



 Centrica Storage Limited

The reopening of Rough gas storage

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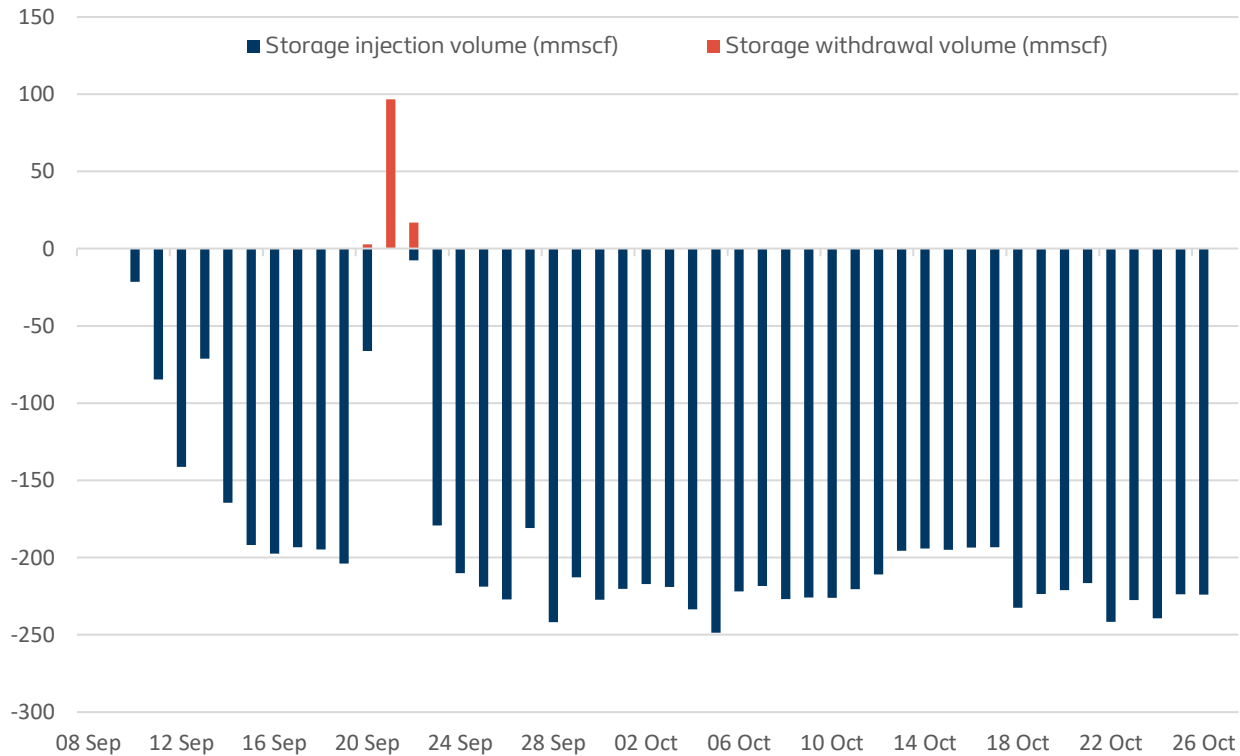
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Rough has now reopened as a gas storage facility

- 10 year storage licence granted to Centrica
- Commissioning since early September
- ~30bcf potential storage capacity available this winter
 - 20bcf+ currently in field
- Immediately becomes the UK's largest gas storage facility
 - Adding ~50% to UK capacity
- No regulatory support model required for this winter
 - Injection when gas prices are lower
 - Withdrawal when gas prices are higher
- Long-term aim remains to turn Rough into Europe's largest long-duration energy storage facility
 - Initially storing methane and subsequently hydrogen
 - Estimated £2bn investment over the long-term
 - Dependent on regulatory support model



