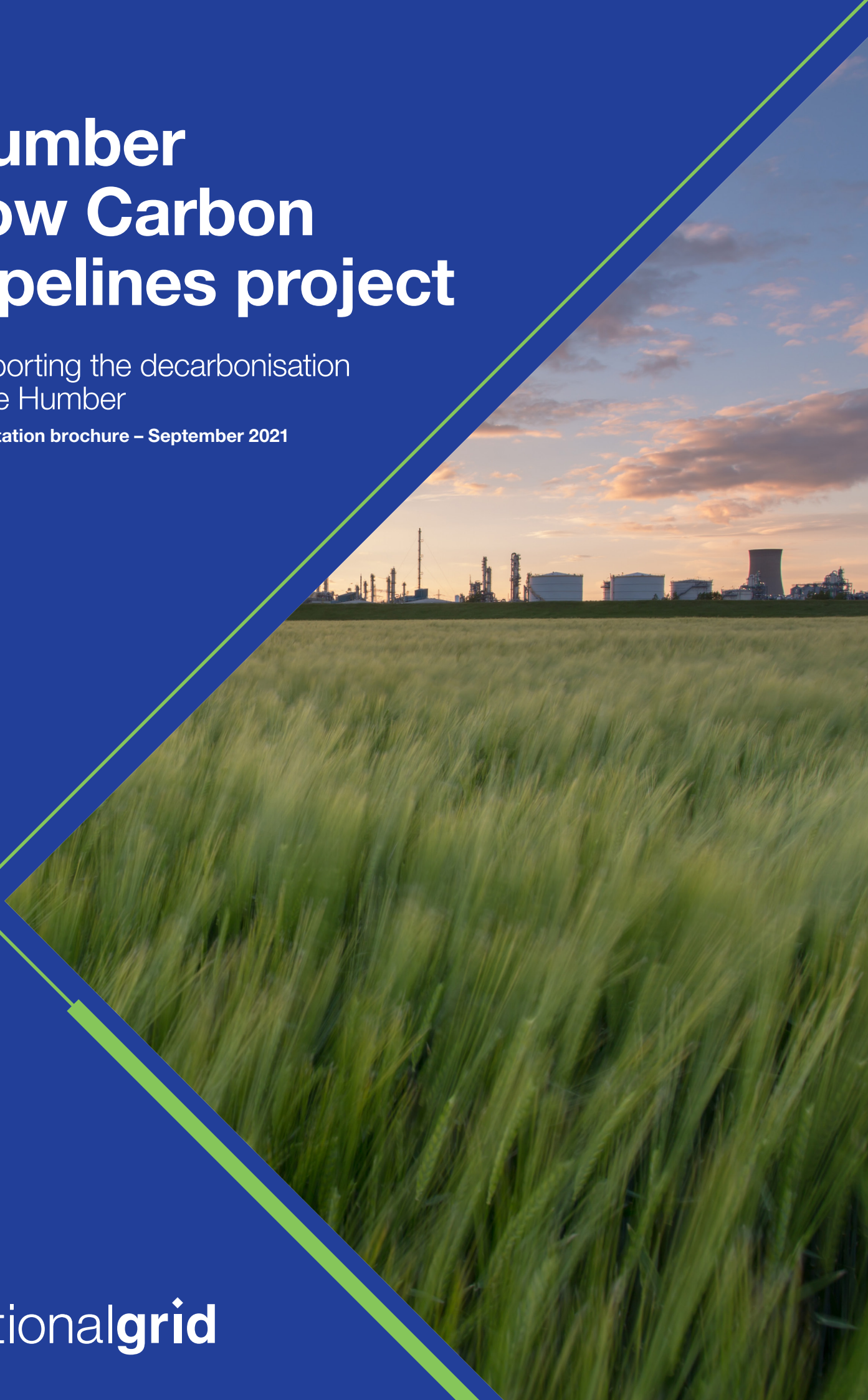
Humber Low Carbon Pipelines project

Supporting the decarbonisation of the Humber

Consultation brochure – September 2021



nationalgrid

Introduction

The global energy revolution has begun. The Humber region can play a key role.

The Humber region is an important part of the UK economy, contributing £18 billion each year and providing 55,000 jobs across a range of industries including refineries, steelmaking, petrochemicals and power generation.

As the UK's largest industrial cluster, the region is responsible for producing 12.4 million tonnes of carbon dioxide emissions per year. This means it can play a crucial part in helping the UK to transition to a low carbon economy and reaching its ambitions around net-zero by 2050.

The Humber and wider Yorkshire region can play a key role in the UK's energy revolution. The development of carbon capture, usage and storage (CCUS) and low carbon hydrogen technologies can help to decarbonise this major industrial powerhouse. This is in line with the Government's UK hydrogen strategy and The Ten Point Plan for a Green Industrial Revolution.

Our Humber Low Carbon Pipelines project forms the backbone of the Zero Carbon Humber vision to become the UK's first net-zero carbon cluster by 2040. Our proposed project aims to deliver a new onshore network of pipelines to transport captured carbon dioxide emissions from the region's emitters for safe storage, and enable industries to fuel-switch from fossil fuels to low carbon hydrogen.

This consultation

As we work to deliver this vision, we want to hear your views so we can shape and refine our plans and ensure the communities living and working around the Humber region have a chance to inform and potentially influence the development of our plans.

September 2021 marks our first stage of public consultation to share our draft plans and invite feedback on them.

Please take part in this consultation and provide your feedback by 22 October 2021.

There is more information about the project in this brochure, together with details on how to give your feedback. There are also contact details for the project team should you have any questions or require any further information.

We want to hear your views

We are here to listen. All comments will be carefully considered as we develop our project. There are many ways to provide feedback including through the interactive map on our website, physical feedback forms and online events. See our **'Have Your Say'** section for more information.

