

HyNet North West

**Creating the UK's first low
carbon cluster:
HyNet's supply chain**

Webinar: 29 March 2022

Agenda

- 1 Introducing **HyNet** - an update on the project
- 2 **HyNet**'s future supply chain
- 3 Presentations from **HyNet** partners
- 4 Q&A session
 - If you have any questions throughout the presentation, please submit them through the Q&A function.
 - We will be recording this webinar

1 Introducing HyNet

The climate change challenge

- We are in a climate emergency and we need to act quickly to reduce our emissions.
- UK Government's Net Zero target:
 - 'By 2050, any CO₂ emissions to the atmosphere must be eliminated, captured or offset by equivalent emissions removal.'
- All parts of our economy must decarbonise.
- By reducing carbon dioxide emissions from industry we can make a big difference, quickly.



What is **HyNet** ?

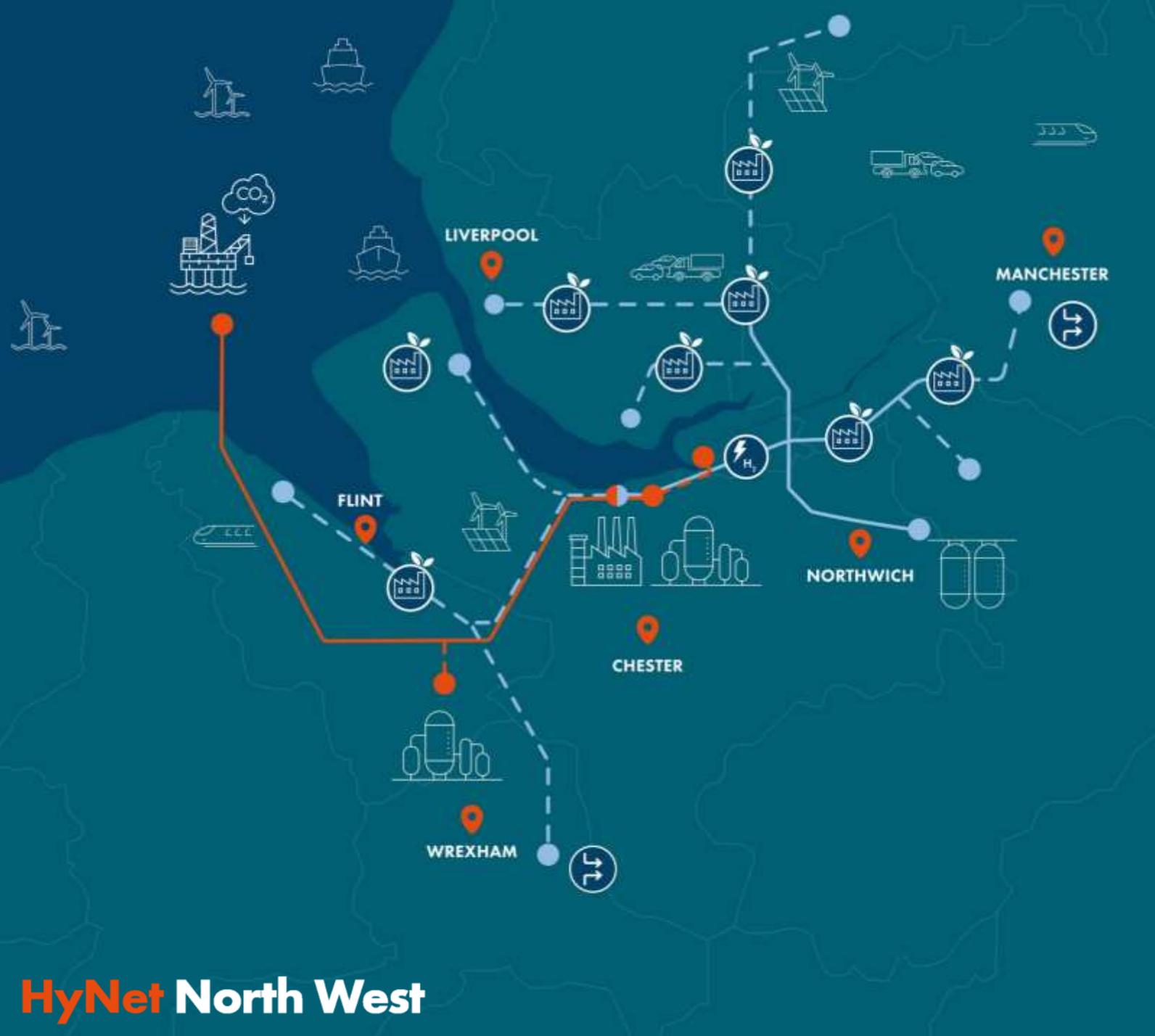
- HyNet is the UK's leading industrial decarbonisation project.
- Stretches across North West England and North East Wales.
- Selected by Government to lead the UK's industrial decarbonisation.
- From the mid-2020's, HyNet will:
 - produce, store and distribute low carbon hydrogen to replace fossil fuels
 - capture and lock up carbon dioxide emissions from industry.
- We will build new infrastructure and reuse pre-existing infrastructure.



Elements of HyNet

HyNet includes:

- Low-carbon hydrogen production plants
- A hydrogen pipeline network
- Salt caverns in which hydrogen can be stored
- Facilities to capture CO₂ emissions
- Underground pipelines to transport CO₂ emissions to permanent safe storage



What will HyNet bring to the region?

- Building on the region's rich industrial heritage to provide a lasting legacy for generations to come.
- Creating 6,000 new jobs and safeguarding many more.
- Tapping into industrial experience and scientific expertise.
- Creating a hotspot for innovation and growth to encourage inward investment.
- Improving local air quality to make the region a safer and healthier place.



