



PEAK CLUSTER

## SECURING A LOW CARBON FUTURE

# Frequently Asked Questions

The Peak Cluster is an innovative collaboration to capture, transport and permanently store carbon dioxide (CO<sub>2</sub>) emissions from the cement and lime industry in Derbyshire and Staffordshire, as well as neighbouring industries in Cheshire.

Five cement and lime plants across Derbyshire, Staffordshire and Cheshire, owned by Tarmac, Breedon, Lhoist and Aggregate Industries, together with Lostock Sustainable Energy Plant in Cheshire, known locally as LSEP, have come together with Progressive Energy to form Peak Cluster.

**Spring 2023**

## Why do we need a pipeline?

We must reduce the amount of carbon dioxide which enters our atmosphere, whilst still allowing industry to continue to produce vital products - such as lime and cement. There are two main options available:

1. Move the cement and lime production plants to the coast, and transport the raw materials from where they are found naturally in the Peak District by rail or road in many thousands of journeys.
2. Capture and transport the carbon emissions to the coast via a new pipeline buried underground.

Having evaluated the options, we have determined that the preferred solution is an underground pipeline to transport CO<sub>2</sub> emissions from industrial plants in Derbyshire,

Staffordshire and Cheshire to a permanent storage facility underneath the eastern Irish Sea.

## Is CO<sub>2</sub> storage safe?

Carbon capture and storage is a well-established, proven technology. There are projects which have been successfully storing CO<sub>2</sub> for more than 25 years of demonstration.

CO<sub>2</sub> is stored safely offshore deep underground, typically between 0.8 – 3km down, for thousands of years.

CO<sub>2</sub> storage sites are carefully chosen to ensure the highest confidence in permanent storage and there is rigorous site characterisation, monitoring and verification procedures in place to ensure the CO<sub>2</sub> remains safely stored. These assessments and procedures are required by carbon capture and storage regulations before a project is allowed to proceed.

The potential storage site options for Peak Cluster are depleted oil and gas fields which are well understood, having been previously used to store natural gas for millions of years.

## Are CO<sub>2</sub> pipelines safe?

Transporting carbon dioxide by pipeline has been in practise for many years both on and offshore. For instance, in the United States alone there are some 8,000km of pipelines actively transporting CO<sub>2</sub> today.

The UK has a wealth of experience, based on designing, constructing and operating approximately 6,800km of high-pressure gas pipelines, for which it has earned a global reputation for safety. The Code of Practice for pipelines to transport CO<sub>2</sub> streams are recognised as being the most cautious in the world, and the design and operation receives detailed scrutiny from the Health and Safety Executive.

We also will ensure rigorous monitoring mechanisms are in place along the CO<sub>2</sub> pipeline. The pipelines will be monitored both electronically and manually and block valves will be used to safely shut down the pipeline should the need arise.

## Will this bring new jobs?

The cement and lime industry has been a part of the region's rich industrial heritage for more than a century. However, as we move into the future low carbon economy, the sector needs to evolve by enabling it to operate sustainably as we journey to Net Zero carbon emissions by 2050.

Peak Cluster will enable this transition, ensuring the region remains an attractive location for the cement and lime plants, providing jobs and stimulating investment.

The impact of Peak Cluster could enable further growth in the supply chain of materials and skills, growing the local, regional and national economies.

## Who is paying for this?

The UK's Government recognises that decarbonisation is vital as we play our part in the fight against climate change. It is also a huge economic opportunity for the UK's economy.

Peak Cluster is largely funded by the partners who make up the consortium.

Part of Peak Cluster's development is supported by government funding, designed to help businesses with high energy use to cut their carbon emissions through investing in low carbon technologies. The funding ensures individual companies do not face higher costs than their overseas competition as they take early action to decarbonise. Government is putting in place a support structure which means companies will not be placed at an economic disadvantage by undertaking CCS, ensuring UK jobs and preventing reliance on imports.

