HyNet North West

CARBON DIOXIDE (CO₂) PIPELINE CONSULTATION - JUNE 2021
About HyNet North West

HyNet North West is a ground-breaking clean energy project that will unlock a low carbon future for the North West and North Wales. It will place the region at the forefront of the UK’s journey to net zero and help to decarbonise many sectors of the economy from 2025 onwards. The project will produce clean hydrogen to replace the fossil fuels we use today for industry, transport and homes. HyNet will also capture and store carbon dioxide (CO₂) emissions produced by energy intensive industries.

We are in a climate emergency and we need to act quickly to reduce our emissions. HyNet is an ambitious and viable answer to reducing CO₂ emissions across the North West England and North Wales region which can be rolled out to reduce, and capture, CO₂ emissions this decade.

The project is made up of several different elements, including upgrades to existing facilities as well as the development of new infrastructure. The breadth of the project makes HyNet a leader in the creation of the UK’s low carbon economy, bringing economic and environmental benefits to the local area and across the UK.

This consultation

We are holding this initial consultation to introduce HyNet North West and to listen to your views on our project ambitions. We have also started to develop our plans for one of the first elements of the project: the pipeline which will take CO₂ emissions from existing industries to be stored in existing depleted gas reservoirs in Liverpool Bay.

As part of our consultation, we have set out an overview of the CO₂ pipeline proposals, including different route options which we have identified. We would like to capture your views and feedback on these early proposals.

This leaflet provides information on the work and studies which have shaped our proposals so far. You can also find more information and provide your comments online at: www.HyNetHub.co.uk.

If you would prefer a hard copy of the consultation materials, or if you require these in different formats such as braille or large print, please contact us.
As part of the HyNet North West project, we will build a low-carbon hydrogen production plant. The hydrogen we produce will be used in the region's industry, transport, homes and businesses. The project also includes infrastructure to capture CO₂ emissions from energy-intensive industries in the area, and from the hydrogen plant, transporting and safely storing these emissions underground.

The project will be developed in different stages, the first of which will be the CO₂ pipeline which forms part of this consultation. The hydrogen plant and network will be developed at a later stage and will be consulted on separately.

The HyNet North West Consortium

HyNet North West is a collaboration of separate but integrated organisations that have joined together to decarbonise the North West region. Each partner is led by industry experts who are working collaboratively across the network of hydrogen production, distribution, usage as well as carbon capture and storage.

Liverpool Bay CCS Ltd, a subsidiary of Eni UK Ltd, the existing owner and operator of the Liverpool Bay gas fields, is leading the delivery of the CO₂ pipeline and offshore storage.
The story so far

The UK Government understands that in order to successfully tackle climate change, all parts of the economy must decarbonise and become greener, including heavy industry. The Government is supporting projects to decarbonise six of the largest industrial clusters in the UK, and HyNet North West is one of these.

North West England and North Wales have always been areas of industrial innovation, providing the food, fuel, products and services that allow this country to thrive. Because of this the region is home to an abundance of highly skilled workers.

The region’s legacy means that instead of building HyNet ‘from scratch,’ we can re-purpose existing infrastructure and benefit from a first-class workforce, allowing us to find more efficient and affordable ways to help the region to decarbonise for the future.

The region has a proud industrial heritage and it remains home to a wide range of world-class energy intensive industries. This means HyNet will support the decarbonisation of a wide range of industry sectors, including chemicals, glass, ceramics, oil refining, food, paper and automotive. All companies in these sectors currently emit significant amounts of CO₂ during manufacturing, and so must change their processes to enable long-term, sustainable operation.

HyNet won’t only be providing clean energy for just industry. Hydrogen can replace petrol and diesel in vehicles as well as blending into the gas network to heat our homes, helping to reduce emissions in our day-to-day lives.

Once it is operating, HyNet North West will serve Liverpool, Manchester, Cheshire and parts of North Wales and Lancashire.
Benefiting local people and the environment

Creating opportunities for hydrogen production and carbon capture will bring benefits for local people, the region, and the UK as a whole. HyNet is a national infrastructure project with a regional focus.

