

Environmental Statement (ES) Summary and Sign-Off

Title:	Gateway Gas Storage Project- Offshore Environmental Statement Addendum 1
Operator:	Gateway Gas Storage Company Limited (Gateway)
Report No:	D/3707/2007 Addendum 1
Submission Date:	December 2010
Block No:	110/3b
Development Type:	Gas Storage Project
Reviewer:	Inger Söderström
Date:	December 2011

A) Project Description:

In November 2007, Gateway Gas Storage Company Limited (Gateway) submitted an Environmental Statement (ES) detailing their proposal to develop an offshore gas storage facility in underground man-made caverns specially created in the salt strata underlying the Irish Sea, approximately 24 km off the coast of Fylde, north west England. The Department notified Gateway that it required no further information in relation to the initial project on the 17 December 2008.

Since then, detailed design work has resulted in the following changes in the project design:-

- The number of storage caverns has increased from 20 to 24, with two wells drilled per cavern (48 wells);
- The spacing between caverns has been reduced from 500 to 450 metres removing the need to cross existing infrastructure (the Rivers pipeline and the Isle of Man power cable) in the cavern area;
- The cavern design has been altered to increase the spatial volume from between 200,000 and 860,000 m³ per cavern to an average of approximately 1,000,000 m³ per cavern, thereby increasing the working gas capacity of each cavern from 57 million standard cubic metres (Mmscm) to between 60 – 96 Mmscm;
- The design, number and layout of the offshore structures has changed from 20 monopods located directly above the centre of each of cavern, to 24 well head platforms (4 hub platforms (HP) and 20 satellite platforms (SP)), as well as a distribution platform (DP) bridged linked to a manifold platform (MP);
- Leaching pumps have been centralised onto the 4 HPs. The change in well/cavern design has increased leaching rates from 385 m³ per hour to 675 m³ per hour;
- Offshore heaters have been added to the HPs for gas injection temperature management;
- The four inch methanol pipeline has been replaced with a 3 inch glycol (MEG) Line
- The 66 Kilo Volt (kV) power cable has been replaced with a 132 kV cable.

The change in design layout allows for the scheduled start-up of the caverns. It is proposed to create 24 caverns, with a platform located above each cavern. The caverns will be connected in a cluster arrangement with 5 satellite platforms linked into each of the 4 central hub platforms. The Hub platform contains all the equipment for providing leaching water and for heating gas exports/imports to /from the field's main gas ring main. The development will also consist of a distribution platform which receives onshore power, transforms and distributes it. The DP is bridge linked to a manifold platform, which connects the import/export pipeline to the hub

platforms via smaller pipelines. Gateway Gas storage facility will be provided with power from onshore at Barrow-in-Furness and will now be a 132kV cable as opposed to a 66Kv cable as originally proposed.

It is planned to commence installation of the jackets in Q2 2013, but piles will be pre-set up to a year prior to this and fitted with transponders. The infield flexible lines between the satellite platforms and the hub platforms, and the service umbilicals between the distribution, hub and satellite platforms and the power cable will be installed after the platforms structures in 2013.

The 36" main import/export pipelines will be laid 70m apart and will connect into the manifold platform. Gas will be distributed from the manifold platform to the hub platforms via 20" pipelines and then onto the satellite platforms via 10" flexible flowlines. The rigid 36", 20" and 3" methanol line will be installed in a second phase during Q4 2015. Infield pipelines will be buried using a jetting technique. A maximum of 100,000 tonnes of rock dump and 96 concrete mats are estimated to be required for crossings and pipeline ends

Drilling is scheduled to commence in the second half of 2012 and continue into 2014. Gateway now intends to drill 2 wells per cavern, increasing the total number of wells from 20 to 48. Conductors will be driven in to the seabed prior to drilling, 48 in total and will be similar to the piling operations. All wells will be drilled with Water Based Mud (WBM) and consist of a 30", 24" and 17.5" sections, with an estimated 21,201 tonnes of cuttings discharged directly to the seabed. Caverns will then be created by salt leaching. Leaching rates have increased from 385m³ per hour to 675m³ per hour. Cavern leaching is planned to commence in 2013 and continue until 2017, with caverns typically taking 2.4 years to complete.

First gas storage is anticipated in Q2 2016. Gateway Gas Storage Facility (GGSF) has a design life of 50 years.