The **HyNet** consortium

- A collaboration of ten partners
- Each partner is led by industry experts working collaboratively



2 HyNet's supply chain



HyNet's future supply chain

- £5 billion investment
- Early engagement with supply chain to raise awareness of project needs/opportunities
- Gain an understanding of products and services and identify constraints
- Maximise regional content
- Future events – Meet the Specifier (this Summer)
- Supplier registration database



A person with long, dark hair is seen from the back, looking out over a vast landscape at sunset. The sky is a mix of blue and orange, and the ground below is dark and textured. The overall mood is contemplative and serene.

3

Meet the **HyNet** partners



VERTEXHYDROGEN

Richard Holden

The UK's first low carbon hydrogen supply business

- Vertex Hydrogen Limited will develop, build and operate the UK's first low carbon hydrogen production facility HPP at the Stanlow Manufacturing Complex, Cheshire within the Track 1 HyNet cluster
- The hydrogen will substantially decarbonise Essar's adjacent refinery and transform the regional industrial cluster into a low carbon manufacturing SuperPlace





Vertex Hydrogen is an exciting new joint venture



vertexhydrogen.com



Hydrogen economy

Support the rapid growth in low carbon hydrogen demand across the region from industry and other sectors. This market development as part of HyNet has been undertaken by Progressive Energy over recent years.



Location

The Essar Stanlow Manufacturing Complex provides the land and a proportion of the feedstock for low carbon hydrogen production.

North West England and North East Wales contains the largest manufacturing cluster in the UK.

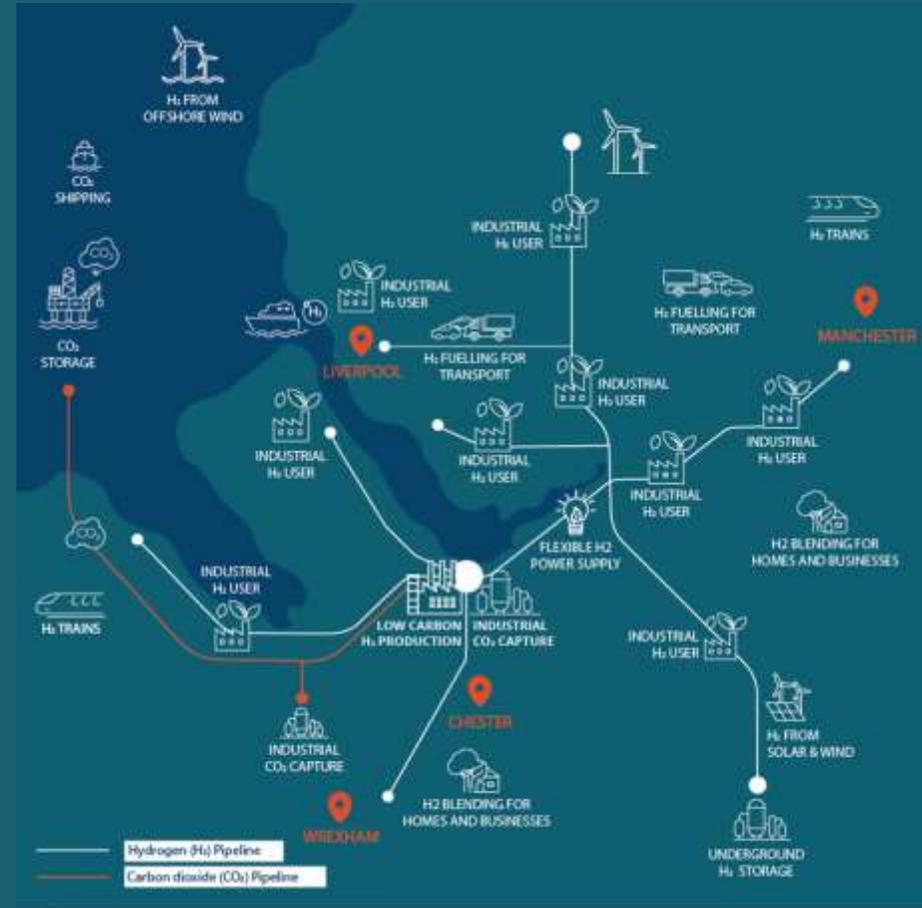


HyNet

HyNet is the UK's most advanced and integrated decarbonisation cluster project, recently selected by the Government as a Track 1 cluster. HyNet will deliver the infrastructure which provides the lowest cost route to market for low carbon hydrogen

