

Dandara Solar Power, S.A.E.

Dandara PV Power Plant and BESS in Nagaa Hammadi

Qena Governorate

Non-Technical Summary

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1. Overview of the Project

1.1 Background

Scatec company intends to establish a power plant 1000 Megawatt (AC) coupled with a Battery Energy Storage System (BESS) with a capacity of 200 Megawatt hour which will be built over 2 phases, through its affiliated Company Dandara for Solar Energy, S.A.E., the first phase will have a capacity of 500 Megawatt (AC) coupled with a BESS with a capacity of 100 Megawatthour. The second phase will be a duplicate of the first phase. The current study focuses on the first phase only. The proposed project is located in Qena Governorate, east of the Nagaa Hammadi Industrial Zone, and near the Egypt Aluminium Company (EgyptAlum) complex. The site has been allocated by the Egyptian government to NREA for Renewable Energy Project.

The project is being implemented in collaboration with international financing institutions, including the European Bank for Reconstruction and Development (EBRD), and the African Development Bank (AfDB). This demonstrates international partners' confidence in Egypt's sustainable investment climate and its capacity to deliver projects with lasting environmental and economic benefits.

Environics was assigned by Dandara to develop the project's ESIA according to the national laws as well as the environmental requirements of the EBRD, and the AfDB.

1.2 Goals

Dandara Solar Power Plant Project represents a strategic step in Egypt's efforts to transition to a low-carbon economy and promote the use of renewable energy in industrial sectors, in line with Egypt Vision 2030 and the Sustainable Development Goals.

The Project will enhance the reliability of solar power generation in Egypt by incorporating battery storage, enabling the country to meet its declared renewable energy targets. This project is significant for Egypt, as its implementation will pave the way for a broader rollout of storage-integrated renewable projects, helping to address the challenges posed by the intermittent nature of renewable energy sources. It will also support the country's efforts to increase its renewable energy share of total energy generation.

1.3 Objectives

The objective of the ESIA is to ensure that the project is environmentally sound and socially sustainable and that any potential negative environmental consequences are recognized early in the project cycle and taken into account before project implementation. It also aims to propose appropriate mitigation measures to prevent/reduce potential negative impacts during the construction and operation of the proposed project, to be within the limits of legal environmental and social requirements.

Moreover, the ESIA aims to satisfy the legal environmental requirements, addressed in the Environment Law No. 4 of 1994, amended by Law No. 9 of 2009 and Law No. 105/2015, and the up-to-date Executive Regulations.

Moreover, the ESIA is also intended to satisfy the environmental and social requirements of the international funding institutions, including specifically the European Bank for Reconstruction and Development (EBRD), the African Development Bank (AfDB), European Investment Bank (EIB), and Cassa depositi e prestiti S.p.A. (CDP), as well as the multilateral development banks.

1.4 Project Location

The usufruct land, allocated for phase 1 and 2, spans approximately 2335 ha ($\approx 23,350,000 \text{ m}^2$) of which 1130 ha ($\approx 11,300,000 \text{ m}^2$) are designated for the first phase for the development of the 500MWac solar power project. The site is located in a desert area to the east of the Nagaa Hammadi Industrial Zone within Qena Governorate. It lies south-east of the Nagaa Hammadi Aluminum Complex (EgyptAlum) and is positioned adjacent to the existing substation for the Nagaa Hammadi Industrial Zone.

The Giza – Luxor Road lies approximately 1.2 kilometers north of the project site. The site can be accessed via an unpaved road extending westward for about 2.5 kilometers from the Giza–Luxor Road, or through another unpaved road extending approximately 2.5 kilometers westward from the Qena–Luxor Desert Road.

The nearest residential settlement, El Baraka Village, is located approximately 4 km northwest of the project boundary and the proposed Al Amal city¹ at about 2km. Additionally, a few scattered reclaimed agricultural areas are found within the broader vicinity. Figure 1 below shows the activities/land uses surrounding the proposed site.

¹ El Amal City is currently under construction. The completion timeline for El Amal City is currently uncertain. While limited infrastructure is in place, it is not anticipated that the city will be fully completed by the time construction of the Dandara Project commences

