

A large, light blue circular graphic on the left side of the slide. Inside the circle is a white silhouette of a person with their arms raised in a 'V' shape, similar to the 'V' logo of the Environment Agency. The person's head is a circle with a cloud-like shape above it.

Current Environment Agency Challenges

Dr John Kupiec
Innovation Manager

Overview of the Environment Agency

Who we are

Established in 1996 to protect and improve the environment
We have around 10,600 employees
Head office in Bristol and ~80 offices across England

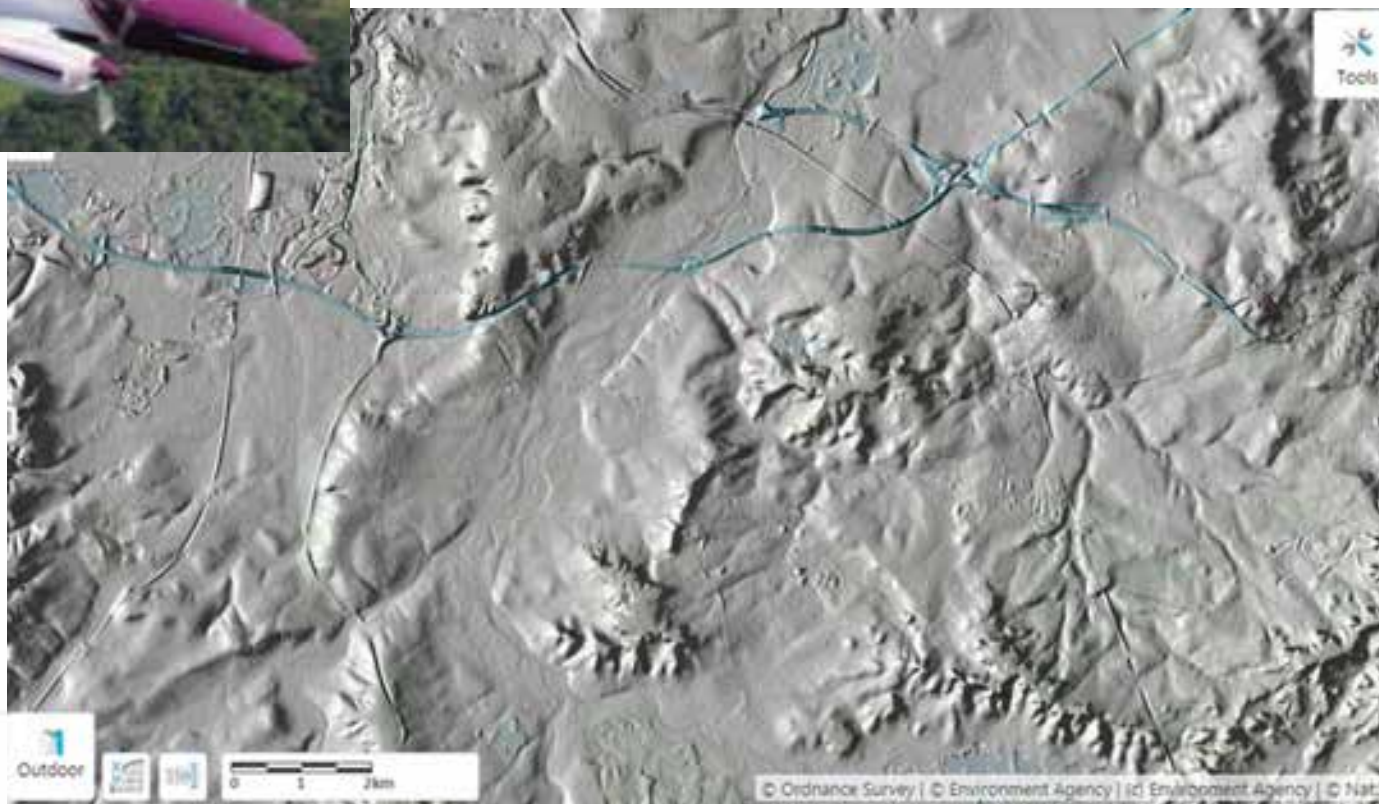
Responsibilities

- Flood forecasting & incident management
 - Regulating major industry and waste
 - Water quality and water resource management
 - Treatment of contaminated land
 - Conservation and ecology
 - Fisheries
-
- ❖ Radioactive Substances Regulation
 - ❖ Thames Barrier

