

**CHRYSAOR LIMITED.
SOLAN FIELD DEVELOPMENT
Environmental Statement Summary**

To: Sarah Pritchard

From: Inger Söderström

Date: 20 April 2012

ES Title:	Solan Development
Operator:	Chrysaor Limited (Chrysaor)
Consultants:	RPS Energy
Field Group (DECC):	Aberdeen
ES Report No:	W/4031/2008
ES Date:	November 2009 and updated December 2010
Block Nos:	205/26a
Development Type:	Field Development by drilling up to five wells tied back to a platform, with oil storage prior to export via shuttle tanker.

Project Description

The Solan Field is located in Block 205/26a on the West of Shetland Continental Shelf and is located approximately 135 kilometres (km) to the west south west of Shetland mainland, 103 km to the west of the island of Foula, Shetland and 96 km to the north west of the Orkney Islands. The nearest international boundary to the development is the UK/Faroe median line, which lies just over 59 km to the North West.

Chrysaor plan to develop the field by initially drilling one water injector (WI) well and two production wells followed by a second WI well and if required a third production well. The wells will be tied back to a steel jacket structure where the fluids will be separated and metered. A storage tank situated 100m south-southeast of the platform and with a 39,735 tonne capacity will be used to store produced oil, prior to it being transferred to tanker for export. The platform has been designed as a Normally Unmanned Installation (NUI), however it will initially be manned and will only revert to an NUI following consultation and agreement with the Department.

Key Environmental Sensitivities

- Fish Spawning area for sandeels (November to February) and Norway Pout (January to May)
- Nursery for sandeels (March to April), Norway Pout (March to June, Mackerel (May-September) and Blue Whiting (June to August)
- High seabird vulnerability April and July, but moderate to low the rest of the year.
- High diversity of cetaceans in the area. Moderate densities of Minke whale, Rissos dolphin, white-sided dolphin, and harbour porpoise have been recorded. Low densities of white-beaked dolphin, Pilot whale, Sperm whale and Sei whale have also

been recorded in the vicinity of the development.

- Peak fishing during the winter months, predominantly targeting pelagic species.
- Nearest coastlines to the proposed development (NW Orkney Islands 98 km, SW Shetland Mainland 135 km, Foula, Shetland 103Km) are areas of international importance for populations of seabirds, seals and otters.

Key Potential Environmental Impacts

The EIA identified the following potential impacts and related mitigation measures :-

- **Physical Presence** - disruption to other sea users. Appropriate mitigation measures will be in place, e.g. 500m safety zones around the platform, drilling rig and well heads, notices to mariners etc., any impact on shipping and navigation is considered to be negligible due to low volumes of shipping in the immediate vicinity of the proposed development.
- **Seabed disturbance:-** A number of the proposed activities will impact the seabed including the discharge of drill cuttings, the footprint of the drill spud cans and rig anchors, the platform, oil storage tank, pipelines and associated mattresses. No cuttings will be generated for the first producer and water injection well as they are sidetracks of existing wells and will be drilled with OBM, with all cuttings contained and shipped to shore. The five wells will generate 1,134 tonnes of cuttings in total which will be discharged to the seabed and whilst this will result in smothering of benthic communities in the vicinity of the wells, based on previously drilled wells in the area, it is anticipated that the impact will be temporary and recovery will commence following completion of drilling. The platform legs will impact an area of 80 m², the tank 2,025 m². Flowlines are all between 300 and 400 m long and will require a total of 400 mattresses, all to be laid within the 500m exclusion zone.
- **Noise:-** Noise will be generated during the drilling, pipelay, production operations and during the piling operations associated with the installation of the platform and oil storage tank. Piling will be undertaken over a 68 hour period and is anticipated to be approximately 140 db at source. Therefore it is unlikely that the injury threshold criteria will be exceeded, although behavioural response criteria may be exceeded, Chrysaor intend to ensure the JNCC protocol for minimising the risk of disturbance and injury to marine mammals from the piling operations, including the use of two dedicated marine mammal observers and the use of passive acoustic monitoring.
- **Atmospheric Emissions:-** Atmospheric emissions will result from the power generation during the drilling of the Solan wells and the installation of the storage tank and platform; from the drilling rig, standby vessels, heavy lift vessels; from the power generation during the production phase and emissions from the well testing. Installation will result in 6,224 tonnes of CO₂ being emitted, whilst drilling of the wells will result in 16,800 tonnes of CO₂ and 45,395.2 CO₂ generated annually during production. Whilst the emissions will affect the local air quality, it is anticipated that there will be rapid natural dispersion and although they will contribute to the regional and global emissions, they are unlikely to have any significant impact.
- **Marine Discharges:-** Water based mud and cuttings will be discharged from the top hole sections of the wells and there will be a discharge of visibly oil free water from the well bore clean up. A detailed risk assessment of the chemicals to be used and discharged during the proposed drilling operations will be included in a PON15B Chemical Permit application prior to the operations being undertaken. Produced

