# Project Union

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national gas transmission

# The National Transmission System (NTS)

## The role of gas:

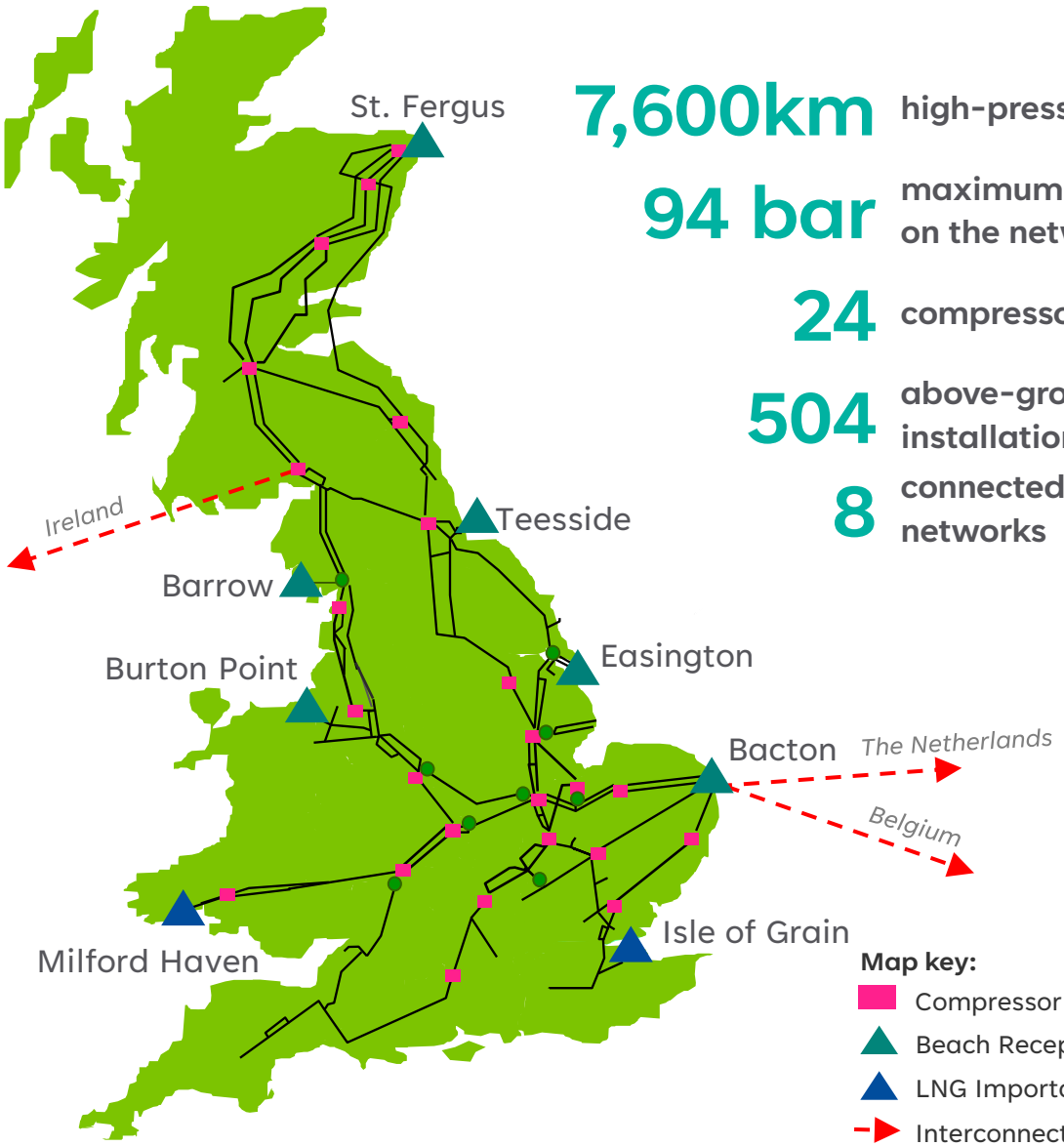
**23m**
gas customers across the UK

**85%**
households using gas for heat

**881TWh**
of energy is delivered by NTS

## UK gas demand:

| 39% | 38% | 23% |
|---|---|---|
| Power Generation | Domestic Use | Industrial & Commercial |




