



HyNet North West Hydrogen Pipeline

Preliminary Environmental Information Report (PEIR) Non-Technical Summary

HyNet North West
Hydrogen Pipeline

Delivering clean growth

September 2022

Cadent
Your Gas Network

Glossary

Term	Description
Applicant	Cadent Gas Ltd
ASCV	Area of Special County Value
Associated Development	Development which is associated with the principal development (i.e. the pipeline)
AQMA	Air Quality Management Area
Block Valve	Block Valves are above ground installations required where the length of a pipeline is such that a valve/break is required for maintenance or pipeline isolation purposes
Blue hydrogen	Hydrogen produced from natural gas and supported by carbon capture and storage. The CO ₂ generated during the manufacturing process is captured and stored permanently underground. The result is low-carbon hydrogen that produces no CO ₂
Carbon dioxide	CO ₂
CCS	Carbon Capture and Storage
DCO	Development Consent Order
EIA	Environmental Impact Assessment
EIA Regulations	The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (as amended)
Environmental Statement (ES)	A document produced in accordance with the EIA Regulations in which the process and results of an EIA are documented
GHG	Greenhouse gas
HAGI	Hydrogen Above Ground Installation
HGV	Heavy Goods Vehicle
HPP	Hydrogen Production Plant
HSF	Hydrogen Storage Facility
LVIA	Landscape and Visual Impact Assessment
NCN	National Cycle Network

Term	Description
NSIP	Nationally Significant Infrastructure Project
NTS	Non-Technical Summary
PEIR	Preliminary Environmental Information
(the) Project	HyNet North West Hydrogen Pipeline Project
PRoW	Public Rights of Way
Ramsar	Ramsar sites are designated under the International Convention on Wetlands of International Importance especially as Waterfowl Habitat (the Ramsar Convention)
SNCB	Statutory Nature Conservation Body
Special Protection Area (SPA)	Sites designated to protect habitats of migratory birds and certain threatened birds under the Birds Directive
Stage One Consultation	Non-statutory consultation carried out by Cadent on the emerging plans and preferred route corridors for the Project
Stage Two Consultation	Statutory consultation on the proposed application carried out in accordance with the requirements of the Planning Act

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1. Introduction

1.1 Overview

- 1.1.1 This document is a Non-Technical Summary (NTS) of the more detailed Preliminary Environmental Information Report (PEIR), which is the information gathered to date to support the Environmental Impact Assessment (EIA) process for the HyNet North West Hydrogen Pipeline Project ('the Project').
- 1.1.2 The Project is proposed by Cadent Gas Ltd (the Applicant) (known as Cadent onwards) to construct and operate the UK's first 100 percent hydrogen pipeline network at scale. It will deliver hydrogen – a low carbon energy source – to multiple industrial users and power generators, plus potential blending points to accommodate the use of a mix of hydrogen and natural gas into the existing gas network. The Project is part of the wider 'HyNet North West' programme that will produce, store and distribute hydrogen as well as capture and store carbon from industry in the North West of England and North Wales.
- 1.1.3 The Project includes the construction, operation and maintenance of up to 125km of new pipeline to distribute hydrogen to industry and for blending with the gas network in the North West, and a number of Hydrogen Above Ground Installations (HAGIs) required to control the flow and pressure of hydrogen at key points along the proposed pipeline. **Table 1.1** provides a summary of the contents of this NTS.

Table 1.1 What's included in the NTS

Chapter	What is it about?
1. Introduction	This section provides a brief introduction to the Project, the Applicant, and the process of obtaining consent.
2. Pipeline route selection and alternatives	This section provides an overview of the work undertaken to select a route for the Pipeline and alternatives considered for some aspects of the Project infrastructure.
3. What is being proposed?	This section provides a description of the Project and location.
4. Preliminary environmental information report	This section provides an overview of the approach to the PEIR and environmental assessment.
5. Preliminary environmental assessment	This section provides the results of the preliminary environmental assessment each environmental topic scoped into the assessment.

Chapter	What is it about?
6. Looking forward	This section outlines the next stages of the environmental assessment process.

1.2 The Project

1.2.1 The proposed key components of the Project are summarised in **Table 1.2** below and described in further detail in **Section 3**.

Table 1.2 Key Project components

Pipeline Corridor	Key components
West Corridor	<ul style="list-style-type: none"> Hydrogen pipeline from Stanlow Hydrogen Production Plant (HPP) to Central Hub Hydrogen HAGI, incorporating Rocksavage HAGI. Pipeline spurs to customers at Intergen, Rocksavage; and The Heath Industrial and Business Park via Runcorn HAGI.
North Corridor	<ul style="list-style-type: none"> Hydrogen pipeline from Central Hub HAGI to St Helens HAGI, incorporating HAGIs at Higher Walton and Clock Face. Pipeline spurs to customers at Solvay, Warrington and Ingevity, Warrington; Novelis, Warrington; NGF Europe Ltd., Clock Face; NSG Pilkington Greengate Works, St Helens; and Glass Futures, St Helens.
East Corridor	<ul style="list-style-type: none"> Hydrogen pipeline from Central Hub HAGI to Partington HAGI, incorporating a HAGI at Warburton and Block Valve near Sworton Heath. Pipeline spurs to Cadent AGI, Warbuton; and customers at SAICA, Partington; Partington Cadent AGI; Basell Polyolefins, Partington and Carrington Power Station, Carrington.
South Corridor	<ul style="list-style-type: none"> Hydrogen pipeline from Central Hub HAGI to Hydrogen Storage Facility at salt caverns located north of Middlewich. A Block Valve. Pipeline spur to Tata Chemicals, Winnington.

1.3 Who is Cadent?

1.3.1 Cadent Gas Ltd (the Applicant) owns, operates, and maintains the gas distribution network serving 11 million homes and businesses throughout the North West, West Midlands, East Midlands, South Yorkshire, East of England and North London. Cadent does not produce gas and does not own the gas that flows through its pipes. It is solely responsible for its transportation and distribution.

1.4 Why is the Project needed?

1.4.1 The UK Government has set legally binding net-zero carbon dioxide (CO₂) emissions targets in response to the global climate emergency. This means that by 2050, any CO₂ emissions to the atmosphere must be offset by equivalent emissions removal.

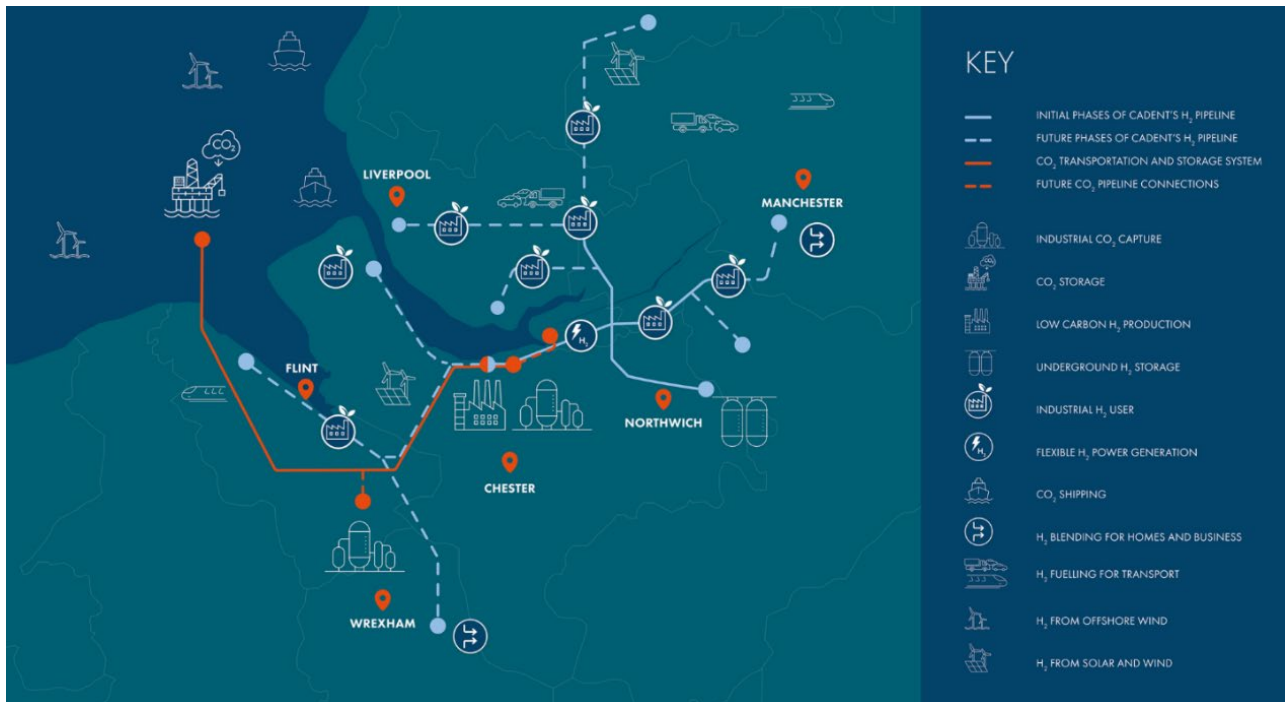
1.4.2 Hydrogen is a low-carbon energy source, and the 'HyNet North West' programme will produce, store and distribute hydrogen as well as capture and store carbon from industry in the North West of England and North Wales. The HyNet North West programme will enable a fuel transition to hydrogen, with the potential to reduce carbon dioxide emissions by millions of tonnes every year by 2030. The elements of the wider HyNet North West programme include:

- Production of 'blue' hydrogen by Vertex Hydrogen at the Hydrogen Production Plant (HPP) (located at Stanlow);
- Development of Carbon Capture and Storage (CCS) infrastructure for capture, transport and storage of carbon dioxide from the HPP by Liverpool Bay CCS Ltd;
- Development of a Hydrogen Storage Facility (HSF) by Inovyn at underground storage caverns in Cheshire to allow for fluctuations in demand.

