

PADESWOOD CARBON CAPTURE AND STORAGE

Making Flintshire a world leader in net zero cement

CONSULTATION BROCHURE 25 January 2023 to 21 February 2023

Gellir darparu fersiwn Gymraeg o'r ddogfen hon ar gais
(am ddim) drwy gysylltu â ni gan ddefnyddio'r manylion isod.

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Introduction

We're consulting on our proposed carbon capture project.

This booklet provides information to help you take part in the consultation. So that we can develop the proposals with you in mind, please share your views with us through the channels opposite.

As part of this, we are holding a series of in-person events and webinars. Find out more at padeswoodccs.co.uk/initial-consultation



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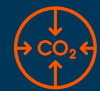


Freepost PADESWOOD CCS

What is Padeswood CCS?

Located at our existing cement works at Padeswood, our project primarily consists of a carbon capture facility, which enables us to extract CO₂ emissions from the cement manufacturing process and then safely store them – supporting the construction industry’s transition to net zero by reducing the carbon footprint of construction projects.

Providing capital investment of over £400 million at Padeswood cement works



A post-combustion carbon capture and compression (PCCC) plant, to extract CO₂ from waste gases and compress it for transport and storage



A combined heat and power (CHP) plant, to power the carbon capture equipment

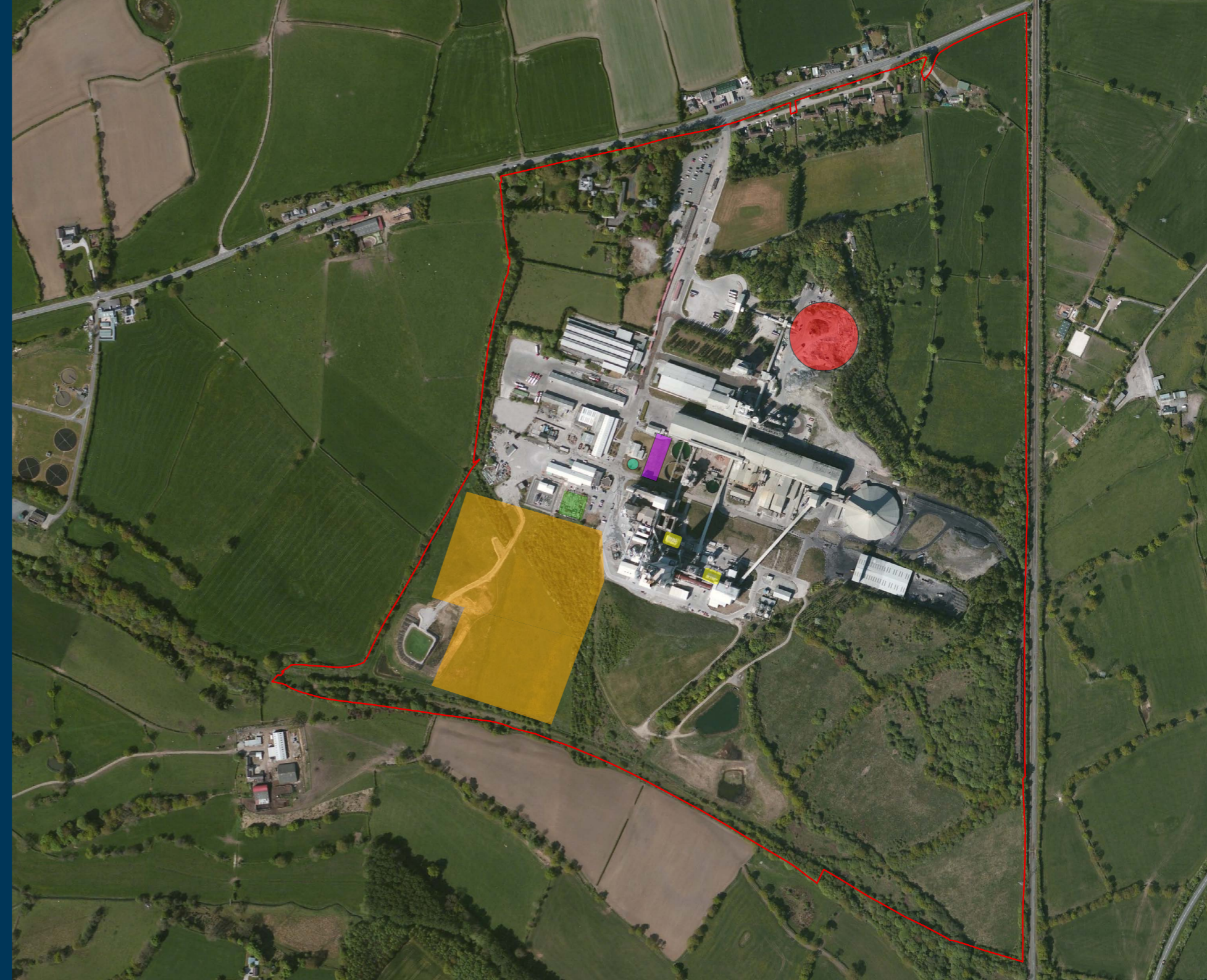


Access roadways, construction parking, construction and laydown compound areas, and temporary office space



