

## **Environmental and Social Review Summary**

### **Cangzhou Seawater Desalination Project**

*This Environmental and Social Review Summary (ESRS) is prepared by MIGA staff and disclosed prior to the date on which MIGA's Board of Directors considers the proposed issuance of a Contract of Guarantee. Its purpose is to enhance the transparency of MIGA's activities. This document should not be construed as presuming the outcome of the decision by MIGA's Board of Directors. Board dates are estimates only.*

*Any documentation that is attached to this ESRS has been prepared by the project sponsor, and authorization has been given for public release. MIGA has reviewed the attached documentation as provided by the applicant, and considers it of adequate quality to be released to the public, but does not endorse the content.*

Country:	China
Sector:	Water
Project Enterprise:	Cangzhou Bohai Development Zone Aqualyng New Water Resources Co., Ltd
Environmental Category:	B
Date ESRS Disclosed:	June 26, 2015
Status:	Due Diligence

#### **A. Project Description**

The project entails the construction and operation of a reverse osmosis seawater desalination plant in Hebei Province of China by Cangzhou Bohai Development Zone Aqualyng New Water Resources Co., Ltd. (the "Project"). Aqualyng Holding AS of Norway has requested MIGA coverage for \$10.3 million to cover equity investment and future retained earnings in the project.

The seawater desalination plant will be built in the Cangzhou New Bohai Development Zone (BNAIZ) located in the eastern part of Hebei Province. The BNAIZ is a state-level supported economic development zone, established in 2007. It includes the Huanghua Port, the Zhongjie Industrial and Chemical Industries Park, and the Nandagang Industrial Park. The total area of the BNAIZ is 2,375 km<sup>2</sup> and the workforce is estimated to 500,000.

The plant will use seawater from the Bohai Bay as the raw water source and is designed to supply the Development Zone with up to 50,000 m<sup>3</sup>/day of desalinated water (phase I) with an additional 50,000 m<sup>3</sup>/day in phase II (not included in the proposed contract of guarantee). The desalinated water will be sold to end users within the BNAIZ to be used for industrial purposes. The desalination plant and associated structures will have a total area of approximately 45,000 m<sup>2</sup> and include: a main process building (including control room, dosing, filtration, pump, and distribution warehouse, etc.); clean water tank; clarification tank; and auxiliary facilities. A 24-month construction period is expected, with completion anticipated by the end of 2017.

Aqualyng is based in Singapore and designs, builds, finances, owns and operates seawater reverse osmosis desalination facilities. The company has extensive desalination experience having executed desalination projects in eight countries. MIGA is providing coverage to Aqualyng for a

desalination plant in the Caofeidian Industrial Zone, using the same technology as the proposed project, which was commissioned in 2012. The ESRS for the Caofeidian Project is available [here](#).

## **B. Environmental and Social Categorization**

The Project is Category B under MIGA's Policy on Environmental and Social Sustainability (2013). The Project is expected to have limited environmental and social (E&S) impacts that are generally site-specific and largely reversible. Key impacts include wastewater management of brine, solid and hazardous wastes, dust, noise and workers' health and safety.

## **C. Applicable Standards**

While all Performance Standards (PS) are applicable to this Project, based on our current information, the Project will have impacts which must be managed in a manner consistent with the following Performance Standards:

- PS1: Assessment and Management of Environmental and Social Risks and Impacts
- PS2: Labor and Working Conditions
- PS3: Resource Efficiency and Pollution Prevention
- PS4: Community Health, Safety and Security

E&S issues associated with the following PSs were not encountered during the assessment of the Project:

- PS5: Land Acquisition and Involuntary Resettlement is not expected to be applicable as the Project is located on reclaimed land in an established industrial zone.
- PS6: Biodiversity Conservation and Sustainable Natural Resource Management is not expected to be triggered as there are no known impacts on conservation or biodiversity;
- PS7: Indigenous Peoples is not expected to be triggered as no known indigenous peoples are within the areas of the Project; and
- PS8: Cultural Heritage is not triggered as the Project is located on reclaimed land in an established industrial zone.

