



HyNet North West Hydrogen Pipeline

Statutory consultation brochure

HyNet North West
Hydrogen Pipeline

Delivering clean growth

September 2022

Cadent
Your Gas Network

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About Cadent and its hydrogen projects

Cadent is the UK's largest gas distribution network, managing a network of more than 80,000 miles of pipelines, most of which are underground. These pipelines transport gas to 11 million customers throughout the North West, West Midlands, East Midlands, South Yorkshire, East of England and North London.

Cadent is involved in several hydrogen projects, including the UK's first proposed 'hydrogen village'.

Cadent is working in clusters and partnerships focused on power generation, blending gas, industrial power and decarbonising heavy industry.

Cadent is looking at ways in which it can help ensure energy security. It has published a Hydrogen Ten Point Plan which describes its decarbonisation journey.

Visit www.cadentgas.com/tenpointplan to read Cadent's Ten Point Plan in full.

In the Queen's Speech, delivered in May 2022, an Energy Security Bill was announced to deliver on the commitment to build a sustainable homegrown energy system that is more secure, clean, and affordable.

Low carbon hydrogen will play an important role in helping realise the ambition of this bill.

This project benefits from a Section 35 direction, issued by the Secretary of State for Business, Energy and Industrial Strategy (BEIS).

A Section 35 direction provides a decision from the Secretary of State that the project is of national significance and requires planning permission via a Development Consent Order (DCO).

This underlines the project's national significance. The project will also make an important contribution to delivering a secure, clean and affordable energy system.

This consultation is for the HyNet North West Hydrogen Pipeline *only* and is being run by Cadent

While Cadent's HyNet North West Hydrogen Pipeline forms part of the wider HyNet North West programme, it is being developed as a standalone project and requires its own Development Consent Order (DCO).

It is separate to the Hydrogen Production Plant, the hydrogen storage facilities near Northwich and the carbon dioxide pipeline and offshore storage project, which is detailed at www.hynet.co.uk.

Consultation responses should relate to Cadent's HyNet North West Hydrogen Pipeline **only**.

For more information about the wider HyNet North West programme, please visit: www.hynet.co.uk.

Reading this brochure

This brochure provides an overview of our updated proposals following the feedback we received during our first round of consultation in early 2022. We've also carried out further environmental, engineering and design work. For more information on how our proposals have developed, please see pages 10-12.

A *Non-Statutory Consultation Feedback Report* has been produced, which summarises and analyses the feedback we received during our first consultation.

The key changes outlined in the *Non-Statutory Consultation Feedback Report* are also identified in this brochure.

As well as this report, there are a number of other resources to help you understand the project in more detail. These are referenced throughout this brochure and we would encourage you to look at them. All these documents are available to read via the knowledge hub on our project website:

www.hynethydrogenpipeline.co.uk/knowledge-hub

Scanning the QR code below with your phone's camera will take you straight to our project website. From there you can access our knowledge hub where you can read all of the documents listed below.



Project website

As well as hosting the documents referred to below, our project website provides more information and context relating to the project. It also includes an interactive map where you can zoom in, search by post code, explore our proposals in more detail and provide feedback.



Preliminary Environmental Information Report (PEIR)

This is a technical document describing the project. It sets out any potential environmental, social and economic effects in detail, and initial measures proposed to mitigate any potential effects, as well as some of the benefits of the project.



PEIR Non-Technical Summary

This is a shorter, plain language summary of the PEIR's key points.



Design Evolution Report

This report provides background to and summarises the need for the project. It also describes the different options and alternatives we considered before arriving at the proposals outlined in this brochure.



Non-Statutory Consultation Feedback Report

This provides an overview of how we carried out our first consultation, summarises the feedback we received and explains how we've considered this feedback.

Our statutory consultation

The HyNet North West Hydrogen Pipeline will help unlock an energy revolution to decarbonise the North West.

This brochure supports the second consultation on Cadent's updated proposals for the UK's first 100 per cent low carbon hydrogen pipeline at scale. This follows our first stage of consultation earlier in 2022.

This is our statutory consultation and it is being carried out in accordance with the Planning Act 2008. **It's likely to be our last route-wide consultation on our proposals before submitting the DCO application, so it's important people take part and have their say.**

The updated plans shown in this brochure have been developed by Cadent, the gas network operator for the region, and are part of the innovative HyNet North West low carbon cluster programme. The wider HyNet programme will unlock a low carbon economy for the North West of England and North Wales, focused on the replacement of natural gas with hydrogen. It will put the region at the forefront of the UK's drive to achieve net zero and unlock permanent jobs in the region.

Cadent's HyNet North West Hydrogen Pipeline

We are developing 125 kilometres (around 77 miles) of new pipeline that will safely transport low carbon hydrogen produced by Vertex Hydrogen at the Stanlow Manufacturing Complex to various industrial customers. The pipeline network will be able to accommodate other hydrogen producers (of both blue and green hydrogen) in the future.

In the future the pipeline has the potential to transport low carbon hydrogen to blending stations, which are adjacent to Cadent's existing gas infrastructure in Warburton and Partington. Here, hydrogen will potentially be blended into the existing gas network to heat homes and businesses.

It will also link to underground hydrogen storage facilities that will be used to balance supply and demand.

The pipeline will be underground, although we will need ten Hydrogen Above Ground Installations (HAGIs) at various locations along the route.

In parallel with the construction of Vertex Hydrogen's Hydrogen Production Plant, we anticipate starting construction on the first section of the hydrogen pipeline from 2025, subject to obtaining a DCO.

Background

Earlier in 2022, at our first consultation, we presented a broad corridor within which the pipeline could be routed and search areas within which HAGIs could be located. Since then, we've looked closely at people's feedback and carried out more technical, engineering and environmental work.

This work means we are now able to present **preliminary order limits** (sometimes referred to as a 'red line boundary'), which have been refined from our early route corridors.

What are 'preliminary order limits'?

Preliminary order limits represent the boundary of the maximum development area we think we'll need for the project.

This includes temporary works, like construction access and storage, and permanent works, such as the pipeline, Hydrogen Above Ground Installations (HAGIs) and Block Valve Installations (BVIs).

We will build the pipeline in stages and our construction activities are likely to move around, which means we won't be working across the whole development area for the entire two years we think it will take to build the pipeline.

At certain points along the pipeline route we're yet to confirm the exact final location of the pipeline and have presented some options. This is because we're still gathering survey results, undertaking engagement and consultation with stakeholders, and seeking more public feedback through this consultation.

We will refine the preliminary order limits in these areas once we've received feedback from this consultation and carried out more technical work.

Once the project has been constructed, the pipeline will be buried underground. Only the above ground infrastructure will remain visible.

The preliminary order limits are consistent with the preliminary route alignments referred to in the Design Evolution Report. This report is also presented for consultation and available via the knowledge hub on our project website.

We want to hear your views

The HyNet North West Hydrogen Pipeline is a Nationally Significant Infrastructure Project (NSIP). This means we will apply to the Planning Inspectorate and Secretary of State for Business, Energy and Industrial Strategy (BEIS) for a Development Consent Order (DCO), in accordance with the Planning Act 2008.

Local people, including elected representatives and other stakeholders, have an important role to play in this process. We need your local knowledge to help us understand any potential impact from the project and welcome any feedback you may have on our more detailed proposals.

All the feedback we receive will be recorded and carefully considered ahead of submitting the DCO application.

Your feedback

We would like your feedback on our more detailed proposals, including the preliminary order limits and indicative pipeline centre line, route options, and potential Hydrogen Above Ground Installation (HAGI) and Block Valve Installation (BVI) locations.

We have also published our Preliminary Environmental Information Report (PEIR) in full, as well as a non-technical summary.

Visit the knowledge hub on our project website to read the PEIR in full.

We would like your feedback on the proposals set out in this brochure and any comments that you have on the PEIR and Design Evolution Report.

How to submit feedback

There are a number of ways for you to submit your feedback:



Use the project website, which has an interactive feedback map and online feedback form

www.hynethydrogenpipeline.co.uk



Send an email to

info@hynethydrogenpipeline.co.uk



Send written feedback to the freepost address

FREEPOST HYNETH NWHP



Drop into one of our in-person events, discuss the project with us and pick up a hard copy feedback form to fill in.

See page 36 of this brochure or visit www.hynethydrogenpipeline.co.uk/meet-the-team for more information

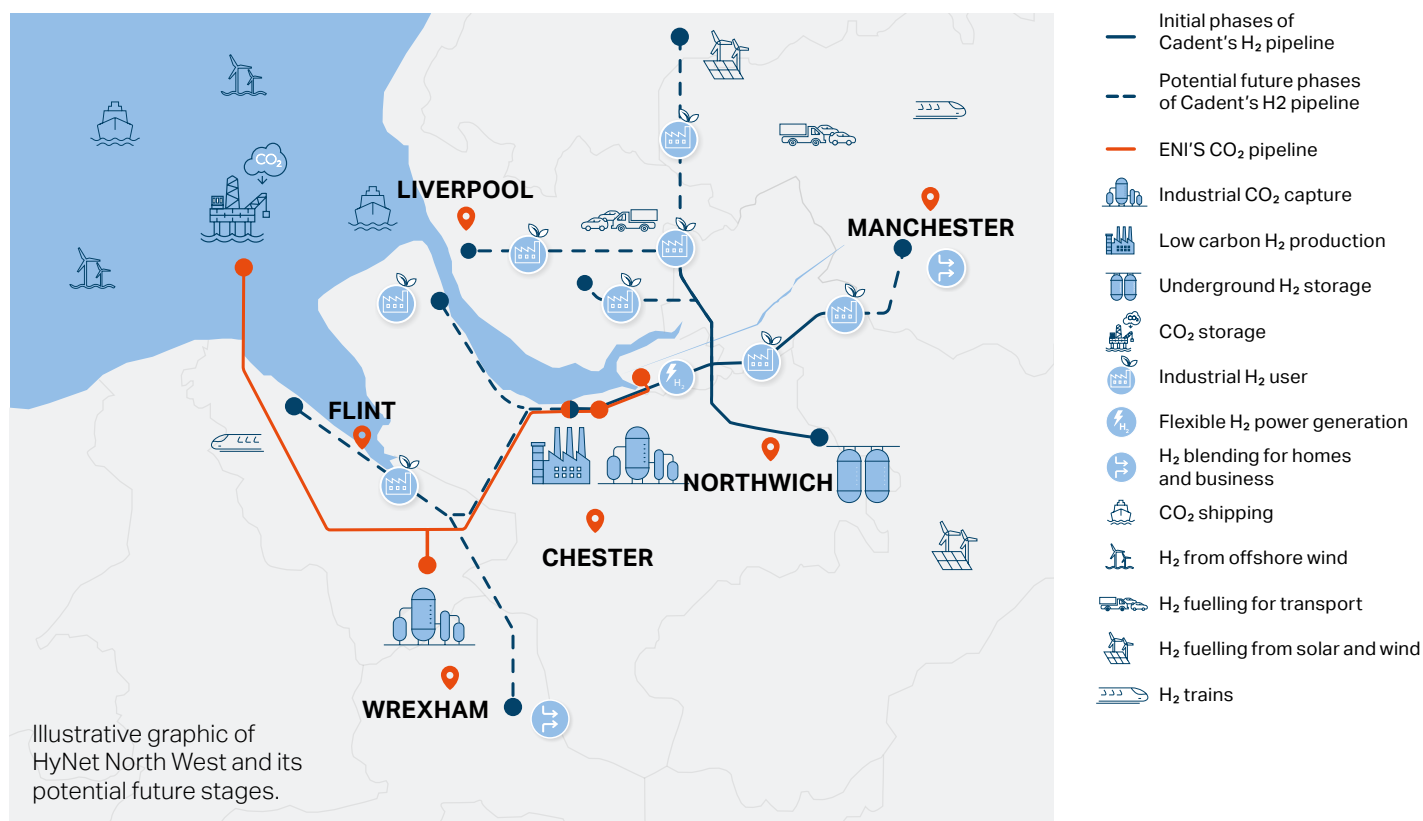


You can also call **0800 860 6261** to ask any questions you might have.

Please ensure you submit your feedback by **23:59, 10 November 2022.**

Your privacy matters to us and we go to great lengths to protect it. Please visit www.hynethydrogenpipeline.co.uk/privacy to view our privacy policy and understand how Cadent processes your information.

HyNet North West, the hydrogen pipeline and delivering a low carbon future



What is HyNet North West?

HyNet North West is a ground-breaking decarbonisation cluster that will unlock a low carbon economy for the North West of England and North Wales, placing the region at the forefront of the UK's drive to net zero and wider energy security aims.

HyNet will produce, store and distribute hydrogen as well as capture and store carbon from industry in the North West of England and North Wales. It will use state-of-the-art technology to build new infrastructure, while also upgrading and reusing existing infrastructure, which is currently involved in fossil fuel production.

While ambitious, delivery of HyNet meets the major challenges of reducing carbon dioxide emissions. The infrastructure has been designed to remove carbon emissions quickly, helping the region and the UK to meet its net zero targets by 2050.

Cadent's HyNet North West Hydrogen Pipeline will play a vital role by delivering low carbon hydrogen to industrial customers across the region.

In addition to the HyNet North West Hydrogen Pipeline, the wider HyNet North West programme includes:

- Hydrogen Production Plant at the Stanlow Manufacturing Complex – developed by Vertex Hydrogen
- Hydrogen storage at Northwich – developed by INOVYN
- Carbon dioxide pipeline and storage – developed by Liverpool Bay CCS Ltd

Find out more

Visit www.hynet.co.uk/benefits for more information about the benefits of HyNet North West.

The objective for this project

The HyNet North West Hydrogen Pipeline project will transport low carbon hydrogen below ground, from Vertex Hydrogen's Hydrogen Production Plant at the Stanlow Manufacturing Complex, or the Inovyn storage site, to identified industrial customers. It will also provide the opportunity to blend hydrogen into the existing gas network at Partington and Warburton.

The aim is for the project to be commissioned in 2027, but it will also be designed with foreseeable future phases, demand and need in mind.

In this way, it will support some of the North West's biggest businesses and employers for years to come, helping the region lead the way in the transition to net zero by 2050.

As outlined above, this project is being designed with foreseeable future phases and usage in mind. It has the potential to accommodate hydrogen from wider sources, including sources of both blue and green hydrogen.