**7,600km** high-pressure pipe

**94 bar** maximum pressure on the network

**24** compressor stations

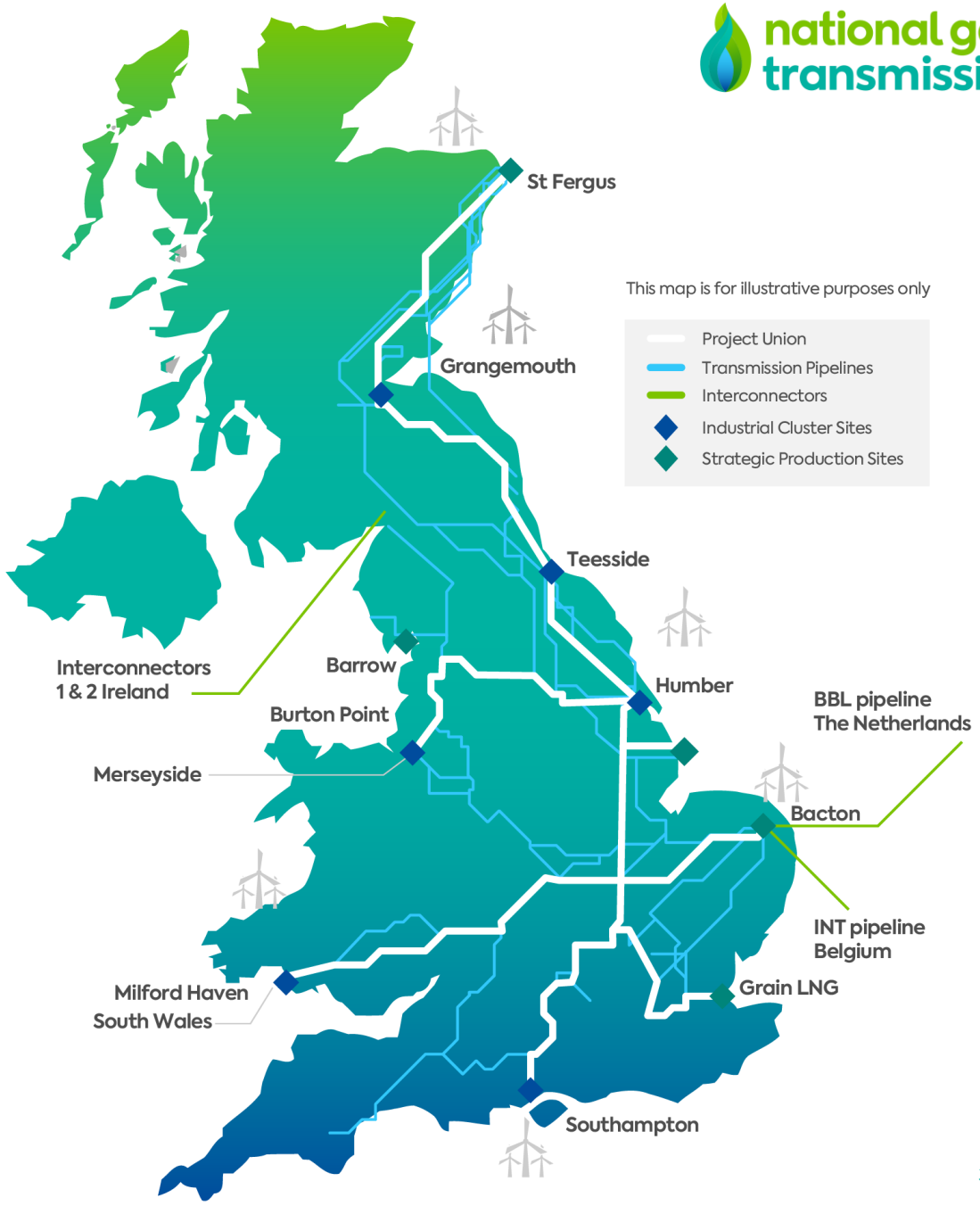
**504** above-ground installations

**8** connected distribution networks

# ProjectUnion

Project Union will connect, enable net zero and empower a UK hydrogen economy, repurposing existing transmission pipelines to create a hydrogen ‘backbone’ for the UK by the early 2030s.