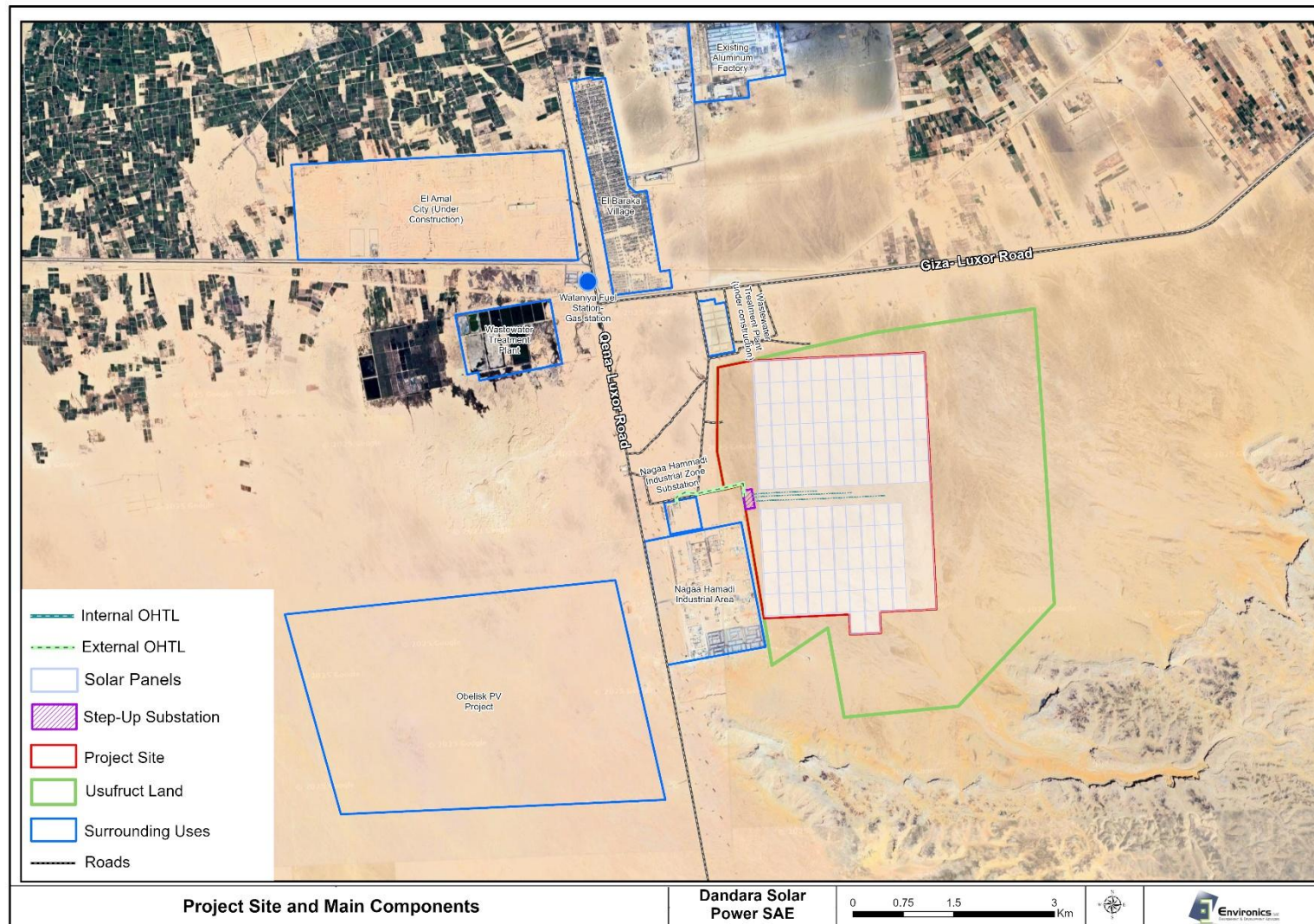


Figure 1: Proposed Project Location and the Surrounding Activities

2. Project Description

2.1 General Outline

The Photovoltaic Power Plant will utilize high-efficiency mono-crystalline silicon solar panels along with single-axis tracking systems (horizontal single axis tracker -1P) to maximize energy capture. Additionally, a BESS using lithium-ion battery modules will be integrated to store and manage the generated energy.

The project will be connected to the national grid through an overhead transmission line (OHTL) to be constructed by Dandara Solar Power, linking the project substation to the existing Nagaa Hamadi Industry Park Substation. The generated electricity will then be wheeled to EgyptAlum through the existing electricity grid infrastructure.

2.2 Project Components

a) Component 1: Solar field Photovoltaic modules: High-efficiency mono-crystalline silicon solar panels.

- **Solar Panels**

The PV plant comprises approximately 903,960 high-efficiency, bifacial, monocrystalline silicon photovoltaic modules, each rated at 630 W, providing a total DC capacity of around 569.49 MW. The modules are connected in series to generate DC power from solar irradiance, with key design parameters including panel orientation, row spacing, and tilt angle.

- **Mounting Structures**

PV modules will be installed on a single-axis horizontal tracking system with a maximum height of approximately 2.8 meters and a tracking range of -55° to +55°. The following table describes the PV module.

The PV arrays will be spaced appropriately, considering local topographic conditions. This spacing is designed to minimize shading effects and optimize solar exposure, ensuring maximum efficiency and environmental compatibility.

Table 1: Module Description (500 MWac)

No	Item Description	Unit	Total Qty for 500MWac
1.	PV Modules (630Wp)	Nos	903960
2.	Substructure –Tracker	Tables	10044
3.	No. of PV Module per table	Module	90
4.	Inverter	Nos	496
5.	No. of blocks/ MV transformer station	Nos	62
6.	Technology	----	Bifacial
7.	BESS Container	Nos	20

- **Inverter Systems**

- **Inverters**

The project will utilize 496 inverters to convert the DC generated by the photovoltaic modules into AC for use in the power grid. These inverters will handle the conversion process, ensuring efficient energy transmission. The project will employ PV inverters with a total capacity of 545.6 MVA, and approximately 164.34 MVAR of reactive power will be supplied by both the BESS and PV Inverters together.

- **Switchgear**

The electrical equipment used to manage and protect the medium voltage (33kV) circuits before the voltage is stepped up to 220kV for transmission. This switchgear is crucial for ensuring the safe and efficient operation of the electrical system within the substation.

b) Component 2: BESS

A Solid-State Battery consists of multiple battery cells assembled into modules. Each cell contains a positive electrode, a negative electrode, and an electrolyte. The lithium-ion BESS primarily uses lithium nickel manganese cobalt oxide (NMC) or lithium iron phosphate (LFP) for its cathodes.

The BESS will comprise multiple battery units or modules housed in shipping containers or suitable housing structures, delivered pre-assembled to the project site. These containers are typically elevated slightly off the ground and arranged in rows.

Supplementary infrastructure and equipment include temperature control equipment, which may be positioned between the battery containers. The solid-state batteries under consideration are Lithium-ion systems.

Key Components of the BESS**1. Battery Modules**

- The core of the BESS, typically lithium-ion batteries with a designed capacity of 100 MWh and a dispatchable capacity of 50 MWac AC-coupled BESS, with no augmentation (degrades over the project lifetime)
- Connected in series and parallel to achieve the required capacity.
- Housed in weatherproof, insulated containers to protect from environmental conditions.
- BESS is designed to operate on only one full cycle per day. Once the BESS is charged to 100% State of Charge (SoC), it could accommodate Ancillary Services and load shifting if agreed by all parties. However, upon the first measurement of 0% SoC, all services will be suspended for the remainder of the day.
- The BESS can store energy and then release it during the specified time frame as agreed with the off taker, depending on how much of its capacity is allocated for Ancillary Services. Ancillary Services are essential for maintaining the stability and reliability of the power grid.

2. Battery Management System (BMS)

The BMS is an essential component of the battery-based energy storage system. Some of the main tasks performed by the BMS include:

- Voltage and Current Monitoring: to ensure they operate within safe limits.

- Charge Balancing ensures balanced charging among all cells in the battery, which helps improve performance and extend battery life.
- Temperature Monitoring: The BMS monitors the battery temperatures and activates cooling or heating systems as needed to maintain optimal temperatures.
- Protection system: It protects against abnormal conditions such as overcharging, over-discharging, and short circuits.
- Diagnostics and Maintenance: The BMS provides regular reports on the battery status and helps detect potential faults before they cause significant problems.

3. Cooling and Ventilation Systems

During charging and discharging, batteries generate heat that must be controlled to prevent performance degradation or fire risk. A liquid-cooled temperature control system is utilized to maintain safe operating conditions and optimize auxiliary power consumption for cooling fans.

4. Control and Monitoring Systems

- Provides real-time data on the performance of the BESS.
- Components include SCADA systems, sensors, and communication interfaces.

5. Auxiliary Systems

- Includes lighting, emergency power supplies, and fire suppression systems.
- Supports the safe and reliable operation of the BESS.

c) Component 3: Internal Medium Voltage Overhead Transmission Line (MV OHTL) Corridor

An internal 33 kV medium-voltage overhead transmission line (OHTL) corridor will be established within the project site boundary to collect and transmit electricity generated from the distributed PV arrays to the on-site substation. The internal 33 kV OHTL comprising about 12 towers network will extend over a span of 2.7 kilometers, running west to east across the central part of the project site. The lines will be supported on steel towers averaging 28 meters in height, with a potential maximum of up to 34 meters depending on the terrain and technical design requirements.

d) Component 4: Connection to the Grid

This component involves the development of one main step-up substation within the project boundaries. This facility will ensure the efficient transmission of generated power, enhance operational flexibility, and maintain stability and reliability across the national grid.

A 33/220 kV pooling substation will be constructed within the project site to step up the electrical output from the PV plant's 33 kV medium-voltage collection system to 220 kV for efficient long-distance transmission and integration into the national grid.

The substation will house two step-up transformers, each rated at 300 MVA, providing a total installed capacity of 600 MVA. Each power transformer will be of the ONAF Type (Oil Natural Air Forced) featuring oil-filled tanks for insulation and cooling. Externally forced Air cooling, provided by multiple fans, will be employed to maintain optimal operating temperatures, thereby enhancing transformer efficiency and extending service life.

e) Component 5: Overhead Transmission Line (OHTL)

The proposed project includes the construction of a 220 kV overhead transmission line to facilitate the evacuation of power from the solar PV plant to the national grid. The OHTL will connect the 33/220 kV step-up substation located within the project site to the existing 220 kV Nagaa Hammadi Industrial Zone Substation, situated approximately 1 kilometer to the west of the proposed new 33/220 kV substation.

