

EDC PROJECT REVIEW SUMMARY: Johan Sverdrup Offshore Project

Project Description	Johan Sverdrup Offshore Project
Sponsors	Lundin Petroleum
Country	Norway
Project Category	A
Canadian Exporter(s)	Various Canadian Exporters
Description of capital goods and/or services	Sale of Various Canadian Goods and Services
EDC Product	Project Financing
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Project Categorization


The Project consists of an offshore oil and gas development located 155 kilometers (km) off the coast of Norway covering an area of approximately 200 km² in water depths of 110-120 meters (m). Project infrastructure includes four platforms, three subsea installations, two export pipelines and power cables from the mainland. The export pipelines, one for oil and one for gas, will be 274 km (to the existing Mongstad Terminal) and 156 km (to an existing pipeline near Kårstø) in length, respectively, while the power cables from shore will measure 200 km (to the national grid in Kårstø). Project life is estimated to be 50 years with total recoverable reserves modeled to be between 1.8-2.9 billion barrels of oil equivalent (95% oil; 5% gas). The Project was classified as Category A. (Category definitions can be found [here](#).)

Summary of EDC's Review

EDC reviewed the Project in accordance with our *Environmental and Social Review Directive* and the *Equator Principles*, and EDC's Environmental Advisory Services team (EAS) has determined that the Project has been designed in compliance with applicable host country environmental requirements and the Equator Principles. To reach this conclusion, EDC reviewed Project Environmental and Social Impact Assessments, various independent due diligence reports and Project management plans.

Key environmental and social issues associated with the project, and related mitigation measures reviewed by EDC include, but are not limited to, the following:

Biodiversity: The export pipelines and power transmission cables will intersect some locally important spawning, nursery and feeding areas for cod, herring, mackerel, as well as the grey seal. Further, unprotected but generally valuable coastal zones will be impacted at and around where the pipelines and cables make landfall. On land, the pipelines and cables will intersect some rivers such as the Arvik, which is home to Critically Endangered freshwater eel species, as well as some known bird nesting areas of sensitive species (Eurasian Curlew; Northern Lapwing). Considering the nature of the Project, these impacts are expected to be limited to the construction period.



Mitigation measures include: To mitigate potential impacts on biodiversity, the Project Sponsors will minimize the size of the Project's footprint to the extent possible; utilize techniques to expedite the construction period to reduce the length of impact; avoid construction during spawning, nesting and other sensitive periods; implement measures to avoid freshwater siltation; conduct terrestrial reclamation activities; and participate in regional biodiversity monitoring programs. Sensitive species and habitats will be monitored and managed in accordance with Norway's Nature Management Act (2009).

Emergency Preparedness and Response: Like other offshore oil and gas developments, the Project is at risk for well blow-outs and pipeline ruptures leading to occupational health and safety (OHS) incidents and environmental degradation. In the case of the Project, these risks have been subject to detailed Quantitative Hazard Risk Assessments; Vulnerability Analyses; and Oil Spill Modeling in accordance with national and international guidelines. Analysis shows that these risks and impacts are within acceptable Norwegian criteria and response capacity.

Mitigation measures include: Key mitigants are the Project's proposed use of 17 different spill response systems to be deployed as a part of two barrier systems – the first which can be deployed in five hours and the second within 41 hours after detection. Pipeline leaks will be monitored via a continuous mass balance monitoring of the pipeline; risk-based inspection; satellite imagery; and flyovers by the Norwegian Clean Seas Association for Operating Companies (NOFO). In the case of a well blow-out or platform emergency, the Project Sponsor has identified various evacuation options, which are enhanced by the fact that the four platforms will be linked by bridge.

Economic Displacement: During construction, the Project will result in the temporary displacement of fishermen and impact shipping routes in the vicinity of the platforms and along the export pipeline and power transmission cable routes. On land, the Project will temporarily impact over 120 hectares of agricultural land as a result of the installation of the pipelines and power cables; establishment of laydown areas; and creation of temporary roads and access points. As a result of these impacts, the Project has the potential to temporarily affect the livelihoods of seasonal and resource-based workers in the region. Longer-term operational impacts are primarily limited to changes in some shipping routes as result of buffer areas around the platforms for safety reasons. Fishermen are not expected to be adversely affected during operations as: (a) the platforms are located away from productive fishing grounds; (b) the species found in and around the platforms are common and have extensive ranges; and (c) the platforms and their associated buffer zones represent a very small percentage of the permitted fishing zones.

Mitigation measures include: In an effort to offset potential livelihood impacts, the Project will utilize techniques and technologies that will expedite the installation of the pipelines and power cables to reduce the overall construction period; apply "trawable" designs to reduce the impact on the fishing industry and to limit damage to fishing gear; communicate frequently with fisheries and shipping associations regarding construction schedules and plans; and provide compensation for lost wages in accordance with Norwegian laws and regulations.



Wastewater Discharge and Air Emissions: Similar to other offshore developments, the Project will result in wastewater discharges and air emissions. Areas of particular concern relate to the discharge of chemicals used to treat the pipelines prior to operation; the capture and treatment of contaminated drill cuttings and process water; and the release of greenhouse gas (GHG) emissions.

Mitigation measures: To manage these discharges and emissions, the Project will only use chemicals that Pose Little or No Risk (PLONOR) or are deemed to be “environmentally acceptable,” per EU and Norwegian criteria. Further, drill cuttings and process water will be captured and treated using Best Available Technologies (BAT) and either re-injected back into the wells or transported to shore for disposal. With respect to GHG emissions, the Project will have an emissions intensity of 6.7 kilograms (kg) of carbon dioxide (CO₂) per cubic meter (m³), which is significantly lower than the industry average of 53 kg of CO₂ / m³. This relative GHG reduction is due to the Project’s use of power from the national grid versus the use of diesel generators. As a result of its design and consideration of alternatives, the Project will result in an estimated 61,000 tonnes of CO₂ emissions per year, representing a savings of 460,000 tonnes of CO₂ per year or 19 million tonnes over the life of the Project.

Documentation Reviewed:

The following is an illustrative list of key documentation that was reviewed as part of the current confirmation of the ERD.

- Environmental and Social Impact Assessments (2014)
- Third-Party Socially Responsible Investment Reports (2016)

Applicable International Finance Corporation (IFC) Environmental and Social Standards used by EDC (in addition to host country requirements):

- N/A