HyNet North West

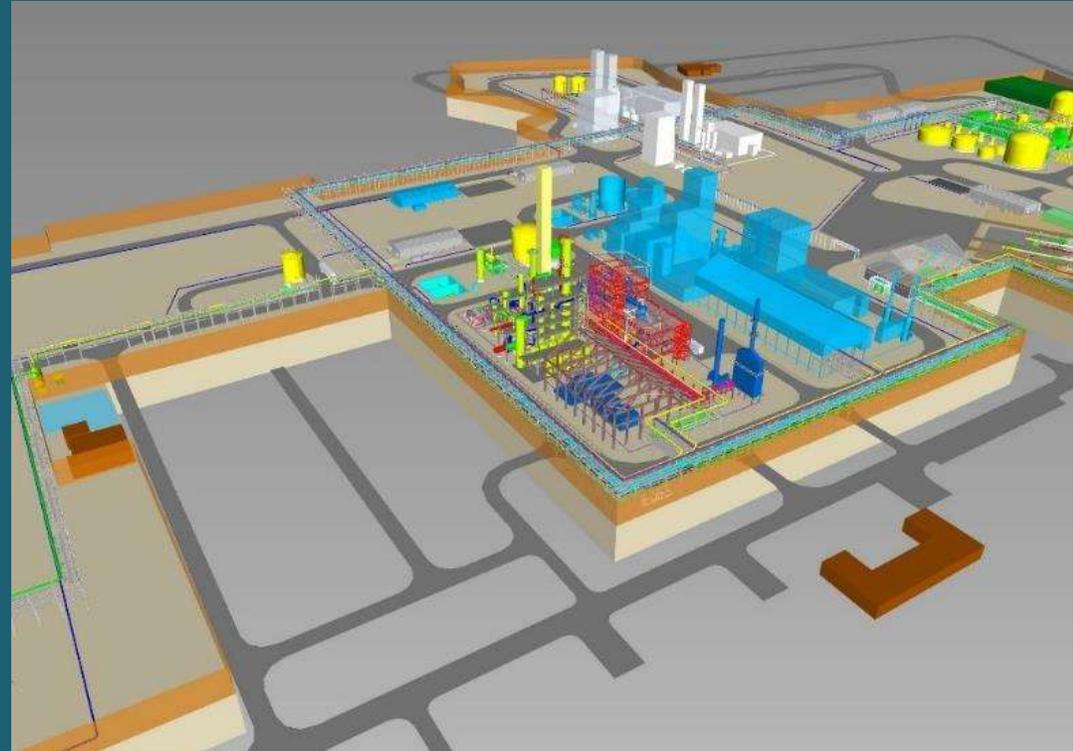
HPP will be built on Stanlow Manufacturing Complex to serve regional demand





Hydrogen production

- World-leading Johnson Matthey LCH Technology
 - 97% Carbon Capture Rate
 - 85% Thermal Efficiency
- Most advanced bulk hydrogen production in UK:
 - FEED completed for HPP1 (350MW)
 - Consent applications submitted
 - Target for start-up of HPP1 in 2026
 - HPP2 will bring capacity to 1GW in 2027



3D model of hydrogen production facility at Stanlow – output from the FEED study



Planning Application made

HyNet North West

[Home](#) [Our current consultation](#) [Get in touch and stay updated](#)

Where will it be located?

The HPP will be located on a largely redundant plot of land in the South East corner of the Stanlow Manufacturing Complex, near to Pool Lane and the A5117 (shown below). The site was identified as the most suitable following an evaluation of a number of sites within the complex.

Proposed Site at Stanlow Manufacturing Complex



HyNet North West

[Home](#) [Our current consultation](#) [Get in touch and stay updated](#)

