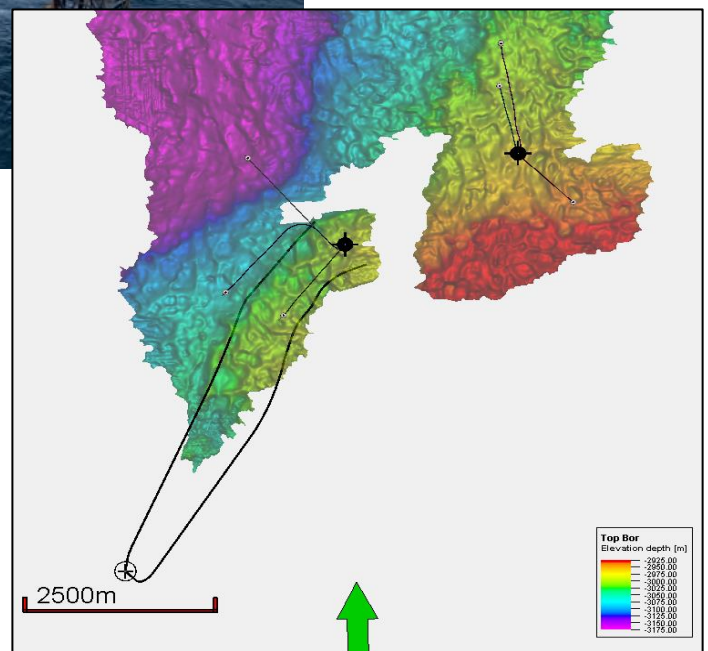




January 2022

SOLSORT UNIT (LICENSE 4/98, 3/09 & 7/89) NORTH SEA – DENMARK ESPOO REPORT SOLSORT WEST LOBE

Non-technical summary



Top photo shows Syd Arne Main with bridgeline East Well-head Platform and North Well-head Platform in the distance
Bottom picture shows the two Solsort wells to be drilled from North Well-head Platform.

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1. Non-technical summary

INEOS Oil & Gas Denmark (hereafter called INEOS) plans to phasedevelop the Solsort field by drilling two wells from the South Arne Well Head Platform North (SA WHPN) into the Solsort West Lobe reservoir including modifications at the South Arne installations to allow for receiving, transporting, processing and exporting the Solsort West Lobe fluids. Evaluation of the East Lobe will be conducted at a later point.

The ESPOO report comprises the Espoo documentation of Denmark elaborated under the Solsort West Lobe Development Project. It contains a description of the project-related transboundary environmental impacts, which are caused by project impacts generated in Denmark and potentially affecting the marine territories (EEZ and/or territorial waters) of Norway, Sweden and Germany.

The Espoo report and procedure are an integrated part of the EIA procedures and approval processes.

The consultation process and content of the environmental impact assessment documentation for the Solsort Development project is considering recommendations given from the Economic Commission for Europe (UNECE, 1996) and the European Commission (European Commission, 2013).

The following countries have requested to be part of the Espoo process: Sweden and Germany. Norway only wants to be informed of the project and process.

The consultation process started 20 July 2021, when the Danish EPA as Espoo focal point distributed a letter of notification together with an Espoo Scoping report to the Affected Parties (AP).

1.1 The Project

The Solsort West Lobe will be developed with one production well and one water injection well.

The two wells will be drilled from the SA WHPN platform, located approximately 250 km west of Esbjerg, at a water depth of 61 meters. The wells will end in the Solsort West Lobe reservoir, see [Figure 1-1](#).

Solsort West Lobe production is metered prior to being commingled with South Arne production at the South Arne WHPN. Solsort production relies on commercially available processing capacity in the South Arne facilities.

Licence Partners in the Solsort Unit are:

- INEOS E&P A/S (Operator)
- INEOS E&P (Petroleum Denmark) Aps
- INEOS Energy (Syd Arne) Aps
- Nordsøfonden (Danish North Sea Fund)
- Danoil II Aps
- Danoil Exploration A/S

The project includes:

- Site survey for relief well to ensure a safe position for a relief well and drilling rig in case of a well control situation and if a safe location cannot be found within current survey areas. Emissions from supply vessel and underwater noise from the survey equipment can be expected.

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- Drilling of two wells from the South Arne North platform into the Solsort West Lobe reservoir, one producer and one injector. New flowlines including in-line metering on South Arne North platform and lift gas flowline for later use. Modifications of the South Arne central including installation of a new water filter package for water injection pump. New wax inhibitor on South Arne East platform. Chemicals will be used and discharged during drilling, emission from operation of rig and vessels and footprint on seabed from the rig can be expected.
- Decommissioning at end of field life including plug and abandonment of wells. Chemicals will be used during plug and abandonments of the wells and emission and waste can be expected during decommissioning.