water will be re-injected and Chrysaor has committed to an operating policy of no production without injection.

- **Accidental Events:-** Modelling was undertaken for a release of 40,065 tonnes of crude, which represents the entire inventory of the storage tank and is higher than the predicted 29,400 tonnes worst case spill associated with a potential well blow out. Modelling was also undertaken for a spill of 1,900 tonnes of diesel which represents the total fuel inventory of a drilling rig. A number of control measures will be in place and Chrysaor will have to have an approved Oil Pollution Emergency Plan in place prior to operations commencing.
- **Cumulative Impacts:-** There are no licensed dredging or offshore windfarm developments in the general area of the proposed development, the level of shipping in the area is considered low and the nearest oil and gas infrastructure is the Foinhaven and Schiehallion Fields located approximately 31 km and 35 km north respectively. It is considered unlikely that the development will have a significant effect in combination with other projects.
- **Transboundary Impacts:-** The closest international boundary between UK/Faroe is 59 km NW from the Solan Field . Transboundary emissions are expected to disperse rapidly and be undetectable against background levels at 20 km and therefore no transboundary impacts are expected. Whilst oil spill modelling predicts a 20% chance of hydrocarbons crossing the median line, there is less than 2.5% probability of it beaching on the Faroese coastline. Modelling is a worst case prediction without any intervention, whereas in reality an oil spill response would be initiated by Chrysaor following a spill scenario.

Public Consultation: No comments were received as a result of the public consultation.

Consultee(s):

The statutory consultees for this project were the Joint Nature Conservation Committee (JNCC) and Marine Scotland (MS), Northern Lighthouse Board (NLB), Maritime and Coastguard Agency (MCA), Ministry of Defence (MOD) . The following comments were made:

JNCC:- Initially requested clarification on a number of issues including location of the proposed infrastructure & in particular pipelines, the survey work undertaken, potential Annex 1 Habitat – stony reef, assessment of potential impacts and control measures – effects of drill rig anchors and potential scour around the oil storage tank. Following additional information from Chrysaor, JNCC commented that they are content that there is unlikely to be any significant impacts to benthic habitats as a result of jacket leg installation or relocation of the subsea oil tank. and are therefore content for the proposed development to be approved.

MS:- MS requested clarification of a few issues including the benthic data and requested a copy of the final version of the survey report and the associated report. Following additional information from Chrysaor, MS has confirmed that they are content that the Environmental Statement can be accepted.

NLB:- The NLB had no objections to the proposals, however they recommended the appropriate marking and lighting of the platform to reduce the risk to surface marine traffic and confirmed that detailed recommendations will be provided during the Consent to Locate application stage. They also confirmed that they will require the geographical locations (WGS84 datum) of all subsea structures to be notified to the United Kingdom Hydrographic Office in order that Admiralty Chart BA219 can be revised accordingly. They also require notification of any Rig moves.

MCA:- MCA commented that they have no objections at this stage on Safety of Navigation grounds to the submission being granted consent, subject to the standard conditions.

MOD:- MOD has confirmed they have no objections.

Further Information: In addition to the consultee comments a number of issues were highlighted by DECC and significant discussions and further information was requested, with regard in particular to the proposed unmanned status of the platform, the monitoring and leak detection facilities, oil spill response, treatment of produced water, power generation during production, flow lines and the oil storage tank.