Various enabling development to the existing cement works, to facilitate the operation of the project. This is likely to include a limestone store, wet sand mill, raw meal silo, heat exchange towers, and a small central control building.

We are also planning to replace and modify some existing infrastructure and install new connecting infrastructure, such as conveyors, ducting and associated supports.



Proposed development layout

- Planning application boundary
- Area of development for combined heat power plant and post combustion carbon capture and compression plant
- Wet sand mill
- Central control building
- 25,000t limestone store
- 4,500t raw meal silo
- Heat exchangers

Need for the project

Concrete is needed to build homes, schools and hospitals, as well as roads, power stations and wind farms. It is an essential construction material with no viable alternative, and cement is one of its key components.

Cement production is currently carbon intensive. The power consumption of the cement plant contributes to this, but most of the carbon dioxide (CO₂) emissions come from the cement making process, which are released from limestone when it is heated to very high temperatures in a kiln.

In order to produce the cement that the UK needs, without emitting large amounts of carbon, it is essential that we capture and store these emissions.

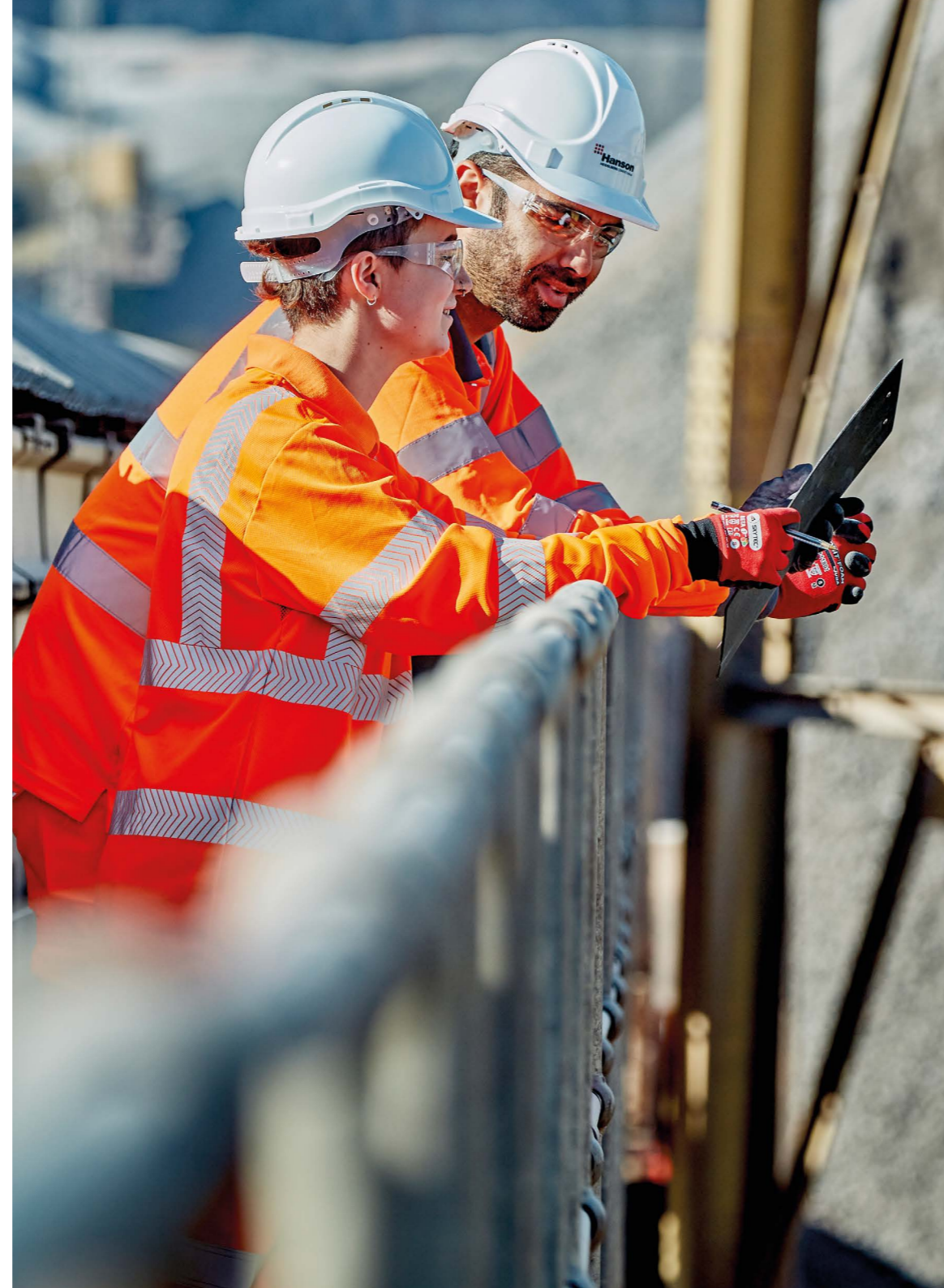
The Padeswood carbon capture and storage (CCS) project gives us the opportunity to place Padeswood at the forefront of the worldwide movement toward carbon-neutral building materials.