You can find our webpage and more information at:
www.nationalgrid.com/humberpipelines

The opportunity in Yorkshire and the Humber

Net zero by 2050

The UK is a leader in global efforts to combat climate change. In 2019, the UK became the first major economy to pass legally-binding commitments to reduce greenhouse gas emissions to net zero by 2050.

The Government is exploring plans to transform how energy is produced and used including advancing technology such as hydrogen and carbon capture, usage and storage (CCUS).

The Humber Region

The Humber and wider Yorkshire region is the UK's most carbon intensive industrial cluster and has an important role to play. It is home to a high concentration of fossil fuel power stations and industrial plants that release millions of tonnes of carbon dioxide (CO_2) every year. This makes it an ideal location for clean growth projects using CCUS and hydrogen.

By drawing on its existing skills and infrastructure, the Humber can become the base for the UK's first net zero carbon industrial cluster, helping to create a cleaner environment for future generations while delivering thousands of jobs and export opportunities for businesses across the Yorkshire and Humber region.

National Grid Ventures

National Grid Ventures is part of the National Grid group. By developing, operating and investing in innovative projects and partnerships, it is helping to develop a cleaner future for the UK.

National Grid Ventures has a long track record of developing and operating energy infrastructure across the UK and United States, leveraging its experience and knowledge of gas and electricity networks, including direct experience in developing solutions for the transportation and storage of carbon dioxide (CO_2).

East Coast Cluster

This project is part of the East Coast Cluster. The East Coast Cluster brings together communities, businesses, industry and academia to deliver the carbon capture and storage (CCS) infrastructure needed to decarbonise the Humber and Teesside regions. It was created by the Northern Endurance Partnership - a partnership between BP, Eni, Equinor, Shell, Total and National Grid - which aims to develop offshore carbon dioxide transportation and storage infrastructure in the North Sea and wider Humber region. The cluster will take part in the Government's carbon capture and storage cluster sequencing process.

5GW

The Government is aiming for 5GW of low carbon hydrogen production capacity by 2030, providing a clean source of fuel and heat for our homes, transport and industry.

10Mt

Net zero technology aims to capture 10 million tonnes (Mt) of carbon dioxide emissions each year, equivalent to the energy use of up to 3 million homes in the UK.

The project

Project overview

Our proposals are to create an onshore network of underground pipelines to transport captured carbon dioxide and hydrogen.

The pipelines are intended to connect to major emitters and power stations in the Humber region, such as Drax, the new power station at Keadby, British Steel in Scunthorpe, Uniper's Killingholme site near Immingham and Equinor's proposals for hydrogen production at Saltend.

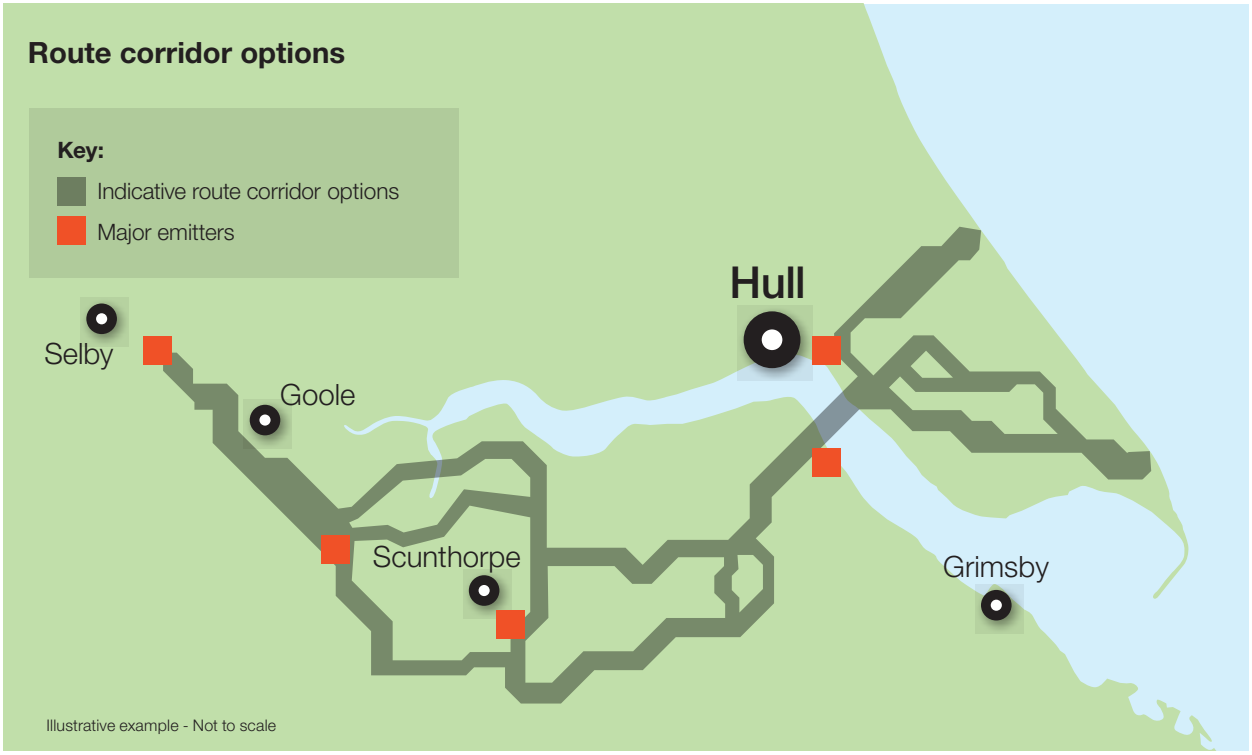
The pipelines will continue to a landfall point on the Holderness coast. The onshore carbon dioxide pipeline will then connect to an offshore pipeline to the Endurance offshore storage location. There is also potential for the hydrogen pipeline to connect into SSE Thermal and Equinor's plans for a hydrogen storage facility in Aldbrough. The project includes a new pipeline crossing under the River Humber.