The following World Bank Group (WBG) Environmental, Health, and Safety (EHS) guidelines are applicable to the project:

- General EHS Guidelines

#### **D. Key Documents and Scope of MIGA Review**

In addition to reviewing environmental and social documentation, a visit of the Project site was conducted in May 2015 as part of a MIGA due diligence mission. MIGA also met with relevant Project representatives, as well as the Environmental Agency of the Cangzhou Development Committee, the BNAIZ, and GHD, the Project's Environmental Consultant.

The following documents were reviewed by MIGA:

- *Cangzhou SWRO Desalination Plant, Environmental and Social Impact Assessment*. July 2013. Prepared by GHD on behalf of Aqualyng Holding AS.
- *Cangzhou SWRO Desalination Plant, Environmental Management Plan*. July 2013. Prepared by GHD on behalf of Aqualyng Holding AS.
- *New Bohai Area Aqualyng 50,000m<sup>3</sup>/d Seawater Desalination Project – Feasibility Study Report*. May 2013. Prepared by Hangzhou Water Treatment Technology Development Center on behalf of Aqualyng Holding AS.
- *Aqualyng Annual Monitoring Report, 2014*.

#### **E. Key Issues and Mitigation**

##### PS1: Assessment and Management of Environmental and Social Risks and Impacts

MIGA's review considered the Project's capacity to manage its environmental, safety and health performance and compliance with national permitting requirements. The review concluded that parts of the Project's management systems and procedures need to be updated and complemented to comply with PS1. Aqualyng has committed to addressing the gaps through the implementation of an Environmental and Social Action Plan (ESAP) (see attached).

*Environmental and Social Assessment:* A local Environmental Impact Assessment report was prepared by the Hebei Provincial Development and Reform Commission in early 2013, in line with the requirements of the Chinese national environmental legislation. Additional impact assessment and studies were carried out by GHD, in accordance with international best practice, and published in a supplementary ESIA in July 2013.

*Management Program and Monitoring:* Aqualyng has an Environmental Policy in place, summarized in a Code of Conduct that applies to all Aqualyng projects. Aqualyng strives to meet the requirements of ISO 9001, ISO 14001, and OHSAS 18001 but its operations are not yet certified. The ESIA includes a draft Environmental and Social Management Plan (ESMP), which will be updated and finalized as indicated in the ESAP.

Aqualyng, along with an Owners Engineer which is intended to be selected, will undertake regular inspections during the construction process, to review the implementation of the requirements of the ESMP. Monitoring of ambient parameters including air, noise and surface water runoff will be undertaken by the construction contractor on a quarterly basis during construction. The construction contractor will report the results of the quarterly monitoring along with any non-conformances, spills, public comments or complaints to Aqualyng and the Bohai New Area Environment Protection Bureau of Cangzhou (BEPB) on a quarterly basis in a brief monitoring report.

During operations, Aqualyng will undertake regular monitoring and inspections in accordance with the ESMP and develop an annual report, detailing monitoring results, any non-conformance and corrective actions taken. The report will be submitted to BEPB annually. The project will also submit annual monitoring reports to MIGA.

The Project will require the Contractor to implement an Environment, Health and Safety Management Plan (EHSMP) for the construction phase, and Aqualyng will develop an EHSMP for the operations phase, in line with the requirements of PS1.

*Emergency Preparedness Procedures:* The EHSMP will include emergency response procedures for both construction and operations phases, as indicated by the ESAP.

*Organizational Capacity and Training:* All staff involved in the Project are to undergo training in Environmental Management Systems, as well as Code of Conduct and Corporate Social Responsibilities. The Contractor will be required to appoint a qualified Environmental, Health and Safety Officer to implement and supervise the EHSMP.