Who is Hanson?

Employing over 3,500 people across 300 sites in the UK, Hanson is a leading supplier of low carbon heavy building materials to the construction industry.

Hanson is part of Heidelberg Materials, one of the largest building materials manufacturers in the world.

We are committed to achieving net zero by 2050.



Our vision for Padeswood cement works

Padeswood CCS will help the UK achieve its net zero goals by:



Capturing 800,000 tonnes of CO₂ a year – equivalent to taking 320,000 cars off the road



Enabling the production of carbon neutral building materials, supporting the construction industry's transition to net zero



Playing an integral role in HyNet North West, the UK's leading industrial decarbonisation project



Creating the first net zero cement works in the UK and demonstrating pathway to net zero for the cement industry across the UK



Helping to secure a sustainable future for 2,500 people employed in the UK cement industry, 15,000 indirect jobs, and 2.5 million jobs in the construction industry

The project will support the local economy by:



Creating 54 new full-time high skilled jobs at Padeswood, and up to 350 jobs during construction



Protecting 222 direct and indirect jobs



Providing additional supply chain opportunities



Helping local people develop new skillsets for an exciting new sector



Providing capital investment of over £400 million at Padeswood cement works

Our proposals

Overview

The project is made up of several different components, the main part being the carbon capture facility – shown on the map on page 5.

A number of factors have contributed to the initial site layout. These include ensuring that the carbon capture facility and associated equipment are located near the existing kiln to mitigate local disruption and reduce energy consumption. We will continue to engage with the local community and other key stakeholders on this topic.

At our existing cement works, we will capture carbon from the cement manufacturing process before it enters the atmosphere.

The captured CO₂ will be safely transported via HyNet's underground pipeline to the Liverpool Bay CO₂ store – which is more than 1km below the seabed and approximately 32km offshore – and stored there indefinitely.

Carbon capture facility

We are proposing to build a post-combustion carbon capture and compression (PCCC) plant in the south western part of our site, to extract CO₂ from waste gases and compress it for transport and storage.

We reviewed several different carbon capture technologies and selected an amine-based post combustion capture system. The diagram on page 10 illustrates how this type of system works.

This technology is already being used at scale in other industries. Our parent company Heidelberg Materials is currently constructing this type of plant at Brevik, Norway.

We are currently looking into various design options for the facility, which may end up being approximately 250m by 100m and generally 25m in height.

