DURHAM COUNTY COUNCIL

At a Meeting of **Environment and Sustainable Communities Overview and Scrutiny Committee** held in Committee Room 2, County Hall, Durham on **Tuesday 25 November 2014 at 9.30 am**

Present:

Councillor B Graham (Chairman)

Members of the Committee:
Councillors J Armstrong, D Bell, E Bell, J Clare, J Clark, J Gray, D Hall, G Holland, I Jewell, S Morrison, P Stradling and L Taylor

Co-opted Members:
Mrs P Spurrell

Also Present:

J Bell, D Boyes and A Surtees

1 Apologies.

Apologies for absence were received from Councillors E Adam, K Hopper, P May and S Zair.

2 Substitute Members.

There were no declarations of interest submitted.

3 Declarations of Interest, if any

There were no declarations of interest submitted.

4 Any items from Co-opted Members or interested parties.

There were no items from Co-opted Members or interested parties.

5 Underground Coal Gasification (UCG) - Overview

The Chairman welcomed Professor J Gluyas, Chair of Geoenergy and Carbon Capture and Storage at Durham University and J McKewon, Spatial Policy Team who were in attendance to provide a presentation on Underground Coal Gasification including the

technological process, installation, licences, regulation and potential benefits and impacts for Durham County (for copy of report and slides of presentation see file of minutes).

Professor Gluyas proceeded to provide an in-detail presentation explaining that the UK energy mix is declining with coal and nuclear power in their last years and oil and gas stock depleating. In relation to coal currently there is 1 year's reserve supply of coal which had been mined which equates to 50 million tonnes, however there was at least 750 year's supply of coal in the UK which was undeveloped. In relation to geothermal there is a potential thermal reserve of greater than 100 year's supply.

It was explained that Underground Coal Gasification (UCG) involved the controlled combustion of coal seams beneath the ground and the consequent recovery of gases. The reaction of the combination of coal + water produced a gas called syngas. It was highlighted that UCG is not a new process and that the system had been used in 'gas works' for many years however the temperature and pressure in the reaction chamber can be precisely controlled but with UCG the precise nature of the and outputs from the UCG process are intimately related to the temperature profile of the underground cavity.

It was explained that 'syngas' consisted of hydrogen, carbon monoxide, carbon dioxide and methane. It was reported that there had been a number of trials in particular in Spain and Australia in order to determine its feasibility however at this stage there was still a significant amount of unknowns. The most advanced developments which had been made with UCG were happening in Australia however detail on their research at this stage was not forthcoming.

Professor Gluyas explained that there were a number of uses for syngas including the use of Hydrogen as a clean fuel, carbon monoxide as a petrochemical and that both of these gases could be used for power generation.

Reference was made to Yerostigaz, a company in the former Soviet Union who produces about 1 million cubic metres (35 million cubic feet) of syngas per day in Angren, Uzbekistan. The produced syngas is used as fuel in the Angren Power Station.

The thermal efficiency of UCG can be as high as 90% and is greater for thick coal seams that behave adianatically, low ash contents, high pulse rates, efficeient water influx and low gas leakage. The gas produced can be used for oil products, methanol carbonylation (acetic acid production), hydrogen fuel cells, carbon capture, carbon capture storage and carbon dioxide enhanced coal bed methane. Further background information was given to UCG and its history, including work which had been undertaken in 1912 at Hett Hill in Durham.

Moving on information was reported in respect of environmental implications and it was reported that there were some issues which would be required to be rigorously monitored including; the release of toxins to potable water, overburden collapse,topsides (although this was expected with any industrial plant)
and monitoring the process which is difficult due to the extreme operating environment.
In conclusion Professor Gluyas advised that long term UCG and geothermal were the only viable options for the UK which gave an acceptable level of homeland energy security. If the Council were to explore UCG further any early developments would require substantial investment in order to ensure it could work commercially.

Councillor E Bell asked if it was known what percentage of coal would be used to create the gas. In response Professor Gluyas advised that it was not known exactly however it could be around 60/70%. Councillor Bell further asked what the expected timescales would be for the development of a plant. It was noted that the development of a UCG plant from the very early stages of discussions to the developmentof the plant can take up to 5-10 years.

Councillor Bell asked whether proposals would be for off shore or on land. In response professor Gluyas advised that it could work on either however, it was about ensuring that the public were comfortable and starting in an area which was not heavily populated. It was noted that off shore costs were higher and the process more complex.

Councillor Holland asked whether the process required a minimum seam depth. It was noted that a thicker coal seam was advantageous. Councillor Clare in following on from that point asked whether it was possible to quantify the output of the operations outlined in the presentation. Professor Gluyas explained that the output was a fairly moderate one of around 100/200 tonnes.

Further discussion took place regarding manpower and it was noted that the process required a lot less human power than traditional mining methods, however a significant workforce would be required. Comparison were made to Gas and Oil operators in Aberdeen and the impacts that these operations had taken upon the economy of the area.

Councillor Boyes, who represented the Easington area, advised that there was a great deal of dissent in his area because of the unknown impact upon the community. He therefore asked what was the anticipated impact, disruption and benefits, if any, that the project would bring.

In response Professor Gluyas advised that the environment was critical and therefore it was imperative to ensure that all risks were fully understood and tested before anything was put in place. He advised that there would be job creation, however these would be higher skilled, with much less manual labour as was found with traditional mining.

In response to comments the Head of Planning and Assets referred to the County Durham Plan and in particular environmental protection which was in place down the Durham coastline. He advised that bearing this in mind the only suitable site would be at Seaham and the port. He further advised that there were still a lot of unknowns however there could be benefits to the Council if they were to make an early move on this, with options to pipe energy to Northumberland, Humberside etc.

Councillor Armstrong asked whether there were any companies identified to undertake the work. In response Professor Gluyas advised that Cluff Natural Resources and Five Quarters were the two main companies involved.

Councillor Wilkes made reference to energy efficiency and zero carbon homes, highlighting the use of renewables and retrofitting and suggested that the council should explore these options further, as it was known that it would help the economy by creating further jobs and would not damage the environment of County Durham.

Professor Gluyas added that he agreed completely and added that we were as country ‘energy greedy’ with an ever increasing appetite for energy and terrible at reducing energy consumption and that the measures outlined by Councillor Wilkes could run in parallel with new sources of energy supply however they alone would not satisfy the increasing demand for energy.,

Councillor Morrison asked what were the possible effects of UCG on the watertable and whether there were any comparisons with traditional methods of extraction. Professor Gluyas responded that UCGtakes place at a level where it would not impact on ground water and that there would need to be in place measures to ensure that pathways do not open up which could cause the contamination of ground water.

Jason McKewon of the Spatial Policy Team then went on to provide a presentation on the way in which the council was addressing UCG under the emerging statutory development plan for County Durham.

The Senior Policy Officer advised that UCG would be a heavily regulated industry with planning permission being required from the minerals planning authority for each phase of extraction, exploration, appraisal and production.

The exploratory phase seeks to acquire geological data to establish whether hydrocarbons are present and may involve seismic surveys and exploratory drilling. The appraisal phase takes place following exploration when the existence of oil or gas has been proved, but the operator needs further information about the extent of the deposit or its production characterisitics to establish whether it can be economically exploited. The production phase will involve the drilling of a number of wells, this may be wells used at the sites at the exploratory and/or appraisal phases of hydrocarbon development.
In addition to planning permission a range of other consents and permissions are required with the Department of Energy and Climate Change giving consent to drill under the Licence once permissions and approvals are in place together with responsibility for assessing risk and monitoring seismic activity as well as granting consent to flaring or venting. The Environment Agency protect water resources and ensure the appropriate treatment and disposal of mining waste and emissions to airand the Health and Safety Executive which regulate the safety aspects of all phases of extraction particularly responsibility for ensuring the appropriate design and construction of the well casing for any borehole.

Other bodies which may be involved in the consenting to the process include the Coal Authority, Natural England, the British Geological Survey and the Hazardous Substances Authorities.

Further details were then presented with regard to planning policy. Members were advised that the County Durham Local Plan which was to be adopted within the next 12 months did not address UCG or any other type of conventional or unconventional hydrocarbons. However, the plan did contain numerous policies which would be applicable to UCG. The County Durham Plan will be supplemented by a Minerals and Waste Policies and Allocations Document which will address all forms of conventional and unconventional hydrocarbons including UCG and fracking. The Minerals and Waste Policies and Allocations Document is to be adopted by the end of 2016.