## PS2: Labor and Working Conditions

The majority of the construction work force will be engaged by contractors, the Project will ensure that relevant requirements of PS2 will be applied to all workers. All project contractors are required to give preference to employing locally when hiring unskilled and semi-skilled employees. At peak, the Project will employ approximately 200 people during construction. During operations, the project will have around 40 employees.

*Working Conditions:* Aqualyng has a Human Resources Policy that complies with national regulatory requirements and is consistent to PS2, including non-discrimination, freedom of association and protection of the workforce. The policy is included in employment contracts, and addresses working conditions, terms of employment, and wages and benefits.

*Worker Health and Safety:* Occupational Health and Safety at Aqualyng is managed by the Administration and Human Resources department, and the company strives to meet the requirements of OHSAS 18001. The EHSMP will include measures for accident prevention and worker safety, consistent with regulatory requirements and PS2. All employees are required to undergo OHS-training, including specific training related to their individual job activity. The Project will be monitored annually by the Bohai New Area Environmental Protection Bureau of Cangzhou (BEPB) for compliance with labor regulations.

Contractors will be required to provide Personal Protective Equipment (PPE) to all workers, and ensure that safety protection measures including signage, elevation barriers, proper storage of material, protection from dust and noise, etc., are in place at the construction site. Contractors are also required to provide OHS training, including certificates for operation of machinery, electrical works, working a height, etc. Monitoring of the contractor's compliance will be undertaken by Aqualyng and / or the Owners Engineer.

A grievance redress mechanism will be established as part of the Environmental Management Plan, in line with local regulation and the requirements of PS2. Aqualyng will require that all contractors implement a grievance mechanism available to construction workers.

### PS3: Resource Efficiency and Pollution Prevention

The key impacts from construction and operation of the plant are from wastewater (including management of brine), solid and hazardous wastes, dust and other air emissions, and noise. These impacts will be avoided, reduced or mitigated through measures identified in the ESIA, compliance with national legislation, as well as through the development of a comprehensive ESMP consistent with WBG EHS Guidelines.

*Air quality:* Ambient air quality is expected to be affected by dust emissions from construction activities. The major sources of dust emissions during construction are: grading, excavation and earthworks; loading/unloading, handling, storage and transport of materials or wastes; and vehicle movements. These impacts are not considered significant since there are no potential sensitive receptors near to the project site. Dust suppression measures will be implemented, as identified in the ESIA, including: suspending earthworks in high winds, covering payloads, appropriate storage of loose/friable materials, covering excavated piles and watering using collected rainwater and construction wastewater.

*Water quality and usage:* The project will use seawater from the Bohai Bay as raw water source, at a rate of approximately 140,000 m<sup>3</sup>/day. Around 14% will be used in the pretreatment processes and for system cleaning purposes, 49% will be discharged as brine, and the remaining 37% constitutes the final product (desalinated water), supplied to the BNAIZ for industrial uses.

The brine will have salinity concentrations around twice the level of seawater, if discharged into the Bohai Bay the salinity could result in negative impacts on marine biodiversity. The brine will therefore be discharged directly via pipeline to the Chang Cangzhou National Salt Company, for recycling and use as raw material for salt production. Waste water from pretreatment processes and system cleaning will be discharged to the governmentally-owned waste water treatment plant within the BNAIZ, where it will be treated to national effluent standards prior to discharge to sea or reused as grey water.

*Waste management:* Debris and domestic refuse generated by construction personnel are the main solid waste streams during construction. Management of construction-based solid wastes will be conducted according to waste management measures identified in the ESIA and consistent with national legislation, WBG EHS Guidelines and the ESMP, including disposing of construction wastes and debris in a licensed refuse dump and transporting domestic wastes to a waste transfer

station, with final treatment or disposal being the responsibility of the relevant government authority.