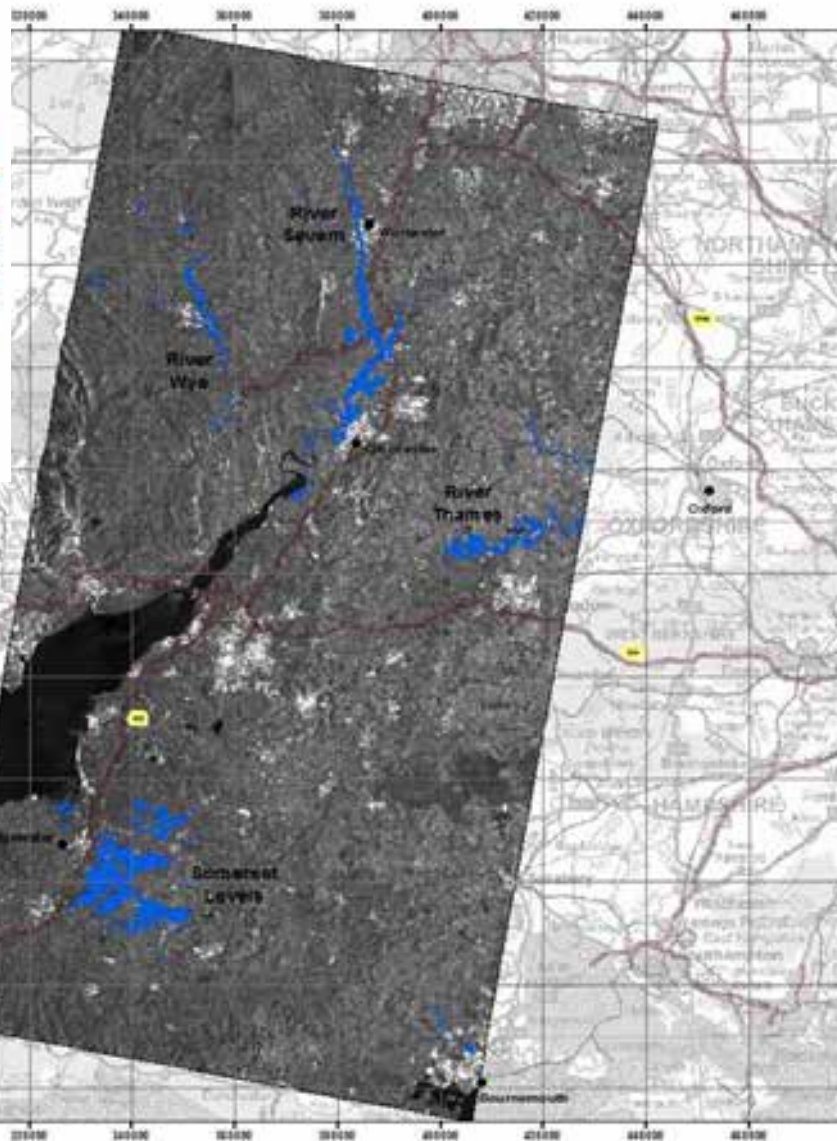
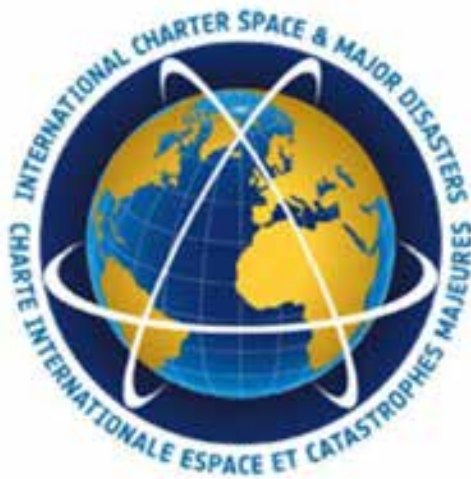
In-House Capabilities

- **Lidar**
- **International Disaster Charter**
- **Air Quality**

Lidar – Digital Terrain Models






Disaster Charter for Flood Forecasting



Flood Outline Thames and South East 22nd February 2014 0626h UTC

Legend

-  Estimated Water Extent
-  Railways
-  Motorways

0 10 20 40 Kilometres

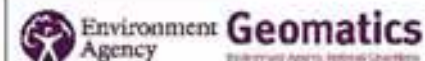
Projection: Ordnance Survey 1936



Estimated flood extent within satellite data: 16,800 hectares

The flood extent was estimated from TerraSAR-X in ScanSAR mode with HH polarisation at 8 metre resolution acquired at 22/02/2014 06.26 UTC.

