RISHEH SOLAR PV POWER PLANT PROJECT

(50MW)

Non Technical Summary (NTS)

13 August 2017

REV – 0

TABLE OF CONTENT

1. INTRODUCTION

The Jordan Council of Ministers issued an official letter for the International Company for Water and Power Projects (hereafter referred to as 'ACWA Power' or the 'Sponsor ') for the development of a 50 Mega Watt (MW) solar photovoltaic (PV) project (hereafter referred to as 'the Project') through the Direct Proposal process with the Ministry of Energy and Mineral Resources (MEMR).

The Project will be developed by Al-Risheh SPV (hereafter referred to as the 'Developer') – a special purpose company owned 100% by ACWA Power. The Project site has been allocated by the Government of Jordan at the Risheh area in Mafraq Governorate.

This document (the Non-Technical Summary (NTS)) provides a summary in non-technical language of the main findings of the Environmental and Social (E&S) assessment undertaken for the Project. In addition, a Stakeholder Engagement Plan (SEP) has also been developed for the Project, which describes the planned stakeholder consultation activities and engagement process as well as a grievance mechanism to ensure that it is responsive to any concerns and complaints particularly from affected stakeholders and communities.

2. PROJECT DESCRIPTION

2.1 Project Location

The Project is located in the eastern parts of Mafraq Governorate around 300km from the capital city of Amman (Figure 1 below). More specifically, the Project site is located within the Risheh area in Rwaished District where the closest organized community settlement is located around 70km to the west (Rweishid village). In addition, the Project site is located 4.5km from the Jordanian-Iraqi borders.

The Project site is located within a military controlled zone and special permits are required for entry which must be obtained beforehand. The Project site can be classified as a desert-like habitat that is barren with scarce and scattered vegetation restricted to wadi systems which runs within the site. In general, the Project site and surrounding area is vacant with the exception of the following (Figure 2):

a. Risheh Thermal Power Station: located east of the Project site with a current capacity of 50MW. The plant runs on natural gas and diesel (used for emergency situations). Within the power station there is a worker accommodation area. To the south of the thermal power plant is a 11/132 kV substation (known as Risheh Substation).

b. National Petroleum Company (NPC) Gas Plant: located 5km to the northeast, the plant is a small unit which pressurizes gas for delivery to the Risheh station through a dedicated pipeline. The plant has several gas wells in the area (not within the Project site) which supply the plant through pipelines.

c. Overhead transmission line: that originates from the existing Risheh Substation and passes through the proposed site. The line is in place to transmit electrical energy generated from the existing Risheh station to the national grid.

