Environmental Statement (ES) Summary and Sign-Off

Title:	Western Isles Field Development (WID) Environmental Statement
Operator:	Dana Petroleum (E & P) Limited (Dana)
Report No:	D/4104/2011
Submission Date:	April 2011
Block No:	210/24
Development Type: **Reviewer:** **Date:**	Field Development Inger Söderström October 2012

A) Project Description:

Dana Petroleum (E & P) Limited (Dana) is planning to develop the Western Isles Development (WID) which comprises four proven reservoirs, Lewis, Harris, Uist and Barra, and the Berneray prospect. The WID is situated in block 210/24a in the Northern North Sea, approximately 77 km northeast of Shetland and 50 km west of the median line between the UK and Norwegian sectors. The water depth at the WID location is between 151 and 172 metres.

The WID will be developed by drilling up to thirteen wells, six production wells and six water injection wells, all of which will be tied-back to a new Floating Production Storage and Offloading vessel. (FPSO), and one exploration well to investigate the Berneray prospect. There will be two drill centres; north and south; both 2.6 km from the FPSO and 2.4 km apart. Produced fluids will be processed on the FPSO before being exported via tanker. Produced gas will be exported via a 6" gas line to tie into the Tern to North Cormorant pipeline adjacent to the Tern Platform, situated approximately 12 km from the FPSO. Later in the development life, when gas deficiency occurs, gas will be imported for fuel via the same pipeline. Produced water will be treated on board the FPSO prior to discharge.

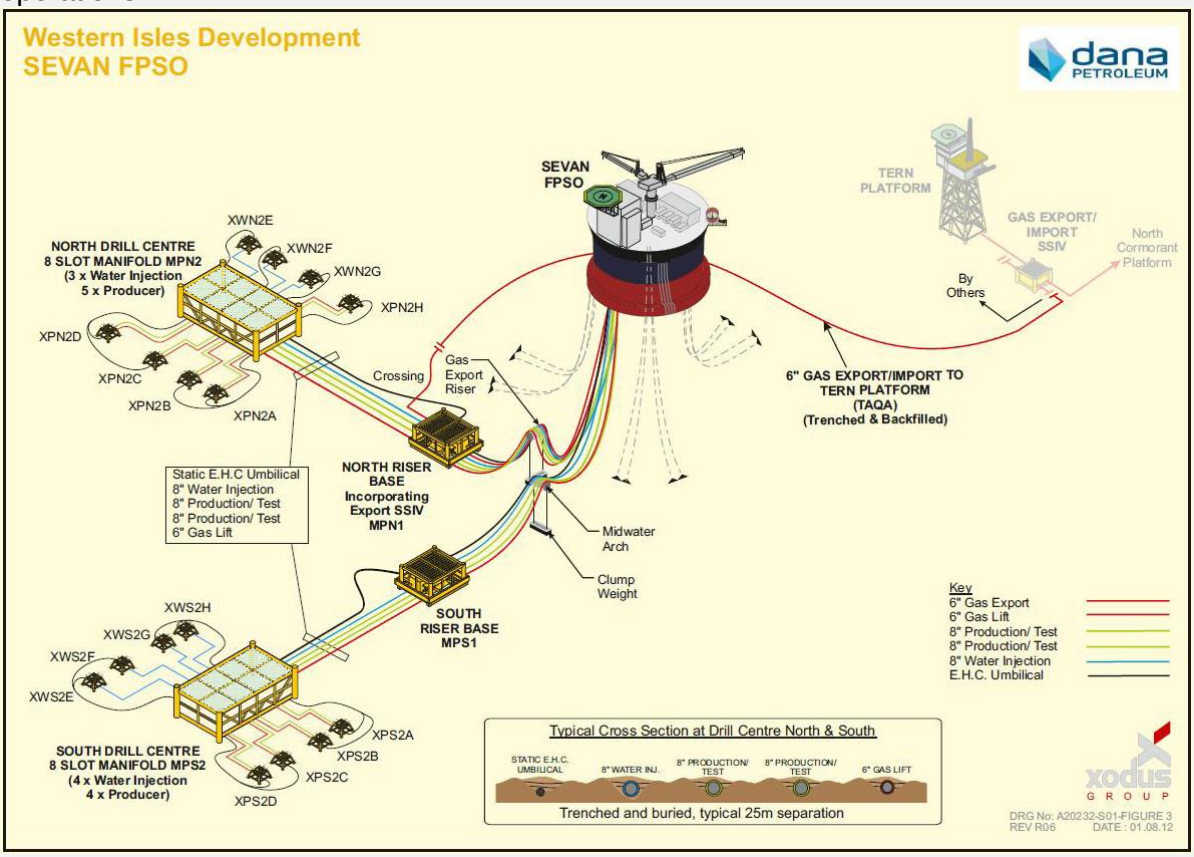
Development drilling is scheduled to start in mid-2013, with the wells drilled from a semi-submersible Mobile Drilling Unit (MoDU). All the 36" and 26" sections will be drilled riser-less using Water Based Mud (WBM), with an estimated 6,123 tonnes of cuttings discharged directly at the seabed. All the 12.25" and 8.5" sections will be drilled using Low Toxicity Oil Based Mud (LTOBM), with an estimated 9,484 tonnes of cuttings that will either be shipped to shore for treatment and disposal, or treated offshore using the hammer mill process prior to discharge.