The water indications on this map are not to scale due to the regional viewing extent. Urban extent is underestimated.



Map generated by Environment Agency,
National Operations, Geomatics.
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Ordnance Survey 100024198



TerraSAR-X/Tandem-X
© 2014 German Aerospace Center (DLR),
2014 Airbus Defence and Space
/ Infoterra GmbH



The satellite data in this map were provided under the International Charter Space and Major Disasters.



Air Quality



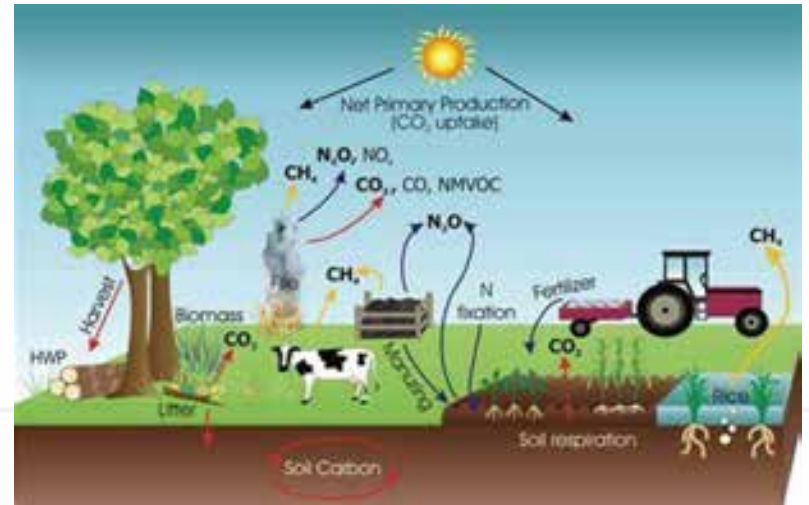
- **Automatic Urban and Rural Network (AURN)**
- **Monitoring by Local Authorities**



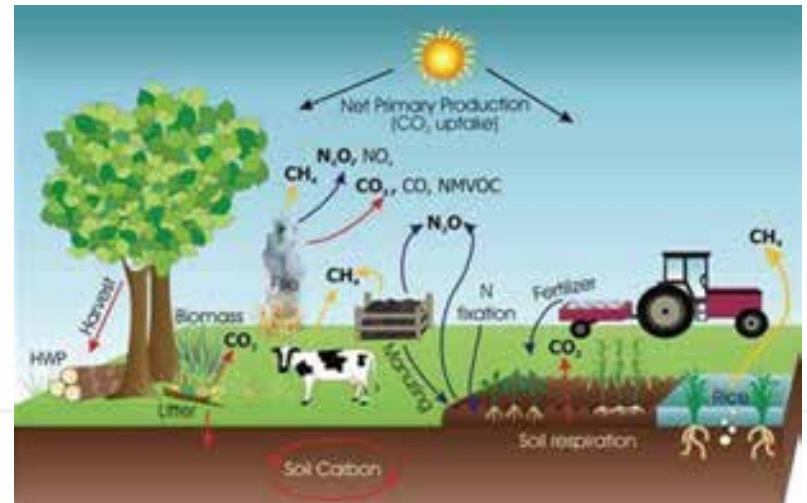
Challenge Areas

- **Greenhouse Gas Emissions**
- **Air Quality**
- **Soil Moisture**
- **Groundwater**
- **Flood Forecasting**
- **Ground Motion**