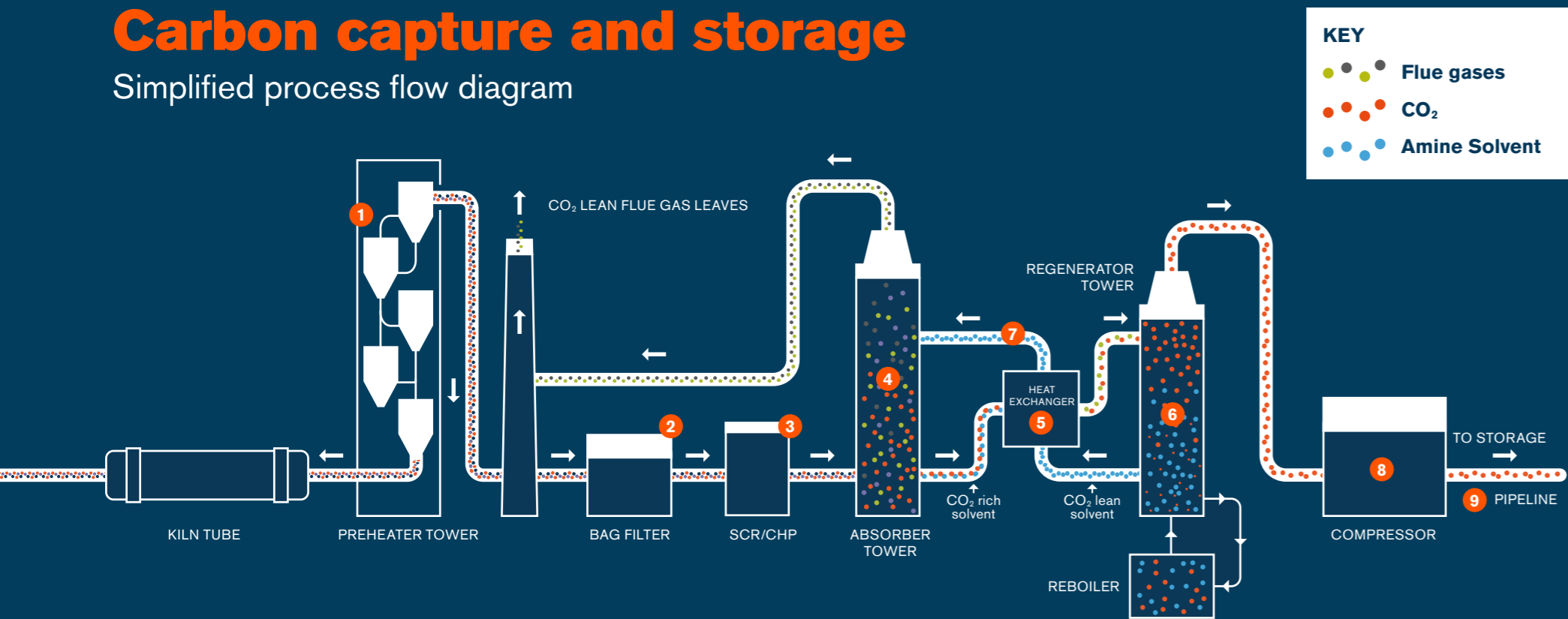
The highest component of the plant would be an absorber tower, which could be up to 100m in height.

The visualisations to the right illustrate how the development might look.



Carbon capture and storage

Simplified process flow diagram



KEY

- ● ● Flue gases
- ● ● CO₂
- ● ● Amine Solvent

- 1** Preheater tower – cement raw materials heated to 900°C.
- 2** Bag filter dust from the kiln system removed from the gas flow.
- 3** Flue gases from the kiln are cleaned in the selective catalytic reduction plant (SCR). Heat and electricity needed to operate the capture plant is produced in the combined heat and power plant (CHP).
- 4** CO₂ is collected from the flue gasses as it reacts with the Amine solvent.
- 5** Heat exchanger.
- 6** CO₂ stripped from amine solvent.
- 7** Lean amine solvent is returned to absorber tower.
- 8** CO₂ is then compressed.
- 9** CO₂ sent via pipeline to permanent storage.