The project will also involve a number of above ground installations (AGIs) along the route, which will provide access for pipeline maintenance. Potential sites for where these could be located will be identified and consulted on at future stages of consultation in 2022.

Route corridor options

We have developed broad route corridor options (roughly one kilometre wide) within which the underground pipelines and associated infrastructure would be located. In some areas we have more than one potential route corridor option. While the hydrogen pipeline and carbon dioxide pipeline may run in parallel along sections of the indicative route corridor, this will be subject to the needs of each location.

Our routeing and design plans will be informed by the outcome of the Government's cluster sequencing decision for CCUS deployment, alongside technical studies, site investigations and the feedback we receive through consultation. We intend to hold two further rounds of consultation in 2022.



The technology

What is hydrogen?

Hydrogen (H_2) is a colourless and odourless gas which is found naturally in the atmosphere. It has the potential to be a low carbon alternative to heat our homes and businesses and for use in industrial manufacturing where high temperatures are required. When we burn fossil fuels, we emit the greenhouse gas carbon dioxide. However, when we burn hydrogen the only waste product is water vapour.

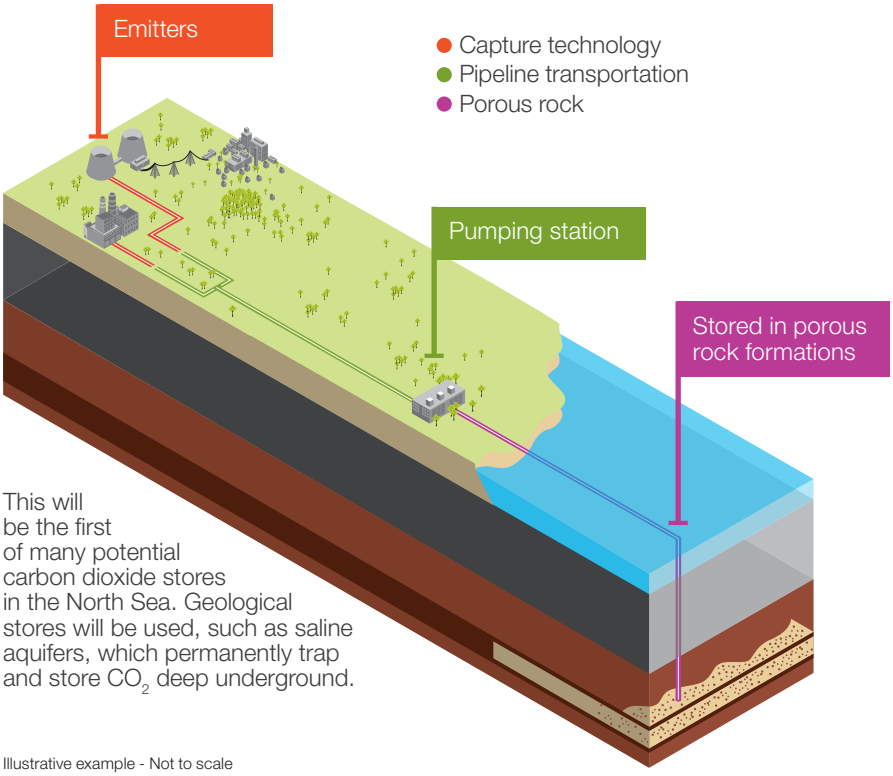
What is carbon capture, usage and storage (CCUS)?

CCUS refers to technology that captures harmful carbon dioxide emissions and transports them to be stored permanently beneath the seabed in natural porous rock formations or depleted oil and gas fields or to be used in industrial or chemical processes for other products.

How does the project fit into this picture?

Our proposed network of pipelines will transport captured carbon emissions from the region's emitters for safe storage and allow local industries to fuel-switch from fossil fuels to hydrogen.

How does CCUS work?



This will be the first of many potential carbon dioxide stores in the North Sea. Geological stores will be used, such as saline aquifers, which permanently trap and store CO_2 deep underground.

Illustrative example - Not to scale

Capture

Carbon dioxide is captured via a filter system on a flue or stack at a fossil fuel power station or industrial facility.

