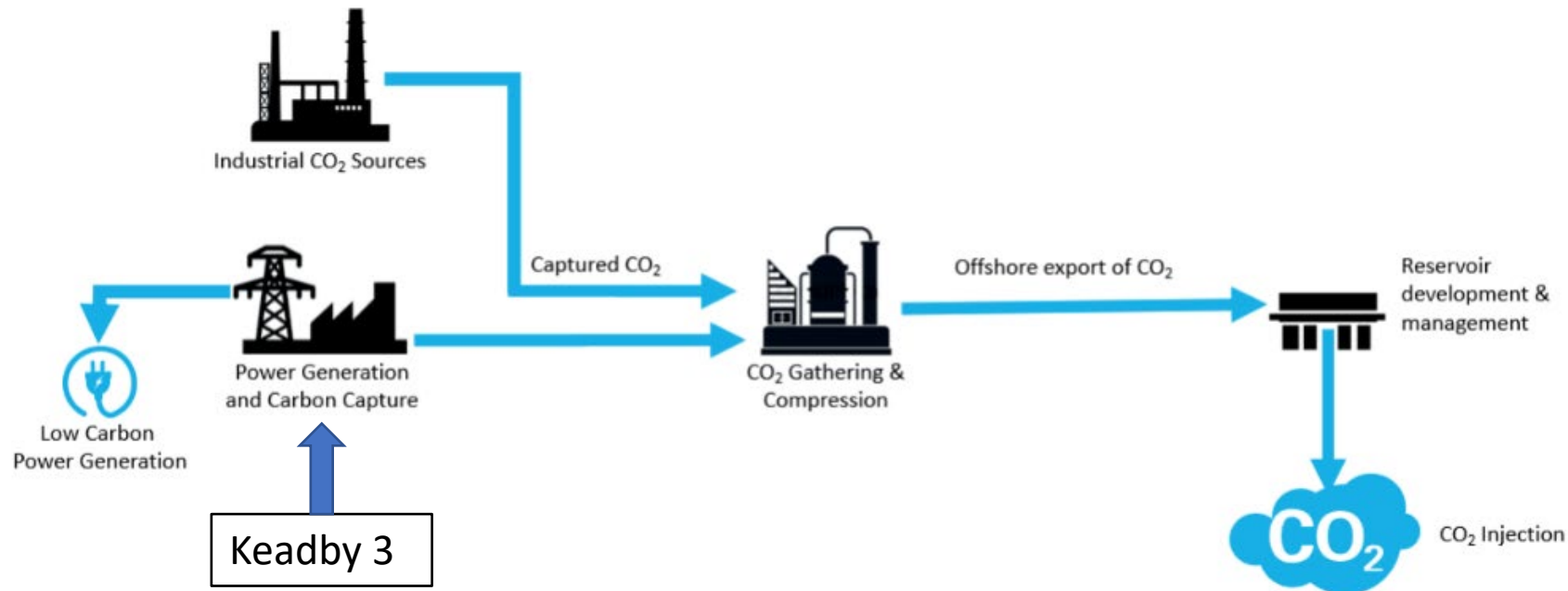


What is carbon capture?

Carbon capture is a proven and safe process that removes CO₂ from emissions, for example from a power station or chemical manufacturing installation, and then compresses the CO₂ so that it can be safely transported to secure underground storage sites. It is then injected into layers of solid rock several kilometres underground, where the CO₂ is stored, preventing it from being released into the atmosphere.

A diagram of the full 'chain' of carbon capture, usage and storage (CCUS) is shown below.