B) Key Environmental Impacts:

The EIA identified and discussed the following key activities as having the potential to cause an environmental impact:

- **Discharges from the solution mining**

The revised cavern design will result in an increase in the proposed brine leaching rates from the solution mining process. This discharge has been remodelled and demonstrates that the dense brine will sink to the seabed, diluting in the process, with a high level of dispersion related to the strong tidal flow. There will be a zone of enhanced salinity that is expected to peak at 7ppt above ambient levels but this impact will be limited to within 500m of the platforms and is not anticipated to have a significant impact and recover is expected once the project is completed.

- **Drill Cuttings**

There will be an increase in drill cuttings from 6,700 tonnes in the original ES to 21,201 tonnes due to the proposal to drill 48 wells as opposed to the original 20

wells. Further modelling was undertaken which predicts that there is unlikely to be a significant overlap of cuttings piles between each cavern to be drilled. There will be localised smothering and a temporary increase in suspended sediment levels, however the cuttings piles are anticipated to disperse given the currents in the area and once drilling has ceased, recovery is expected over time.

- **Navigational Risk**

Due to the re-configuration of the platforms the total exclusion area will be reduced from 12 km² to 11 km². Shipping has increased since 2007 and further traffic studies have been carried out. The development is likely to have a minor impact on shipping navigation as opposed to negligible for the original design. There is a slight increase in collision frequency which can mainly be attributed to the changes to fishing and shipping due to other developments in the area, but this is not considered significant.

- **Underwater Noise**

The revised project will result in an increase in intensity and duration of noise due to the increased period of drilling from 150 days to 1,008 days, the installation of 48 conductors as opposed to 20 originally planned, piling in connection with the 26 platforms as opposed to the 20 monopods and an increase in maintenance vessels from 80 trips annually to 96 trips.

Underwater sound generated by the drilling activity could exceed the behavioural response noise threshold at source as expected noise levels will be up to 127 dB and the behavioural response threshold is between 80 to 200 dB. Noise from the piling is not anticipated to exceed the 224 dB re 1 µPa (peak) sound pressure level injury threshold criteria. Therefore whilst it is predicted that noise levels associated with these activities are unlikely to result in injury to marine mammals, disturbance may be experienced by some marine mammals. Gateway intend to follow the JNCC guidelines for minimising the risk of disturbance and injury to marine mammals, including the use of Marine Mammal Observers (MMOs) and Passive Acoustic Monitoring (PAM) during piling.

- **Atmospheric Emissions**

There has been an increase in fuel use from 15,740 tonnes to 41,320 tonnes due to the change in design and drilling which will result in an increase of emissions for the project from 138,918 tonnes to 206,624 tonnes of CO₂. Although these additional emissions will contribute in a small way to the overall pool of greenhouse and acid gases in the atmosphere, this is not expected to have a significant impact on the local and global air quality.

- **Accidental hydrocarbon release**

The change in project design is not considered to increase the risk of an accidental hydrocarbon release. A number of control measures will be in place to minimise the risk of accidental events, and an Oil Pollution Emergency Plan (OPEP) will be in place.

C) Key Environmental Sensitivities:

The EIA identified the following environmental sensitivities:

- **Fish and Shellfish:** The Gateway Gas Storage Project is recognised as a spawning area for cod, whiting, sole, sprat, plaice, nephrops, dab, flounder and herring, and as a nursery area for whiting, sole, plaice Nephrops and herring. The spawning and nursery areas are extensive and the area of impact would be localised and short term. Therefore the development of the Gateway Gas Storage Project is unlikely to significantly impact these species.

- **Seabirds:** The area is important for over wintering populations of cormorants, gulls, terns, red-throated diver and common scoter. The original Appropriate Assessment concluded that the vessel traffic did not represent a risk to the integrity of the overwintering Common Scoter and Red Throated diver populations of Liverpool Bay and although the Liverpool Bay has since been designated as a Special Protection Area (SPA), the revised boundary has meant that GGSF is no longer within the SPA, but is approximately 2 km west of the boundary. However the established shipping lanes of ports in Morecombe Bay cross the Northern limits of the SPA. The increase in maintenance vessels from 80 per year in the original ES to 96 per year in the addendum, is not considered significant.

