

Written Evidence Submitted by Centrica plc (HNZ0073)

About Centrica

Centrica is a leading international energy services and solutions provider, founded on a 200-year heritage of serving people. We serve around 13 million customers across the UK, Ireland, North America and continental Europe. We are focused on satisfying the changing needs of our customers, enabling them to transition to a [lower carbon future](#).

Centrica Storage Ltd own and operate the Easington gas processing terminal in East Yorkshire and the Rough gas field in the Southern North Sea Basin. The Easington Terminal's main function is to receive and separate natural gas from Rough and process gas from third parties delivering it to the National Transmission System (NTS). The terminal is capable of processing up to 1.6 billion cubic feet (bcf) of gas per day into the NTS.

The Rough gas field is a highly porous rock reservoir surrounded by non-porous rock, the biggest of its kind in the UK. Located off the east coast of Yorkshire the reservoir itself is approximately 10 km (6 miles) long by 3 km (1.8 miles) wide and varies from 24 metres (80 feet) to 36 metres (117 feet) in depth. It began producing gas in 1975 before converting to a gas storage operation in 1985 to meet seasonal supply and demand imbalances from through to 2017. In 2018 the Rough field returned to a production facility and the Undertakings were removed.

The Easington Terminal is part of the Hydrogen to Humber (H2H) Saltend project, an anchor project to the Zero Carbon Humber partnership. The terminal would receive and compress the CO₂ generated from the hydrogen ("H₂") production before it is piped offshore and stored in an underground "saline aquifer" storage reservoir.

Executive Summary

Centrica welcomes the opportunity to submit evidence to the Science and Technology Committee's inquiry. In order to achieve the UK's Net Zero target by 2050, the UK appears increasingly likely to rely on H₂ to meet its future energy needs.

To manage the inevitable fluctuations between the production of H₂ and its consumption, there will be a need for H₂ storage facilities. Re-purposing Rough, which is currently scheduled for closure, is expected to be the most cost-efficient option to meet this long-term need for H₂ storage. With the support of the right policy and regulatory framework, we can avoid decommissioning and re-purpose Rough into a H₂ store.

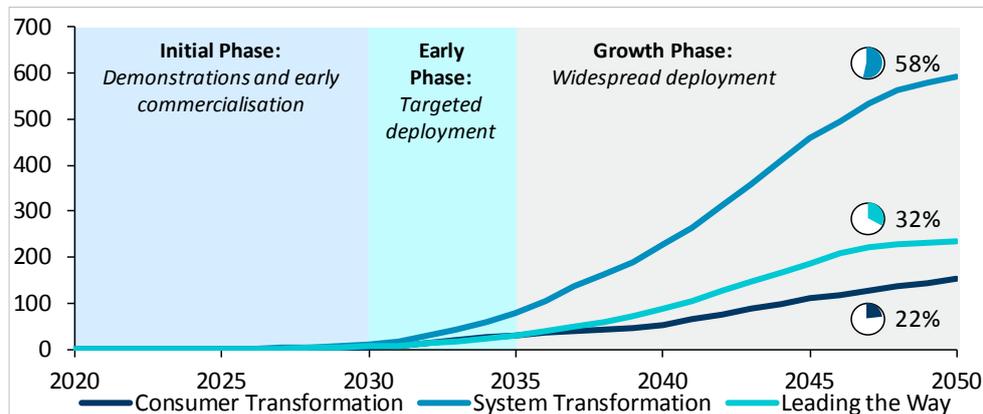
We must lay the groundwork this decade to ramp up H₂ production in the 2030's and keeping Rough open as a natural gas storage facility in the 2020s will benefit GB consumers through greater security of supply and lower gas prices, while being ready to switch to hydrogen storage when needed. Moreover, Rough's continued operation is unlikely to require taxpayer support, but it does require a regulatory regime to be appropriately designed.

An investment in Rough during the 2020s would support up to 2,000 jobs in the North-East during construction and 350 direct jobs during operations, plus 1,900 more indirect and induced supply chain roles. Development of Rough would also strengthen the UK's security of supply – necessary given our increasing reliance on imported energy.

The UK has a growing need for hydrogen and hydrogen storage

Hydrogen is increasingly viewed as a key enabler of the UK’s transition to achieving Net Zero emissions by 2050: The Committee on Climate Change (CCC), Hydrogen Council, and National Grid, among others, have identified H2 as a solution for decarbonisation where other low carbon options (e.g. electrification) may be more costly or complex to implement. According to National Grid’s Future Energy Scenarios (“FES”), H2 could support more than 50% of total UK energy demand by 2050 (see Figure 1).

