HyNet North West

HyNet – A blueprint for decarbonisation

7 March 2023

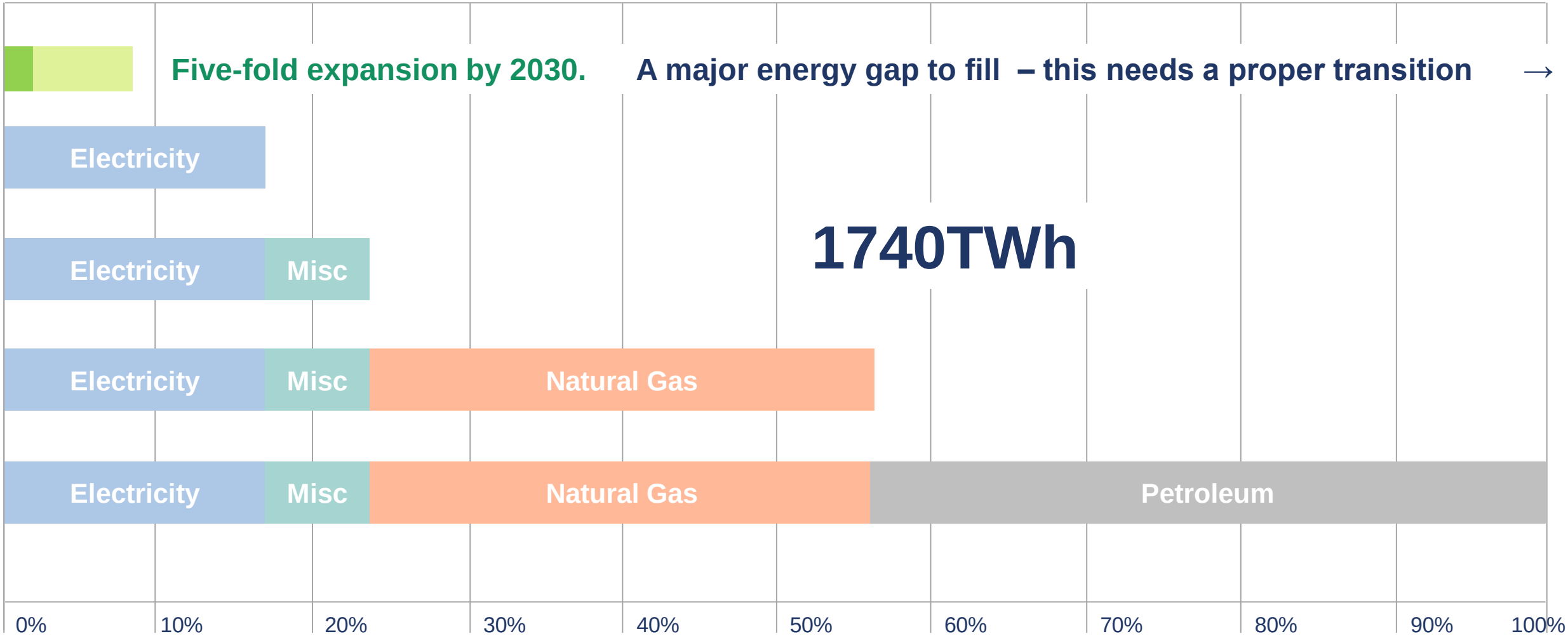
PROGRESSIVE ENERGY

Why Hydrogen

HyNet blueprint

Unlocking delivery

Anchoring Energy –UK Demand



Why Hydrogen

- Abating 500 mtpa CO_2 is a vital but massive challenge & opportunity
- Electricity and the electricity network cannot do it alone – we need:

e^- + H_2

Drop-in **Storage** **Resilience**

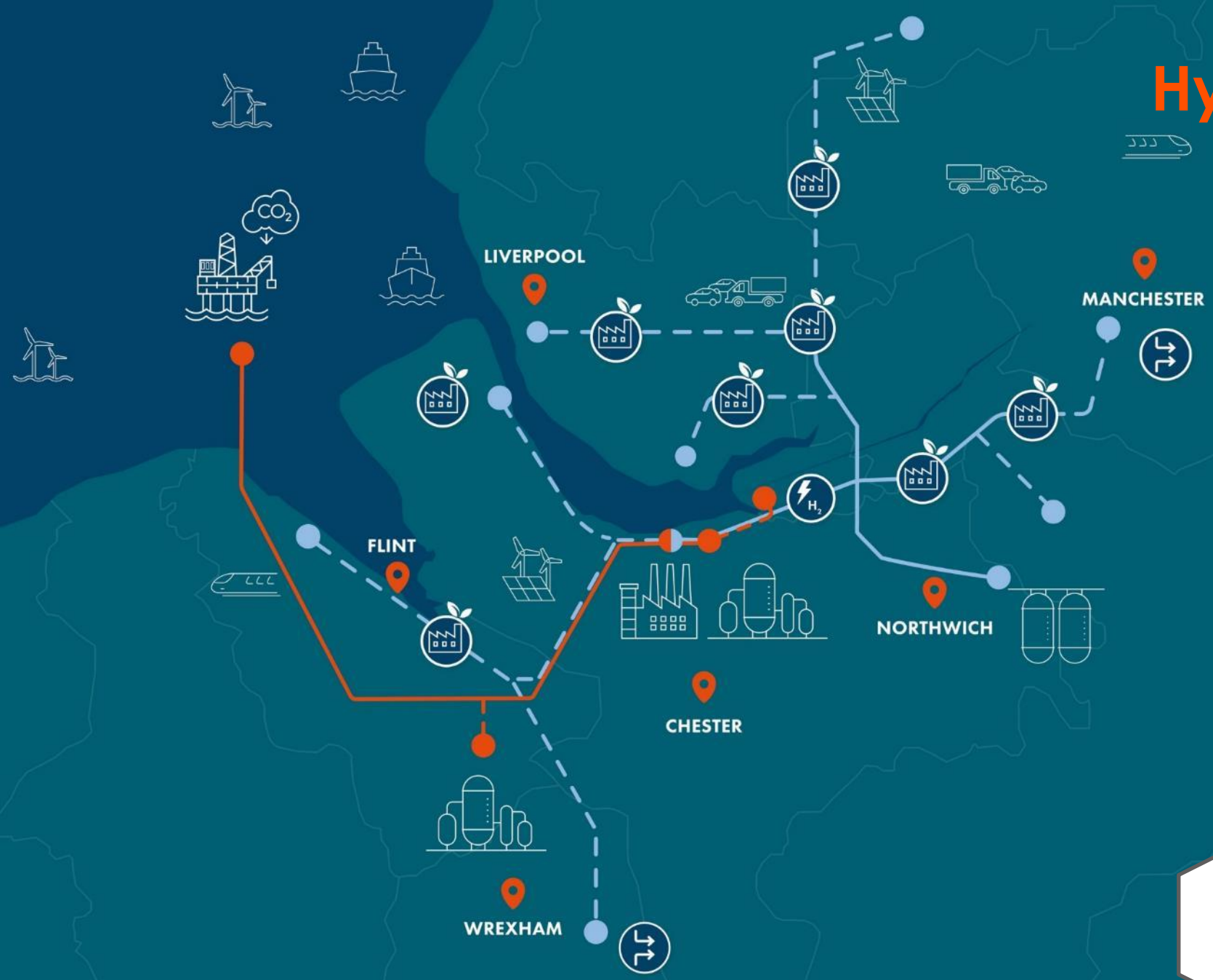
- All types of low carbon hydrogen will have a part to play
  - **CCUS enabled** hydrogen will deliver millions of tonnes of abatement rapidly, and underpin our hydrogen infrastructure build out today
  - **Electrolytic hydrogen** should start now, and will dominate by 2050
  - Other forms such as **Biohydrogen** have an interesting future role.

HyNet North West

- UK's leading industrial decarbonisation cluster
- Selected by Government: Track 1 project
- From 2026, HyNet will:
  - produce, store and distribute low carbon hydrogen
  - capture and lock up carbon dioxide emissions from industry.
- New and reuse of pre-existing infrastructure

Demand led

Unlocking new low-carbon growth opportunities for the automotive, chemical, shipping, glass, food, material, and energy sectors



HyNet Infrastructure

- → Underground pipelines to transport CO_2 emissions to permanent safe storage
- → Facilities to capture CO_2 emissions
- → Low-carbon hydrogen production
- → A hydrogen pipeline network and salt caverns in which hydrogen can be stored ready for use

Cadent Your Gas Network

inovyn An INEOS company

eni

HyNet North West

Delivering Economic Growth

- Save guarding industry and jobs
- Driving inward investment
- World leading blueprint for decarbonisation
- By 2030, HyNet will enable
  - 55,000 UK jobs
  - >£5Billion of capital investment
- By 2050, HyNet could generate up to £31 billion GVA for the UK

"Net zero is a driver of economic growth"

"….the global net zero transition could be worth over £1 trillion to UK businesses between 2021 & 2030."