It should be noted that other sources of hydrogen are currently being considered.

1.4.3 **Figure NTS1.1** illustrates the pipeline element of the Project in the context of the wider HyNet North West programme.

Figure NTS1.1 Illustration of the wider HyNet North West programme (Source: About HyNet - HyNet North West)



Note: the figure above is an illustrative representation of the wider HyNet North West programme only.

1.4.4 The Project is an integral part of the wider HyNet North West programme and the associated removal of emissions. The Project proposes the construction and operation of the UK's first 100 percent hydrogen pipeline network at scale with up to 125km of new pipeline, delivering hydrogen to industrial users and power generators, and also to blending points so that hydrogen can be introduced into the existing gas network.

1.5 The consenting process

1.5.1 Cadent is a gas transporter for the purposes of the Planning Act 2008. The Project would be defined as a Nationally Significant Infrastructure Project (NSIP) under Part 14(1)(f) ('the construction of a pipe-line by a gas transporter') of the Planning Act 20082 (as amended) if it blended gas into the existing gas network. However, given ongoing regulatory assessment of blending into the gas network Cadent has obtained a section 35 direction dated 05 July 2022 from the Secretary of State for Business, Energy and Industrial Strategy confirming that the Project (save for the pipeline spurs) is of national significance and is to be treated as development for which development consent is required.

1.5.2 The Applicant intends to submit an application for an order granting development consent for the Project pursuant to the Planning Act 2008; this application is likely to include the pipeline spurs as associated development. The application will comprise details of all development proposals and will be accompanied by an Environmental Statement (ES) conforming to the Infrastructure Planning

(Environmental Impact Assessment) Regulations 2017 (as amended) ('the EIA Regulations').

1.5.3

Before applying for a Development Consent Order (DCO), an applicant must consult interested parties on its preliminary assessment of likely environmental impacts (the PEIR). The PEIR allows an informed view to be made of the Project's likely significant effects identified to date, to support consultation. The PEIR has regard to the preliminary stage in the design process and has taken into account the currently-known complexities of the Project and the receiving environment.

2. Pipeline route selection and alternatives

2.1 Introduction

2.1.1 Cadent considered a number of alternatives to the design of the Project, including the route of the pipeline and the location of above ground infrastructure. The final design of the Project remains under consideration and will be influenced by the comments received during the Stage Two Statutory Consultation.

2.1.2 A summary of the alternatives considered to date and the reasons for the selections made are set out below. Further information on the alternatives considered can be found in **Chapter 2: The Project** of the PEIR.

2.2 Pipeline route options

2.2.1 The end points of the pipeline routes, including the HPP at the Stanlow Refinery, the HSF, Carrington Power Station, the blending points and industrial operations in St Helens are fixed, and therefore potential route options between these locations were developed.

2.2.2 Consideration was given to the likely length of the pipeline, potential for major crossings, proximity to settlements, planning policy and environmental constraints when developing route options.

2.2.3 Four Strategic Options were initially identified, and Strategic Option A was selected because it avoided crossing the Mersey Estuary, which is designated on an international basis for nature conservation and avoided the need for a further hub.

2.2.4 Route corridors were then identified within Strategic Option A, including two options in the West Corridor and two in the South Corridor. Options for route corridors were also identified for the Runcorn/Rocksavage Spur and the Northwich Spur. The preferred route corridors were presented at the Stage One Consultation.

2.2.5 A preliminary route alignment, as described in **Chapter 3** of this NTS, was developed, taking into account the comments received during the Stage One Consultation and ongoing engineering/environmental work.

2.3 Hydrogen Above Ground Installations (HAGI)

2.3.1 Search areas for HAGIs were identified within the preferred route corridors. The locations were influenced by where the connections are required and sought to avoid important environmental designations and constraints where possible. A number of options were considered within the HAGI search areas. The preferred options selected, took account of specific environmental factors and feedback received during the Stage One Consultation.

2.3.2 The location of the HAGIs at Rocksavage, Higher Walton and the Central Hub have yet to be finalised with location option described within the PEIR.

2.4 Block Valves

2.4.1 Options for the location of Block Valves have also been considered. There are three location options in the East Corridor and five in the South Corridor. The preferred locations of the Block Valves have not yet been selected, so all of these options are assessed in the PEIR.

2.5 Refining the project design

2.5.1 The feedback received during the Stage Two Statutory Consultation will help to influence which of the remaining design options will be selected to include in the final DCO application. The selection process will also take account of the results of the environmental assessment and the ongoing engineering design work.

3. What is being proposed?

3.1 Key components of the Project

3.1.1 The key components of the Project include:

- Construction, operation and maintenance of up to 125km of new pipelines to distribute hydrogen to industry and power stations and opportunities for blending with the existing natural gas network in the North West;
- Four main Pipeline Corridors connected at a Central Hub;
- Ten HHAGIs along the pipeline to control the flow and pressure of hydrogen at key points along the proposed pipeline;
- Two Block Valves along the pipeline; and
- Smaller pipelines known as spurs branching off each pipeline corridor, to connect identified customers for the hydrogen.

3.1.2 The key components of the Project are shown in **Figure NTS3.1** and are summarised in the following sections.

3.1.3 At this stage, some options remain in relation to the route of the pipeline in the corridors, and the location of the HAGIs and Block Valves. Further work will be carried out to review these options as part of the ongoing design, assessment and consultation process and the final design will be presented in the DCO application and assessed in the accompanying ES.

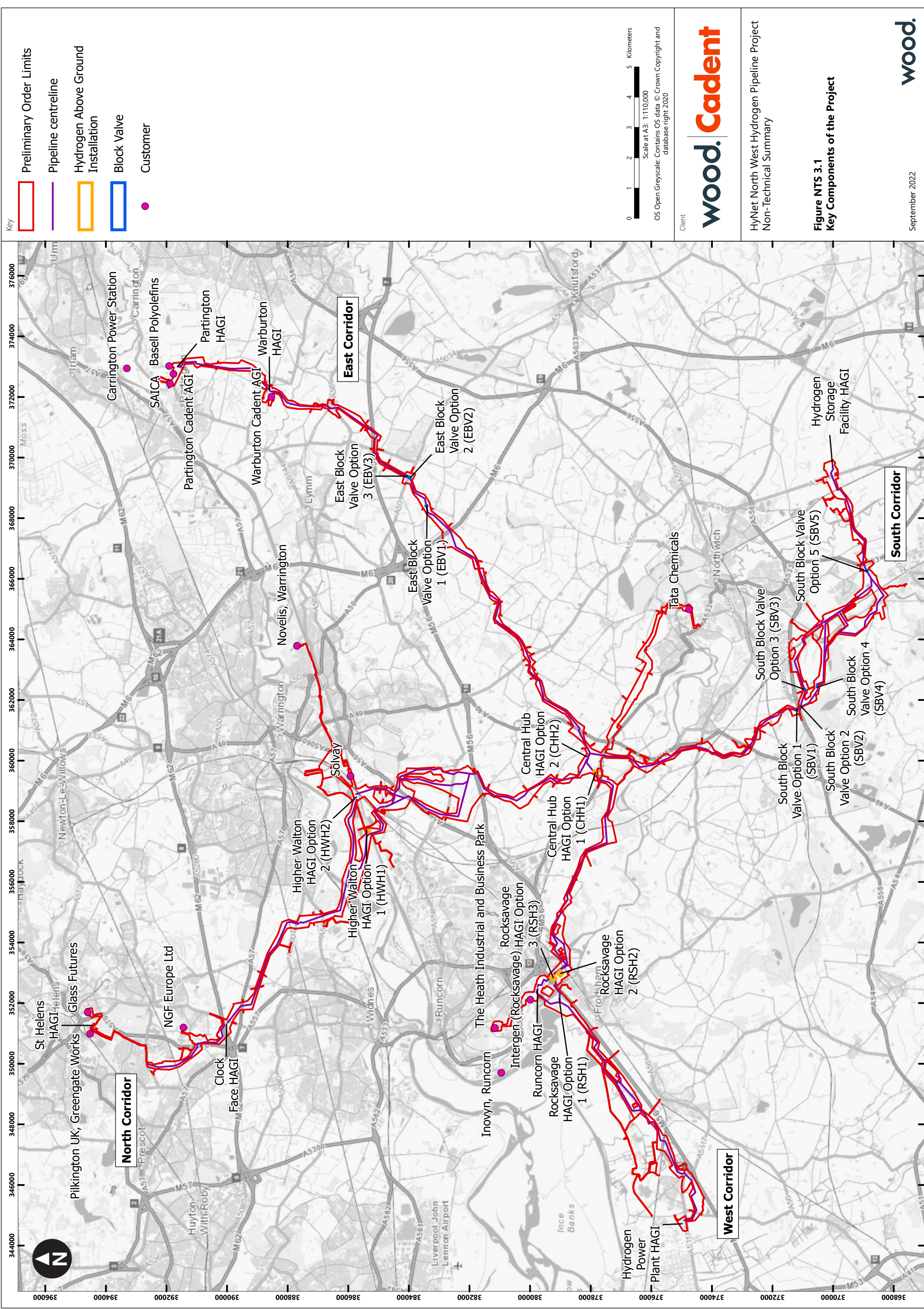
Pipeline Corridors

3.1.4 The Project has four Pipeline Corridors (West, North, East and South) each connecting to the Central Hub HAGI. The four corridors are illustrated in **Figure NTS3.1**.

3.1.5 The pipeline would be buried along the entire route apart from short sections within secure compounds at locations where HAGIs and Block Valves are required.

3.1.6 The pipes that make up the network would vary in diameter between approximately 8" and 42" dependent on which corridor or spur they are on. The pressure of the pipeline is independent on its size. Two main types of pipe are expected to be used, of carbon steel and polyethylene.

3.1.7 The majority of the pipeline would be placed in open cut trenches, but at key locations such as major roads and rivers, the pipeline would be installed using trenchless techniques. The construction techniques are described further in **Section 3.2**.



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West Corridor

- 3.1.8 The West Corridor would start at the HPP HAGI at Stanlow and run approximately 9.7km northeast to the Rocksavage HAGI and then approximately 9.7km southeast to the Central Hub HAGI.
- 3.1.9 The West Corridor is typically characterised by open fields with hedgerows and tree lines separating them. The pipeline would be between approximately 1.5km and 2km from the Mersey Estuary Special Protection Area (SPA) and Ramsar at the nearest point.
- 3.1.10 The pipeline would be High Pressure and the diameter is anticipated to be 42". It is anticipated that eleven trenchless crossings would be required in the West Corridor.
- 3.1.11 At this stage there are two pipeline route options around the Hover Force Outdoor Activity Centre and there are two further pipeline route options southeast of the Rocksavage HAGI.

North Corridor

- 3.1.12 The North Corridor would start at the Central Hub HAGI and run approximately 9.2km north to the Higher Walton HAGI and then approximately 9.7km northwest to the Clock Face HAGI. The corridor continues broadly north for 6.4km to the St Helens HAGI.
- 3.1.13 The North Corridor is typically characterised by open fields with hedgerows and tree lines separating them before Sutton Heath where the route is more typically adjacent to residential areas and proceeds to the more industrial setting around Ravenhead.
- 3.1.14 The pipeline would be High Pressure from the Central Hub HAGI to the Higher Walton HAGI and Clock Face HAGI. The pipeline would then be an Intermediate Pressure pipeline from the Clock Face HAGI to the St Helens HAGI. The Pipeline would be High Pressure and the diameter is expected to be between 10" and 18". It is anticipated that fourteen trenchless crossings would be required in the North Corridor.
- 3.1.15 There are three pipeline route options at the Creamfields site, and there are two pipeline route options at Higher Walton.

East Corridor

- 3.1.16 The East Corridor would start at the Central Hub HAGI with the pipeline running approximately 18km northeast to the Warburton HAGI. The pipeline would then continue northeast for approximately 3.7km to the Partington HAGI.
- 3.1.17 The East Corridor is typically characterised by open fields with hedgerows and tree lines separating them.
- 3.1.18 The pipeline diameter is expected to be 30" and High Pressure. The East Corridor is expected to include six trenchless crossings. There are no trenchless crossings planned between the Warburton and Partington HAGIs.

South Corridor

- 3.1.19 The South Corridor would start at the Central Hub HAGI with the pipeline running approximately 17.9km south to an HSF. The HSF and associated infrastructure are subject to a separate consent application by Inovyn. It has previously received consent for natural gas storage.
- 3.1.20 The South Corridor is typically characterised by open fields with hedgerows and tree lines separating them, with more built-up areas located to the east (Weaverham, Northwich) and south (Winsford).
- 3.1.21 The pipeline is expected to be High Pressure and 42" in diameter. The South Corridor is anticipated to include fourteen trenchless crossings.
- 3.1.22 South of the trenchless crossing of the A556 (Chester Road), there are four pipeline route options for the required trenchless crossings of the Weaver Navigation and the West Coast Mainline.

Spurs

- 3.1.23 Spurs are smaller pipelines branching off the four Pipeline Corridors providing connections from the pipeline network to customers. The proposed spurs are described below.

Runcorn/Rocksavage Spur

- 3.1.24 The Runcorn/Rocksavage spur would start at the Rocksavage HAGI and run north to the Runcorn HAGI. From the Runcorn HAGI there would be two spurs routed broadly northwest to connect the following customers:
- Intergen (Rocksavage); and
 - The Heath Industrial Business Park.
- 3.1.25 The Rocksavage HAGI to Runcorn HAGI spur would include 1.3km of 24" diameter pipeline and two trenchless crossings. There would be an approximately 0.4km 24" High Pressure spurline from Runcorn HAGI to Intergen (Rocksavage), with no major crossings required. There would be a Medium Pressure spurline from Runcorn HAGI to the Heath Industrial and Business Park of 2km.
- 3.1.26 There are two pipeline route options for the crossing of the River Weaver and River Weaver Navigation that are required between the Rocksavage and Runcorn HAGIs.

Warrington Spurs

- 3.1.27 The Warrington spurs would be approximately 6km in length. They would start at the Higher Walton HAGI and run northeast. A High Pressure 8" spurline would provide connection to the following customers:
- Solvay, Warrington (shared single connection with Ingevity); and
 - Ingevity, Warrington (shared single connection with Solvay).

3.1.28 A second spurline of 10" diameter Medium Pressure pipeline would run towards the railway with two options, prior to connecting to Novelis, Warrington.

3.1.29 There are two options for the connection to Novelis, and there would be up to four trenchless crossings.

Clock Face Spur

3.1.30 The Clock Face spur would start at the Clock Face HAGI and run approximately 4.8km northeast to connect to NGF Europe Ltd.

3.1.31 This Medium Pressure spur would be 8" diameter. There would be one trenchless crossing.

St Helens Spurs

3.1.32 The St Helens spurs would start at the St Helens HAGI and connect to the following customers:

- Pilkington UK's Greengate Works; and
- Glass Futures.

3.1.33 The spurline to Pilkington UK's Greengate Works would run approximately 0.25km north-west from the St Helens HAGI. The Intermediate Pressure spur would be 8" diameter.

3.1.34 The spurline to Glass Futures would run 0.85km southwest from St Helens HAGI, then turn north with one anticipated trenchless crossing of the A570. The Medium Pressure spur would be 8" diameter.

Warburton Spur

3.1.35 The Warburton spur would start at the Warburton HAGI and run approximately 0.2km west to connect to the existing Cadent AGI to facilitate Hydrogen Injection Blending of the hydrogen supply into the wider gas supply.

3.1.36 This spur is expected to be 12" diameter. No trenchless crossings are anticipated.

Partington Spurs

3.1.37 The Partington spurs would start at the Partington HAGI and would connect to the following customers:

- SAICA, Partington;
- Partington Cadent AGI; and
- Basell Polyolefins.

3.1.38 The spurline to SAICA would run 6km northwest from the Partington HAGI. It is expected to require a single trenchless crossing of the A6144. The High Pressure Spur would be 8" diameter.

3.1.39 The spurline to the existing Cadent AGI at Partington would run 0.3km northwest from the Partington HAGI. The High Pressure spurline would be up to 18"

diameter. This spur would facilitate Hydrogen Injection Blending of the hydrogen supply into the wider gas supply.

3.1.40 The spurline from the Partington Spur would run approximately 0.4km north to Basell Polyolefins. The High Pressure spurline is expected to be up to 18" diameter.

3.1.41 Carrington Power station will connect to Partington HAGI.

Northwich Spur

3.1.42 The Northwich spur starts at the Central Hub HAGI and runs to the south-east to connect to TATA Chemicals, Winnington.

3.1.43 This Intermediate Pressure spur would include approximately 8km and of 16" diameter and include four trenchless crossings.

3.1.44 There are two options for the spurlines following the combined trenchless crossing of Marbury Road, Trend and Mersey Canal and Lift Lane.

HAGIs

3.1.45 HAGIs would be located at certain points along the pipeline route. HAGIs are required to:

- Control the flow and pressure of hydrogen;
- Provide connections to the network producers, customers and storage; and
- To be able to monitor, operate and maintain and inspect the network during operation.

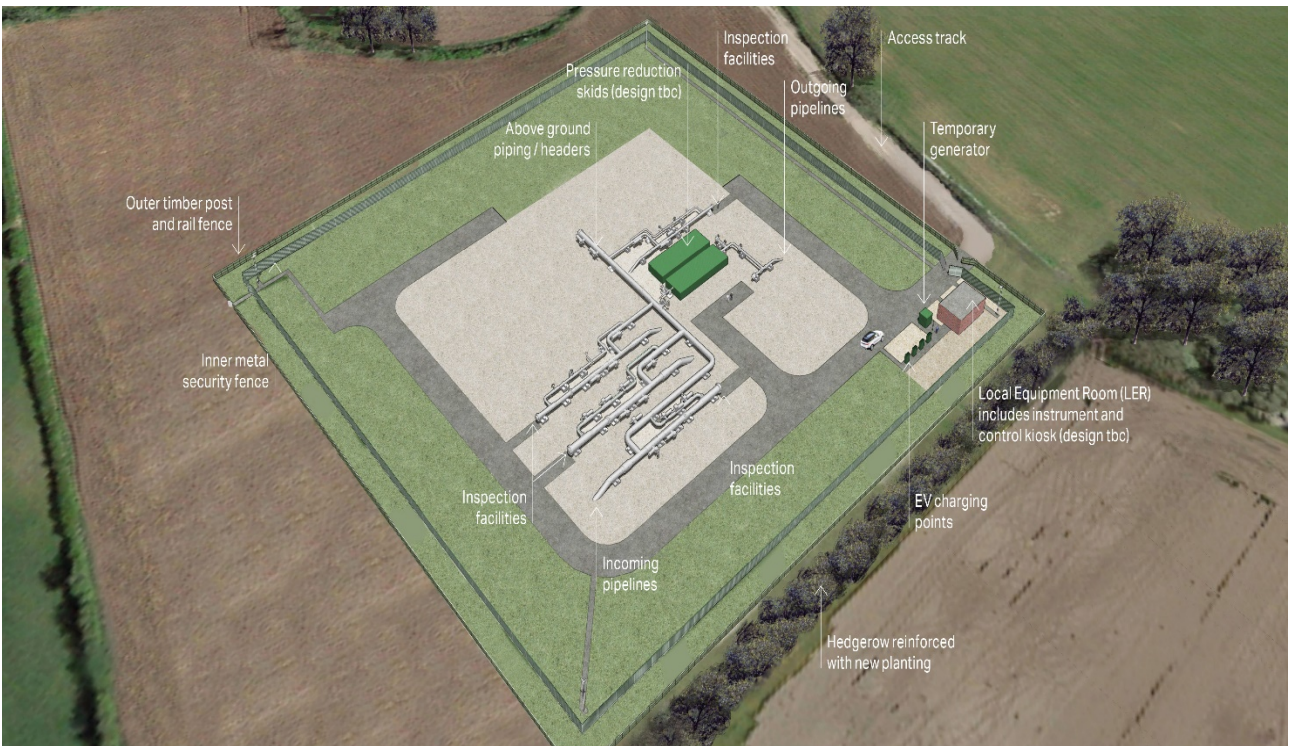
3.1.46 HAGI sites would include a range of permanent above ground components. This infrastructure would typically be approximately up to 3m in height, subject to final design. Other features include security fencing (typically 2.4 – 3.6m in height), general telecommunications equipment, lighting, parking and access tracks off the highway. The HAGIs will require connection to the local electrical distribution and telecommunication systems. Alternative sources of power including use of renewables are currently under consideration. The HAGI sites would range in area from 0.5 – 1.5 hectares.