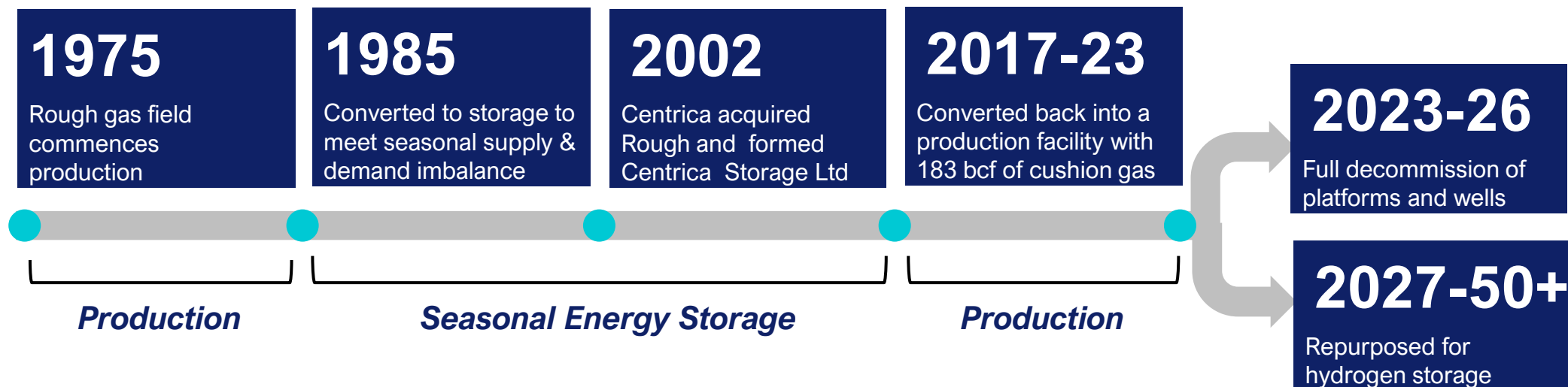
Rough injection and withdrawal profile during commissioning



- Gas sold forward at time of injection
- On delivery date, option to withdraw or buy on market
 - Gas price dependent
- Asset ownership enables lower-risk optimisation

Note: mmscf = million standard cubic feet. 100mmscf = 0.1bcf = ~1mmth

Centrica Storage Ltd has wholly owned and operated Rough and the Easington gas processing terminal in East Yorkshire since 2002



Rough and the Easington gas processing terminal

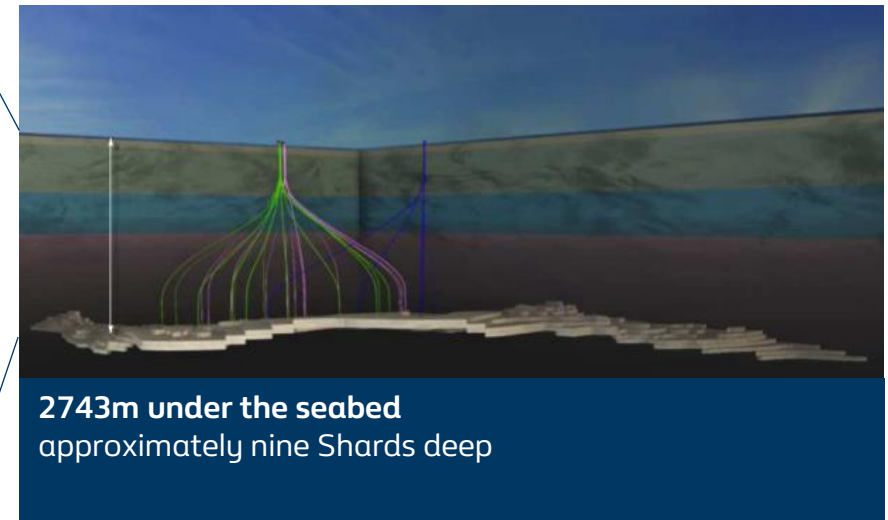
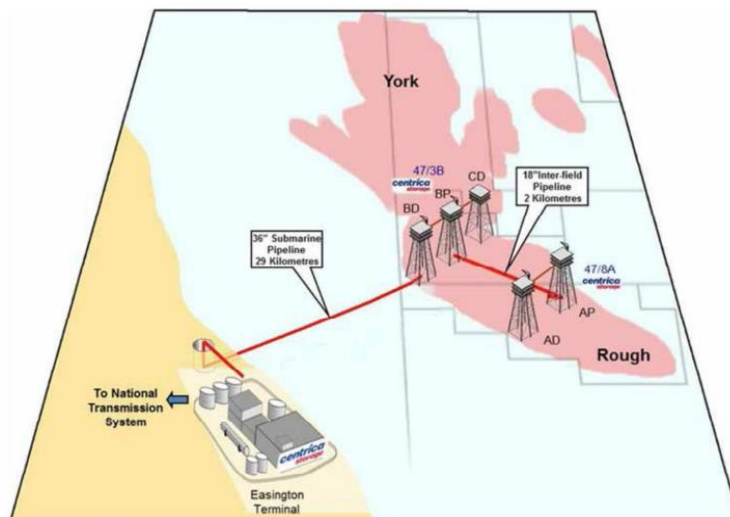
- 30 km² of highly porous rock reservoir, the biggest of its kind in the UK
- Easington gas terminal capable of processing up to 1.6bcf of gas per day into the national transmission system – approximately half an average LNG tanker
- Management team with a proven track record in gas infrastructure development
- Safe storage operations delivered over 30 years

Since Centrica ownership in 2002:

- Equivalent of 38m UK homes supplied through storage to meet annual demand
- 300+ people employed annually
- 82 Different customers served
- £3bn Cumulative revenues

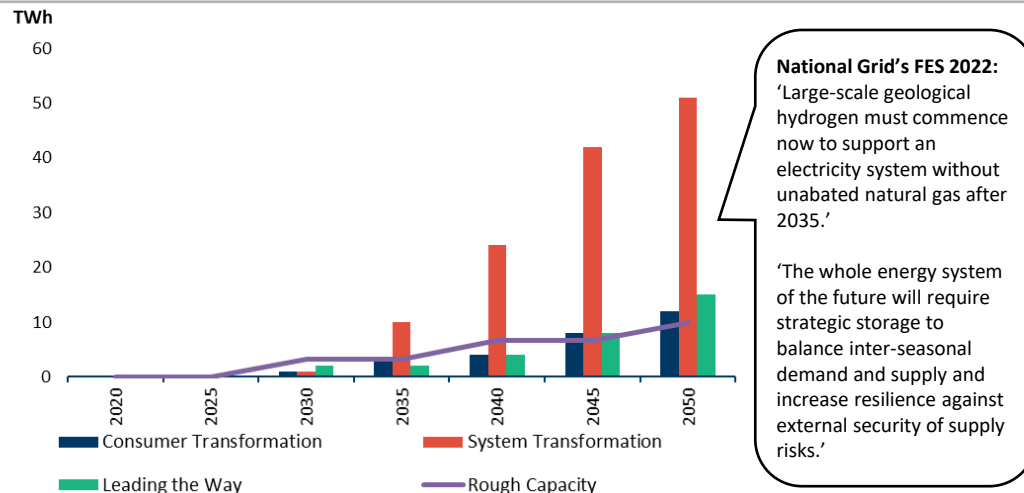
The Rough reservoir remains the only proven large scale gas storage facility in the UK with favourable technical characteristics

- The Rough reservoir is located **29 km offshore from Easington**, spanning an area of approximately 30 km² and is located approximately **2.7 km under the seabed**
- The facility currently consists of the Rough reservoir, two (manned) offshore installations (47/8A and the 47/3B) and the Easington Terminal
- The two offshore installations are connected to Rough via **30 wells** and connected to each other via a 2 km long 18" inter-field pipeline
- It is the "Goldilocks" of the sector as it meets requirements on temperature, dryness, size and proximity to land – it is the only proven offshore gas storage reservoir in the UK