- **Protected habitats:** Since submission of the original ES two Special Areas of Conservation (SAC) have changed status. In August 2010 the Shell Flat was upgraded from a possible SPA to a candidate SAC (cSAC) and although the area designated has increased, the nearest cavern lies 4.4 km outside the boundary. A new boundary has also been recommended for the Lune Deep, which now forms part of the Shell Flat and Lune Deep cSAC, with the nearest cavern approximately 13 km distant. The Liverpool Bay Special Protection Area (SPA) was also designated in August 2010, with the GGSF approximately 2 km west of the boundary. A potential Marine Conservation Zone has been identified by the Irish Seas Conservation Zones Project and the proposed GGSF is currently located within this area.

- **Protected species:** Harbour porpoise is the only Annex II species recorded in the area of the GGSF, with medium numbers sighted in February, July, August and September.,

- **Other users of the sea:** The proposed development is situated within ICES rectangle 36E6 & 37E6, with fishing effort greatest between April and June and April and September respectively.

D) Consultees:

The Joint Nature Conservation Committee (JNCC), Natural England (NE), the Centre for Environment, Fisheries and Aquaculture Science (CEFAS), Maritime and Coastguard Agency (MCA), the Ministry of Defence (MoD) and Trinity House (TH), the Environment Agency, the Crown Estate (CE) and Barrow Borough Council, made the following comments:

JNCC/NE: JNCC/NE produced a joint response and confirmed that in their opinion the amendments to the ES do increase the potential for degradation of the local marine environment, but they do not feel they pose an increased risk to any protected site and do not pose a serious risk to the integrity of the wider marine

environment. They also confirmed that the amendment to the ES does not significantly change the information used within the Appropriate Assessment and thus further assessment under the Habitats Regulations is not necessary.

CEFAS (Environment):- commented that there are currently no English fisheries related restrictions on drilling activities in the blocks relating to the Gateway Gas Storage Development and they have no further concerns and recommend consent. CEFAS also recommended any fishing vessels be contacted by VHF radio to advise them of the type and duration of the activity and regular broadcasts should be made for the benefit of all vessels.

CEFAS (Chemical):- Gateway has re-modelled the brine discharge, which is expected to peak at 7ppt above ambient levels. Although some impact may be experienced by the benthic community in the immediate vicinity of the project, these are likely to be localised to within 500m of the platforms and the area should recover once the project has been completed.

MCA: Are content that the Company has taken into account and adequately addressed all the MCA recommendations in the current Offshore Renewable Energy Installations Marine Guidance Note, "Offshore Renewable Energy Installations (OREIs) - Guidance on UK Navigational Practice, Safety and Emergency Response Issues" and any Annexes that may be appropriate to the Development.

However they recommended that the Navigational Risk Assessment is kept under continual review during the construction phase and a further Traffic Study is conducted on completion to determine the Risk Control Options required for the operational stage.

MoD: . MOD has no concerns with the addendum.

TH: Trinity House commented that as the pile foundations for the platforms may be in place and remain proud for up to a year before the jackets are deployed, Gateway will need to consult and agree a revised marking regime with the Trinity House both during construction and for the permanent marking, which may include additional navigational aids on the periphery of the development.

CE: Confirmed they had no comment to make on this addendum and that they would be picking up any relevant changes to the project within the CE agreement for lease, if required.

Barrow Borough Council:- confirmed that the Authority had no comments it wished to make on the addendum.

E) Public Consultation:

No comments were received following the public notice.

F) Further Information:

Further information was requested from Gateway, including clarification on the

offshore pipelines and potential rock deposits/mattressing, potential for scour, the combined impact of mobilising two drill rigs simultaneously, in particular the potential impact of drill cuttings and noise, impact of electromagnetic fields from cabling, visual impact, loss of containment from the rig inventory, project commitments, and navigational risk assessment. Additional information was provided by Gateway in correspondence dated 28 October, 01 November, 18 November and 02 December 2011, which adequately addressed the issues raised.

G) Conclusion:

Following consultation and the provision of further information, DECC OED is satisfied that this project is unlikely to have a significant environmental impact, and content that it will not have a significant adverse effect on the marine environment in general or on any protected sites or species.

H) Recommendation:

DECC OED recommends that the Gateway Gas Storage Project is given consent to proceed.

Approved by:

Wendy Kennedy
Head of Offshore Oil and Gas Environment and Decommissioning

Date: