Al-SAFAWI FOR GREEN ENERGY PSC SOLAR PV POWER PLANT PROJECT

(50MW)

NON-TECHNICAL SUMMARY

AlSafawi for Green Energy PSC.

TABLE OF CONTENT

LIST OF TABLES

LIST OF FIGURES

1. INTRODUCTION

The renewable energy sector in Jordan is gaining momentum since the "Renewable Energy and Efficiency Law No. (13) of the Year 2012 and its Amendments No.(33) for the Year 2014" entered into force. With this law, "Direct Proposal Submission" of renewable energy projects to the Ministry of Energy and Mineral Resources (MEMR) was allowed, where investors (or developers) had the opportunity to develop renewable grid-connected electricity production projects. MEMR issued a Request for Submission of Expression of Interest under the "Direct Proposal Submission – Phase two" for qualified investors interested in investment in renewable energy projects for power generation on build, own and operate (BOO) basis. The "Direct Proposal Submission – Phase two" required developers to propose solar photovoltaic (PV) projects in the middle and north of Jordan with a capacity of 50 Mega Watt (MW).

Within this context, Al-Safawi for Green Energy PSC (hereafter referred to as 'the Developer') has been selected by MEMR as part of the "Direct Proposal Submission – Phase Two" for the development of a 50 MW Solar PV Project in Mafraq Governorate (hereafter referred to as 'the Project').

In accordance with the "EIA Regulation No. (37) for the Year 2005", the Ministry of Environment (MoEnv) classifies such a Project as "Category 1" which requires the preparation of a comprehensive Environmental and Social Impact Assessment (ESIA) before an environmental permit is granted. The ESIA has been prepared and submitted to the MoEnv and an environmental permit has been granted. The Developer will be seeking financing for the Project from prospective lenders, including International Financial Institutions (IFIs) – including the European Bank for Reconstruction and Development (EBRD). Therefore, for the purpose of the ESIA this has also been developed in accordance with EBRD Environmental and Social Policy (2014) and Performance Requirements (PR).

This document (the Non-Technical Summary (NTS)) provides a summary in non-technical language of the findings contained in the ESIA Report. The ESIA Report contains more detailed information on the Project and the environmental and social issues considered (refer to 'Section 6' for details on disclosure of the ESIA report). It includes a description of the need for the Project; details of the Project and the main alternatives considered; the assessment of the potential effects from the proposed development upon the environment and community; and details of any required procedures to mitigate significantly adverse environmental effects. It includes an Environmental and Social Management Plan (ESMP) which describes the monitoring and mitigation requirements for the duration of the project, including responsibilities and any legal requirements. The Developer commits to the ESMP. 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.

1.1 Project Alternatives

During the Project's development a number of alternatives have been identified and analysed, including project location, processes, technology and the "no project" alternative:

- The Developer has considered several priority areas for the development of the Project within the Middle and Northern parts of Jordan. Assessment of such priority areas were based on a due diligence exercise undertaken by the Developer and which took into account technical, financial, environmental and social factors to include: (i) ideal solar resources; (ii) land ownership logistics; (iii) distance to key sensitive receptors; (iv) natural landscape of the site; (v) proximity to grid; (vi) proximity to road networks; and (vii) social development potential to local communities. Based on such a due diligence exercise the Project area for the development of the Project was selected and the land was purchased from the owner of the land based on a mutually agreed price.
- As part of the ESIA, other solar technology alternatives which are suitable for the Project site were considered, compared and assessed such as Concentrated Solar Power (CSP) and Concentrated Photovoltaic (CPV) but the assessment concluded solar PV is the preferred option.

- As part of the ESIA, wind power was considered as technological alternatives to solar power but the assessment concludes that solar PV is the preferred option.

2. PROJECT DESCRIPTION

2.1 Project Setting

The Project is located within Mafraq Governorate in the north of Jordan approximately 100 km east of the capital city of Amman. More specifically, the Project site is located within the Badiya Al-Shamaliyeh District which hosts several cities and villages; the closest being is Al-Safawi village located 13km to the northeast of the Project site. The Project is accessed by Highway #5 – a major highway which connects south of Jordan (from Ma'an Governorate) with Al-Safawi village. The total Project area is around 1.7km^2 equivalent to 1,700 Dunums. The Project area in general is located within the eastern deserts of Jordan which are characterized as being barren desert habitats covered with basalt stones.