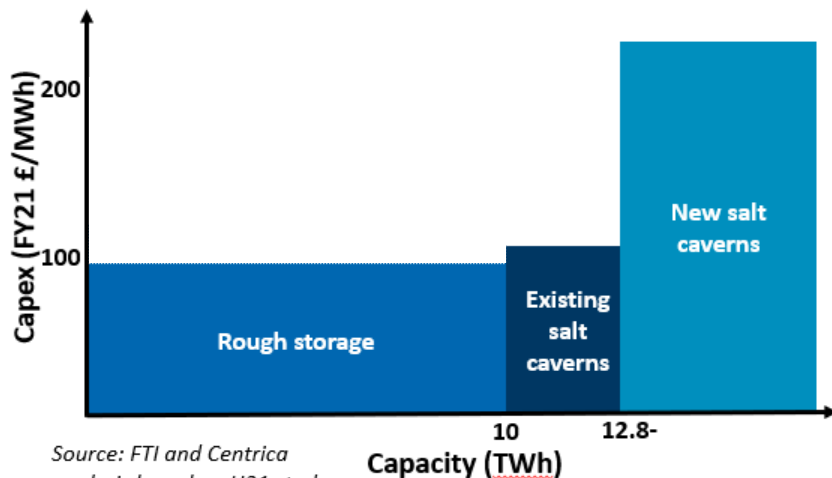


Rough is uniquely placed to deliver the UK's accelerated hydrogen targets but requires the right regulatory support model

Significant volumes of H2 storage is required to reach Net Zero



Merit order of 100% H2 storage options, £/MWh of storage



- Hydrogen storage will play a key role in providing “**hyper-flexibility**” in matching supply and demand so that minimal energy is wasted
- The new **10GW hydrogen target by 2030** accelerates and amplifies the need for storage
- In the long term, Rough can accommodate high storage requirements for which there is broad consensus; NG Future Energy Scenarios (FES) 2022 estimates **11-56 TWh by 2050**; Committee on Climate Change (CCC) estimates **20 TWh by 2050**
- The UK currently has no established hydrogen storage capacity and existing operational salt caverns will be needed for interim methane use
- Rough can provide **up 10TWh** of hydrogen storage to be **brought online in phases** of ~3TWh, reaching 10TWh when needed
- **These incremental increases in capacity can be adjusted to reflect the need for hydrogen storage**
- Rough can be the key to the **UK's long term needs** for hydrogen storage
- Storage is best suited to leading the hydrogen transition, providing support and structure to the nascent hydrogen economy

There are locational benefits from Rough's proximity to the largest industrial cluster – the combined East Coast Cluster

Centrica is a partnership organisation to Zero Carbon Humber, which is aiming for the East Coast Cluster to be the world's first net zero industrial region by 2040