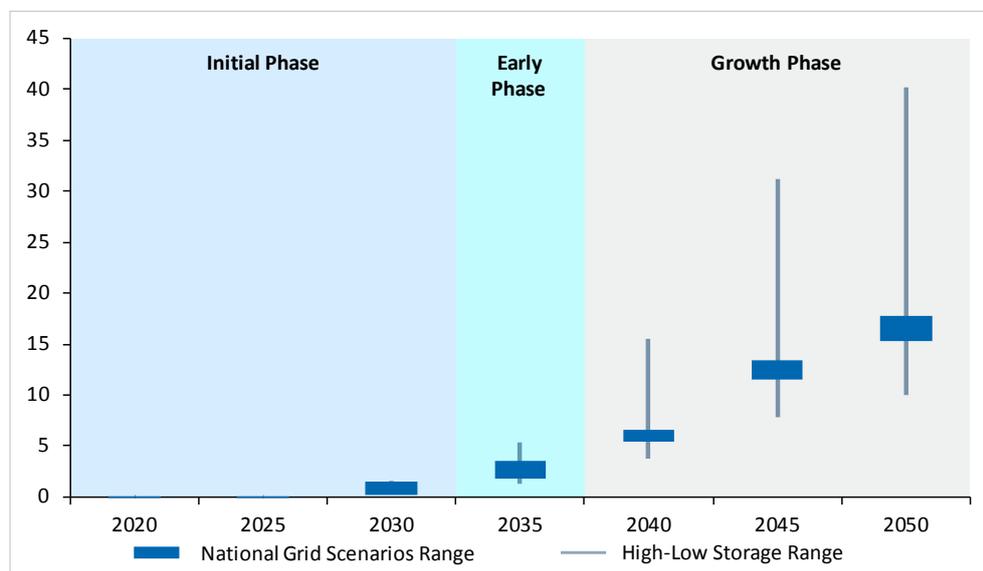
Figure 1 - Annual hydrogen demand by National Grid scenario (TWh)



Note: Pie charts in the figure represent the H2 share of total UK energy demand in 2050.

Modelling undertaken by FTI Consulting¹, based on the FES scenarios, shows that under any National Grid scenario consistent with Net Zero, a significant need for H2 storage is likely – regardless of whether the hydrogen is made from natural gas (“blue H2”) or by electrolysis (“green H2”).

Figure 2: Potential Storage Capacity Needs (TWh)



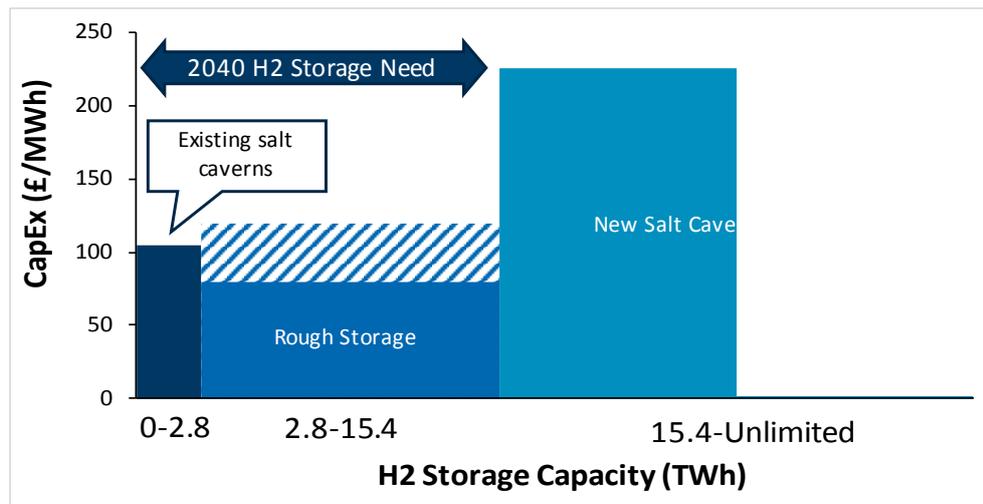
¹ FTI Consulting modelling commissioned by Centrica Storage Ltd (2020)

Rough is best placed to meet the UK's H2 storage needs and benefit consumers.

Based on National Grid scenarios, the UK's need for H2 storage could be 3.5 TWh by 2035 and 6.6 TWh by 2040 (see Figure 2 above). Converting the UK's existing salt cavern natural gas storage facilities to be able to store H2 could potentially meet a proportion of this need.

However, significantly more H2 storage will be needed. In this respect, repurposing Rough to be able to store H2 is more cost effective than investing in new storage facilities, as shown in **Error! Reference source not found.** 3 below. Rough therefore appears key to meeting UK's long-term H2 storage need efficiently but would require the right policy support and a regulatory regime to be appropriately designed.

Figure 3: H2 storage options



Keeping Rough open for gas/H2 blend storage in the interim brings major advantages:

1. **Securing our energy**

- Keeping Rough open whilst it transitions to 100% hydrogen provides a physical store of natural gas, strengthening our security of supply as the reliance on imports surges while ensuring the UK has storage capabilities for both blue and green H2 as we progress towards a low carbon future

2. **Greener buildings**

- Though decarbonising heating is one of the biggest challenges the UK faces, Rough enables more diverse heating technology solutions to meet differing consumer needs by providing an energy storage solution at the centre of whole system flexibility needs

3. **Export strategy & skills**

- Building on the UK's expertise on the UKCS, we now have the opportunity to become a global leader in H2 storage capabilities and re-purposing oil & gas assets for a low carbon future

4. **Protecting consumers**

- Storage benefits consumers by improving liquidity of the gas market and reducing price volatility, and ultimately gas price levels

5. **Advancing offshore wind**

- Rough provides a large-scale energy storage solution that allows the utilisation of renewable technologies not possible with large-scale electricity storage & serve inter-seasonal system flexibility needs

6. Industrial “SuperPlace”

- Rough would facilitate job creation & growth in the Humber across the 2020’s, creating a potential world-leading net-zero industrial heartland

7. “Levelling up” the UK

- Rough is an existing and proven infrastructure solution ready to lay the ground for H2 ramp up in the 2030’s and support over 2,000 jobs in this decade

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