‘bH2’ Bacton Hydrogen Project

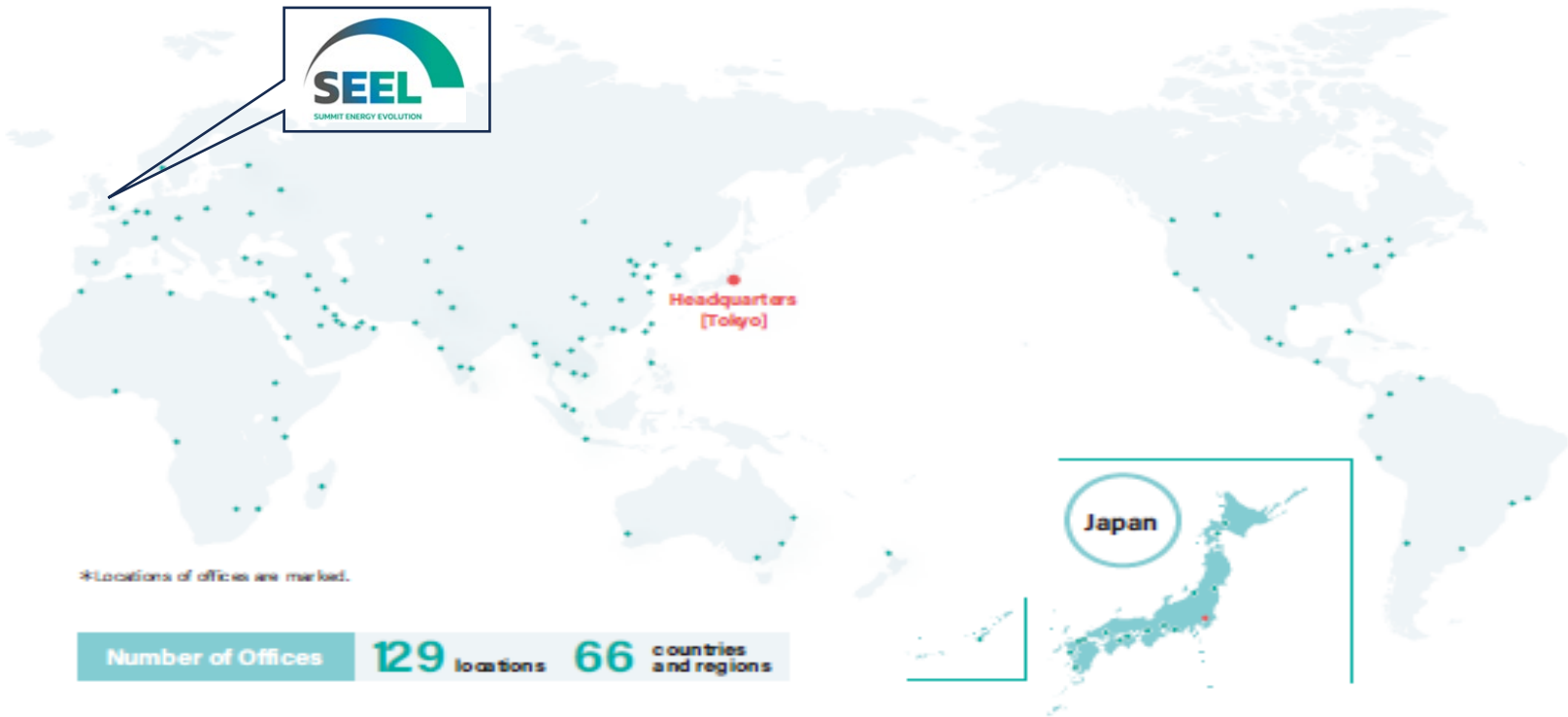
Progress for Norfolk’s Energy Jewel

EEEGR SNS 2024
Norwich

About Sumitomo Corporation

Global Network

as of March 31, 2023



*Locations of offices are marked.

Number of Offices	129 locations	66 countries and regions

as of March 31, 2023

Shareholders' Equity (equity attributable to owners of the parent)	US$28.4billion
Net Income	US$4.2billion
Number of Consolidated Subsidiaries and Associated Companies	886 (78countries and regions) Consolidated Subsidiaries 636 (Japan:135 Overseas:501) Associated Companies 250 (Japan:50 Overseas:200)
Number of Employees (Consolidated Base)	78,235
Corporate Evaluation	Fortune Global 500

Sumitomo Corporation has been ranked in the Fortune Global 500, an annual list compiled and published by US Fortune magazine, for 28 years, as one of the global companies leading the world's development.

International Financial Reporting Standards (IFRS)
The US Dollar amounts represent translations of Japanese Yen amounts at the rate of ¥130=US$1.

Based on nine "Groups" that concentrate the power of Sumitomo Corporation, we anticipate market changes and social needs in each business domain, and aim to improve corporate value by resolving social issues through value creation that transcends industry frameworks.

Detail information

- Steel Group
- Automotive Group
- Transportation & Construction Systems Group
- Diverse Urban Development Group
- Media & Digital Group
- Lifestyle Business Group
- Mineral Resources Group
- Chemical Solutions Group
- Energy Transformation Business Group

(as of April 1, 2024)

