H2Teesside and the East Coast Cluster

Energy Transition for the Supply Chain – 23 March 2022

Luke Warren
bp Hydrogen

Becoming a Net Zero bp

Integrated gas

Our aims:

- 25Mtpa customer sales
- >30Mtpa LNG portfolio

Low carbon electricity

Our aims:

- 50GW developed renewables
- Position across generation and customers
- 500TWh traded[1]

Bioenergy

Our aims:

- >100Kbd produced and integrated across value chain
- 20% Biojet market share
- Cost advantaged platforms across Brazil

Hydrogen and CCUS

Our aims:

- 10% hydrogen share in core markets
- Net Zero Teesside

A sustainability frame linking our purpose and ambition

Net Zero

EAST CO_2AST CLUSTER

In January 2022, several projects from the Teesside and Humber regions submitted proposals to BEIS as part of Phase-2 of the CCUS cluster sequencing process. The UK Government is set to announce a shortlist of successful projects from May that will be eligible for business model support. The successful projects are likely to be amongst the first taken forward in the East Coast Cluster.

Northern Endurance Partnership

NORTH SEA

145km

103km

MIDDLESBROUGH

REDCAR

DARLINGTON

PROJECTS IN TEESSIDE
INCLUDING
Net Zero Teesside

UP TO 10 MTPA CO_2 CAPTURED

YORK

HULL

GRIMSBY

SCUNTHORPE

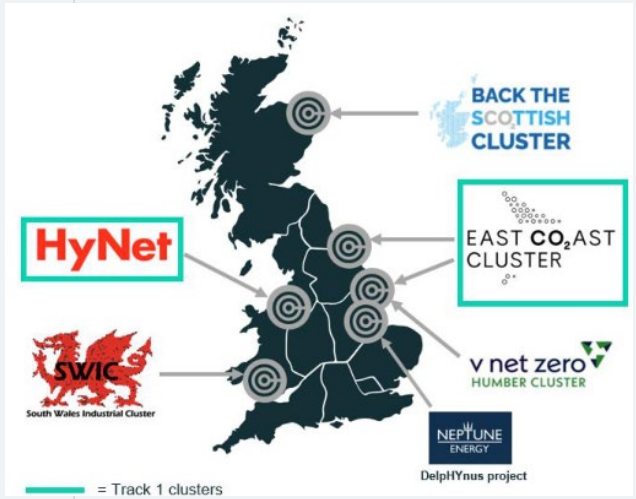
PROJECTS IN THE HUMBER
INCLUDING
ZEROCARBON HUMBER

17+ MTPA CO_2 CAPTURED

LEEDS

SHEFFIELD

East Coast Cluster offers unmatched scale and diversity, removing almost half of the UK's industry cluster emissions



EAST CO_2AST CLUSTER

Unites the Humber & Teesside to remove almost
50% of industry cluster CO2 emissions

Northern Endurance Partnership

A partnership between bp, National Grid, Equinor, Shell and Total, the NEP enables the East Coast Cluster by providing the common infrastructure needed to transport CO2 from emitters in the Humber & Teesside to secure and scalable offshore storage in the North Sea

ZEROCARBON HUMBER

Delivers a net zero industrial cluster in the Humber region

Net Zero Teesside

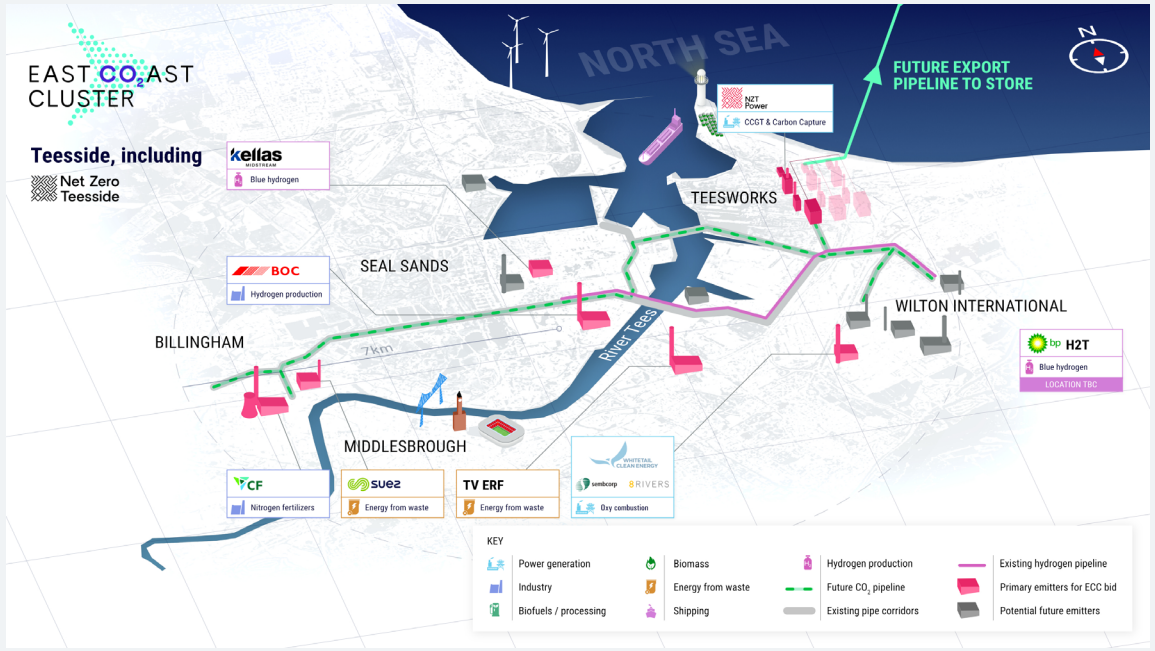
Delivers a net zero industrial cluster on Teesside

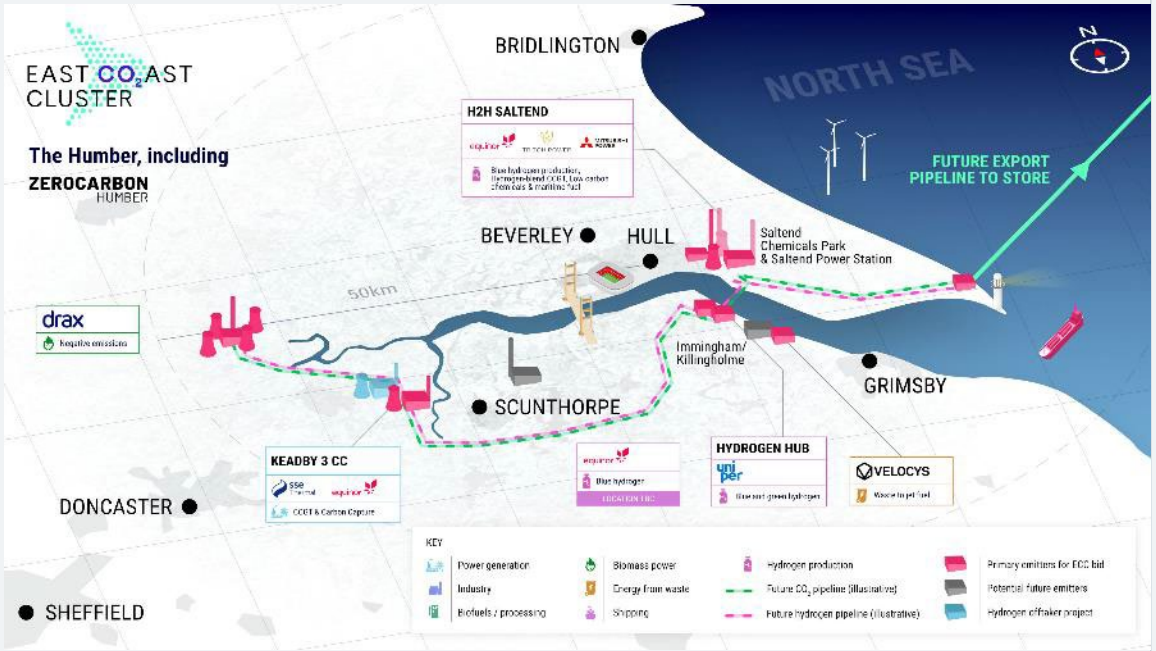
Diversity is at the heart of the East Coast Cluster

