

Welcome

Welcome to the Aldbrough Hydrogen Pathfinder Public Consultation

Thank you for visiting SSE Thermal's public consultation on the proposed Aldbrough Hydrogen Pathfinder Project.

At this consultation, you can learn more about the proposed Aldbrough Hydrogen Pathfinder (AHP) project. This exhibition includes:

- An overview of the project
- The proposed project location
- The findings from our initial environmental appraisal
- AHP's role in reducing carbon emissions in the Humber and the wider East Coast Cluster

Our virtual consultation runs from the **26 May to 23 June 2023**. The local community and stakeholders are also welcome to attend our in-person events:

- **Tuesday 6 June, 2:30pm – 7pm:**
Hedon Town Hall, 36 St Augustine's Gate, Hedon, Hull, HU12 8EX
- **Wednesday 7 June, 2:30pm – 7pm:**
East Village Meadows, Northfield Farm, Garton, Hull, HU11 4QB
- **Thursday 8 June, 2:30pm – 7pm:**
Aldbrough Village Hall, Garton Rd, Aldbrough HU11 4QA



Find out more

Explore our consultation boards to discover more about:

- The Aldbrough Hydrogen Pathfinder Project
- The Humber: Our Low Carbon Vision
- Hydrogen Technology
- Safety through Design, Construction and Operation
- Planning, EIA and Scoping
- EIA Scoping Results
- Maximising Socio-economic Benefits in the Region
- Planning Process and Next Steps



Feedback

We value your feedback and are committed to an open dialogue with all our stakeholders. Please let us know what you think, ask questions or leave comments through our feedback form.

About the Aldbrough Hydrogen Pathfinder Project

What is AHP?

Located at SSE Thermal’s Aldbrough Gas Storage site, the Aldbrough Hydrogen Pathfinder project is an important building block in the development of a thriving Humber hydrogen economy, underpinning the region’s decarbonisation and supporting economic growth locally and nationally.

The Pathfinder Project is within our existing site at Aldbrough Gas Storage, and all visible infrastructure will be within the site boundary.

This green energy project intends to use one of existing the storage caverns and repurposing it to develop a project in the Humber that will unite hydrogen production, storage and power generation in one location.

Pathfinder will support the evidence base for wider deployment of flexible hydrogen power in the UK’s net zero journey and is a major enabler of SSE Thermal’s wider Humber ambitions.



AHP Project Location

The AHP project will be located within the existing Aldbrough Gas Storage facility, which commenced operation as a natural gas storage facility over 10 years ago in 2011. It can store around 330 million cubic metres of gas. The site is accessed from the B1242 Aldbrough Road.



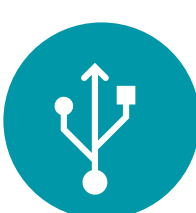
The proposed location is an existing brownfield site and it is suitable for several reasons, including:



The site is distanced from the residential areas.



The site does not have sensitive ecological factors.



The site can share utilities with existing infrastructure.



The site has good transport access.



The local geology (i.e. the presence of salt)



The site is screened by an earth bund and mature vegetation.

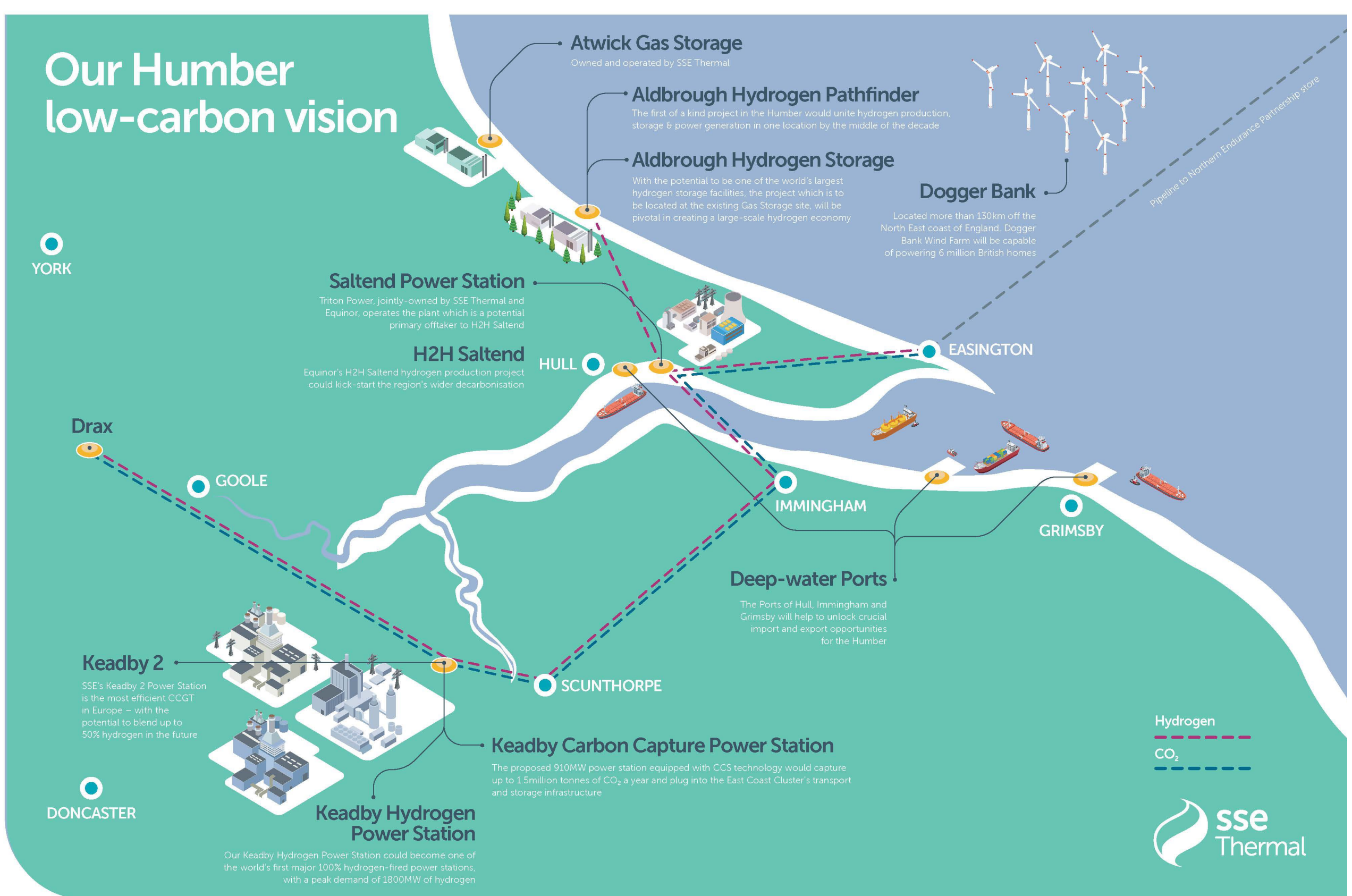
The Humber: Our Low Carbon Vision

Hydrogen in the Humber Region

The Humber region is an essential and valued part of the UK's economy however it does produce large volumes of carbon dioxide (CO₂) emissions. In fact, the Humber is the most carbon intensive region in the country. Using hydrogen to reduce the CO₂ emissions of the industrial cluster will play a crucial role in achieving local and national net zero targets, whilst delivering new jobs, opportunities and investment to the region.