It will not only make a big difference towards reducing the amount of CO₂ we emit, but will also have longer-term benefits. By reducing CO₂ emissions, local air quality will improve and make the region a safer and healthier place for future generations to thrive.

LOCAL BENEFITS

HyNet will create thousands of new construction jobs in the North West region, and will help to protect many more for the future. It will help provide cleaner air for the local environment. There will also be greater opportunities for local people, tapping into the area’s blend of industrial experience and scientific expertise, which together will create a hotspot for innovation and growth. HyNet will bring opportunities for local people to develop new skillsets and train to work in exciting, world-leading sectors.

REGIONAL BENEFITS

HyNet will make North Wales and the North West region a leader in clean industrial innovation. We want to support the region to be recognised as a centre for innovation and clean growth, creating opportunities, attracting inward investment and boosting the region’s reputation as a highly attractive location for sustainable organisations. With more opportunity comes more investment, boosting growth and attracting new talent to spread regional prosperity.

NATIONAL BENEFITS

HyNet has the potential to reduce carbon emissions by 10 million tonnes of carbon per year by 2030, the equivalent to taking four million cars off the road. This ambitious project will provide world-leading solutions for a cleaner, greener world for generations to come.
By 2050, direct spend on HyNet North West and related inward investment will equate to £17 billion for the local region, and £31 billion for the UK.

HyNet will support up to 75,000 jobs across the country by 2035.

HyNet could provide enough hydrogen to displace nearly 50% of natural gas use across the region.

Carbon Capture and Storage (CCS) is a safe and proven technology that stores CO₂ and prevents it from being released into the atmosphere. It is the first step in our vision for a net-zero North West.

The UK Government and the Climate Change Committee see it as an essential technology for the UK to achieve its net zero emissions reduction target. The CO₂ is captured at source from industry. It is then transported by pipeline to permanent underground storage sites.

Capture of CO₂ from industrial sources, including manufacturing facilities and hydrogen production processes

Transporting carbon dioxide (usually in pipelines) to a storage site

Permanent storage of carbon dioxide under the sea

Putting safety first

HyNet will never compromise on safety. Liverpool Bay CCS Ltd has extensive experience in designing, building and operating safe and effective high-pressure gas pipelines. We will utilise this expertise to develop the CO₂ pipeline project.

We will incorporate principles of safe design based on our own design standards, relevant industry codes of practice, and the requirements of the Pipelines Safety Regulations 1996.
What happens offshore?

The CO₂ will be transported in a pipeline under the sea to an offshore platform, located approximately 30km offshore in Liverpool Bay. From here, the CO₂ will be injected into the depleted gas reservoir. As an offshore pipeline, this will be regulated by the Oil and Gas Authority. We will consult with the relevant stakeholders on the offshore works, including the Oil and Gas Authority, the Marine Management Organisation and other environmental bodies to ensure their views are taken into account and incorporated into the offshore design process.

How will the CO₂ be transported?

The CO₂ will be transported safely by pipeline to the depleted gas reservoirs in Liverpool Bay. The CO₂ pipeline will comprise of two parts: the construction of a new underground pipeline, which then connects with an existing natural gas pipeline that will be repurposed so that it can transport CO₂.

The new CO₂ pipeline will transport CO₂ produced and captured from existing industrial premises in the Ince and Stanlow area. It will also transport CO₂ from a new low-carbon hydrogen production plant at Stanlow. From here it will run south west through Cheshire and into Flintshire, connecting into the existing repurposed pipeline at a location near Flint.

The existing onshore pipeline that will be repurposed runs from a location near the existing Connah’s Quay Power Station, and travels west through Flintshire to the existing Point of Ayr Gas Terminal in Talacre. The pipeline then runs under water from the shoreline until it connects to the depleted gas reservoir where the CO₂ will be injected.
Identifying routes for the new pipeline

We are currently in the stage of identifying a suitable route for the new CO₂ pipeline to follow.

We identified potential routes through a staged approach of research and studies. We firstly considered wide ‘corridors’ (broad areas of land) where the pipeline could be located. We then assessed various options within these corridors, scoring them against a set of criteria, to identify two preferred routes which we would like your feedback on during this consultation.