HyNet: Hydrogen production at Scale

VERTEXHYDROGEN

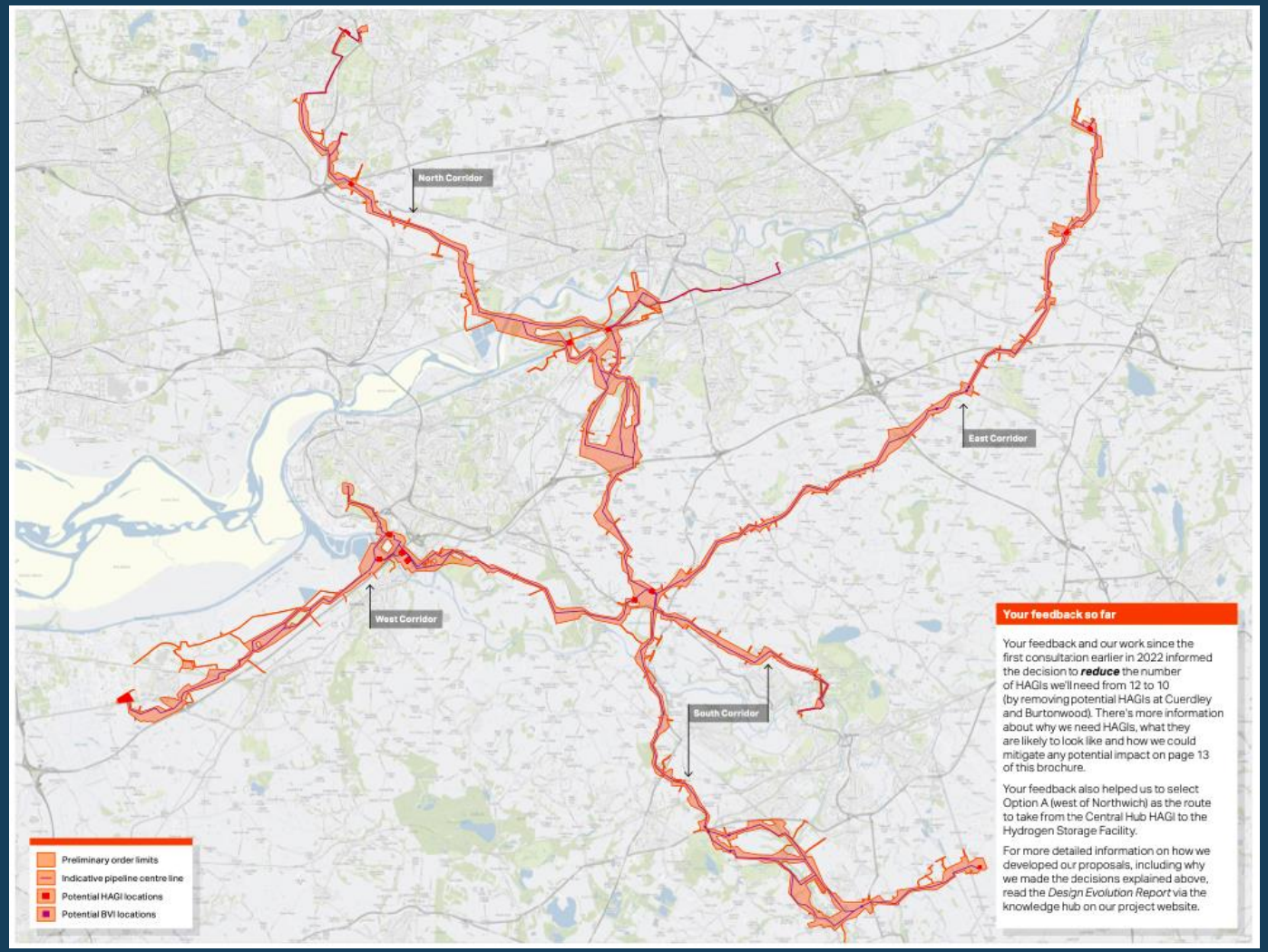
- Vertex Hydrogen formed to deliver **1GW** of low carbon hydrogen at Stanlow
- Most advanced hydrogen project in the UK
- Unlocks wider low carbon hydrogen production
- **Awaiting Cluster Sequencing announcement**

