



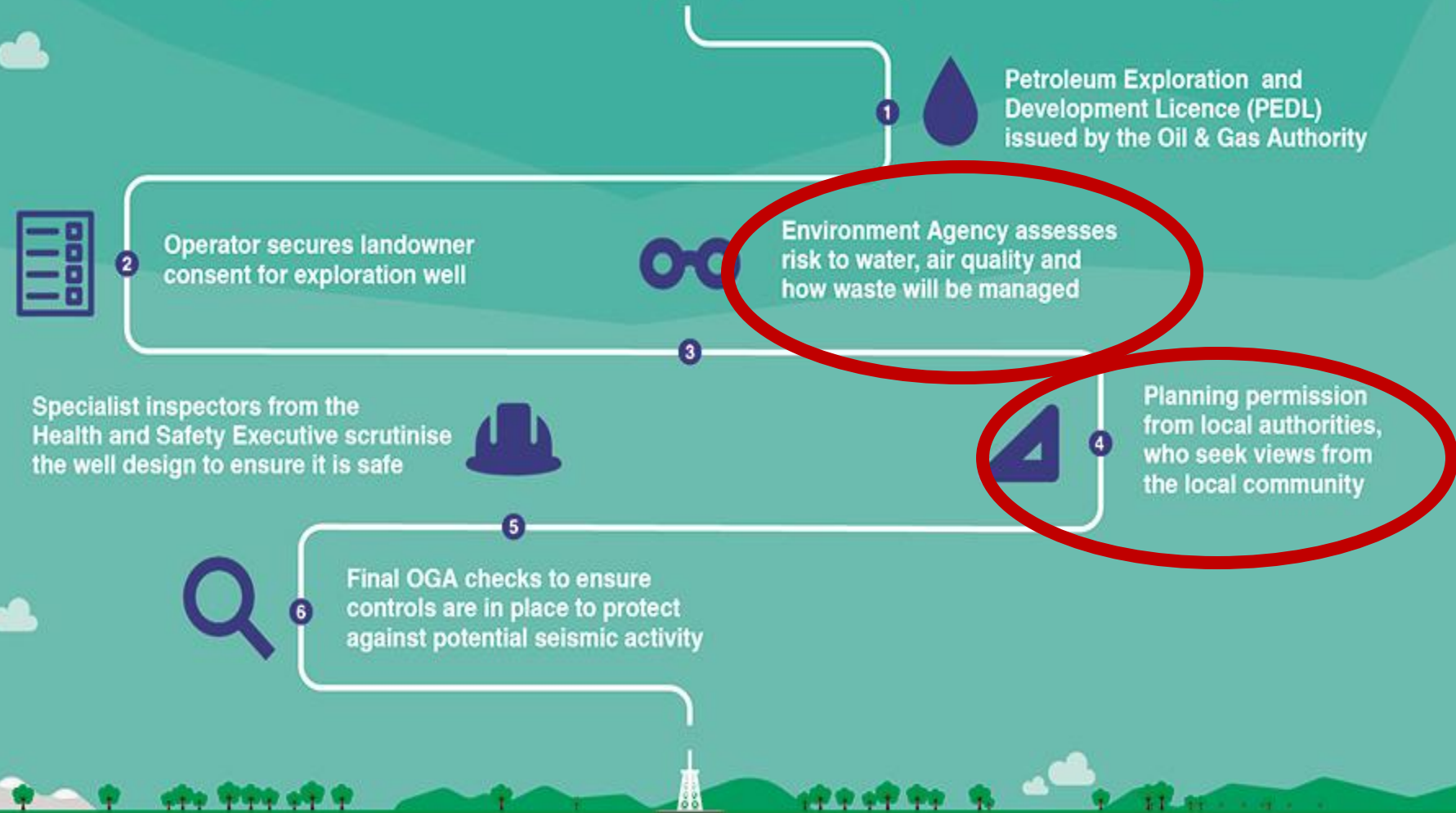
HYDRAULIC FRACTURING

BAKKEN SAFETY TOUR 2016
AUGUST 31 - SEPTEMBER 2

Tony Almond
Onshore Oil and Gas Policy
Health and Safety Executive
UNITED KINGDOM

Environmental Regulation and Planning Conditions for Onshore Oil and Gas well sites in the UK

What happens before a company can explore for shale gas?