3.1.47 A photo of an example above ground installation as part of the existing gas network is shown in **Figure NTS3.2** with typical above ground components shown in **Figure NTS3.3**.

Figure NTS3.2 Photo of existing Above Ground Installation that is indicative of a HAGI



Figure NTS3.3 Indicative visualisation of equipment at a HAGI



3.1.48 Ten HAGIs are proposed within the Corridors, and some of these have options for the final location of the HAGI:

- HPP HAGI¹;
- Rocksavage HAGI (three options);
- Runcorn HAGI;
- Central Hub HAGI (two options);
- Higher Walton HAGI (two options);
- Clock Face HAGI;
- St Helens HAGI;
- Warburton HAGI;
- Partington HAGI; and
- HSF HAGI.

3.1.49 The proposed location of these HAGIs is shown on **Figure NTS3.1**.

3.1.50 A description of the infrastructure included in the HAGI sites is provided below.

Pressure Reduction Units

3.1.51 Pressure Reduction Units consist of above ground components including pipework and would control the flow or pressure into the network.

3.1.52 The above ground pipework, metering and facilities would vary in diameter with the maximum piping sizes approximately the same diameter as the adjacent buried pipeline, but many of the associated pipes would be much smaller.

Metering facilities

3.1.53 Metering facilities consist of above ground pipework and components and would be required to take volume measurements of the hydrogen gas flow. Metering facilities would only be required at the HPP and HSF HAGIs.

3.1.54 The metering facilities would be installed on a 15m length of pipeline above ground, measuring approximately 4m in width and up to 2.5m in height.

Inspection facilities

3.1.55 Inspection facilities support the future inspection of the pipeline network and work by passing an In-line Inspection Tool through the pipeline. The inspection facilities include above ground pipework and operating equipment including valves.

¹ Note that the HPP itself does not form part of this DCO Project (a separate permission is being sought by another applicant/developer).

Instrumentation and Control Kiosks

- 3.1.56 Instrumentation and Control Kiosks would house the equipment that monitors the pipeline performance including the flow, pressure and temperature. These kiosks would be approximately 2.4m in height.

Block Valves

- 3.1.57 Block Valves sites are separated facilities to the HAGIs and would be housed in a compound less than 0.5ha in size, with fencing approximately 2.4m high, an access track, facilities for turning vehicles. and an access gate. Access would be required for maintenance vehicles. The main valve would be located in-line with the buried pipeline and some ancillary valves and pipework will be above ground. The valve actuator would be approximately 1.5m above ground. The sites would also have an Instrumentation and Control Kiosk (see description above).
- 3.1.58 Two Block Valves are anticipated as part of the Project. One would be located between the Central Hub HAGI and the Warburton HAGI in the East Corridor. Three options are under consideration for the location of this Block Valve.
- 3.1.59 The second Block Value would be located in the South Corridor. Five options are under consideration for the location of this Block Valve.

Cathodic Protection

- 3.1.60 A Cathodic Protection system would be required as part of the pipeline system. This protects the pipeline from corrosion by imposing a small electrical current, which stops the process of corrosion. Equipment to produce and control this electrical current would be placed at strategic locations around the network. These would typically be included at the HAGI sites but they could also be installed on the street within a typical telecommunications cabinet.
- 3.1.61 Cathodic Protection monitoring points would be installed at regular intervals along the pipeline (approximately every 1 - 2km). These are housed within Marker Posts typically at selected road or footpath crossings and do not require any other above ground infrastructure such as a compound or kiosk.

Marker Posts

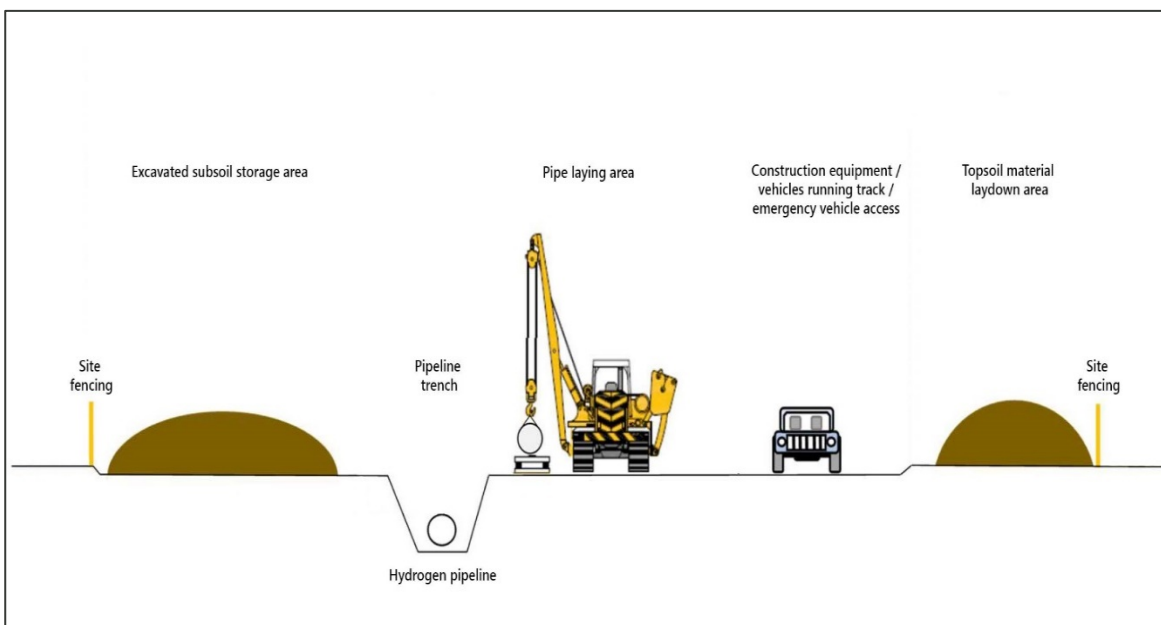
- 3.1.62 Marker Posts would be required at crossings and field boundaries. These are small posts typically made of plastic and approximately 1m high. Aerial markers would also be required to assist in ease of route identification during aerial surveys of the pipeline. These are typically made of plastic and approximately 2m high.

3.2 Construction

- 3.2.1 This section provides an overview of the construction process for the Project.
- 3.2.2 Site preparation works would include the installation of site fencing, Public Rights of Way crossing points, access track creation, site clearance and minor earthworks.

- 3.2.3 The pipeline would predominantly be constructed using an open cut installation technique which involves the excavation of a trench and the installation of the pipeline in the trench. Some trenchless construction would be required where the pipeline crosses features such as rivers and major roads. The key parts to the installation include trench excavation, de-watering (if required), testing and commissioning.
- 3.2.4 The working width of construction along the pipeline will vary along the route depending on the constraints, the diameter of the pipeline being installed, and the method of installation. **Figure NTS3.4** presents a cross-section of a typical layout of working width for pipe laying.

Figure NTS3.4 Typical layout of working width for pipe laying



- 3.2.5 Following the installation of the pipeline, the working area would be reinstated by re-establishing previous land uses where possible, landscaping and drainage works.

Crossing techniques

- 3.2.6 At certain points along the pipeline route, crossings of features such as roads and rivers would be required.
- 3.2.7 Some of these features such as minor roads, tracks, streams and ditches would be crossing using the open cut installation method described above.
- 3.2.8 Other features, such as major roads, rivers or railways would require trenchless crossings. A number of different trenchless crossing techniques may be used, including Horizontal Directional Drilling, auger boring, micro-tunnelling, and direct pipe. Trenchless techniques install the pipeline beneath the barrier (e.g. major road or river) without disturbing the surface. The choice of technique adopted would be determined with consideration of third-party needs, ground conditions and the length and depth of the crossing.

Above Ground Infrastructure

3.2.9 The construction of a HAGI would require similar site preparation works and earthworks as described above in relation to the pipeline. Mechanical equipment, pipelines, electrics, Instrumental and Control Kiosks, Pressure Reduction Units, metering facilities and inspection facilities would then be installed. Construction of Block Valves would follow a similar procedure.

Temporary Construction Compounds

3.2.10 Temporary construction compounds would be established to support the construction of the pipeline, HAGIs and Block Valves. The construction site for a HAGI would typically include the necessary temporary construction compound to be co-located for maximum convenience.

3.2.11 The temporary construction compounds would typically include:

- Secure fencing;
- Hard surfacing and drainage;
- Temporary connections to utilities;
- Welfare facilities;
- Site Offices to safely administer the works
- Vehicle/plant storage and associated fuels;
- Storage for pipes in stacks, equipment and materials; and
- Lighting.

3.2.12 Smaller temporary compounds would also be established at Block Valve locations to enable construction of these installations. Once the pipeline has been constructed and reinstated, the temporary construction compounds would be removed and land reinstated to its former condition.

3.3 Operation and Maintenance

3.3.1 The HAGIs would generally be monitored and operated remotely from an Energy Control Centre located off-site. The HAGIs would be operational 24 hours a day. Periodic maintenance of the HAGIs would take place during the life-time of the pipeline network and would typically include the following:

- Planned periods of maintenance every 6 months.
- Pipeline inspection operations every 1 to 5 years. Inspection operations involve an internal examination of the pipe undertaken by an inline inspection tool, which travels inside the pipeline from one HAGI to the next.
- Infrequent breakdown or urgent visits with access on a 24/7 basis if required.

3.3.2 The pipeline would be subject to aerial surveys by helicopter, drone and/or vantage surveys so access onto private land is not normally required. Aerial surveys are typically undertaken every two weeks, but frequency will be

determined during further design development and engagement with the Health and Safety Executive. Access to private land along the pipeline may be required infrequently (every 2-7 years) for closer inspection of the pipeline and for maintenance.

3.4 Decommissioning

3.4.1 The design life of the Project infrastructure is 40 years, but the actual life of the Pipeline could extend well over 40 years depending on its ongoing condition that we monitor, as over time parts are likely to be maintained or upgraded.

3.4.2 Once the use of the pipelines ceases, it would be left in situ and filled in sections to avoid any environmental effects associated with removal. The HAGIs and Block Valves would be removed, with materials being reused or recycled where possible or disposed of in accordance with relevant waste disposal requirements. Land would then be restored to its former use.

3.5 What is the timeline for the Project?

3.5.1 The construction of the Project is expected to start in late 2024 and be fully operational in late 2027 or early 2028.

3.5.2 Pipeline construction is generally focused on the spring and summer months (March to September) with the aim to reduce impacts on agricultural land. Based on the current programme, two pipelaying seasons, in 2025 and 2026, are currently expected for the Project. The works for crossings and pipelines in the streets may occur outside the typical pipelaying season and throughout the year. The Applicant will work with consultees e.g., Statutory Nature Conservation Bodies (SNCBs) to determine the timing of sensitive works. It is expected that each Pipeline Corridor would take 12-18 months to construct.

3.5.3 The construction of a HAGI would typically take from six to twelve months and may be in progress at any point during the year, subject to any local constraints. The construction of Block Valves would typically take up to four months.

3.5.4 Standard construction working hours would be 10 hours per day (08:00 to 18:00) from Monday to Saturday, with no works on Sundays or Bank Holidays. There would be the need for continuous (24-hour) working for some activities. Such activities include Tunnelling and Horizontal Directional Drilling, pipe pulling at trenchless crossings, and pipeline testing.

3.5.5 A number of the works described above would be expected to occur in parallel, however, the exact phasing of the works has yet to be determined. Further details of the construction programme and phasing will be developed for the ES.

3.5.6 The removal of the HAGIs following the end of the Project is anticipated to take the same amount of time as construction (6 to 12 months), although this is indicative and may vary.

4. Preliminary Environmental Information Report

4.1.1 As part of the EIA, the PEIR provides the latest environmental information obtained and assessed in relation to the Project. It provides a preliminary assessment of likely significant effects arising from the construction, operational and decommissioning phases of the Project.

4.2 What is the Preliminary Environmental Information Report?

4.2.1 EIA is a process for identifying the likely significant environmental effects (positive and negative) of a project to inform the decision-making process of whether an order granting development consent should be made. The PEIR is part of the EIA process and provides the latest information obtained and assessed in relation to the Project. The PEIR provides a preliminary assessment of likely significant effects arising from the construction, operation and decommissioning phases of the Project.

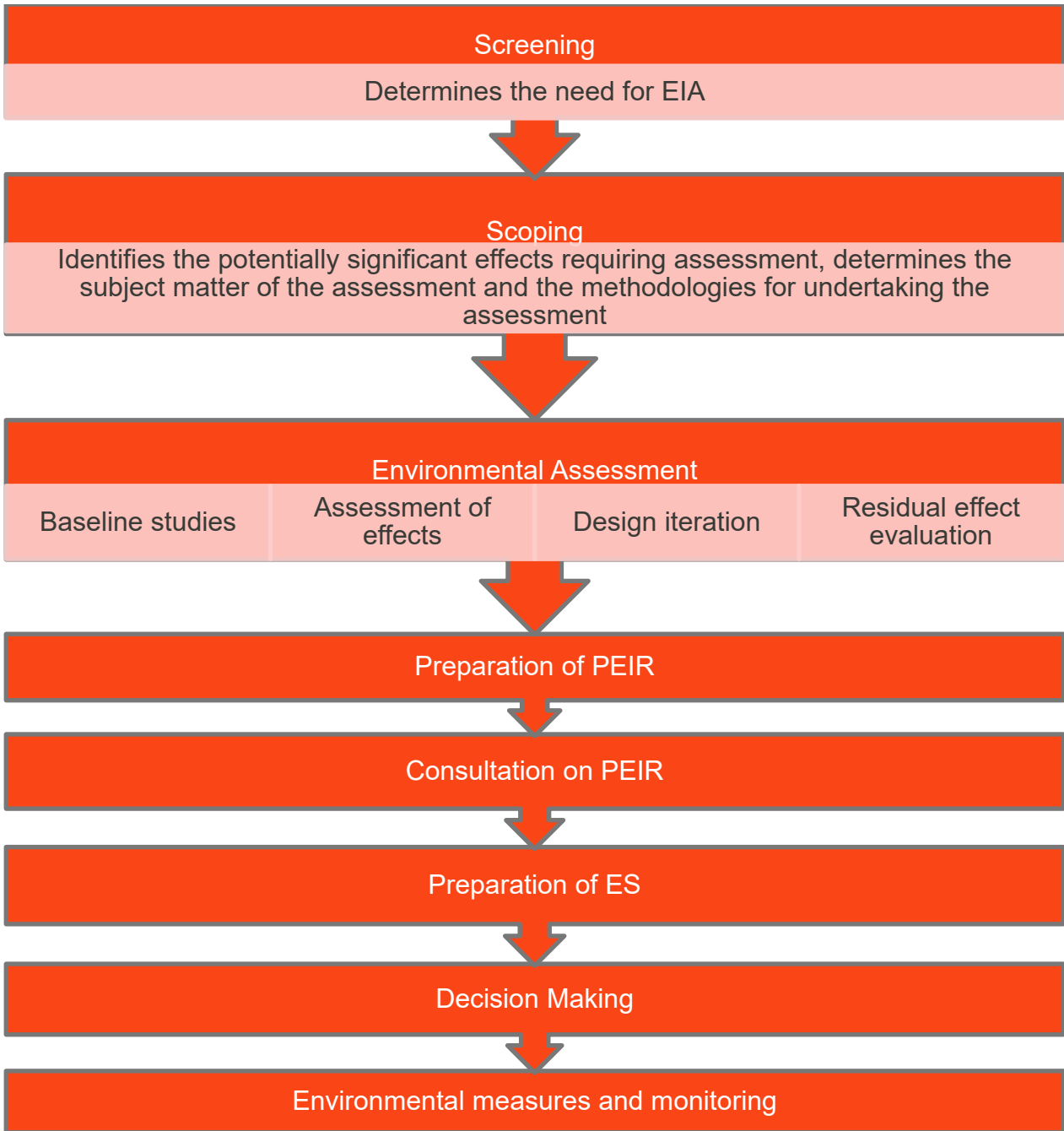
4.2.2 The findings presented in the PEIR are based on a preliminary assessment and reflect the current stage in the design process of the Project and understanding of baseline conditions, allowing for conclusions as to the likely significant effects to be drawn. Where the design is still evolving or further information on baseline conditions is still to be obtained, a precautionary approach is applied to ensure that a likely worst-case (based on current knowledge) is assessed in the PEIR.

4.2.3 The purpose of the PEIR is to inform the consultation with the public and other stakeholders of preliminary environmental findings. The PEIR presents a level of assessment appropriate to enable consultees to develop an informed view of likely significant environmental effects of the Project and help inform their consultation responses, during the statutory consultations completed as part of the pre-application stage. This then enables both the design of the Project and the EIA to take into consideration comments received through consultation.

4.2.4 The ES will then provide a full assessment of the likely significant effects associated with the Project during its construction, operation and decommissioning phases, presenting the full findings of the EIA process. The ES accompanies the DCO application.

4.2.5 The EIA process and where the PEIR fits into this process, is summarised in **Figure NTS4.1**.

Figure NTS4.1 The EIA process



4.3 Scoping and engagement

4.3.1 The scoping of the EIA is intended to inform a proportionate and robust approach to assessment through initial evaluation and reporting of identified likely significant effects in a Scoping Report.

Early engagement

- 4.3.2 The Scoping Report for the Project was submitted on 26 January 2022 to the Planning Inspectorate who administer the EIA process on behalf of the Secretary of State. The Scoping Report contains conclusions made on whether an effect should be considered significant and requires assessment. A Scoping Opinion was subsequently adopted on 08 March 2022, which included statutory consultee responses, to inform the assessment work and further design evolution undertaken to date.

Informal consultation and engagement

- 4.3.3 The Applicant has held, and will continue to hold, informal engagement with the key prescribed consultees, as appropriate, to refine the Project and the EIA, and to assist in the development of any required mitigation.

