



Environmental Statement (ES) Summary and Sign-Off

Title:	Arran Environmental Statement
Operator:	Dana Petroleum (E & P) Limited (Dana)
Report No:	D/4069/2010
Submission Date:	July 2010
Block No:	23/11a, 23/16b, 23/16c,
Development Type:	Field Development
Reviewer:	Inger Söderström
Date:	November 2011
A) Project Description:	
<p>Dana Petroleum (E & P) Limited (Dana) is planning to develop the Arran Gas Condensate Field situated in blocks 23/11a, 23/16b and 23/16C in the Central North Sea. Arran is situated approximately 222 km from Aberdeen and 5km west of the median line between the UK and Norwegian sectors. The water depth at Arran is between 77 and 95 metres.</p> <p>The field will be developed by drilling three production wells, which will be tied-back via a new 12 inch pipe contained within a 20 inch carrier pipe,(Pipe-in-Pipe (PIP)) to a new riser Bridge Linked Platform (BLP) located adjacent to the Lomond Platform which is operated by BG Group. Primary processing will be undertaken on the BLP before being transported to the Lomond Platform for secondary processing prior to export. Gas will be exported via the Central Area Transmission System (CATS) Riser Platform and CATS Pipeline to the CATS Processing Plant. Condensate will be exported to Kinneil via the Everest Platform, Everest Liquids System (ELS) and the Forties Pipeline System (FPS).</p> <p>The field will be developed through two drill centres, with one well drilled from the drill centre in the Arran North area and two wells drilled from the Arran South Area. The wells are currently scheduled to be drilled in Q3 2013 to Q1 2014. It is anticipated that the wells will be drilled with a semi-submersible drill rig. The top hole sections i.e. the 36" and 26" sections will be drilled riserless with seawater and viscous sweeps, with a total of 1,278 tonnes of cuttings for the three wells, discharged directly to the seabed. The 17.5",12.25" and 8.5" sections will be drilled with low toxicity Oil Based Mud (OBM) and the 3,957 tonnes of cuttings expected to be generated in total, will be recovered and shipped to shore for treatment and disposal. Following drilling, a drill stem test may be carried out on each well; if required; to obtain reservoir information and fluid samples, resulting in a maximum of 6,400 tonnes of CO² per well. The wells will be produced under natural depletion and will not require artificial lift.</p> <p>Production fluids will flow from Arran North via an approximately 7.2 km PIP and be commingled with fluids from Arran South prior to being carried by an approximately 21 km PIP production pipeline to the Lomond BLP. The production lines will be trenched and mechanically buried, whilst the 6.5" umbilical will either be trenched in a separate trench and left to naturally backfill or will be jet trenched. A total of 31,000 tonnes of rock is required for pipeline crossings and for protection of pipelines and a contingency of 69,000 tonnes for potential upheaval buckling. Installation of the pipelines is scheduled to commence Q2 2014.</p>	

Production is anticipated to peak in the first three years of field life, with a maximum annual average production rate of approximately 2,500,000 m³/day of gas and 843 m³/day of condensate. Produced water will be discharged to sea following treatment, with a peak of 39 m³/day being discharged.

No new power generation or compression facilities are required at Lomond to process the Arran fluids, however minor modifications will be required to tie into the existing gas compression and treatment systems, condensate stabilisation and export systems, topsides control and shut down systems, utilities systems which will provide utilities for the BLP and the provision of new instrument air facilities. Host modifications are scheduled to commence in Q1 2013 and installation of the BLP in Q2 2014.

It is estimated that Arran will have an estimated 15 year field life and is expected to produce 8.2 Bscm of gas. Production is expected to commence in Q4 2014.

B) Key Environmental Impacts:

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

- **Physical disturbance to seabed & physical presence –A** moored semi-submersible drill rig will be used to drill the wells and the anchors will result in localised disturbance of the seabed. The drill cuttings from those sections drilled with WBM, trenching and backfilling of the pipeline & installation of the umbilical, the use of rock dump in connection with pipelay and installation of the BLP, will also cause localised disturbance of the seabed. However, benthic communities will recolonise the impacted area and the impact is not expected to be significant.

The physical presence of the drilling rig, subsea infrastructure and BLP is not anticipated to have a significant impact on other users of the sea due to the appropriate mitigation measures proposed, e.g. 500m safety zone, relevant navigational aids and warnings which are to be out in place and the relatively low fishing effort in the area and moderate shipping levels.

- **Atmospheric Emissions** - Emissions will be generated during the drilling and clean up of the wells and during the installation of the infrastructure. No extended well test will be carried out and any drill stem tests are contingency and if undertaken will be limited to a 48 hours. Although these emissions will contribute overall to global warming, the incremental contributions to the regional and global effects are not expected to be significant. Atmospheric emissions will also be generated by the production of the fluids from the Arran Field, however existing compression ullage on the Lomond Installation created by the declining production from Lomond and Erskine will be utilised. Therefore any increase in power demand as a result of the Arran fluids is expected to be negligible and will not result in an increase in fuel requirements or atmospheric emissions above historic levels experienced during peak production and high gas compression requirement.
- **Marine Discharges** – Water based mud and cuttings discharged during drilling and pipeline commissioning fluids have the potential to impact on water quality. All drilling, commissioning and production chemicals will be CEFAS registered and will be selected to minimise the environmental impact. All operational chemicals will be subject to formal risk assessment prior to use and discharge via the relevant PON15B, PON15C & PON15D activity specific applications.