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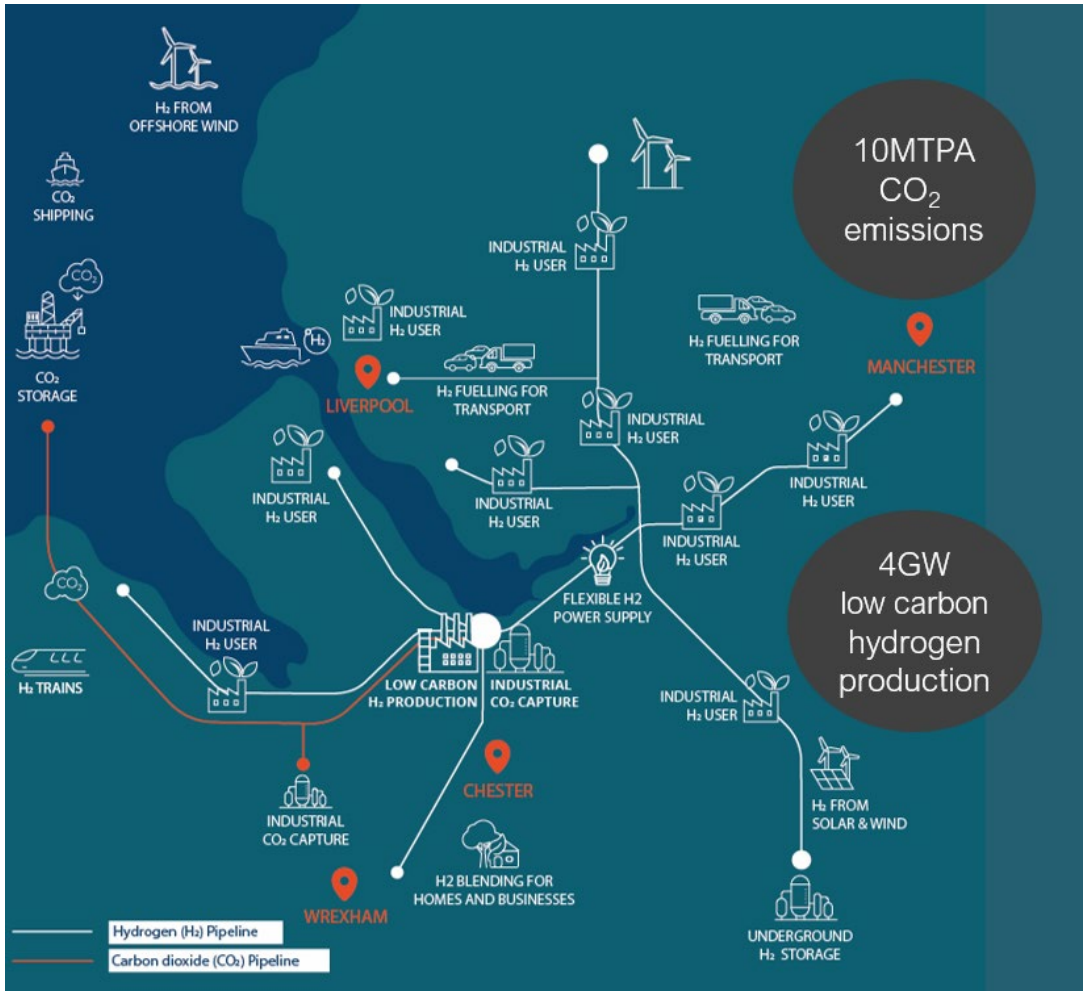
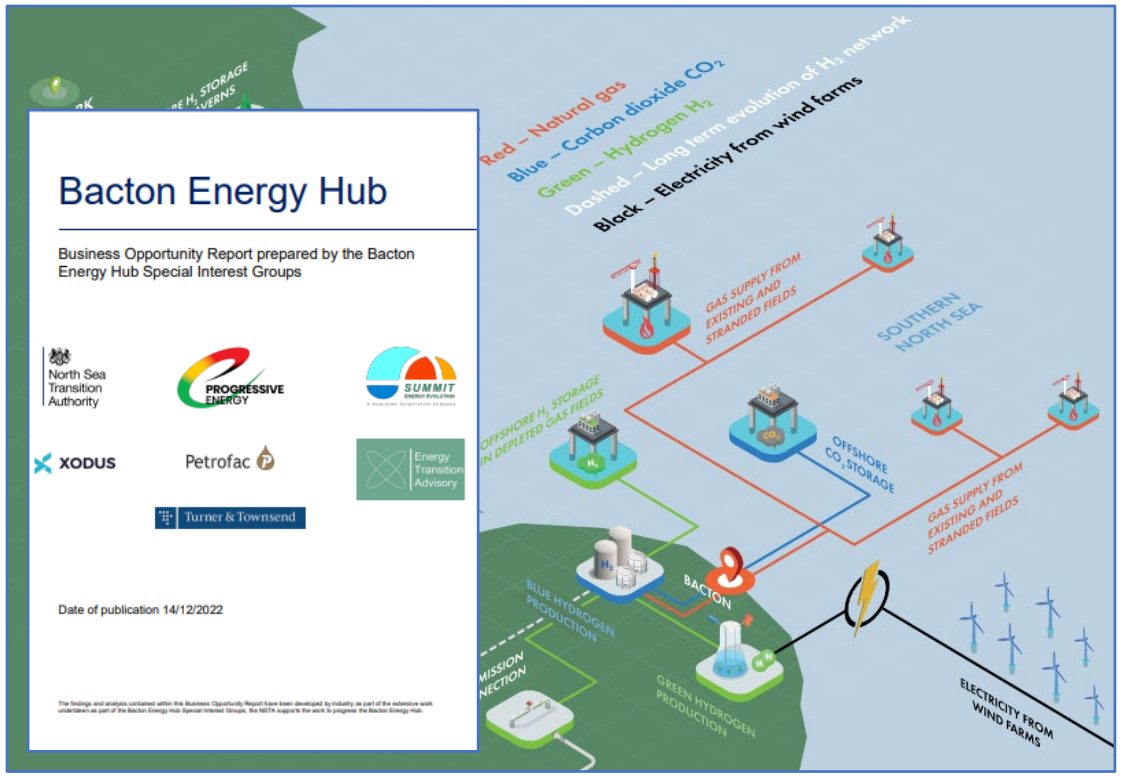
Progressive Energy

- A low carbon energy projects company formed in 1998.
- Focused on decarbonising industry using low carbon hydrogen and carbon capture and storage technologies.
- Originator and lead developer on multiple industrial decarbonisation projects;
  - Vertex Hydrogen
  - HyNet North West
  - HyDeploy
  - Grenian Hydrogen
  - HyNet IFS (Industrial Fuel Switching)
- Conducted Bacton Energy Hub Area Plan for the NSTA (formally the OGA) in December 2020, answering the question:

"What role might there be in the context of Net Zero?"