View of Phase 1 Hydrogen Process Area & Associated Infrastructure from the North

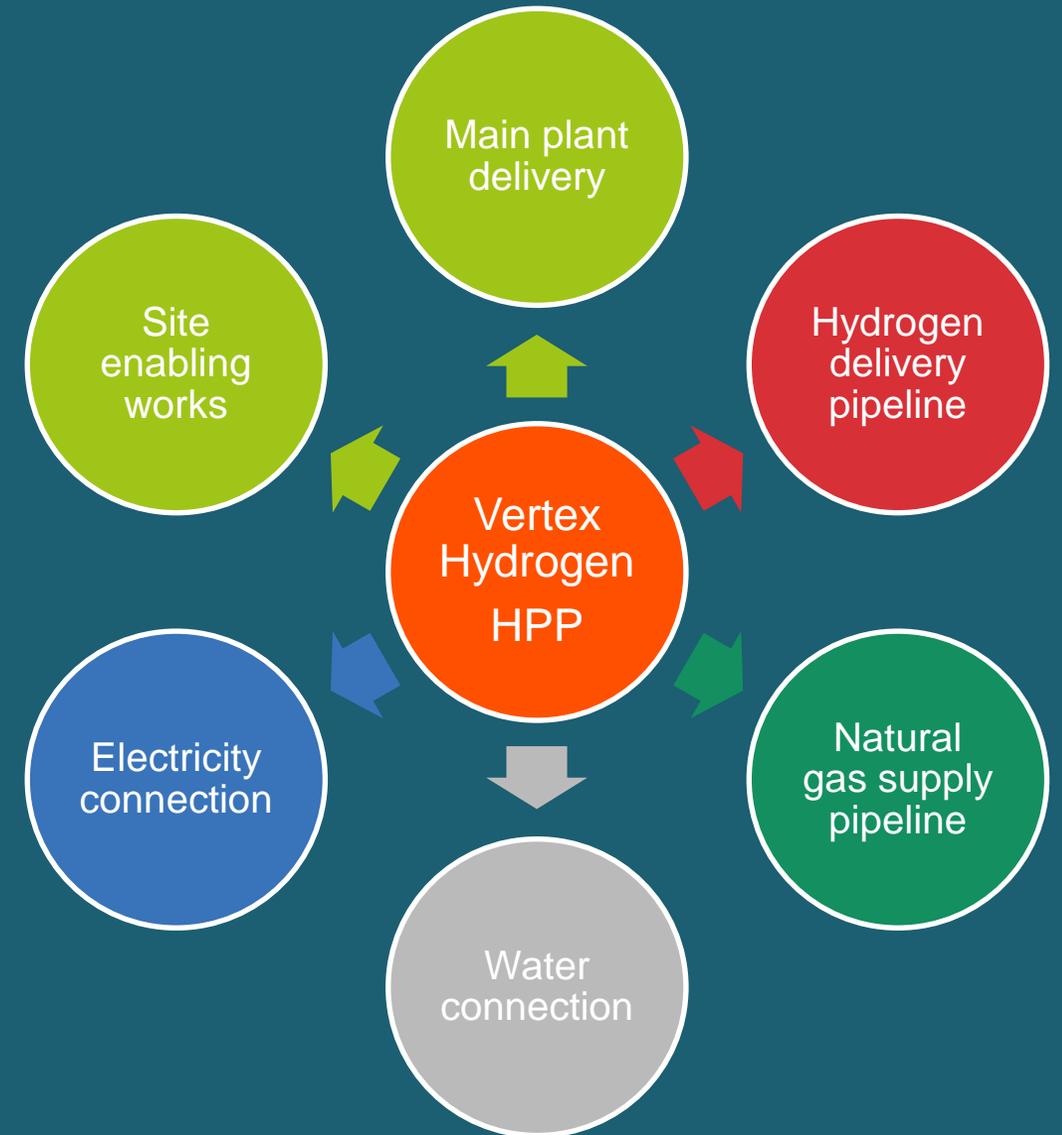


What are the benefits?



HPP delivery supply chain

- Development contracts such as consultants, advisors, ground investigation etc being let now.
- Core plant will be delivered under a single contract including licensed technology, design and construction
- Additional delivery contracts limited to external utility connections



Cadent

Your Gas Network

Victoria Hinchcliffe

HyNet North West



2017

Officially created - when National Grid sold its gas distribution business- we can trace our roots back 200 years, to the very start of the gas industry in Britain.



11 million

homes and businesses in the UK are connected with our gas pipes



4000+

employees in the UK



82,000 miles

of gas pipes - placed end to end, that amount would stretch more than three times around the world.



1.42 million

Number of calls received in 2020. We manage the national gas emergency free phone line on behalf of the gas industry

Hynet Packages

- Front End Engineering and Design - Awarded
- Land Consent and Communication – Awarded

Strategy Development

- Engineer, Procure, Construct, Commission

Procurement Process

- Utilities Contracts Regulations 2016
- Formal Process

- Existing Frameworks versus Specific Contract
- Expecting launch of tender May/June 2022

Cadent's hydrogen workbook

Cadent's current Priorities for Hydrogen Projects:

- Identify Regional Schemes of works
- Work with the wider Industry and Engineering Associations to develop onshore transmission and distribution Policies, Procedures and Standards to consistently inform the development and implementation of schemes.
- Develop and formalise Engineering Philosophies and ways of working for Major Hydrogen Schemes to drive consistency and potential integration of different projects.
- Understand the capability and capacity of delivery organisations within the UK to deliver both new major projects and BAU Capital Delivery projects.
- Undertake supplier days to inform our procurement strategies for the major projects covering EPC, EPCC, EPcM, Wider required services and what the supply chain needs to prepare for Hydrogen Projects.

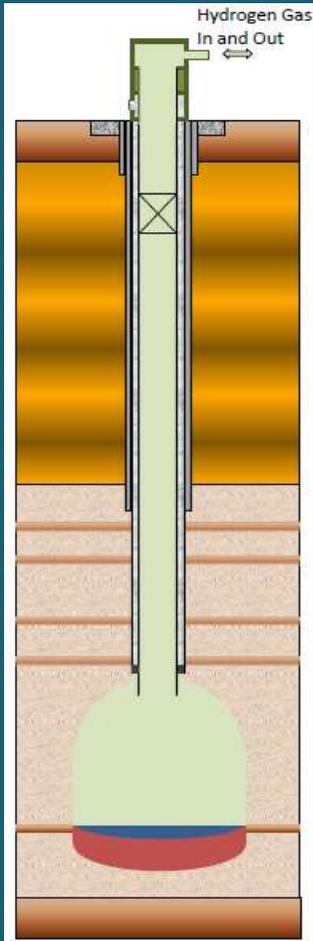


**Richard Stevenson
and Joanne Skyner**

HyNet /HyKeuper – Hydrogen Storage Project

- Keuper Gas Storage and INOVYN are part of the HyNet Project to provide 1.3TWhs of Hydrogen storage in 19 salt caverns in Cheshire
- INOVYN's Holford Brinefield already hosts two of the UK's largest natural gas storage facilities.
- We are committed to bring our skills and knowledge in salt cavern storage and hydrogen production to support the HyNet project and the North West regions ambitions to achieve Net Zero.
- As Europe's largest electrolysis operator we are also keen to develop green hydrogen production in the North West region, with the HyNet project as a potential customer.

HyNet /HyKeuper – Hydrogen Storage Project



Activity:

- FEED engineering (contracted out) and consenting is already underway.
- Some construction work has already begun on site (civil contract).
- Detailed design could start later in 2022 (EPC)
- A scale up in site construction in 2023.
- The project construction programme will be (typically) 6-10 years

HyNet /HyKeuper – Hydrogen Storage Project

Regional benefits:

- Significant investment (>£500M) in engineering and technical skills;
- Well paid construction jobs;
- Supply chain opportunities (both specialist engineering and typical civil/mechanical/process construction).





**Beatrice Barbato and
William Dickson**

Project overview



Eni's Liverpool Bay T&S project



- New-build onshore pipeline from emitters to Flint
- Repurposed existing onshore natural gas pipeline from Connah's Quay to Point of Ayr
- Redevelopment at Point of Ayr
- Repurposing and life extension of existing offshore structures and pipelines
- Drilling





Selected Concept and work package overview

WP2 – EPC Package including:

- Engineering responsibility
- Decommissioning at Point of Ayr and offshore to enable CCS project
- CCS design, supply and installation at Point of Ayr and offshore
- Power and fibre optic cable installation between Point of Ayr and offshore platforms
- Potential additional non-CCS related decommissioning offshore

WP3 – EPC Package including:

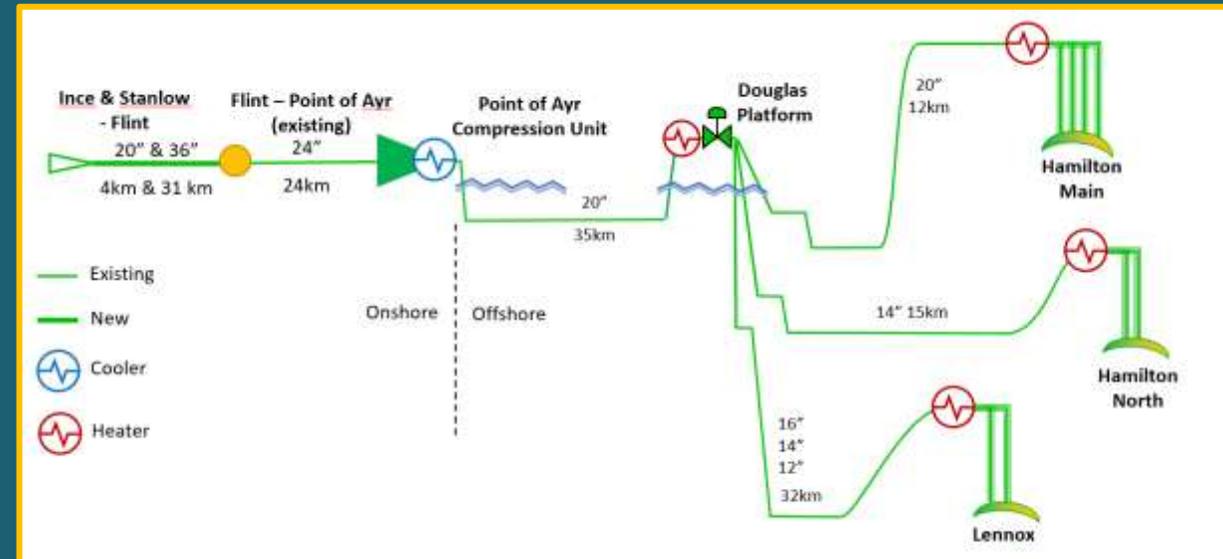
- Point of Ayr compression and cooling

WP4 – EPC Package including:

- New build pipeline Ince to Stanlow
- New build pipeline Stanlow to Flint
- Above Ground Installations
- New Block Valve Stations on existing Flint to Point of Ayr pipeline
- Abandonment of existing pipeline Flint to Connah’s Quay

Scope will be executed via four main work packages:

- WP1 – Drilling package
- WP2 – Decommissioning / CCS EPC Package
- WP3 – EPC Package for compression at Point of Ayr
- WP4 – Onshore pipelines contract



Procurement packages

WP2 Scope Overview

WP2 combines:

1. *Offshore decommissioning at Douglas and wellhead platforms*
2. *Onshore decommissioning at Point of Ayr*
3. *Offshore CCS development, including cable installation*
4. *Onshore CCS development at Point of Ayr*
5. *Non CCS related Offshore decommissioning scope (optional scope)*

Contractor responsibility:

1. *Decommissioning scope*
 - *Detailed engineering*
 - *Decommissioning, removal and disposal*
2. *CCS Development*
 - *Adoption of the FEED designs*
 - *Detailed engineering and overall engineering design responsibility*
 - *Procurement*
 - *Fabrication, transport to site*
 - *Onshore construction*
 - *Offshore installation*
 - *Commissioning*

Procurement packages

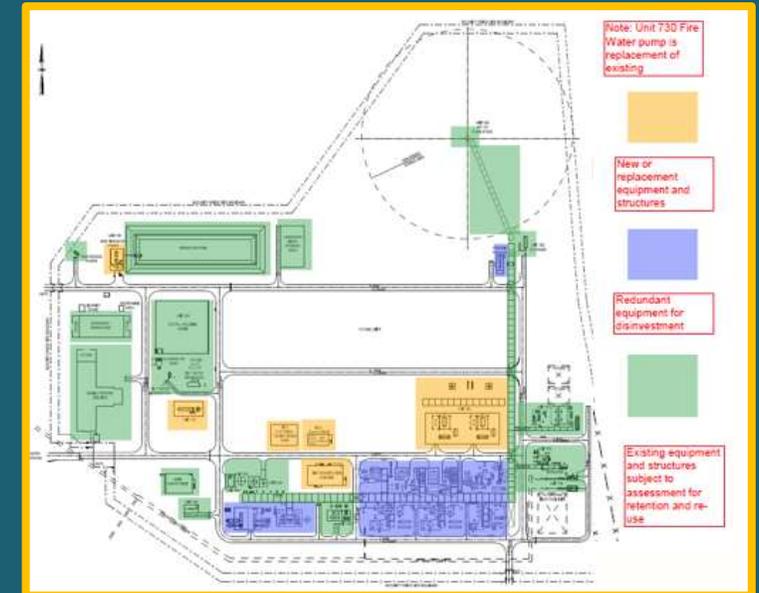
WP2 Onshore Decommissioning and CCS development at Point of Ayr

Decommissioning

- Decommissioning engineering
- Site decommissioning, removal & disposal

CCS Development

- Detailed design, supply, construction and commissioning
- CCS Scope includes:
 - Power supply infrastructure
 - Site power system
 - Utilities
 - Site control system and control centre for full T&S system
 - Civil and structural works
 - Pipeline and site piping works



Procurement packages

WP2 Offshore Decommissioning and CCS development

Douglas Hub Platform

- Decommissioning engineering
- Offshore decommissioning, removal & disposal for CCS
- Design supply, installation and commissioning of CCS module, approximate weight 800t.

Wellhead Platforms (Lennox, Hamilton Main, Hamilton North)

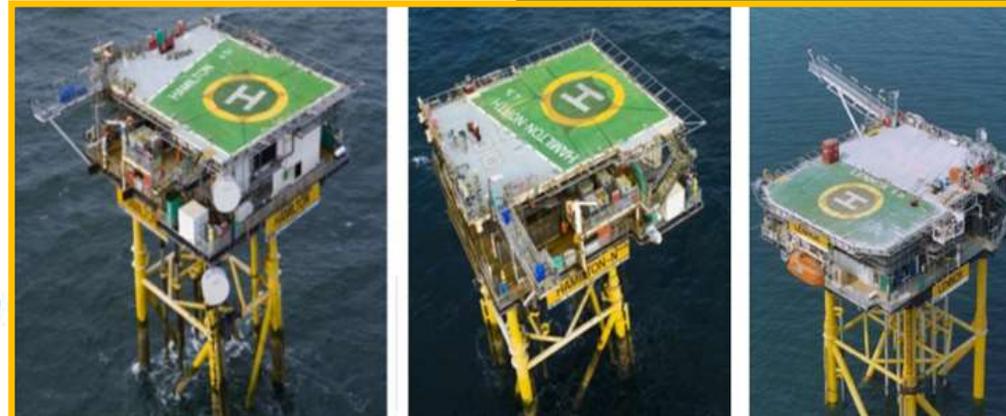
- Decommissioning engineering
- Offshore decommissioning, removal & disposal for CCS
- Design, supply, installation and commissioning of CCS modules, approximate weight 600t – 1000t each.

Optional decommissioning (Owner Option)

- Douglas WHP
- Douglas accommodation
- Conwy WHP
- Offshore storage installation
- Pipeline and subsea

Offshore cabling

- Electrical power cabling
- Point of Ayr to Douglas ~34km
- Between platform >60km



Procurement packages

WP3 - Onshore CCS development

Point of Ayr

- *Design, supply, construct, commission*
- *CCS Scope includes:*
 - *3 x 50% CO2 compressors*
 - *After-cooler system*
 - *Tie-ins to power, control and safety systems*
 - *Tie-ins to piping systems.*
 - *Any necessary utilities*
 - *Civil and structural works*



Procurement packages

WP4 - Pipelines



	Existing 24"	New build 36"	New build 20"
Length (km)	24	31.1	4.1
Wall thickness (mm)	11.1 or 22.2	14.3 or 20.6	9.5 or 14.3
Material	CS X60	CS X60	CS X60



Tendering & execution schedule

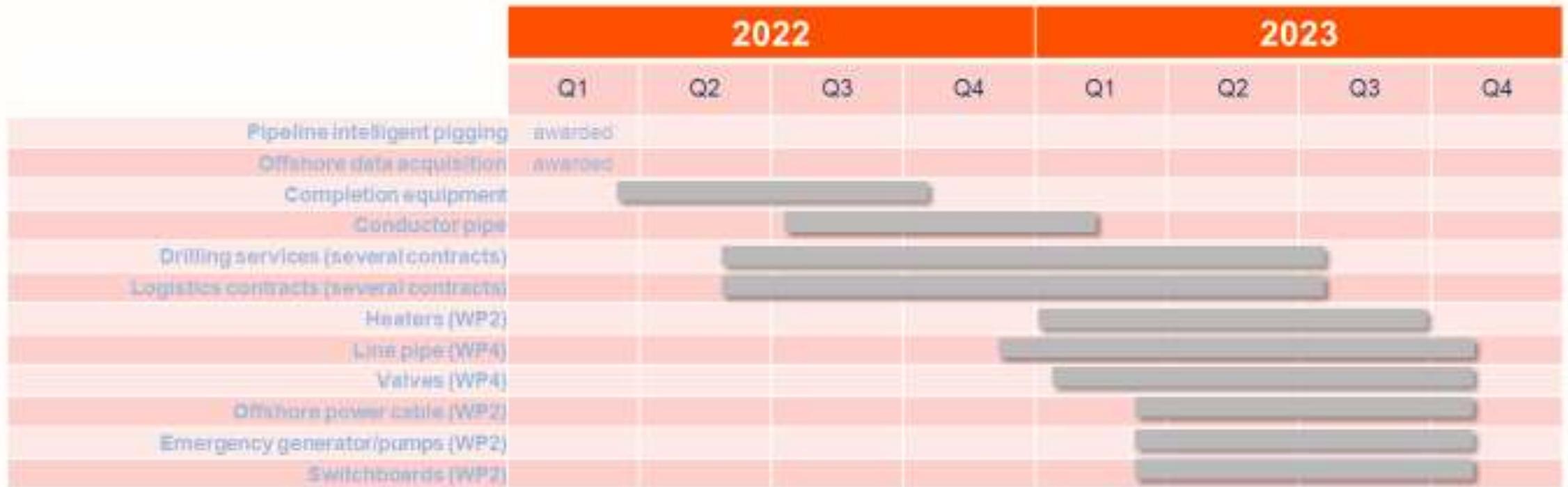
Tendering & execution schedule for WP2, WP3 and WP4



First CO₂ injection

Tendering & execution schedule

Tendering schedule for main items





**Gareth Bowden
and Mike Walton**

CF Fertilisers Ince site overview



- Located on 124 acres by the Manchester Ship Canal near Chester
- 400 employees
- Produces 1 million tonnes of fertiliser per annum
- Supplies the key market sectors for grass and arable farming.
- Consists of:
 - 1 Ammonia plant
 - 3 nitric acid plants
 - Nitrogen fertiliser plant
 - 3 compound lines