¡Error! No se encuentra el origen de la referencia. below presents the overview of the Project Location while Table 1 presents the Project coordinates.

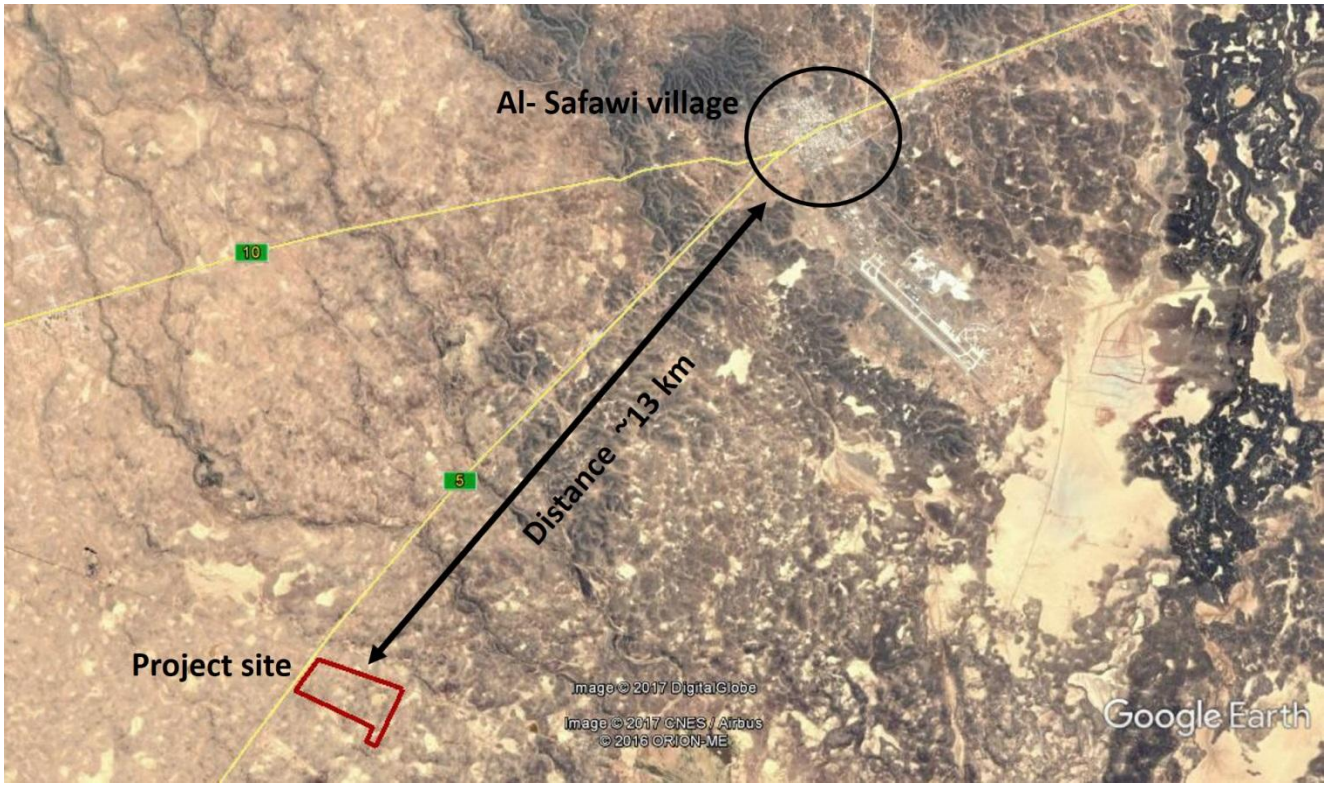

Figure 1: Overview of Project Location

Table 1: Project Site Coordinates

No.	EASTING JTM	NORTHING JTM	EASTING UTM	NORTHING UTM
1	503529.2	550523.49	314751	3551327
2	503414.17	550253.42	314631	3551059
3	503606.31	550158.66	314822	3550960
4	504110.9	551331.61	315348	3552124
5	502391.81	551862.21	313639	3552687
6	501951.92	551221.49	313187	3552054

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 expected electricity generation from the Project will serve the annual electricity needs of more than 25,000 local households;
- 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.

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 201,000 PV Panels. A typical PV power array that is composed of PV panels is shown in Figure 2 below.