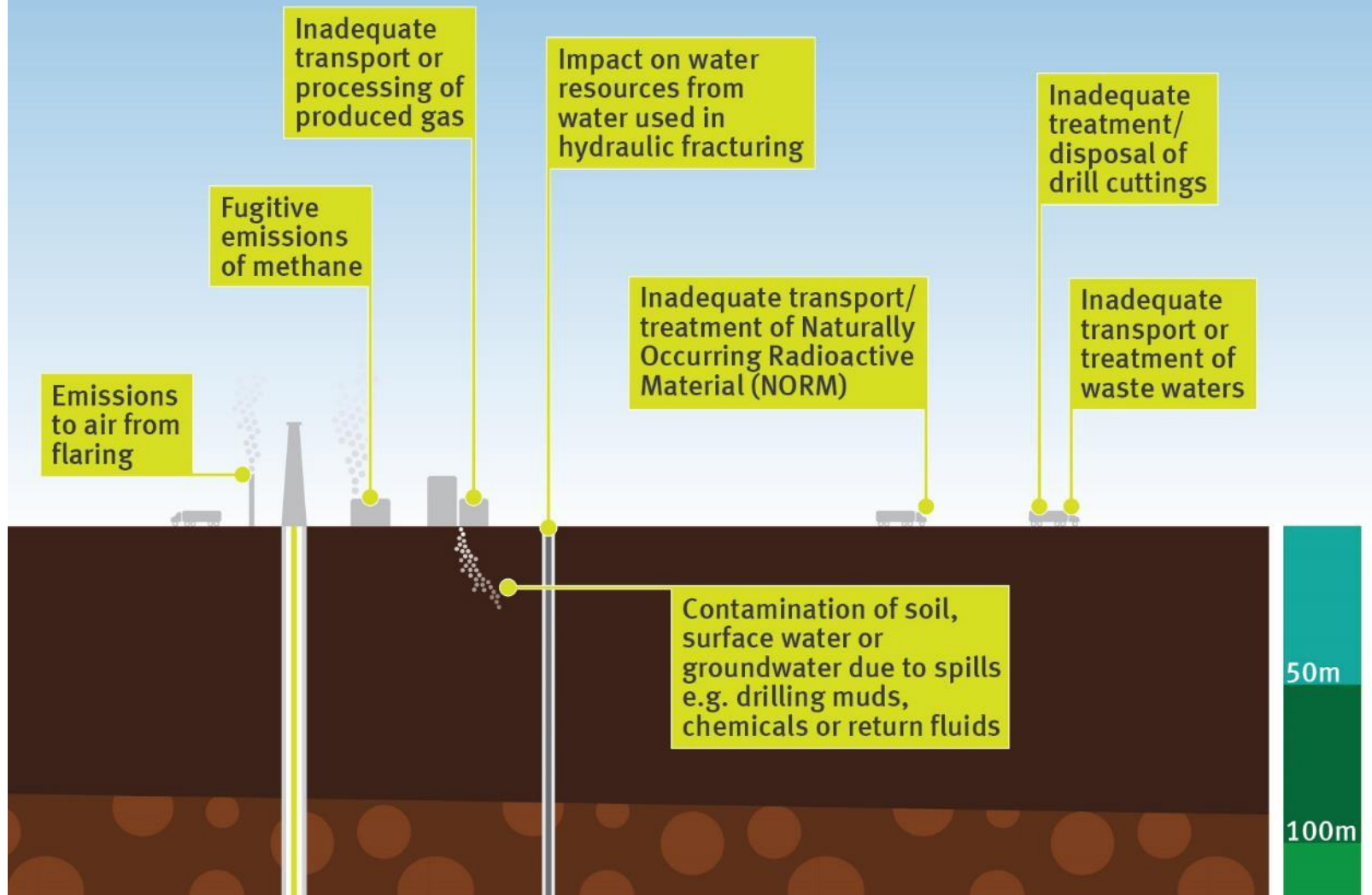


Once all these rigorous safety checks have been completed and permits secured – exploratory drilling can begin