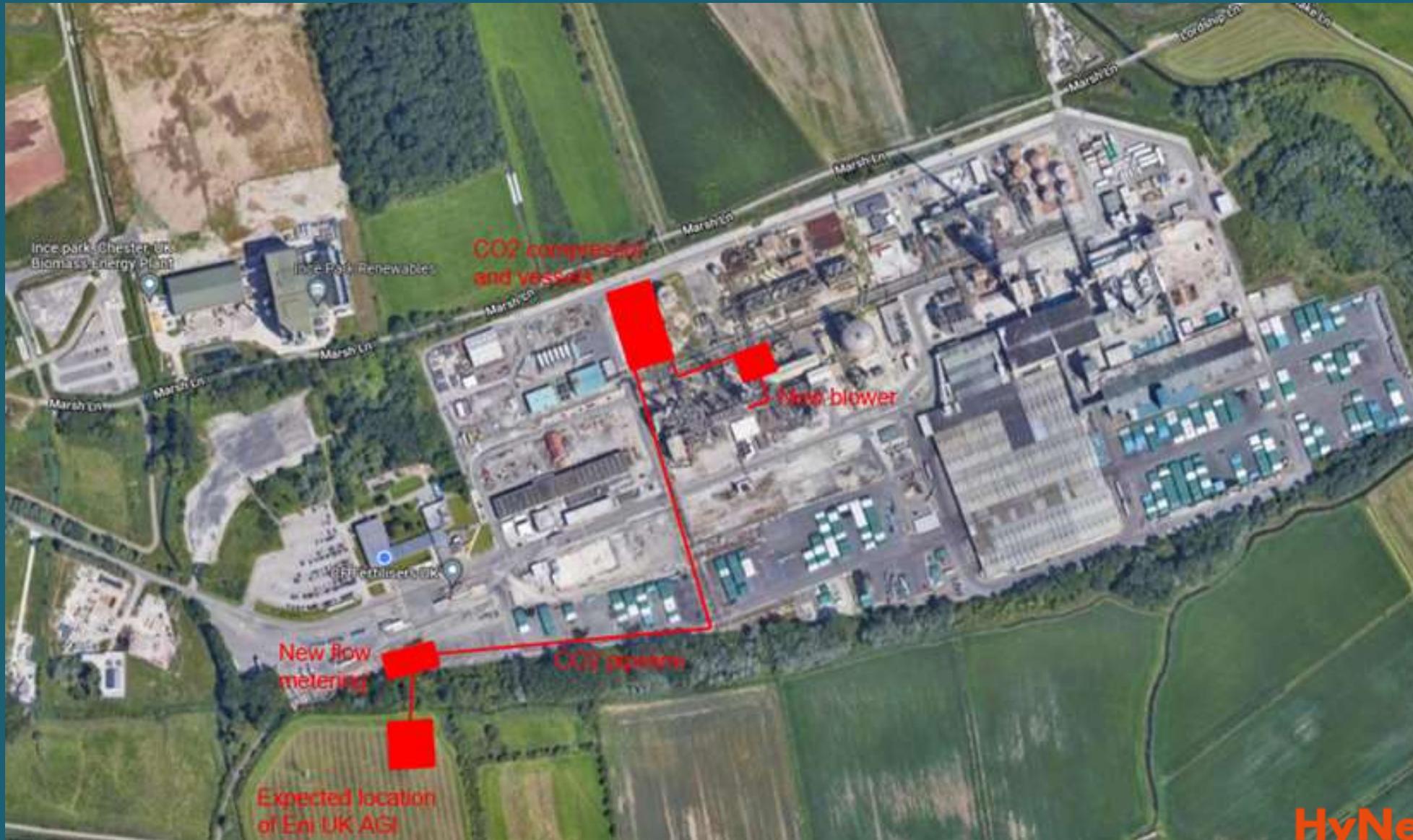
CF Fertilisers UK will continue to invest and manufacture at both its state-of-the-art Ince and Billingham sites, producing market-leading fertilisers that make a real difference to farmers - optimising crop performance and yields

CF Fertilisers Ince project overview



- Potentially up to £60mil of investment
- Comparatively straight forward due to ammonia production process
- The project will capture ~ 400,000 tonnes per annum of CO₂, utilising the existing CO₂ capture process within the Ince Ammonia plant
- The CO₂ will be compressed in multistage compressors and treated to achieve the HyNet CO₂ pipeline specification.
 - This will include cooling, water removal, hydrogen content reduction and drying

CF Fertilisers Ince project overview



CF Fertilisers Ince project overview



FEED

- Pending award.
- 9 month duration, likely start July 2022 (depending on business situation).
- Already tendered – award to single consultant

EXECUTION PHASE:

- Likely appoint FEED consultant in EPCm role
- CF may direct procure major long lead equipment packages:
 - CO₂ compression
 - HV switchgear
 - Pressure Vessels

- Bulk equipment (e.g. valves etc.) combination of:
 - CF direct procure against term contracts / competitive tender
 - In some cases package with on site services
 - Potentially sourced through EPCm contractor
- Onsite services (e.g. piping); combination of:
 - Utilise term contractors for connections / brown field work
 - Competitive tender discrete packages for greenfield items



Iain Walpole and
Lucy Parkinson

Hanson - Part of the HeidelbergCement



Cutting CO2 emissions is a key priority for our HeidelbergCement

We are the largest vertically integrated building materials producer in the world

ABOUT HEIDELBERGCEMENT

- **53,000** employees
- **Leading market positions**
 - in aggregates, cement and ready-mixed concrete
- **3,000** production sites in more than **50** countries
- Cement capacity **184 mt** (incl. joint ventures)
- Aggregates resources and reserves **19.2 bnt**