Hydrogen has an integral role to play in reaching net zero and we are accelerating projects across the hydrogen value chain, with a particular focus on the Humber region. This will bring energy, opportunities and low-carbon careers to a new generation.

AHP is one of several projects being delivered by SSE Thermal, see the map below. Together, these projects provide a major step towards decarbonising the Humber and delivering a net zero future. This will be achieved by shared pipelines for low-carbon hydrogen and captured carbon emissions, creating the world's first net zero industrial region by 2040.

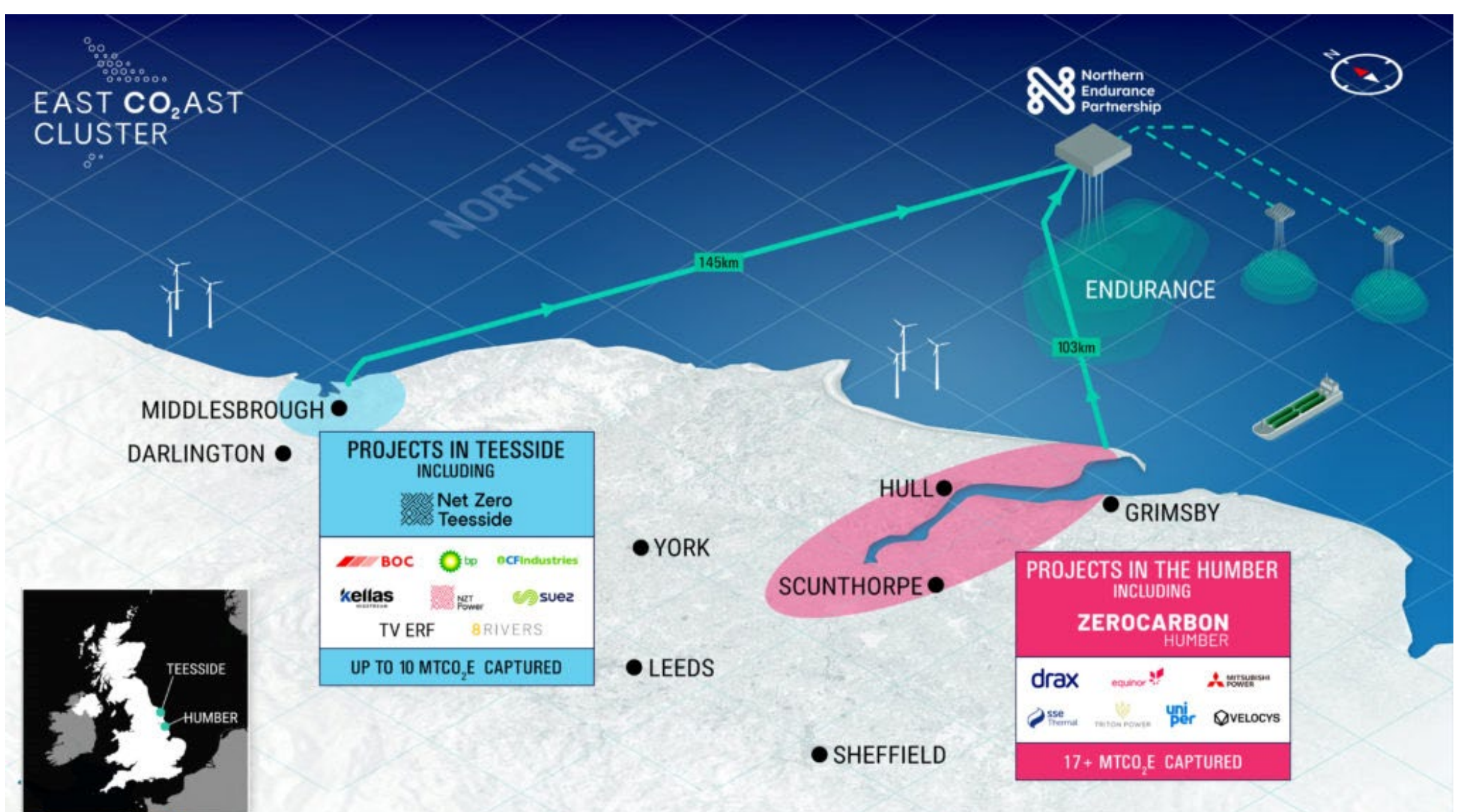


Opportunity for Humber to support the wider East Coast Cluster

The UK Government selected the East Coast Cluster to become one of the UK's first Carbon Capture, Usage and Storage (CCUS) networks. The East Coast Cluster aims to remove almost 50% of the UK's total industrial cluster CO₂ emissions.

The East Coast Cluster includes a diverse mix of projects, including industrial carbon capture and low-carbon hydrogen production. Development of the East Coast Cluster is moving forward towards first commercial operations in 2027.

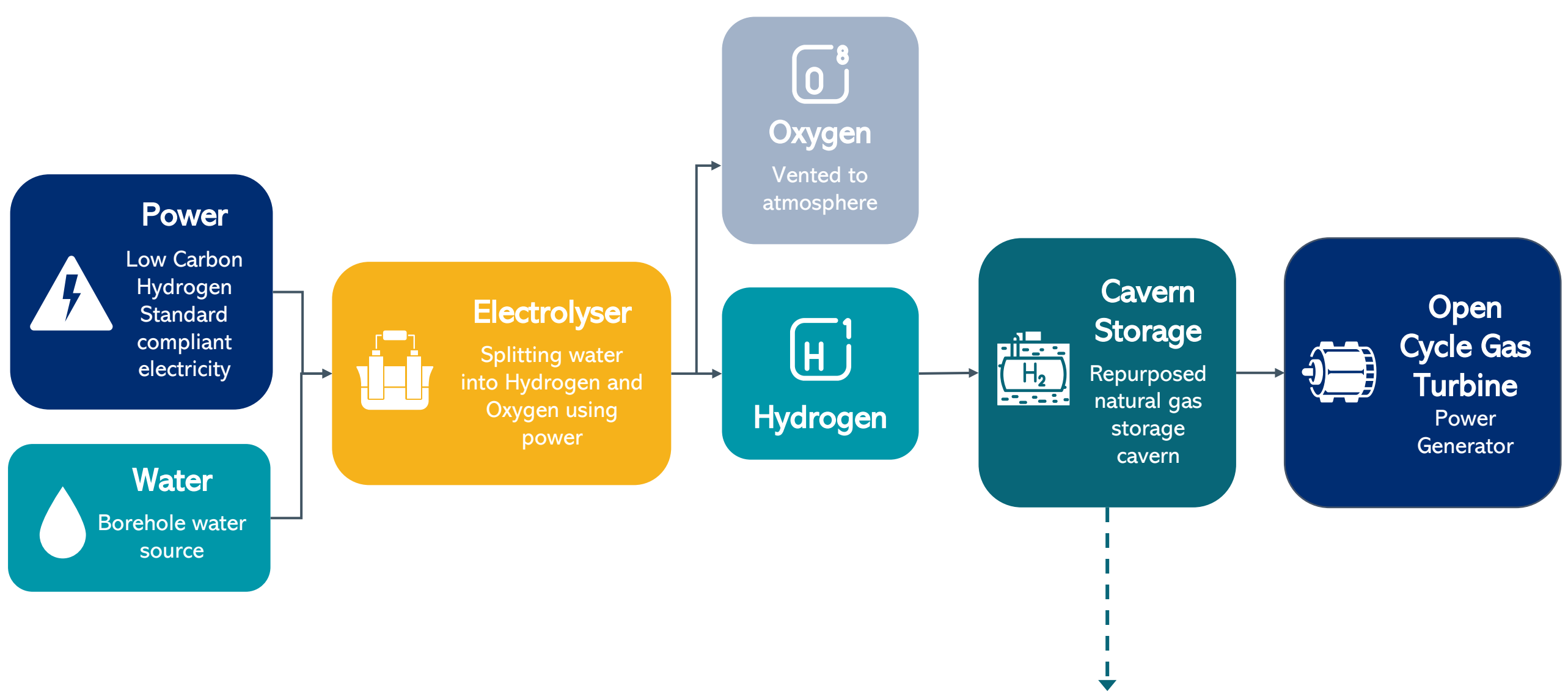
In March 2023, the Department for Energy Security and Net Zero (DESNZ) selected 3 East Coast Cluster projects – Net Zero Teesside Power, H2Teesside and Teesside Hydrogen CO₂ Capture – which will connect first to the cluster by 2027. DESNZ also announced that they will launch a process later in 2023 to enable further expansion of the East Coast Cluster, identifying additional projects in the region.



Hydrogen Technology

Hydrogen Process

The below diagram shows the process in which the Aldbrough Hydrogen Pathfinder facility will produce hydrogen, store hydrogen and generate energy, all from the one site. This will be a first-of-its-kind green hydrogen project, that will be a key step in the wider deployment of green energy projects across the UK.



Use of Aldbrough 1 Cavern for Storage

How will the existing cavern be repurposed?

To store the hydrogen in an existing underground cavern, the cavern needs to be repurposed. The cavern repurposing process involves rewatering the cavern to remove all natural gas, then relining the cavern with hydrogen ready materials and refitting the cavern with equipment to allow safe and secure hydrogen storage.

How is the hydrogen stored in the cavern?

Following the repurposing process, the contents of the cavern – up to 60,000 m³ of brine – will be replaced with the hydrogen produced by the Aldbrough Hydrogen Pathfinder facility over approximately 4 months. This will be stored in the existing cavern at a depth of approximately 1.8 km below ground (as shown in the diagram below).

What will happen to the brine that is removed from the cavern?

There are three options for disposal of the water resulting from the filling of the cavity with hydrogen:

1. Discharge of the water to sea – using an existing but decommissioned pipe running east from the Aldbrough Gas Storage site;
2. Rewatering of an old, existing cavern and its subsequent decommissioning; or
3. Tankering of the water off site with disposal at the nearby licenced SSE Atwick site or alternative disposal site.

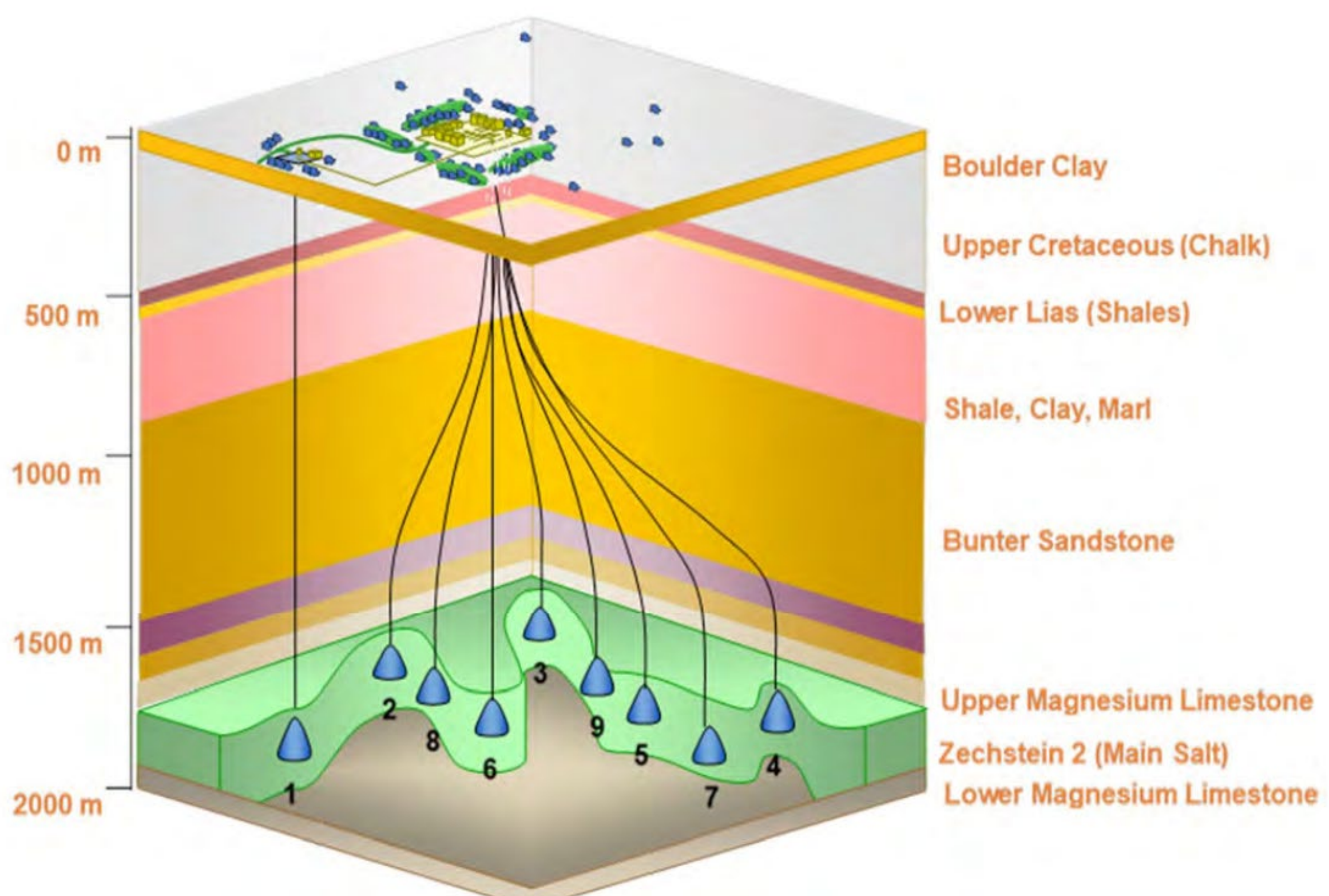


Diagram showing salt caverns below ground at the existing site

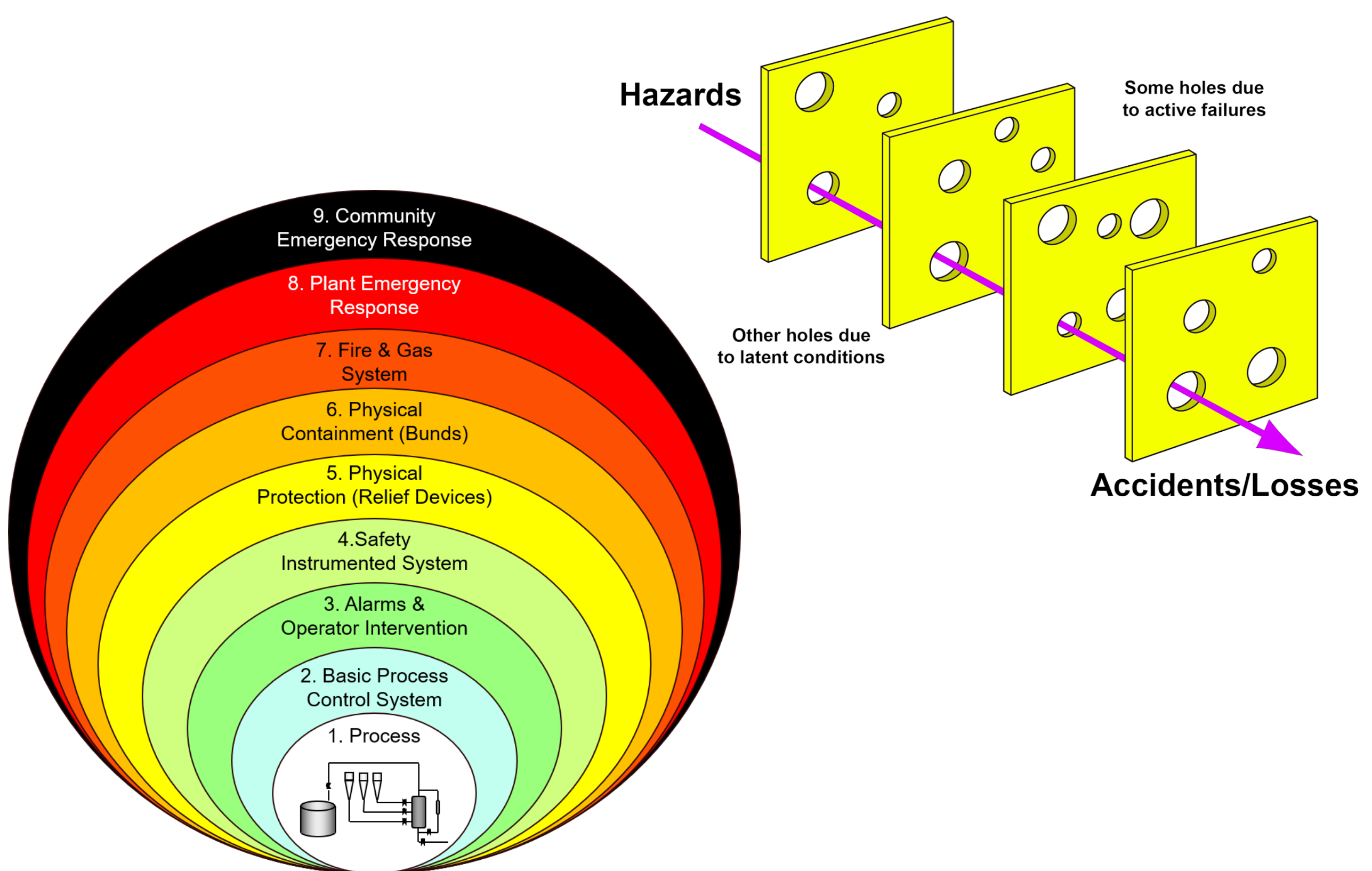
Safety through Design, Construction and Operation

Our Commitment to Safety

At SSE Thermal, we do everything safely and responsibly or not at all. We have operated an industry-leading fleet of flexible generation and energy storage assets for decades without a major incident. From this, we can ensure that our commitment to safety remains an absolute priority in everything we do. This is demonstrated by our SHE policy that our CEO signs and commits to, preventing a major accident.

The production and storage of hydrogen, like natural gas, is closely regulated to ensure the highest levels of safety are always adhered to.

One technique to manage safety is using “layers of protection” – like an onion. Any one layer will stop a major accident and by having lots of layers, this helps ensure a major accident does not occur. Another technique is the “Swiss cheese model” – each cheese slice helps ensure the holes don’t line up, which prevents a major accident from occurring. A technique common in the medical industry and NHS.

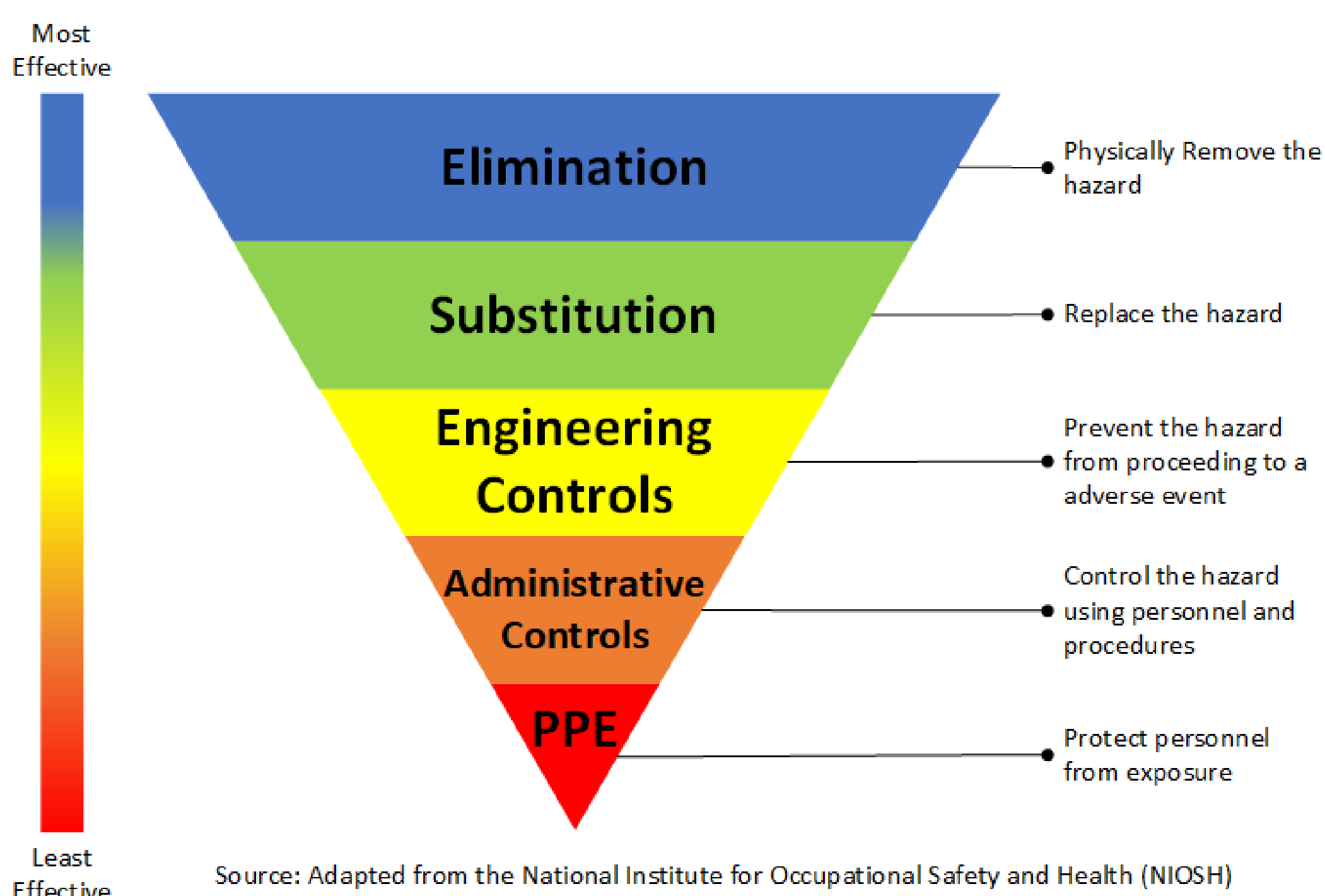


COMAH Regulations require the operators to take “all measures necessary” to prevent major accidents and limit their consequences particular to those off site. There are hundreds of COMAH sites across the UK and COMAH regulations are amongst the strictest regulations in the world. Since COMAH was introduced, major incidents at COMAH sites have become increasingly rare.

Another key piece of legislation is the Health & Safety at Work Act (HSWA). This legislation can hold directors and employees personally and criminally liable for the actions they take regarding the safety of others.

The Proposed Development will make no change to the site being regulated as COMAH or HSWA because the site already is. COMAH sites are subject to rigorous Health & Safety regulations and are closely monitored by the Health and Safety Executive (HSE) and Environment Agency through inspections and having to submit reports demonstrating how “all necessary measures” have been taken.

Another example tool used to manage safety on site is the “hierarchy of control” which aims to reduce or removes hazards. This technique will be used throughout the project development and ongoing operation.

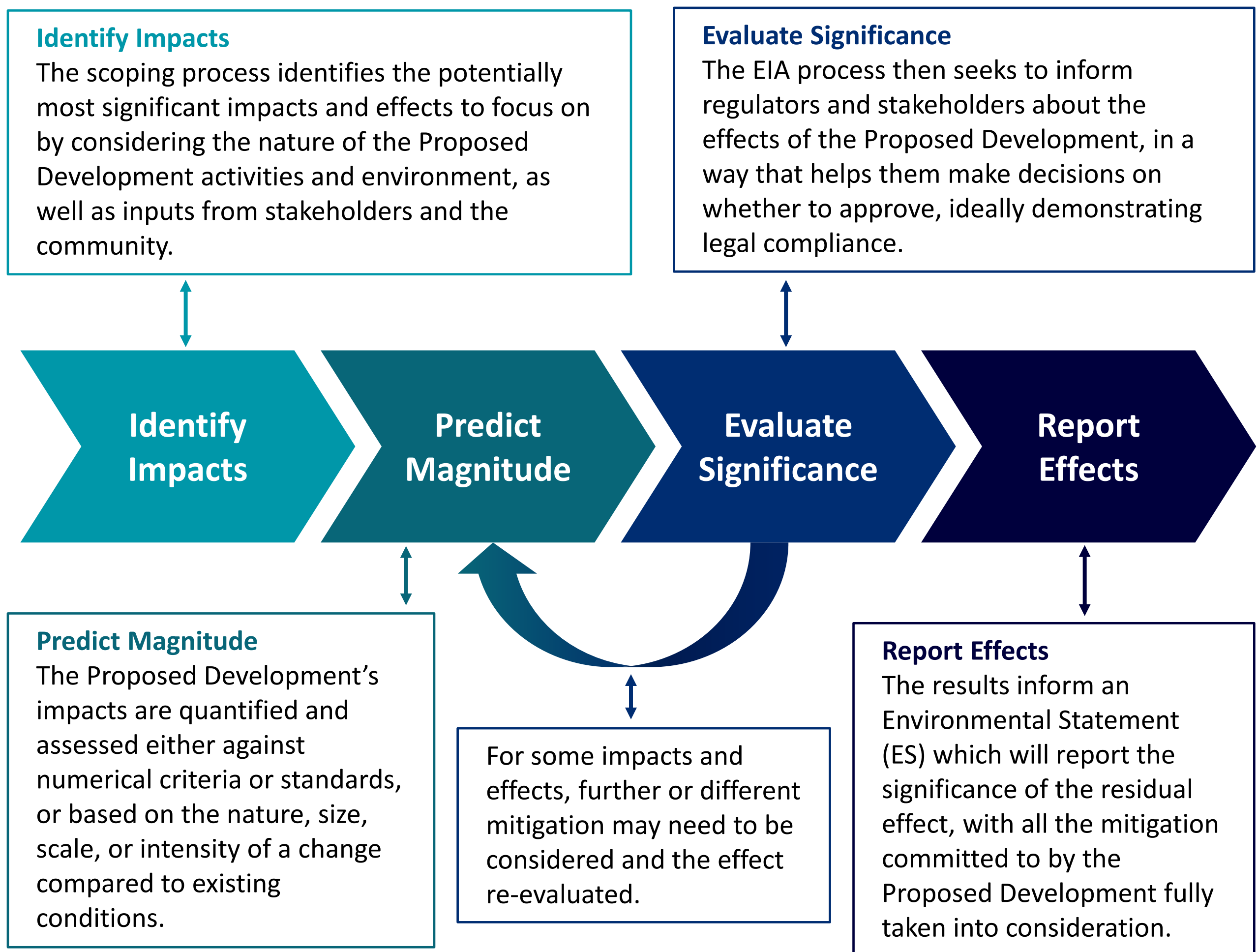


Planning, EIA and Scoping

EIA Role and Approach

An application for planning consent will be made to the East Riding of Yorkshire Council later in 2023, under the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (the EIA Regulations). SSE Thermal will undertake an Environmental Impact Assessment (EIA) as part of this planning application.

The role of an EIA is to inform the local planning authority and stakeholders of the likely significant environmental effects of the Proposed Development during its construction, operation and decommissioning phases. An EIA ensures that all implications of the Project are considered and appropriately mitigated before consent is approved. The assessment approach to an EIA is shown in the diagram below:



The Scoping Process

Scoping is a key step in the EIA process, whereby a Scoping Opinion is sought from East Riding of Yorkshire Council and its statutory consultees (such as Natural England and the Environment Agency). The Scoping Opinion sets the terms of reference for completing the EIA and the information to be provided in the Environmental Statement (ES).

- 1** **Baseline environmental conditions** are compared with the conditions that would prevail were AHP to be approved and become operational.
- 2** Potential **significant effects** are identified for each relevant EIA topic in relation to 'receptors', including people, built resources, and natural resources.
- 3** The **assessment methodology** is set out, including the approach to assessing significance, as shown in the diagram on the right.

		Magnitude of Impact		
		Small	Medium	Large
Importance and Sensitivity of Receptor	Low	Not Significant	Minor	Moderate
	Medium	Minor	Moderate	Major
	High	Moderate	Major	Major

Assessment matrix showing the magnitude of effect and the importance and sensitivity of the receptor.

Key EIA Scoping Topics

- Geology and Ground Conditions
- Water Resources and Flood Risk
- Noise and Vibration
- Air Quality
- Traffic and Transport
- Ecology and Nature Conservation
- Landscape and Visual Amenity
- Historic Environment
- Socio-economic Characteristics
- Population and Human Health
- Major Accidents and Hazards
- Waste Management
- Climate Change and Greenhouse Gas

EIA Scoping Results

Geology and Ground Conditions

Baseline

The Site is located within a predominantly undeveloped rural area dominated by agricultural farmland. Natural England classifies most of the land within the study area as Grade 3 ('good to moderate') and Grade 2 ('very good'). There are no nationally designated geological SSSI sites or ERYC-designated Regionally Important Geological Sites (RIGS) within 1 km of the site.

Findings & Mitigation



In the unlikely event that gross contamination is encountered, it will be appropriately remediated ahead of construction



Risk of dewatering trenches and excavations affecting local watercourses, to be mitigated through consideration of temporary water treatment.



Appropriate controls will be designed to mitigate the potential for contamination of the aquifers, if contamination is encountered.

Water Resources and Flood Risk

Baseline

The site is at a low risk of fluvial flooding and tidal surges. There is a moderate groundwater flood risk for the wider site boundary area, with areas of high and moderate-high risk in the northwest of the site. The highest risk of surface water flooding across the site is recorded as 3.3% chance in any given year. The Core Study Area does not lie within a Drinking Water Safeguard Zone.

Findings & Mitigation



Risk of chemical pollution, erosion and sedimentation, and impediments to flow, to be mitigated through standard good practice during construction and operation.



Increased runoff and flood risk, to be mitigated through appropriate sustainable drainage system design.



Very low impacts on public/private water supplies, to be mitigated through good practice measures in construction.

Air Quality

Baseline

The Site is not located within an Air Quality Management Area (AQMA), however traffic accessing the Site will travel through the AQMA on the A63 in Hull.

Findings & Mitigation



Construction and decommissioning works associated with dust raising activities, to be mitigated through guidance set out by the Institute of Air Quality Management (IAQM).



Risks associated with the operation of the facility, to be mitigated through appropriate design and safety protocols.

Landscape and Visual Amenity

Baseline

The Site lies entirely within an earth bund that is well vegetated, created as part of Aldbrough Phase 1, in an otherwise grassland landscape. The site comprises a low-lying plain with broad, shallow drains, enclosed by flood banks. There are no statutory landscape designations (National Parks or Areas of Outstanding Natural Beauty (AONB)) within 20 km of the Proposed Development.