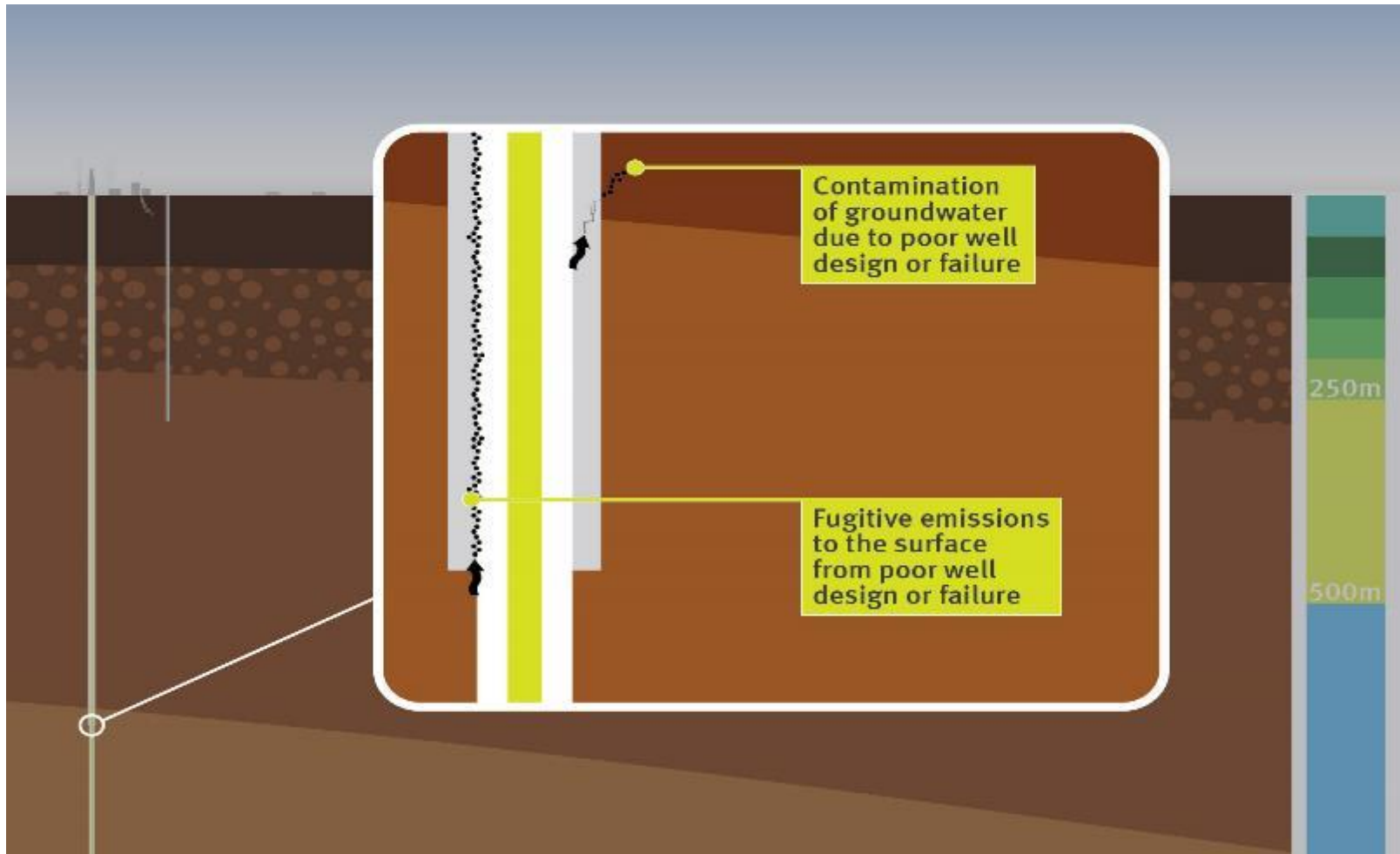
Environment Agency (EA) approach to regulation

- All regulatory activities are risk based
- Activities that could impact on the environment need a permit
- Inspection – examining the activities or infrastructure at a permitted site
- Auditing – detailed review of specific elements including checking of records & procedures
- Monitoring – checking information provided
- Advice and Guidance
- Enforcement