Figure 2: Typical PV Power Arrays Composed of PV Panels

Other buildings and infrastructure needed onsite include:

- Central inverter stations which converts electricity from the panels from Direct Current (DC) to Alternating Current (AC). Inverter stations connect to a substation through underground cables;
- Substation which converts voltage from 33kV to 132kV that is appropriate for connection with the High Voltage National Grid (132 kV);
- Building Infrastructure will mostly include offices for normal daily operational related work, as well as a warehouse for storage of equipment and machinery;

- Road network to include an internal road network for ease of access to the arrays for operation and maintenance purposes as well as security road around the perimeter of the Project site for security patrolling;
- Fencing around the entire facility and security will be required to ensure safety from criminal activity and trespassing of unauthorized personnel; and
- All consumables needed for the works and the operation of the site facilities (water, electricity, telecom, etc.) as well as their connection works.

The Project will provide approximately 240 jobs during the construction phase for duration of ten (10) months which will include unskilled labour (e.g. security personnel), semi-skilled labour (electricians, welders, fitters, etc.) and skilled labour (engineers and management professionals). During operation, the Project will provide approximately 14 jobs for a duration of 20 years, which will include skilled labour (such as electrical and mechanical technicians) and unskilled labour (such as module cleaners and security personnel).

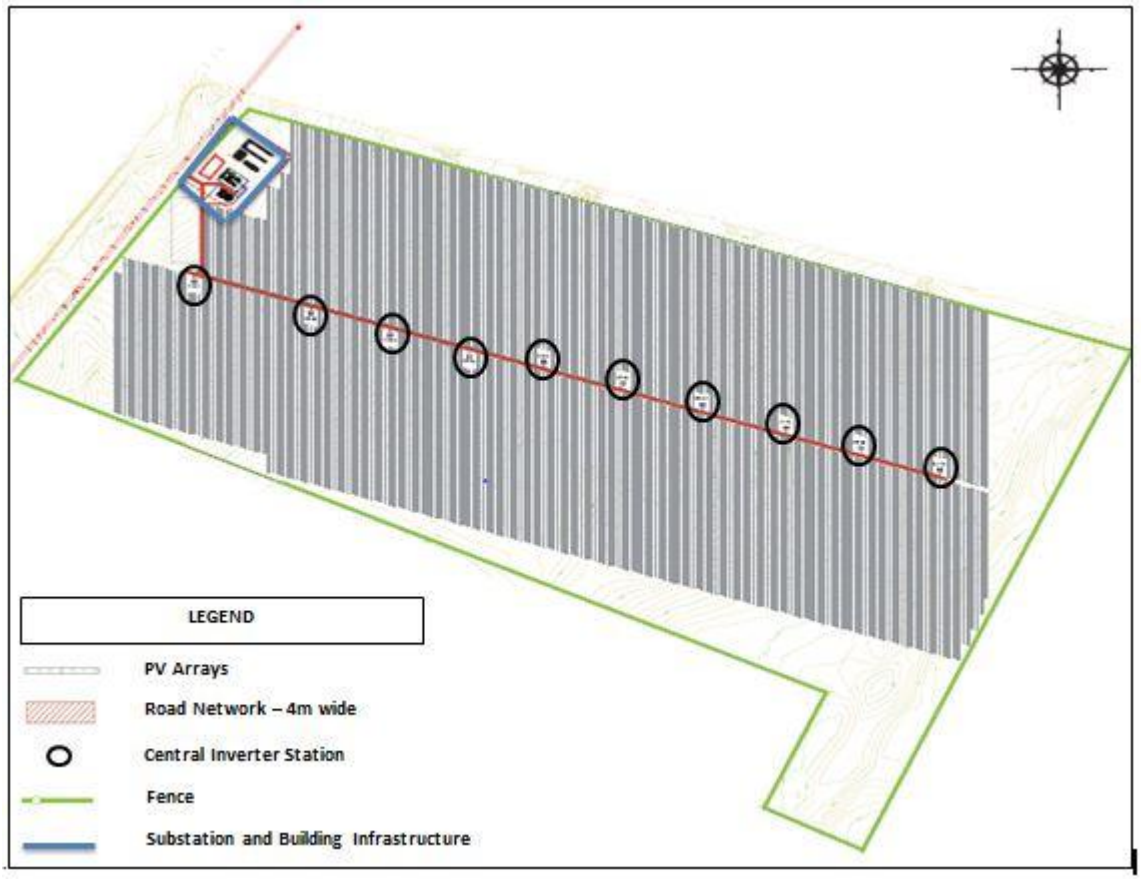

Figure 3: Project Layout

2.3 Project Phases

- Planning and Construction Phase (February 2018 – November 2018): This phase includes preparation of a detailed design for the Project, planning and transportation of the various Project components to the site (e.g. PV modules), and onsite preparation activities for installation of the PV arrays and various other components. Site preparation activities could include excavations, grading, and land clearing activities.
- Operations Phase (2018- approximately 2038): This phase involves operation and maintenance of the PV Power Arrays and all the various electrical equipment. This includes, for example, regular PV module cleaning to prevent dust build-up which could affect their performance. Operation phase also includes commissioning tests which involves standard electrical tests for electrical infrastructure as well as the panels, and inspection of routine civil engineering quality records.
- Decommissioning Phase (to be determined): The lifetime of the PV plant is 20 years, after which the plant is decommissioned and the panels are dismantled. Decommissioning activities could include the

disconnection of the various Project components (PV array, central inverter stations, delivery station, etc.) for final disposal. In addition, internal road network will be restored and gates and fences will be removed.