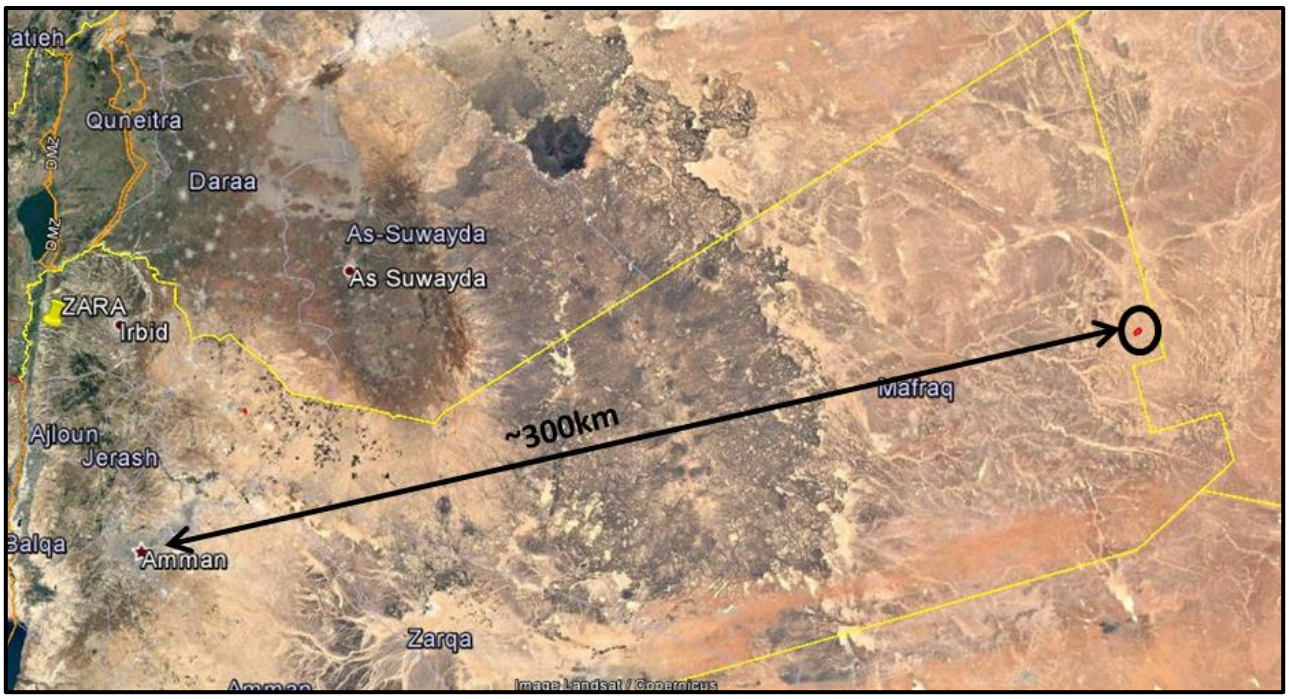

Figure 1: Project Location

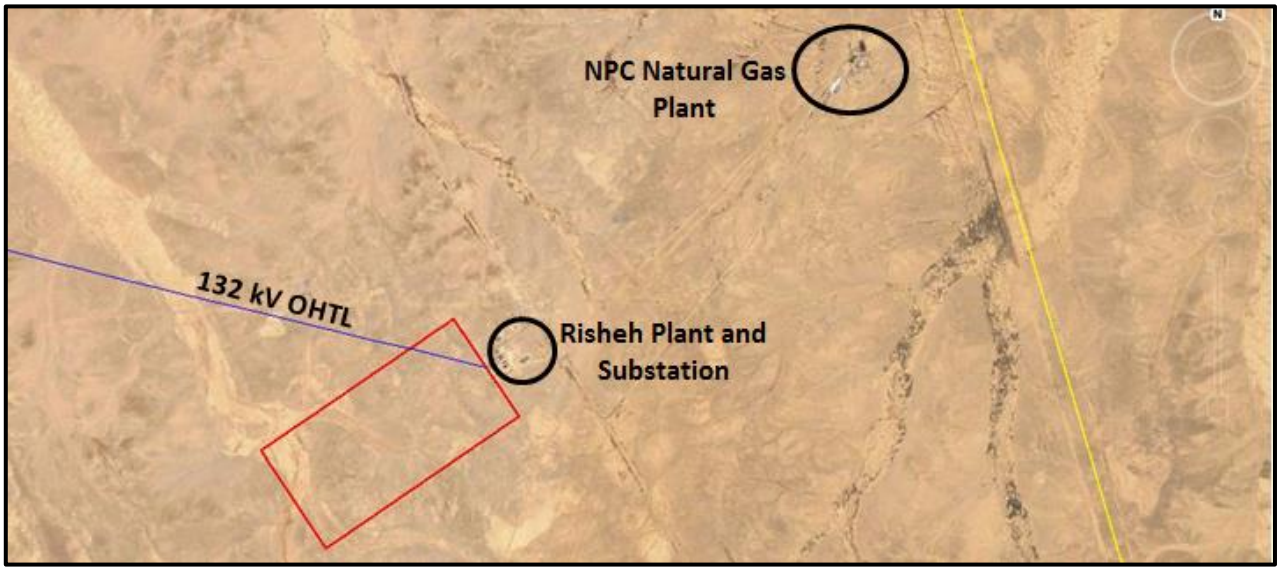

Figure 2: Project Site and Nearby Receptors

2.2 Project Components

The key components of the Project are the power arrays which are composed of PV panels which convert solar energy (radiation from the sun) into electricity. Throughout the site the total number of PV Panels will be just over 200,000.

In addition, there are infrastructure and utilities which will serve the Project and which include underground cabling, inverter stations, transformer, building infrastructure (control room and storage), monitoring system, fencing, and internal road network. In addition, the Project will connect through an electricity line to the existing Risheh substation.

2.3 Project Entities

Key entities involved in the implementation of the Project include the following entities:

- Risheh SPV: is Project Proponent and will be the owner and developer of the Project;
- EPC Contractor – Sterling and Wilson: will be responsible for preparing the detailed design and layout of the Project; supply of the material and equipment (panels, inverters, etc.); construction of the Project and its various components (PV arrays, internal roads, building infrastructure, and, etc.).
- Operation & Maintenance (O&M) Contractor - CEGCO: will be undertaking O&M activities for the Project. ACWA Power's O&M subsidiary NOMAC will be providing capacity building and training for Central Electricity Generating Company's (CEGCO) employees on O&M of PV projects.
- NEPCO: is the national electricity company of Jordan responsible for the high voltage electric grid in the country and, for this Project, will be the off-taker for the Project.
- European Bank for Reconstruction and Development (EBRD): the Developer will be seeking financing for the Project from prospective lenders, including international Financial Institutions (IFIs). The EBRD will be the Lenders for this Project. The Project is to be co-financed by the German Investment Corporation (DEG).

2.4 Workforce Requirements

Based on estimations provided by the Developer, the Project will require the following workforce for the development of the Project:

- A maximum of 250 job opportunities will be provided during the Project's construction phase for a duration of 12 months. This will most likely include Jordanians as well as expatriates. Based on information provided by the Developer, around 80% of the job opportunities will be for semi-skilled and unskilled workers, where priority for these will be for local communities.
- A maximum of 13 job opportunities will be provided during the Project's operation phase for a duration of 20 years. This will most likely include current CEGCO employees in the Risheh power plant and from other CEGCO projects in Jordan.

2.5 Timeline for Project Development

Based on the information provided by the Developer, the construction phase is scheduled to take place starting early November 2017 for duration of 12 months (i.e. till end of October). Therefore, operation of the Project will start in November 2018 for a period of 20 years.

2.6 Project Rationale

The Project will result in crucial positive environmental and economic impacts on the strategic and national level given the current challenges the energy sector in Jordan is facing. Such positive impacts underpin rationale for the Project. These include the following:

- The Project allows for more sustainable development and shows the commitment of the Government of Jordan to realizing its Energy Strategy and meeting the set targets for renewable energy sources;
- The Project will contribute to increasing energy security through reliance on an indigenous, inexhaustible and mostly import-independent energy resource;
- The Project will produce clean energy which will contribute to lowering electricity generation costs when compared to the current costs associated with liquid fuels, and thus leads to a substantial decrease in the Government of Jordan's fiscal deficit; and

- Generating electricity through PV power is rather pollution-free during operation. Compared with the conventional way of producing electricity in Jordan, the clean energy produced is expected to reduce consumption of liquid fuels for electricity generation in Jordan, and will thus help in reducing greenhouse gas emissions as well as air pollutant emissions.

3. ENVIRONMENTAL PERMITTING

An Environmental and Social Impact Assessment (ESIA) has been prepared in accordance with the requirements of the Jordanian Ministry of Environment (MoEnv) to include the "Environmental Protection Law No. 52 of 2006", the "Environmental Impact Assessment Regulation No. (37) of 2005" and the EBRD Performance Requirements (2014).

The ESIA included assessment of environmental and social baseline conditions, assessment of anticipated impacts during the various project phases and identification of suitable mitigation and monitoring measures for identified impacts. The ESIA has also considered potential cumulative impacts associated with other developments in the area.

As part of the ESIA, a scoping session was undertaken on the 29 March 2017 to discuss, and identify suitable topics for assessment (as part of the ESIA process in Jordan). Attendees included regulatory authorities (including the MoEnv), national government agencies, local government agencies, and Non-Governmental Organizations (NGOS) and project representatives. In addition, targeted consultations were held with local community representatives.

Taking the above into account, the ESIA has been approved by the MoEnv and an environmental permit has been granted for the Project (dated 19 July 2017). As part of the environmental clearance process and given the Project site location, there are additional permits/official letters required to include: (i) Civil Aviation Regulatory Commission (CARC) permit, (ii) Royal Jordanian Air Force (RJAF) permit, (iii) Energy and Minerals Regulatory Commission (EMRC) permit, (iv) Royal Jordanian Army (RJA) letter to confirm that unexploded ordnance does not pose a risk for project development, and (v) NPC letter to confirm that they do not have any existing/planned infrastructure in the Project site. The developer will be securing these permits/official letters prior to commencements of any construction activities.

4. ENVIRONMENTAL & SOCIAL BASELINE CONDITIONS & IMPACTS

4.1 Geology, Hydrology and Hydrogeology (Soil and Groundwater)

Key impacts related to the Project include potential for flood risks which could affect the Project components. Within the Project site there are two (2) wadi systems (figure below). Such wadi systems are subject to local flood hazards especially during rainy seasons and flash flood events. However, a flood risk assessment has been undertaken which identifies proper mitigations to eliminate such risks. In particular, the detailed design will avoid sitting any project components (panels, roads, etc.) within an appropriate buffer distance from the wadi systems (figure below) and the study also provides engineering recommendations for drainage of rainwater within the Project area.

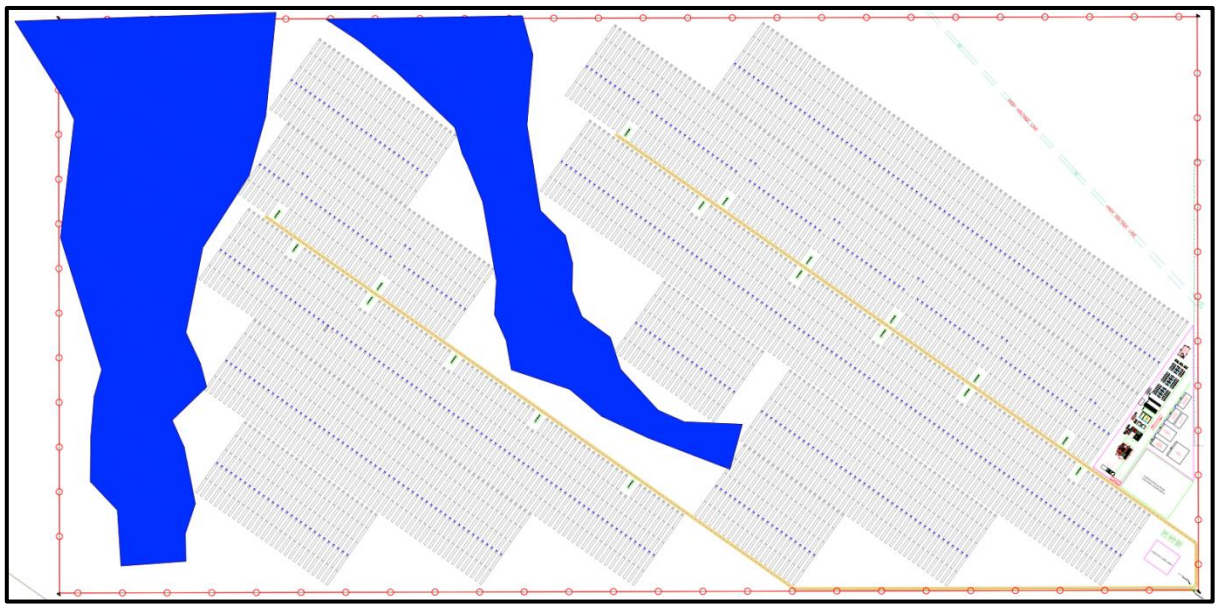

Figure 3: Wadi Systems within the Project Site and Layout of Components

Other potential impacts are mainly from improper housekeeping practices during construction and operation (such as illegal disposal of waste to land – to include solid waste, wastewater and hazardous waste) which could contaminate and pollute soil which in turn could pollute groundwater resources. Nevertheless, a waste management plan will be developed for the construction and operation phase and which will identify adequate mitigation measures to control such impacts and ensure proper conduct and housekeeping practices are implemented.

4.2 Infrastructures and Utilities

Water Resources and Utilities – Water will be required during the construction phase (potable for drinking and non-potable for dust control, washing of equipment, etc.) and operation phase (potable for drinking and non-potable for cleaning of panels and sanitary use). It is likely that water requirements will be supplied through tankers and/or a nearby groundwater well which is currently used by the Risheh thermal power plant. A water management plan will be developed for the construction and operation phase which will identify the sources of water, estimation of quantities, measures to minimize usage, and measures to ensure quality is suitable for Project. In addition, a water resource sustainability study will be undertaken to ensure that groundwater well will be able to supply the water requirements for the Project as well as thermal power plant and other users' requirements.

Wastewater and Solid Waste – Wastewater and solid generated during the construction and operation phase will be minimal and are expected to be easily handled by nearest wastewater treatment plant and municipal approved landfill. The contractor and operator are expected to coordinate with the relevant authorities for disposal of such waste streams.

Hazardous Waste Utilities: Hazardous waste generated during the construction and operation will be minimal and are expected to be easily handled by hazardous waste disposal facilities (Swaqa Hazardous Waste Treatment Facility).

The decommissioning phase of the Project will involve the disposal of a significant number of PV panels and electrical equipment. Before any decommissioning activities take place, the Developer will prepare a decommissioning plan for disposal of panels and associated equipment which must first consider recycling programs for PV Panels and as a last option disposal at existing hazardous waste facilities in Jordan. Disposal through recycling programs will be coordinated with MoEnv for approval.

4.3 Biodiversity

A biodiversity assessment was undertaken and which concludes that the Project site is barren and of low ecological significance and sensitivity. Several flora, fauna and avi-fauna species are likely to be present within the Project site most of which are considered of least concern and common to such area habitats. There are no sensitive habitats recorded within the Project site.

To ensure conservation of biodiversity, additional measures will be implemented to include: (i) during construction/operation worker code of conduct and induction training will cover biodiversity management measures such as prohibiting hunting, restricting movement of workers/vehicles to allocated areas, prohibiting off-roading, etc. and (ii) any fencing that will be constructed for the Project site will allow for the natural movement of small faunal species.

4.4 Land Use

The Project will be developed on a governmental land located within a military controlled zone where access is prohibited. In addition, the Project area is empty with no permanent or temporary structures, facilities or settlements with no local community activity (such as agriculture or nomadic settlements).

However, grazers are noted within the Project area in general. Based on consultation it was stated that a very few and limited number of people from Rwaished area undertake grazing activities within the military controlled zone (although access is prohibited). They usually settle in tents outside of the military controlled zone and undertake day trips for grazing. After grazing season they return to their permanent residences in Rwaished.

The Project will not result in any physical displacement as the Project site is vacant. In addition, it will not result in any economic displacement given that the Project site has no specific value in terms of grazing, and there are widespread alternative lands of similar habitat available for grazing.

The Developer will be undertaking additional consultation activities with the grazers to inform them about Project, its location, construction and operation schedule and other as appropriate.

4.5 Archaeology and Cultural Heritage

The Department of Antiquities (DoA) (the official governmental entity responsible for protection and conservation of archaeological sites in Jordan) has undertaken an archaeological assessment for the Project site. The assessment confirmed that there are no known artefacts within the Project area. The DoA subsequently issued a No Objection Letter for the Project on 27 March 2017.

In addition, a chance finds procedure will be developed which will identify required actions in the instance that any artefacts are uncovered during construction.

4.6 Air Quality and Noise

Construction and operation activities of solar PV Projects are passive in nature and do no result in any key air emissions or significant noise sources. However, construction activities may increase level of dust and particulate matter emissions, which will temporarily impact ambient air quality. Moreover, the use of machinery and equipment are expected to be a source of noise and vibration within the Project site and its surroundings.

Nevertheless, appropriate mitigation measures have been identified for dust suppression and noise control and which will be implemented during the construction phase. This includes for example regular watering of

all active construction areas, proper management of stockpiles, the use of well-maintained mufflers and noise suppressants for high noise generating equipment and machinery, etc.

4.7 Socio-economic

The main impact anticipated on socio-economic conditions is positive and related to potential job opportunities for the local communities as well as sourcing of local materials and supplies as well as local contracting jobs. However, such impacts are limited taking into account the nature of activities for the Project.

The Developer is aiming to adopt and implement a labour employment plan which will include a local community labour/contractor recruitment strategy in line with Jordanian local requirements on obligatory employment of local communities and contractors for the Project. Such a plan will be implemented in coordination with key local entities such as Rweishid District Office and Rweishid Municipality.

4.8 Occupational Health and Safety

During the construction and operation phase there will be generic occupational health and safety risks to workers, such as working on construction sites, exposure electric shock hazards during maintenance activities, etc. The contractor and operator of the Project will prepare an Occupational Health and Safety Plan (OHSP) tailored to the Project's site and activities. Such plans aim to ensure the health and safety of all personnel in order to concur and maintain a smooth and proper progress of work at the site and prevent accident which may injure personnel.

4.9 Community Health, Safety and Security

With regards to community health and safety, as discussed earlier, the closest community settlement to the Project site is around 70km. In addition, the Project site is located within a military controlled zone where a permit/clearance is required from the military for entry. Particular impacts on community health and safety are not considered an issue of concern. In addition, the environmental and social studies also investigated potential impacts on refugee movements in the area (as Mafraq Governorate is known for entry points for Syrian refugees) and it was concluded that there are no issues of concern.

Nevertheless to manage community health and safety risks the following will be undertaken: (i) security risk assessment which takes into account internal and external security risks (such as its proximity to the Iraqi Border) – the assessment will identify security measures to be implemented onsite including those to prevent unauthorized access to the site (such as fencing, security personnel, safety signage, and other); and (ii) traffic management plan which covers offsite activities – the plan will cover transportation requirements of Project components as well as labour (if relevant). The plan will identify proposed delivery routes to the Project site, planning of generated trips of trucks, speed limits, number of vehicles movement and other.

5. ENVIRONMENTAL & SOCIAL MANAGEMENT & MONITORING

The Developer will be establishing a comprehensive Health, Safety, Social and Environmental (HSSE) Management System (MS) that is specific for the Project's nature and site location. The Developer also requires that the contractor and operator each develop and implement a similar HSSE MS for the project. The objective of such systems is to manage HSSE risks from project's construction and operation and ensure compliance with relevant EHSS national legislations and international best practice.

The Developer will be monitoring the implementation of HSSE requirements by the contractor and operation during the construction and operation phase. In addition, the Project will be subject to periodic independent monitoring as per the requirements of the lenders.

6. CONCLUSIONS

As discussed throughout the NTS, the environmental and social assessment process for the Project concludes that the impacts anticipated from the Project are readily identified, site-specific and can be mitigated through implementation of appropriate mitigation and monitoring measures and provision by the Developer of adequate management resources to address E&S risks.

7. CONTACT DETAILS

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