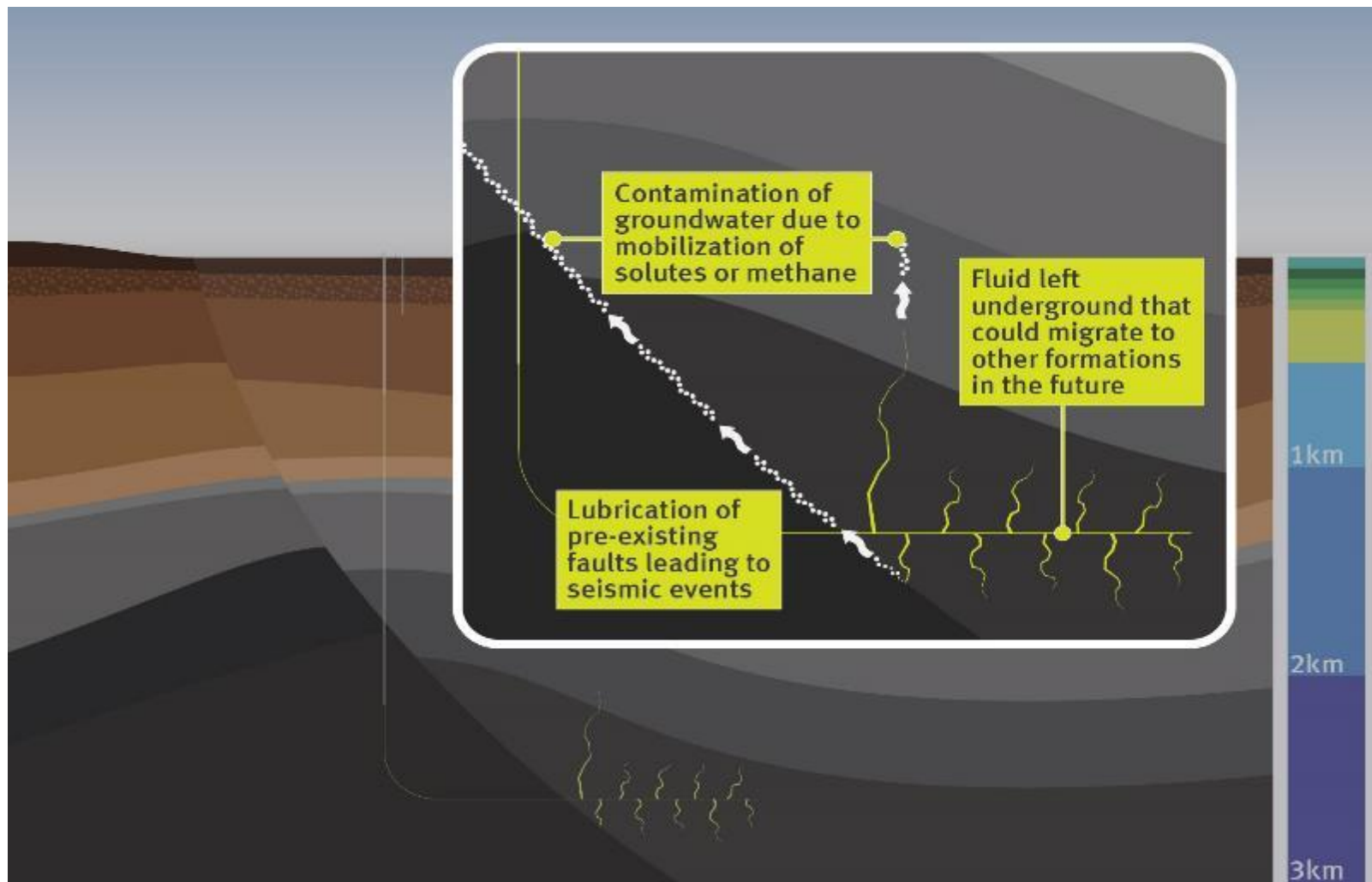
Risks from surface operations



Risks from poor well design



Risks from hydraulic fracturing



Environmental regulatory controls

- ➔ Water Resources Act 1991
 - ➔ S199 notice to drill
- ➔ Extractive (mining) waste permit.
- ➔ Groundwater Activity
- ➔ Radioactive Substances
 - ➔ NORM
- ➔ Industrial Emissions (IED) Flaring 10 t/d
- ➔ Crude Oil Storage
- ➔ Abstraction licence
- ➔ Discharge consent
- ➔ Flood assessment
- ➔ COMAH

Permitting Considerations

Permit for all extractive wastes – defines activities

- ➔ Drill cuttings, spent drilling fluids, returning fracturing fluids, waste gases and any stimulation fluids left behind.

