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## Cluff Natural Resources plc ('CNR' or 'the Company') Awarded Additional Underground Coal Gasification Licences

Cluff Natural Resources plc, a company founded by natural resources entrepeneur Algy Cluff, is pleased to announce that The Coal Authority, sponsored by the UK Department of Energy & Climate Change, has awarded the Company a further two Conditional Underground Coal Gasification ('UCG') Licences, Options for Leases and non-exclusive Exploration Licences for two offshore Deep UCG prospects at North Cumbria and Largo Bay. CNR now holds five UCG licences in the UK, covering a total area of 30,881 hectares which provide critical mass to the Company's strategy to build a portfolio of high quality Deep UCG assets.

## **Overview:**

- Formal offer received from The Coal Authority for the award of 100% of a UCG Licence at North Cumbria totalling 8,238 hectares and at Largo Bay totalling 7,796 hectares
- CNR now has 100% working interest in five UCG licences in the UK, covering a total of 30,881 hectares
- CNR to apply for relevant planning and environmental permits in order to develop the projects
- Propose to target extended coal seams offshore UK in order to extract syngas through the UCG process
- Focus on supplying the resulting syngas to customers for a variety of uses including power generation and providing a carbon capture solution for carbon dioxide

Mr Algy Cluff, Chairman and Chief Executive of Cluff Natural Resources, commented: "I am delighted to be able to announce the award of these two further licences at Largo Bay and Cumbria following on from the licences we were recently awarded at Kincardine, the Loughor Estuary, and the Dee Estuary. It is well known that coal seams extend into the offshore waters around the UK and with proven technology now available to utilse this energy source, we intend to embark on the process of extracting gas from these coal seams.

"It is our intention to seek the necessary planning and environmental permits to advance these projects with a view to production. Deep UCG has the potential to do much to address the UK's future energy needs, avoids the use of fracking and enables the gas generated to be easily controlled by the supply of oxygen."

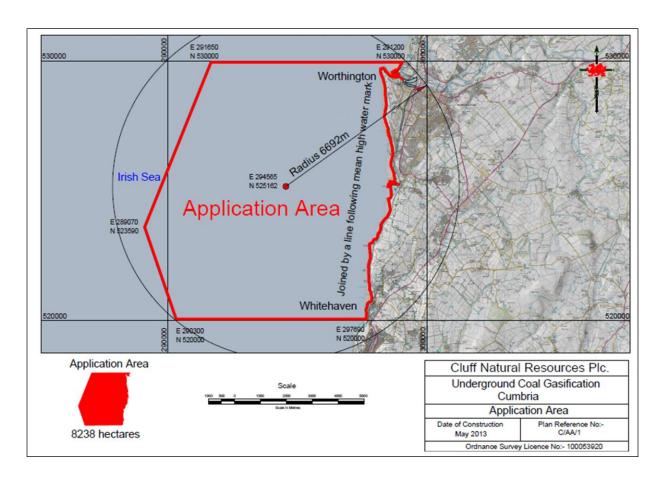
## **Further Information**

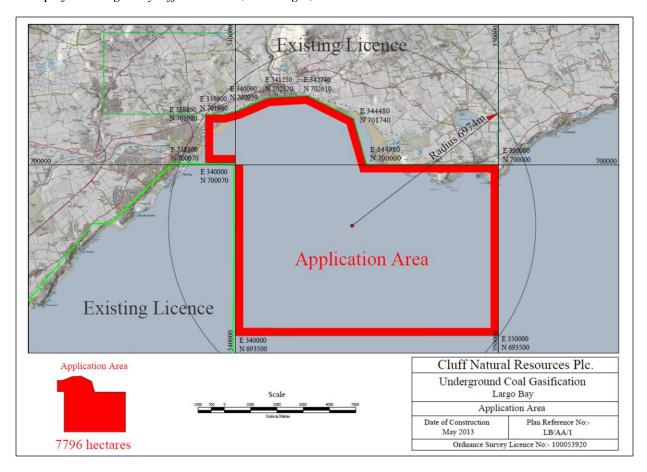
Following a formal offer from The Coal Authority, sponsored by the UK Department of Energy & Climate Change, CNR has been awarded two Conditional UCG Licences, Options for Leases and non-exclusive Exploration Licences for offshore areas at North Cumbria and Largo Bay. CNR has a 100% working interest in each of these licences.

Once planning and environmental permits are in order it is intended that the licences will be developed towards production by a team including Keith Leighfield, an experienced coal practitioner. Keith has 50 years' experience in mining at coal and metaliferous mines and has held various positions before becoming the Chief Surveyor and Minerals Manager for British Coal and the first Director of Licensing at the Coal Authority.

The licence areas are shown below:

Map of the North Cumbria Offshore Area, totalling 8,238 hectares





UCG is a commercially proven industrial process which enables coal, in situ, to be converted into syngas, which is brought to the surface via a production well.

Syngas has a number of commercial applications; feed for power generation plants, iron and steel manufacturing, gas-to-liquids processes and fertilizer/methanol production.

In addition, the carbon dioxide ('CO2') produced as a result of the UCG process can be sold to mature oil fields as part of Enhanced Oil Recovery ('EOR'). EOR is a technique used to increase the amount of crude oil that can be extracted from an oil field through injecting gas into the oil bearing stratum at high pressure.

While UCG has been researched and practiced for the past century, recent developments in directional drilling have been critical in enhancing the commercial viability of the extraction process. UCG technology has a commercial track record, with one facility supplying syngas to a power station for over 40 years. In addition, a number of projects in South Africa and Australia are moving into commercial production.

Gasification

The conversion of the coal to syngas is achieved through a controlled underground

gasification process initiated by the injection and ignition of oxidants into the coal seam.

The coal seam is ignited and gasified, generating a syngas consisting of methane, hydrogen,

carbon dioxide and carbon monoxide.

The rate of gasification is controlled by the injection rate of air or oxygen, but this is

typically 0.5 tonnes of oxygen for each tonne of coal gasified.

All UCG processes are similar in that they require a minimum of two boreholes that have to

be connected, or linked, together to form a complete circuit for the gases to flow through:

• one to inject the gasifying agents and start ignition, known as the injection well; and

• the other to recover the syngas produced, known as the production well.

Historical UCG technology varied from driving underground roadways, or drilling in seam

boreholes from underground roadways to vertical boreholes. Thanks to the advancements made with drilling technology in the oil industry it is now possible to perform directional

drilling from the surface and the application of this technology is vital to the future

development of UCG.

\*\*ENDS\*\*

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