Findings & Mitigation



Visual impacts from construction, operation, and decommissioning activities, to be mitigated through bunds and screening measures.

Noise and Vibration

Baseline

The baseline noise environment is likely to include road traffic noise from the existing road network, as well as other anthropogenic sources such as farm machinery.

Findings & Mitigation



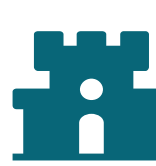
Impacts of construction, operation, and decommissioning infrastructure and traffic, to be mitigated through noise control measures, such as acoustic enclosures and noise barriers but also good practice adopted during construction.

Historic Environment

Baseline

There are no listed buildings, designated registered parks and gardens, conservation areas, scheduled monuments, protected wrecks, world heritage sites or historic battlefields within the Site. Several listed buildings of Grades I, II, and III, exist within 2km of the Site, as well as the Aldbrough conservation area.

Findings & Mitigation



Ground disturbance caused by construction of infrastructure, to be mitigated through investigation and surveys, combined with appropriate design process input.

EIA Scoping Results

Ecology and Nature Conservation

Baseline

There are three European and national statutory designated sites within 5 km of the Site. There are no Special Areas of Conservation (SACs) with bats as qualifying features within 30 km of the Site. Bail Wood Ancient Woodland is located approximately 310 m west of the Site, and The Humbleton Local Wildlife Site (LWS) is located 1.2 km east of the Site.

Habitats

Construction works shall primarily take place across the existing storage facility, with minor works to take place across arable land; which has limited ecological value. Some nearby habitats, such as the woodland and grassland, have the potential to support protected species.

Species



No active setts or evidence of badgers were identified during the survey.



Negligible habitat suitability for foraging and commuting bats within the Site.



Good value habitat to support breeding, roosting and foraging birds. Diverse breeding bird community of mainly still common species present.



Further surveys will be undertaken to confirm that no Great Crested Newts have been found.



No reptiles were encountered during surveys; however, there are records of grass snake within 1 km of the Site.

Findings & Mitigation

Standard construction and operational good practice will be adopted to safeguard habitats and species, with mitigation measures to be described in the Environmental Statement, and the means for securing them will be set out in a Code of Construction Practice (COCP). Site-specific mitigation measures will also be identified.

Traffic and Transport

Baseline

Assuming that traffic is travelling from Hull, the approved route for heavy goods vehicles (HGVs) is along the A165, the B1238 through Bilton and Sproatley and then using the link road to access the Proposed Development via the B1242. It is anticipated that this route will be utilised by the Site.

Findings & Mitigation



Risks associated with the construction and operational phases, such as road safety, driver delay, and pedestrian amenity, to be mitigated through good practice measures outlined within the traffic management plans.

Major Accidents and Disasters

The Infrastructure EIA Regulations 2017 requires a Major Accidents and Disasters (MA&D) Assessment to identify potential significant adverse effects of the Site on safety and the environment. To do so requires a combination of sufficient design information and working alongside the design team on hazard identification. The MA&D Assessment activities will be carried out in future stages of the EIA.

Findings & Mitigation

Through the application of engineering good practice and mitigation included in design, it is anticipated that Major Accident Hazard (MAH) risks associated with the Site will be managed.

Waste Management

Baseline

Hull and East Riding of Yorkshire Councils have a broad range of waste management and waste treatment facilities, with widespread remaining landfill capacity for inert, non-hazardous and hazardous waste.

Findings & Mitigation



Handling and disposal of construction, operational, and decommissioning wastes, to be mitigated through appropriate prevention, reuse, and recycling of wastes created by the Project.

Population and Human Health

A health impact assessment (HIA) will be undertaken to address potential effects on human health and wellbeing. The HIA will:

- Determine health and wellbeing impacts of the Project;
- Assess extent of impacts and potential benefits;
- Identify ways to maximise positive benefits and minimise negative health and wellbeing impacts; and
- Inform the planning process and respond to health and wellbeing issues.

Socio-economic Characteristics

Baseline

To contribute to the understanding of the baseline, population and demographics will be considered, particularly in relation to the community profile which will be developed, together with economy and employment, tourism, transport links, residential properties, and wider local receptors.

Findings & Mitigation

Mitigation will be identified and discussed with stakeholders, as appropriate, as the assessment evolves, however these may include measures from other environmental topics.

Maximising Socio-economic Benefits in the region

Employment and the Local Economy

During construction and operation there will be inward investment to the region, with employment and expenditure in the local economy during construction and job creation during construction and operation.

Employment supported by the project is expected to peak in 2025, as the construction could support up to 750 jobs across the UK, including around 250 in Yorkshire and the Humber.

There will also be economic benefits arising from direct and indirect expenditure associated with the AHP project, for example through placing local orders for goods and services and maintenance.



Local Community

Since operation commenced at the gas storage site, there have been close links forged between SSE Thermal and the local community. A local woodland has been developed to provide an area for walkers to enjoy the surrounding countryside with nesting boxes recently erected to encourage birds to inhabit the area and wildflowers sown. SSE Thermal volunteers have assisted with bulb planting and the Aldbrough village fêtes supported.

Community Liaison Group

Our local Community Liaison Group (CLG) meetings are held monthly and there are representatives from Aldbrough Parish Council, East Garton Parish Council, St. Michael's Church, Aldbrough Sport's Hall, Aldbrough Primary School & the local Equestrian Community. The meetings are a key part of the relationship between SSE Thermal and the wider community, providing a forum for discussions, updates, and opportunities to support activities and events. Minutes from these meetings are available on the project website.

The wider East Coast Cluster

AHP is one of many projects that aims to attract inward investment and harness economic growth in the Humber and Teesside region. Aside from the environmental benefits associated with a shift to hydrogen production and use, the East Coast Cluster has the potential to protect and promote thousands of jobs and establish the region as a globally-competitive climate-friendly hub for industry and innovation.