Keadby 3 CCS

Keadby 3 will be a new build CCGT of up to 910MW (gross), with CCS, connecting into the Zero Carbon Humber CCUS network

The gas-fired plant is being designed to be dispatchable to meet UK electricity demand and capable of capturing at least 90% of CO₂ emissions

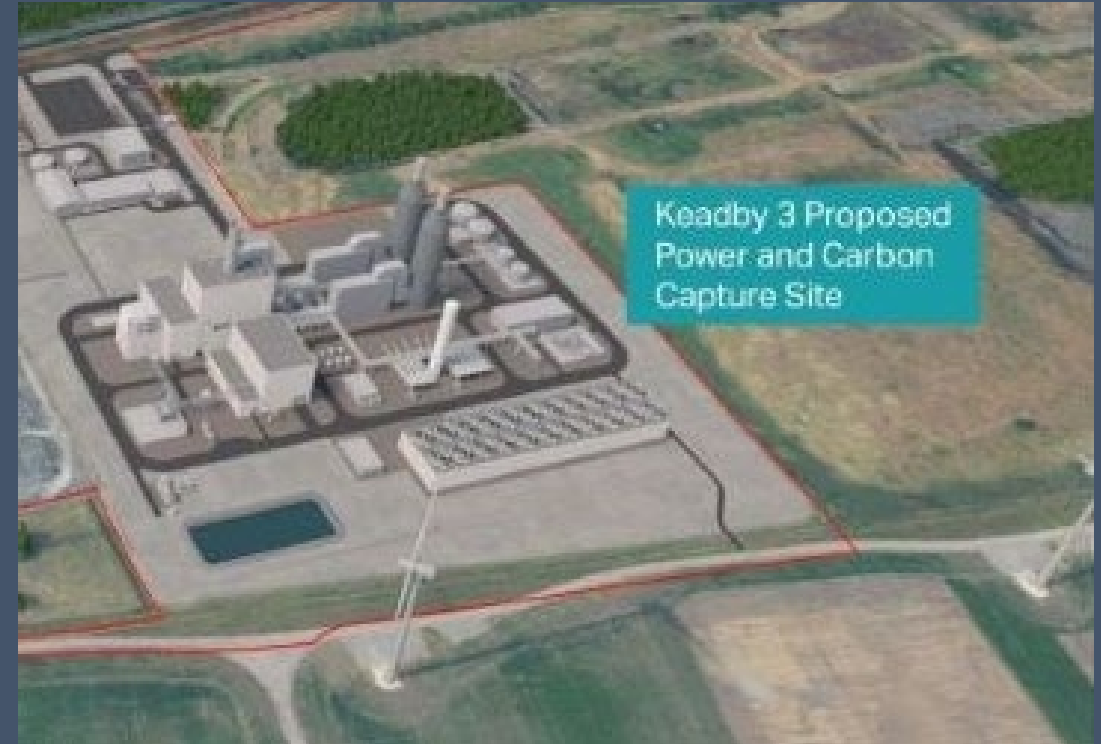
The carbon capture plant absorber will either be a single larger column or two smaller columns