3. SUMMARY OF ENVIRONMENTAL AND SOCIAL BASELINE CONDITIONS & IMPACTS

3.1 Introduction

The environmental and social impact assessment (ESIA) comprised of environmental and social baseline studies and an assessment of impacts. Mitigation measures, which are included in the ESMP, were identified for potential significant effects and the significance of residual effects determined. The impact assessment followed an assessment methodology developed to reflect current best practice.

The ESIA has provided the engineers and designers with important information regarding the sensitivities of baseline environmental and social resources that could be affected by the proposed development. The resulting design proposal has been developed to take account of these sensitivities and avoid negative environmental effects wherever possible. The key baseline and impact assessment findings are further discussed below.

3.2 Environmental & Social Baseline Conditions & Impacts

(i) Landscape and Visual

The Project area in general can be characterized as being dominantly of fairly flat surfaces. The site can be classified as a desert-like habitat that is barren and covered with Basalt stones which are typical habitats of the eastern deserts in Jordan as shown in Figure 4. In general views towards the north, south, east and west are mainly limited to the open landscape that is similar in classification as the Project site. More importantly, within the Project area in general there are no key sensitive visual receptors.

The key impacts from the Project development are limited to the operation phase and which include impacts from Project visibility and impacts from glare, both of which are discussed below.

Given the maximum height of the PV arrays (2 - 3.5m only), the Project is expected to be visible within the immediate vicinity and up to some kilometres around the Project site only, and thus is likely to create visual impacts. However, given that there are no key sensitive visual receptors within the surrounding vicinity of the Project site, such impacts are considered to be of minor significance.

There is potential for glare caused by sunlight from reflected off the PV panel modules. Figure 5 shows the typical glare from PV Panels. Nevertheless, not all of the incoming sunlight is absorbed and thus a minimal amount of incoming sunlight is reflected, which could be associated with insignificant potential for glare. PV modules reflect much less light and have a lower potential for glare when compared to other materials widely used in other human developments such as steel, standard glass, plastic and even when compared to snow and smooth water. Although such a Project will result in insignificant potential for glare, the ESIA requires that the Developer obtain an approval permit from key regulatory entities which could be affected by glare (airports and military bases) to include the Civil Aviation Regulator Commission (CARC) and the Royal Jordanian Air Force (RJAF).