It was further reported that when the Local plan was prepared there were no licences held for any form of hydrocarbons within or off the Durham Coast and evidence led DCC to conclude during initial investigations that prospects in County Durham for Conventional Oil and Gas, AMM, CMM were low, with UCG being recognised as a possibility off shore. Consultation occurred in December 2010 with respondents agreeing that policies could be prepared in the Minerals and Waste Policies and Allocations Document.
Moving on it was noted that two conditional UCG licences had been issued by the Coal Authority on 29 August 2014 to Cluff Natural resources called Durham North and Durham South however no production can occur until the owners of the licences Cluff Natural Resources have de-conditioned the licences and in order to do this they then need to apply for a wide range of studies.. Evidence suggested that off shore progress to de-condition licences would be slow.

The Senior Policy Officer then went on to outline potential benefits for County Durham including; potential direct employment and the development of associated industries.

In conclusion members were advised that if an application for a UCG plant and infrastructure was to be submitted in the next two years the council would rely upon the County Durham Plan Policies and saved minerals local plan policies. In addition the Council would also take into considerarion the NPPF and Planning Practice guide..

Councillor Boyes expressed his concern and that of the local communitiy in relation to the UCG process and asked whether it was known what the risk of overburden collapse and risk of underground explosion was as there were so many unknowns.
In response the Senior Policy Officer advised that UCG was in its infancy however it was felt to be a viable technology. It was accepted that there was still a number of unknowns and further stringent studies needed to be undertaken however the process is heavily regulated via the Environment Agency and the Health and Safety xecutive. Professor Gluyas commented that there are a lot of unknowns and any project would have to start small with a rigourous monitoring programme in place..

The Head of Planning and Assets advised that members should be reassured that for this to work on a commercial basis it was critical to private companies that the issues and concerns discussed did not occur as the companies would be subject to environmental fines with the prospect of the project failing having already invested considerable sums of money into the project. . It was therefore crucial that DCC worked in partnership with Durham University to ensure that any decisions taken were based upon scientific fact.

Councillor E Bell asked whether there would be any known emissions from the plant. In response Professor Gluyas advised that the only emissions would be steam and water. In addition the CO^2 emissions could be used to synthesize plastics.

Further discussion and debate took place regarding Geothermal energy and the potential for further exploration of this energy source. Councillor Bell further queried why Seaham had been identified as a possible location for a UCG plant, when it was not identified in the County Durham Plan.

The Head of Planning and Assets added that UCG was not a ‘when but an if’, if UCG was to come to Durham, Seaham was the only viable location. Members were also reminded

that the council was still working on other major energy schemes including hydro power, anaerobic digester, bio-mass and hot water rock. The council would also continue to work on micro-regeneration.

Councillor Stradling commented that having himself worked in the mining industry on the east coast, he advised that the coal had already been worked out of the Easington area and he saw little risk of caving. He further asked whether it was likely that UCG would become government policy in the future. The officer responded that any UCG application in relation to County Durham would be out at sea. In relation to Government policy, Professor Gluyas responded that there is very little in current Government policy regarding UCG and that it had not been given proper consideration by Government however Government would have to look at potential future sources of energy.

Councillor Clare commented that there was always the danger that if County Durham did not make a move early on UCG the county may lose out to other areas. He further asked whether there was any danger of potable water being contaminated with polluted water. Professor Gluyas in response added that there was no definitive answer however he was able to advise that over time due to compression and the areas of subsurface becoming tighter and tighter the opportunity for polluted water to escape was reduced.

Councillor Armstrong commented that in effect we were being held to ransom as a result of our energy demands, however he agreed that the council should take a really good look at Geothermal and UCG energy. He further commented it was important that training could be provided to local people so that any jobs created could be of local benefit.

In conclusion the Chairman thanked professor Gluyas and the officers present for their very helpful presentation. It was suggested that this topic be continued as a theme and regular updates be provided on each of the possible technologies which could be developed in County Durham.

Councillor Armstrong further suggested that given that this issue was of interest to all members that Professor Gluyas be invited to attend a future meeting of full council to discuss further.

Resolved:

That the content of the report and presentation be noted.

That as part of the work programme for 2015/16 the Environment and Sustainable Communities Overview and Scrutiny Committee receive updates on possible new energy technologies which could be developed within County Durham.