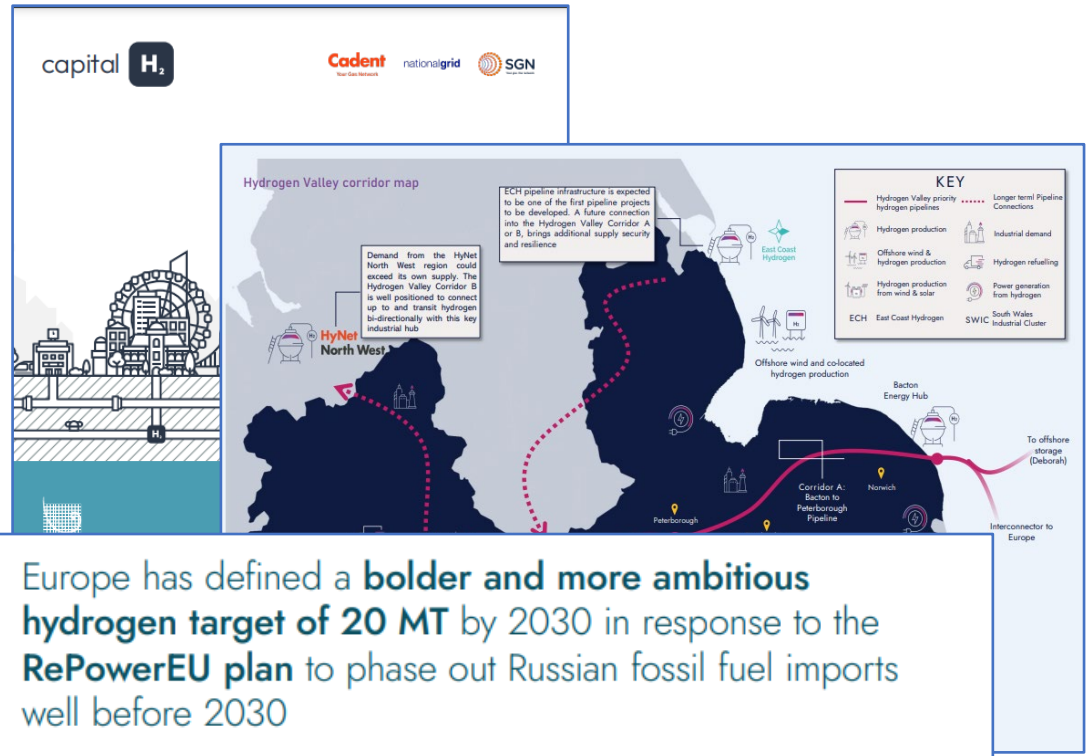


Bacton Energy Hub Recap



Bacton is ideally positioned
to become a significant hydrogen production site for London and the South East.

A sustainable market for hydrogen
will emerge over the coming years.



Europe has defined a **bolder and more ambitious hydrogen target of 20 MT** by 2030 in response to the **RePowerEU plan** to phase out Russian fossil fuel imports well before 2030

This includes a **10 MT target of domestic EU hydrogen supply**, as well as a **10 MT target of hydrogen imports** from outside the EU.[1]

These targets are strengthened by accelerated **national climate ambitions** as well as the accelerated development of the **European hydrogen market**.

Note, Information extracted from BEH Study and Guidehouse European Hydrogen Backbone report 2022

bH2 - Datasheet

Hydrogen Production	▪ 600MW_{th} HHV
Feedstock	▪ Natural Gas – NG specification public domain
Product Specification	▪ In accordance with LCHS (GHG emissions intensity of 20gCO2e/MJLHV)
Carbon Capture Rate	▪ Minimum 95% CO2 capture rate, target 97%
CO2 specification	▪ Track 1 Cluster Projects CO2 Specification
Availability	▪ Designed with a target availability of 95% averaged over its lifetime (based on 20-day turnaround every 4 years)
Design Life	▪ Design for 25-year operational life
Timeline	▪ Operational 2030
Technology Selection	▪ Driven by following priorities: 1. Safety 2. Ramp up and Turndown rate viability due to demand profile 3. Site space constraints 4. Utilities and Water consumption 5. Consenting
Site Selection	▪ Bacton Terminal Area

Appraisal – Context and Approach

Context

- Feasibility study to improve the definition of bH2 following on from the original BEH SIG work.

➢ Define the **minimum potential / minimum value** proposition of a hydrogen facility in the Bacton Catchment area.

➢ Provide **improved technical** and **commercial** definition.

➢ **De-risk** key areas of development.

Approach

- Over the past 6 months work focused on:

➢ **Frame the opportunity**: key focus on hydrogen supply and demand.

➢ **Define the development concepts:** Technology and Site Evaluation

➢ **Prepare the business case:** Economic assessment and commercial strategy

➢ Follow the defined **PDP Process**

Appraisal work – Feasibility Studies

Major Item	Current Status (end of Mar 2024)	Way Forward Plan (before/during Pre-FEED)
Natural Gas Feedstock	✓ Completed indigenous and foreign gas demand/supply study ✓ Confirmed significant feed gas availability up to 2050 and likely beyond	✓ Execute HoT with producers ✓ Collaborate with SCGC
H2 Off-takers	✓ Signed MOU with major off-takers (approximately 760 MW capacity) ✓ Negotiating MOU with various off-takers (approximately 400MW capacity) Government showed positive strategic decision on hydrogen blending	✓ Execute HoT with off-takers ✓ Complete dynamic modelling to consider the demand and supply profiles (e.g. seasonality)
H2 Pipeline	✓ Signed MOU with National Gas (trunk line operator) ✓ Signed MOU with Cadent (local and regional line operator)	✓ Execute HoT with pipeline operators ✓ Define trunk line, connection points, etc. ✓ Assisting with pipeline studies
Water	✓ Set minimum case as building desal plant for Bacton ✓ Discussing wider collaboration (e.g. Bacton + other local demand) with water supplier	✓ Define desal plant specification
CO2 Disposal	✓ Currently working on maintaining all options	✓ Decide a company to take CO2 this year
Power	✓ Negotiated MOU for regional power discussion ✓ Set minimum case as building power plant for Bacton bH2 ✓ Discussing wider collaboration (e.g. large H2 power generation, private wire)	✓ Define bH2 power plant specification ✓ Feasibility studies for private wire

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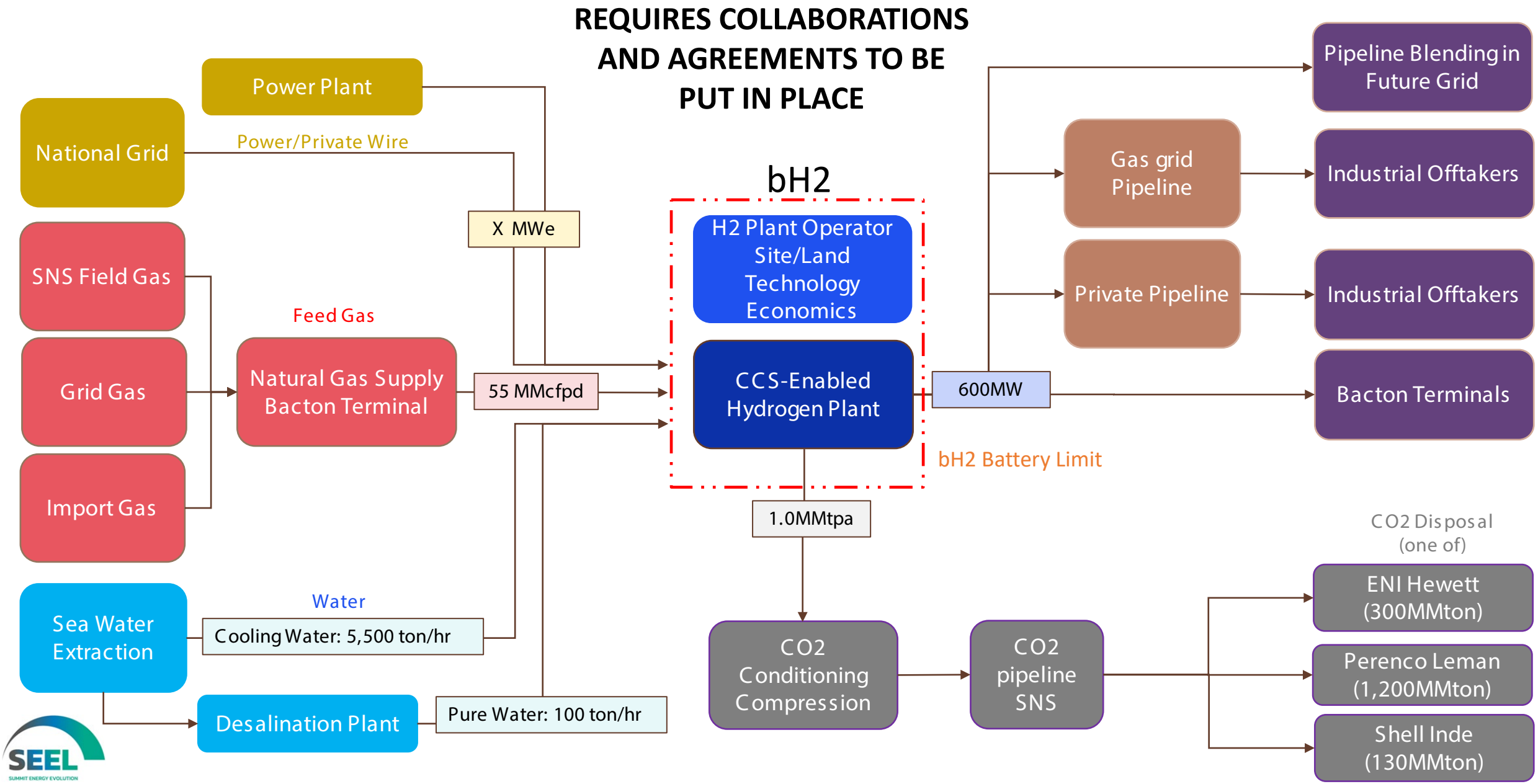
Wider Project Value Block Diagram

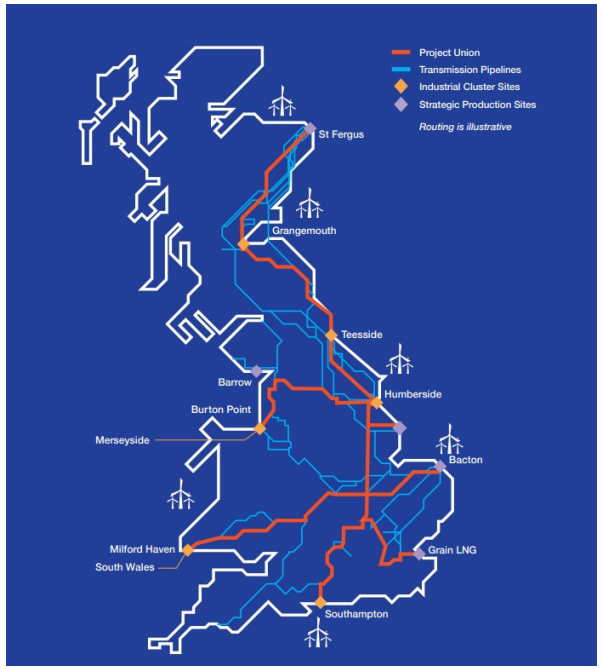


Routes to Market – Strong Collaboration

Strong relationships developed with key transport operators

National Gas ProjectUnion FutureGrid

"Project Union will deliver a "first of a kind" hydrogen transmission backbone for the UK"



~2,000km
hydrogen backbone

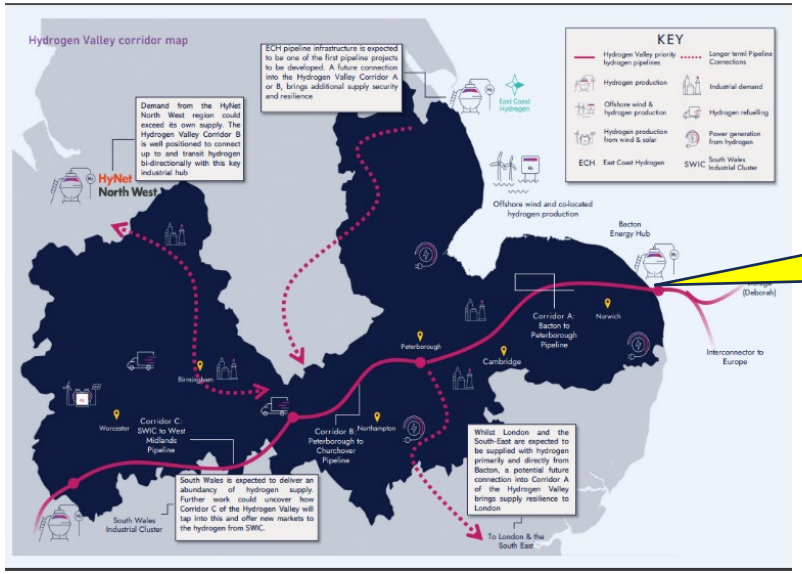
25%
of the UK's current natural gas transmission pipelines

Early 2030s
initial backbone complete

MOU signed *with National Gas outlining the intent for the parties to cooperate and share their expertise to explore hydrogen transmission opportunities.*

Cadent

Cadent are leading a number of pioneering hydrogen programmes in partnership with the energy sector, inclusive of Hydrogen Valley and Capital Hydrogen.



Hydrogen Valley

BACTON bH2

Deliver H2 at Scale by 2032

MOU signed *- outlines the intent for hydrogen transmission collaboration opportunities including but not limited to and from the Bacton Terminal to potential hydrogen clusters.*