Diversity of geography

Diversity of capture projects

Innovative T&S technology

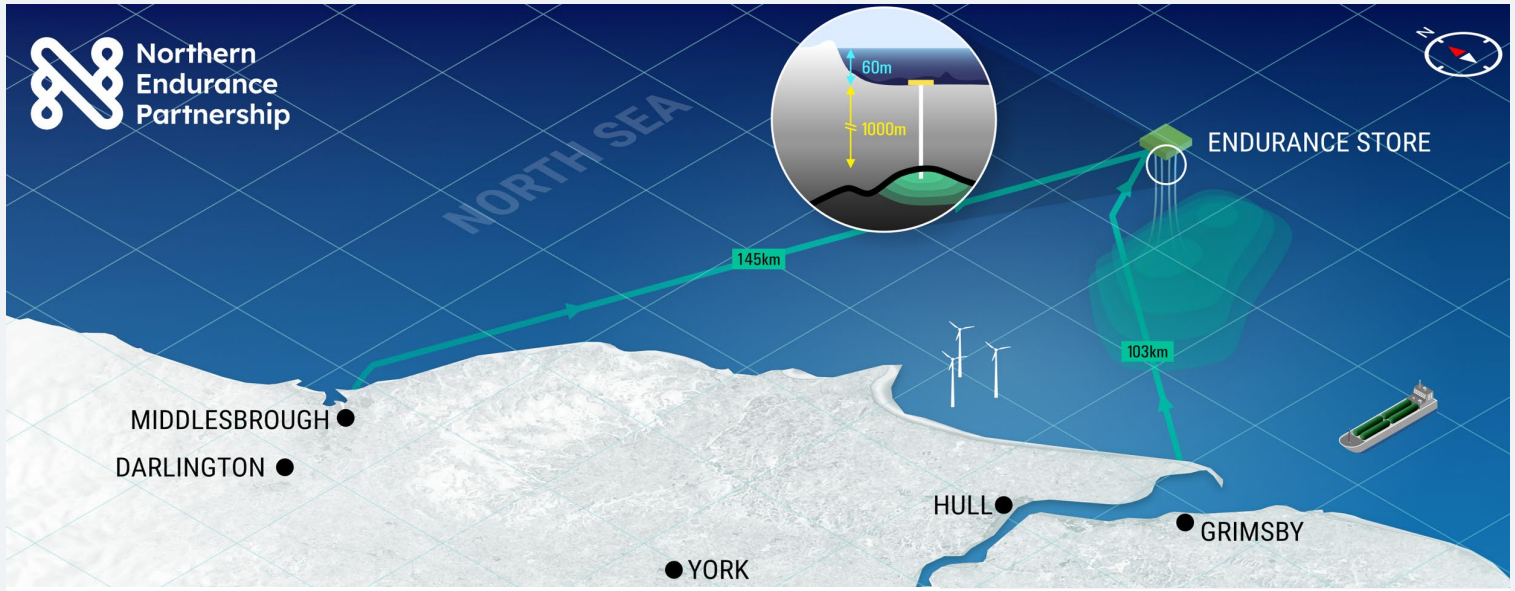


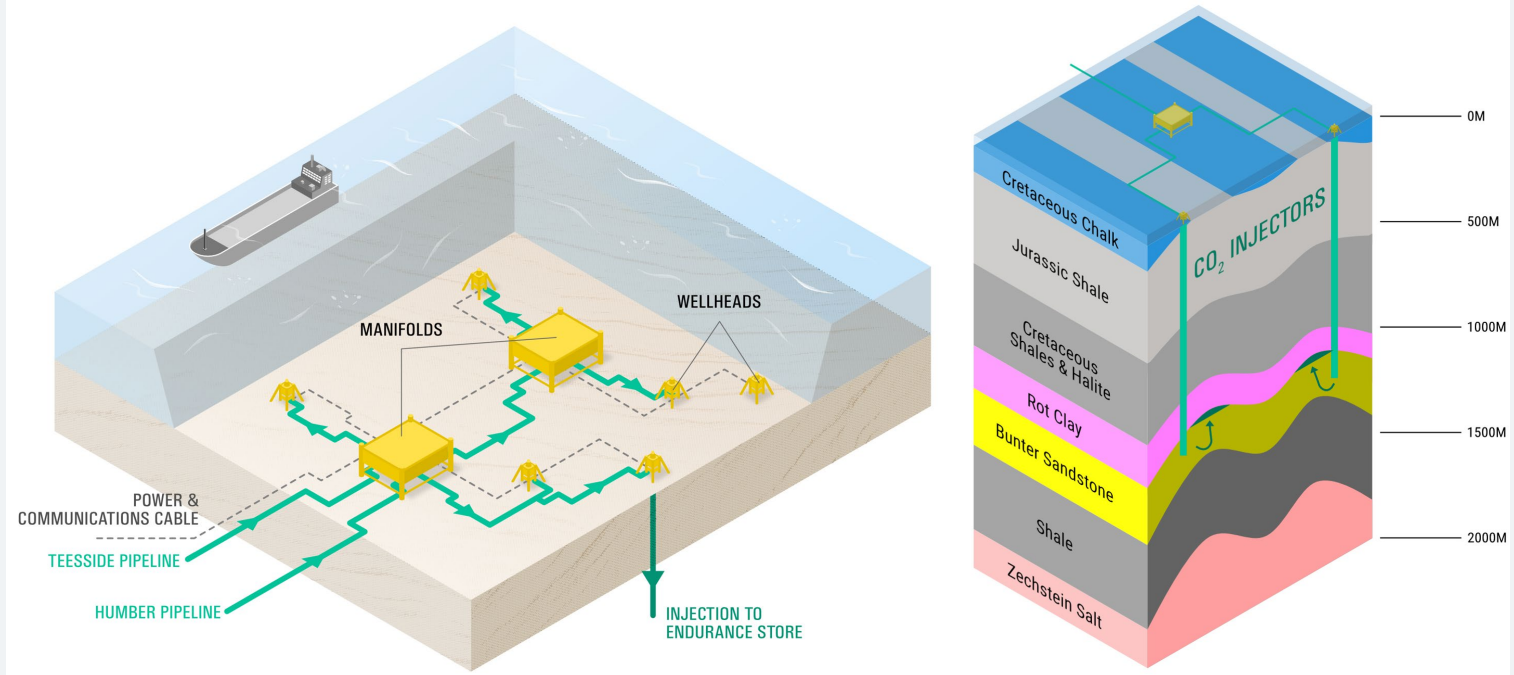


The East Coast Cluster brings together unrivalled expertise and experience in the delivery and operation of onshore and offshore energy infrastructure

The Endurance Carbon Store – serving Teesside and the Humber

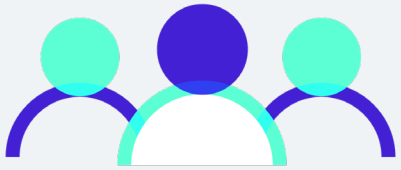
- First-of-a-kind offshore low carbon CCS infrastructure in the UK
- CO2 injection into a saline aquifer is a worldwide proven concept
- Largest saline aquifer in southern North Sea – capacity to store 450m tonnes of CO2 with potential to extend capacity to around 1 billion tonnes with nearby stores
- Includes CO2 pipelines from Teesside and the Humber
- Compression and pumping systems to a common subsea manifold and well injection site at the Endurance store





