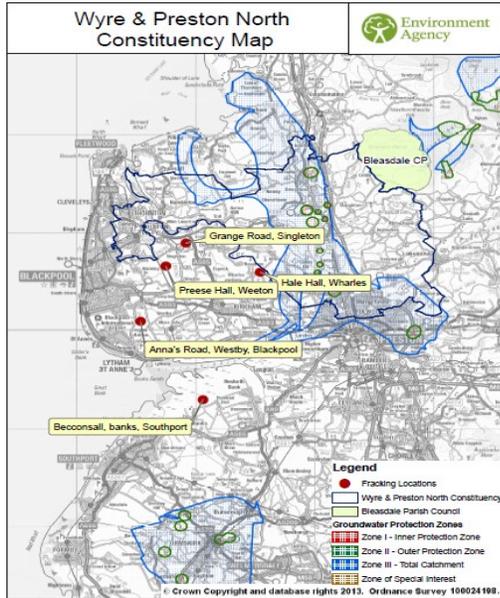
## ➔ Powers to prosecute & enforce suspension of operations



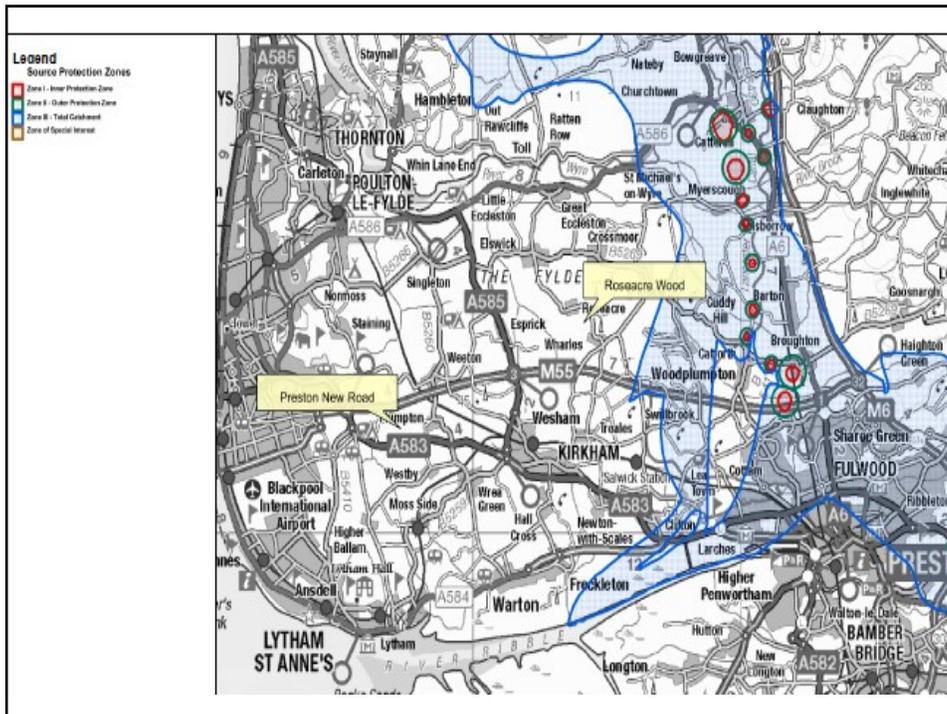
Schematic Diagram of Shale Gas Exploration Preese Hall site in Lancashire



ap3



### Groundwater Source Protection Zones and Location of Lancashire Shale Gas Drill Sites



## Slide 11

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**ap3**

Do we need this map?

apool02, 08/07/2014

## Environment Agency Position

- Shale gas in the UK is at a the early stage of development
- The environmental risks are taken seriously and they can be managed effectively
- All shale gas operations will require environmental permits
- We have the necessary regulatory controls in place for this exploration stage with a robust inspection regime.
- We continue to work closely with the Government, other regulators and the new Office of Unconventional Gas and Oil (OUGO)
- Examining best practice in environmental regulation in Europe (via EU technical working group)



## Permit consultations now closed

Preston New Road

➤ 5 August 2014

Roseacre Wood

➤ 19 August 2014

**Permits being determined, prior to further public consultation if the EA believe permits can be issued.**