## Where will the CO<sub>2</sub> be saved?

There are well understood geological formations which can store CO<sub>2</sub> in the eastern Irish Sea. This includes fields in both Liverpool Bay and Morecambe Bay with sufficient capacity for storage requirements for CO<sub>2</sub> from across the region for the foreseeable future.

## Why do we need Peak Cluster?

Cement is essential for the UK economy, including the construction sector which produces mineral based products used to vital infrastructure. Around 40% of the UK's cement is manufactured in and around the Peak District. Lime is also a fundamental, but often unseen, ingredient for many key UK industries including purifying our water and environmental remediation.

However, as cement and lime are created, unavoidable CO<sub>2</sub> emissions are produced. Approximately two thirds of carbon dioxide emissions from cement and lime come from the raw materials themselves. This means that in order for the cement and lime industry to reach net zero and decarbonise, switching their fuel won't be enough to tackle the vast majority of emissions they produce. The only option is to capture and store their CO<sub>2</sub> emissions in order to reach net zero.

Starting from 2030, Peak Cluster will prevent over 3 million tonnes of carbon dioxide emissions (CO<sub>2</sub>) each year from across the Peak District, Staffordshire Moorlands and Cheshire. This represents a quarter of all of Derbyshire's and Staffordshire's CO<sub>2</sub> emissions and is the equivalent of taking 1.2 million cars off the road each year.

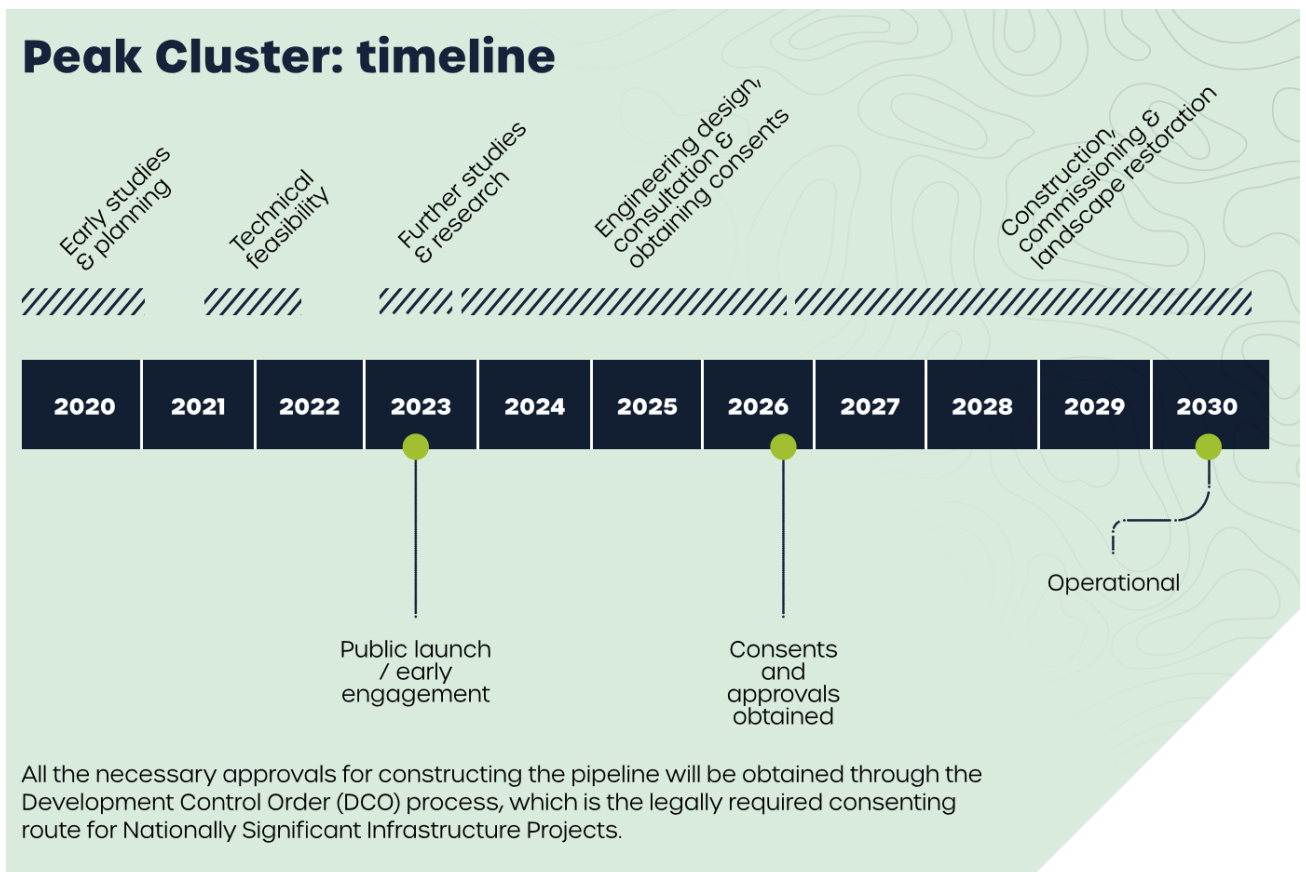
This will protect and safeguard 1,000 skilled jobs in the local region.