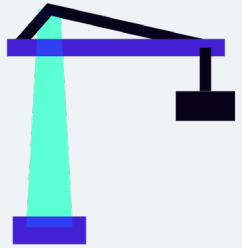
Economic benefits: the headlines

Please note that these figures are based on the projects that were included in the East Coast Cluster bid in June 2021 as part of BEIS Phase-1 cluster sequencing process and give an indicative picture of the potential benefits of the East Coast Cluster

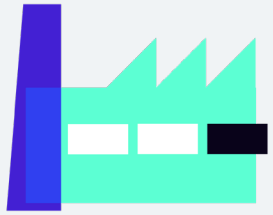


25,000+
jobs up to 2050
(average per annum)

~41,000
jobs peak
in 2026



Construction
9,400 direct jobs/yr
12,300 indirect jobs/yr



Operations
2,200 direct jobs/yr
13,300 indirect jobs/yr

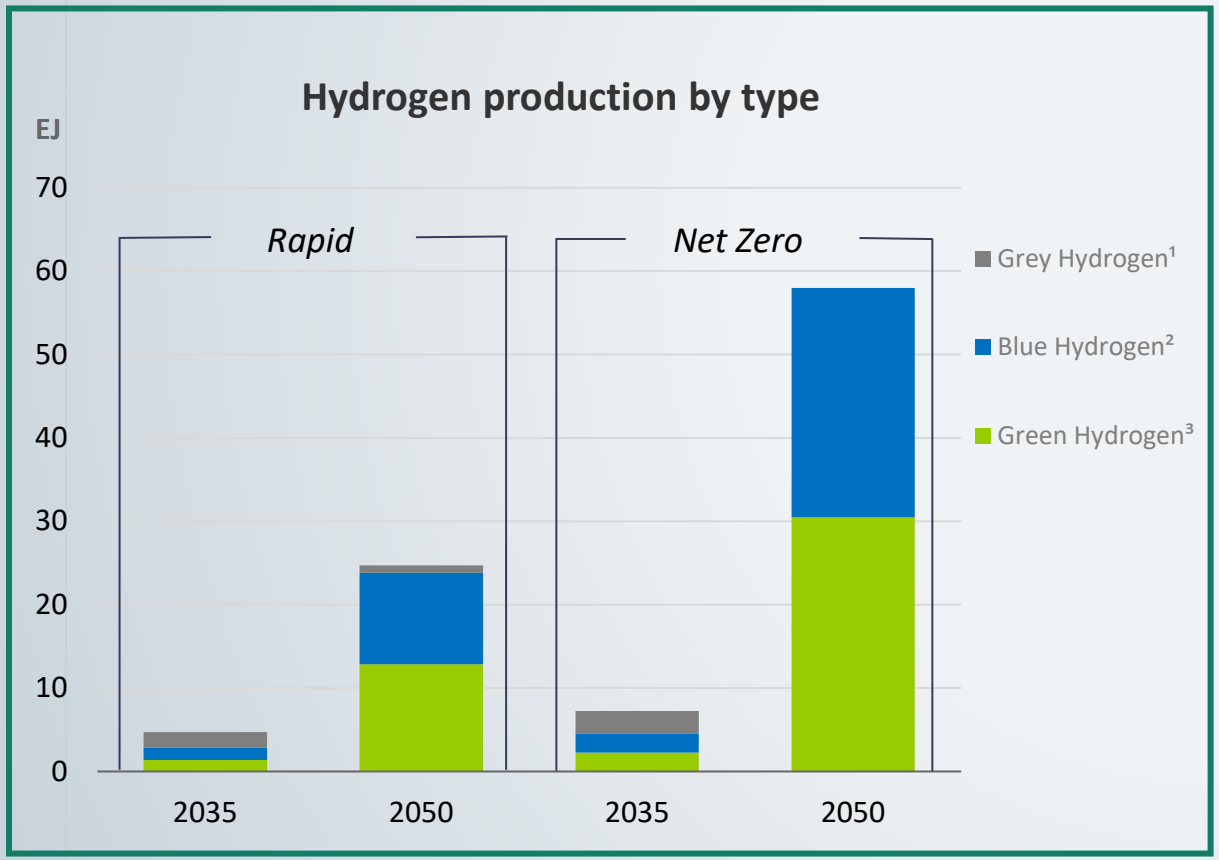
25,000
potential additional
induced jobs/yr