Figure 4: General Topography and Landscape of the Project site

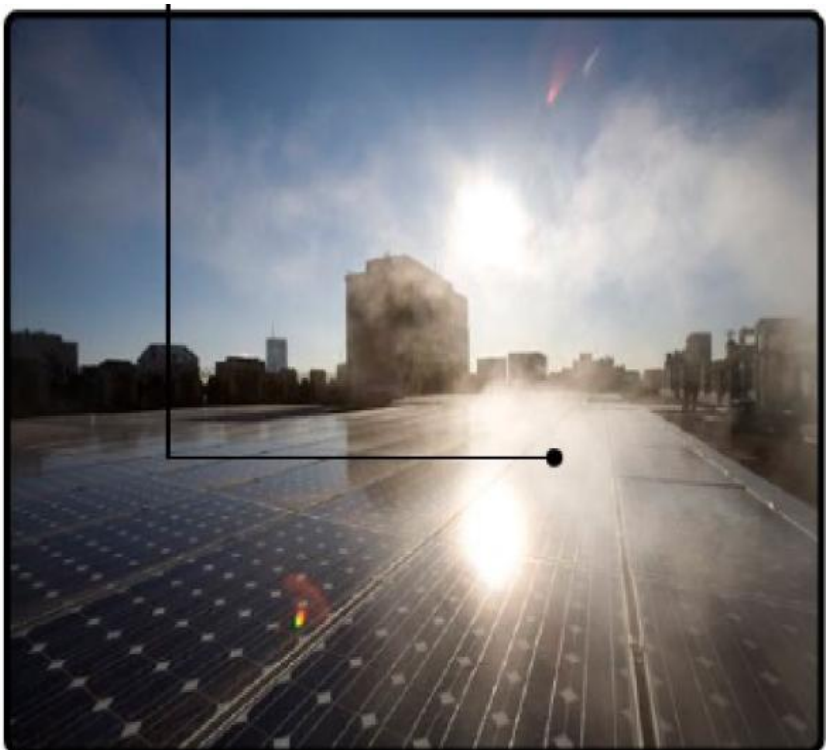

Figure 5: Typical Glare from PV Panels

(ii) Land Use

The Project site location does not conflict with any land use planning as set by the various governmental institutions (such as the land use planning by the Ministry of Municipal Affairs, area of critical environmental concern planning by the Ministry of Environment, grazing reserves planning by the Ministry of Agriculture, etc.).

The ESIA also investigated the actual land use of the Project area and which can be summarized as follows:

- Agricultural activities are very limited in Al-Safawi village and are not considered a major source of livelihood not even for self-sufficiency purposes. Within the area in general, there is an agricultural area utilized by a very limited number of local community members whom undertake agricultural activities known as Al-Buqayawiyya area– an area located around 10km to the west of the Project site

that is utilized for rain-fed agriculture during specific times of the year for wheat, barley, etc. Based on consultations with Al-Safawi municipality and local communities there are no additional areas utilized for agricultural activities – therefore the Project site itself has no specific agricultural value to the local communities. Access to as Al-Buqayawiyya area is through a road network from Highway #5 which runs just north of the Project site.

- It is important to note that within Al-Buqayawiyya area (also around 10km from the Project site) there is Al-Buqayawiyya Tree or The Tree of Life. The tree is a perennial pistachio tree and it is believed that Prophet Muhammad (peace be upon him) sought the tree for shade during his trade journey to the Levant. The tree is considered of cultural/religious value by the local communities as some local community members visit the tree for remembrance of Prophet Muhammad and tend to consider it as a wish tree. The area is currently fenced.
- Access to Al-Buqayawiyya area (including the Tree of Life) is through a road network from Highway #5 which runs just north of the Project site.
- Grazing activities undertaken by the local community are also very limited and are not considered a major source of livelihood in the area not even for self-sufficiency purposes. The limited grazing activities are generally undertaken in those areas around Al-Safawi village. No grazing activities were noticed within the Project site in specific or the area surrounding it. Finally, based on such discussions with Al-Safawi Municipality and the local communities it was concluded that the Project site has no specific grazing value to the local community due to the widespread alternative lands of similar habitat extending within the area which can be used for grazing activities
- There are 2 main semi-nomadic populations which inhabit the Safawi area in general during specific times of the year, although they are considered of limited numbers. Those include the following:
  - Dair Al Kahf: those are semi-nomadic populations which are located in Dair Al Kahf Sub-District located around 30km to the north of the Project site. Such semi-nomadic populations inhabit the Safawi area during winter time (from November – March) but have permanent residences in Dair Al Kahf. They occupy Al-Safawi area due to its warmer weather during winter compared to Dair Al Kahf area and due to the proximity of the village to provide them with necessary day to day requirements (bread, food, etc.). Throughout this period they generally undertake grazing near Safawi village and not within the Project area which has no specific grazing value.
  - Western Mafraq area: those are semi-nomadic populations which are located in the western parts of the Governorate (approximately 40km to the east of Al-Safawi and in villages such as Al-Hamra, Hleiwah, Al-Masarha, etc.). Such semi-nomadic populations inhabit the Safawi area during spring/summer time (from May – September) but have permanent residences in their respective villages. They occupy Al-Safawi area due to the availability of water in the area (mainly at Al-Bsheriyeh located 20km northwest of the Project site), availability of a fodder distribution centre in Al-Safawi, proximity of the Al-Safawi village to provide them with necessary day to day requirements (bread, food, etc.). Throughout this period they generally undertake grazing near Safawi village and not within the Project area which has no specific grazing value.

