## Key Issues –
Routing a major pipeline, in particular one which also requires a number of above ground installations (AGIs) along the route, presents a challenge. This is because it is highly iterative, with changes on one section often having consequences for other sections of the route. A primary aim is to route the pipeline as directly as possible, though avoiding important engineering and environmental constraints. Other important routing factors include avoidance of the main centres of population and major crossings, such as motorways, where possible. The number of routing criteria taken into consideration, including AGI siting criteria, means that it is vital to develop a clear narrative to explain the routing philosophy.

Once a preferred route corridor is defined the design of the final route is progressed. However, limits of deviation are also included in pipeline routing, to ensure there is a degree of flexibility to make small route modifications to avoid, for example, previously unknown archaeology, poor ground conditions etc. In pipeline terms this flexibility is referred to as the limits of deviation (LoD). This presents a challenge for the EIA team in terms of the basis for the assessment. For example should it be assumed that works take place everywhere within the LoD or should the team try to develop a more realistic scenario to assess, but risk under reporting effects?

## Purpose of the project
The project is needed to transport dense phase carbon dioxide from the White Rose CCS Project at Drax, via a 67 km buried cross country pipeline, to a pumping station at the coast. Although not within this consent, seaward of MLWS the pipeline will be initially buried and they surface laid out 90 kms to be injected into a saline aquifer for long term storage.

The initial volume of CO₂ to be transported from the White Rose CCS project is 2 million tonnes a year; however the pipeline is designed to transport up to 17 million tonnes of CO₂ y⁻¹.

## Description of the project
A 12 inch pipeline will connect the White Rose CCS facility to a PIG trap at Drax. The CO₂ is then transported to a Multi-junction at Camblesforth. The Multi-junction will allow additional CO₂ emitters to connect to the cross country pipeline in the future. A 24 inch pipeline will connect the Multi-junction to a Pumping Station at Barmston, passing through three Block Valves along the route. On exiting the Pumping Station the pipeline will cross the cliffs and foreshore down to MLWS where it will connect to the Offshore Pipeline.
## Lessons learnt

For the assessment work two approaches were taken, depending upon the receptor in question. For discreet receptors (e.g. an archaeological feature, badger sett, residential property) the worst case was assumed, i.e. works taking place at the closest possible proximity. For linear receptors crossed by the pipeline such as hedgerows and watercourses, an assumption was applied relating to the maximum working width, to ensure that effects were not overstated. The same approach was taken to the drafting of the great crested newt license application. A third tier of assessment was also included looking at the effects of the most likely pipeline route within the limits of deviation.

It is essential, for DCO applications, that the mitigation measures relied upon when assessing the significance of residual effects are secured in the DCO. From an early stage it is important to maintain a record of such measures and provide a guide explaining where and how such measures are secured. The use of a Code of Construction Practice (CoCP), which is secured by a requirement, provides an effective document for recording construction related commitments.

## Lessons learnt cont.

Although the total number of traffic movements required to construct the scheme could be calculated with some accuracy, the distribution of construction traffic in and around the construction of such a long linear scheme was more difficult to predict. Two approaches were therefore developed specifically for this scheme, the first being to take the peak week of traffic, and to distribute it evenly over the agreed access routes and the second being to split the pipeline route into sections and to then calculate the number of vehicle movements as a proportion of the pipeline length.

Co-locating the consenting, EIA coordination and construction (design) team for 6 months prior to submission meant that there was greater collective knowledge of the scheme, including the interdependencies of the various disciplines and the increased sensitivity of the application to changes as the design was finalised.

## Contact details

Author: Nigel Pilkington  
Registrant: AECOM  
AECOM House, Moss Lane, Altrincham, WA15 8FH  
Tel: 07540970024  
Email: nigel.pilkington@aecom.com

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