Produced water will be treated prior to overboard discharge and will comply with the OSPAR 30mg/l dispersed oil standard. This will result in a future potential peak discharge

of 0.438 tonnes/yr from the proposed Arran project and is not expected to have a significant impact on the receiving waters.

- **Underwater noise** – Noise will be generated during drilling and subsea installation, including the piling of the tie in structures. Piling will be limited to 16 hours. The predicted maximum source level for the piling is 201dB re 1microPa @ 1m (peak) and is therefore not expected to exceed the peak levels which could cause physical injury to cetaceans. Although some disturbance may be experienced, Dana intend to follow the JNCC piling guidance and has committed to using a Marine Mammal Observer during piling operations.
- **Accidental loss of Containment** – appropriate mitigation measures are proposed and all activities will be the subject of an approved Oil pollution Emergency Plan (OPEP) prior to operations commencing. Modelling of a subsea blow-out of a total of 90,374 m³. and 1000m³ of diesel from the drill rig, and the potential of oil spill during production, has been undertaken and included in the EIA.
- **Cumulative Impacts** – The Arran Field lies in an area of extensive oil and gas development, however the nearest platform is Mungo at approximately 14 km south and there are no windfarms or aggregate extraction areas in the vicinity of the proposed development. Cumulative impacts are not anticipated.
- **Transboundary Impacts** – Arran is situated 5km west of the median line between the UK and Norwegian sectors, however the Lomond facility and the BLP where the processing of the fluids will take place are approximately 7 km from the median line. Oil may reach the median line in some of the modelled scenarios, however that is based on no response to the spill and in reality Dana would respond to such an incident. Atmospheric emissions are expected to disperse prior to reaching the median line.

C) Key Environmental Sensitivities:

The EIA identified the following environmental sensitivities:

- **Fish:** The Arran Development is within a spawning area for Norway pout, Nephrops, lemon sole cod, mackerel and sandeel and is a nursery area for Norway pout, Nephrops, sandeel and cod . The spawning and nursery areas are extensive and the area of impact would be localised and short term. Therefore the drilling of wells, installation of the BLP and associated pipelay is unlikely to significantly impact these species long term.
- **Seabirds:** Seabird vulnerability is high in September, with the remainder of the year being moderate to low. The overall seabird vulnerability is moderate. It has been assessed that there are sufficient mitigation measures in place to prevent accidental spills that could have a significant impact on seabirds.
- **Protected species:** Harbour porpoise is the only Annex II species recorded in the Arran Development area, and these sightings have been limited to June, July and September. Harbour porpoise are widely distributed and abundant throughout the majority of the UKCS and due to the limited sightings in the Arran Area, it is therefore unlikely that there will be a significant impact on marine mammals.
- **Protected habitats:** There are no designated protected habitats in the vicinity of the proposed development. The nearest Annex 1 Habitat is the Scanner Pockmark cSAC which is 102 km north west of the development.
- **Other users of the sea:** The proposed development is situated within ICES rectangle 43F2 and the fishing effort is relatively low. Shipping density in the vicinity of the proposed development is moderate.

D) Consultees:

The Joint Nature Conservation Committee (JNCC), Marine Scotland (MS), Maritime and Coastguard Agency (MCA), Ministry of Defence (MoD) and Northern Lighthouse Board (NLB) made the following comments:

JNCC: JNCC commented that based on the information provided, they are content that consent is granted for the proposed operations. JNCC also requested that Dana should ensure the JNCC Piling Guidelines are followed during the piling operations.

MS: Marine Scotland is content that the Environmental Statement for the Arran Development can be accepted.

MCA: have no objection at this stage on Safety of Navigation grounds to the submission being consented, subject to the standard conditions.

MoD: MOD has no objections to the Arran Field Development.

NLB: NLB had no objection to the Development, but advised that the scope of the works including drill site locations, pipeline routes, and well head locations along with an expected timetable for the works, should be communicated via Notices to Mariners, the permanent infrastructure on the seabed must be communicated to UK Hydrographic Office to ensure updating of all relevant admiralty charts and recommended that standard marking and lighting requirements should be followed. NLB also required notification of rig moves.

E) Public Consultation:

No comments were received following the public notice.

F) Further Information:

Further information was requested from Dana ,including clarification in relation to the proposed rock dumping, the Lomond BLP, produced water, demonstration of historic emissions at Lomond and emissions from the proposed well test, scope of the Oil Pollution Emergency Plan (OPEP), and the impacts from anchors. Additional information was provided by Dana in correspondence dated 08 April and 20 October 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 Arran Field Development is given consent to proceed.

Approved by:

--Sarah Pritchard-----

Sarah Pritchard - Head of Offshore Environmental Operations, Energy Development Unit.

D/4069/2010
01.08.06.02/196C

Date:---24th November 2011-----