Transportation

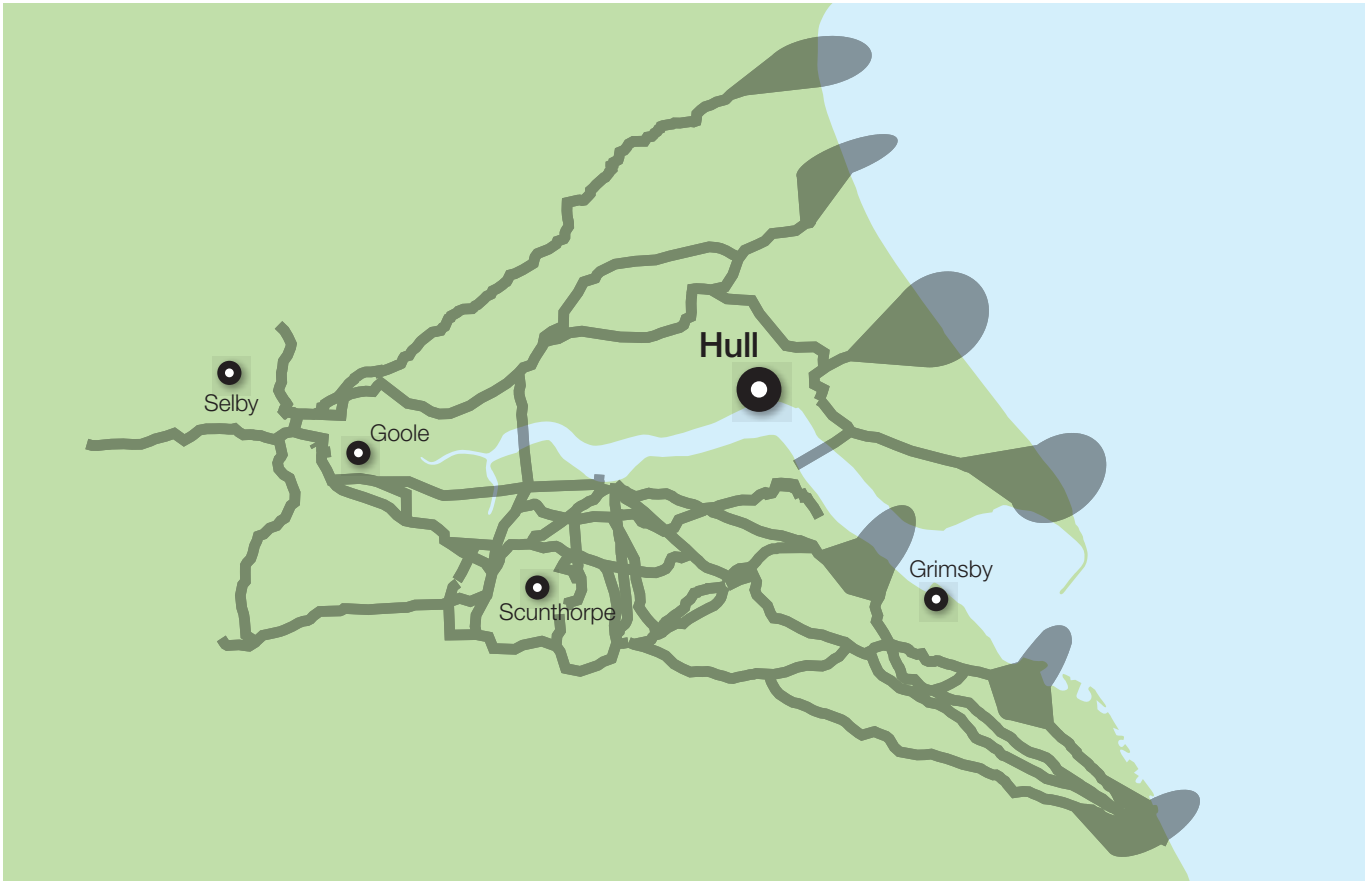
Carbon dioxide is compressed and transported via onshore and offshore pipelines to a suitable storage location.

Storage

Carbon dioxide is injected into natural porous rock formations offshore where it will be stored permanently.

Route corridors - earlier options

Our initial appraisal started in 2019 when we identified several possible route corridor options. Since then, physical, environmental and social factors have shaped possible routeing options, as well as technical constraints, the location of emitters and other existing or proposed developments in the region.



High-level route options - initial planning. Initial route corridor options were then narrowed down to two primary configurations, A and B.

Configuration A

Configuration B

The route corridor options have subsequently evolved. Please see the following pages.

Environmental considerations

The pipelines and associated above ground installations will be designed to minimise their impact on natural habitats and the environment.

The project team will be carrying out a series of surveys, site and route investigations and other assessments to understand the issues and inform the management of potential environmental impacts.

The pipelines would primarily run through agricultural land and will not be routed through private gardens. Some surveys may be required in areas beyond the pipeline corridor for the purpose of gaining a greater understanding of local habitats and how they might be impacted by the project. There is no intention to carry out surveys in private houses or gardens; these surveys are primarily in agricultural land and we will always work with landowners to seek voluntary access for surveys.

The Humber Low Carbon Pipelines project is committed to 'biodiversity net gain'. This means we intend to work closely with landowners and stakeholders to ensure that we go beyond mitigating our environmental impact with positive initiatives to support biodiversity and habitats for wildlife in the region.

Constructing an onshore underground pipeline

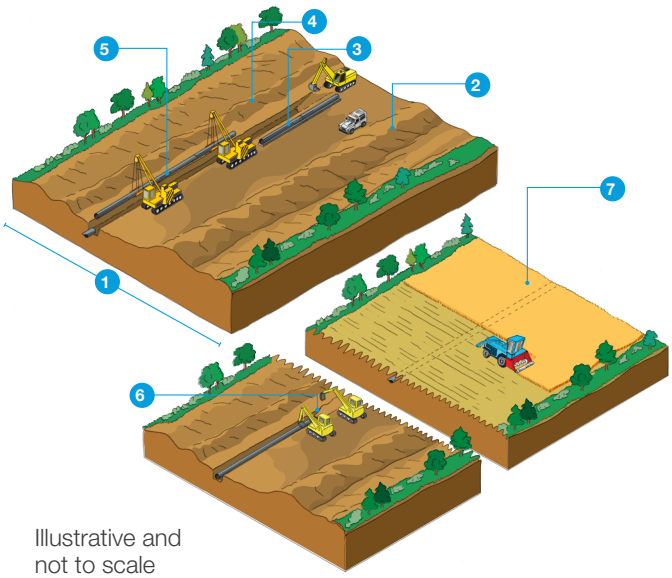
National Grid has extensive expertise in designing, building and operating safe and effective high-pressure gas pipelines in the UK.

We will work closely with the local community and other interested parties throughout the planning and construction process. Through construction, we will manage environmental impacts and work to minimise any disruption caused.

How is an onshore pipeline built?

To build the pipelines, roads, railways and waterways will need to be crossed. We would use a range of special techniques to cross these features to avoid disruption.

The pipeline will also involve a tunnel crossing under the River Humber. Further details on this will be available at our second round of consultation in early 2022.