4.4 Embedded environmental measures

- 4.4.1 The environmental chapters within the PEIR include a description of the “*measures envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment*”, in accordance with the EIA Regulations. For each environmental topic, the EIA process will identify impacts and effects, taking into consideration environmental measures that the Project will adopt.
- 4.4.2 These environmental measures include avoidance, best practice and design commitments, which are classified into primary or tertiary measures. Embedded environmental measures are primary (inherent) measures, and are modifications to the location, design or operation of the Project made during the pre-application phase that are an inherent part of the Project, and do not require additional action to be taken.
- 4.4.3 Opportunities for embedded design measures will be identified through the evolution of the design of the Project and the EIA process. Good practice measures will also be identified. Primary and tertiary measures will both be integrated into the overall design strategy as embedded measures.
- 4.4.4 Following the application of embedded measures, where the potential for a significant environment effect remains, ‘additional measures’ will be considered to avoid, reduce or compensate this effect. Monitoring measures may also be required in relation to any significant negative effects on the environment.

4.5 Reporting EIA assessment results

- 4.5.1 There are two stages of reporting environmental information for a DCO:
- The PEIR, to inform the consultation with the public and other stakeholders of preliminary findings; and
 - The ES, to accompany the DCO application.

4.5.2

The EIA process will culminate in the provision of an ES, written in accordance with the EIA Regulations, which will accompany the DCO application and help inform the determination of the DCO application for the Project. The ES will provide a full assessment of the likely significant effects associated with the construction, operation and decommissioning phases of the HyNet North West Hydrogen Pipeline Project.

5. Preliminary environmental assessment

5.1 Introduction

5.1.1 The PEIR includes a number of environmental topic sections setting out the results of the preliminary environmental assessment. A summary of these assessments is provided below.

5.1.2 A cumulative assessment which considers the combined environmental impacts of the Project with other developments is due to be carried out and will be presented in the ES submitted with the DCO application.

5.2 Biodiversity

How biodiversity effects have been assessed

5.2.1 The assessment methodology adopted is consistent with the standard industry guidelines and the requirements of planning policy. The results of the preliminary assessment are based on publicly available information and field surveys. There has also been consultation with ecological consultees, which has fed into the assessment

5.2.2 Ecological features such as habitats and species that could be sensitive to the Project have been identified, and potential effects on them set out. Habitat surveys of hedgerows, trees, vegetation and watercourses are being carried out. Species surveys are currently being undertaken to understand the presence of bats, great crested newts, otters and water voles, badgers, breeding and winter birds and aquatic ecology. The surveys are partially complete and will remain ongoing during 2022 and the early part of 2023.

5.2.3 Full details of the biodiversity assessment can be found in **Chapter 5 of the PEIR**.

Baseline environment

5.2.4 Land covered by and surrounding the Project includes sites and habitats protected for the importance of their ecology. Some important species have been identified and will be confirmed within the ES once the surveys are complete.

Embedded environmental measures

5.2.5 A range of embedded environmental measures have been included in the Project to avoid or reduce potential negative effects. These include best practice measures as well as measures specific to certain habitats and species. In addition, the Code of Construction Practice will be a key document, setting out how habitats and species should be protected during construction. The Project will also seek to deliver Biodiversity Net Gain.

- 5.2.6 These measures will be developed as the design of the Project progresses and further survey data is collected.

Likely significant effects

- 5.2.7 The preliminary assessment considered effects on ecology due to disturbance and habitat loss due to the Project.
- 5.2.8 At this stage, negative effects on some ecological features have been identified, but no likely significant effects are anticipated during construction or operation.

Next steps

- 5.2.9 The preliminary assessment will be reviewed based on responses received during the statutory consultation and after the ecology surveys have finished. Further environmental measures may be defined depending on the results of the surveys.
- 5.2.10 Cadent will continue engaging with Natural England and other key stakeholders when finalising the assessment.

5.3 Historic environment

How historic environment effects have been assessed

- 5.3.1 The preliminary assessment of likely significant effects on the historic environment involved analysing records about buried archaeological remains, historic buildings and historic landscapes. A site visit was also carried out to examine these features. The assessment considered policy requirements and took on board feedback from consultees such as local authorities and Historic England.
- 5.3.2 The purpose of the analysis was to identify all historic features close to the Project to understand how they could be affected. Further survey work to investigate potential archaeology will be carried out in 2022.
- 5.3.3 Full details of the Historic Environment assessment can be found in **Chapter 6 of the PEIR**.

Baseline environment

- 5.3.4 The pipeline route and the areas where other infrastructure such as the HAGIs would be located include areas where there is potential for archaeological remains.
- 5.3.5 There are Listed Buildings, Scheduled Monuments, Conservation Areas and non-designated heritage assets within and close to the Project which may be affected.

Embedded environmental measures

- 5.3.6 The project design process involved selecting locations for the pipeline and HAGIs to avoid impacts on heritage assets where possible. Measures to protect archaeology will be defined once the survey work is completed. Best practice

measures to avoid impacts on archaeology and historic buildings will also be set out in the Code of Construction Practice.

Likely significant effects

- 5.3.7 The preliminary assessment considered whether there would be disturbance to archaeology or any changes to historic buildings and historic landscapes.
- 5.3.8 At this stage, negative significant effects on some of these features have been predicted during construction and operation due to disturbance of the ground and working close to historic buildings and landscapes.
- 5.3.9 The planned archaeological surveys will identify further possible mitigation to avoid or reduce the negative significant effects identified.

Next steps

- 5.3.10 The preliminary assessment will be updated in response to feedback received during the statutory consultation and with the archaeological survey results.

5.4 Water environment

How water environment effects have been assessed

- 5.4.1 The water assessment is based on a detailed review of publicly available information, including existing watercourses, water quality and water use in the area.
- 5.4.2 A Preliminary Flood Risk Assessment has been prepared, which assesses the risk of flooding where the Project is located. The assessment is informed by consultation responses and stakeholder engagement including with the Environment Agency.
- 5.4.3 Full details of the water assessment can be found in **Chapter 7 of the PEIR**.

Baseline environment

- 5.4.4 A number of rivers, watercourses and canals are located in the Project area. The key main rivers are the Rivers Weaver, Dane, Bollin and Mersey, plus the Manchester Ship Canal. There are a number of aquifers, groundwater abstractions and protected sources of drinking water (Source Protection Zones) within the Study Area. The water environment within the Study Area connects with some nature conservation sites. Areas of the Project are located in Flood Zones 1, 2 and 3.

Embedded environmental measures

- 5.4.5 Appropriate measures will be incorporated into the Project to ensure that there are no significant effects on the water environment. This includes measures relating to the project design, such as burying infrastructure to avoid flood risk and surface

water runoff. Flood protection and drainage measures will also be incorporated as appropriate.

- 5.4.6 Best practice construction measures will be included in a number of management plans including the Code of Construction Practice, Drainage Management Plan, Pollution Prevention Plan, Materials Management Plan, Flood Emergency Response Plan and Watercourse Crossing Plan.

Likely significant effects

- 5.4.7 The preliminary assessment considers the potential effects on watercourses and flood risk. At this stage, no significant effects have been identified, taking account of the embedded environmental measures.

Next steps

- 5.4.8 A site visit will be carried out to obtain information on the water environment. More information on ground conditions and ecology in watercourses will feed into the assessment and proposed environmental measures. Detailed flood risk modelling will be carried out.
- 5.4.9 The assessment may be updated in response to comments received during the statutory consultation, ongoing stakeholder engagement and the final design of the Project.

5.5 Landscape and visual

How landscape and visual effects have been assessed

- 5.5.1 The preliminary Landscape and Visual Impact Assessment (LVIA) has been undertaken in accordance with established methodologies and considers an area within 1km of the pipeline corridors. Publicly available information has been used in the assessment, together with site survey information and photographs from key viewpoints.
- 5.5.2 Full details of the LVIA can be found in **Chapter 8 of the PEIR**.

Baseline environment

- 5.5.3 There are no national landscape designations such as National Parks within the Study Area. There are two local landscape designations in the Study Area, Weaver Valley Area of Special County Value (ASCV) and the Helsby and Frodsham ASCV, both within the Cheshire West and Chester Council administrative area. The relevant National, Regional and Local Landscape Character Areas have also been identified as part of the assessment.
- 5.5.4 There are many places within the Study Area where the Project would be visible including settlements, national and regional cycle routes, footpaths, canals and rivers, Marbury Country Park and a number of golf courses.

Embedded environmental measures

- 5.5.5 The Code of Construction Practice will include measures to help protect existing vegetation and to minimise effects on the landscape and views. These measures may include visual screening such as tree planting and measures to minimise light disturbance. Outline Landscape Mitigation Plans will also be prepared and embedded into the design of the Project.

Likely significant effects

- 5.5.6 The preliminary assessment considers the impacts of the Project on the surrounding landscape and views. It concludes that there is the potential for significant negative effects on some Landscape Character Areas during the construction of the Project and one during the first year of operation.
- 5.5.7 Some settlements may experience significant visual effects during the construction of the Project. Significant negative visual effects of a localised nature may remain in Dones Green and Dunham Woodhouses during the first year of operation. The assessment of the longer-term effects in Year 15 of operation has yet to be carried out and will help to determine if the significant effects will remain, and whether any further mitigation can be identified to reduce this effect.
- 5.5.8 The users of some canals and rivers may experience significant negative visual effects during the construction of the Project, but the effect would only remain significant during operation for users of the Manchester Ship Canal. Some golf courses would also experience significant negative visual effects during construction, but none during operation.

Next steps

- 5.5.9 The preliminary assessment is based on information obtained to date. It will be updated in response to comments received during the statutory consultation and more environmental information, including the results of the tree survey, the final design/location of the HAGIs and Block Valves and project photomontages.
- 5.5.10 The assessment will be further developed to look in greater detail at the impacts on the local landscape designations, and to consider the landscape and visual impacts at Year 15 of operation.

5.6 Air quality

How air quality effects have been assessed

- 5.6.1 The assessment is based on a detailed review of publicly available information, including air quality monitoring data and other data relating to Air Quality Management Areas (AQMAs). The assessment is informed by consultation responses and stakeholder engagement.
- 5.6.2 The assessment has been undertaken following best practice guidance and methodologies. The Study Area for the assessment is based on how far

construction road traffic emissions and construction dust may travel. No operational air quality impacts are expected.

- 5.6.3 Full details of the air quality assessment can be found in **Chapter 9 of the PEIR**.

Baseline environment

- 5.6.4 There are four AQMAs within 50m of where construction traffic is expected to travel. Air quality monitoring data was obtained from the six local authorities to understand the air quality within 10km of the Project.

Embedded environmental measures

- 5.6.5 Appropriate measures would be incorporated into the Project to ensure that there would be no significant effects on people or ecology.
- 5.6.6 The Code of Construction Practice will include good practice air quality measures to prevent construction dust impacts and emissions from construction vehicles.

Likely significant effects

- 5.6.7 The preliminary assessment concludes that there will be no significant air quality effects on people and their health or ecology in the vicinity of the Project, once the embedded environmental measures are in place.

Next steps

- 5.6.8 The preliminary assessment is based on information obtained to date. It will be updated in response to comment received during the statutory consultation, ongoing stakeholder engagement, the final design of the Project and final information on traffic flows.

5.7 Noise and vibration

How noise and vibration effects have been assessed

- 5.7.1 A preliminary assessment of potential noise and vibration effects created by the Project has been undertaken in accordance with standard methodologies, guidance and planning policy.
- 5.7.2 The assessment considers the construction phase and the operation of the HAGIs, as these are the only operational element with the potential to generate noise. The assessment looked at potential noise impacts within a distance of 300m of construction activities, and 500m from the HAGIs in relation to operational impacts.
- 5.7.3 A range of publicly available data sources are used in the assessment. Noise and vibration levels have been predicted at this stage using standard methodologies and guidance and will be supplemented with baseline noise monitoring survey results once this has been undertaken.

- 5.7.4 Full details of the noise and vibration assessment can be found in **Chapter 10 of the PEIR**.

Baseline environment

- 5.7.5 Land use in the noise study area is predominantly rural, however it does also include more built-up urban areas. The main existing sources of noise are major transportation routes and nearby industrial/commercial sites.

Embedded environmental measures

- 5.7.6 A number of embedded environmental measures are proposed to reduce the potential for noise and vibration impacts. Best practice measures for the construction phase will be included in the Code of Construction Practice. This will include the need to use plant and machinery with noise reducing measures. During operation, this would include the need to use equipment with noise reducing measures and time works to minimise impacts on nearby people.

Likely significant effects

- 5.7.7 The assessment considers the impact on residential, community, commercial and leisure receptors. The preliminary assessment concluded that the majority of noise effects would not be significant. However, the noise associated with the machinery used for trenchless crossings during construction may result in significant negative effects.

Next steps

- 5.7.8 Baseline sound level surveys will be undertaken and fed into the assessment. The assessment of the construction phase effects will be reviewed and updated when more information on construction activities is available. This will help to develop the environmental measures for the trenchless crossing. An assessment of operational noise will also be carried out.

5.8 Traffic and transport

How traffic and transport effects have been assessed

- 5.8.1 A preliminary assessment of potential traffic and transport effects due to the Project has been undertaken, in accordance with standard methodologies and guidance, plus planning policies. A range of publicly available information has been used to inform the assessment and a site survey of the local road network has been completed. Traffic data was obtained from the Department for Transport and automatic traffic counts were carried out in eight locations to collect more data. Discussions have been held with stakeholders, including local highways authorities and National Highways.
- 5.8.2 The assessment considers the construction phase only, as limited traffic generation is anticipated during the operational phase.

- 5.8.3 Full details of the traffic and transport assessment can be found in **Chapter 11 of the PEIR**.

Baseline environment

- 5.8.4 Due to the scale of the Project many roads, both local and strategic are located in the topic study area. Public transport services operate throughout the study area including buses.
- 5.8.5 The Project crosses a number of Public Rights of Way (PRoW), including some key walking trails. It also crosses some elements of the Sustrans National Cycle Network (NCN).
- 5.8.6 The pipeline would cross 16 railways and 17 navigable waterways, although these would be crossed using trenchless construction techniques and therefore the use of the railways and waterways would not stop during construction.
- 5.8.7 The predicted baseline traffic (including heavy goods vehicles (HGVs)) within the Study Area has been calculated using historic traffic data and established traffic models.
- 5.8.8 Accident data on roads within the Study Area has also been obtained.

Embedded environmental measures

- 5.8.9 A key embedded environmental measure is the crossing of railways, navigable waterways and certain roads using trenchless construction techniques to avoid the closure of these key transportation routes during the construction phase. A Construction Traffic Management Plan will be produced to manage construction traffic access, including HGV access. A PRoW Management Plan will be in place to manage impacts on PRoW.

Likely significant effects

- 5.8.10 The preliminary assessment has identified certain sections of roads surrounding the Project which may be affected by construction traffic. Additional measures have been proposed in certain locations to address these significant negative effects, including improvements to footpaths, road crossings and cycleways, limiting construction traffic movements at peak times and identifying specific HGV routes. With these measures in place, no significant effects are predicted.

Next steps

- 5.8.11 The preliminary assessment is based on information obtained to date. It will be updated in response to comments received during the statutory consultation and continued engagement with the local and strategic highways authorities.
- 5.8.12 A review of the traffic data will be carried out to determine if updated data will be required for the ES.

5.9 Ground conditions

How ground conditions effects have been assessed

- 5.9.1 The preliminary assessment is based on a review of publicly available information and follows best practice guidance. The assessment has also been informed by consultation responses and ongoing stakeholder engagement.
- 5.9.2 Full details of the ground conditions assessment can be found in **Chapter 12 of the PEIR**.

Baseline environment

- 5.9.3 The review of historic mapping indicates that the majority of the Study Area remains in agricultural use. Some potential contaminating land uses have been identified.
- 5.9.4 The geology in the Study Area varies, and is underlain by a mix of glacial till, glaciofluvial sheet deposits, tidal flat deposits, alluvium, the Shirley Hill Sand Formation and peat.
- 5.9.5 No statutory or non-statutory sites have been identified which are designated for their geological interest.
- 5.9.6 Numerous historical and authorised landfill sites are located within the Study Area. Historical brine extraction and coal mining areas have also been identified. The potential for ground gas and radon has been identified.
- 5.9.7 Some of the geology in the area holds groundwater and there are several drinking water abstractions.

Embedded environmental measures

- 5.9.8 The Code of Construction Practice will include best practice measures to avoid and prevent harm from contamination. A Materials Management Plan will be produced to address how excavated material is dealt with. Pollution Prevention Plans will be put in place to reduce the risk of pollution.

Likely significant effects

- 5.9.9 The assessment considers the effect of contamination on human health, property and controlled waters, such as groundwater. The preliminary assessment concluded that significant effects are not expected.

Next steps

- 5.9.10 The preliminary assessment is based on information obtained to date. It will be updated with comments received during the statutory consultation, ongoing stakeholder engagement and the final design of the Project. Further desk-based investigations and a site walkover will be undertaken to confirm the conditions in the Study Area. The assessment will also be informed by the results of an initial ground investigation carried out in 2022.

5.10 Agriculture and Soil Resources

How agriculture and soil resource effects have been assessed

- 5.10.1 The preliminary assessment is based on a review of publicly available information and follows best practice methodologies and guidance. The assessment has also been informed by consultation responses and stakeholder engagement. The results of the ground investigation will be used to confirm the conditions in the Study Area. The Study Area includes the land on which the Project could be located.
- 5.10.2 Full details of the agriculture and soil resources assessment can be found in **Chapter 13 of the PEIR**.

Baseline environment

- 5.10.3 The soil resource in the Study Area includes topsoil and subsoil. In addition, seven areas have been identified where deep peaty soil is likely to be present.
- 5.10.4 The majority of the Study Area is Agricultural Land Classification Grade 3 and some of the land is Grade 2.

Embedded environmental measures

- 5.10.5 Appropriate measures will be incorporated into the Project to ensure no significant effects on agriculture and soil resources. This will include minimising disturbance to soil and peat. Where soil needs to be excavated and reinstated this would be done in accordance with best practice. A Soil Management Plan and a Peat Management Plan will be produced to set out how soil and peat would be protected during the construction phase. The Drainage Management Plan will include measures to protect soil from any water runoff.

Likely significant effects

- 5.10.6 The preliminary assessment concludes that during construction the effects of soil compaction, soil erosion, damage to soil and damage to land drainage systems would not be significant. However, before further detailed assessment is completed, it is considered that the permanent loss of agricultural land and soil resources would result in significant negative effects.
- 5.10.7 Damage to peat and its permanent loss is also anticipated to result in a significant negative effect at this stage.

Next steps

- 5.10.8 The results of the preliminary ground investigation surveys being carried out in 2022 will be examined to determine the potential for peat and will inform the need for further peat surveys in discussion with key stakeholders.
- 5.10.9 Site-specific Agricultural Land Classification data will be obtained through a field survey.

5.11 Land use

How land use effects have been assessed

- 5.11.1 The preliminary assessment is based on a review of publicly available information, which follows common practice. The assessment has also been informed by consultation responses and ongoing technical engagement.
- 5.11.2 A study area was established based on the extent of the potential impacts on natural resources and tourism/recreation.
- 5.11.3 Full details of the land use assessment can be found in **Chapter 14 of the PEIR**.

Baseline environment

- 5.11.4 Reserves of aggregate sand/gravel and silica sand have been identified in the study area. There are some minerals safeguarding areas within the study area for sand/gravel and salt extraction.
- 5.11.5 A number of recreational receptors are located in the study area, including National Cycling Routes, walking trails such as the Trans-Pennine walking trail, canals and golf courses. There are also a number of sports facilities including playing fields.