The OHTL will traverse limited path along government-owned desert land, requiring the installation of transmission towers and the establishment of a right-of-way (ROW) corridor (about 1 km).

The new OHTL will be routed along very limited area, which will help minimize visual, land use, and ecological impacts.

2.3 Project Schedule

The Dandara Solar Power Project is planned to commence in the second quarter of 2026, following the receipt of all required permits and approvals. The total implementation period is estimated at approximately 15 months, from March 2026 to June 2027, covering all site establishment, civil, electrical, and mechanical works.

2.4 Project Phases

The Project will include three main phases: Construction, Operation, and Decommissioning.

a) Construction Phase

Major on-site activities will include civil works, construction of buildings, installation of equipment and utilities, and testing and commissioning of equipment. Key activities during the construction phase include:

- Site preparation: Includes land surveys, ground levelling, and clearing; concrete works, utility installations, and laydown areas for materials and equipment.
- Panel and access road construction: Installation of PV panel supports and development of a 1.5 km gravel access road connecting the site to the main road, along with internal gravel roads for equipment movement and operations.
- Stormwater and drainage system: Protection against flash floods through a trapezoidal open channel or compacted earthen berm along the eastern fence line, designed to follow natural drainage paths and accommodate a 100-year flood event with erosion control and energy dissipation measures.
- Fencing and gates: The entire site will be enclosed with perimeter fencing and main/emergency gates, while the HV substation and O&M building will have separate fencing for enhanced security and safety.

Workers Accommodation

During the construction phase, workforce accommodation will be arranged through a combination of on-site and off-site facilities, depending on workers' roles and their permanent residence. The primary accommodation will be a dedicated camps within the project site, while subcontractors may arrange additional housing for non-local workers, if

needed, in rented apartments within nearby villages and urban centres. However, all contractors will be encouraged to continuously increase percentage of local workforce.

All accommodation will comply with Good International Industry Practice, EBRD PR2, IFC PS2, the 2009 IFC/EBRD “Workers’ Accommodation” guidelines, Egyptian Labour Law No. 14/2025, relevant safety decrees, and Civil Defense fire-safety requirements.

Temporary structures

During the construction phase, the following facilities are required on site to service employees, contractors, and employer’s representatives (laydown areas).

- Offices for the employers (air-conditioned)
- Mess / eating facilities
- Sanitary facilities

When the construction work is completed, most of the temporary structures and facilities will be dismantled.

b) Operation Phase

Once construction is complete, the clean energy will be generated and stored. Key activities include:

- Energy Production: The solar panels convert sunlight into electricity, which is fed into the grid.
- Battery Storage & Management: The BESS stores excess energy during the day and releases it in the evening to stabilize the power supply.
- System Monitoring & Maintenance: Regular inspections, cleaning, and repairs of panels, inverters, and batteries to ensure efficiency.
- Safety & Compliance: Continuous monitoring of environmental and safety standards, including temperature control, fire prevention, and worker safety measures.

c) Decommissioning Phase

At the end of the project's life span, the site will be safely dismantled and restored. Activities include:

- Removal of Equipment: Solar panels, batteries, and supporting structures will be safely dismantled.
- Recycling and Waste Management: Reusable components will be recycled, while hazardous materials will be disposed of according to environmental regulations.
- Site Restoration: The land will be restored to its original state or re-purposed for other sustainable uses.

2.5 Environmental and Social Aspects

Based on the project components, the key environmental and social aspects of the PV project are summarized in Table 2 for both construction and operation phases:

Table 2: Project E&S aspects

Environmental & Social Aspects		Source(s)	
		Construction phase	Operation phase
Land Uptake	Land Access Restriction	- Project infrastructure and assets (e.g., laydown areas, temporary facilities, and site security)	- Project infrastructure and asset (e.g., fenced PV field, substations, BESS) security
	Land Transformation	- Site clearing, leveling, grading - Excavation for foundation construction - Lay down area - Substation construction - Construction of temporary facilities (e.g., construction workforce camps)	Permanent transformation of the project footprint, fully stripped of its natural state.
	Land Acquisition	- Potential private ownership or land use along the OHTL (associated facility) - The project site itself is state-owned desert land	- N/A
Transportation Demand		- Transportation of project components - Transportation of machinery & equipment - Transportation of water, fuel, and other materials for construction activities - Transportation of workers to and from project sites and accommodation camps	- Limited transportation needs for O&M workforce, spare parts, and maintenance equipment.
Workers Influx		- Skilled and non-skilled construction workers (site preparation activities, assembly, technical installations, etc.)	- Limited workforce
Worker welfare		- In the work environment - In the workers' camp	- In the work environment - In the workers' camp, if any
Water Demand		- Construction activities (preparation of concrete) - Potable (drinking) water - workers (workforce accommodation, sanitation, catering & other facilities) - Dust suppression	- Limited O&M workforce, sanitation, and other facilities. - Panel cleaning.
Noise & Vibration		- Site preparation grading, leveling, clearing, concrete mixing, trucks, deliveries, piling/ramming works. - moving machines (mixers, tippers, communicating workers) - Incoming vehicles to deliver construction materials, components, and workers to the site - Installation of the components (especially ramming machines)	- Limited activities from O&M (inverters, transformers, cooling fans, and trackers) - Limited Worker's transportation and maintenance activities
Dust/Particulate Matter/Gaseous Emissions		- Site preparation (site clearance, excavation, and spreading of the topsoil)	- Negligible – only workforce transport and minor maintenance vehicles.

