



SECURING A LOW CARBON FUTURE

Carbon Capture and Storage: construction

The Peak Cluster is an innovative collaboration to capture, transport and permanently store carbon dioxide (CO₂) 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, owned by Tarmac, Breedon, Lhoist and Aggregate Industries, SigmaRoc, together with Lostock Sustainable Energy Plant in Cheshire, known locally as LSEP, have come together with Progressive Energy to form Peak Cluster.

How will you construct the infrastructure which captures the CO₂ emissions at each of the sites?

We are currently assessing which specific carbon capture technology options will be most appropriate to implement at each industrial site. The details of each capture plant will be determined by the technology we choose, the amount of CO₂ to be captured, the space and utilities available, and a range of other technical and environmental factors. We will share more details about the individual capture plants once we have undertaken the assessments and the information is available.

We will aim to use brownfield land within the footprint of the current industrial sites wherever possible. We would expect the construction of the carbon capture plants to take around 3 years at each of the sites, although this will be confirmed as we develop our

engineering and contracting plans. We will also investigate the need to upgrade electricity and gas connections to each site.

There will inevitably be increased traffic during the construction period and we will work on detailed traffic management plans to reduce disruption which we will agree with the relevant local authorities. Once operational, the capture plants will create minimal additional traffic.

How will you construct the pipeline which will transport the CO₂?

As we develop the route for the pipeline, we will aim to avoid urban areas and sensitive habitats and minimise any effects on the environment. We will also carefully consider how to cross other features, like roads, rivers and railways and we will not cross private homes or gardens.

Building a CO₂ pipeline is the same as a gas pipe or other utility. For most of route of the pipeline, we will dig trenches, lay the pipeline in the trench, and then fill it in with the excavated soil. This is called open trench technique.

Although we expect that the pipeline will have a maximum diameter of about 36 inches/91cm, we will need a corridor of around 30 meters while we install the pipeline. This gives us enough space to carry out the construction works, as well as providing space for temporarily storing soil and moving construction vehicles.

However, this open trench method will not always be suitable. Where we can't dig trenches, we will use trenchless techniques like horizontal directional drilling (HDD) to lay the pipeline underground without disturbing the land above. This will allow us to lay pipelines under certain rivers, strategic roads, and small but especially environmentally sensitive areas, without digging a trench through them.

In addition, we will need to create access routes to the construction areas for personnel and equipment, and construction compounds at strategic locations for preparation of materials, storage of equipment and vehicles, welfare facilities for construction personnel, construction management offices, and so on. Larger compounds to serve the pipeline construction will be in place for the duration of construction in that area.

Additional temporary compounds of approximately 50m x 50m will be needed for a few months where trenchless techniques need to be used. Small compounds of around 35m x 35m will be needed while we build any permanent above ground infrastructure.

Will there be any disruption during the pipeline construction?

Construction of the Peak Cluster pipeline will be very similar to the work required for other buried utility pipes such as gas and water. Unfortunately there will inevitably be some temporary local disruption during construction, and we will seek to minimise this.

Construction of the Peak Cluster pipeline is estimated to take around 3 years.

Disruption will not occur across the entire length of the pipeline for the whole construction period, as the pipeline will be built in sections from start to end. Construction of each pipeline section will typically be completed in 4 to 16 weeks, although this might take longer if there are particular engineering challenges involved.

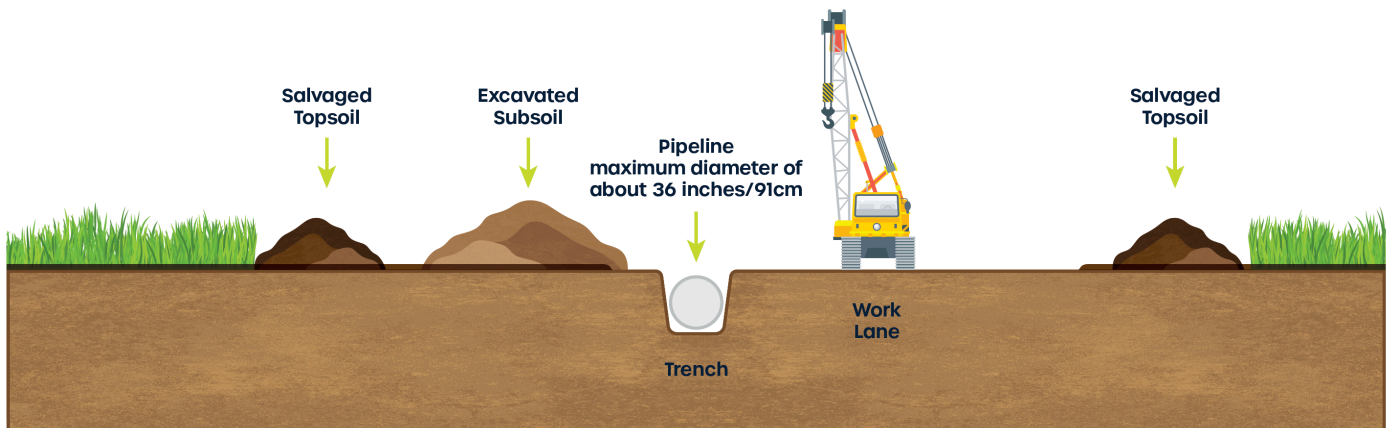
Construction of AGIs are anticipated to take up to 4 months. Temporary minor traffic diversions, typically lasting 2 to 4 weeks, may be needed during pipeline construction. Temporary construction compounds will be established for the duration of construction works within each area and at some river, road and railway crossings. The fenced compounds are expected to be accessed from the existing road network and will require some lighting for safe completion of each task.