No extended well testing is planned, but a drill stem test may be carried out on each production well to obtain reservoir information and fluid samples, with a maximum of 2,000 tonnes of hydrocarbons flared over a maximum of 48 hours for each well test, resulting in a maximum of 38,400 tonnes of CO_2 generated for all six wells.

Subsea infrastructure installation is programmed to commence in Q2 2014 and be completed by Q2 2015. The Northern and Southern Drill Centres will each have two 8" production/test lines, a 8" water injector line, a 6" gas lift line and an electro/

hydraulic/chemical umbilical, laid between the manifold and the northern and southern risers respectively and then onto the FPSO. The lines between the manifolds and the FPSO will either be separately trenched and buried, approximately 30 metres apart, or laid as part of a subsea bundle. A separate 12 km, 6" gas export/import line will be laid between the Northern riser base and the Tern to North Cormorant pipeline connection and will be trenched and buried. If the pipelines are separately trenched and buried, there may be a requirement to deposit up to a maximum of 30,000 tonnes of rock to minimise the risk of upheaval buckling and to create and protect the pipeline crossings. A maximum of 350 6m x 3m concrete mattresses will be used to provide protection for the sections of the pipelines and umbilicals that are not trenched.

Installation of the FPSO and first production is planned for Q3 2015. The main power generators on the FPSO will be dual fuel turbines, with Waste Heat Recovery Units (WHRUs) installed to recover heat from the gas turbine exhausts. The WID is estimated to have a 15 year life and is expected to produce 14 million tonnes of oil. Oil production will peak during the first few years of production at 5,600 tonnes/day and decrease to 615 tonnes/day at the end of development life (based on a P10 case). Gas production is anticipated to peak at 337,537 m^3/day, declining rapidly to 37,501 m^3/day. Produced water is expected to be zero for the first six to twelve months of development life, and then increase to a peak of 6,546 m^3/day. All activities will be subject of an Oil Pollution Emergency Plan (OPEP) that will be submitted for approval prior to commencement of operations.



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

MoDU will be used to drill the wells and the anchors will result in localised disturbance of the seabed. The discharge of drill cuttings from the well sections drilled with WBM and the discharge of treated cuttings from the well sections drilled with LTOBM (if this option is chosen), the potential trenching and backfilling during installation of the pipelines and umbilicals, and the potential deposit of rock and deposit of concrete mattresses 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 and subsea infrastructure is not anticipated to have a significant impact on the marine environment or other users of the sea, and appropriate mitigation measures are proposed to protect navigational interests, e.g. 500m safety zone and relevant navigational aids and warnings.

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 if any drill stem tests are undertaken they will be limited to a 48 hour period per well. Atmospheric emissions will also be generated by the combustion equipment and routine flaring during the production of hydrocarbons from the WID and, as a worse case, are predicted to represent approximately 0.6% of total UK CO_2 emissions from offshore oil and gas installations. Emissions during production will be regulated under the PPC Regulations and the decision to import gas when the development becomes gas deficient will limit the emissions generated. Although all the emissions will contribute overall to global warming, the incremental contribution to regional and global effects are not expected to be significant.

Marine Discharges – The discharge of mud and cuttings during drilling, the discharge of pipeline commissioning fluids and the discharge of produced water will all 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 activity specific applications for chemical permits. Produced water will be treated prior to overboard discharge and will comply with the OSPAR 30mg/l dispersed oil standard, although Dana's target is to achieve 15mg/l. This will result in a potential peak discharge of 72 tonnes/yr (target of 36 tonnes/yr) of dispersed oil from the WID project. Any impact of the produced water discharge is expected to be localised (near-field) and, because of the dilution of the discharge, is not expected to have a significant impact on the receiving waters.

Underwater noise – Noise will be generated during drilling and subsea infrastructure installation, including the noise associated with piling of the two manifolds. Piling will be limited to 16 hours. Dana presented noise modelling data for a 1.5m diameter pile and concluded that sound levels capable of inducing a permanent threshold shift in cetaceans would only occur in the immediate vicinity of the pile driver. Beyond a distance of 10m, the sound levels are expected to be below the levels capable of causing permanent or temporary threshold shift, but may result in some disturbance of cetaceans. Dana intend to follow the JNCC piling guidance and has committed to using a Marine Mammal Observer during the 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 releasing a total of 102,616 m^3 of oil and the potential release of 1000m^3 of diesel during the drilling operations, and the potential release of oil during production operations, has been undertaken and included in the EIA.