Environmental & Social Aspects	Source(s)	
	Construction phase	Operation phase
	<ul style="list-style-type: none"> - Movement of vehicles across dirt/unpaved roads, topsoil, and excavated soil handling - Increased traffic flows (vehicle emissions) - Emissions from onsite diesel power generators 	
Wastewater Generation	<ul style="list-style-type: none"> - Domestic waste from a large number of workers 	<ul style="list-style-type: none"> - Limited generation from sanitation facilities
Waste Generation (Hazardous and non-hazardous)	<p>Non-hazardous</p> <ul style="list-style-type: none"> - Construction material packaging, debris, and waste - Non-hazardous off-cuts - Domestic waste from workforce (e.g., food waste, plastic bottles & cans, Paper, and Glass) <p>Hazardous</p> <ul style="list-style-type: none"> - Empty containers of hazardous substances - waste paints, coatings, adhesives, cleaning solvents - Spent lubricating oils and hydraulic fluid 	<p>Non-hazardous:</p> <p>Limited quantities of</p> <ul style="list-style-type: none"> - O&M material packaging (e.g., spare parts) - Domestic waste from workforce (e.g., food waste, plastic bottles & cans, glass, and mud) - Paper & other office supplies - Cardboard. <p>Hazardous</p> <ul style="list-style-type: none"> - Absorbent material, waste oil from machinery lubricants - Empty containers of hazardous substances - Waste cleaning solvents - End-of-life lithium batteries
Visual Aspects	<ul style="list-style-type: none"> - Heavy construction machinery, equipment, and vehicles 	<ul style="list-style-type: none"> - PV panels are alien to the desert landscape
Glare	N/A	<ul style="list-style-type: none"> - Sunlight reflected off the modules and the metal mounting structure
Electromagnetic waves	N/A	<ul style="list-style-type: none"> - Substation and Transformer - Switch gears - Transmission Lines (associated facility)
Lake effect	N/A	<ul style="list-style-type: none"> - Smooth and uniform appearance of PV solar plants, similar to a sheet of water, as they reflect light just as a lake or a pond is said to attract birds - For PV panels with a tracking system, this will happen only during a short portion of the day

2.6 Area of Influence

The identified project E&S aspects within the project's direct area of influence are described in the tables below.

Table 3: Environmental and Social Aspects Aol during the construction phase

Environmental & Social Aspects		Area of Influence (Aol)
		Construction phase
Land uptake	Land Access Restriction	the project footprint
	Land Transformation	the project footprint
	Land Acquisition (for the transmission line)	The project area and the transmission line are on government-owned desert land (1km to the substation)
Transportation Demand		<p>The project site can be accessed through the national and regional road network linking the Red Sea ports with Upper Egypt. The following main corridors and right-of-way (ROW) options are relevant for the transportation of imported equipment and materials:</p> <ul style="list-style-type: none"> From Red Sea Ports (Ain Sokhna / Adabeya): Cargo can be transported westward via the Red Sea coastal highways towards Safaga Port and then inland. Safaga – Qena Corridor: The Safaga–Qena Road provides a direct inland route across the Eastern Desert, leading to the Qena Bridge over the Nile, offering access into Upper Egypt. Eastern Desert Road – Luxor Bridge Option: Alternatively, the Eastern Desert Highway can be used to reach the Luxor Bridge, providing another Nile crossing point south of Qena. Connection to Giza–Luxor Road: Both Nile crossings (Qena Bridge or Luxor Bridge) link to the Giza–Luxor (Western Desert) Road, which serves as the principal north–south arterial route along the west bank of the Nile. Site Access: From the Giza–Luxor Road, access to the project site is gained through the industrial area access road, located east of the corridor, leading directly to the designated project location.
Workers Influx		The nearest communities are located in Baraka village, approximately 4 km from the project site.
Water Demand		To be trucked from the nearest water supply plant.
Wastewater		To be trucked from the nearest wastewater plant
Waste Generation		To be trucked from the nearest waste management facility
Noise & Vibration		The immediate project footprint and construction areas
Dust/Particulate Matter/Gaseous Emissions		The immediate vicinity of the project area (A general default distance of 350 m to be considered for dust effects, (IAQM, 2012))
Biodiversity Disturbance		Desert habitat along the site footprint and OHTL alignments
Community Health & Safety		Baraka Village (nearest settlement), roadside communities along transport routes.