Embedded environmental measures

- 5.11.6 A number of embedded environmental measures are proposed to reduce the potential impacts on land use. This includes avoiding locating project infrastructure in tourism and recreational areas, where possible. The use of trenchless construction techniques across main rivers and canals will help to avoid impacts on the recreational use of these watercourses.

Likely significant effects

- 5.11.7 The preliminary assessment concludes that there would be significant negative effects on Sutton Weaver, Dutton Lodge, Agden Bridge, Peterhouse Farm, Bartington, and Sandiway sand and gravel minerals resources without mitigation measures in place.
- 5.11.8 A significant negative effect on Runcorn Golf Club is also predicted because at least seven of the holes would be temporarily unavailable for approximately one year. The Vale Royal Golf Club may also experience significant negative effects, depending on which pipeline route option is taken in this location. The effects on Sandiway Gold Club and Barnton Cricket Club may also be significant without mitigation measures in place. A significant negative effect is also assumed for Big Hands Riding Club due to the proximity to construction activities.
- 5.11.9 The effects on all other natural resources and tourism/recreation receptors are not anticipated to be significant.

Next steps

- 5.11.10 The assessment will be updated to feed in further details obtained from related assessments in the PEIR, such as **Chapter 8: Landscape and Visual**, **Chapter 9: Air Quality and Chapter 10: Noise and Vibration**. Further mitigation may also be defined to help avoid the significant negative effects identified.

5.12 People and Communities

How people and communities effects have been assessed

- 5.12.1 The preliminary assessment is based on a review of publicly available information, which follows accepted practice. The assessment has also been informed by consultation responses and ongoing stakeholder engagement.
- 5.12.2 Full details of the people and communities assessment can be found in **Chapter 15 of the PEIR**.

Baseline environment

- 5.12.3 Data on population, employment, education, earnings, economy and business, unemployment, tourism, the housing market, life expectancy and mental health has been obtained and used to describe the characteristics of the six local authority areas the Project passes through.

Embedded environmental measures

- 5.12.4 A Skills and Employment Strategy will be produced, to be submitted with the ES, to set out how the local workforce will be used and upskilled as part of the Project.
- 5.12.5 The Code of Construction Practice will include standard best practice construction measures to minimise potential effects on local businesses and tourism/recreational facilities.

Likely significant effects

- 5.12.6 Disruption to travel and the ability for individuals and communities to access land and amenities during the Project's construction, may result in significant negative effects, however using the embedded environmental measures identified it should be possible to reduce such impacts.
- 5.12.7 The impact on employment markets may result in significant negative effects as there is an existing demand for construction workers in the project area and the Project may therefore increase the current labour supply shortage.
- 5.12.8 There may be significant beneficial effects associated with the contribution of the Project towards the future supply of hydrogen and the decarbonisation of industrial activity. However, there is public concern about the safety and costs of hydrogen use.
- 5.12.9 All other potential effects on people and communities are not anticipated to be significant at this stage.

Next steps

- 5.12.10 The assessment will be extended to include specific consideration of the individual locations which form part of the Project.

5.13 Major accidents and disasters

How major accidents and disasters effects have been assessed

- 5.13.1 The preliminary assessment is based on a review of publicly available information which follows accepted practice. No site survey work is anticipated. The assessment has also been informed by consultation responses. Study Areas have been established on the basis of professional judgement and standard guidance in relation to major accidents and disasters, and who/what may be affected by these.

Baseline environment

- 5.13.2 A number of establishments which hold hazardous material have been identified in the Study Area. In addition, one site regulated by the Office of Nuclear Regulation is located in the Study Area.
- 5.13.3 Potential disasters, such as those associated with extreme weather and flooding have been identified. People and public facilities, plus environmental receptors such as sites protected for biodiversity reasons, land, soil/water resources, material assets, cultural heritage and landscape that could be affected by disasters have been identified.
- 5.13.4 Full details of the major accidents and disasters assessment can be found in **Chapter 16 of the PEIR.**

Embedded environmental measures

- 5.13.5 The Project would need to be constructed and operated in accordance with various health and safety regulations. The design of the Project would also follow relevant design legislation and best practice to avoid a risk of hazards. The Code of Construction Practice will include measures to reduce the risk of major accidents and disasters on people and other environmental features.
- 5.13.6 The route of the pipeline and the placement of infrastructure will seek to avoid, or safely cross in accordance with industry standards, transport networks and any hazardous sites.

Likely significant effects

- 5.13.7 Hydrogen industry at this scale is relatively new, and therefore there are ongoing research programmes and planned tests intended to enhance the understanding of the potential risks from hydrogen infrastructure. As a result, the preliminary assessment has been undertaken based on conservative or 'worst-case' assumptions. The preliminary assessment concludes that, due to the current uncertainties around risk from hydrogen infrastructure, and the current stage of the Project design, there is potential for significant effects arising from the release of

hydrogen from HAGI sites on people or other environmental features as a result of the Project.

- 5.13.8 However, it should be considered that there are currently hydrogen pipelines in operation at a smaller scale in the UK and the USA. The Project, through the Development Consent Order, will be issued to the Health and Safety Executive for review as a Statutory Consultee. If the Project does not satisfy the Statutory Consultees the Project would not reach construction, with the Project likely abolished or substantially redesigned.

Next steps

- 5.13.9 The embedded measures, particularly the design engineering processes, have the aim of reducing the risk of all potential major accidents to 'As Low As Reasonably Practicable' (as required by Health & Safety at Work Act 1974) and therefore a not significant effect. Following further refinement of the design and, a more detailed description of how the design of the Project has embedded risk reductions in the Project will be available at ES.
- 5.13.10 The assessment will be updated to reflect the above, and any further relevant information that arises from the surveys due to be carried out for other environmental topics. A more detailed risk assessment of the impact of releases from the HAGIs will also be carried out.
- 5.13.11 Further technical engagement will be undertaken with key stakeholders to inform the assessment.

5.14 Climate change – Greenhouse Gas (GHG) Emissions

How climate change effects have been assessed

- 5.14.1 The preliminary assessment is based on a review of publicly available information and follows established technical guidance. No site survey work is anticipated. The assessment has also been informed by consultation responses.
- 5.14.2 Consideration is given to GHG emissions associated with the activities relating to the Project, including transport movements.
- 5.14.3 Full details of the GHG Emissions assessment can be found in **Chapter 17 of the PEIR**.

Baseline environment

- 5.14.4 The third carbon budget (2018 to 2022) of 2,544MtCO₂e and the Climate Change Committee's recommended carbon budget sector allocations are relevant to this Project.

Embedded environmental measures

- 5.14.5 The Code of Construction Practice produced for the Project will include measures to help reduce GHG emissions associated with the construction phase, particularly those associated with construction traffic, plant and machinery.

- 5.14.6 Disturbance to peat will be avoided where possible and a Peat Management Plan will be produced to set out how peat will be protected during the construction phase.

Likely significant effects

- 5.14.7 The preliminary assessment concludes that there would no significant effects on GHG emissions and the Project would be in line with the Government's carbon budgets/targets.

Next steps

- 5.14.8 The results of the ground investigation and potential peat deposits will be fed into this assessment. The assessment will also be reviewed in light of any design changes to the Project.

5.15 Climate change – Climate Change Resilience

How climate change effects have been assessed

- 5.15.1 The preliminary assessment is based on a review of publicly available information such as Met Office data and follows established technical guidance. No site survey work is anticipated. The assessment has also been informed by consultation responses.
- 5.15.2 Consideration is given to the infrastructure forming part of the Project, and how this relates to external infrastructure such as the surrounding electricity network.
- 5.15.3 Full details of the Climate Change Resilience assessment can be found in **Chapter 18 of the PEIR**.

Baseline environment

- 5.15.4 The current climatic conditions of the North West of England are varied due to its topography and altitude. This influences the average temperature and rainfall, plus the likelihood of flooding, thunderstorms and high winds.

Embedded environmental measures

- 5.15.5 During the construction phase a Code of Construction Practice will be used and include health/safety protocols to address extreme weather events.
- 5.15.6 The Flood Risk Assessment and Drainage Management Plan (**see Section 5.4**) will include measures to address the risk of flooding during the construction and operation of the Project.

Likely significant effects

- 5.15.7 The preliminary assessment concludes that there are likely to be no significant effects of climate change on the Project due to the embedded environmental measures.

Next steps

- 5.15.8 The assessment will be updated to take account of additional climate change literature, further flood risk modelling and design work that remains ongoing. This may also influence the development of the embedded environmental measures.

6. Looking forward

6.1 What happens next?

6.1.1 This NTS forms part of the preliminary environmental information which has been prepared for statutory consultation (Stage Two Consultation). Stakeholders, local communities and members of the public can comment on the preliminary assessments undertaken and the conclusions reached. All comments will be considered and responses provided in the form of a Consultation Report, which will be submitted with the DCO application.

6.2 What if I would like further information?

6.2.1 If you would like further information (for example the Applicant's PEIR documents, this NTS and other documents accompanying the Stage Two Consultation) the consultation documents will be available to review and comment on between 12 September and 24 October 2022.

6.2.2 These documents are available on the project website at the following address: <https://www.hynethydrogenpipeline.co.uk/our-current-proposals/knowledge-hub/>. Details of in-person consultation events, online events and information points are provided on the website.

6.3 How can I comment?

6.3.1 During the Stage Two Consultation stakeholders, including the public, will be able to submit feedback in a number of ways:

- Via the interactive map on the Project website;
- Online feedback form on the Project website;
- Paper feedback forms available on request and at in-person events, and can be submitted via the Freepost address or by email;
- Email: info@hynethydrogenpipeline.co.uk; and,
- Letter: FREEPOST HYNETHYDROGEN PIPELINE.

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



Register to stay informed:
www.hynethydrogenpipeline.co.uk/keep-in-touch



Write to us: FREEPOST HYNET NWHP



Call: 0800 8606 261