The region will benefit from an influx of green jobs, skills development and economic benefits, some of which presented below:



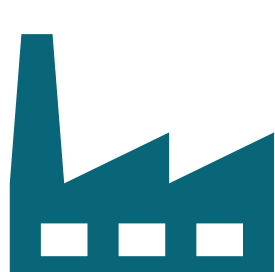
25,000+ jobs up to 2050
(average per annum)



~41,000 jobs peak
In 2026



Construction
9,400 direct jobs/yr
12,300 indirect jobs/yr



Operations
2,200 direct jobs/yr
13,300 indirect jobs/yr



25,000 potential additional
induced jobs/yr



£2bn+ average GVA
Up to 2050

Planning Process and Next Steps

Planning Process

Sustainable development is the core principle underpinning planning and the core consideration of planning applications. It makes a positive difference to people’s lives and helps deliver homes, jobs, and better opportunities for all, whilst protecting and enhancing the natural and historic environment. Policies are designed to protect, and where possible, appropriately enhance the environment.

Under the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (the EIA Regulations) the AHP project is classed as a ‘Schedule 2’ development, meaning it is likely to have significant effects on the environment as a result of factors such as its nature, size, or location. The Project also falls within the Category 3 ‘Energy Industry’ section, which includes:

- a** Industrial installations for the production of electricity, steam and hot water (unless included in Schedule 1);
- b** Surface storage of natural gas; and
- c** Underground storage of combustible gases.

Based on this criteria, SSE Thermal will undertake an Environmental Impact Assessment (EIA), and the planning application will be submitted with an Environmental Statement.

The marine aspect of this proposal does not fall within the jurisdiction of this Scoping Report, instead it is subject to a separate EIA process under The Marine Works (Environmental Impact Assessment) Regulations 2007 (as amended). Marine screening has already been undertaken and we are awaiting the results from the Marine Management Organisation (MMO).

Following planning submission, there will be another opportunity for you to provide feedback to ERYC on the final EIA and planning statement.

Provide your feedback

There are multiple ways you can participate and provide your feedback. You can view our consultation information online or at our in-person events. You can also find the full Scoping Report located on the project webpage listed below, or on the ERYC website.



Following this, we encourage you to provide your feedback via the online survey in the Virtual Consultation Room, or by filling in a feedback form at our in-person events.

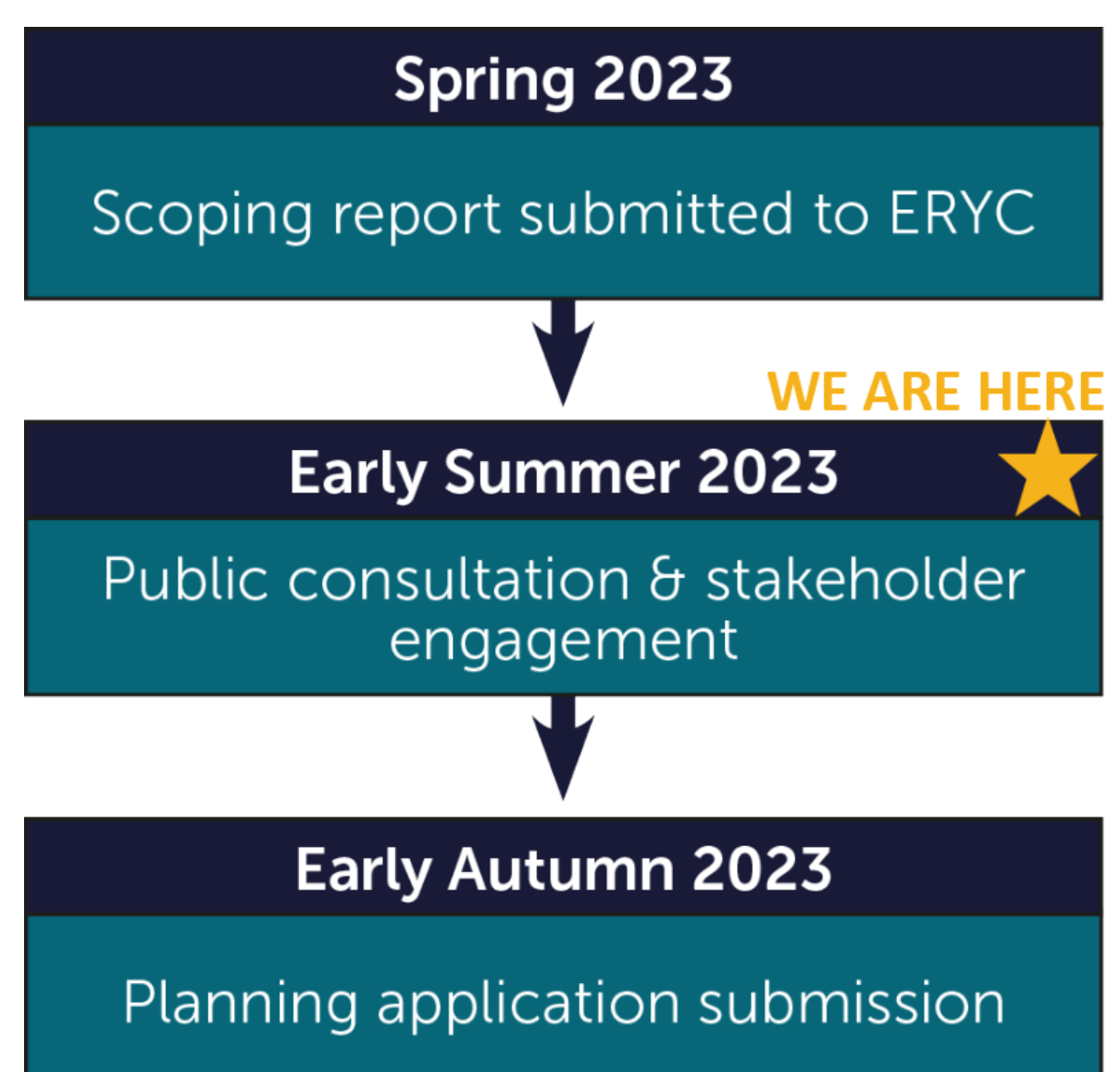
If you would like to receive a copy of the consultation information or feedback form in a different format, please feel free to get in touch using the contact details below.

Next Steps

Following this public consultation, we will collate, analyse and consider feedback to include where relevant in the draft EIA that is being developed.

We will continue stakeholder engagement on the EIA, to finalise this for the planning application to East Riding of Yorkshire Council (ERYC) in the coming months (expected Autumn 2023).

If approved, construction of the development will commence with the aim of becoming operational in 2026.



Get in Touch

Stay up to date on the project by viewing our project website or scanning the QR code.

Web: www.ssethermal.com/flexible-generation/development/aldbrough-hydrogen-pathfinder/

You can contact Rachel Fox, the project’s Stakeholder Engagement Manager by email and phone:

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