Conclusions:

Following consultation and the provision of the additional information by Chrysaor on the 16 April 2010, 10 November 2011, 13 December 2010, Update dated 13 December 2010 revision 02, 31 March 2011, 03 May 2011, 28 June 2011, 12 August 2011, and 14 December 2011, and in consideration of the report by an independent consultant on 27 March 2012, DECC and its consultees are satisfied that this project is not likely to have a significant impact on the receiving environment, including any sites or species protected under the Habitats Regulations.

Recommendation(s):

On the basis of the information presented within the ES, the update to the ES, the supplementary information provided in support of the ES and advice from consultees it is recommended that the ES should be approved but should include the following conditions:-

1. The Department notes that the Solan Platform is intended to be operated as a 'Normally Unattended Installation' (NUI). However, Chrysaor must fully staff the Solan Platform during an extended commissioning phase, which must include a night shift for an initial period. Phasing out of the night shift, with control reverting to the Onshore Control Room, and the establishment of NUI status must only be carried out following consultation with, and the written agreement of the Department.

2. The Department's agreement to phasing out of the night shift and/or the establishment of NUI status will be dependent upon Chrysaor or the appointed operator making available to the Department any relevant reports pertaining to the operation of the installation; the outcome of Departmental inspections of the offshore installation and the onshore control facilities; the Department confirming that it is satisfied that the installed plant and monitoring systems are robust and have been extensively tested and proven; and the outcome of a review of the period of remote plant operation following loss of satellite links (currently anticipated to be 1 hour).

3. The Department notes Chrysaor's commitment to re-inject produced water and the oil storage tank displacement water, and the commitment to cease production should the re-injection facility not be available. The Department therefore reserves the right to request a supplement to the ES if there is any deviation from this strategy, which may require to be subject to further public notice. Irrespective of whether the Department requests a supplement to the ES, Chrysaor or the appointed operator will be required to apply for a variation of their oil discharge permit that may also be subject to a period of public notice.

4. The Department notes the proposed strategy to deal with fuel gas deficiency, and reserves the right to request a supplement to the ES if there is any deviation from this strategy, which may require to be subject to further public notice. Irrespective of whether the Department requests a supplement to the ES, Chrysaor or the appointed operator will be required to apply for a combustion installation permit that will have to be supported by a Best Available Technique (BAT) assessment and an Energy Audit that provides full details of the proposed strategy (including reference to alternative options such as fuel gas import) that will be subject to a separate public notice requirement.

5. The Department notes Chrysaor's commitment to ensure that the JNCC protocol for minimising the risk of disturbance and injury to marine mammals will be followed whilst undertaking piling operations during the installation of the platform and oil storage tank, and that two dedicated trained and qualified Marine Mammal Observers (MMOs) assisted by Passive Acoustic monitoring (PAM) will be provided for the duration of the operations. If there is any deviation from this strategy, Chrysaor or the appointed operator must notify the Department prior to undertaking the proposed piling operations and obtain the Department's approval.

6. The Department notes Chrysaor's commitment to provide a standby vessel during offloading operations from the oil storage tank to the shuttle tanker. If there is any deviation from this strategy, Chrysaor or the appointed operator must notify the Department prior to undertaking the proposed operations and obtain the Department's approval.

7. The Department notes Chrysaor's commitment to consider reducing the number of mattresses required for flowline protection during the detailed design studies relating to flowline installation (current maximum quantity 400). Details of the final proposals will have to be included in the application to the Department for a Direction to install the flowlines (the PON15C), which will be required to support the application for a Pipeline Works Authorisation.

8. The Department notes Chrysaor's commitment to remove the oil storage tank, the platform, the subsea structures and any unburied pipelines at the end of field life. Details of the final proposals will have to be included in the Decommissioning Programme and the Marine and Coastal Access Act licence application submitted to the Department prior to undertaking the decommissioning activity.

Sarah Pritchard:-

Date:- 20 April 2012

Head of Offshore Environmental Operations