Cumulative Impacts – The WID Project lies in an area of extensive oil and gas

development, the nearest platform being the Taqa operated Tern Platform located approximately 12 km to the east. There are no windfarms or aggregate extraction areas in the vicinity of the proposed development. Cumulative impacts are not anticipated.

Transboundary Impacts – The WID Project is situated 50km west of the median line between the UK and Norwegian sectors. Modelling predicts that an oil spill could cross the median line and beach on the Norwegian coastline, but that assessment is based on no response to the spill and Dana will have an approved OPEP in place that will include an appropriate response to any incident. Operational discharges are not expected to have any transboundary impacts, and atmospheric emissions are expected to disperse prior to reaching the median line.

C) Key Environmental Sensitivities:

The EIA identified the following environmental sensitivities:

- **Fish:** There are cod, haddock, saithe, Norway pout and sandeel spawning grounds and blue whiting, haddock, Norway pout and mackerel nursery grounds in the vicinity of the proposed development. The spawning and nursery areas are extensive and any impact would be localised and short-term. The proposed development is therefore unlikely to have any significant long-term impact on these species.

- **Seabirds:** Seabird vulnerability is very high in February, high in March, July, September and October, and moderate to low for the remainder of the year. The overall seabird vulnerability is considered to be moderate, and there are sufficient mitigation measures in place to prevent any accidental spills that could have a significant impact on seabirds.

- **Protected species**: Both grey and harbour seals inhabit coastal waters and have occasionally been observed to travel long distances, but the proposed development is 77 km from the coastline and both species are unlikely to be present in the area in significant numbers. The harbour porpoise is the only Annex II species recorded in the WID area, with limited sightings in June, July and August, but the harbour porpoise is widely distributed and abundant throughout the majority of the UKCS and any disturbance is expected to be localised and therefore unlikely to be significant.

- **Protected habitats**: There are no designated protected habitats in the vicinity of the proposed development. The nearest Annex 1 Habitat is the Braemar cSAC which is 250 km southeast of the development. The development proposals are not expected to have any significant impact on any protected habitat.

- **Other users of the sea**: The proposed development is situated within ICES rectangle 51F0 and the fishing effort is low, representing <0.1% of the total fishing effort in UK waters. Shipping density in the vicinity of the proposed development is moderate with an estimated 603 ships passing within 10 nm of the development area. Appropriate navigational controls will be put in place, and it is not anticipated that there will be any significant impact on other users of the sea.

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) responded to the consultation:

JNCC: JNCC confirmed that they were satisfied with the assessment of the potential impacts of the proposed operations.

MS: Marine Scotland confirmed it is content that the Environmental Statement for the Western Isles Field Development should be accepted. They requested a copy of the site and pipeline survey reports, which will be a condition of acceptance of the ES.

MCA: MCA had no objections on the grounds of Safety of Navigation, subject to relevant approvals including the standard navigational conditions.

MoD: MOD had no objections to the Western Isles Field Development.

NLB: NLB had no objections to the Development, but advised that the Standard Marking Schedule for Offshore Installations will apply to the MoDU engaged in the drilling operations and the FPSO. They also advised that notification of all MoDU moves and the geographical locations (WGS84 datum) of all subsea structures should be communicated to the United Kingdom Hydrographic Office in order that Notices to Mariners can be issued and that Admiralty Chart BA2182D can be revised accordingly.

E) Public Consultation:

No comments were received in response to the public notice.

F) Further Information:

Further information was requested from Dana, including clarification in relation to the produced water, gas utilisation and flaring strategies; emissions data, including during offloading; pipeline design and installation; combustion plant selection and information relating to the selected FPSO. Additional information was provided by Dana in correspondence dated 12 April, 07 August and 18 October 2012, which adequately addressed the issues raised.

G) Conclusion:

Following consultation and the provision of further information, DECC OGED is satisfied that this project will not have a significant adverse impact on the receiving environment or the living resources it supports, or on any protected sites or species or other users of the sea.

H) Recommendation:

On the basis of the information presented within the ES and the additional information provided by Dana, and taking account of the advice received from consultees, DECC OGED is content that there are no environmental or navigational objections to approval of the proposals, and has advised DECC LED that there are no objections to the grant of the relevant consents.

Approved by:
Sarah Pritchard *26/10/2012*
----------Dated:----------
Sarah Pritchard Head, Offshore Environmental Operations, Energy Development Unit.