Opportunities for the region

With a bold history of innovation and industry the North West of England is a natural choice to lead the way in developing alternative sources of energy. The use of such alternatives will help industry decarbonise and the UK reach net zero by 2050.

While establishing the region as a hub of innovation and clean growth, the HyNet North West programme will create opportunities that will directly benefit the region. It will:

- Attract inward investment to increase regional prosperity
- Boost the region's reputation as a highly attractive location for sustainable organisations

- Provide opportunities for local people to develop new skills and to train to work in exciting and innovative sectors
- Directly create new jobs

Cadent's HyNet North West Hydrogen Pipeline will help unlock these opportunities and deliver the hydrogen needed to meet the UK's net zero targets.

In October 2021, the government announced the wider HyNet programme as the UK's leading industrial decarbonisation cluster. This means the programme has been selected to lead the way in developing hydrogen and carbon storage infrastructure. This places the region at the heart of the UK's drive to net zero. The wider HyNet programme is key to decarbonising industry in the North West.

Why is the hydrogen pipeline needed?

The HyNet North West Hydrogen Pipeline will be the UK's first 100 per cent hydrogen pipeline network at scale. It is essential to unlocking the benefits and ambitions of the wider HyNet North West programme and achieving the UK's net zero target by 2050.

Cadent's HyNet North West Hydrogen Pipeline will deliver the infrastructure needed to provide 100 per cent low carbon hydrogen to industry, and provide connections into the wider gas network to allow for potential blended hydrogen to power homes across the region (described below). The hydrogen pipeline is central to realising the benefits of the HyNet North West low carbon cluster programme.

What is blended hydrogen?

Blended gas is the injection of hydrogen, up to 20mol%*, into the existing gas infrastructure, safely and efficiently. Allowing hydrogen to deliver cost effective and non-disruptive carbon savings to consumers

This blended hydrogen is then transported to the wider gas network, mainly supplying general domestic and industrial customers.

This hydrogen and natural gas mix is less carbon intensive than 100 per cent natural gas, reducing the environmental impact of the energy we use in our homes and businesses while allowing existing domestic appliances, such as our hobs and boilers, to keep working without any changes.

A decision on blending hydrogen and natural gas, in relation to the use of hydrogen for heating, is to be made by the UK government in the future.

Net zero by 2050

The UK has committed to net zero emissions by 2050. This means that over the next 28 years we need to significantly reduce our net carbon dioxide emissions.

To achieve this, the government is exploring wide-ranging plans to transform how energy is produced and used, how people travel, and how our natural environment can be restored.

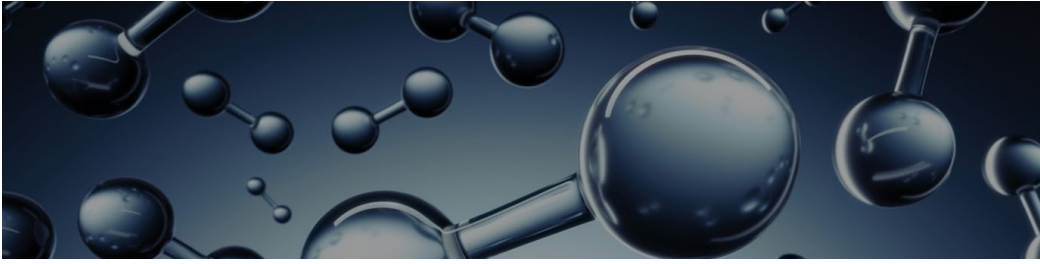
This includes advancing the deployment of offshore wind, solar energy generation, electric vehicles, hydrogen and carbon, capture, utilisation and storage (CCUS).

As set out in the UK government's recent Energy Security Strategy, hydrogen is a clean, affordable and secure source of energy. Coupled with CCUS, it offers a low carbon alternative to fossil fuels.

We need to produce more low carbon hydrogen to help achieve net zero by 2050. Cadent's North West Hydrogen Pipeline and the wider HyNet North West programme will help realise this ambition.

*The mole per cent (represented by symbol 'mol') is a measure of how many elementary entities of a given substance are in an object or sample.

The technology



What is hydrogen?

Hydrogen is a colourless, odourless, non-toxic gas. It is used for a variety of purposes, including as a source of fuel.

Hydrogen doesn't typically exist by itself in nature. It must therefore be processed in one of a variety of ways. Each process adds cost and, like all energy transformation processes, comes at the cost of some efficiency.

Once separated, hydrogen can be stored and transported and then turned back into other forms of energy. This makes it tremendously versatile, capable of being used in the power, heat and transport sectors.

From 2027, the aim is for HyNet North West to produce, store and distribute low carbon hydrogen.

What solution does hydrogen offer?

Traditionally, we have burned fossil fuels (such as natural gas) to produce the energy we need day-to-day for cooking and heating our homes, as well as providing power for industrial use. But this produces carbon dioxide, a greenhouse gas that contributes to global warming.

Low carbon hydrogen offers a cleaner alternative source of fuel that doesn't release harmful emissions into the atmosphere. It can also be used in multiple sectors, which presents an opportunity to reduce carbon emissions across different industries – in power generation, transport, and in our homes and businesses.

What's the difference between blue hydrogen and green hydrogen?

There are many different ways of making low carbon hydrogen. The two main types of low carbon hydrogen are typically described as either 'blue' or 'green'. Vertex Hydrogen's Hydrogen Production Plant will initially be producing low carbon blue hydrogen, but the HyNet North West Hydrogen Pipeline will be able to carry all types of low carbon hydrogen – including both 'blue' and 'green' hydrogen.

Blue hydrogen

This is produced by 'splitting' natural gas. Carbon dioxide is a by-product of this process, which is then captured and stored. Blue hydrogen can be regarded as 'low carbon' because almost all carbon dioxide created during production is captured and stored. This is what the wider HyNet programme plans to do, with capture rates of 97 per cent.

Green hydrogen

This is produced via the electrolysis of water. Electrolysis means to use electricity to split water into hydrogen and oxygen. This process must be powered by a renewable source of electricity (wind or solar, for example) so that no carbon dioxide is emitted in the production of the hydrogen. Many renewable energy developers are looking to co-locate hydrogen production with new or existing infrastructure.

In the UK's Hydrogen Strategy, published in August 2021, the government set a target for approximately 5GW of low carbon hydrogen production capacity by 2030. 5GW would be approximately sufficient power to heat 1.5 million homes for one year.

In the UK's Energy Security Strategy, published in April 2022, the government **increased this target from 5GW of low carbon hydrogen production capacity to 10GW by 2030**, doubling the amount of low carbon hydrogen required.

In the Queen's Speech, delivered in May 2022, an Energy Security Bill was announced to deliver on the commitment to build a sustainable homegrown energy system that is more secure, clean, and affordable. **Low carbon hydrogen transportation will play an important role delivering this bill.**

Overview map

This map shows an overview of our updated plans for the HyNet North West Hydrogen Pipeline.

We are now able to present preliminary order limits, which represent the area within which we will route the pipeline and site HAGIs and BVIs. It also includes the construction areas we'll temporarily need to build the pipeline and above ground infrastructure, including access routes from the public highway into our working area.

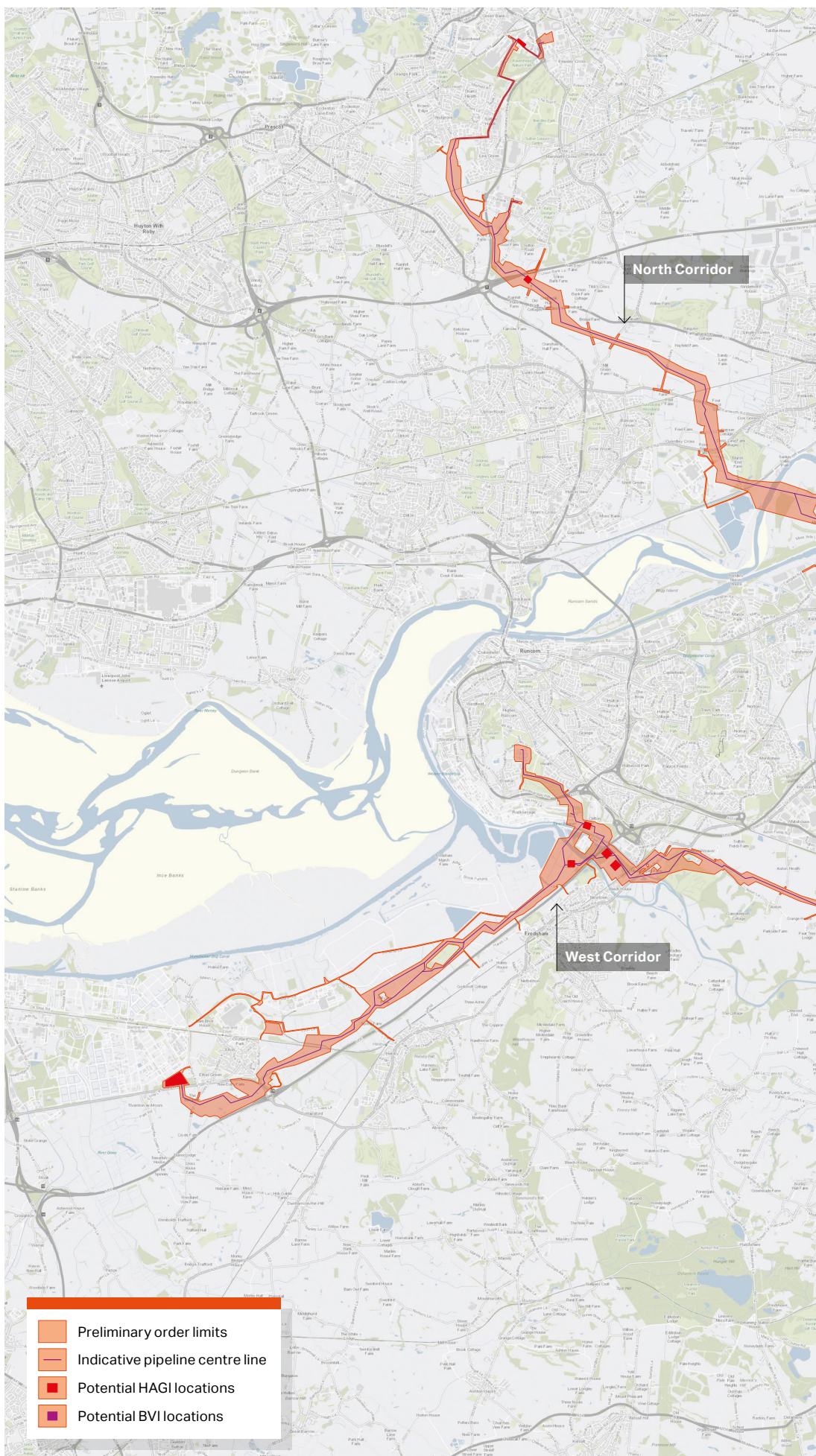
Within the preliminary order limits we've identified an indicative pipeline centre line.

At this stage of the project design the preliminary order limits also include optionality for specific infrastructure elements at certain locations, including the route of the pipeline and locations of HAGIs and BVIs. This is because there may be sections of the pipeline where engineering challenges require further investigation.

To help explain the proposals we've split the development area into individual corridors (north, east, south and west) – although we will need to construct a pipeline in each of these corridors. On pages 18-33 we present each section in more detail.

We would like your feedback on the preliminary order limits, including the centre line for the pipeline and pipeline route options, potential HAGI and BVI sites and the land we'll need temporarily for construction.

The final project design will be informed by your feedback and be subject to the results of further technical, engineering and environmental work.



**Find out more
and submit
feedback**



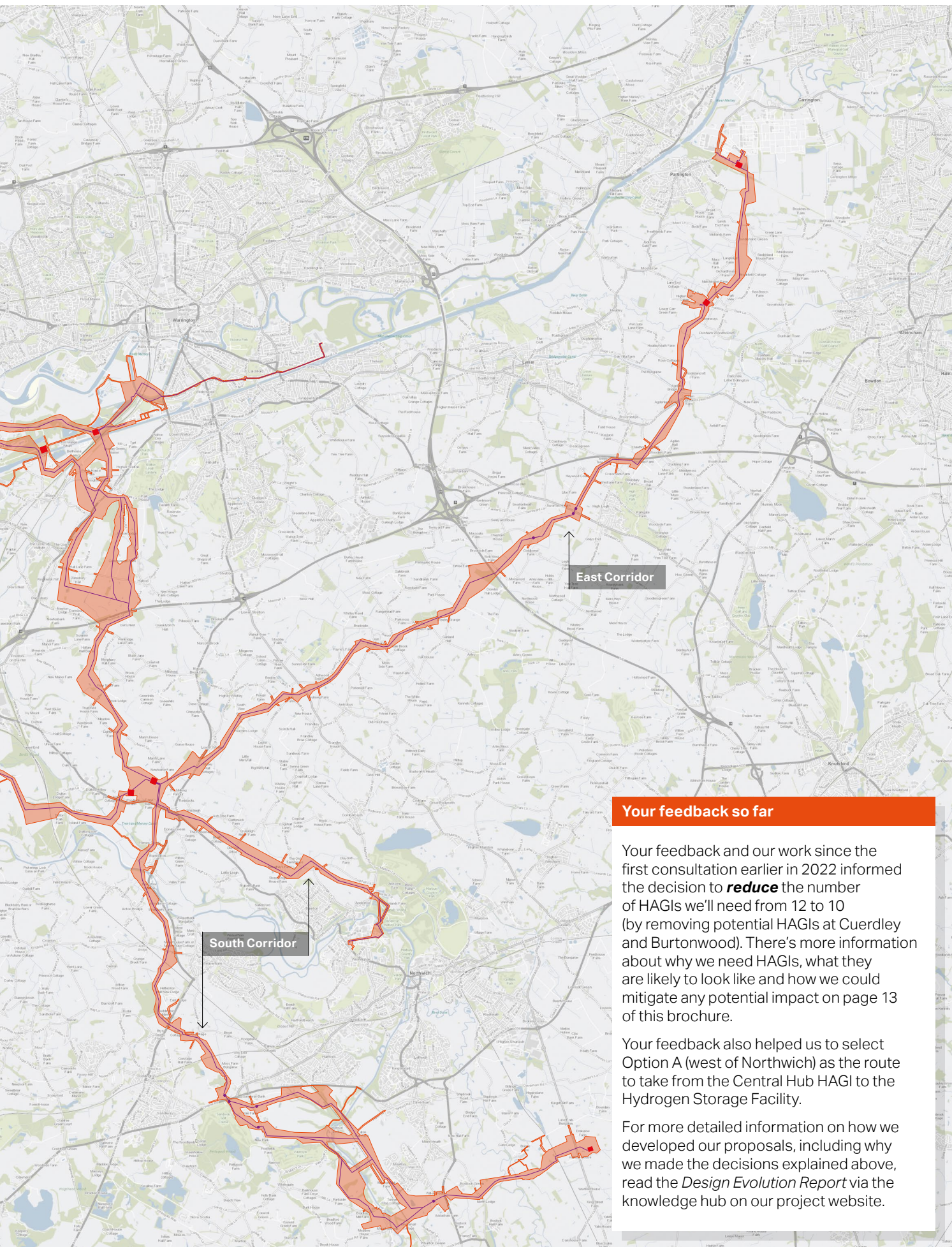
Use the project website:
www.hynethydrogenpipeline.co.uk



**Attend an in-person
or online event.**
See page 36 for details



Send an email to: info@hynet-hydrogenpipeline.co.uk



Your feedback so far

Your feedback and our work since the first consultation earlier in 2022 informed the decision to **reduce** the number of HAGIs we'll need from 12 to 10 (by removing potential HAGIs at Cuerdley and Burtonwood). There's more information about why we need HAGIs, what they are likely to look like and how we could mitigate any potential impact on page 13 of this brochure.