£2bn+
average GVA
up to 2050

Hydrogen in Teesside

H2Teesside and HyGreen Teesside

bp is developing both green and blue hydrogen projects



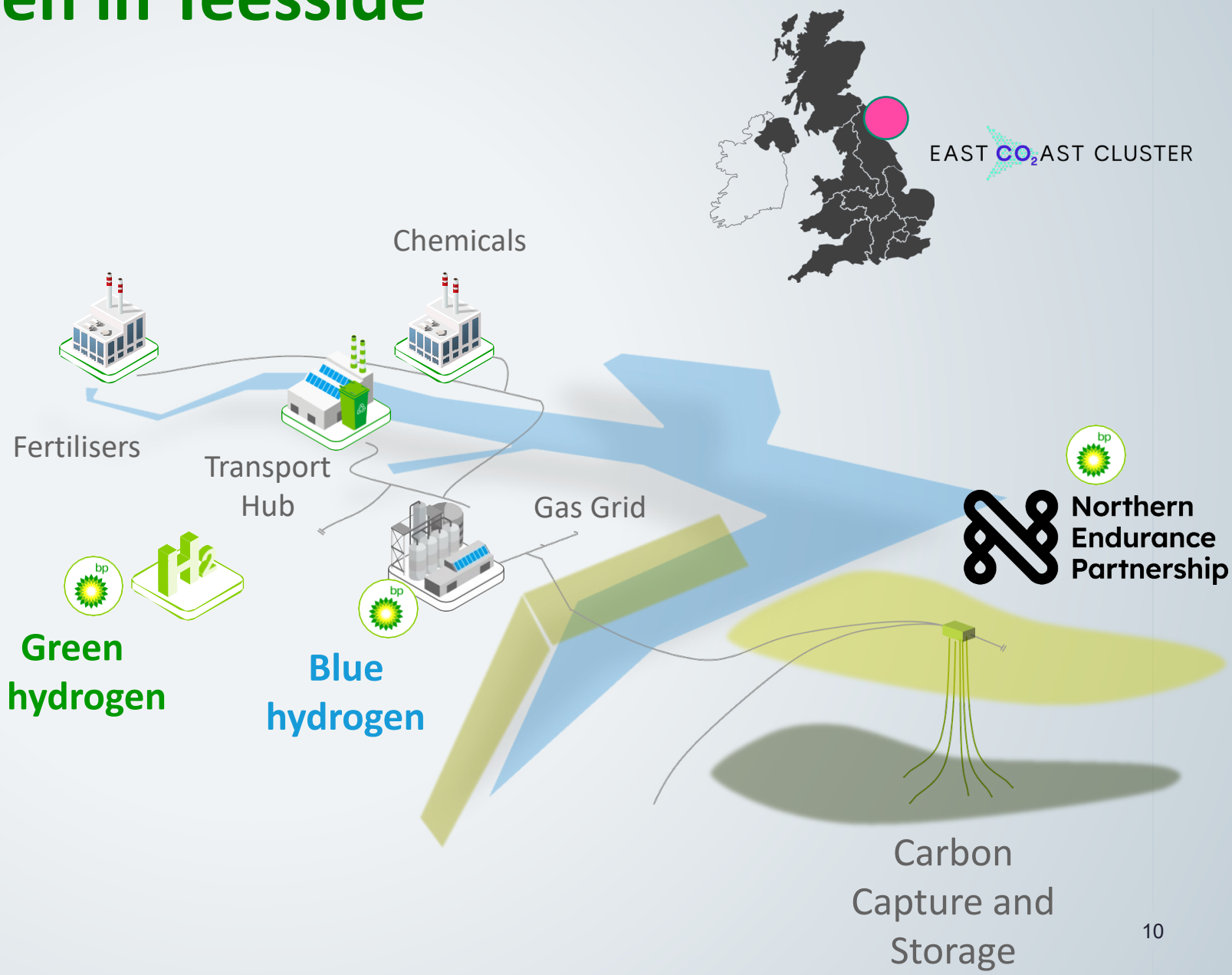
1) produced from natural gas (or coal), without CCUS.
2) produced from natural gas (or coal) with CCUS
3) made by electrolysis, using renewable power