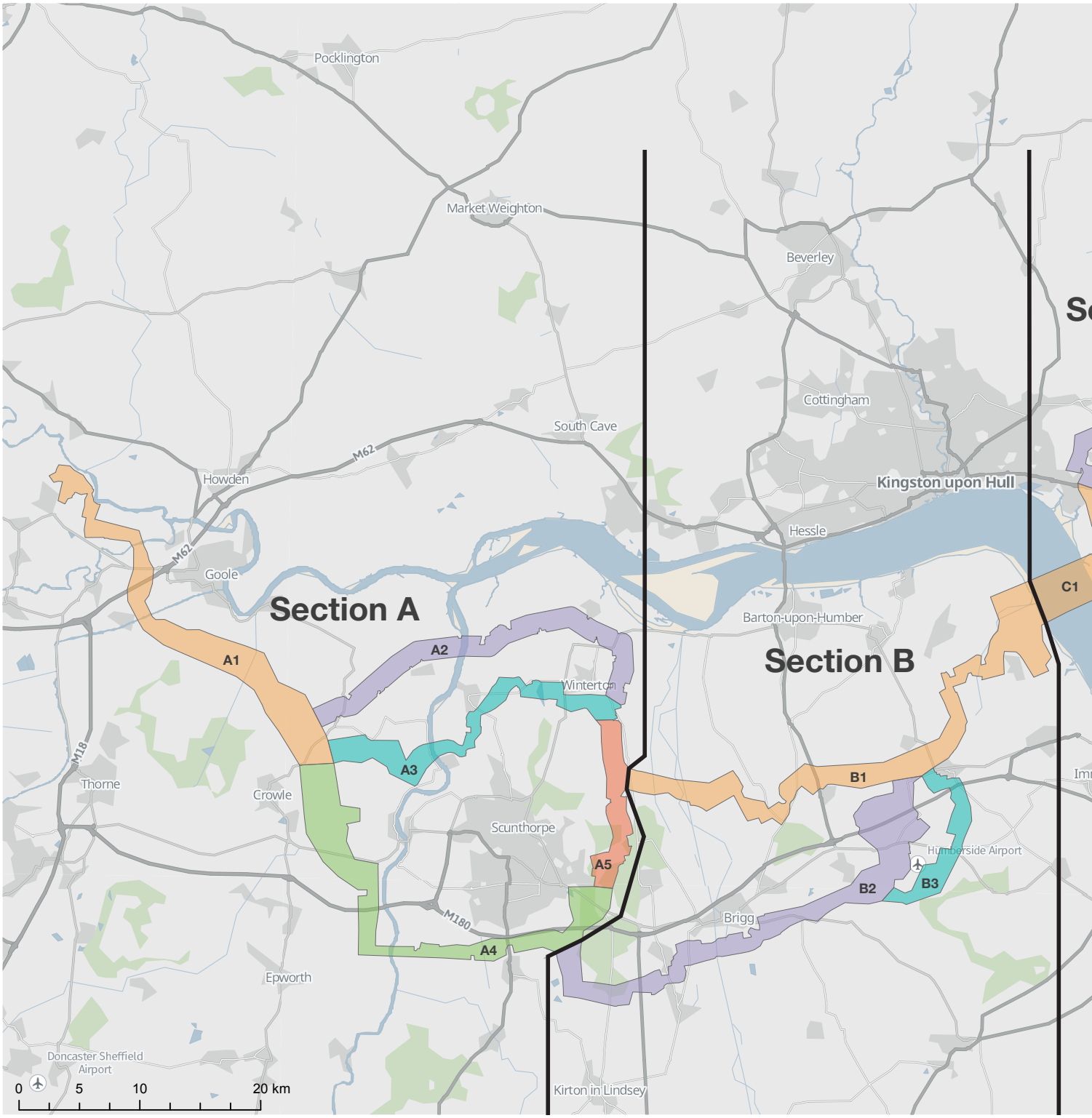
Illustrative and not to scale

This is an illustrative diagram showing the construction process of an onshore pipeline. Please note, this image is based on a single pipeline. The Humber Low Carbon Pipelines project will involve two pipelines and will take a similar approach.

1. First, the working width – the total area within which construction work will take place – is marked out.
2. Next, the topsoil is carefully stripped and stored next to the pipeline route.
3. The pipeline is delivered in short lengths and placed on supports. These short lengths of pipeline are welded together into longer sections called 'strings'.
4. The pipeline trench is dug, with the excavated material being stored separately from the topsoil on the opposite side of the trench.
5. The pipeline 'strings' are lowered into the trench using special vehicles called 'side booms' and welded to the pipeline already laid.
6. The trench is filled in using the previously excavated material and the topsoil is replaced.
7. Once the land above the pipeline has been fully reinstated, it can be returned to its previous use, for example farming.