Your feedback also helped us to select Option A (west of Northwich) as the route to take from the Central Hub HAGI to the Hydrogen Storage Facility.

For more detailed information on how we developed our proposals, including why we made the decisions explained above, read the *Design Evolution Report* via the knowledge hub on our project website.



Send written feedback to our freepost address: FREEPOST HYNET NWHP



Ask any questions you might have by calling 0800 860 6261



Visit our **website** and read our **Design Evolution Report**

How our proposals have developed

Earlier in 2022, at our first consultation, we identified a broad route corridor within which the pipeline could be routed and search areas within which HAGIs could be located. Since then we have:

- Analysed people’s feedback.
 - Carried out more technical, engineering and environmental work, including site surveys.
 - Engaged further with a range of stakeholders, including key environmental bodies and utility providers.
- Updated our proposals, presenting preliminary order limits, within which we’ve identified an indicative pipeline centre line, potential HAGI and BVI sites, and areas we’ll temporarily need for access and construction.

There is more information on HAGIs and BVIs on page 13 of this brochure.

You raised	Our response
West corridor – in the west corridor, people identified areas of potential constraints to routeing the pipeline and locating other infrastructure, including:	
Areas of flooding and flood plain	The preliminary order limits have been developed to avoid the flood plain as far as possible. Where that hasn’t been possible (for example, between Stanlow and Rocksavage), we will look carefully at how we construct the pipeline to ensure any potential effects are appropriately mitigated. Detailed flood risk assessments are also being completed.
The landscape south of the A553	This information has helped us to identify potential locations for the Central Hub HAGI, which will not be sited south of the A553. Land south of the A553 will only be used as an access route for the pipeline and related construction activities. Here, the landscape is not considered a major constraint and land used will be reinstated once work has been completed.
Impacts on Runcorn Golf Club as a result of the Runcorn spur	Because of challenges caused by other land uses in the area, we are progressing with infrastructure that may impact Runcorn Golf Club.
Environmental designations that could be impacted by the Rocksavage and Runcorn HAGI sites	HAGI sites have been selected to avoid, as far as possible, any impacts on certain environmental designations. We have provided a number of options for the Rocksavage HAGI location. These provide different ways of mitigating potential environmental impacts. We would welcome your views on the options provided. Further information can be found in the PEIR, available via the knowledge hub on our project website.

Find out more

Read our *Non-Statutory Consultation Feedback Report* via the knowledge hub on our project website. This sets out in detail how we analysed and responded to feedback received during our first consultation earlier in 2022.

Over the next three pages we’ve provided a snapshot of people’s feedback from our first consultation and how it has influenced our proposals. Where relevant, we’ve also explained why we decided not to move forward with certain recommendations.

You can still have your say and influence our proposals by responding to this, our second, consultation. This is likely to be our last project-wide consultation on these proposals, so it’s really important you take the opportunity to provide feedback.

You raised	Our response
North corridor – in the north corridor, people identified areas of potential constraints to routeing the pipeline and locating other infrastructure, including:	
The proximity of the corridor to Daresbury and its residential properties	We acknowledged people's concerns about the proximity of the corridor to residential properties at Daresbury. This route has now been discounted.
The Creamfields music festival site	We've looked carefully at how to route the pipeline near to the Creamfields festival site. We are currently speaking with landowners about various routes across the area.
East corridor – in the east corridor, people identified areas of potential constraints to routeing the pipeline and locating other infrastructure, including:	
National Trust land at Dunham Massey	We've developed the preliminary order limits to be further away from the Dunham Massey estate.
Proximity of the corridor to Lower Whitley and its residential properties	We've looked carefully at the proximity of residential properties and considered mineral protection constraints in the area. Following further consideration, and also to avoid mineral protection constraints, the preliminary order limits have been developed further away from Lower Whitley.
Planned new developments at Partington	We've considered the location of allocated developments and the pipeline has been routed to avoid these.
The importance of Carrington mosses	We've developed the preliminary order limits to minimise any impacts to sensitive habitats, such as Carrington mosses, as far as possible. We'll also endeavour to further mitigate effects through construction.
A request to use the HS2 route corridor to avoid Broome Edge	The HS2 route corridor does not move in the direction we require to enable access to potential blending sites at Warburton and Partington. Construction integration risks may have also arisen.

You raised	Our response
South corridor – in the south corridor, people identified areas of potential constraints to routeing the pipeline and locating other infrastructure, including:	
The existence of salt and brine mines and associated infrastructure	We've looked carefully at how the pipeline route would interact with existing and historic salt and brine mines and are completing related engineering assessments. Option B, east of Northwich, included a greater length of the route above these mines. This is one of the reasons why we're progressing with Option A, west of Northwich.
The HS2 Phase 2b route	We have considered the Phase 2b route as part of our development work for the preliminary order limits and will work with HS2 to explore opportunities to reduce any potential impact in the region.
Wildlife designations on Option B, east of Northwich	Alongside other factors, the proximity of wildlife designations to the Option B corridor helped us to select Option A, east of Northwich.
Other comments	
Some people asked why we couldn't route the pipeline along existing infrastructure corridors, for example the Manchester Ship Canal or the M56	When we are routeing near existing infrastructure or utilities, we need to look very carefully at the safety and viability of constructing and operating that route. Working in or adjacent to motorways, canals or existing pipelines for long distances raises safety concerns over the structural integrity of existing infrastructure, traffic collision risks or working in and around water.
People asked whether hydrogen is safe to use in pipelines	Please be assured that people's safety is our first priority. We will consider all potential risks during the design, construction and operation of the new pipeline. See page 34 for more about safety.

Hydrogen Above Ground Installations (HAGIs)

The majority of our pipeline will be underground. However, we will need ten HAGIs at certain points along the pipeline. This includes a Central Hub HAGI, which will act as the central connection point for each of our four pipelines.



HAGIs allow us to control the flow and pressure of hydrogen and to facilitate inspection and routine maintenance of the pipeline. They will also act as the connection points to the Hydrogen Production Plant, Hydrogen Storage Facility, potential blending points and industrial customers.

What HAGIs typically look like

HAGIs usually include a range of above ground equipment and structures. These structures are designed to be kept at a low level and are usually around 1.5 to 2 metres tall.

Our HAGI sites will be protected by security fencing between 2.4 and 3.6 metres high with a gate allowing access.

They also usually require an access road linking the site to the local road network and places for workers to park their vehicles within the HAGI. In some cases, fences may need to be higher and additional security measures added.

HAGIs will also need to connect into the local electrical distribution and telecommunications networks. Sites can vary in size depending on their specific use, but they typically range between 0.5 and 1.5 hectares (1 hectare is around the size of a football pitch).

Your feedback and our work since the first consultation earlier in 2022 informed the decision to **reduce** the number of HAGIs from 12 to 10.

Minimising any potential visual and environmental impact

Outlined below are some of the ways we will look to mitigate any potential impacts:

- HAGIs will generally be largely screened from view with hedges, trees and/or fencing.
- While we may need to turn on some lights during routine maintenance work, or in case of emergency, HAGI sites will generally be unlit. Any permanent lights we do install are likely to be around 2 to 3 metres high.

- There may be some noise during construction, but overall we don't anticipate much noise disturbance once the HAGIs are built. Nor will there be any audible alarms.
- There will be some coming and going of workers carrying out essential checks and routine maintenance but this will be fairly minimal and sites will not be manned 24 hours a day.

Provide your comments

We would like your feedback on the potential HAGI sites we've identified along the pipeline route.

See pages 18-33 of this brochure to find out more and see the locations of these potential sites.

Block Valve Installations (BVIs)

There will be two BVIs along the pipeline. BVIs act as a cut-off point to isolate a section of pipeline for maintenance, repair or safety reasons. These are smaller than HAGI sites, typically measuring around half a hectare (half a football pitch).

Security fencing, like HAGI fencing, will be between 2.4 and 3.6 metres high.

A gate will be required for access, typically for light goods vehicles. This is likely to include an access track (or similar) and space for vehicles to turn.

For more information about BVIs and where we we'll need them read the *Design Evolution Report* via the knowledge hub on our project website.

How we would construct the project

Cadent is an experienced and trusted operator of gas pipelines. We will make sure we bring our knowledge of constructing, operating and maintaining the existing gas network to this project.

The pipeline would be constructed predominantly using open trench (or 'open cut') techniques. Where open trenching is not possible or practicable, trenchless crossing techniques will be used. This will likely be to cross things like roads, railways and waterways.

Over the next two pages we've provided an overview of open trenching and trenchless construction methods.

Open trenching

Open trench (or 'open cut') excavation is the most common method for installing underground pipelines.

- Open trenching begins by marking out the total area within which construction work will take place.
- Topsoil is then carefully stripped and stored next to the pipeline route. Meanwhile, the pipeline is delivered in short lengths and placed on supports. These short lengths of pipeline are welded together into longer sections called 'strings'.

- Testing is completed on each weld and a full inspection report produced before the welds are coated.
- The pipeline trench is then dug, with excavated material stored separately from the already stripped topsoil.
- The pipeline 'strings' are then lowered into the trench using special vehicles called 'side booms' (pictured) or excavators and welded to the pipeline that's already been laid.
- The trench is backfilled using the previously excavated material and the topsoil is replaced.
- The pipeline is then hydrotested (filled with water) to prove the integrity of the fabricated structure and will pass rigorous checks prior to being commissioned.

Once the land above the pipeline has been fully reinstated it can be returned, as far as possible, to its previous use. We anticipate that open trenching will be the predominant technique we use to construct our underground pipeline.

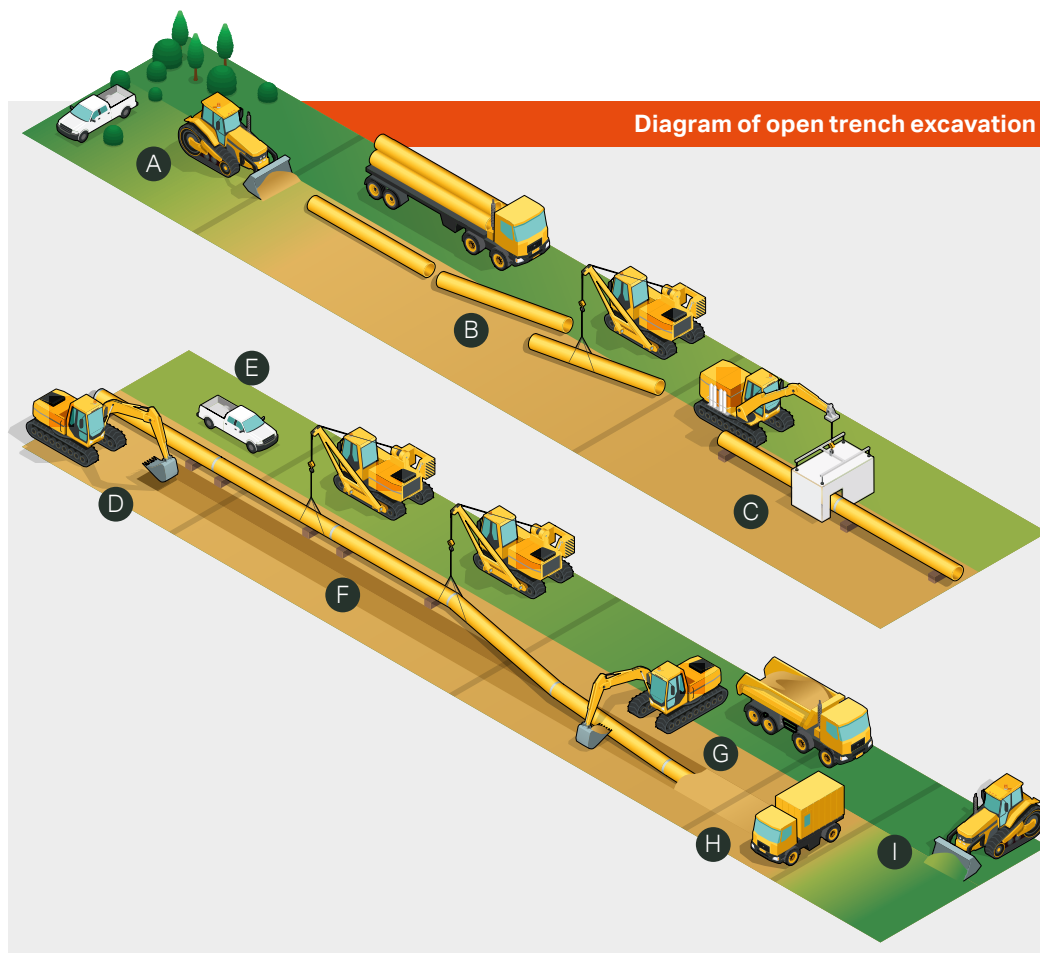


Diagram of open trench excavation

- A. Surveying and clearing of site
- B. Laying out pipe sections, cold bending
- C. Welding pipe sections together
- D. Digging pipeline trench
- E. Construction inspection
- F. Lowering pipe into trench
- G. Backfilling trench and pipeline
- H. Hydrotesting pipeline
- I. Site restoration

Trenchless methods (for roads, rivers, other utilities, and rail)

In some cases, for engineering and environmental reasons, open trench methods are not viable so trenchless methods will be considered.