Table 4: Environmental and Social Aspects Aol during the operation phase

Environmental & Social Aspects		Area of Influence (Aol)
		Operation phase
Land Uptake	Land Access Restriction	Project footprint

Environmental & Social Aspects		Area of Influence (AoI)
		Operation phase
	Land Transformation	Project Footprint
	Land Acquisition	N/A - no new land anticipated during O&M.
Transportation Demand		Limited needs for the same roads as for construction for transportation during O&M
Workers Influx		N/A .
Water Demand		Limited needs during O&M; supply to be secured either through trucking or a dedicated water connection.
Noise & Vibration		Limited to the workplace - Localized within the project footprint, primarily from inverters, transformers, and occasional vehicle movements.
Dust/Particulate Matter/Gaseous Emissions		N/A
Visual Aspects		The project site boundaries
Glare		<p>Potential glare impacts on nearby receptors are considered minimal.</p> <ul style="list-style-type: none"> - The nearest airport is Luxor Airport (~50 km away), with a NNE–SSW runway orientation; no significant glare risk is expected. - Potential glare toward the Giza–Luxor Road is expected to be limited, as this corridor lies about 3 km north of the site and is partially shielded by on-site infrastructure, including the substations, BESS complex, and O&M facilities located along the western and southwestern boundaries. These structures effectively block potential reflected sunlight from the PV modules toward the road user. <p>Overall, based on the above, the glare potential to off-site receptors—such as airports, roads, and nearby communities—is considered negligible.</p>
Electromagnetic waves		<ul style="list-style-type: none"> - Project footprint. - Along the OHTL corridor: within a Right of Way (RoW) of 25 m on each side of the transmission line.

Based on the two tables above, the AoI during the construction phase includes the project site and its immediate surroundings. During operation, although the IFC standards do not define a specific extent of the AoI for solar panels' projects, previous studies proposed best practices that consider a buffer area of 1 km from the project site boundaries (ERM, 2018; Masdar, 2022). Accordingly, the AoI considered for the project extends for 1 km from the project site boundaries.

3. Environmental and Social Legislation and Regulations Related to the Project

3.1 National Legislations

As per Egypt's Environmental Law 4 of 1994 (as amended by Laws 9 of 2009 and 105 of 2015), an Environmental Impact Assessment (EIA) must be conducted for new projects. The New and Renewable Energy Authority (NREA) serves as the Competent Administrative Authority (CAA) for this project, overseeing the submission and review process through the Egyptian Environmental Affairs Agency (EEAA).

The EEAA classifies projects into four categories (A, B, Scoped B, and C) based on their potential environmental impact. The Dandara PV Plant and Battery Energy Storage System (BESS) are classified as a Scoped B project, meaning a full Environmental and Social Impact Assessment (ESIA) is not required, and public consultation is not mandatory.

The table below lists the key relevant legislation and regulatory entities associated with each environmental and social parameter assessed within this ESIA. Throughout the following chapters, reference is made to the applicable legislative requirements under each relevant parameter.

Table 5: National Regulations and Laws

Legislation Related to the Project
Management of non-hazardous solid waste and hazardous waste generated from the facility during generation, handling, transportation and disposal
Law 4/1994 amended by Law 9/2009, and its ER 1095/2011, amended by Decree 710/2012
Law 202/2020 on waste management and its executive regulation 722/2022 and 1113/2024
Biodiversity Protection
Article 28 of the Environmental Law 4 of 1994
Annex 4, as amended by ERs 1095 of 2011 of the Environmental Law 4 of 1994,
Law 102 of 1983 Concerning Natural Protected Areas
Law 53 of 1966 (the Law of Agriculture) and amended by Decree 1227 of 1988
Cultural Heritage
Antiquities Protection Law 117/1983 amended by Laws 3/2010, 61/2010, 91/2018 and 20/2020
Air quality and noise
Article 36 of Environmental Law 4/1994 and Article 37 of ER 1095/2011
Article 35 of Environmental Law 4/1994, article 34 of its modified ER 1741/2005, and annex (5) of modified ER 710/2012
Article 42 of Environmental Law 9/2009 and Article 44 of its modified ER (1095/2011)
Annex 7 of the ER replaced by Decree 710/2012
Executive regulations 81/2023 amended by decree 164/2025
Register/Records: Environmental Register & Hazardous Materials & Waste Register
Article 22 of Environmental Law 9 of 2009
Article 17 of Law 1741 of 2005 Article 17 and Annex 3 of the executive Regulation.
Article 56 of Waste Law 202 of 2020
Appendix (3) of the ERs of Environmental Law 4/1994
Article 50 and Appendix (7) of the ER of Waste Law 202/2020 on waste management and its executive regulations (654/2021)
Workplace Emissions
The Ministerial Decree 134/2003 concerning committees for vocational safety and health
Ministerial Decree 211/2003 concerning safety levels, precautions, and terms to prevent detrimental physical, chemical, biological, and mechanical hazards
Workplace Noise