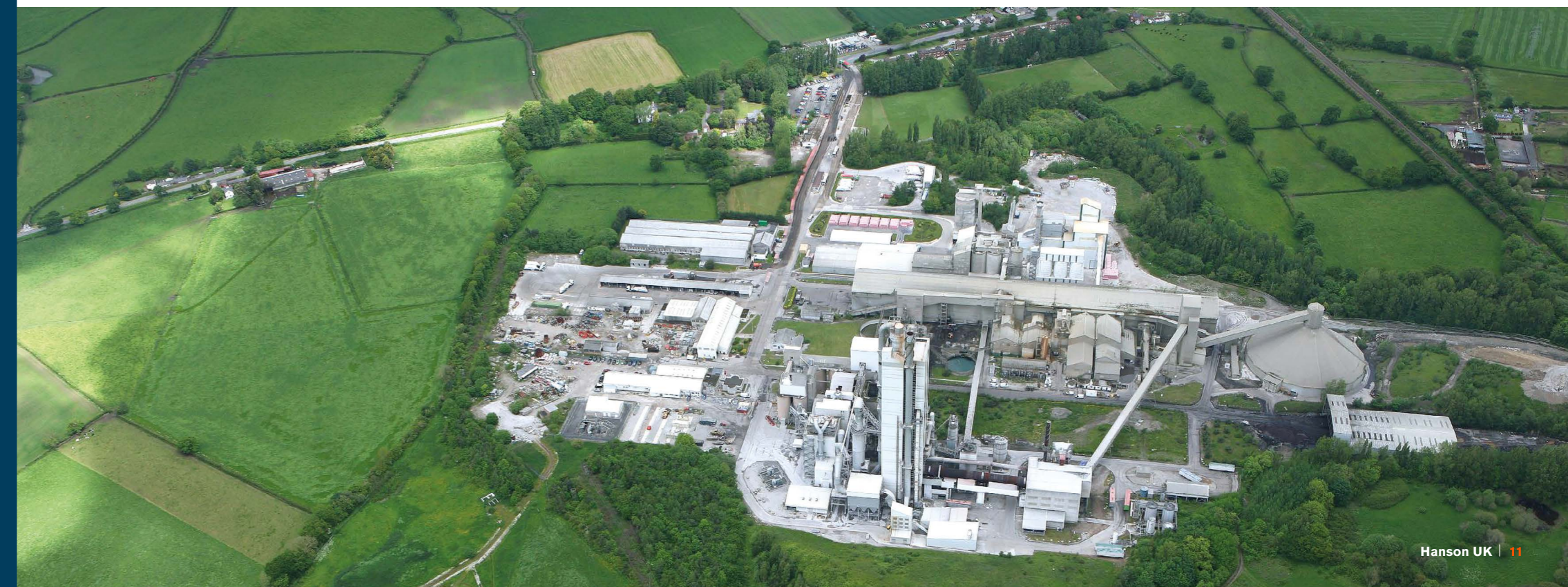
Combined heat and power plant

As part of our proposals, we are planning to construct a combined heat and power (CHP) plant, also in the south western part of our site, to produce the electricity and heat required to power the carbon capture equipment.

The plant would be able to generate at least 12 megawatts (MW) of electricity and 83MW of heat. CO₂ produced by the CHP plant will also be captured and stored together with the emissions from the kiln.

The CHP represents only a small addition to the cement works' overall carbon emission footprint but allows the whole operation to become carbon neutral by powering the PCCC plant.

We are currently looking into design options for the CHP plant, which could end up being approximately 50m by 20m and 40m in height.



Environmental impact assessment (EIA)

Overview of the EIA process

The project is a Development of National Significance (DNS), meaning that the planning decision will be issued by Welsh Government instead of Flintshire County Council. The DNS process is administered on behalf of the Welsh Government by Planning and Environment Decisions Wales (PEDW).

A full environmental impact assessment (EIA) will need to be undertaken to support the DNS application. An EIA is a tool used to identify and assess the environmental, social, and economic impacts of a project. It allows project decision makers to think about the likely effects early on and aims to avoid, prevent, reduce or, if possible, offset those effects. It ensures that the Welsh Government and relevant consultees have a comprehensive understanding of the effects of a project, which are then taken into consideration in the decision-making process.

We are currently at the scoping stage, which is the process of determining the content and extent of the matters which should be covered in the EIA. After reviewing all available relevant project information and data, we have proposed what we consider to be an appropriate EIA scope to PEDW. However, the final decision over the scope is a matter for PEDW, who will notify us in a 'scoping direction', due to be issued in mid-February 2023.

Subject to that scoping direction, the most important environmental considerations are expected to be as follows:

- Air quality (including dust)
- Biodiversity
- Climate
- Cultural heritage (including archaeology)
- Landscape and visual
- Noise and vibration
- Traffic and transport

Within the EIA, these will be assessed and, where necessary, appropriate measures will be proposed to address any environmental effects identified.

Through PEDW's scoping direction and consultation with key consultees that include (but are not limited to) Flintshire County Council, Natural Resources Wales, Cadw and the local and wider community, the scope of works will be refined and agreed before moving through the EIA process. A further round of consultation will be scheduled prior to the DNS application submission, where the same key consultees will have another opportunity to provide feedback on more detailed project plans and information, and the draft findings of the EIA. The project plans and information will have taken into consideration feedback from earlier rounds of consultation.

Climate

The latest international research demonstrates that climate change caused by humans is already having negative impacts on nature and people across the globe.

To avoid the very worst impacts in the future, the goal of the Paris Agreement is to keep global warming well below 2°C and ideally below 1.5°C. In order to do this, global CO₂ emissions need to start falling within the next decades so that we can reach net zero by 2050 at the very latest. Projects such as the Padeswood carbon capture and storage (CCS) project are aligned with the goals of the Paris Agreement in that they cause emissions-avoidance, by capturing any greenhouse gases that may have been emitted to the atmosphere and storing them within geological reservoirs.

However, it is important to assess the full lifecycle impact of the project. Greenhouse gases will be emitted during the construction process, alongside the carbon emissions associated within construction materials and other minor sources such as staff commuting during the operation of the project. During the EIA process these sources will be assessed against the proposed benefits from the project. The assessment will quantify applicable greenhouse gases as measured in tonnes of carbon dioxide equivalence (tCO₂e), where equivalence means having the same warming effect as CO₂ over 100 years.

Emissions associated with the activities contributing to the operation of the project will be quantified. The project is anticipated to capture and store approximately 800,000 tonnes of CO₂ per year, which by far exceeds initial high-level estimates of construction emissions (around 53,000 tonnes of CO₂ equivalent).



Consultation and next steps

Overview of consultation

We are consulting on our proposed carbon capture project from 25 January 2023 to 21 February 2023. We first engaged with local residents and stakeholders at drop-in events on 20 October 2022. We are now consulting on our initial proposals for the carbon capture facility, which includes the site layout and initial photo montages.

The design has not been determined yet, but we welcome your feedback on our initial proposals.

This consultation round gives you an informal opportunity to provide your views on our proposals and the scope of the assessments to help us shape them.

Following this consultation there will be a further, formal opportunity to comment prior to the submission of our planning application to Planning and Environmental Decisions Wales (PEDW).



Consenting timeline

Padeswood carbon capture and storage (CCS) is classified as a Development of National Significance (DNS). The consenting regime for DNS applications requires us to apply for planning permission to PEDW (Planning and Environmental Decisions Wales-part of the Planning Inspectorate).

The application will be examined by PEDW, who will make a recommendation on the application to Welsh Ministers. The Welsh Ministers make the final decision on the application on behalf of the Welsh Government.

Before submitting the planning application, we are required to consult people living in the vicinity of the project, specific community and specialist consultees, and other relevant persons.

Early engagement with communities, local planning authorities, statutory consultees and other interested parties helps ensure we listen to your views, identify valuable information about the potential effects of the project, and overcome any potential issues with our proposals. It also provides an opportunity for early feedback from stakeholders to help shape the project's development.

In addition, it enables potential mitigation measures to be considered and, where appropriate, built into our designs before we apply for planning permission.

You can find out more about the DNS process at gov.wales/developments-national-significance-dns-guidance

How to provide feedback

Your views are important – they can help shape the project

We want to make it as easy as possible for you to provide feedback.

There is an online version of the feedback form on the project's dedicated consultation website <https://padeswoodcarboncapture.co.uk/> and we would appreciate you taking the time to provide your comments there.

The deadline for feedback is 23:59 on 21 February 2023.

If you would like a hard copy of the feedback form, please let us know using the details below:

 padeswoodccs@hanson.com

 **0800 046 9642**

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Where to find out more?

You can find further information and details of the projects' progress at padeswoodccs.co.uk

Os hoffech gopi o'r ddogfen hon yn Gymraeg, cysylltwch â ni



Please scan the QR code to be directed to our website.

Additional relevant documents can be accessed free of charge electronically via the Welsh Government's planning casework service (under CAS-02009-W1R1Z7 - Padeswood CCS):
planningcasework.service.gov.wales

Contact details

If you would like to talk to us about Padeswood CCS, or view a hard copy of any of our materials, please let us know.

Os hoffech gopi o'r ddogfen hon yn Gymraeg, cysylltwch â ni

Email us at padeswoodccs@hanson.com

Call us on 0800 046 9642

Write to us at Freepost PADESWOOD CCS

We have made every effort to ensure the information here is accurate at the time of going to print.

*Images used in this document are indicative.