Possible trenchless techniques that will be assessed as part of the design are set out below.

Find out more

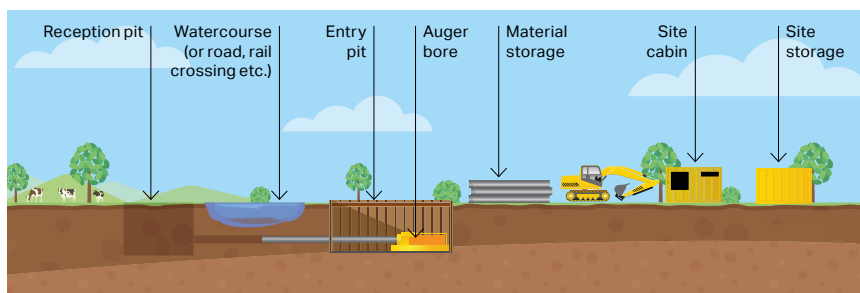
We'll need to use trenchless methods at various points along the pipeline route, including to cross major roads, such as the M56, M62, M6 and watercourses like the River Weaver Navigation, Mersey River and Trent and Mersey Canal. For more information on the trenchless crossings we think we'll need, read the project description in chapter two of the PEIR via the knowledge hub on our project website.

Auger boring

Auger boring can either be 'cased' or 'uncased'. For cased auger boring, steel or concrete pipe sections are pushed along the crossing section and material is removed by the auger drill inserted into the pipe.

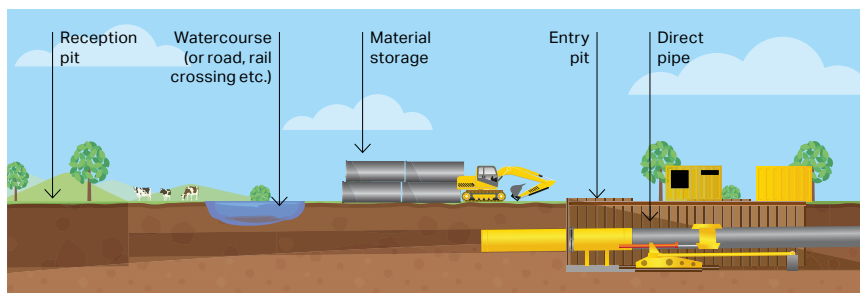
Following installation of the casing pipe, the hydrogen pipe is inserted with insulators to insulate and centralise the pipe in the casing.

For uncased auger boring the hydrogen pipe is inserted directly into the ground with no casing.



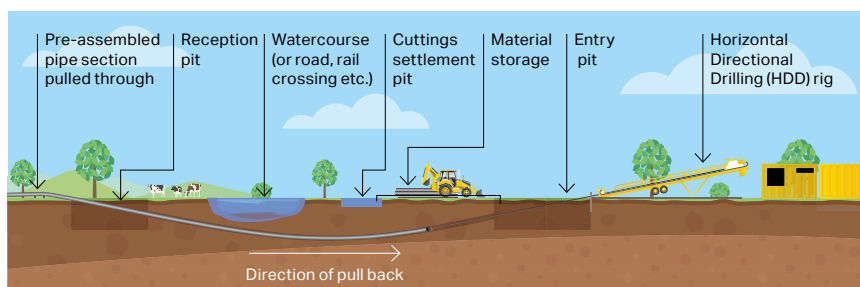
Direct pipe

Direct pipe can be applied to short and longer trenchless crossings. This technique is similar in its method and set up to micro-tunnelling (see below). However, the pipeline is installed directly into the ground behind the cutting machine, rather than being installed inside a completed tunnel.



Horizontal Directional Drilling (HDD)

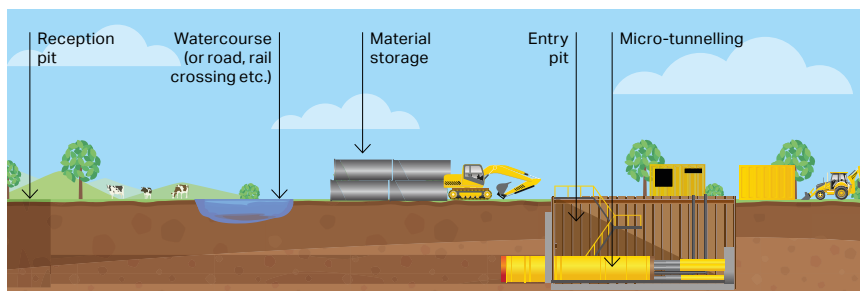
HDD is typically used on longer trenchless crossings. It requires an entry and exit pit on either side of the crossing. A hole is then drilled beneath the crossing and the hydrogen pipe pulled back through the drilled tunnel.



Micro-tunnelling

Micro-tunnelling is especially useful for laying pipelines beneath motorways, large roads, railway lines, and other sensitive areas.

A cutting tool / machine provides the mechanical excavation, which is generally controlled remotely above ground. Individual line pipes are then welded into a string pipe (a longer section of pipeline) and gradually pulled into the casing. Where space is limited, the pipe may be welded at the base of a shaft.



These graphics are for indicative purposes only and not to scale.

Temporary construction areas

At certain points along the route we will need temporary construction areas. These will allow us access to build the pipeline and HAGIs, as well as to store construction materials. Once construction has finished, these areas will be returned to the land owner.

You can view the temporary construction areas in more detail via the interactive map on our project website: feedback.hynethydrogenpipeline.co.uk or by contacting our project team for more information.

As part of our ongoing work, we'll carry out further surveys of construction areas and continue to liaise with local highway authorities to confirm they are suitable to use and support the safety of other road users. We will aim to carry out our construction as sensitively as possible and would welcome any feedback that can help us finalise our construction plans.

Temporary construction areas are likely to include:

- Temporary fencing – the requirements of which will be determined by security factors and what the land is being used for

- Temporary site signage and potentially other site safety requirements
- Temporary facilities for site personnel, (there will be no lodging on any of our sites)
- Temporary site drainage and possible watercourse crossings
- Temporary access to and from the site. Any access required will be agreed with the local highway authority. Any access tracks that are required will be determined by the conditions at particular construction areas.

Once we have finished using temporary construction areas we will, as far as possible, reinstate the land used to its previous use and return it to the land owner.

To see where these temporary construction areas will be, visit **[feedback.hynet
hydrogenpipeline.co.uk](https://feedback.hynethydrogenpipeline.co.uk)** or contact the project team.

Environmental considerations

Our pipeline will bring positive long-term environmental benefits by helping industrial customers across the region to decarbonise their activities. However, any major infrastructure development can create short-term impacts and it's really important these impacts are identified, avoided, managed and minimised.

In early 2022, we published our Scoping Report, which set out what we understood to be the likely effects upon the environment and how we would assess them. Our Scoping Report was followed by the Secretary of State's Scoping Opinion. This is available to view on the Planning Inspectorate's website (www.gov.uk/government/organisations/planning-inspectorate).

Since then, we have been carrying out a range of environmental assessments to understand the potential impacts of the project. These included desk-based research, supported by on-site surveys. We have also engaged with statutory bodies, including the Environment Agency and Natural England. This has helped us to understand in greater detail the areas that we're working in.

Our Preliminary Environmental Information Report

To support this consultation, we've published a Preliminary Environmental Information Report (PEIR).

This provides the preliminary findings of our environmental assessments, including the likely environmental effects of the project and how they could be mitigated.

We want you to tell us if there are any potential environmental effects you think we might have missed or anything else we should consider. Feedback at this consultation, and further technical work, will help us refine our plans and develop our Environmental Statement. This will be an important part of our application for development consent.

You can read our PEIR in full via the knowledge hub on our project website.

Land owners



The land agent team on Cadent's HyNet North West Hydrogen Pipeline project is being led by Fisher German LLP. Fisher German is a specialist company that's enjoyed a long working relationship with Cadent and has provided land agency services in connection with our pipeline network since its inception.

As part of the DCO application process there's a legal requirement to identify who owns or has an interest in land. To make sure the information gathered is as accurate as possible, the Fisher German team has been engaging with potentially impacted landowners.

As part of this consultation we will write to everyone that we have identified as having an interest in land affected by the project, inviting them to comment on our more detailed proposals.

We will continue to talk to landowners following the closure of this consultation as we prepare to submit our application for development consent and, if successful, carry out the installation of the pipeline.

This project will require land rights over private land, both long term and short term. We will offer payments to landowners who host our pipeline or provide access during its installation. These payments will be made under a temporary access agreement (where we only need to access land and will not be carrying out installation works) or an easement agreement, where we seek more formal rights to allow for the installation and operation of the pipeline.

Easement agreements

We will seek to agree the necessary rights from landowners to maintain, operate and inspect the pipeline. These rights are contained in an 'easement' agreement. The agreement places duties on both parties that enable us to work together to ensure the safe operation of the pipeline. One aspect of the easement is to control and restrict what can take place within the strip of land that lies over the pipeline. This is to prevent damage to the pipeline once it has been laid.

This strip of land will vary in width, up to 24.4m wide (depending on the size of the pipeline).

We will seek an option agreement for the easement with landowners before we submit our application for development consent.

We would then exercise the option should development consent be granted. Where land rights cannot be agreed voluntarily the DCO will contain compulsory purchase powers. However, these would only be used where we are unable to reach voluntary agreement.

Our proposals

West corridor: Stanlow to the Central Hub, and the Runcorn spur

The preliminary order limits in the western corridor start at Vertex Hydrogen's Hydrogen Production Plant at the Stanlow Manufacturing Complex. From there the pipeline route runs approximately 9.7 kilometres (6 miles) east to the Rocksavage HAGI and then approximately 9.7 kilometres (6 miles) south east to the Central Hub HAGI, primarily through open fields. The route avoids the Mersey Estuary Special Protection Area (SPA).

To help minimise the impacts of our construction, we'll use trenchless techniques to cross:

- Roads – the M56, A5117, A56 and A533
- Rail – the Ellesmere Port to Warrington line, Chester to Manchester Line and West Coast Mainline
- Waterways – River Weaver, Weaver Navigation and the Trent and Mersey Canal

We would like your feedback on our preliminary order limits in the west corridor, within which our pipeline will be routed, HAGIs sited and temporary construction areas located.

Options for the west corridor

In this corridor, there are still some options for short sections of the pipeline route, as well as options for the site of the Rocksavage HAGI. You can find out more about these options on pages 20-21.

The spur

In this area we'll need a spur in the direction of Runcorn. This will connect to the pipeline via the Runcorn HAGI. The spur will start at the Rocksavage HAGI and run north to the Runcorn HAGI. From the Runcorn HAGI there will be two spurs routed broadly north west to connect to the following industrial customers:

- Intergen
- The Heath Business and Technical Park

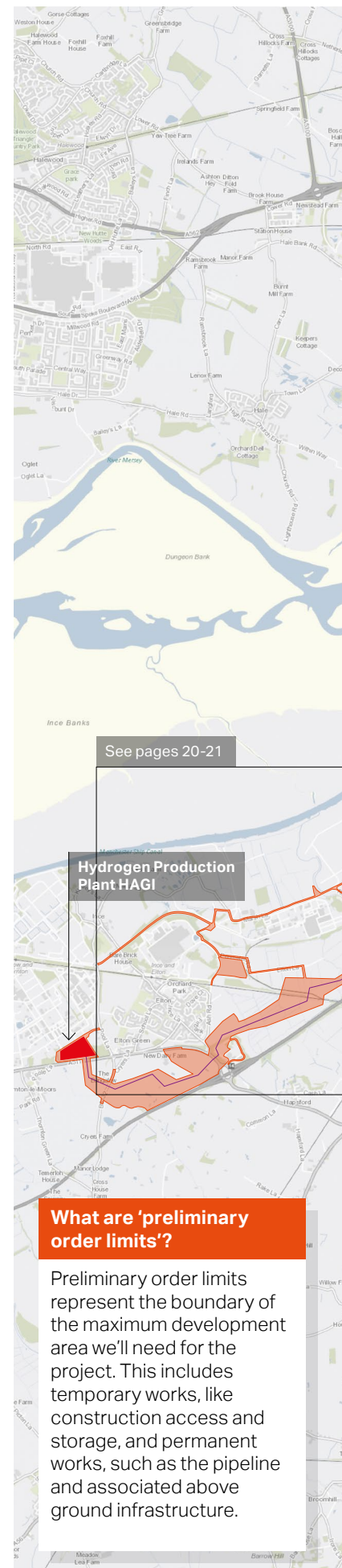
HAGIs

Along the western corridor we'll need three HAGIs:

- Hydrogen Production Plant HAGI – this would be located on the existing Stanlow Manufacturing Complex
- Rocksavage HAGI – we've currently identified three options for the location of our Rocksavage HAGI, which you can read more about on pages 20-21
- Runcorn HAGI – this would be located on land between the Weaver Navigation and the Weaver View minor road

The benefit of a separate Runcorn HAGI is a reduction in the number of pipelines crossing the Weaver Navigation in an area congested by existing infrastructure.

We would like your feedback on the potential HAGI sites we've identified along the western corridor. Please also tell us if you have any information that could help us identify a preferred site for the Rocksavage HAGI.



See pages 20-21

Hydrogen Production Plant HAGI

What are 'preliminary order limits'?

Preliminary order limits represent the boundary of the maximum development area we'll need for the project. This includes temporary works, like construction access and storage, and permanent works, such as the pipeline and associated above ground infrastructure.

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View temporary construction areas online

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Alternatively, get in touch with the project team via the contact details below.

See pages 20-21

Runcorn HAGI

Rocksavage HAGI options

Central Hub HAGI options

- Preliminary order limits
- Indicative pipeline centre line
- Potential HAGI locations



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Our proposals

West corridor: options in this area explained

Option	Description
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There is a distance of approximately 300 metres between the centre of each route option, with key factors being considered including proximity to overwintering bird habitats, existing energy infrastructure (i.e. overhead electric lines and wind turbines) and engineering feasibility. Either option would be constructed using 'open cut' techniques.

WP1	WP1 is the most northerly route and avoids interaction with existing overhead electric lines (see WP2).
WP2	WP2 brings the pipeline closer to a corridor of land already affected by M56 traffic and existing overhead electric lines, thereby reducing disturbance on land closer to the River Mersey. However, this land is often used by birds from the Special Protection Area on the river.