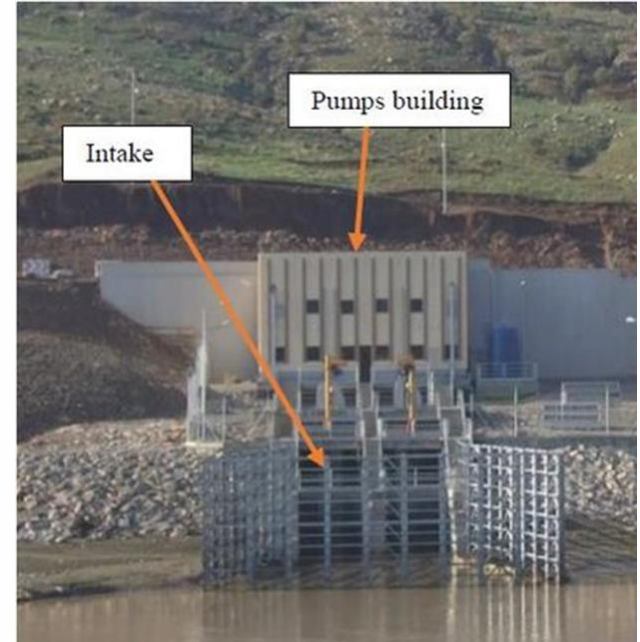
Greenhouse Gas Emissions



Air Quality Monitoring



Surface Water - Abstraction

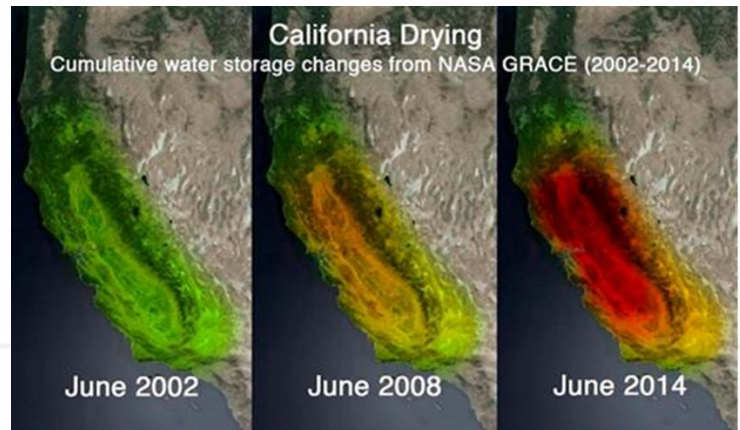
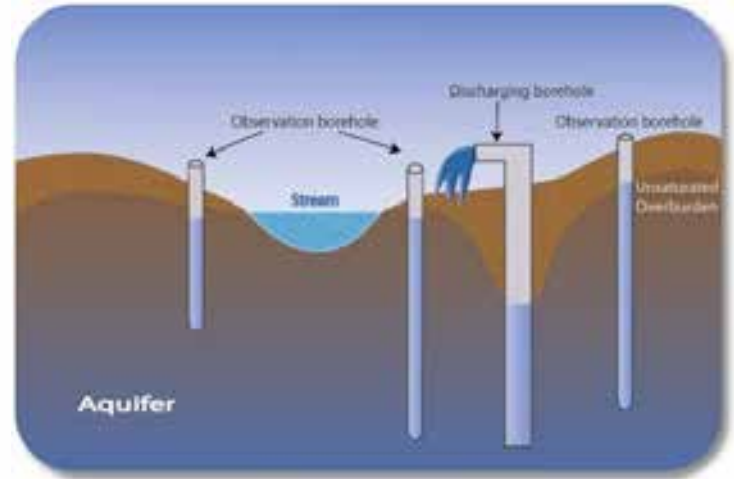
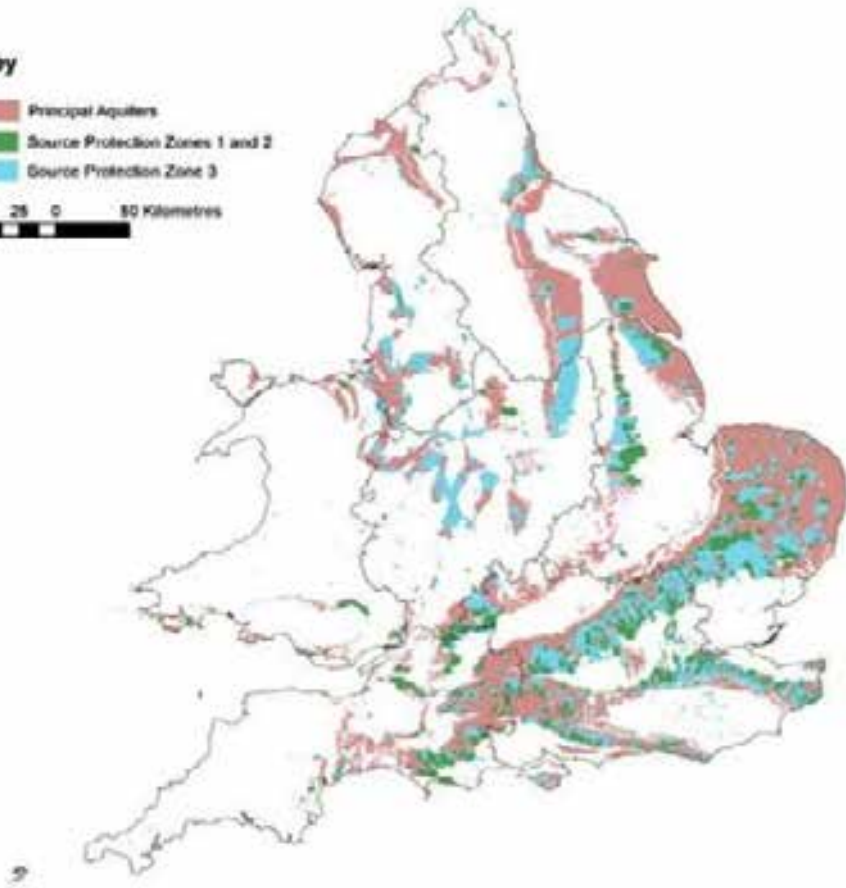


Groundwater – Abstraction

Key

- Principal Aquifers
- Source Protection Zones 1 and 2
- Source Protection Zone 3

0 25 50 100 Kilometres



Soil Moisture – Flooding

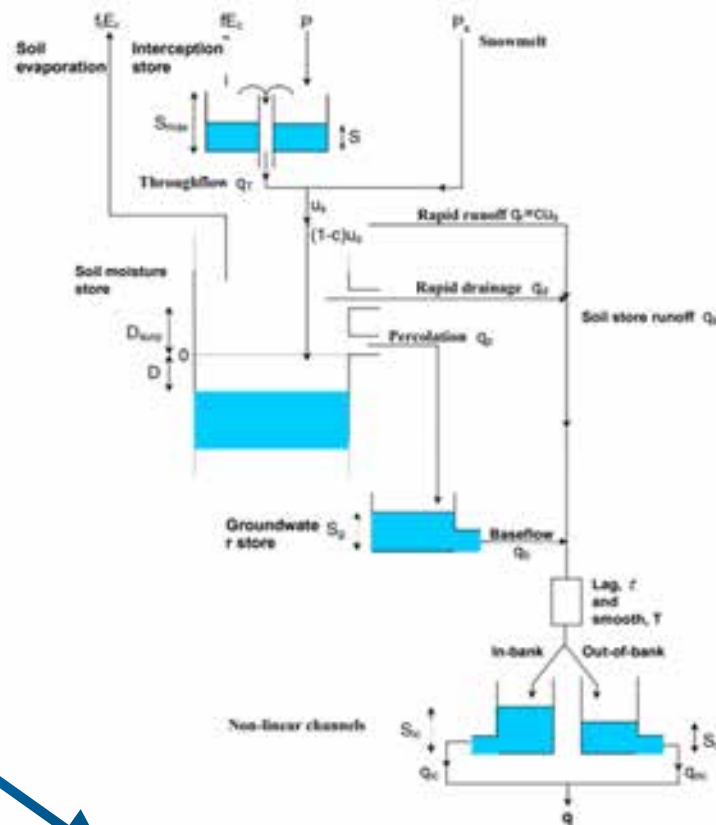
FLOODFORECASTINGCENTRE

a working partnership between



**Groundwater and
Soil Moisture Stores**

Precipitation

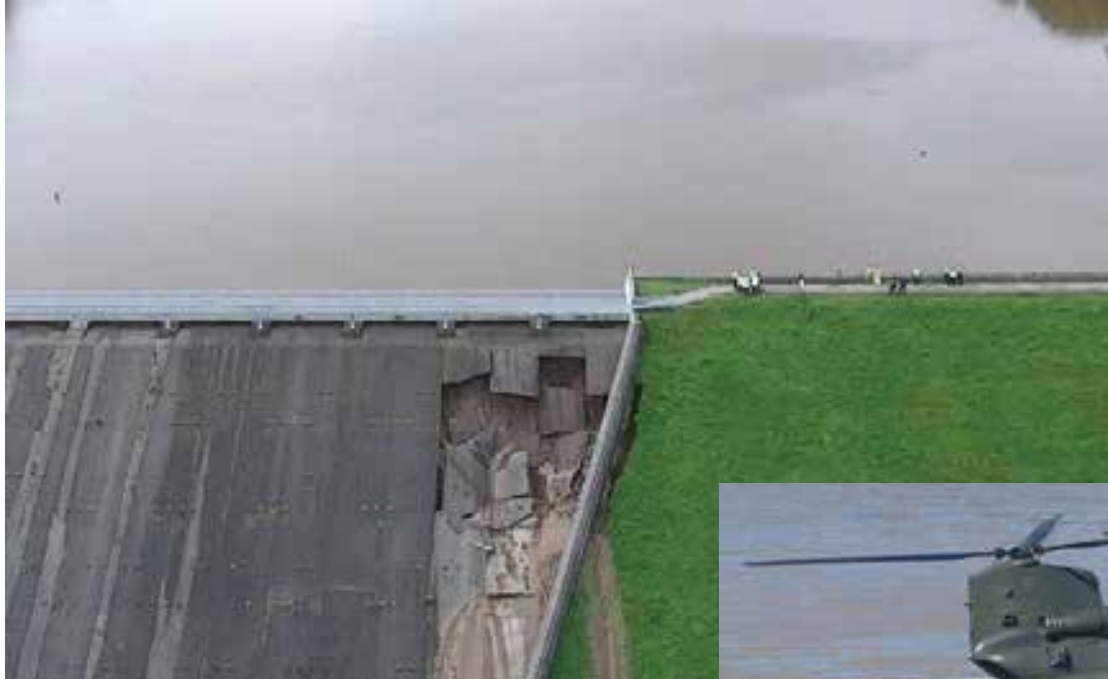


Out of Bank Flooding

Ground Motion – Embankments



Ground Motion – Dams



- **Whalley Bridge Dam collapse. Aug-2019**