A solution of amine is used to capture the CO₂ from the CCGT flue gas

The amine solution is regenerated on site in a scrubber for re-use

Water is required for cooling the CCGT and the carbon capture plant

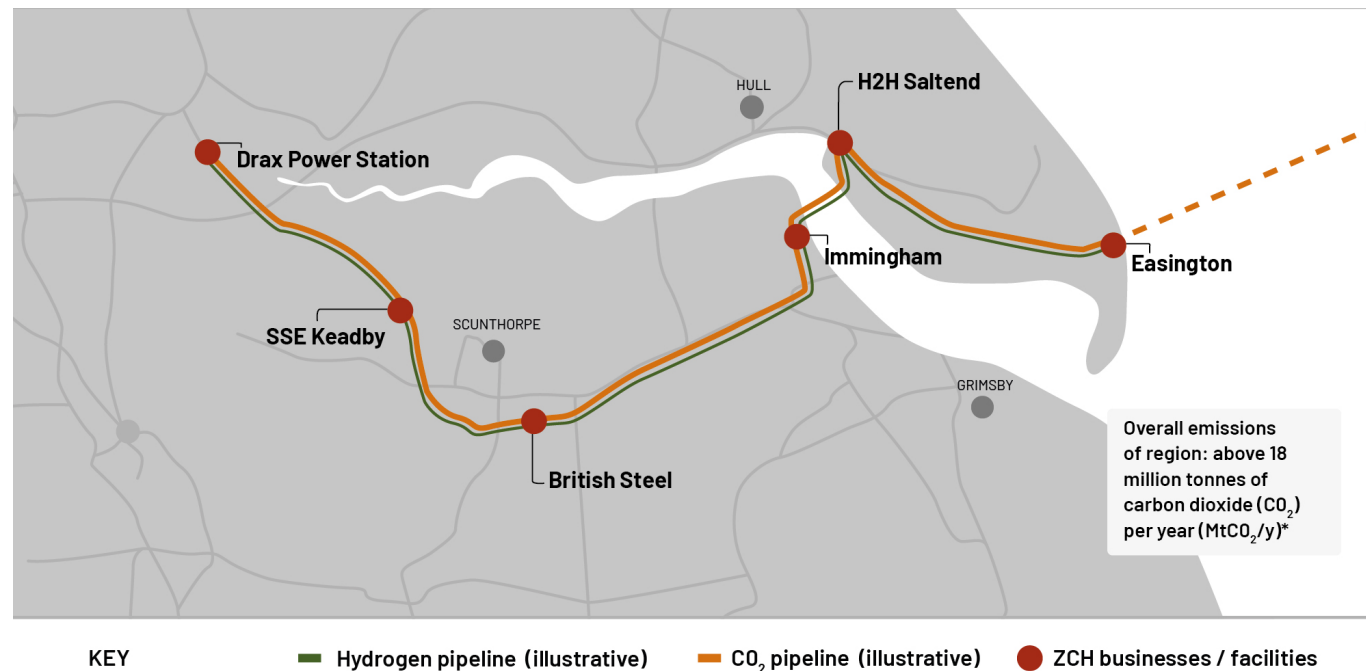
The captured CO₂ will be compressed in work 7 and removed from site in the National Grid Humber Low Carbon Pipeline



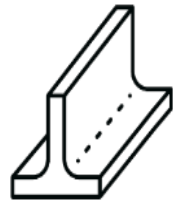
Strategic Context

The UK has legislated to cut national carbon dioxide emissions to **Net Zero** by **2050**

SSE Thermal is partnering with leading organisations across the Humber Region to accelerate the development of carbon capture and underground storage (CCUS) - this includes Keadby 3, which is intended to link in to the Zero Carbon Humber (ZCH) Partnership, representing an important contribution to towards **Net Zero**



Why do we need CCS?



- CCS is proven technology and is already in use around the World (Committee on Climate Change. 2019. Net Zero Technical Report).
- It is one of a number of technologies that are crucial to reducing CO₂ emissions and combatting global warming (HM Government. 2021. Net Zero Strategy: Build Back Better).
- It is seen as essential to help the UK achieve net zero (HM Government. 2020. Energy White Paper: Powering our Net Zero Future).
- Significant role in decarbonising industry (HM Government. 2020. Energy White Paper: Powering our Net Zero Future)

Carbon Capture and Compression Plant

- EN-1 states all applications for combustion plant with a generating capacity of 300 MW or over should demonstrate that the plant is carbon capture ready ('CCR').
- The Proposed Development goes beyond CCR, being carbon capture enabled and equipped with carbon capture and compression plant from the outset.
- 1.6 of draft EN-1 states that for applications accepted before its designation, the 2011 suite of NPSs should be relied upon, although emerging draft NPS' may be important or relevant considerations.
- The emerging draft EN-1 goes into more detail and states that developments should include carbon capture plant and application documents should assess environmental impacts and the status of other consents for the CCUS chain.
- Our ES assesses the carbon capture and compression plant, while requirement 33 provides the commitment that the NSIP will not be constructed before principal consents for onshore and offshore components of the CCUS chain have been granted, nor begin commercial use without the plant being in place. An Environmental Permit will govern the ongoing operation of the Proposed Development including the carbon capture and compression plant.