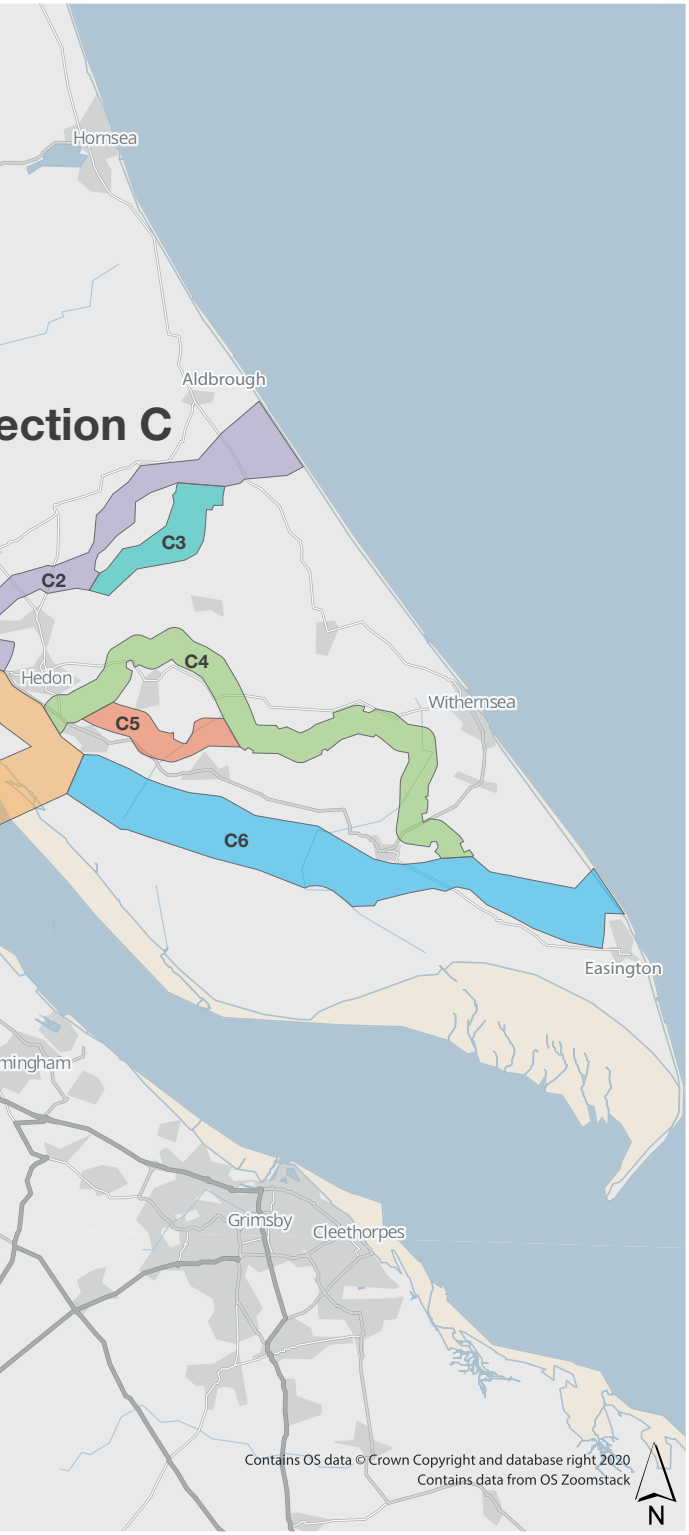
Route corridor options map

The map below shows the proposed route corridors and route options. To give comments or find out more about the feedback process, please go to 'Have Your Say' where you can find our contact information.



Feedback

We want to hear your views. All comments will be carefully considered as we develop our project. There are many ways to provide feedback including through the interactive map on our website, physical feedback forms and online events. See our **'Have Your Say'** section for more information.

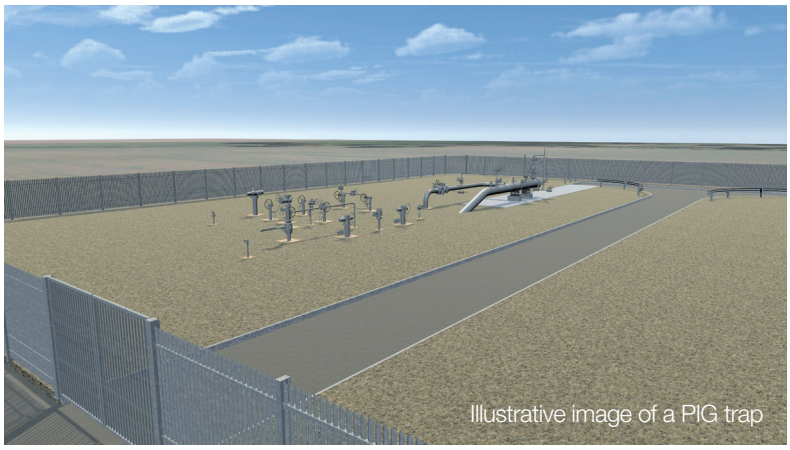


Above ground installations (AGIs)

AGIs will be required at intervals along the route. The proposals will require AGI sites at or near the emitter locations, including pipeline inspection gauges (PIG) trap installations and block valves. Block valves will be required at intervals every 16 to 18 kilometres along the route and a pumping station near the coast.

AGIs will contain above ground equipment and pipework, essential instruments and one or more small buildings. Each will also have a vehicular access point as well as planting, screening and fencing.

We will have further details on the AGIs and possible locations at the next stage of consultation, scheduled in early 2022.

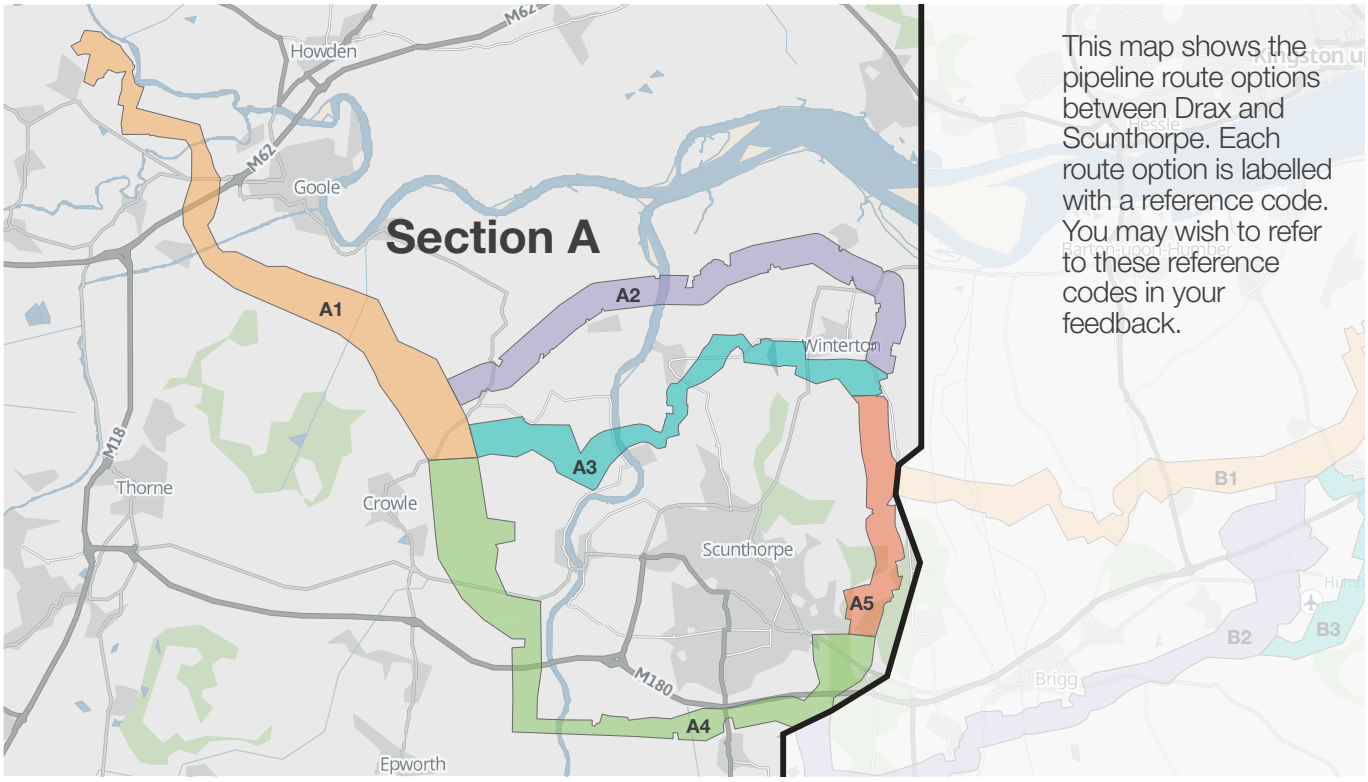


Illustrative image of a PIG trap

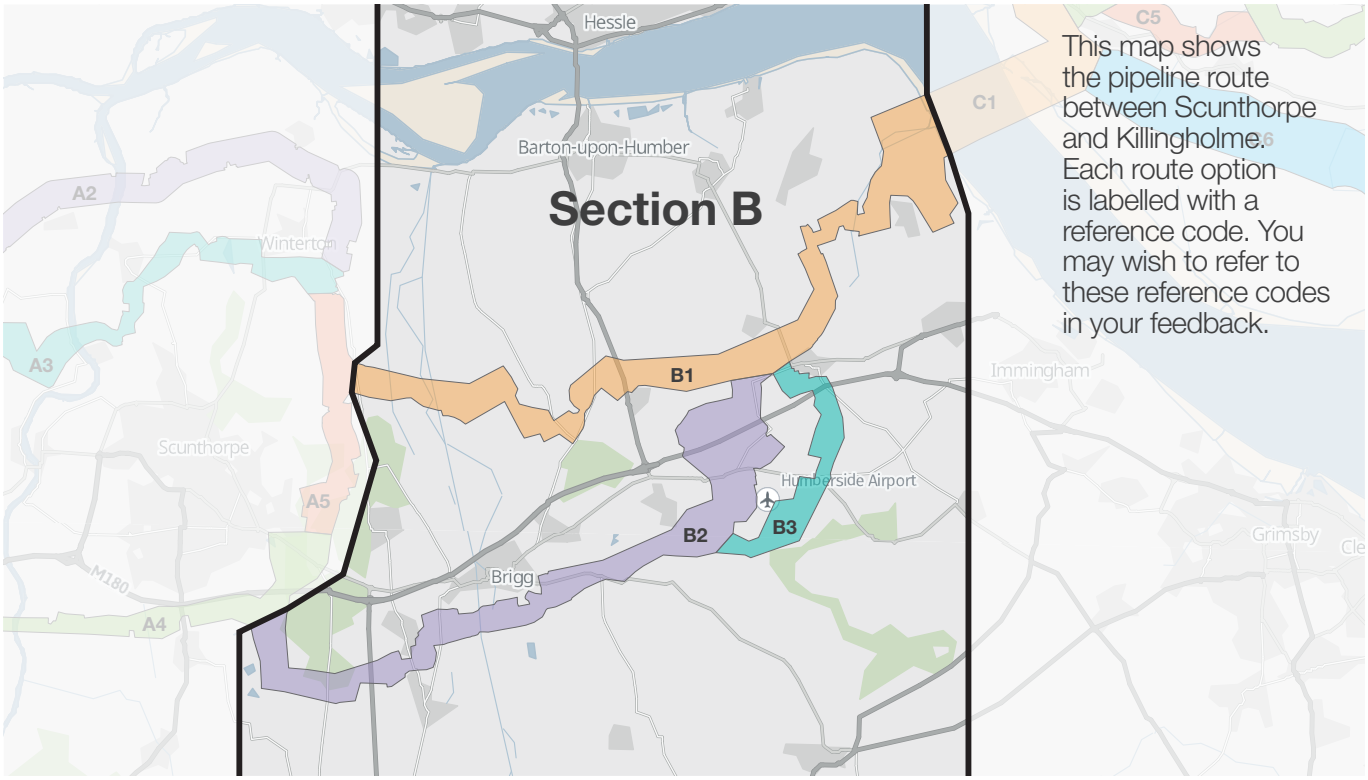
What happens offshore?

One of the pipelines will transport captured carbon dioxide emissions to a pumping facility near the coast where the pressure of the carbon dioxide will be increased, allowing for efficient transportation to a safe storage site beneath the North Sea.