HeidelbergCement are advancing carbon capture technology around the world



Hanson Cement - Padeswood Plant North Wales

- Hanson UK employs 3500 people, operates at over 300 locations providing aggregates, asphalt, concrete and cement. Hanson Cement is the UK's largest producer of cementitious materials
- Approx. 160 direct employees – highly skilled including 30 FTE Directly supported by the plant with £5.5 m spend annually in the local economy, over 90% of employees live and spend in Flintshire
- Cement clinker capacity 2650 tonnes per day
- One of Hanson's 3 UK cement plants, located in N. Wales
- Target CO2 reduction of 800k tons per year
- Project completion Q3 2027
- Anticipated UK spend > £275m during the project
- Circa 300 direct/in-direct suppliers/employees during construction phase



Tendering Process

■ Planned Works Packages

- WP1 Carbon Capture Plant
- WP2 Steam and Condensate
- WP3 Cement Plant Modifications
- WP4 Civil Works, Foundations
- WP5 CO2 Pipeline

WP's 1,2 & 5 are likely to be Engineering Procurement & Construction (EPC) Awards

WP's 3 & 4 will constitute multiple contract awards across several skill/supply bases inc. (Civils; Mechanical & Electrical Engineering; Fabrication; Installations; Equipment and Spares; Piping; Scaffolding; Craneage; Precision Engineers; Welding etc)

■ Our Procurement Process

- Identification of suitable suppliers
- Heidelberg – SAP Ariba Electronic Platform used for tendering – suppliers will be invited to register
- Closed tendering
- Multiple rounds of proposal and review (dependent on package)
- Face to face discussions / tender reviews
- Fair award process



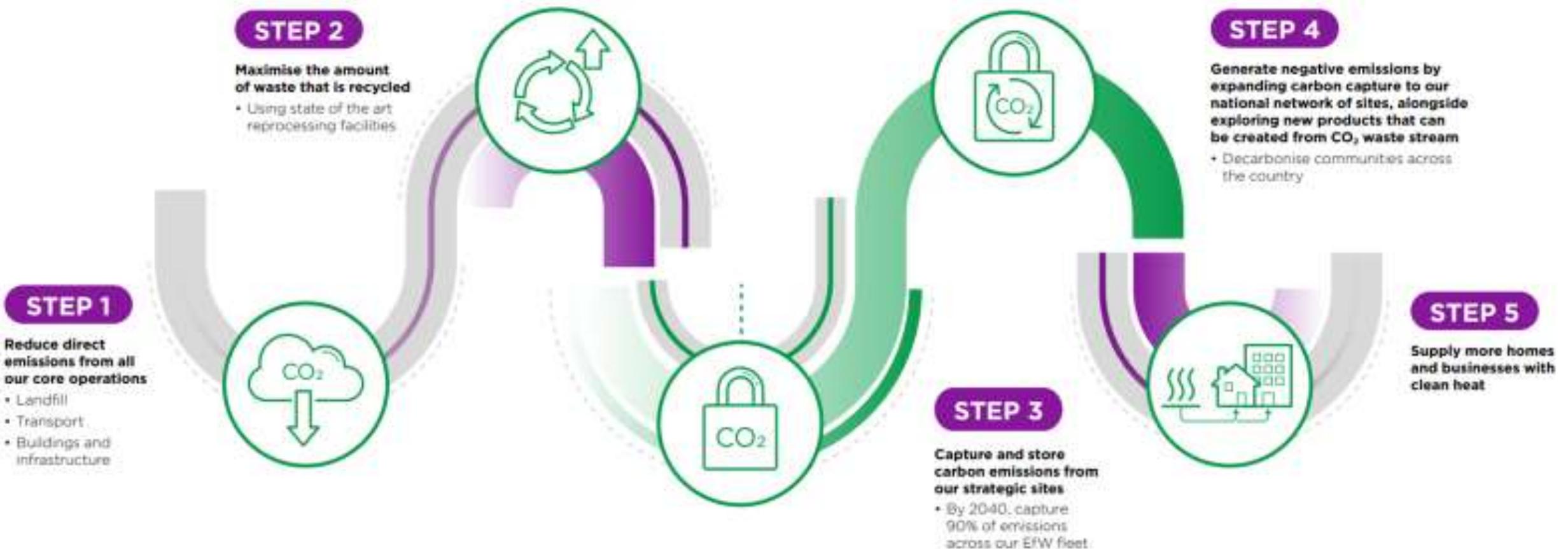


Richard Belfield

Introducing Viridor's decarbonisation ambitions



Viridor's decarbonisation strategy



Runcorn CCUS Project – 950ktpa CO₂ captured

- Confirmed as “Eligible” for the “Cluster Sequencing Carbon Capture Usage and Storage Deployment: Phase 2”
- Investment value £300-400 million
- To be built next to Runcorn ERF on neighbouring Inovyn land
- CO₂ to be piped to Hynet/ENI collection facilities at Stanlow
- MOU signed with ENI
- Supportive financiers (Viridor, SocGen, Credit Agricole, TD, BNP and Aviva)
- Awaiting BEIS decision May 2022

Milestone	Date and Timeframe
Submission Deadline	21st January
Evaluation (CCUS Phase 2)	24th January – May 2022
Negotiation / Due Diligence	May 2022 onwards
Decision on contract award to support FID	Q2 2023 onwards
Negotiate and Award EPC Construction Contract	By December 2023
Commercial Operation	December 2026





Building a world
where nothing
goes to waste



4 Q&A

If you have any questions, please submit them in the chat function.

5 Keep in touch

- Register your organisation on our supplier database
- Subscribe to the HyNet newsletter
- Follow us on social media



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