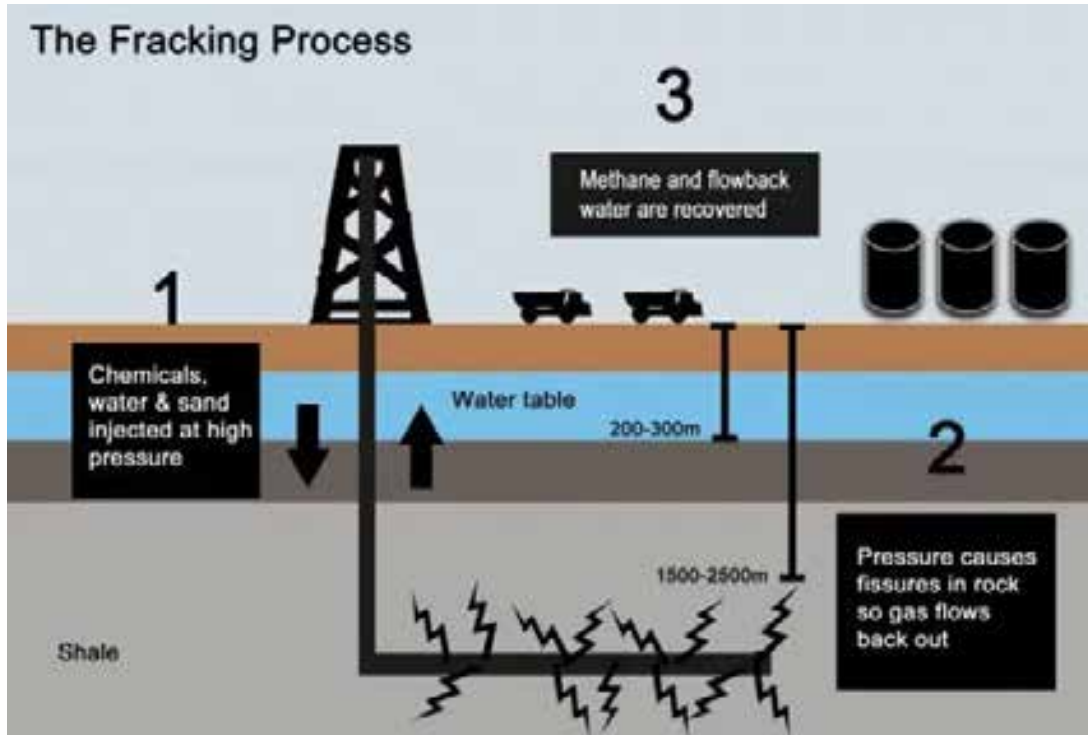


Ground Motion – Landslips



- Stonehaven train derailment. Aug-2019

Ground Motion – Hydraulic Fracturing



- Baseline surface measurement
- On-going ground motion monitoring

Ground Motion – Nuclear

How we dispose of low-level waste



- Radioactive waste sites have to be monitored for movement for ~100 years
- Enhanced monitoring of nearby flood defence assets
- Real time measurement of building movement



Discussion

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