There are three options identified for the location of the Rocksavage HAGI (RSH1, RSH2 and RSH3).

RSH1	RSH1 is within an area identified as being at risk of flooding. This could make construction and operational access more difficult. This is why alternative locations (RSH2 and RSH3) have been identified.
RSH2	RSH2 avoids the flood area, thereby providing good access. However, there are potential land contamination concerns.
RSH3	RSH3 is located near to RSH2 in an area of woodland. However, it broadly avoids the flood zone and ground associated with historic landfill.

There are two further pipeline options south east of the Rocksavage HAGI (WP3 and WP4).

WP3	WP3 would include a trenchless crossing of the Weaver Navigation. It would pass north west of properties on the A56 and then switch south east, with another trenchless crossing of the A56. This option would require two individual crossings which, if technically feasible, could be completed as one larger crossing (see WP4)
WP4	WP4 would head broadly north east with a single trenchless crossing of the A56 and Weaver Navigation. It then passes to the south east of properties on the A56. This option would require one larger trenchless crossing of the A56 and Weaver Navigation.

There are two pipeline route options for the crossing of the River Weaver and Weaver Navigation, which are required between the Rocksavage and Runcorn HAGIs (RSp1 and RSp2).

RSp1	RSp1 reduces the number of more difficult, large diameter pipeline crossings in the area. It could be used in conjunction with RSH3.
RSp2	RSp2 would require a longer single trenchless crossing of both the River Weaver and Weaver Navigation, passing north east of an existing National Grid substation. It would remove the need for RSH1, RSH2 or RSH3, but, overall, requires more difficult, larger diameter pipeline crossings. Assessments are being completed to determine its feasibility.

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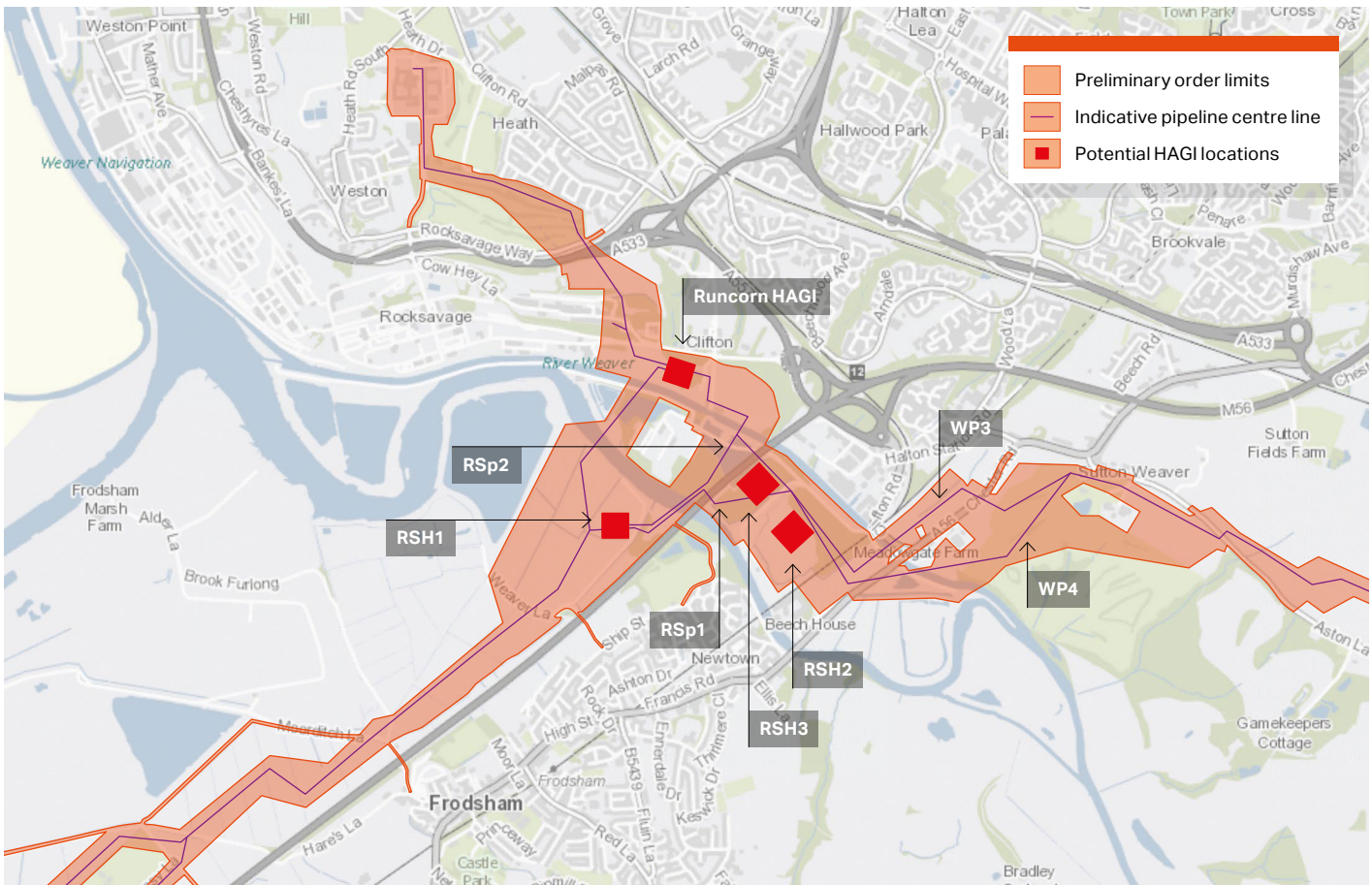
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Our proposals

North corridor: St Helens to the Central Hub and the St Helens and Warrington spurs

The preliminary order limits in the northern corridor start at the Central Hub HAGI. From there they cover approximately 12 kilometres (7.4 miles) north to the Higher Walton HAGI and then approximately 9 kilometres (5.5 miles) north west to the Clock Face HAGI. They then continue broadly north for around 8 kilometres (5 miles) before finishing at the St Helens HAGI.

Between the Central Hub HAGI and Sutton Heath, the corridor typically runs through open fields before getting closer to residential areas and the industrial setting of Ravenhead. We are looking closely at how to minimise construction impacts on local people and welcome any views on this.

To help minimise the impacts of our construction, we'll use trenchless techniques to cross:

- Roads – the M56, M62, A56, A562, A5080, A57, A570
- Rail – the West Coast Main Line, the Skelton Junction to Ditton Junction Line, the Manchester to Allerton Line, the Liverpool to Manchester Railway
- Waterways – Bridgewater Canal, Manchester Ship Canal, River Mersey

We would like your feedback on our northern preliminary order limits, within which our pipeline will be routed, HAGIs sited and temporary construction areas located.

Options for the north corridor

In this area, there are some options for the pipeline route and options for the location of the Higher Walton HAGI. You can find out more about these options on the next page.

The spurs

In this area we'll need two spurs: one in the direction of St Helens and one in the direction of Warrington. The Warrington spur will include a second, smaller spur.

Warrington spur

The Warrington spur would be approximately 6 kilometres (3.7 miles) in length. It would start at the Higher Walton HAGI and run north east to connect to the following industrial customers:

- Solvay, Warrington (a shared single connection with Ingevity)
- Ingevity, Warrington (a shared single connection with Solvay)

A second, smaller spur will run for approximately 1.3 kilometres (0.8 miles) parallel to the railway line before connecting to:

- Novelis, Warrington

There are two route options for the connection to Novelis.

Clock Face spur

The Clock Face spur starts at the Clock Face HAGI and runs north east to connect to the following industrial customer:

- NGF Europe Ltd

St Helens spur

The St Helens spur starts at the St Helens HAGI and connects to the following industrial customers:

- Pilkington UK's Greengate Works
- Glass Futures

The spur to Pilkington's Greengate Works would run along Burtonhead Road to the north west for approximately 0.25 kilometres (0.2 miles).

The spur to Glass Futures would run along Burtonhead Road to the south east and then turn north with one major trenchless crossing of the A570 (St Helen's Linkway). This spur would be approximately 0.85 kilometres (0.52 miles).

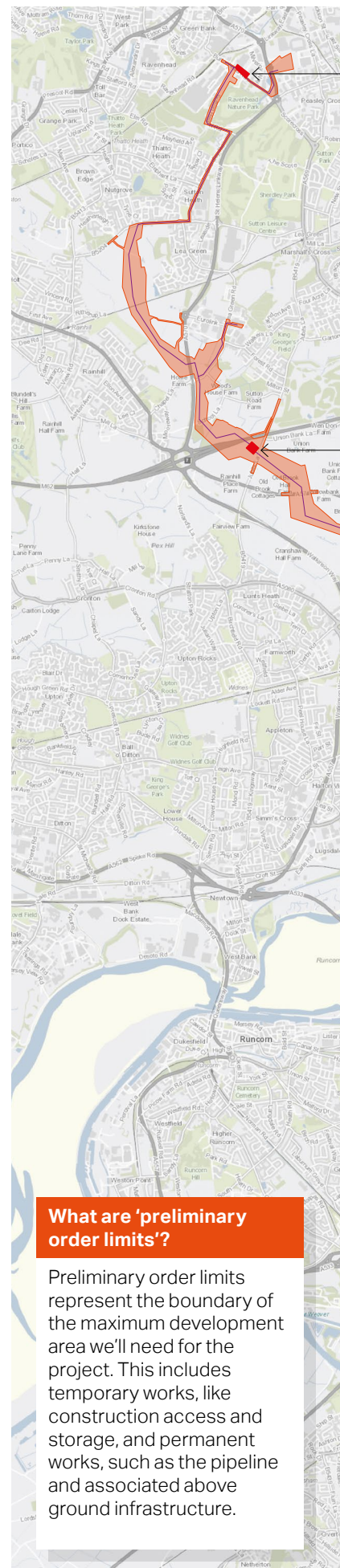
HAGIs

Following analysis of people's feedback and more technical and environmental work, **we have removed two potential HAGIs presented during our first consultation earlier in 2022: Cuerdley HAGI Search Area and Burtonwood HAGI.**

Along the northern route corridor we'll need three HAGIs:

- St Helens HAGI – this would be located on an area of open grass and scrub to the rear of Ravenhead Retail Park.
- Clock Face HAGI – this would be located in a field bounded by the M62 and the B5419.
- Higher Walton HAGI – we've currently identified two options for the location of our Higher Walton HAGI. You can find out more information about these on pages 24-25.

We would like your feedback on the route options and potential HAGI sites we've identified along the northern corridor. Please also tell us if you have any information that could help us identify a preferred site for the Higher Walton HAGI.



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St Helens HAGI

Clock Face HAGI

See pages 24-25

Higher Walton
HAGI options

See pages 24-25

Central Hub HAGI options

View temporary construction areas online

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Alternatively, get in touch with the project team via the contact details below.

- Preliminary order limits
- Indicative pipeline centre line
- Potential HAGI locations



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Our proposals

North corridor: options in this area explained

Option	Description
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The preliminary order limits include an area used by Creamfields festival, located north of the M56 and between Hatton and Daresbury. It's our aim to mitigate impacts on the operation of the festival site where possible. To do so we have identified various options (NP1, NP2 and NP3) and are in discussions with the landowner. Conversations as to how to minimise any potential impacts are ongoing between the festival organisers and the project team.

NP1	NP1 would pass along the western side of the Creamfields festival site, past Daresbury and continues north, parallel to the A56 (Chester Road). It is designed to avoid the key areas of the Creamfields festival site.
NP2	NP2 would travel within the Creamfields site and west of Warrington Road. It is designed to avoid the key areas of the Creamfields festival site.
NP3	NP3 would cross Warrington Road and then run parallel on its eastern side. It is designed to avoid the key areas of the Creamfields festival site and avoids the largest area of the festival site overall.

Following the trenchless crossing of the A56, there are two options at Higher Walton (NP4 and NP5) that include the trenchless crossings of the Bridgewater Canal, the West Coast Mainline and the Manchester Ship Canal.

NP4	NP4 would run through Moore Nature Reserve and an area of flood risk, but to a lesser extent than NP5. It would require individual crossings of the railway line and Manchester Ship Canal. The Higher Walton HAGI option would require a longer spur to reach Warrington customers.
NP5	NP5 would facilitate a HAGI option closer to Warrington customers and would avoid Moore Nature Reserve. It would require individual crossings of the railway line and Manchester Ship Canal. Engineering assessments are ongoing.

There are also two options at Higher Walton that include the trenchless crossings of the Bridgewater Canal, the West Coast Mainline and the Manchester Ship Canal (HWH1 and HWH2).

Each option connects to one of two Higher Walton HAGI location options on the north side of the Manchester Ship Canal and rejoins towards the crossing of the River Mersey to the west.

HWH1	This HAGI location option is dependent on pipeline route option NP4 being appropriate. It would require a longer spur line to Warrington customers and would be located within Moore Nature Reserve and an area of flood risk.
HWH2	This HAGI location option is dependent on pipeline route option NP5 being appropriate. It would require a shorter spur line to Warrington customers and would be located outside Moore Nature Reserve and an area of flood risk.

There are two options for the Warrington spur connection to Novelis (WSp1 and WSp2).

WSp1	WSp1 would remain south of the River Mersey. It would cross under the railway underpass and continue as street works along Eastford Road. It would then proceed broadly north east, crossing the disused Runcorn and Latchford Canal, then toward the A5060, and continue as street works towards Novelis. This option would run along the same corridor as the Warrington Linkway road development.
WSp2	WSp2 would run north east with a trenchless crossing of the River Mersey. It would then turn south east, with a trenchless crossing of the railway, and continue on to the A5196 (Slutchers Lane / Centre Park Link Road). Finally, it would exit the lane before another trenchless crossing of the River Mersey and head towards Novelis.