HyNet North West

HyNet: Hydrogen Distribution

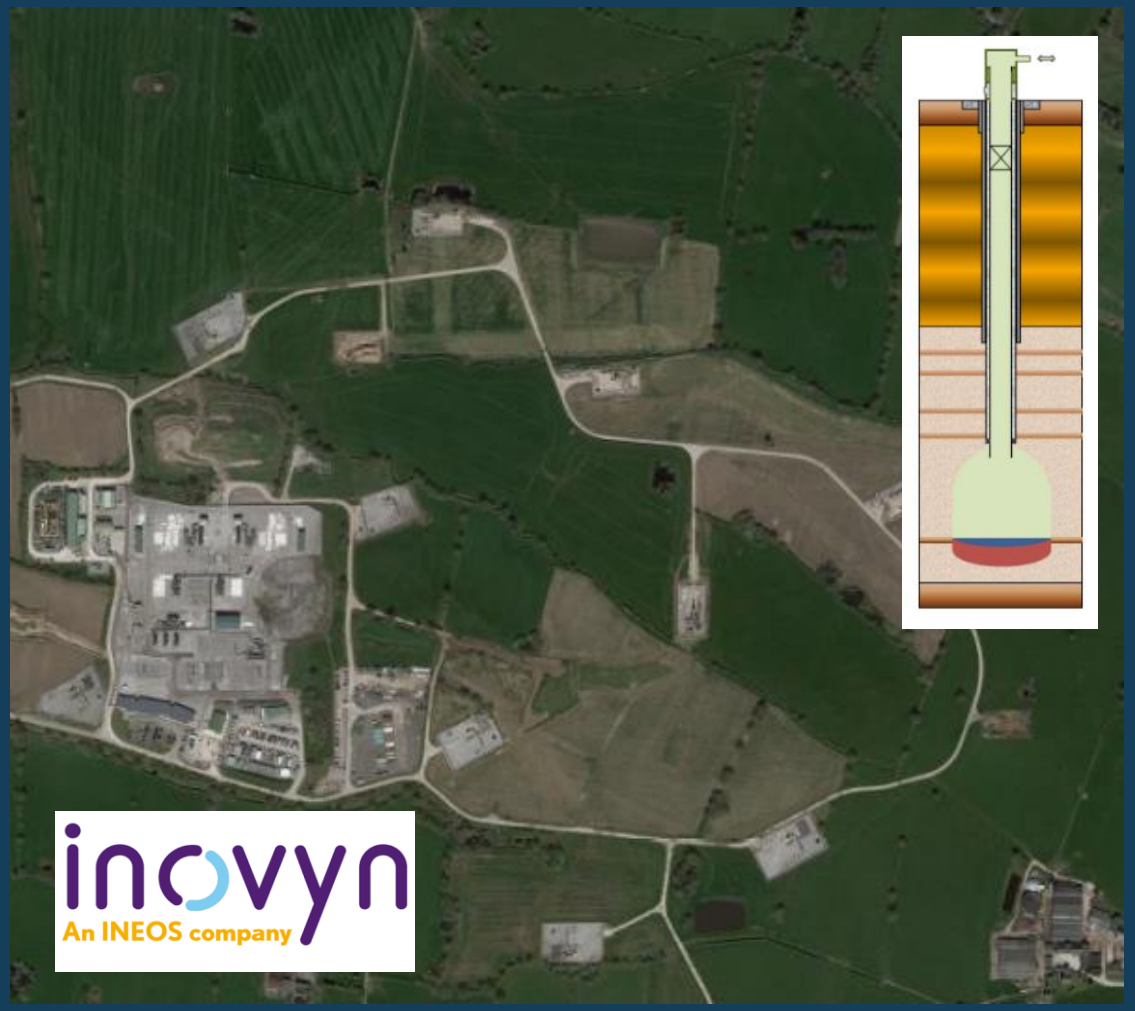
Cadent
Your Gas Network

- 120km of dedicated hydrogen pipeline
- Designed for expansion over wider geography to distribute over 30TWh of hydrogen (4GW)
- FEED & DCO Consent underway
- **Awaiting government business model**



HyNet North West

HyNet: Hydrogen Storage



- Capable of storing 1300GWh of energy
- **150x bigger** than Dinorwig, UK's largest pumped storage facility
- Most advanced H_2 store in the UK: Finalising FEED engineering and consenting
- **Awaiting government business model**

Electrolytic Hydrogen Production

- HyNet unlocks wider regional hydrogen production
- Progressive Energy, Statkraft and Foresight developing a suite of green hydrogen projects
  - Initial phase of 100MW of projects will reduce emissions from industry by up to 180,000 tonnes.
  - Includes proposed 28 MW Cheshire Green Hydrogen project which will use renewable electricity from Frodsham wind farm.
  - **Awaiting NZHF Strand 3 announcement**

HyNet: industrial fuel switching

- Hydrogen trials complete at:
  - NSG Pilkington Glass
  - Unilever
- Feasibility studies undertaken at:
  - Kellogg's
  - PepsiCo
  - Novelis
  - Essity
  - KraftHeinz

PILKINGTON Unilever ESSAR Kellogg's Novelis KraftHeinz essity PEPSICO

Making it Happen

- The clock is ticking
  - Environmental : Planet is desperate
  - Economic: We are loosing global ground
- Industry is poised to deliver
- We need
  - Clusters delivered : pace and ambition
  - Intermediate business models for hydrogen transport and storage

"Net zero is a driver of economic growth"

"….the global net zero transition could be worth over £1 trillion to UK businesses between 2021 & 2030."

HyNet North West

PROGRESSIVE ENERGY

HyNet North West

Making it Happen