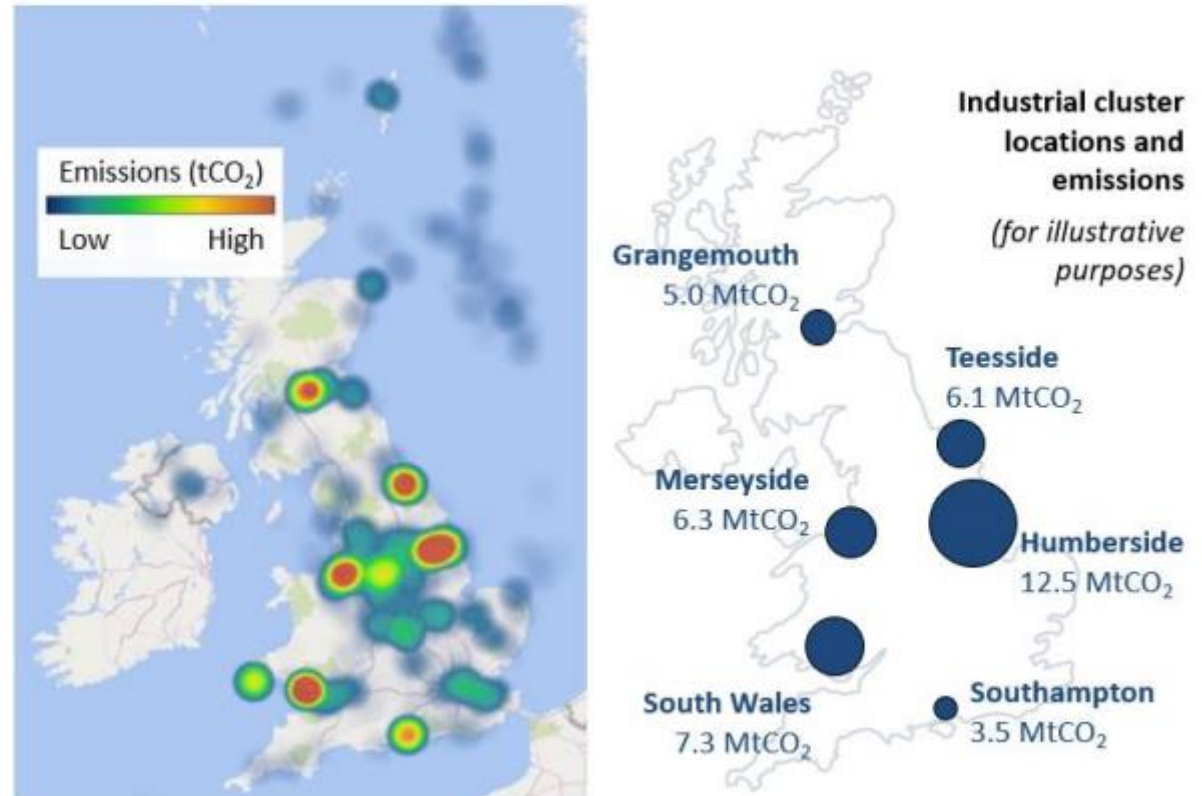
Proximity to wind generation

- Dogger bank A-C 3.6 GW of installed capacity by 2025 with sub-station located at Saltend.
- Hornsea 1-4 will have 6 GW of installed capacity by 2027 with the sub-station located at Immingham.
- In 2020, the UK curtailed its wind energy generation on 75% of days, amounting to over 3.6 TWh of curtailed generation (c.5%) which could have been stored and subsequently delivered back to the grid or supplied directly to consumers.¹

Proximity to major conurbations

- Rough could support hydrogen fuelled homes and businesses in the North East under the scenario that conversion of heating will roll out from industrial clusters to local areas.
- Rough's vicinity to the Humber cluster places it strategically in an area where heating with hydrogen may become prevalent in the late 2020s, requiring much greater seasonal storage and capability for hydrogen to meet demand patterns.

Heat map of 2018 point source emissions (left) correlates directly to the corresponding locations of the UK's six major industrial clusters²



Today, Rough is supporting the UK's energy resilience and will help keep consumer prices lower

- 10 year storage licence granted to Centrica
 - 30bcf potential storage capacity available this winter
- Injecting gas since September
 - 20bcf+ currently in field
- Investment made solely by Centrica
 - No regulatory support model required for this winter
- Full development requires the right regulation to:
 - Secure £2bn of investment
 - Create thousands of jobs
 - Reduce prices for consumers
 - Deliver the UK's hydrogen targets
- Continued discussions with UK Government on developing the right regulatory framework to support the long term development
 - No government investment required
- Rough essential to enable the UK's hydrogen economy and return the UK to being a net exporter of energy

