

Response ID ANON-SG2H-Q1DW-H

Submitted to Consultation on modernising environmental permitting for industry
Submitted on 2025-10-15 08:25:41

About you

1 Would you like your response to be confidential?

No

If you answered 'Yes', please explain your reason(s) below:

2 What is your name?

Please enter your name:
Dr Corinna Abesser

3 What is your email address?

Please enter your email address:
BGSPolicy@bgs.ac.uk

4 In which part of the United Kingdom are you based?

England

5 Which part of the UK are you primarily interested in?

All of the UK

6 Who are you responding as?

Non-governmental organisation

Type of respondent:

7 If you are responding on behalf of an organisation, what is its name?

If responding on behalf of an organisation, what is its name?:
British Geological Survey

The case for change

8 Are there other reform goals that we should aim to deliver as part of the modernised framework?

Reform goals for consideration:

Regulatory sandboxing

9 What key factors should be considered when further developing a regulatory sandbox approach for industrial R&D activities under the EPRs, ensuring it fosters innovation while maintaining robust environmental and health safeguards?

What key factors should be considered when further developing a regulatory sandbox approach for industrial R&D activities under the EPRs, ensuring it fosters innovation while maintaining robust environmental and health safeguards?:

Additional guidance and streamlining of groundwater abstraction and reinjection permitting should be considered for research and innovation activities carried out at non- industrial geothermal or underground thermal energy storage (UTES) field research facilities. Experiments at these sites typically involve multiple short- term groundwater abstraction and/or reinjection events, sometimes with heating or cooling, and it is difficult to secure the required abstraction licences and discharge permits.

The abstraction licence application process does not cater for multiple experiments at field research facilities as it only allows for one-off temporary licences or full abstraction licence applications. If a full abstraction licence is applied for then the following difficulties are encountered:

- I) The turnaround time is typically 4-6 months due to the number of applications being processed
- II) No dialogue is possible with permitting officers and so when the permit is eventually assessed it may be rejected due to it being a non- standard research application, which further increases the processing time.
- III) The application process requires that the maximum requested abstraction rate (which is typically high but short duration for research work) is permitted as an annual abstraction rate. This vastly overestimates the volume that will be abstracted and increases the risk that the application will be refused if the catchment concerned has restricted water available for licensing.

IV) Where research involves groundwater abstraction with reinjection nearby and in the same aquifer (e.g. for control of the hydraulic gradient), the licensing process does not take into account the fact that the groundwater is immediately reinjected.

By way of example:

- Researcher request is to undertake 3 x 2 week experiments annually at a field site with groundwater abstraction and immediate reinjection nearby and in the same aquifer at a flowrate of 4 l/s. Actual net volume of groundwater abstracted is zero.
- The facility is required to apply for a long- term abstraction licence as the abstraction is not a one-off temporary event. This assumes a continuous annual flow rate of 4l/s and the process does not allow the reinjection volume to be deducted from the abstracted volume. Assumed net volume of groundwater abstracted for abstraction approval decision is 126144 cubic metres.

In consequence, it is difficult and time- consuming to secure permits for the at- scale field research that is needed to assess the effects of shallow geothermal or energy storage schemes on aquifers. A lack of research on the effects of shallow geothermal or energy storage schemes on UK aquifers risks slowing the adoption of this technology, which is widely utilised elsewhere in Europe and can significantly reduce CO2 emissions associated with the heating and cooling of buildings.

Hydrogen production

27 Do you have any comments on the most proportionate approach to permitting of hydrogen production via the electrolysis of water? Please outline your views on any potential costs or benefits the proposal may bring to you and/or your organisation, as well as any positive or negative impacts it could have on human health or the environment.

Do you have any comments on the most proportionate approach to permitting of hydrogen production via the electrolysis of water?:

Sub-surface storage of hydrogen

28 Do you have any comments on groundwater permitting of sub-surface storage of hydrogen? Please outline your views on any potential costs or benefits the proposal may bring to you and/or your organisation, as well as any positive or negative impacts it could have on human health or the environment.

Do you have any comments on groundwater permitting of sub-surface storage of hydrogen? :

In order to enable large-scale underground storage of hydrogen, the BGS view is that exemptions for particular potential pollutants, including those associated with underground hydrogen storage, would be required. This would allow for the development of underground hydrogen storage in the UK, and part of the remit for this is given in the following text:

The use of hydrogen is recognised as one of the promising yet unexploited technologies to support decarbonisation of the energy, industrial and transport sectors (Royal Society, 2023). To support a hydrogen economy, large-scale hydrogen storage is required, and subsurface storage gives a scale of storage that is not commercially viable through surface storage in tanks (Hydrogen Technology Collaboration Programme, 2023). BGS have researched multiple opportunities for hydrogen storage in porous rocks (including deep saline aquifers and depleted hydrocarbon reservoirs) and initial results (British Geological Survey, 2023) indicate these may well be feasible targets for large-scale hydrogen storage based on the required geological conditions and the geological conditions present in many of these structures. To enable subsurface storage it is therefore required to allow hydrogen to be introduced into suitable subsurface units (including depleted hydrocarbons reservoirs and deep saline aquifers). BGS consider this is important in allowing the effective environmental regulation of this developing technology.

Royal Society. 2023. Large-scale electricity storage. Royal Society Policy Briefing. Issued: September 2023 DES6851_2. ISBN: 978-1-78252-670-4.

Hydrogen Technology Collaboration Programme. 2023. Underground Hydrogen Storage: Technology Monitor Report.
<https://www.ieahydrogen.org/download/17/task-reports/7067/task-42-technology-monitoring-report.pdf>

British Geological Survey. 2023. Hydrogen storage in porous media: Pre- and postbatch experiment assessment of borehole samples. British Geological Survey Open Report, OR/23/022.

Consultee Feedback on the Online Survey

46 Overall, how satisfied are you with our online consultation tool? Please give us any comments you have on the tool, including suggestions on how we could improve it.

Neither satisfied nor dissatisfied

Overall, how satisfied are you with our online consultation tool? :