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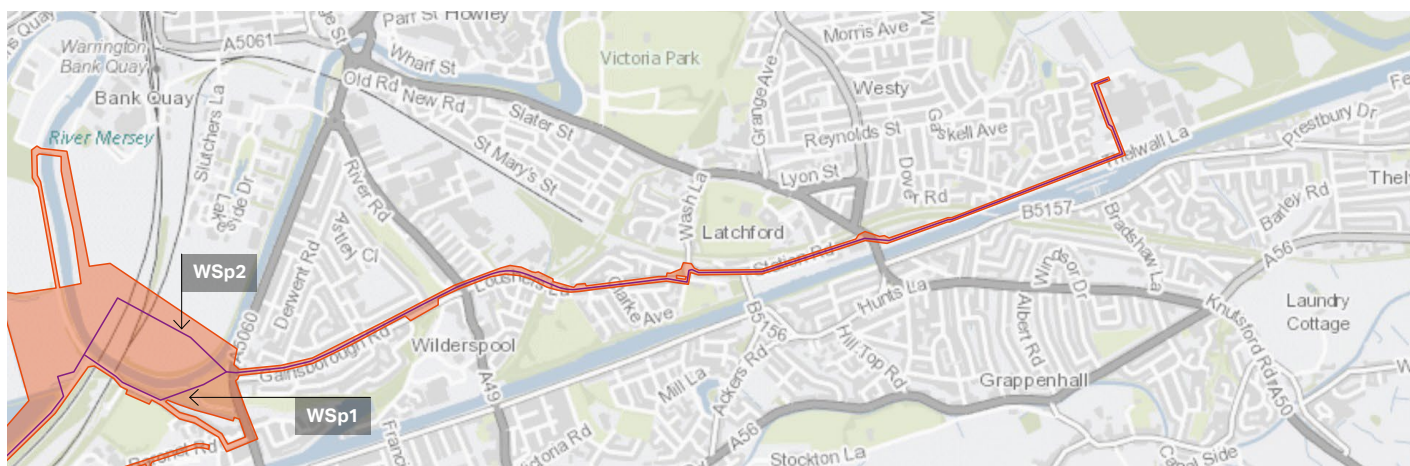
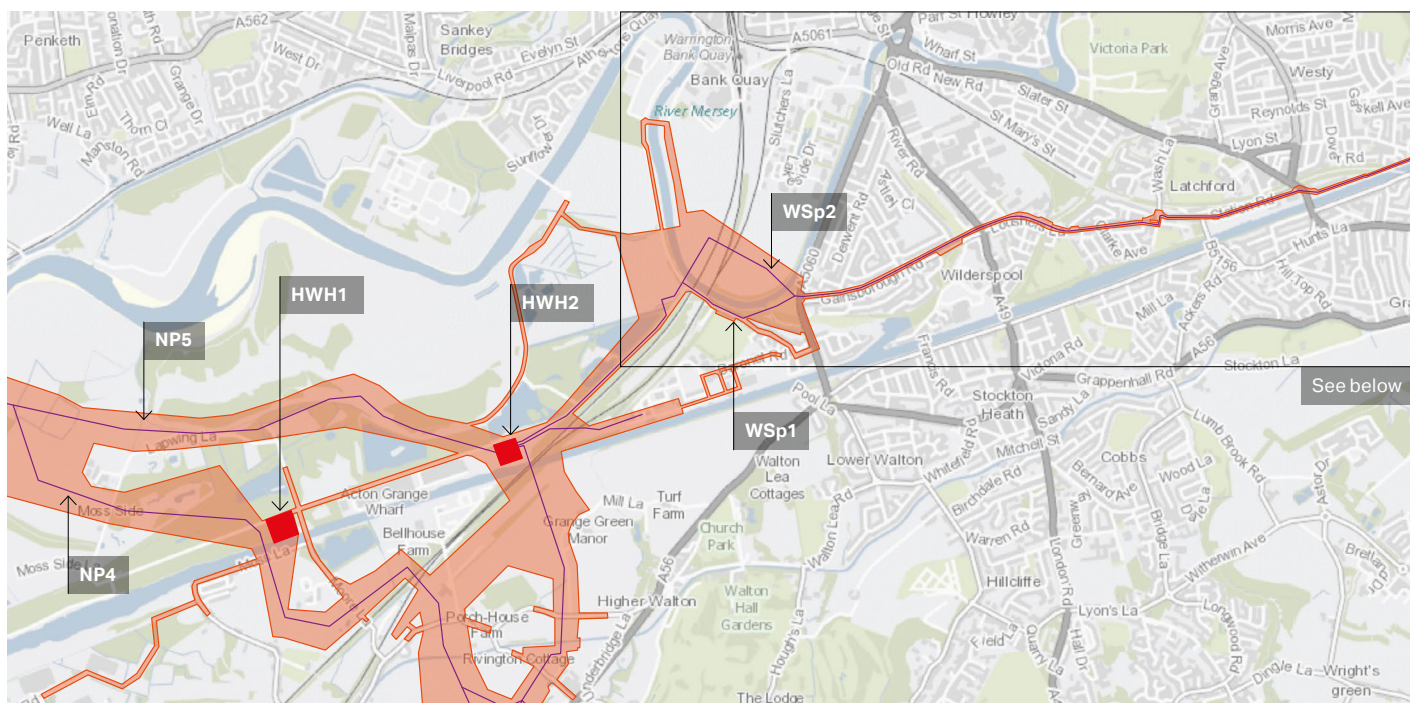
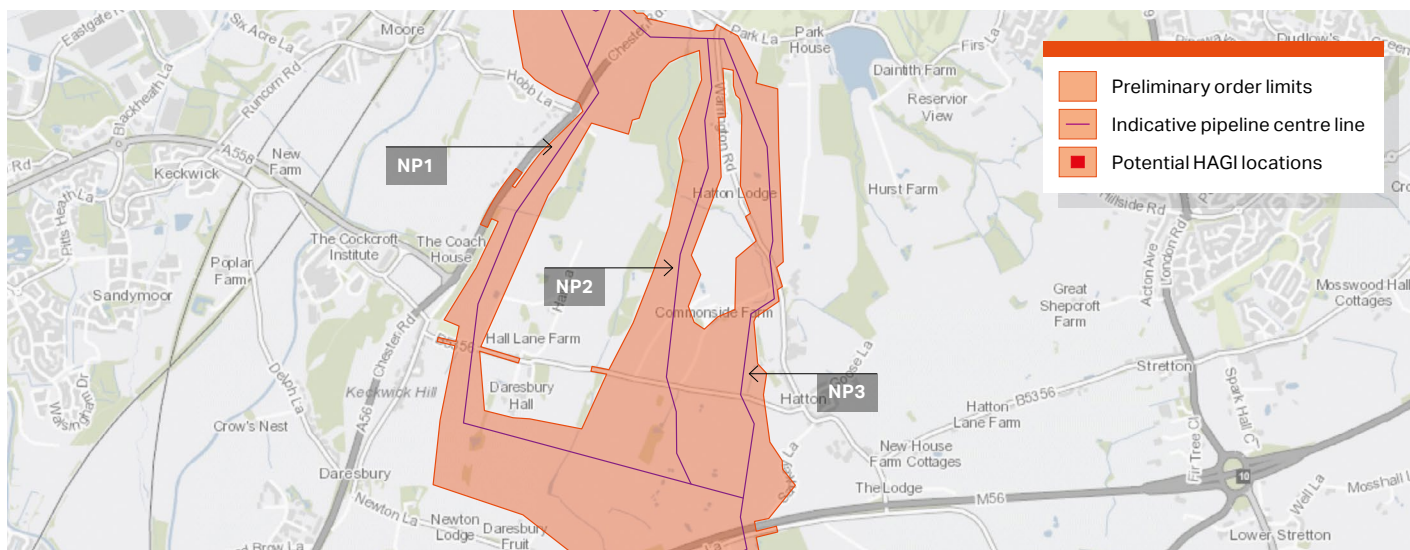
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Our proposals

East corridor: Central Hub to Partington, and the Warburton and Partington spurs

The preliminary order limits in the eastern corridor start at the Central Hub HAGI. From there they travel approximately 20.4 kilometres (12.6 miles) north east to the Warburton HAGI. They then continue north east for approximately 4.7 kilometres (2.9 miles) before continuing north east to the Partington HAGI. The route for this corridor is typically through open fields.

To help minimise the impacts of our construction, we'll use trenchless techniques to cross:

- Roads – the M56, M6, A49, A559, A50 and A56

We would like your feedback on our eastern preliminary order limits, within which our pipeline will be routed, HAGIs and BVIs sited and temporary construction areas located.

The spurs

Warburton spur

The Warburton spur starts at the Warburton HAGI and runs approximately 0.2 kilometres (0.12 miles) west to connect to the existing Cadent Above Ground Installation (AGI) on Carr Green Lane. This spur will enable potential blending of hydrogen into the existing gas network in the future.

Partington spur

The Partington spur starts at the Partington HAGI within a disused industrial area and connects to the following industrial customers:

- Carrington Power Station
- SAICA, Partington
- Partington Cadent AGI
- Basell Polyolefins

The spur to SAICA, Partington would be 0.5 kilometres (0.3 miles) and travel north west along an existing road. It would require a single major trenchless crossing of the A6144.

The spur to Partington Cadent AGI would run north west and is expected to be approximately 0.3 kilometres (0.2 miles).

The spur to Basell Polyolefins would run north for approximately 0.4 kilometres (0.2 miles) and connect adjacent to an existing metering house.

HAGIs

Along the eastern corridor we'll need two HAGIs:

- Partington HAGI – this would be located on a disused brownfield site, with extensive belts of trees to the south and east and an open industrial setting to the north
- Warburton HAGI – this would be located next to the existing Cadent Above Ground Installation (AGI)

The Partington and Warburton HAGIs will connect to existing Cadent Above Ground Installation facilities to enable potential blending of hydrogen into the existing gas network.

We would like your feedback on the potential HAGI sites we've identified along the eastern corridor.

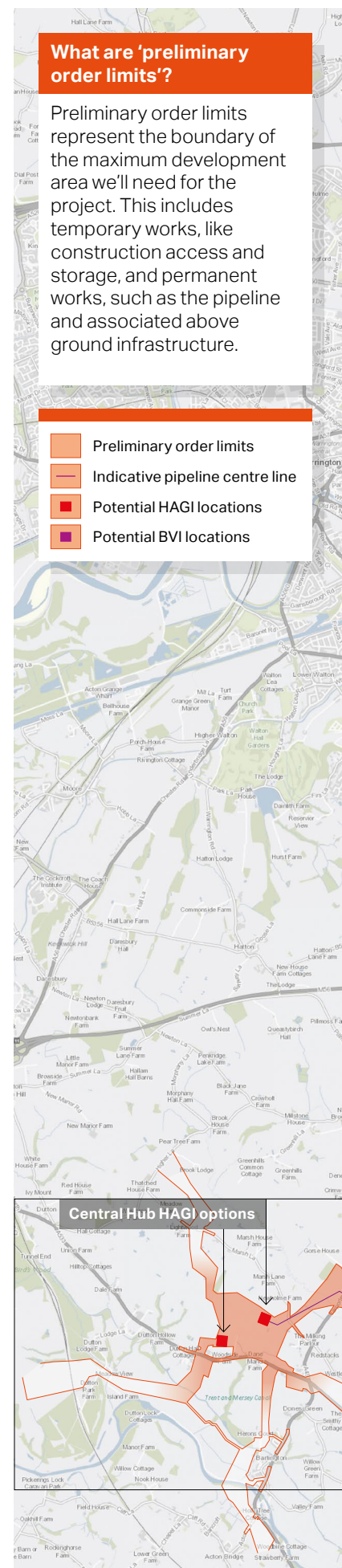
BVI options

We will need a BVI in this area and have currently identified three options for this. See pages 28-29 for more information.

What are 'preliminary order limits'?

Preliminary order limits represent the boundary of the maximum development area we'll need for the project. This includes temporary works, like construction access and storage, and permanent works, such as the pipeline and associated above ground infrastructure.

- Preliminary order limits
- Indicative pipeline centre line
- Potential HAGI locations
- Potential BVI locations



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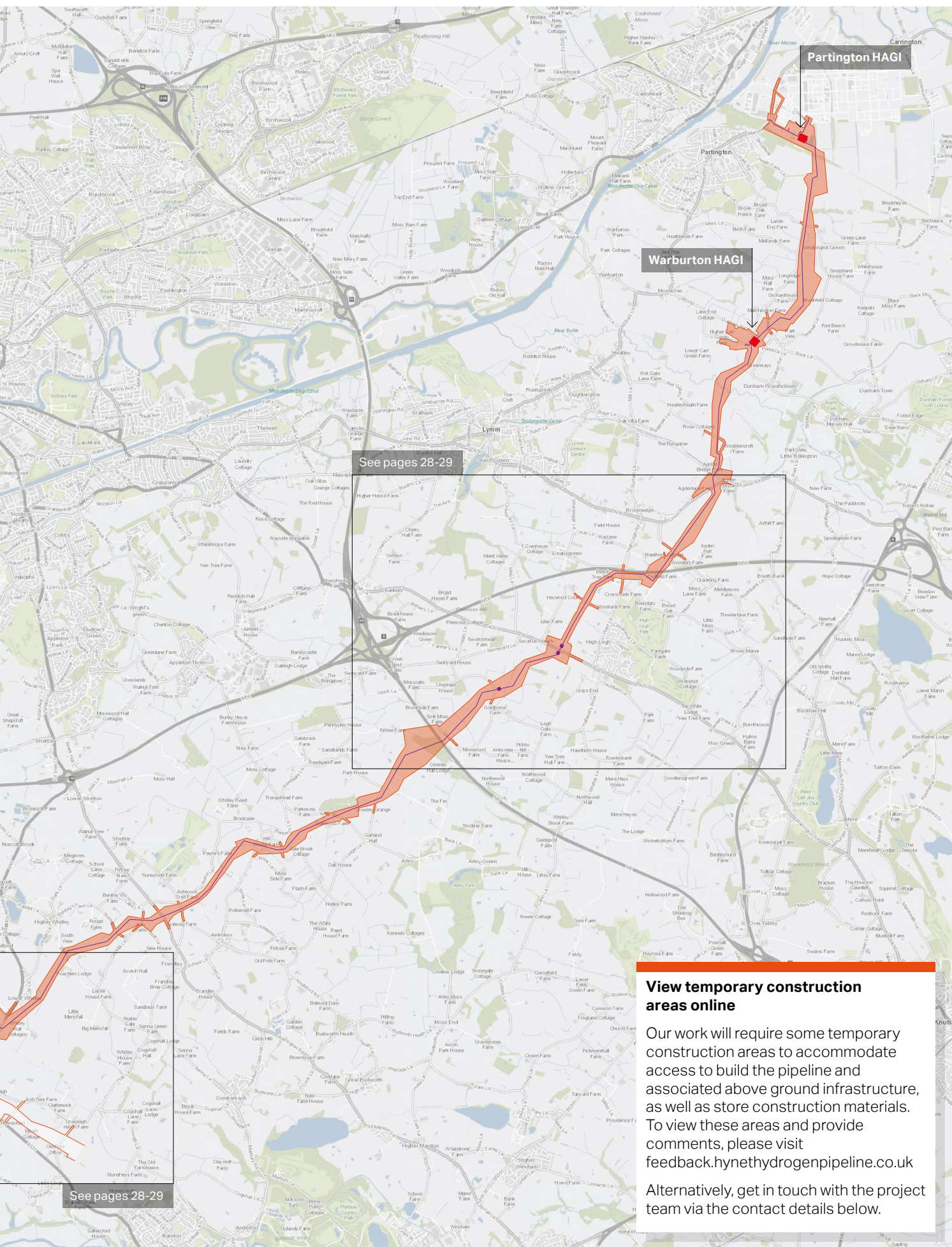
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Our proposals

East corridor: options in this area explained

Option	Description
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There are three options that we've identified for the Block Valve Installation we need in the east corridor. The first option (EBV1) is off Moss Lane, approximately 1.1km (0.7 miles) northeast of the M6 and is located in an agricultural field. The other two options (EBV2 and EBV3) are in agricultural fields approximately 30 metres southwest and northeast respectively of the A50 (Warrington Road).