Annex 7 of the ER 710/2012 of the Environmental Law 4/1994, amended by decree 2466/2024.
Occupational health and safety
Law 14/2025 on Labour and Workforce Safety
Ministerial decree 211/2003 concerning safety levels, precautions, and terms to prevent detrimental physical, chemical, biological, and mechanical hazards
Child Labour
Article 64 of the “Child Law” 12/1996
Articles 62, 63, 64, and 65 of the Labor Law 14/2024
Decree 215/2021 regarding the child employment and training
Persons with Disabilities
Law 10 of 2018 amended by Law 156/2021 on the Rights of Persons with Disabilities
Article 37 of Labour Law 14/2025
Equal opportunities
Article 9 of the Egyptian Constitution
Article 5 of Labour Law 14/2025
Law 10/2018 related to the rights of people with disabilities
Protection from Harassment
Article 254 of Labour Law 14/2025
Anti-harassment Law 141/2021
Grievance
Article 85 of the Egyptian Constitution
Article 103 of the Environmental law 4/1994
Community Investment:
the Egyptian Investment Law 72/ 2017

3.2 Strategic National Initiatives

Egypt National Climate Change Strategy (NCCS) 2050

Launched in May 2022, the NCCS 2050 provides a roadmap for Egypt’s climate action through five key pillars: mitigation, adaptation, governance, financing, and scientific research.

The PV and BESS projects contribute to the following national objectives:

- Renewable Energy Goals: Supporting Egypt’s target of achieving 42% renewable energy by 2035.
- Climate Resilience: Incorporating measures to withstand extreme weather conditions in Qena.
- GHG Emissions Reduction: Replacing fossil fuel–based energy with renewable sources.
- Sustainable Development: Aligning with Egypt’s Vision 2030 for low-emission economic growth.

Nationally Determined Contribution (NDC)

Egypt signed the Paris Agreement in 2016 and ratified it in 2017, outlining its commitments to GHG emission reduction and climate adaptation. The updated NDC (2023) includes the following key elements:

- Sectoral Emission Reductions: Targeting key sectors including energy, oil and gas, transport, industry, waste management, and tourism.
- Oil & Gas Sector Targets: Reducing emissions from 2,575 Gg CO₂-eq (BAU scenario) to 0.89 Gg CO₂-eq by 2030 through the use of cleaner fuels and alternative energy sources.

Egypt's National Strategy for the Empowerment of Egyptian Women 2030

Launched in 2017, this strategy aims to promote women's empowerment across four key pillars:

- Political Empowerment: Increasing women's participation and leadership in decision-making roles.
- Economic Empowerment: Expanding employment opportunities and supporting female entrepreneurship.
- Social Empowerment: Enhancing access to education, healthcare, and social services.
- Protection and Response: Addressing and preventing all forms of violence against women.

3.3 International Conventions**Biodiversity Conventions**

Egypt has ratified several international agreements aimed at protecting biodiversity, including:

- Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA) (1995): Protects migratory waterbirds and their wetland habitats.
- The United Nations Convention on Biological Diversity (UNCBD) (1992): Promotes the sustainable management of biological diversity.
- The Convention on the Conservation of Migratory Species of Wild Animals (CMS) (1979): Ensures the conservation of migratory species.
- Convention on International Trade in Endangered Species of Wild Fauna and Flora CITES (1973): Regulates international trade in endangered species.
- African Conservation Convention (1968): Promotes the sustainable use of natural resources.

Climate Change Conventions

Egypt has taken significant steps to address climate change through the ratification of:

- United Nations Framework Convention on Climate Change (UNFCCC (1992): Establishes a global framework for addressing climate change.
- Kyoto Protocol (1997): Sets binding emission reduction targets.
- Paris Agreement (2016): Aims to limit the global temperature increase to below 2°C.

Cultural Heritage Conventions

Egypt is committed to safeguarding its cultural heritage through:

- United Nations Educational, Scientific and Cultural Organization (UNESCO) Convention for the Safeguarding of the Intangible Cultural Heritage (2003): Protects traditions, expressions, and traditional knowledge.
- World Heritage Convention (1972): Identifies and preserves sites of cultural and natural heritage.

Work Environment Conventions

Egypt adheres to international labor standards established by the International Labour Organization (ILO):

- Freedom of Association and Protection of the Right to Organize Convention, 1948 (No. 87)

- Right to Organise and Collective Bargaining Convention, 1949 (No. 98)
- Forced Labour Convention, 1930 (No. 29) and its 2014 Protocol
- Abolition of Forced Labour Convention, 1957 (No. 105)
- Minimum Age Convention, 1973 (No. 138)
- Worst Forms of Child Labour Convention, 1999 (No. 182)
- Equal Remuneration Convention, 1951 (No. 100)
- Discrimination (Employment and Occupation) Convention, 1958 (No. 111)
- Occupational Safety and Health Convention, 1981 (No. 155)
- Promotional Framework for Occupational Safety and Health Convention, 2006 (No. 187)

3.4 International Standards and Guidelines

The Environmental and Social Impact Assessment (ESIA) for the Dandara PV Power Plant and Battery Energy Storage System (BESS) in Nag aa Hammadi complies with both Egyptian Law 4/ 1994 and international financial institutions' requirements, including mainly AfDB, and EBRD standards.