Requires a Waste Management Plan that:

- ➔ Characterise wastes, and describe risks
- ➔ Set out mitigations, in line with waste hierarchy
- ➔ Discloses chemical additives
- ➔ Sets out monitoring and closure plans

Waste water treatment and disposal



Monitoring and decommissioning

- Requirement to produce a site condition report at the beginning and end of operations.
- Monitoring regime set out in the permit or Waste Management Plan
 - Point sources of combustion emissions – e.g. particulates, volatile organic compounds, sulphur and nitrogen
 - Surface water and groundwater – e.g. dissolved methane, total suspended solids.
- Post-decommissioning monitoring until we are satisfied that there is no significant ongoing environmental risk



“Associated hydraulic fracturing”

IA S50 Onshore hydraulic fracturing: safeguards

(S4A Petroleum Act 1988)

- ➔ Fracturing of shale (or strata encased in shale)
- ➔ and involves injecting
 - ➔ more than 1000m³ fluid at each stage **or**
 - ➔ more than 10 000m³ of fluid in total

Protected Areas 1200m depth

➔ Protected Groundwater Source Areas (SPZ1)

➔ National Parks

➔ AONBs

➔ World Heritage Sites

+

➔ Surface Development Restrictions

➔ SSSI

Hydraulic Fracturing Plans

- ➔ EA want to know:
 - ➔ Where fractures have gone
 - ➔ Where the fracc fluid is left underground
- ➔ OGA, HSE & EA working together
 - ➔ approval
 - ➔ Information
 - ➔ skills

In the last 12 months ...

- ➔ 265 Freedom of Information requests
- ➔ 45 Parliamentary questions
- ➔ 24 conference presentations
- ➔ 23 Public meetings
- ➔ 33 permit applications
 - Over 3,400 responses
- ➔ Standard rules consultation
 - 36,000 responses
- ➔ External film published in November on YouTube



What happens before a company can explore for shale gas?

1



Petroleum Exploration and Development Licence (PEDL) issued by the Oil & Gas Authority

2



Operator secures landowner consent for exploration well



Environment Agency assesses risk to water, air quality and how waste will be managed

3

Specialist inspectors from the Health and Safety Executive scrutinise the well design to ensure it is safe



5



4

Planning permission from local authorities, who seek views from the local community

6



Final OGA checks to ensure controls are in place to protect against potential seismic activity

Once all these rigorous safety checks have been completed and permits secured – exploratory drilling can begin

Local Minerals Plan

- Produced by the Minerals Planning Authority
- Plan for minerals extraction over 5 years
- Not a guarantee of planning permission...

Planning Permission

- Needed for all industrial development
- Granted by Minerals Planning Authorities (Local Authorities)
- Any application must be consulted upon
- The MPA can impose planning conditions on the applicant
- The MPA must assume other regulations will be effective

Planning Considerations

- noise associated with the operation
- dust
- air quality
- lighting
- visual intrusion
- landscape character
- archaeological and heritage features
- traffic
- risk of contamination to land
- soil resources
- the impact on best and most versatile agricultural land
- flood risk
- land stability/subsidence
- internationally, nationally or locally designated wildlife sites, protected habitats and species, and ecological networks
- nationally protected geological and geomorphological sites and features
- site restoration and aftercare

Planning Process

- Environmental Impact Assessment
- Pre-application consultation
- Application
- Consultation
- Recommendation of MPA
- Planning Committee decision
- (possible) Public Inquiry
- (possible) 'Call in'

Summary

- **Environment Agency** – protect and improve the environment
 - Use system of regulations and permits
- **MPAs** – meet the justified need for minerals but at the least social, economic and environmental cost
 - Consider impacts and set planning conditions

JOINT US/EU



**CONFERENCE ON HEALTH
AND SAFETY AT WORK**

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