EBV1	This BVI option would be located in an agricultural field with hedgerows at its edges. It is approximately 1.1 kilometres north east of the M6 and adjacent to Moss Lane.
EBV2	This BVI option would be located in agricultural fields south west of the nearby A50 (Warrington Road).
EBV3	This BVI option would be located in an agricultural field north east of the nearby A50 (Warrington Road).

Central Hub HAGI: options explained

Option	Description
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The Central Hub is the HAGI at the centre of our proposed pipeline. It will provide a connection and onward distribution point to customers along the south, east and north corridors.

We have identified two options for the Central Hub HAGI, which we would like your feedback on.

CHH1	This Central Hub HAGI option would be located in an agricultural field to the rear of Woodside Farm. This field is generally bound by hedgerows with some existing gaps.
CHH2	This Central Hub HAGI option would be located further north. It would be along an existing hardstanding track leading to an area currently used for storage. The adjacent field has hedgerows and some mature trees at its edges. CHH2 is set back a fair distance from existing public roads, decreasing its visibility.

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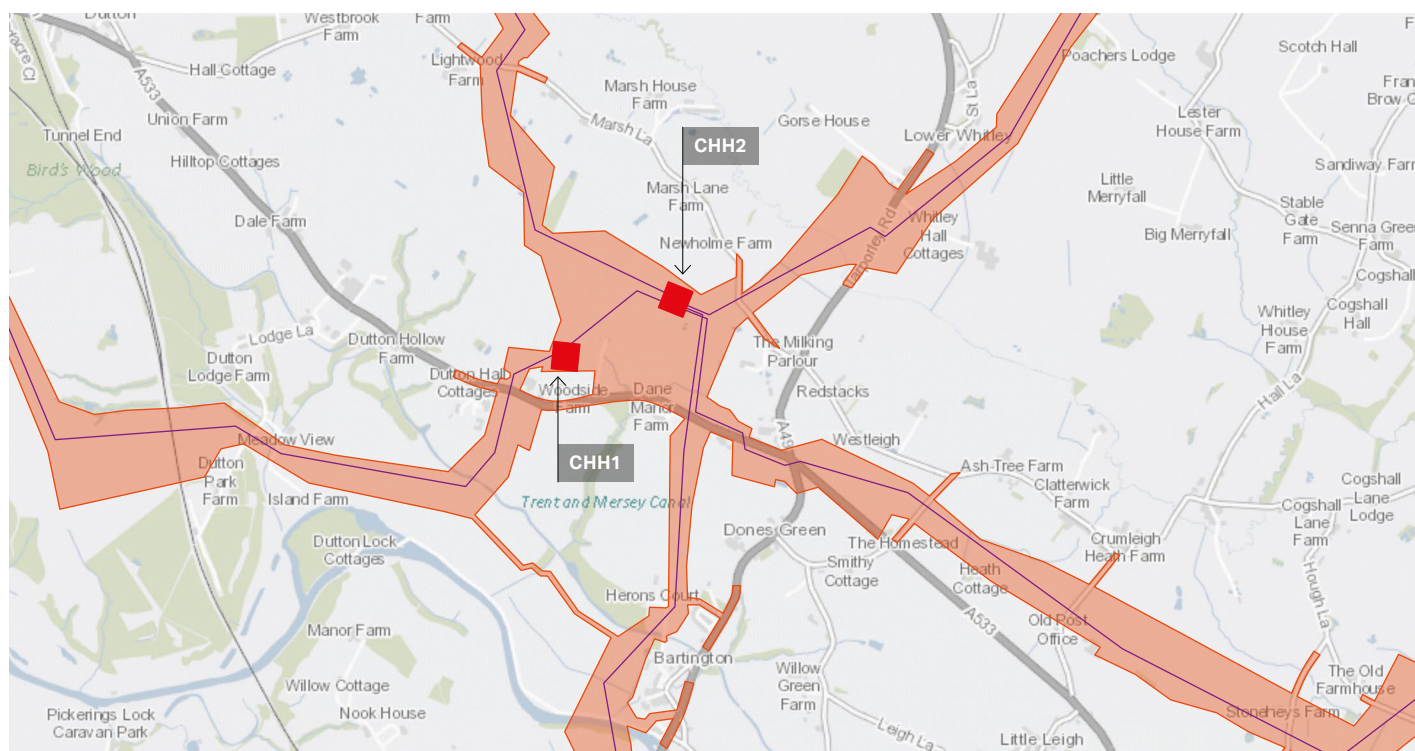
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Our proposals

South corridor: Central Hub to Hydrogen Storage Facility and the Northwich spur

At our first consultation earlier in 2022 we presented two options for the southern route: option A to the west of Northwich and option B to the east of Northwich. **We can now confirm that option A is the option we will be moving forward with.**

The preliminary order limits in the south corridor start at the Central Hub HAGI. From there the south corridor runs approximately 20.5 kilometres south to the Hydrogen Storage Facility.

This will store hydrogen at Inovyn's underground caverns to the south of Northwich. Hydrogen stored in these caverns will be transported to industrial customers.

To help minimise the impacts of our construction, we'll use trenchless techniques to cross:

- Roads – the A553, A49, A556, A533, A530
- Rail – the West Coast Main Line and West Coast Main Line (Vale Royal Island), the Mid Cheshire Line, Middlewich Branch Line
- Waterways – Trent and Mersey Canal, Weaver Navigation, River Dane,

We would like your feedback on our preliminary order limits in the south section, within which our pipeline will be routed, HAGIs sited and temporary construction areas located.

Options for the south corridor

In this area, there are some options for the pipeline route and the BVI. You can find out more about these options on pages 32-33.

We would like your feedback on the southern preliminary order limits route options we've provided.

The spur

The Northwich spur starts at the Central Hub HAGI and runs approximately 7 kilometres (4.3 miles) south east, including four major trenchless crossings, to connect to the following industrial customers:

- TATA Chemicals, Winnington

HAGIs

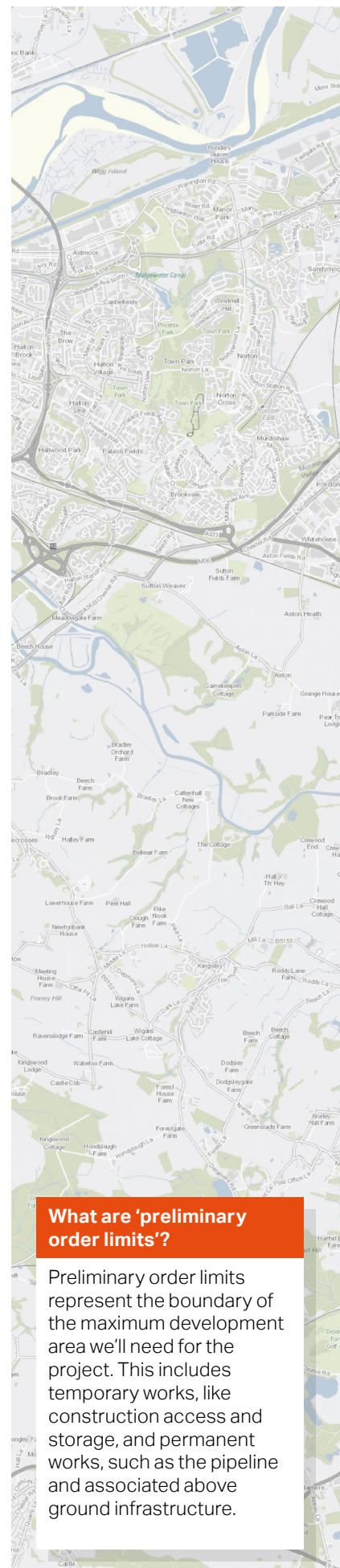
Along the southern corridor we'll need one HAGI:

- Hydrogen Storage Facility HAGI – this would be located approximately 250 metres east of the A530, in a field bounded by hedgerows and trees.

We would like your feedback on the route options and potential HAGI site we've identified along the southern corridor.

BVI options

We will need a BVI in this area and have currently identified five options for this. See pages 32-33 for more information.



Find out more
and submit
feedback



Use the project website:
www.hynethydrogenpipeline.co.uk



Attend an in-person
or online event.
See page 36 for details



Send an email to: info@hynet-hydrogenpipeline.co.uk

View temporary construction areas online

Our work will require some temporary construction areas to accommodate access to build the pipeline and associated above ground infrastructure, as well as store construction materials. To view these areas and provide comments, please visit feedback.hynethydrogenpipeline.co.uk

Alternatively, get in touch with the project team via the contact details below.

Central Hub HAGI options

Northwich Spur

See pages 32-33

See pages 32-33

Hydrogen Storage Facility HAGI

Preliminary order limits

Indicative pipeline centre line

Potential HAGI locations

Potential BVI locations



Send written feedback to our freepost address: FREEPOST HYNETH



Ask any questions you might have by calling 0800 860 6261



Visit our website and read our Design Evolution Report

Our proposals

South corridor: options in this area explained

Option	Description
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In this area we've identified four options for the required trenchless crossings of the Weaver Navigation and West Coast Mainline, south of the trenchless crossing of the A556 (Chester Road) (SP1, SP2, SP3 and SP4).

SP1	SP1 would require individual trenchless crossings of the West Coast Mainline and an area of ancient woodland (Heys Wood).
SP2	SP2 would run south east to a long trenchless crossing of the Weaver Navigation and West Coast Mainline, near Vale Royal Locks.
SP3	SP3 would run along the eastern edge of the golf club at Vale Royal Park and an area with a number of Tree Preservation Orders. It would require a single trenchless crossing of the Weaver Navigation and West Coast Mainline. This would start south of Hulses Island as access between the two crossings would be challenging.
SP4	SP4 would also run along the eastern edge of the golf club at Vale Royal Park and an area with a number of Tree Preservation Orders. It would then run further south, crossing Mill Lane / Bradford Road and the belt of established deciduous broadleaved woodland using open cut construction. A trenchless crossing of the Weaver Navigation, near Bradford Road, and the West Coast Mainline, would be required. This option could also be completed as a larger single trenchless crossing of the Weaver Navigation and West Coast Mainline.

There are five options for the BVI we need in this area (SBV1, SBV2, SBV3, SBV4 and SBV5).

SBV1	This BVI option is located in fields to the north of the A556 (Chester Road).
SBV2	This BVI option is located in fields to the south of the A556 (Chester Road).
SBV3	This BVI option is located in a field to the east of Whitegate Lane. This option would only be possible if pipeline route option SP1 is preferred.
SBV4	This BVI option is located further south than SBV1 and SBV2, in a field to the west of Whitegate Lane. It is applicable to pipeline route options SP2, SP3 and SP4.
SBV5	This BVI option is located to the west of an established belt of trees at Jack Lane, after the pipeline route options SP1, SP2, SP3 and SP4 converge.

There are two options following the combined trenchless crossing of Marbury Road, Trent and Mersey Canal and Lift Lane (NSp1 and NSp2).

NSp1	NSp1 would run south to a trenchless crossing of the River Weaver. It would then follow open areas and tracks to, as far as possible, avoid impact on woodland through Anderton Nature Reserve and associated recreational areas.
NSp2	NSp2 would run south east and then south west to avoid existing ponds and areas of mature woodland.

