

EDC PROJECT REVIEW SUMMARY – Liwa Plastics Industries Complex Project

Project Description	Liwa Plastics Industries Complex Project
Sponsors	Oman Oil Refineries and Petroleum Industries Company
Country	Oman
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	Limited Recourse Financing
Date of publication on EDC's website (dd/mm/yy)	26/11/2015
Date of Signing (dd/mm/yy)	03/03/2016

Project Categorization

The Project involves the development of a greenfield petrochemical complex that will produce 1.1 million tonnes of High Density Polyethylene (HDPE), Linear Low Density Polyethylene (LLDPE) and Polypropylene (PP) for export. Key Project components include a new Natural Gas Liquids (NGL) Extraction Plant in Fahud; a Petrochemical Complex within the Industrial Port of Sohar; and a 300 kilometer (km) pipeline running between Fahud and Sohar to transport the NGL product. 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 its 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:

Air Emissions: Project air emissions will be most significant during operations, and will emanate primarily from the Petrochemical Complex, with residual emissions coming from the NGL Extraction Plant. Most emissions will be from single point sources such as exhaust stacks attached to gas turbines, steam boilers and flares. Key emissions include particulate matter (PM₁₀), nitrogen oxides (NO_x), sulphur dioxide (SO₂) and carbon monoxide (CO).

Mitigation measures include: The Project is anticipated to meet or exceed the emissions standards noted in the applicable IFC EHS Guidelines. Compliance with the standards will be achieved through the use of "best available technologies" (BAT) and by conducting Project flaring activities in accordance with the IFC Guideline for Onshore Oil and Gas Development. The Sponsor has agreed to apply the most stringent environmental emissions standards in cases where there is a discrepancy between the international standard and host-country standard, according to best practice.



Labour Management: At peak construction, the Project will employ approximately 16,500 workers (13,000 at the Petrochemical Complex; 2,500 at the NGL Extraction Plant; and 1,000 for the Pipeline). The majority of these workers will be sub-contractors hired by the various contractors to complete the required civil, mechanical and electrical works. It is anticipated that most of the sub-contractors will be sourced from India, Pakistan, Bangladesh and Sri Lanka, which is common practice on the Arabian Peninsula.

Mitigation measures include: EDC considers the Project to meet the requirements of IFC Performance Standard 2 given the Sponsor's established Occupational Health and Safety (OHS) and human resources policies, procedures and practices, as well as its commitment to implement the European Bank for Reconstruction and Development/International Finance Corporation (EBRD/IFC) Worker Accommodation Processes and Standards guidance document at all construction sites. All Project matters involving migrant workers will be monitored by the Lenders and independent experts throughout the construction phase to ensure ongoing compliance.

Greenhouse Gas Emissions: Operational GHGs for the Project (Scope 1 and 2) have been estimated to be ~ 1.9 million tonnes of carbon dioxide-equivalent per year (CO₂-e/year), which represents approximately 3% of Oman's daily CO₂ emissions. The Petrochemical Complex will account for the majority of GHG emissions (67%) with the rest coming from the NGL Extraction Plant.

Mitigation measures include: Alternatives to reduce Project GHG emissions were considered during the BAT assessment, and the Sponsor has committed to evaluating additional mitigating measures as engineering design progresses. Given that the Project will emit more than 100,000 tonnes of CO₂-e/year, the Sponsor has agreed to publicly disclose its operational emissions in accordance with Equator Principle III requirements.

Community Health and Safety: The operation of the pipeline running between Fahud and Sohar represents a potential risk to community health and safety. Key operational risks primarily relate to a major pipeline rupture, which can lead to significant soil and groundwater contamination, as well as health impacts and fire hazards.

Mitigation measures: Main pipeline protections to be implemented during operations include the installation of 11 block valves at strategic locations along the line, in addition to negative wave leak detection and emergency shutdown systems. General encroachment and unapproved activity within the pipeline right-of-way will be managed through educational campaigns, regular patrols, and local and regional planning initiatives.

Documentation Reviewed:

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

- Environmental Impact Assessment Report, dated June 2015.
- Social Impact Assessment, dated January 2016.
- Environmental Management Plans, dated February and March 2015.
- Independent Environmental and Social Consultant Report, dated January 2016

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

- Performance Standard 1: Assessment and Management of Environmental and Social Risks and Impacts
- Performance Standard 2: Labor and Working Conditions
- Performance Standard 3: Resource Efficiency and Pollution Prevention
- Performance Standard 4: Community Health, Safety, and Security



EDC has considered the relevant aspects of the *IFC General Environmental, Health and Safety (EHS) Guidelines* and *Guidelines for Onshore Oil and Gas Development; Thermal Power Plants; Large Volume Petroleum-based Organic Chemical Manufacturing; and Petroleum-based Polymers Manufacturing*.