The final stage of our route appraisal process will be to select a single route for which we will be seeking consent. We will present our preferred route at a further public consultation later in the process to seek your feedback on our more detailed proposals.

We will select a route that:

- avoids, or has a minimal impact on, the local environment and local communities where possible
- ensures the carbon dioxide can be safely and securely transported
- can be constructed with minimal disruption to the local area
- provides a cost-effective and deliverable solution
The corridors we considered

We looked at four broad route corridors for the new CO₂ pipeline.

The first of the four defined corridors was labelled the ‘Core’ corridor. The core corridor runs approximately 13km between Stanlow and the border between England and Wales. The Core Corridor is needed to deliver the first section of the newbuild pipeline route.

It is at this point that the corridors can be seen to split into three more distinct corridors:

The ‘Northern Corridor’ which runs to the north of the Deeside Industrial Park.

The ‘Central Corridor’ which runs between Deeside Industrial Park and Garden City.

The ‘Southern Corridor’ which arcs south of Deeside, Queensferry and Connah’s Quay.

We have assessed and compared the results of each corridor against a range of planning, environmental, land and engineering criteria and have concluded that the Southern Corridor was the most suitable to progress for further development because it:

- Was less likely to impact environmentally protected areas in the River Dee Estuary;
- Offered the greatest opportunity to connect to other viable CO₂ emitters, and so helping to achieve the greatest level of CO₂ reduction within the region;
- Has the least amount of complex crossings, which also has safety and cost benefits;
- Offered greater flexibility of route directions within the corridor widths.
From corridors to route options

We then looked at more defined routes (typically 50m - 100m wide) that the pipeline could take within the Core and Southern Corridor. We began by identifying nine potential route options. Each of these was designed as far as possible to avoid impacting environmentally protected areas.

We assessed each route against a series of more detailed criteria relating to: environment, economy, engineering, planning and communities.

Of the nine route options, we have discounted seven and shortlisted two for further consideration: Option G and Option I. These are the two routes that would best meet our criteria of ensuring safety, minimising impact, and cost effectiveness. We would like to understand your views on these two routes.
Reasons for discounting route options

Overall, the seven routes which we have discounted scored lower than Option I and Option G, particularly in relation to environmental impacts and construction complexities. We set out in the following pages the main reasons each of these options were discounted.

KEY OF IMPACTS

- Impact on local ecology and habitats
- Impact on protected areas (‘designated sites’)
- Impact on landowners and land with special rights (such as common land which people have the right to use or land owned by the Crown Estate)
- Impact on rivers, streams or other watercourses
- Complex construction, including length of route and road / rail / river crossings
- Impact on ancient woodland
- Crosses a landfill site

Discounted options

- Impact on Gowry Wildlife Local Wildlife Site
- Impact on three Sites of Special Scientific Interest (SSSI) and two Special Areas of Conservation (SAC)
- Impact on ancient woodland near Stoney Hill
- Complex crossings
- Potential impact on common land

Impact on Deeside and Buckley Newt Sites SAC, Buckley Claypits and Commons and River Dee SSSI
- Impacts on local ecology
- Impact on land with special rights
- Impact on ancient woodland south of the A55 near Spencer Industrial Estate
- Complex crossings
Discounted options continued

Impact on Gowry Wildlife Local Wildlife Site
Crosses four historic landfill sites
Impact on ancient woodland
Complex crossings

Discounted options continued

Impact on Gowry Wildlife Local Wildlife Site
Crosses four historic landfill sites
Complex crossings and longer route
Impact most number of local landowners

Crosses one historic landfill site and one authorised landfill site
Impact on ancient woodland
Complex crossings and longer route

Crosses one historic landfill site and one authorised landfill site
Impact on ancient woodland
Complex crossings and longer route
Discounted options continued

Impact on Gowry Meadow Nature Reserve
Impact on ancient woodland
Impact on watercourses
Impact on land with special rights
Complex crossings

Options for consultation

Option G and Option I both performed better against the criteria compared to the other options. These are therefore the two main options we are asking for your views on as part of the consultation.
Considering the options for consultation

Option G and Option I share some similarities, but also have some important differences for consideration. Based on our detailed analysis, our current favoured route is Option G.

The routes separate between the River Dee and the M53. Option G (coloured blue in the map below) takes a more southerly route, running to the south of Saughall and the north of Mollington. Option I (coloured pink in the map below) takes a more northerly route, to the north of Saughall and Backford.
Possible variations to both options

There are also some variations to consider which could be applied to either of the two route options. These include options for how the routes connect into the existing pipeline, as well as an alternative crossing location for the River Dee. We would be interested in hearing your views on the variations.

Our proposals include three different variations:

- Where the newbuild pipeline connects into the existing pipeline at Connah’s Quay;
- Crossing the River Dee; and
- How the newbuild pipeline extends from Stanlow to Ince.

Connection to existing pipeline at Connah’s Quay

We are considering different locations at which the new pipeline will connect into the existing pipeline to the south of Flint. These variations will determine where the above ground installation at Flint (which will be used for the maintenance and operation of the pipeline) could be located. We are currently considering three different locations;

1. A connection close to the A5119
2. A connection close to Coed Onn Road / Allt-Goch Lane
3. A connection close to Leadbrook Drive.
River Dee Crossing Variation

Option G crosses the River Dee approximately 2.5km south east of Option I. However, we are also considering the possibility of a ‘cross over’ point between the two options. This would mean that Option G could use the cross-over to divert and cross the River Dee at the same location as Option I. The same principle would apply in reverse, with Option I being diverted to the more south easterly River Dee crossing. If Option I were to use the cross-over, this would increase the length of the overall route by 2km.

Connection from Stanlow to Ince

We have also developed two route options for the new CO2 pipeline which will run between the Stanlow Refinery and Ince Industries.

1. A route that crosses the A5117 at a point south of Elton and north of the M56 motorway services.
2. A route that runs further to the south and east, crossing the M56 motorway twice before reaching Ince Industries.
What will the pipeline look like once constructed?

The pipeline will be buried underground at a depth of 1.2 metres or lower. Once constructed, you will not be able to see the pipeline although some above ground marker posts will be visible.

We will need to build some above ground installations which will be used for the maintenance and operation of the pipeline. This includes sites where the pipeline will connect into existing industries.

In some locations along the pipeline, installations called ‘block valves’ will be required. They are used for safety and maintenance purposes, helping to break the long pipeline into distinct sections. The block valves can be closed to isolate these different sections, helping with the maintenance and management of the pipeline.

The block valves will be installed below ground, with some elements that will be visible above ground. The block valves will be enclosed within a fenced secure site.

Once we develop the designs for the pipeline in more detail, we will determine the precise location and sizes of these block valve sites.
Constructing the new pipeline

We anticipate that the construction of the entire newbuild pipeline will take approximately 12 months. Typically, installation of the pipeline itself should take around one to two months in a location. In complex areas, it might take longer. Once the pipeline installation is complete, we will reinstate the land as close as possible to its original condition.

For much of the pipeline, we plan to use an open trench technique. This will involve the digging of soil, lowering the pipe into the trench, and backfilling it with the excavated soil. Any hedges, fences or other ground features would be replanted or replaced after construction.

Although the pipeline is relatively small, with a maximum diameter of about 36 inches (or 91cm), the space needed to safely install this type of pipeline is usually between 20m and 30m. This width allows enough space to dig the trench and lay the pipe, as well as providing space for storing soil during installation and enabling access for vehicles.

At times, we will need to use trenchless techniques to install the pipeline, for example when installing it under railway lines, major roads and riverbeds. In these cases, we will use methods such as directional drilling or auger boring. These techniques allow us to install the pipeline while allowing roads and railways to remain open and rivers to continue flowing.

— Horizontal drilling: A tunnel is drilled below a river, road or other crossing point. The pipe is then pulled through the drilled tunnel.

— Auger boring: A tunnel is drilled into the ground using an ‘auger’ at the same time as laying the pipe into the tunnel.
Construction management

We will need to install the pipeline on private land, but we would not install any pipeline under homes.

Temporary facilities would be needed during the construction phase. These would be set up to provide site teams with offices, staff welfare and storage facilities. Details of these will be developed after we have identified the preferred pipeline corridor.

As we continue to develop our designs and define how we will construct the infrastructure we need, we will produce a Construction Environmental Management Plan. This will be used to ensure that we are reducing the impacts of construction works on people and the environment as much as possible. It will set a framework to monitor and manage potential impacts during the construction process.

Understanding the impacts of the proposals

We will be undertaking a series of studies to understand the potential impacts of the construction and operation of the CO₂ pipeline on the local area and, importantly, how we can include for ways to reduce, remove or offset those impacts as part of our design work.

We will be looking at a variety of environmental and social aspects, including how the infrastructure will look within the landscape, air quality, and ecology (the plants and animals) in the local area.

As we continue to develop the CO₂ pipeline, we will provide more detail on the studies we are undertaking as well as our plans to minimise potential environmental impacts.
The process of assessing environmental impacts

The studies we undertake to understand environmental impacts are referred to as an Environmental Impact Assessment (EIA). There are four key stages to the EIA process:

1. Gathering information and data on the area as it currently stands, for example to understand the local wildlife that is present in the local area. This includes field surveys, some of which are currently underway, and which will continue into 2022.

2. The extent of the issues and topics to be considered as part of the EIA is described in a Scoping Report. For this project, the EIA Scoping Report has been submitted to the Planning Inspectorate (PINS) and is currently being reviewed by local authorities and statutory environmental bodies to provide their opinions. The EIA Scoping Report is available to the public and can be found on the PINS website*.

3. A Preliminary Environmental Information Report will be prepared, describing the findings of the environmental assessment so far. This information will be available at the next consultation on the CO₂ pipeline so that we can capture feedback from the public and from stakeholders on the environmental work done so far.

4. An Environmental Statement will be prepared, taking on board feedback from the consultation and describing the findings of the assessment. It will describe the significant impacts we have identified as part of the assessment, and how we have sought to avoid, reduce and minimise these impacts as part of the final design. The Environmental Statement will be an important document in our application for consent for the project.

* infrastructure.planninginspectorate.gov.uk/hynet-north-west-carbon-dioxide-pipeline
Here are some of the environmental topics that we will be assessing:

ECOLOGY AND BIODIVERSITY: We will assess the impacts of the CO₂ pipeline on local ecology and natural habitats, looking at certain species of plants and animals. We will undertake field surveys, as well as desktop research to understand the local area and to gather data. As the proposed pipeline crosses arable and agricultural landscapes, we anticipate that species in the area could include bats, great crested newts and badgers, among others. We will consider impacts on ecology and biodiversity both during the construction and when the pipeline is in operation. As part of our assessments, we will think about opportunities to enhance local biodiversity as well as protecting it.

LANDSCAPE AND VISUAL IMPACTS: Although the pipeline will be largely underground and therefore not visible, there will be some permanent above ground installations which could be visible once constructed. We will undertake a landscape and visual impacts assessment to determine what the infrastructure would look like once built and how we can lessen this impact. We will review where we place these above ground installations, how we can screen them from view, and how we will replace any trees or hedges that may be lost during construction.

CULTURAL HERITAGE AND ARCHAEOLOGY: We will consider the potential impacts of the CO₂ pipeline on the cultural heritage of the area, such as Roman sites, listed buildings and other conservation areas. We will do this by carrying out surveys to find out more about the archaeology and the heritage of the area. This will help us to identify ways to reduce potential for any impact on what we have found (especially during construction when the ground is being disturbed).

Other topics that we will consider as part of our EIA will include:

- Changes to air quality
- Climate change considerations
- Impacts on soil and land quality
- Potential noise or vibration impacts, particularly during construction
- Impacts on local traffic, particularly during construction
- Potential impacts on rivers, streams and other water bodies in the local area
- Potential impacts on local people and human health, during construction and operation of the pipeline
- How the pipeline would handle potential natural disasters or major accidents such as storms
Planning consents

As the newbuild CO₂ pipeline exceeds 16km in length, it is classed as a Nationally Significant Infrastructure Project (NSIP). This means that we will be applying to obtain a Development Consent Order (DCO) to be able to progress the project. We will also be using the powers provided by the DCO to transport the CO₂ in the existing pipeline and infrastructure.