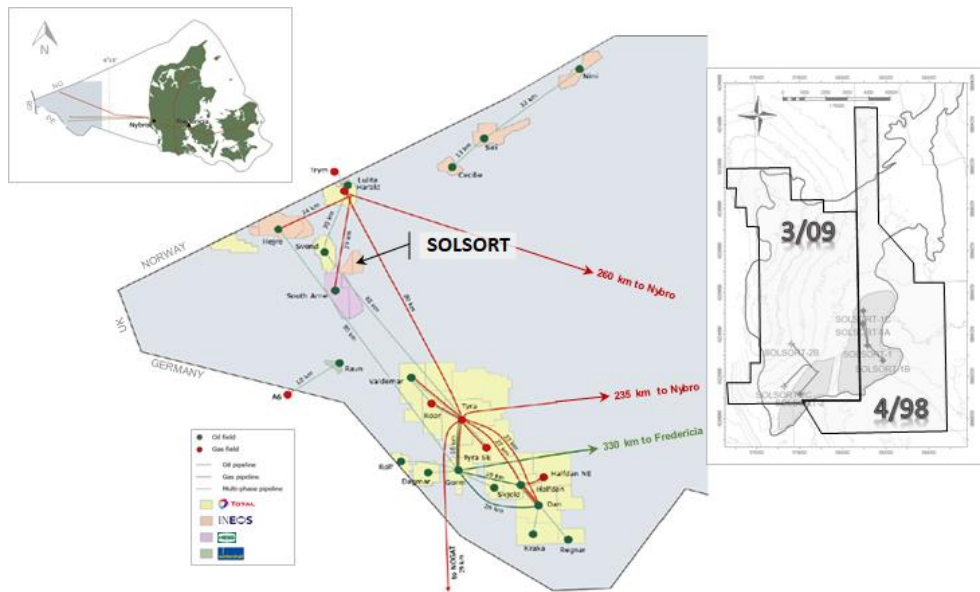


Figure 1-1 Solsort field location and surrounding infrastructure in the Danish sector of the North Sea

1.2 Screening of potential transboundary impacts

A screening of potential transboundary impacts has been carried out and the detailed assessments made in the EIA report.

Based on the results of the detailed assessment, the Espoo report presents a screening of the same impacts in relation to their potential transboundary effects. Because of the low range for most of the project impacts, significant transboundary impacts can be ruled out with certainty in many cases. Subsequently, these impacts are not further elaborated on in this chapter, and focus is given to those impacts for which significant transboundary impact cannot be excluded in the first round.

An overview of potential transboundary impacts has been prepared, see Table 1-1 below.

Table 1-1 Screening of potential transboundary impacts

| Activity | Potential impact | Transboundary evaluation |
|---|---|---|
| Environmental impacts of activities during the construction phase | | |
| Presence of drilling rig | <ul style="list-style-type: none"> > Impacts on fisheries and shipping due to exclusion zones around drilling rigs | <ul style="list-style-type: none"> > Local impact only. |
| Discharge of drill cuttings, drilling mud (WBM) components and cementing chemicals (only discharge of green and yellow chemicals) and of treated sewage | <ul style="list-style-type: none"> > Physical smothering of seabed mainly affecting benthic fauna > Water contamination from suspended cuttings, solids and drilling chemicals and impact on pelagic organisms > Sediment contamination from drilling chemicals affecting benthic fauna > Discharge of treated sewage | <ul style="list-style-type: none"> > Local impact only at short distances from the platform. > Local impact only. Several field studies have consistently shown that drilling waste solids are diluted and deposited within 30 meters from the rig. > Local effect only in the vicinity of the drilling sites > Negligible local impact |
| Well completion | <ul style="list-style-type: none"> > Discharges of completion fluids can impact on water quality and marine fauna. However, only green chemicals are discharged. | <ul style="list-style-type: none"> > Local or no impact. |
| Noise from site survey, drilling operation and ramming of well conductor casing | <ul style="list-style-type: none"> > Impact on marine mammals and fish | <ul style="list-style-type: none"> > Impacts from site survey and ramming in Danish waters only (up to 20 km from site). The site is more than 20 km from the UK, NO and GE border, and therefore negligible local impact. Soft start procedures will be used. > Noise from site survey and drilling operations are local. |
| Accidental spills and blowout | <ul style="list-style-type: none"> > Mainly birds, marine mammals, fish, coastal ecosystems, fisheries, aquaculture and tourism may be affected. | <ul style="list-style-type: none"> > Potential transboundary impacts are possible |