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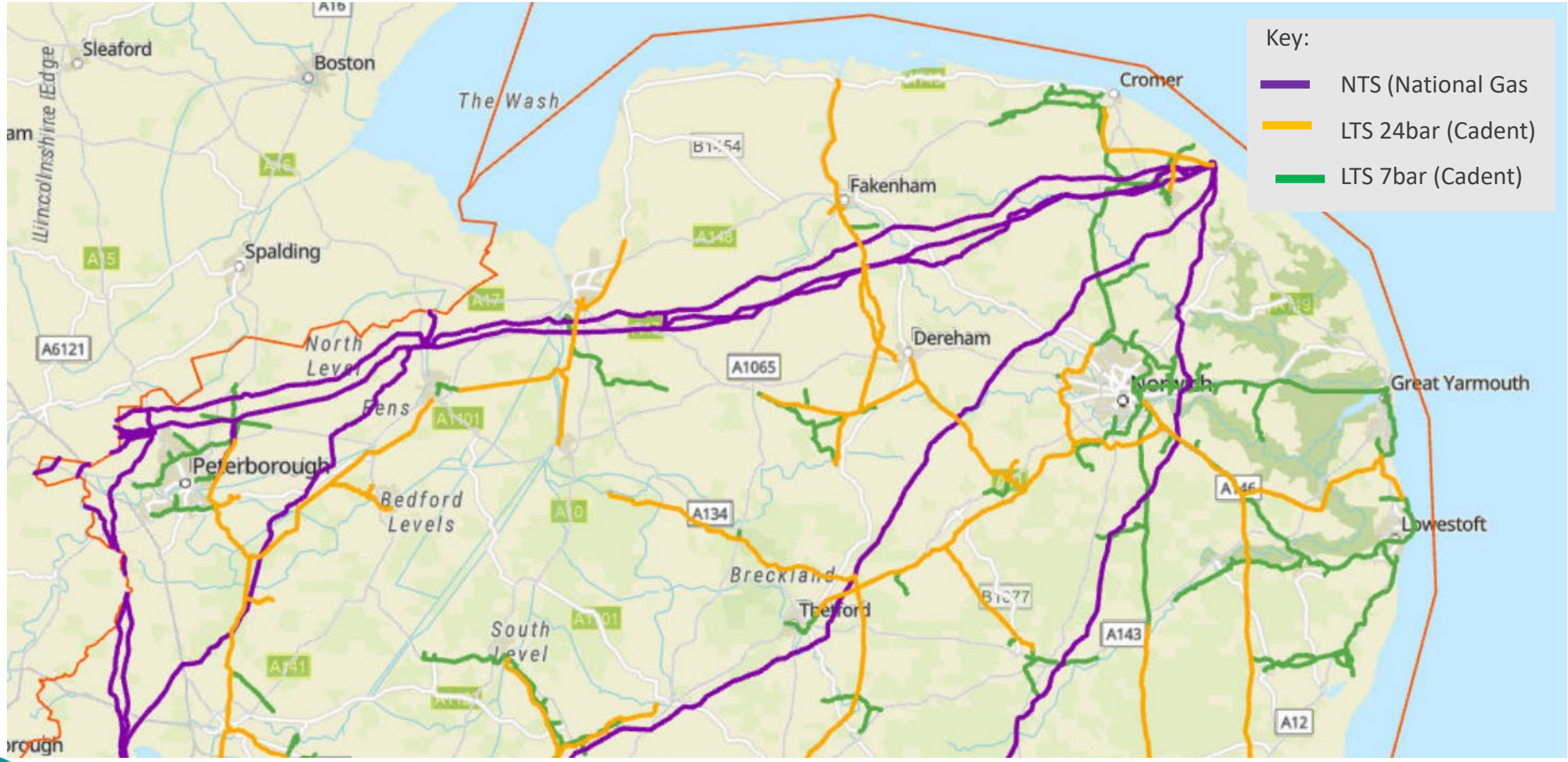
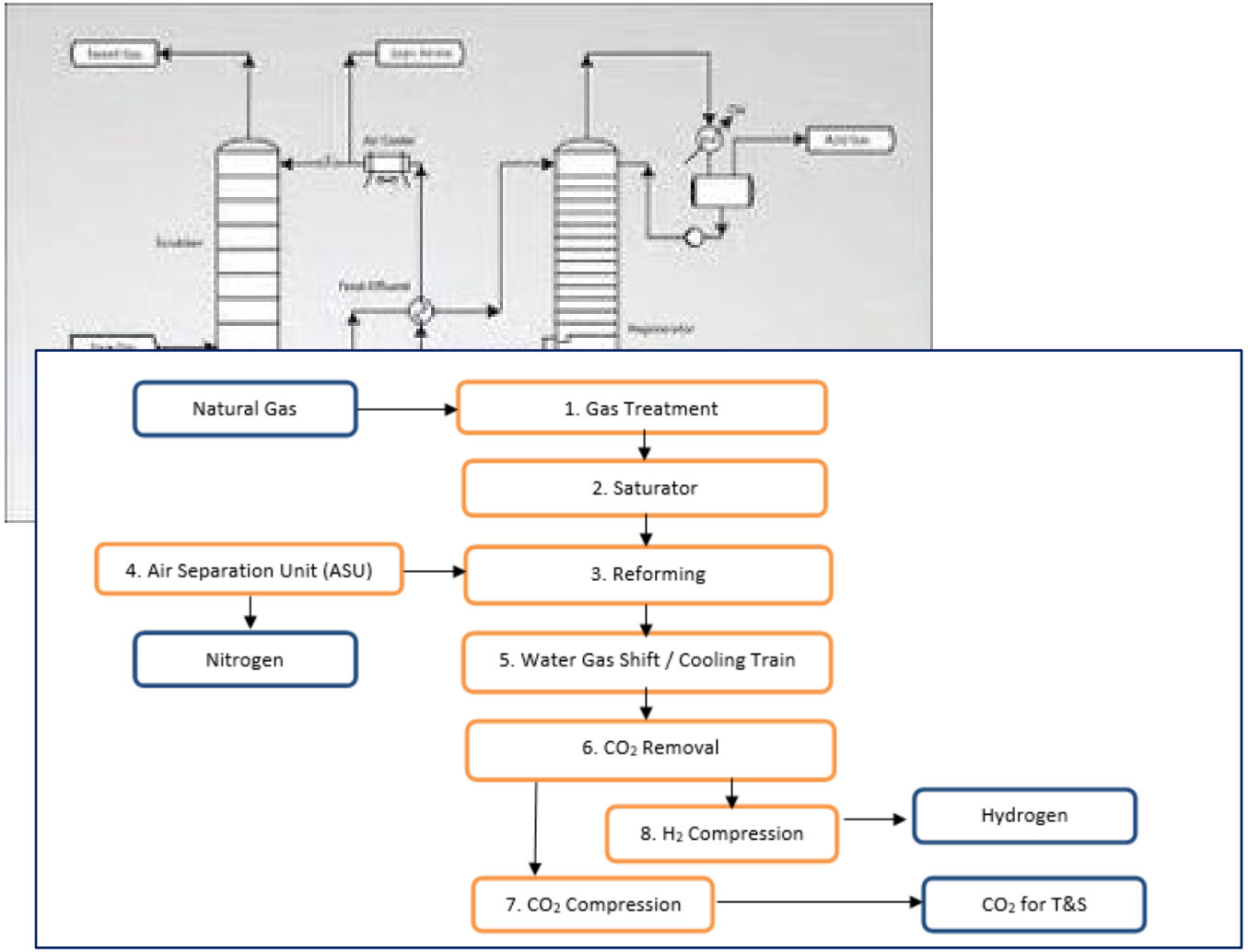
Links to existing NTS infrastructure



Technology engagement



Criteria for selection defined and shared with technology providers.

Key focus on safety and Bacton location, i.e. SSSI, AONB etc.

Expression of interest requested from 11 vendors.

EOI followed by an RFI in 2Q 2024

Responses from nearly all to engage with the project.

Deselection based upon project design criteria and constraints before pre-FEED.

Early Environmental Assessment

ERM

PROGRESSIVE ENERGY

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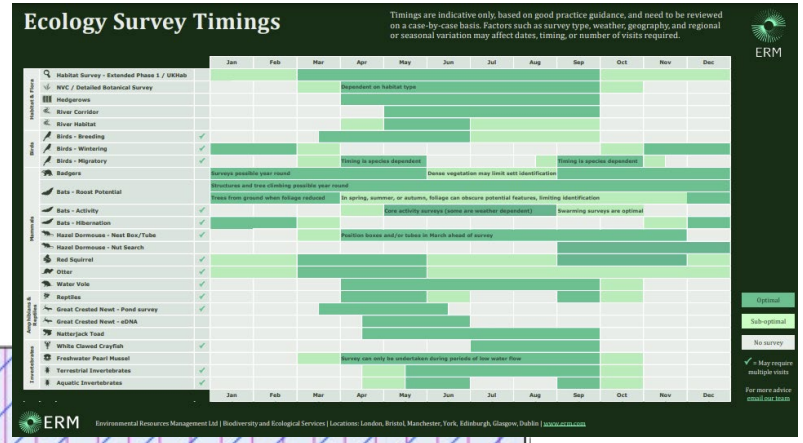
Hydrogen to Bacton

Environmental Constraints Report

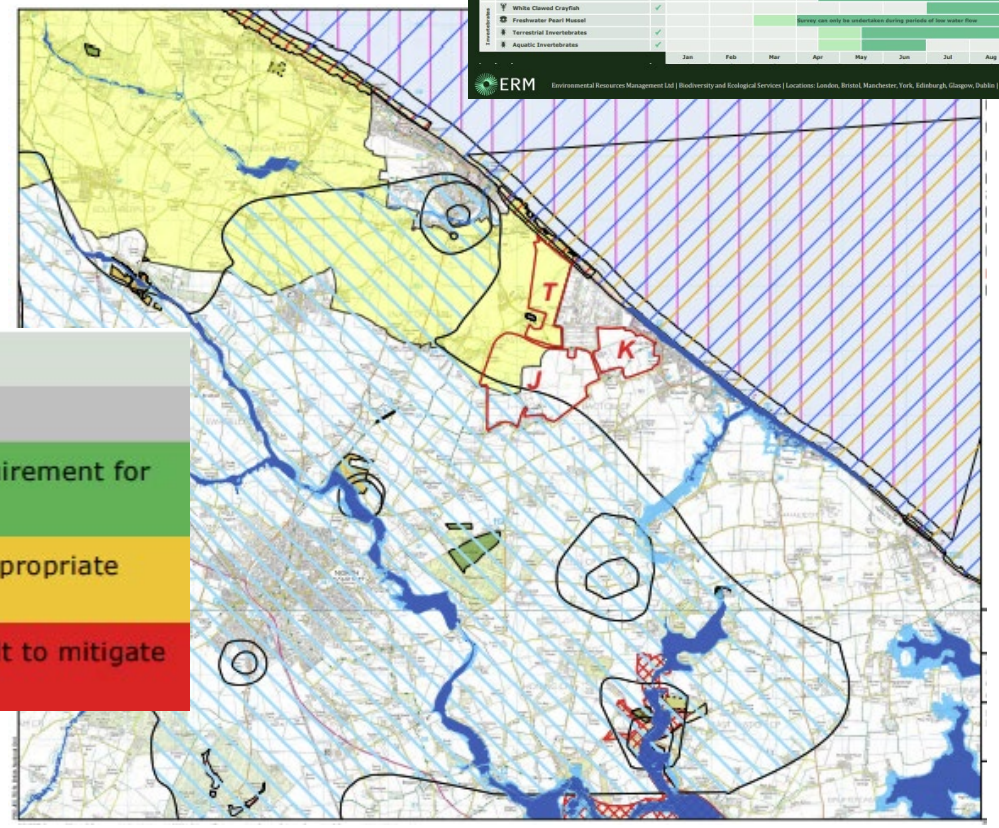
DATE
March 2024

REFERENCE
0727884

- Potential sites identified
- Some early RAG grading
- Future work for EIA scoped



Performance	Comparative Appraisal	
Most Preferred	No Impact	Not applicable
↓	Lower Impact	Potentially minor effects, with little or no requirement for mitigation
	Moderate Impact	Potentially moderate effects subsequent to appropriate mitigation
Least Preferred	Higher Impact	Potentially major effects which may be difficult to mitigate



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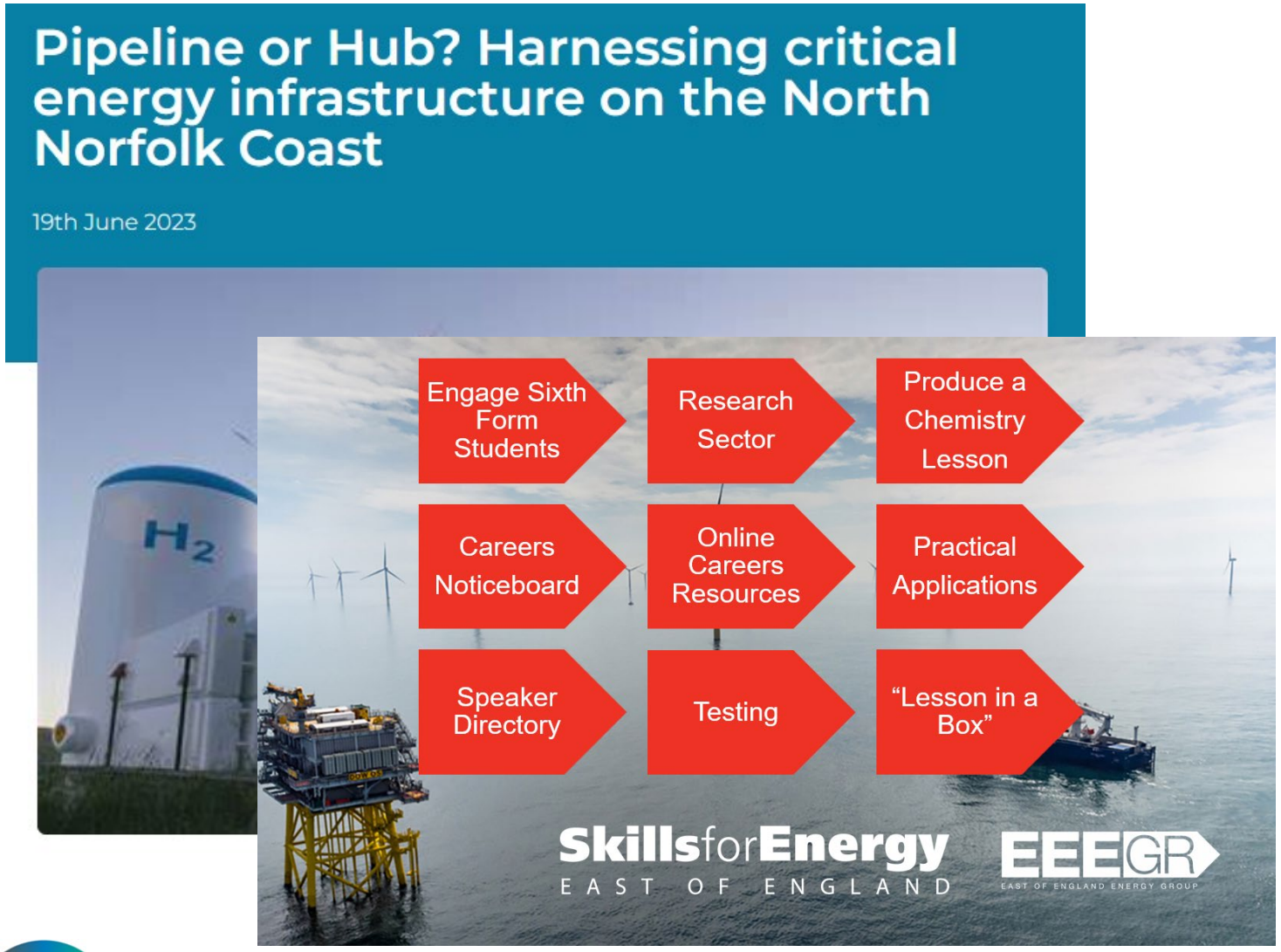
Bacton, “a project for North Norfolk”



How do we ensure it is a project “for” North Norfolk as opposed to purely being “in” North Norfolk.

Opportunity to provide / retain higher paid jobs at Bacton.

Support accessibility to education in the region and skills retention

Opportunity to be involved in and to facilitate local decarbonisation initiatives

SkillsforEnergy
EAST OF ENGLAND

- **Inspire – Success**
- **Encourage – Innovation**
- **Engage - Together**

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Collaborating with local initiatives

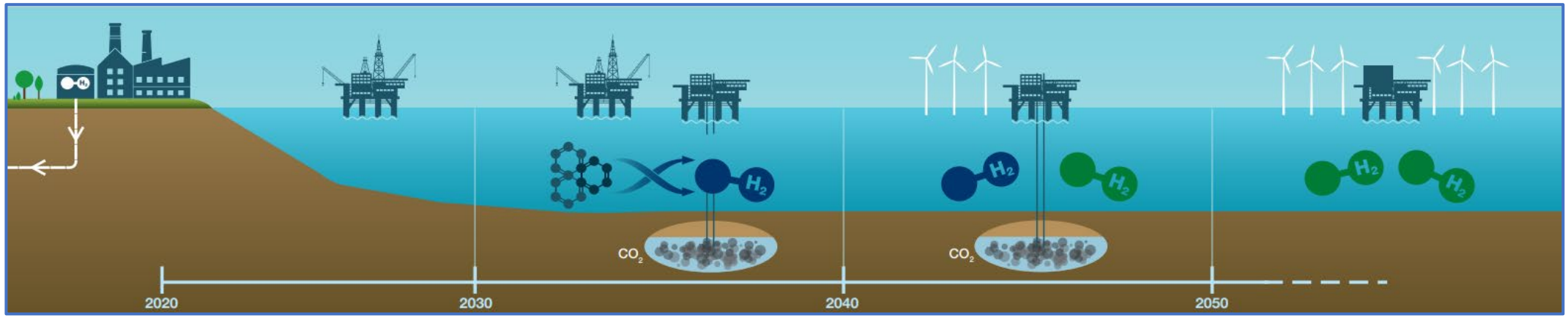
Opportunity for multi project collaboration at the terminal:

- Cumulative assessment
- Cumulative mitigation

Local considerations during each phase of the project:

1. Site selection
2. Construction phase
3. Long term benefit

BH2 Project Schedule



Original BEH Study Timeline for implementation and development

Appraise Phase (Feasibility)
- Q1 2024

Select Phase (pre-FEED)
Q1 2024 – Q4 2025

FID

Define Phase (FEED)
Q1 2026 – Q4 2027

Execute Phase
Q4 2027 – Q3 2030

Operational
Q4 2030

“Enabling the Energy Transition”

Aims

- Unlocking the energy transition for the Bacton Terminal, building on the original work completed as part of the BEH study.
- Enabling Hydrogen production and use “at” the Bacton Terminals
- Enabling distribution of Hydrogen from Bacton to offtakers and markets
- Enable through anchor project certainty the on-time development of CCS
- Enabling alignment and unlocking opportunities, **such as low carbon power** for longer term utilities (and space) requirements for terminal members

Deliverables

- **Draw together stakeholding parties** with an interest in the Energy Transition, and other supporting organisations to establish an Energy Transition working group.
- **Provide an interface** for all involved in the energy transition; hydrogen production, energy storage, renewables and carbon capture.
- **Identify and develop the opportunities** enabled through hydrogen production (electrolytic and CCS enabled), hydrogen blending and CCUS.
- **Identify and develop** an understanding of the long-term utilities (and space) requirements for the terminal to ensure energy transition opportunities are maximised for all parties.
- **Develop a roadmap** and relevant business cases to unlock the opportunities and debottleneck utilities access, working in conjunction with the Net Zero workstream.

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Thank you.