- Repurpose 1,500-2,000km of the NTS through a phased approach in line with Government’s cluster prioritisation and green hydrogen development
- Connect cross GB supply, demand and strategic storage sites, enabling growth of a UK hydrogen economy
- Use existing infrastructure to deliver a low carbon future, reducing environmental impact of new construction
- Enable early and affordable market growth of a low carbon hydrogen economy to achieve net zero



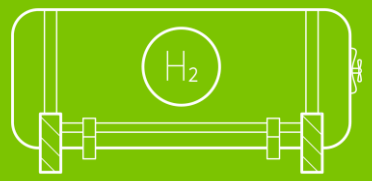
# Project Union: the benefits

## Project Union will contribute to Energy Security.

Enabling transport of, and fair access to, indigenous supplies around the UK and opens up export opportunities by connecting to the European Hydrogen Backbone.


### Decarbonisation of industry & power

Fair access to green and blue hydrogen enabling businesses to decarbonise. Access to transmission enables green hydrogen production to scale.




### Energy storage and resilience

System resilience to move and store sufficient volumes across the country

### Connectivity and efficiency

Connect production and storage with demand, enabling system efficiency through shared infrastructure

### Market coupling

Connect isolated production sites enabling competition, reducing costs and improving security of supply

### Levelling up and job creation

Project Union drives approx. £300m GVA and supports 3100 jobs at peak construction

### Global leader in green innovation

Attract global investors by getting best value from national infrastructure and enabling rapid scale up

### Flexibility and optionality

Flexibility in power generation, storage and consumption. Optionality in future hydrogen decisions whilst maintaining gas networks' delivery.

### Consumer-centric

Innovative, cost-effective consumer focused energy solutions, e.g., the pilot hydrogen town brings scalability & phasing.

# Project Union: Feasibility key deliverables

Regulatory funding under the NZASP mechanism has been approved to the value of **£5.626m***.

Over a 12-month period commencing early 2023, the programme will deliver the following outputs:

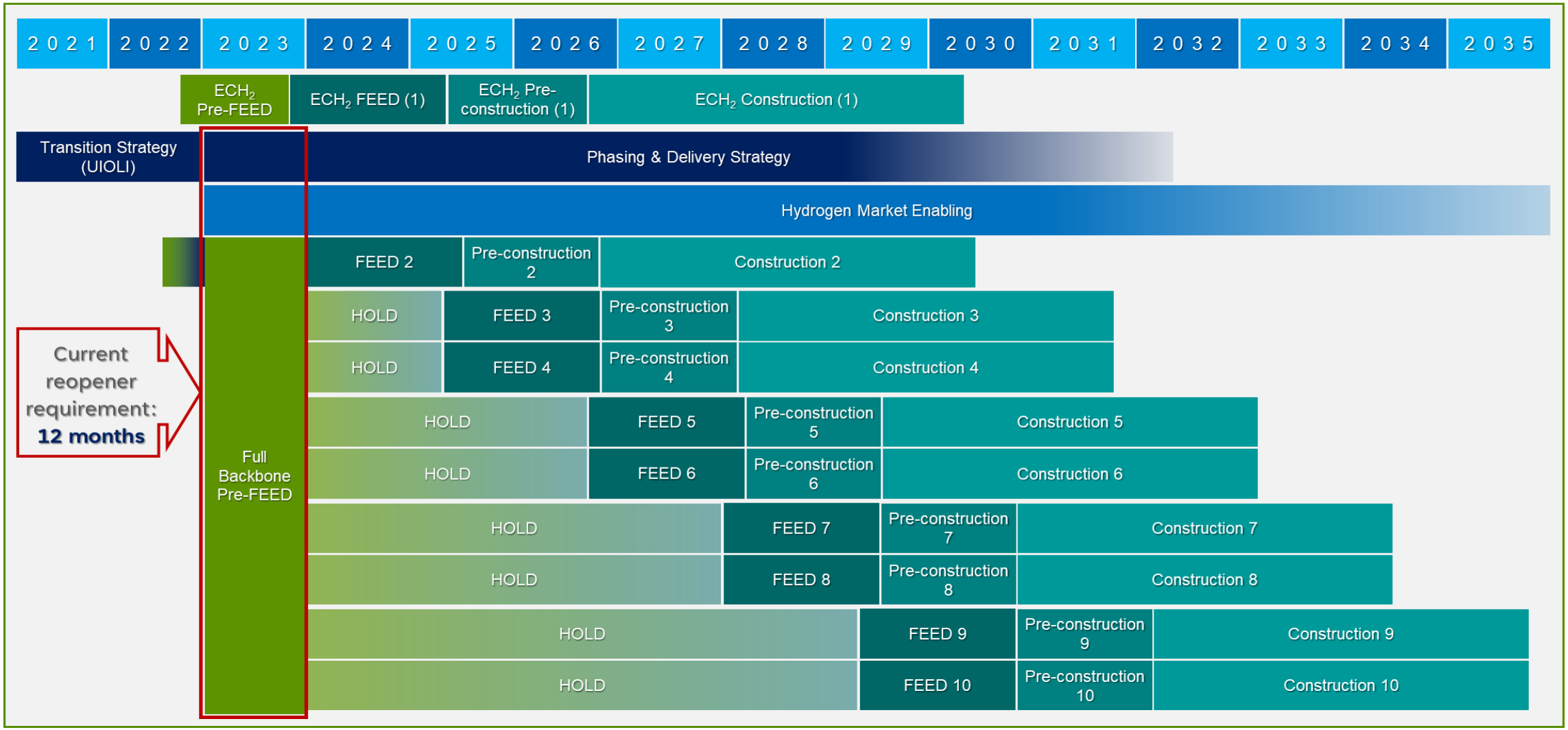
| | Outputs |
|---|---|
| **Phasing Strategy and Priority** for each section of the hydrogen backbone. This will be determined through engagement with existing and emerging stakeholders across production, storage and demand sectors, network modelling, alignment with policy objectives and by evaluation of greatest value to the consumer. | ▪ Phasing strategy – order and timing<br>▪ Economic assessment<br>▪ Real Options Analysis identifying key decision points<br>▪ Supply and Demand Scenarios |
| **Pre-Front End Engineering and Design (pre-FEED)** activities, examining the viability of repurposing existing methane infrastructure assets and options to provide a complete hydrogen backbone connecting strategic supply locations. | ▪ Planning and consenting strategy<br>▪ Appraised set of routing options<br>▪ Asset data collection requirements<br>▪ Constructability assessment<br>▪ Cost Estimates<br>▪ Engineering policy review |
| **Hydrogen market enabling activities,** including development of options for the design of regulatory and commercial frameworks for hydrogen infrastructure and ongoing customer and stakeholder engagement. | ▪ Evidence gathering for policy decisions<br>▪ Regulatory and market framework options<br>▪ Supply chain review<br>▪ Customer and stakeholder engagement |



*18/19 price base

# Project Union: high level plan

FEEDs are staggered following pre-FEED to allow phases construction by the early 2030's. Example for illustration only.



# Project Union: summary

- Government policy indicates a clear signal for hydrogen, and it is essential that this is **supported with the development of transportation infrastructure** to allow a resilient, liquid, competitive UK wide market to develop.
- Given the length of time required to plan for and deliver critical national infrastructure, if the UK is to achieve its Net Zero targets by 2050, there is **a clear need to act now and at pace**.
- **Project Union** proposes to create an operational hydrogen backbone for the UK by **repurposing 1,500 to 2,000km of existing assets**, representing ~25% of the UK's current methane transmission network by the early 2030s.
- We will create the evidence base to support government and regulatory policy decision making. Over the next 12 months, we will deliver:
    - **Phasing strategy and priority pipeline routes**
    - **Pre-Front End Engineering and Design (pre-FEED) for the full UK hydrogen backbone**
    - **Hydrogen market enabling activities**



*18/19 price base

# FutureGrid

A high-pressure **hydrogen test facility** using **decommissioned transmission assets,** to **demonstrate** the National Transmission System (NTS) can **transport hydrogen safely and reliably**

**Four key hydrogen concentrations are being tested:**

- **2%** hydrogen gas
- **5%** hydrogen gas
- **20%** hydrogen gas
- **100%** hydrogen gas

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national gas transmission

# A global-first, world-class facility


Project Union drives approx. £300m GVA and supports 3100 jobs at peak construction

# Thank you

**You can find out more and get in touch:**


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National Gas Transmission

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