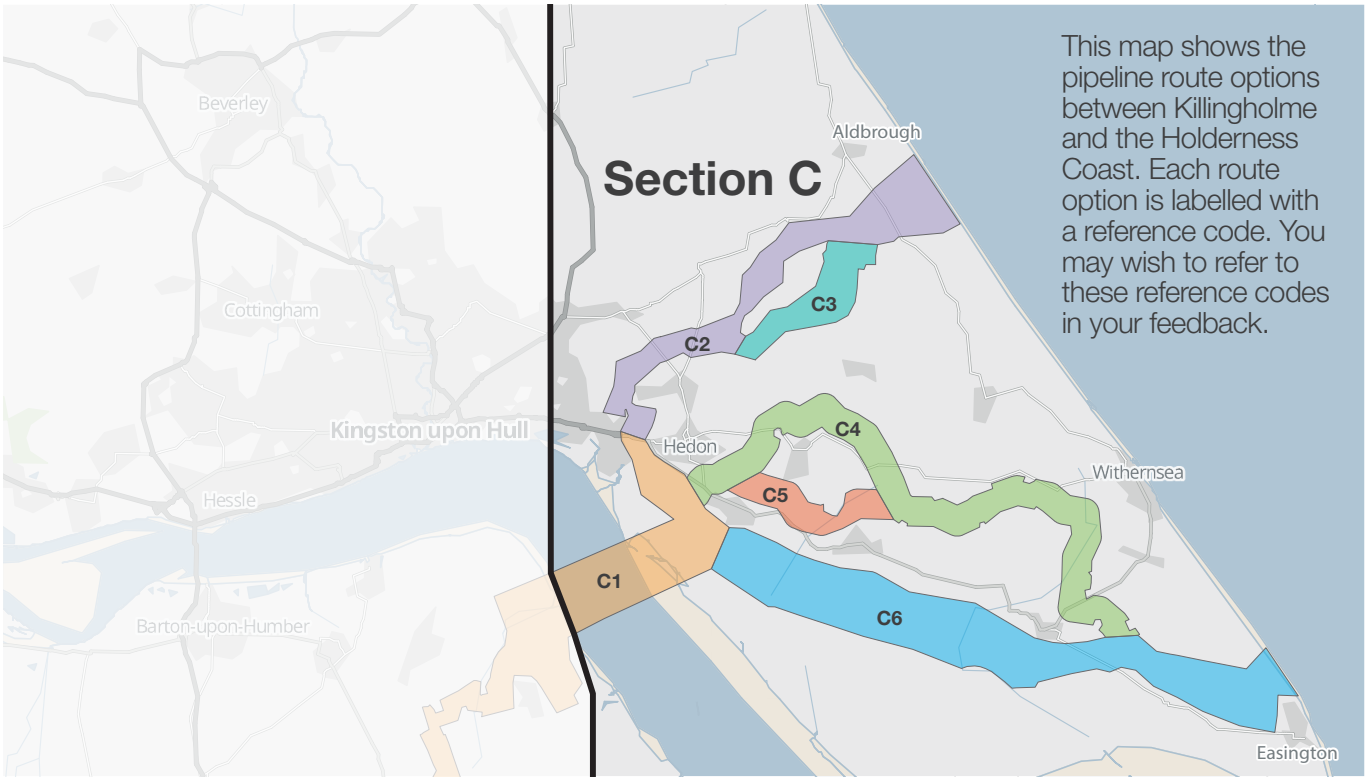
Route corridors - in detail



Section A - between Drax and Scunthorpe



Section B - between Scunthorpe and Killingholme



Section C - between Killingholme and Holderness

Feedback and the application process

Due to its scale, the project is classified as a nationally significant infrastructure project (NSIP) under the Planning Act 2008 and the application will be determined by the Government.

Late next year we intend to submit our proposals to the Planning Inspectorate, the Government body responsible for handling NSIP applications. The Planning Inspectorate will carry out an examination of the proposals and make a recommendation to the Secretary of State who will make the final decision.

Local councils, stakeholders and residents have an important role to play through this process. All written comments we receive will be considered and reported as part of the application process.

Please note, comments may be made public and the personal details of respondents may be made available to the Planning Inspectorate and other third parties.

You can find out more about the process at www.infrastructure.planninginspectorate.gov.uk.

Have Your Say

Giving Feedback

This consultation is an important opportunity for local residents, stakeholders and others to learn about the draft proposals and give their views.

Feedback

Please ensure you submit your feedback by the end of the consultation period of 22 October 2021.

Submit your comments online

You can leave feedback online using our interactive map. It allows you to view and comment on specific sections of the proposed route corridors.

We welcome comments about proposed route corridors and any other contributions or queries you may have about the pipeline project.

To use our interactive map go to:
www.nationalgrid.com/humberpipelines

How to get in touch as a landowner

Affected landowners and occupiers have been contacted.

If you believe your land is directly affected by the project but you have not been contacted, **please get in touch at**:

Telephone:
01869 629 007

Email us at:
HLCP@Dalcourmaclaren.com

There are several ways you can provide feedback, which are outlined below.

All comments will be reviewed and considered as the team develops the plans for the Humber Low Carbon Pipelines project. Feedback will be assessed alongside further environmental and technical considerations.

Submit your comments in writing

You can contact us by email or Freepost address.

Email us at:
HumberLowCarbon@nationalgrid.com

Write to us at:
FREEPOST HLCP NATIONAL GRID

Alternatively, you can fill out a physical feedback form. If you would like to do so, please give us a call. We will send one out to you.

You can also pick up a hard copy of our materials at our deposit inspection locations. Please visit our website to find out more.

Get in touch

If you would like more information about the project you can contact us directly.

Call our freephone number:
0800 860 6255

Email us at:
HumberLowCarbon@nationalgrid.com

Write to us at:
FREEPOST HLCP NATIONAL GRID

Website

Please go to our website to find all the ways you can participate in this consultation, including by attending our digital events.

Latest timeline

Please see below an indicative timeline of key milestones for the project. Please note these are subject to change.

Late Summer / Autumn 2021
Non-statutory consultation on preferred route corridors

Early 2022
Second non-statutory consultation on potential route corridors

Spring / Summer 2022
Statutory consultation on detailed project route proposals

Late 2022
DCO application submission

2023 / early 2024
DCO examination and determination process

2024
Construction phase begins

2026
Earliest construction completion date

Further Consultation

We will be holding two further rounds of consultation in 2022. The second of these will be a statutory consultation stage to support the DCO planning application on the proposed design.