## Who is developing Peak Cluster?

Progressive Energy is leading the development of the project alongside the Peak Cluster partners, Breedon, Lhoist, Tarmac, Aggregate Industries and Lostock Sustainable Energy Plant.

## What is the timeline for the project?

A pioneering major infrastructure project, such as Peak Cluster, is a complex to design, develop and build. There are many stages to make it a reality. The diagram below explains the stages we will be working through.



## What is currently happening on the project?

During the Spring and Summer of 2023, we are undertaking initial studies to determine where the infrastructure could be located. This includes the potential pipeline route corridors and 4 – 6 installations built above ground which would be spaced along the pipeline to allow inspection and maintenance.

In parallel, preliminary studies of the carbon capture facilities at the manufacturing sites are being undertaken to determine the most suitable technology and location.

In order to determine the best route within these ‘corridors’, and the potential proposed locations for the installations, we will be undertaking detailed environmental studies and asking for input from local communities and stakeholders.

Have a read of our ‘Consenting’ fact sheet for more information.

## What is Carbon Capture and Storage?

Peak Cluster will use a technology called Carbon Capture and Storage – also known as CCS (or sometimes CCUS – with the ‘U’ standing for ‘utilisation’) to reduce carbon dioxide from entering the atmosphere. The CCS process locks away carbon dioxide emissions before transporting it to secure storage sites.

We will capture up to 95% of the CO<sub>2</sub> emissions produced on site in industrial processes of the existing cement and lime plants in the Peak District and other industry sites.

We will compress the CO<sub>2</sub> so that it can be transported safely by underground pipeline, to be stored in carefully selected depleted gas reservoirs underneath the seabed in the eastern Irish Sea.

Read more about Carbon Capture and Storage in our fact sheet.

## Why do we need to capture CO<sub>2</sub>?

In most industry, CO<sub>2</sub> is emitted from the fuel burnt to power their processes. In order to decarbonise, many industries can simply switch to low carbon alternative fuel or electrify their processes.

However, in the production of cement and lime, the majority of the CO<sub>2</sub> emitted is a direct consequence of processing the key raw material - limestone. Likewise with Energy from Waste facilities, the CO<sub>2</sub> is generated as a result of burning residual waste to create heat and power.

This means the only way CO<sub>2</sub> emissions can be reduced is by capturing the CO<sub>2</sub> and permanently locking it away. This is why it is crucial to capture and safely store this carbon, preventing it being released into our atmosphere.

You can read more about how the cement and lime plan to decarbonise within the Mineral Products Association roadmap here:

- [https://mineralproducts.org/MPA/media/root/Publications/2020/MPA-UKC-Roadmap-to-Beyond-Net-Zero\\_Oct20.pdf](https://mineralproducts.org/MPA/media/root/Publications/2020/MPA-UKC-Roadmap-to-Beyond-Net-Zero_Oct20.pdf)

Read more about Carbon Capture and Storage in our fact sheet.