| Activity | Potential impact | Transboundary evaluation |
|---|---|---|
| | <ul style="list-style-type: none"> Blowouts are extremely rare events > Economic loss to fisheries, aquaculture and tourism due to oiling | <ul style="list-style-type: none"> > Potential transboundary impacts are possible |
| Environmental impacts of activities during the production and decommissioning phase | | |
| Accidental spills Blowout | <ul style="list-style-type: none"> > Extremely rare events. Experience from previous blowouts and oil spills at sea have shown that it is mainly birds, marine mammals, fish, coastal ecosystems, fisheries, aquaculture and tourism than may be affected > Economic loss to fisheries, aquaculture and tourism due to oiling > Mainly birds, plankton, fish eggs and larvae may be affected. | <ul style="list-style-type: none"> > Potential transboundary impacts are possible > Potential transboundary impacts are possible > Potential transboundary impacts are possible |

1.3 Environmental assessment of transboundary impacts

1.3.1 Impacts of accidental spills

Blowout is an extremely rare event and extensive preventative/control measures are implemented to reduce the likelihood of such events.

Experience from previous blowouts and oil spills at sea have shown that it is mainly birds, marine mammals, fish and coastal ecosystems that may be affected by large oil spills.

The assessment of the environmental impacts of accidental blowout is based on modelling results representing a worst-case scenario in which no mitigating oil spill response measures are taken.

The modelling shows that the risk of oil stranding on coasts is negligible, even in case of a blowout. However, Norwegian SVOs may be hit by oil in case of an unmitigated blowout.

Impacts on the conservation status of the nearest Natura 2000 areas (German and Dutch Natura 2000 areas 45 km south of Solsort) is assessed to be limited. There may however be a risk of sedimentation of oil on the habitat type 1110 Sandbanks, especially in the German area, thereby affecting the benthic infauna community at Dogger Bank.

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Harbour porpoises, harbour seals and grey seals may be affected by oil, but it is assessed that only a tiny fraction of the populations is likely to be affected.

The risk of environmental impacts during a blowout is generally assessed to be low. This is mainly due to the risk that a blowout is extremely low since all safety systems and measures are in place on the platform or during drilling.

In case of a blowout, the South Arne oil spill contingency plan will be activated, and oil spill combat will be carried out, which will reduce the spreading of oil and mitigate impacts of any spill.

1.3.2 Risk assessment accidental spills

Based on the above and using the criteria described in chapter **Error! Reference source not found.**, it is assessed that the environmental risks related to accidental spills during construction and operation of the Solsort WHP platform is **Low to Negligible** (Table 1-2).

Table 1-2 Environmental risk of accidental spills during construction and operation of the Solsort WHP platform.

| Impact | Extension of impact | Duration of impact | Magnitude of impact | Severity of impact | Likelihood of impact | Environmental Risk |
|---|---------------------|--------------------|---------------------|----------------------|----------------------|--------------------|
| Impacts of oil release during blow-out | International | Medium term | Large | Major impact | Very low | Low risk |
| Impacts of gas release during blow-out | Local | Short term | Large | Moderate impact | Very low | Negligible risk |
| Impacts of accidental spills of chemicals | Local | Short term | Low | Insignificant impact | Low | Negligible risk |

1.4 Oil spill contingency plan

INEOS Oil & Gas Denmark has established a legal binding cooperation arrangement with Total E&P Denmark, for mutual assistance in case of an oil spill incident from one of the operator's production installations (INEOS Oil & Gas Denmark 2019). This arrangement ensures that four containerized DESMI fast sweep oil collection systems will be available for containing and collecting spilled oil, depending on the magnitude of the spill. In case of blow-out, further resources will be provided by Oil Spill Response Ltd (OSRL).

In Denmark, the preferred response strategy is containment and recovery of spilled oil. Dispersant spraying may be chosen, subject to approval from the DEPA (made official).

Mobilization of the oil spill response (Tier 1) for a small oil spill scenario will in 80% of the cases be within 3 hours. A scenario where the oil spill extends beyond the immediate site proximity (Tier 2 scenario) will be within 16 hours and for the offshore limitation of the spill in relation to uncontrolled well blow out etc. (Tier 3 scenario) it will take 21 hours.

1.5 Conclusion

Most of the environmental impacts from the Solsort West Lobe Development project are local or are confined to Danish waters. These impacts have been assessed in the EIA report to have an insignificant or minor impact on the environment. Underwater noise is assessed to have a moderate but short-term impact and it is confined to Danish waters.

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The environmental impact of accidental oil, gas and chemical spills and especially an uncontrolled blow out during drilling of a well or during normal production may, however, have transboundary impacts.