Solid wastes generated during project operation include: waste membrane elements, used filter elements, chemical packaging and domestic wastes. Each of the waste streams will be managed separately, according to the ESIA, with segregated on-site storage followed by disposal using licensed companies. Used membranes and chemicals packaging will be treated as hazardous waste and will be collected and disposed of by a BEPB licensed hazardous waste contractor. Domestic waste will be collected by a licensed waste management contractor and transported to an approved landfill.

The Project will implement a waste management plan, as indicated by the ESAP, including prevention, reduction, reuse, recovery, recycling, removal and disposal of construction and operations wastes, and a plan for collecting, categorizing, handling, storing and disposing of wastes consistent with national legislation and WBG EHS Guidelines. The waste management plan shall also include an emergency response program to respond to hazardous materials/waste leaks, accidental releases and spills.

*Noise:* During construction, noise will be generated by vehicles on site, tunneling, drilling, rock removal, dredging, and pile driving. Noise impacts are not expected to be significant, and are not expected to exceed national standards at a distance of more than 40 meters from the site. During Project operation, noise sources mainly include various equipment and pumps of the RO system and pretreatment system, including RO high-pressure pump, energy recovery unit and blower fan. Noise generated by the equipment operation will vary between 65-85db. The following measures have been taken to reduce noise: adoption of low-noise equipment and shields; laying of sound-insulation materials for adjacent walls; and mount of shock absorption base and installation of the equipment within the workshop. The final ESMP shall incorporate best practices consistent with WBG EHS Guidelines for noise attenuation and monitoring during construction and operation.

#### PS4: Community Health, Safety and Security

The Project is located on reclaimed land in the eastern part of the BNAIZ. The surroundings lots are used for industrial purposes, for example related to the operations of the port. The nearest community is Fengjiabao village, approximately 4.5 km northwest of the Project area. The BNAIZ was established in 2007, and there is no history of land acquisition claims. Thus, given its location within the zone, the desalinization plant's impacts on and interaction with the local community mainly concerns employment opportunities, potential risks associated with transports to and from the facility, and general security. The Industrial Zone regulates speed limits, signage requirements, heavy transport regulations, etc. within the Zone.

*Security Arrangements:* The BNAIZ has open access through several road entry points, each facility within the zone ensures individual security arrangements. The Project area is fenced, with controlled access points (gates) and a local security company has been contracted for security control. Unarmed security guards are on site 24 hours a day. Within the Industrial Zone, the municipal police is responsible for general security.

The Environmental Management Plan includes a Public Consultation Plan, including mechanisms for feedback and adjustment, and a community grievance redress mechanism in line with the requirements of PS4.

#### **F. Environmental Permitting Process and Community Engagement**

In addition to general environmental permits to construct and operate the desalinization plant, the Project has indicated that it is required to maintain a variety of permits related to hazardous waste storage, wastewater discharge, occupational health and safety, etc. Based on the findings in the due diligence, the Project is expected to be operated in compliance with host country requirements.

#### **G. Availability of Documentation**

- [\*Cangzhou SWRO Desalination Plant, Environmental and Social Impact Assessment and Environmental Management Plan.\*](#) July 2013. Prepared by GHD on behalf of Aqualyng Holding AS.

The above listed documentation is available electronically as PDF attachments to this ESRS at [www.miga.org](http://www.miga.org).

**Environmental and Social Action Plan – Cangzhou Seawater Desalination Project  
June 2015**

<b>Action Required</b>	<b>Anticipated Completion Date</b>
Development of updated Environmental and Social Management Plan for construction	Before commencement of construction
Appointment of Owners Engineer	Before commencement of construction
Obtain permit from the Provincial Ocean Bureau	Before commencement of construction
Develop Contractor EHSMP for construction, including waste management plan	Before commencement of construction
Establish grievance mechanism for Project staff	Before commencement of construction
Establish community grievance mechanism	Before commencement of construction
Develop EHSMP for operations, including waste management plan.	30 days before commissioning
Conduct training in Environmental and Social Management, including the Performance Standards, to staff involved in the Project.	30 days before commissioning