Taking the above into account, the development of the Project will not result in any issues on actual land use of the site. Nevertheless, the ESIA identifies proper management measures to ensure that access to the road which leads to Al-Buqayawiyya area is not affeceted or interrupted during the construction or operation phase of the Project. With the implementation of such measures the impact is considered not significant.

(iii) Geology, Hydrology, and Hydrogeology (Soil and Groundwater)

The geological formation of the Project site is mainly dominated by basaltic cover. In terms of hydrology, the project Site is located within the Azraq surface water Basin – more specifically it is located on a water divide between two catchments of the Azraq Basin. In terms of hydrogeology, the Project site is located in the Azraq groundwater basin.

Key impacts related to the Project include potential for flood risks which could affect the Project site. The Project site is located along water divides where floods will not be generated due to the absence of runoff accumulation. Such areas are considered to be highly resistant to flood hazards. However, within the Projet site there are water gullies which are prone to water accumulation for short periods of time after significant rainfalls events. To this extent, the Developer will be undertaking a hydrological study and will implementat appropriate drainage where required. Taking the above into account, the Project itself will have no impact on the local hydrology.

Other potential impacts are mainly from improper housekeeping practices during construction and operation (such as illegal disposal of waste to land) which could contaminate and pollute soil which in turn could pollute groundwater resources. The ESIA has identified adequate mitigation measures which aim to control such impacts and ensure proper conduct and housekeeping practices are implemented. With the implementation of such measures the impact is considered not significant.

(iv) Biodiversity

The biodiversity baseline assessment concludes that the Project site in general is barren and of low ecological significance and sensitivity. The assessment identified several flora, fauna and avi-fauna species within the Project site most of which are considered of least concern and common to such area habitats and with a wide range of distribution. There are no sensitive habitats recorded within the Project site.

The main impacts on biodiversity are mainly from improper conduct and housekeeping practices by workers (i.e. hunting of animals, discharge of hazardous waste to land, etc.) during the construction and operation phase. The ESIA has identified adequate mitigation measures which aim to control such impacts and ensure proper conduct and housekeeping practices are implemented. With the implementation of such measures the impact is considered not significant.

(v) Archaeology and Cultural Heritage

An archaeological baseline survey has been carried out by the Department of Antiquities (DoA) for the Project site. The assessment concludes that there are no records of any sites of interests or significance within the Project area.

The main impact anticipated is during the construction phase from site preparation activities. As noted earlier there are no archaeological remains on the surface of the Project site, and therefore there are no anticipated impacts. However, there is a chance that throughout construction activities, archaeological remains buried in the ground are discovered. Improper management (if such sites are discovered) could potentially disturb or damage such sites. Nevertheless, the ESIA identifies appropriate mitigation measures which should be implemented should such remains in the ground be discovered throughout the construction phase. With the implementation of such measures the impact is considered not significant.

(vi) 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. Such dust levels could be significant during the removal of the Basalt stones during site clearance activities. Moreover, the use of machinery and equipment are expected to be a source of noise and vibration within the Project site and its surroundings.

As part of the ESIA, 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. With the implementation of such measures the impact is considered not significant.

(vii) Infrastructures and Utilities

Water Resources and Utilities – water requirements for the Project during construction and operation are rather minimal and can be easily met through the North Badia Water System which has an annual supply of 6.8 Million Cubic Meter. The total water requirements during the construction phase are likely to be around 50m^3/day. During operation it is likely to be around 0.7m^3/day for potable use and 400m3 per year for cleaning of the panels (2 cleaning cycles per year with water while the rest will be through a dry cleaning method). The Project contractor and Project operator is required to coordinate with Yarmouk Water Company to secure water requirements for the Project which will most likely be through tankers.

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 Mafraq WWTP and Al-Safawi landfill. The contractor and operator are expected to coordinate with the relevant authorities for disposal of such waste streams. In particular, as the Project will require the clearance of the Basalt stones, the Project will seek to identify options to minimize the need to remove Basalt rocks from the site.