**Find out more
and submit
feedback**



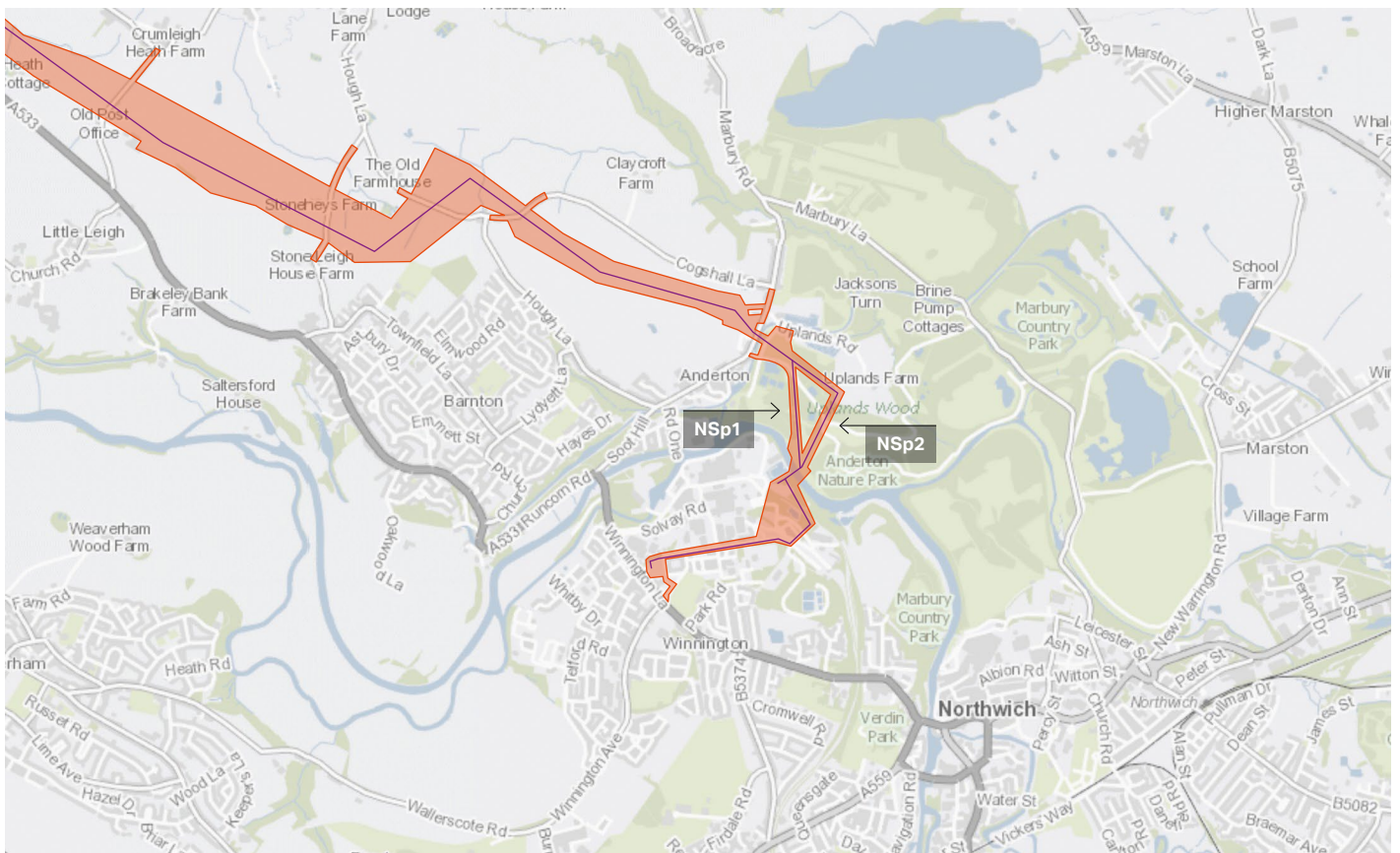
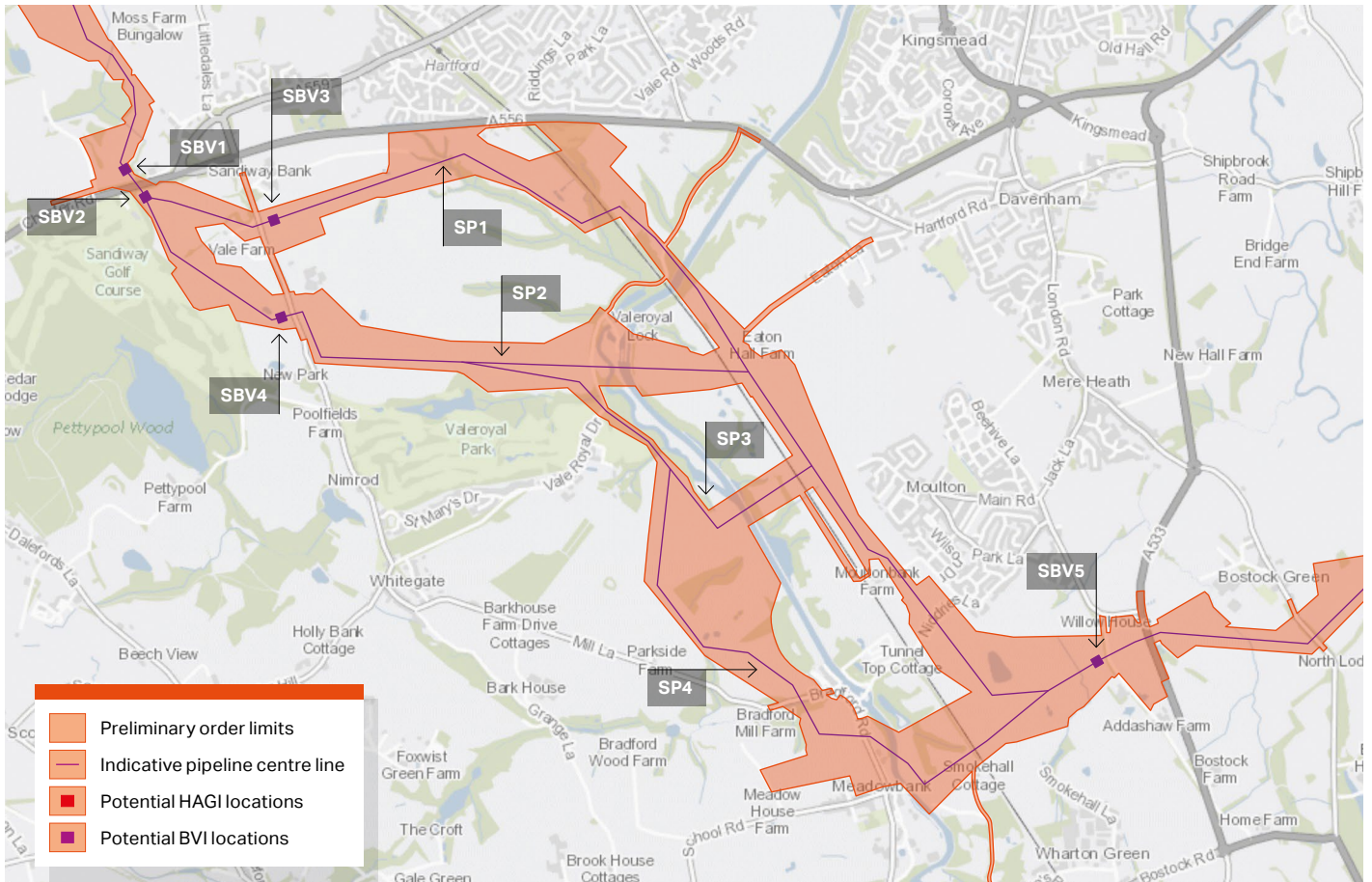
Use the project website:
www.hynethydrogenpipeline.co.uk



**Attend an in-person
or online event.**
See page 36 for details



Send an email to: info@hynethydrogenpipeline.co.uk



Send written feedback to our freepost address: FREEPOST HYNETH NWHP



Ask any questions you might have by calling 0800 860 6261



Visit our website and read our Design Evolution Report

Managing a hydrogen network

At our first consultation earlier in 2022 you told us you would like more information on how Cadent will ensure the safety of the HyNet North West Hydrogen Pipeline – both during construction and while in use.

Please be assured that people's safety is our first priority. We will consider all potential risks during the design, construction and operation of the new pipeline.

Cadent has a long history of safely managing the UK's existing natural gas network. Hydrogen will be used in a similar way to natural gas, which the wider gas sector has managed the safe delivery of for around 200 years.

Here are some of the ways safety of the pipeline will be ensured:

- The hydrogen pipeline will be designed, constructed and managed in line with the Pipeline Safety Regulations 1996 – the same regulations that govern natural gas. It will also be designed to the Institution of Gas Engineers and Managers (IGEM) design standard, specifically developed for hydrogen.

- As with existing gas networks, we're carrying out thorough safety assessments as part of the design process for the pipeline.
- The pipeline will be constructed by competent constructors and to a stringent quality management and control system
- The pipeline will be maintained through an effective Pipeline Integrity Management System. We will monitor any work that takes place in the vicinity of the pipeline. We will also work with landowners who would like to undertake activities near to the pipeline.

In the table below we've provided our answers to a selection of the most common questions relating to safety we received during our first consultation earlier in 2022.

Find out more

Read our *Non-Statutory Consultation Feedback Report* via the knowledge hub on our project website. This sets out in detail how we analysed feedback received during our first consultation, including feedback relating to safety considerations.

Your question	Our answer
A member of the public said they were concerned about the potential for increased fire risk and safety impacts of hydrogen. They were particularly concerned by the flammability of hydrogen. Another considered the fire risk of the project to be particularly high as hydrogen burns with an invisible flame. Members of the public were concerned by the effects on local areas due to a potential hydrogen leak.	The safety of the hydrogen pipeline is of the utmost importance to Cadent. The pipeline will be designed and built to standards specifically developed for hydrogen, which will help minimise any potential safety risks. The pipeline will be maintained through an effective Pipeline Integrity Management System. Where possible, the pipeline has been routed away from populated areas. It will be designed using heavier pipe to minimise any potential risk of leaks. Controls and instrumentation will be put in place to quickly alert us in case of an issue. There will also be remote controls to help manage any potential emergency procedures and a strict testing regime carried out before any hydrogen is introduced into the pipeline.
Members of the public raised concerns about the effects of hydrogen on steel causing a risk of leaks from pipes or seals. Another respondent was concerned that the safety risk of hydrogen leakage might be higher as it is difficult to odourise. They considered the safety risk to be higher than that of methane.	The pipeline materials and components will be tested and qualified for hydrogen service. The hydrogen gas will also be odourised in the same way as natural gas so that it can be recognised.

Have your say

Local people, including residents, local elected representatives and other stakeholders, have an important role to play throughout this consultation. We need your views and knowledge as we work to develop our final proposals for submission to the Planning Inspectorate and Secretary of State for Business, Energy and Industrial Strategy (BEIS).

Our second round of consultation will run from 12 September to 10 November 2022.

This is a statutory round of consultation meaning it's a required part of the government's planning process for Nationally Significant Infrastructure Projects, as per the Planning Act 2008.

We would like your feedback on the work we have done to identify the preliminary order limits, within which our pipeline will be routed, HAGIs sited and temporary construction areas located, as well as the decisions we've made. Your feedback on the proposals we have presented will be helpful as we begin to finalise our plans.

Please ensure you submit your feedback by **23:59, 10 November 2022**

All the feedback we receive will be recorded and carefully considered ahead of submitting the DCO application to the Planning Inspectorate and Secretary of State for BEIS.

Hard copy materials

Materials are digitally available on our project website. However, if you would prefer to view project materials in hard copy form then you can contact the project team or visit a number of information points across the project area.

Call **0800 860 6261** or email **info@hynethydrogenpipeline.co.uk** to contact the team, or visit the project website to see the locations where you can view hard copy materials.



You can take part and comment on our proposals by:



Using the project website
www.hynethhydrogenpipeline.co.uk



Send an email to
info@hynethhydrogenpipeline.co.uk



Send written feedback to the freepost address
FREEPOST HYNETH NWHP



Drop into one of our in-person events, discuss the project with us and pick up a hard copy feedback form to fill in.

See page 36 of this brochure or visit www.hynethhydrogenpipeline.co.uk/meet-the-team for more information



Ask any questions you might have by calling 0800 860 6261

Meet the team

You can find out more about Cadent's HyNet North West Hydrogen Pipeline at one of our consultation events.

These events are a great way to learn more about our proposals, meet the project team and ask any questions you may have about the project.

In-person consultation events are 'drop in' events, meaning you can stop by at any point to learn more and speak to the team. The details are as follows:

In-person consultation events		
The Milner Church Institute	Saturday 1 October 2022 10:00am to 3:00pm	Runcorn Road, Moore, Runcorn, Cheshire WA4 6TZ
Whitley Village Hall	Wednesday 12 October 2022 3:30pm to 7:30pm	Village Lane, Higher Whitley, Warrington WA4 4EJ
Frodsham Community Centre	Thursday 13 October 2022 10:00am to 1:00pm	Fluin Lane, Frodsham WA6 7QN
Fuse ROC Centre	Tuesday 18 October 2022 10:00am to 1:00pm	Warburton Lane, Partington, Manchester M31 4BU
Anderton Village Hall	Tuesday 18 October 2022 3:00pm to 7:00pm	New Road, Anderton, Northwich CW9 6AE
St Stephen's Church Hall	Wednesday 19 October 2022 10:00am to 1:00pm	Main Road, Moulton, Northwich, CW9 8PL
Warrington Football Club	Wednesday 19 October 2022 3:00pm to 7:00pm	Cantilever Park, Common Lane, Warrington, Cheshire WA4 2RS
Thatto Heath Library	Friday 28 October 2022 10:00am to 1:00pm	Thatto Heath Rd, St Helens WA10 3QX
High Legh Village Hall	Monday 31 October 2022 9:30am to 12:30pm	West Lane, High Legh, Knutsford, Cheshire WA16 6LR

Help

Should you experience any issues while trying to register to attend one of our online consultation events then please contact the project team by emailing **info@hynethydrogenpipeline.co.uk** or calling **0800 860 6261**.

Please also refer to the project website for any updates before attending in-person events.

The online events will be held on Zoom and include a presentation from the project team followed by a question and answer session.

Please scan the QR codes below or visit **www.hynethydrogenpipeline.co.uk/meet-the-team** to register your attendance for an online event.

Online events	
Online event 1 Tuesday 4 October 2022 6:00pm to 7:00pm	
Online event 2 Thursday 20 October 2022 6:00pm to 7:00pm	

Next steps

Once this consultation closes at 23:59 on 10 November 2022, we will carefully consider all the feedback we have received alongside carrying out further technical, engineering and environmental work. This is all with the aim of developing our final design for the HyNet North West Hydrogen Pipeline – the basis of our DCO application.

The final design will consist of our order limits, which will continue to include the pipeline centre line, HAGIs, BVIs, and areas to be used for construction and access. The order limits are likely to be narrower than those currently presented and we will have selected final HAGI and BVI locations. We will aim to remove any optionality around the order limits.

This stage of consultation is likely to be the last project-wide consultation on our proposals so it's really important you take this opportunity to have your say.

Once we have developed our final proposals we will submit an application for development consent to the Planning Inspectorate and Secretary of State for BEIS. We expect to submit our application in Spring 2023.

Our application will include:

- A consultation report summarising people's responses to this consultation and an explanation of how we have taken people's views into account.
- An environmental statement setting out the environmental considerations for the project and how we propose to mitigate them.

The Planning Inspectorate will examine our proposals and prepare a report for the Secretary of State for BEIS. BEIS will then make the final decisions on our application, which we expect mid to late 2024.

If our application is successful, we expect to begin construction in 2025 and for construction to take around two years to complete.

There will be further opportunities for people to get involved as part of a process led by the Planning Inspectorate following application submission.

You can find out more about this process by visiting: <https://infrastructure.planninginspectorate.gov.uk/application-process/>.

Current project timeline



Please note that this is an indicative timeline and could be subject to change.

Contact us

To submit feedback, ask questions and find out more, get in touch with the project team via the contact details below:



Email: info@hynethydrogenpipeline.co.uk



Write to us: FREEPOST HYPNET NWHP



Register to stay informed:

www.hynethydrogenpipeline.co.uk/keep-in-touch



Call: 0800 8606 261