It is the role of the Secretary of State for Business, Energy and Industrial Strategy to make the final decision on whether to grant or refuse development consent for our CO₂ pipeline project. We intend to submit a DCO application in 2022. Before submitting our application, we will be undertaking an Environmental Impact Assessment (EIA), progressing the design development and undertaking further consultations on the proposals.

As well as the DCO application, we will also be seeking planning approval from Flintshire County Council for potential works to modify the existing pipeline and the facilities at the Point of Ayr Gas Terminal. We will be consulting separately on the proposed modification to the existing pipeline infrastructure later in 2021.

IN ORDER TO BE SUCCESSFUL, OUR DCO APPLICATION WILL NEED TO PASS THROUGH SIX STAGES.

1. PRE-APPLICATION STAGE
   Environmental Impact Assessment and a statutory consultation to be carried out before submitting an application (planned for Summer 2022). This is the stage we are in now.

2. ACCEPTANCE (EXPECTED AUTUMN 2022)
   The application is submitted and the Planning Inspectorate decides whether it meets the standards required to be accepted for pre-examination.

3. PRE-EXAMINATION (EXPECTED WINTER 2022)
   During this phase, any member of the public can register to become an interested party and give their views on the scheme during the examination. An Examining Authority will be appointed.

4. EXAMINATION (EXPECTED WINTER - SPRING 2023)
   The Examining Authority will conduct their examination on behalf of the Secretary of State. Interested parties can provide further views at this stage.

5. RECOMMENDATION (EXPECTED SUMMER 2023)
   The Examining Authority provides a report and recommendation to the Secretary of State.

6. DECISION (EXPECTED AUTUMN 2023)
   The Secretary of State makes a decision on the application.
Land access

The DCO provides the powers needed to access, install and operate the pipeline. As part of the DCO process, it is a legal requirement to identify who owns or has an interest in any land that may be affected by our proposals.

Earlier this year we wrote to landowners along our existing pipeline to make them aware of our proposals. Where potential works to the existing pipeline may be needed, we also contacted landowners to arrange access for surveys.

In addition to contacting landowners along the existing pipeline, we have also contacted landowners within the proposed route corridors for the newbuild pipeline. This is to ensure that we have the correct information and to agree access for surveys across the length of the new and existing pipelines to inform our Environmental Impact Assessment.
What happens next?

We are keen to involve the local community and our stakeholders at every stage of the HyNet North West project. We want to ensure that everyone has the opportunity to have their say on how we develop the best project for local communities, the surrounding landscape and the environment.

This consultation will help inform our decision on which route to progress the new CO₂ pipeline. We also want to hear your views on the vision and ambition behind HyNet North West.

We will use the feedback and information received as part of this consultation, as well as outputs from ongoing engineering work and the environmental studies we are undertaking, to develop a more detailed route for the new pipeline.

As we progress with the CO₂ pipeline development, we will be holding further consultation exercises to gather your feedback on more detailed aspects of the proposals before we apply for planning consents.

There will also be work happening in parallel on other elements of HyNet North West, such as the hydrogen production plant. There will be further opportunity to have your say on these elements of HyNet as they progress.

How to get involved

This consultation will be open from 9 June to 11 July 2021. Please provide your comments by 11.59pm on 11 July 2021. You can find more information on our consultation and provide your comments on our HyNet Hub by visiting:

www.hynethub.co.uk

We will be holding three live webinar events as part of this consultation. This will give you the opportunity to hear more about the proposals and raise any questions you may have to the project team. You can find more details on how to attend these events on the HyNet Hub. The events will be held on:

- Saturday 19 June 2021 2.30pm - 3.30pm
- Tuesday 22 June 2021 6pm - 7pm
- Thursday 1 July 2021 10am - 11am

If you would like a hard copy version or alternative format of this leaflet, you can contact us using the details below.

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