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. The ESIA requires that before any decommissioning activities take place, the Developer 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.

(viii) Socio-economic Conditions

The main impact anticipated on socio-economic conditions is related to potential job opportunities from the Project. However, such impacts are limited taking into account the nature of activities for the Project. During the construction and operation phases, the Project is expected at a minimum to provide job opportunities for local communities. The Project will create the following job opportunities as discussed earlier:

- A maximum of 240 job opportunities will be provided during the Project's construction phase for a duration of 10 months. This will include unskilled labour, semi-skilled labour and skilled labour. Where relevant, the Developer will prioritize all job opportunities to the local communities and/or Jordanian residents with required qualifications and skills and ensure contract terms are clearly explained through effective management mechanisms.
- A maximum of 14 job opportunities will be provided during the Project's operation phase for a duration of 20 years. This will include unskilled labour, semi-skilled labours and skilled labour. Where relevant, the Developer will prioritize all job opportunities to the local communities and/or Jordanian residents with required qualifications and skills and ensure contract terms are clearly explained through effective management mechanisms.

The Developer is aiming to adopt and implement a community integration plan which will demonstrate how the local communities will be involved and integrated in the Project in terms of job opportunities as well as other indirect socio-economic benefits (from increase in demand for local services, supplies and business such as accommodation services).

(ix) 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 ESIA requires that the contractor and operator of the Project 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. With the implementation of such measures the impact is considered not significant.

(x) Community Health, Safety, and Security

During construction and operation phase there could be potential impacts mainly limited to trespassing of unauthorized personnel into the Project site and which could result in potential risks from several hazards of the various Project components (e.g. electric shock, exposure to chemicals and hazardous materials, etc.). Nevertheless, it is expected that as part of the detailed design the security measures to prevent unauthorized access to the Project site will be identified which in turn will control any such impacts. The detailed design is expected to include security measures such as fencing around the entire perimeter of the Project site along with a number of security guards onsite. With the implementation of such measures the impact is considered not significant.

3.3 Summary of Stakeholder Consultations

The table below provides a summary of all stakeholders that were consulted and engaged throughout the ESIA study. The table provides a summary of the stakeholder groups that were engaged and the main objective and outcome.

Table 2: Summary of Previous Stakeholder Engagement Activities

Stakeholder	Objective and Outcome
Scoping Session *(national governmental entities, local governmental agencies non-governmental organizations, academic and research institutions)*	In accordance with the "EIA Regulation No. (37) of 2005", a scoping session was held for the Project in Amman. The Project was introduced and various components explained, the proposed methodology for the ESIA was outlined and anticipated impacts throughout the Project's phases were discussed. Stakeholders were identified and invited through formal letters, issued by the Ministry of Environment. The main issues raised by stakeholders during the session were related to (i) socio-economic development; (ii) infrastructure and utilities; (iii) geology and hydrology; (iv) land use; (v) biodiversity (vi) occupational health and safety; and (vii) community health, safety and security. Such issues are discussed further in Table 6-3 of the ESIA which also summarizes how such issues were taken into account as part of the ESIA. The ESIA also provides a list of invitees and list of attendees.
Local Community Consultation Session *(Municipal Council members which are representatives of the local community, elder representatives of tribal groups, Community Based Organizations; local enterprises and businesses; women groups; local governmental institutions; youth and the unemployed*.	A local community consultation session was undertaken with the local community representatives. The meeting was headed by the Mayor of Al-Safawi Municipality, Local Governor of Badia Al-Shamaliyeh District, and Director of Mafraq Environmental Directorate. Stakeholders were identified and invited through formal letters issued by Al-Safawi Municipality. Throughout the session, discussions were undertaken about the project, environmental and social impacts, land use patterns in the area, and socio-economic conditions and development. Additional details are provided in 'Section 6.4.2' of the ESIA which is available on the Developer's website. The ESIA also provides a list of invitees and list of attendees.
Ministry of Environment (MoEnv)	Discussion on general concerns and environmental and social impacts from the Project development.
	Collection of information on hazardous waste landfills and discussion on disposal