Source: bp Energy Outlook 2020

Country	bp Projects	Size (MW)
	H2Teesside	**1000 MW**
	HyGreen Teesside	**60-500MW**
	Lingen Green H2 project	**60-500MW**
	GetH2	**100-300MW**
	H2-Fifty Rotterdam	**250MW**
	H-vision	**1500MW**
	Castellón refinery	**20-115MW**
	Geraldton	**1500MW**

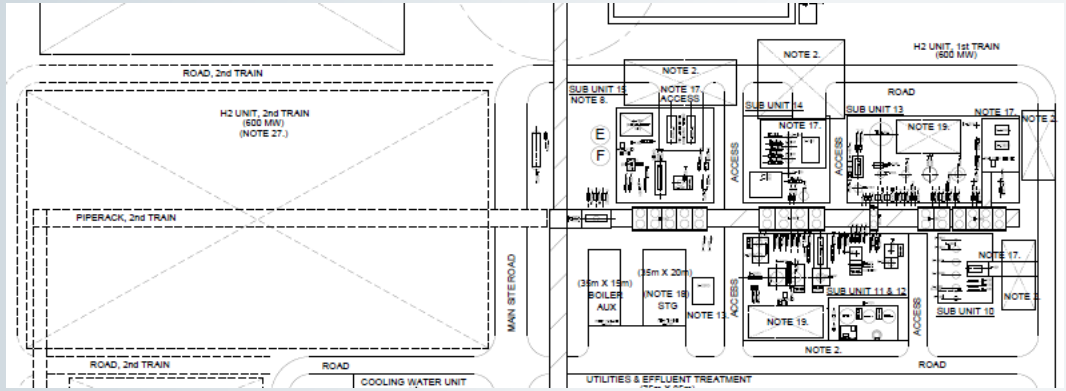
bp's Vision for Hydrogen in Teesside

- **Investment**: c.£1bn, **bp** and partners
- **Scale:**
  - H2Teesside: 1 GWth
  - HyGreen Teesside: up to 500MWe
  - 30% of UK target (5 GW by 2030)
- **Decarbonisation impact:**
  - 2 million tonnes per year of CO2 removal
  - 1 million homes equivalent
- **Broader impact**
  - Future–proof existing jobs by creating sustainable low carbon industry
  - New industry development
  - Low carbon hydrogen for mobility and households



Project Progress

1. Engineering Work



2. Customers

Northern Gas Networks
sembcorp
TEES VALLEY COMBINED AUTHORITY
alfanar
MITSUBISHI CHEMICAL
CF
VENATOR

3. Suppliers

Home / Where we operate / Teesside / Supplier portal

H2Teesside and HyGreen Teesside supplier registration portal

The Government's Ten Point Plan for a Green Industrial Revolution established a commitment to work with industry to deliver 5GW of low carbon hydrogen production capacity by 2030 in the UK, generating green jobs and growth, driving innovation and boosting export opportunities. The target for 5GW of low carbon hydrogen will establish low carbon hubs where renewable energy, CCUS and hydrogen congregate to put UK industrial hubs at the forefront of technological development.

bp wishes to partner with companies that can help H2Teesside contribute to the Government's green growth and levelling up agenda. We want to maximise local content in the procurement approach, benefitting the

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Summary

- It’s going to be big
- It’s happening now
- bp is in action
- Teesside a great example of what can be done at scale
  - CCUS: Northern Endurance Partnership
  - Hydrogen: H2Teesside
  - Power: NZT