## Is carbon capture and storage the right technology to use?

The cement and lime manufacturers and the Lostock Sustainable Energy Plant will require technology at their plant to capture the emissions at source.

Carbon Capture and Storage (CCS) is widely recognised as an important technology to decarbonise industry. Both the Intergovernmental Panel on Climate Change and the UK's Committee on Climate Change agree that, to reach Net Zero, we need to use CCS to decarbonise our industry.

Capturing and storing carbon dioxide is a safe, proven process that is already being carried out in a range of industries around the world including Norway's Sleipner and Snohvit projects, which have been capturing a million tonnes of CO<sub>2</sub> each year for 27 years and 15 years respectively.

There are many other projects being developed globally including at the Hanson Cement plant at Padeswood in Flintshire and the Viridor Energy from Waste plant in Runcorn, both part of the HyNet project

- [www.padeswoodccs.co.uk/en](http://www.padeswoodccs.co.uk/en)
- [www.viridor.co.uk/news-and-insights/nearly-1-million-tonnes-a-year-of-avoided-co2-take-a-step-closer-as-viridor-s-04bn-uk-first-carbon-capture-project-selected-for-final-stage-of-government-competition/](http://www.viridor.co.uk/news-and-insights/nearly-1-million-tonnes-a-year-of-avoided-co2-take-a-step-closer-as-viridor-s-04bn-uk-first-carbon-capture-project-selected-for-final-stage-of-government-competition/)

Read more about Carbon Capture and Storage in our fact sheet.

## Why do the cement and lime plants need to be in the Peak District?

The Peak District's unique geology and extensive mineral deposits mean that the cement and lime industries have been a feature of its landscape and part of its rich industrial heritage for more than a century.

The Peak District has the potential to produce what will be some of the first low carbon cement and lime products anywhere in the world.

The alternative, to relocate the production of cement and lime out of the Peak District would mean that quarried limestone and other materials would need to be shipped by road or rail from the Peak District to the production facilities. This would lead to a very substantial and unacceptable increase in the amount of road and rail freight, as well as additional transport emissions.

## **Why is cement and lime important?**

The cement sector delivers significant volumes of vital raw materials used to build the nation's infrastructure including roads, railways, bridges, buildings and homes. In addition, it is essential in the manufacture of vital materials such as steel and glass. 75-80% of the cement used in the UK (of which around 40% comes from the producers in the Peak District which this project will decarbonise) is produced in the UK, making us virtually self-sufficient. By comparison, 80% of timber and 60% of steel is imported from around the world, competing with UK manufacturing.

Lime is a strategically important product for the UK. It is a fundamental, but often unseen, ingredient for many key UK industries. Not only does lime production underpin the construction and manufacturing industries, but it is also used in many other industrial processes, such as drinking water purification, environmental remediation and sugar manufacturing. There is a secure and long-term supply of lime raw material readily available, which can ensure the UK remains self-reliant.

These vital industries have provided jobs for generations of families and boosted the local economy.

## **Do you need planning permission for the project?**

As a major infrastructure project, Peak Cluster will need to submit a type of planning application called a Development Consent Order to the Government's Planning Inspectorate. The final decision on whether Peak Cluster will get approval will be made by the Secretary of State for the Department of Energy Security and Net Zero.

During the development of the project, alongside our continuous engagement, we will undertake periods of consultation.

We will liaise closely with stakeholders including local councils and the Peak District National Park Authority, Natural England and Historic England.

Read more about consenting in our fact sheet.

## How will you work with local stakeholders?

The collective views and local knowledge of communities, stakeholders, industry and the supply chain across Derbyshire, Staffordshire and Cheshire are essential. We know that we can design and develop a better project which embodies needs and priorities by working together.

We are starting to work together early in the development process to ensure everyone has the opportunity to help shape the project to be the best it can be. Example of our engagement includes:

- Community drop-in events
- Webinars
- Attending community events
- Attending local meetings
- Consultations

## How do I contact you?

If you have any questions, queries or comments on Peak Cluster, please do contact us. You can find the ways to contact us on our website: [www.peakcluster.co.uk](http://www.peakcluster.co.uk).