	plans for the Project at decommissioning phase.
Ministry of Water and Irrigation (MWI) / Water Authority of Jordan (WAJ) / Yarmouk Water Company	Collection of information on existing wastewater treatment plants in the area and existing water resources.
	Collection of secondary information on climate, precipitation, geological and hydrogeological settings, etc.
Ministry of Agriculture (MoA)	Collection of information on current and future land use planning in relation to grazing reserves in Mafraq Governorate.
Ministry of Municipal Affairs (MoMA)	Collection of information on land use planning for the Project area.
Ministry of Tourism and Antiquities (MoTA) / Department of Antiquities (DoA)	Collection of secondary data on archaeology and cultural heritage in the Project site.
	Coordinating with DoA to undertake an archaeology survey for the Project site.
	Discussions on anticipated impacts from the Project, any concerns over the Project site and development, mitigation and monitoring requirements, etc.
Civil Aviation Regulatory Commission (CARC)	Discussion on potential impacts and any requirements which need to be taken into account for throughout the Project development.
Royal Jordanian Air Force (RJAF)	Discussion on potential impacts and any requirements which need to be taken into account for throughout the Project development.
The Royal Society for the Conservation of Nature (RSCN)	Current and future land use planning in relation to areas of critical environmental concern.
	Discussion on biodiversity issues related to the Project (methodology for baseline assessment, anticipated impacts, any concerns over the Project site and development, mitigation and monitoring requirements, etc.).
BirdLife International – Middle East Regional Office, Jordan	Discussion on biodiversity issues related to the Project in particular related to avi-fauna (methodology for baseline assessment, anticipated impacts, any concerns over the Project site and development, mitigation and monitoring requirements, etc.).
Mafraq Governorate	Understand thoughts, views, and concerns from the Project development.
	Collection of secondary data on socio-economic indicators for Mafraq Governorate in general and nearby communities.
Al-Safawi Municipality	Detailed meetings were undertaken to characterize and understand the socio-economic conditions
	Discuss and document the actual land use of the Project site and its nearby areas to determine whether it was considered of any value or utilized for any purpose by local community members or by nomadic populations.
	Collection on information on existing municipal approved landfills.

3.4 Cumulative Impact

The ESIA investigated the cumulative impacts which could results from incremental impacts from other known existing and/or planned developments in the area based on currently available information. The ESIA concludes that there are no existing and/or planned developments which would result in cumulative impacts on any of the environmental/social receptors investigated as part of the ESIA.

4. ENVIRONMENTAL & SOCIAL MANAGEMENT & MONITORING

The ESIA includes and Environmental and Social Management Plan (ESMP) which provides an outline plan for managing and monitoring the environmental and social impacts during construction, operation and decommissioning of the Project. The ESMP identifies the mitigation measures which aim to eliminate and/or reduce the potential impact to acceptable levels and monitoring actions to ensure that the identified mitigation measures are implemented.

During both construction and operation, certain activities, indicators and environmental and social receptors will be monitored. Monitoring may include observation and recording, or may include data gathering and sampling. Monitoring reports will be required from the Contractor and Operator during the construction and operational phases. The monitoring results will be useful for assessing the long term cumulative effects, if any. If on-going problems occur, adaptive mitigation measures can be developed and implemented.

In addition, in accordance with the "EIA Regulation No. (37) of 2005", the Regulator (being MoEnv), will be responsible for undertaking compliance monitoring to ensure that the responsible entity is adhering to the ESMP requirements.

5. FURTHER INFORMATION & CONTACT DETAILS

Full project preparation documents, including the ESIA, NTS, and Stakeholder Engagement Plan (SEP) including the grievance mechanism for affected stakeholders and communities will be available at the following locations:

- ***Ministry of Environment***

  Location: Amman – Um Uthaina – King Faisal bin Abdul Aziz Street – Building No. 83
  P.O. Box: 1408
  Postal Code: 11941
  City: Amman
  Phone: 962 6 5560113
  Fax: 962 6 5560288
  Email address: info@moenv.gov.jo

- ***Al-Safawi Municipality***

  Location: Shobak – Najjal Main Road
  Tel: (962) 3 2164052
  Fax: 03-2164107

- ***Mafraq Governorate – Local Development Unit***

  Location: Northwestern Badia, Mafraq, Jordan
  Tel: +962 2 6230372

Contact Details for the Public

Health, Safety and Environment (HSE) Officer
Mr./Ms. XXXXX
Company:
Telephone:
Fax:
E-mail Address: XXXXX