There will inevitably be some noise from construction activities and vehicles accessing the area. We anticipate the vast majority of the work will be undertaken during the daytime, typically up to 7 days a week to minimise the total duration at any individual location. Noisy activities might include earthworks, piling or ground compaction. Night-time noise will be limited to specific locations where work for 24 hours a day may be required for short periods while we use techniques such as trenchless drilling to go underneath obstacles like rivers, roads or railways.

During the next phase of the project, we will develop a Construction Environmental Management Plan and Traffic Management Plan to show how we will manage issues like air quality, noise, visual impacts and traffic management that may arise as a result of the project. We will consult on these as part of the wider project consultation.

Will the pipeline be built underground?

The pipeline will be buried underground along its entire length. The minimum depth from the top of the pipe to the ground surface is typically 1.2m in trenched sections, in accordance with relevant standards. It will be buried deeper for trenchless crossings and to avoid existing services and physical obstructions.



Throughout the length of the buried pipeline, the only indication of its presence will be pipe markers - very similar to those you may have seen used to identify the location of buried gas pipelines.



Example gas pipeline marker, Google

We would also build a small number of Above Ground Installations ('AGIs') along the route for operational and maintenance needs. These will be located in compounds approximately 80m x 70m in size. They will be very similar in appearance to natural gas pipeline AGIs.



Example of an Above Ground Installation, Google

In addition, we will construct a number of block valve stations along the route of the pipeline. Block valves are used to isolate sections of pipeline for maintenance or emergency purposes. The block valves will be buried, with only minimal parts of them visible above ground such as secure chamber access covers, an electrical and instrumentation kiosk and security lighting. We would expect to dig a trench of about 1-2 meters down.

Can development happen on top of the pipeline after it has been laid?

There will be certain restrictions for further development directly above the area under which the pipeline has been laid, just as is the case for gas pipelines. Generally, no permanent structures can be built along the pipeline route. However, We will work with landowners to minimise any disruption to their business or access to their land.

The land under which a pipeline is laid can be continue to be used as agricultural land or as green space in which grass, or other vegetation are planted. This allows for a certain amount of access for maintenance of the pipeline.

How will you ensure all construction is carried out properly?

We will comply with all construction requirements agreed through the consenting process. In addition, we will agree a Construction Environmental Management Plan with the relevant local authorities to minimise any potential impact on people and the environment.

The plan will assess all potential temporary impacts during construction such as traffic and noise. It will also propose mitigations and we will seek to work with all stakeholders to identify the most appropriate options.

Once the construction of the buried pipeline is complete, we will return the land as closely as possible to its original condition, including replanting or replacing any hedges, walls or fences after construction. Wherever possible, we will look to make improvements – for example, we will propose ways in which we can improve the biodiversity of the area in which we are directly working (known as Biodiversity Net Gain). We will work with the statutory bodies including the local authorities and Peak District National Park Authority to agree the best way to achieve Biodiversity Net Gain.

What about safety?

We will include principles of safe design based on our own design standards, relevant industry codes of practice, and the requirements of the Pipelines Safety Regulations 1996.

During construction, we will take all proper precautions to keep everyone safe, such as erecting barriers around our temporary work area and safely removing and disposing of any dangerous materials we encounter.

How are we reducing disruption?

We will do everything we can to minimise disruption, but it is impossible to construct nationally significant infrastructure without some level of temporary local disruption. We will aim to keep construction traffic and road closures and diversions to a minimum. Some locations where trenchless techniques are being carried out will require working 24 hours a day for short periods but we will do everything we can to minimise disruption in the local area.

We are committed to minimising the impact of our construction activity on the sensitive environment. 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. Finding the right route for the pipeline will be the most important factor in this. We will also consider the time of year we plan to work to minimise disruption to wildlife or enjoyment of particular areas.

The construction and support vehicles will use existing roads or tracks as far as possible to get to where the pipeline needs to be. However, there will be some temporary construction access and compounds, which will be restored afterwards.

What measures will you take to ensure there are no long-lasting detrimental impacts on the landscape?

Once an underground pipeline is installed, the land above will be restored to its original state. We will work carefully, including closely collaborating with local stakeholders, to use this activity to have a positive influence on the landscape.

This could include:

- Creation of habitats
- Improvements to existing flood management measures
- Natural carbon dioxide removal through tree planting
- Climate change resilience

We want to hear from you

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