AfDB Operational Safeguards (OS)

- OS1: Addresses environmental and social risk management throughout the project life cycle.
- OS2: Supports fair labor practices and ensures a safe and healthy workplace.
- OS3: Covers pollution control and promotes resource efficiency.
- OS4: Ensures community health, safety, and security.
- OS5: Land acquisition and resettlement provisions are not applicable to this project.
- OS6: Focuses on biodiversity conservation and the sustainable use of natural resources.
- OS7: Protects vulnerable groups from potential negative impacts.
- OS8: Addresses cultural heritage protection (no expected impacts identified).
- OS9 & OS10: Financial intermediary provisions are not applicable, but stakeholder engagement is required.

EBRD Environmental and Social Requirements (ESRs)

- **ESR1:** Calls for integrated environmental and social impact assessment and stakeholder engagement.
- **ESR2:** Ensures fair labor conditions, health and safety standards, and monitoring of suppliers.
- **ESR3:** Focuses on pollution prevention and resource efficiency.
- **ESR4:** Addresses health, safety, and security risks, including gender-based violence risk assessment.
- **ESR5:** Land acquisition and resettlement provisions are not applicable to this project.
- **ESR6:** Assesses biodiversity conservation and sustainable resource management.
- **ESR7:** Indigenous peoples' provisions are not applicable.
- **ESR8:** Ensures protection of cultural heritage (no registered sites found).
- **ESR10:** Emphasizes stakeholder engagement and transparent information disclosure.

European Investment Bank (EIB)

- Standard 1: Environmental and Social Impacts and Risks
- Standard 2: Stakeholder Engagement

- Standard 3: Resource Efficiency and Pollution Prevention
- Standard 4: Biodiversity and Ecosystems
- Standard 5: Climate Change
- Standard 6: Involuntary Resettlement
- Standard 7: Vulnerable Groups, Indigenous Peoples and Gender
- Standard 8: Labour Rights
- Standard 9: Health, Safety and Security
- Standard 10: Cultural Heritage
- Standard 11: Intermediated Finance

Cassa Depositi e Prestiti S.p.A. (CDP) Sustainability Framework (2020)

The Cassa Depositi e Prestiti S.p.A. (CDP) Sustainability Framework (Version 1.0, 2020) establishes a comprehensive environmental, social, and governance (ESG) system that applies to all projects and entities benefiting from CDP financing.

The Framework aligns with international sustainability principles and ensures that all CDP-supported activities respect human rights, prevent adverse environmental and social impacts, and contribute positively to sustainable development objectives

IFC E&S Performance Standards

- PS1: Social and Environmental Assessment and Management System
- PS2: Labor and Working Conditions
- PS3: Pollution Prevention and Abatement
- PS4: Community Health, Safety, and Security
- PS5: Land Acquisition and Involuntary Resettlement
- PS6: Biodiversity Conservation and Sustainable Natural Resource Management
- PS7: Indigenous Peoples
- PS8: Cultural Heritage

World Bank EHS Guidelines

The World Bank Group members are committed to abiding by the general EHS Guidelines for different projects where they are involved. These are complemented by industry-specific guidelines for complex projects.

4. Analysis of Alternatives

The "no-project" alternative was excluded from consideration, as the proposed land would still be utilized for other renewable energy projects. Key alternatives considered include:

Site Location: The proposed project, located in a vacant desert land south of Nagaa Hammadi. It has been allocated by the Egyptian government to NREA for Renewable Energy Project and does not conflict with other land uses. Therefore, alternative site options were not considered, making the selected site suitable for the project.

PV Panel Types: Different PV panel technologies, including monocrystalline and thin film, were assessed. High-efficiency mono-crystalline silicon panels were selected for their optimal balance of performance, cost-effectiveness, and environmental considerations.

Tracking Systems: The investigation of tracking systems for maximizing solar energy capture led to the selection of an active single-axis solar tracking system for the project. This choice was made because it is generally less expensive and requires less maintenance due to having fewer moving parts.

Module Cleaning: Various module cleaning methods, including manual cleaning and automated systems, were evaluated. The selected option for PV Module Cleaning is the automatic robotic dry- cleaning system.

BESS Alternatives: Different BESS technologies, such as lithium-ion and flow batteries, were considered. Lithium nickel manganese cobalt oxide (NMC) or lithium iron phosphate (LFP) were selected for their high energy density, efficiency, and proven track record in utility-scale applications.

Water Sources: Alternative water sources, including groundwater abstraction and water trucking from the nearest water plant, were investigated. Ultimately, the project will utilize water trucking and pipeline supply for its water needs will also be considered.

5. Environmental and Social Baseline

5.1 Project Site Location

The project is located within the area of Naga Hammadi, Qena Governorate. The coordinates of the boundaries of the usufruct area and the included project site, along with the locations of the nearest roads and residential settlements, are provided below (Figure 2).

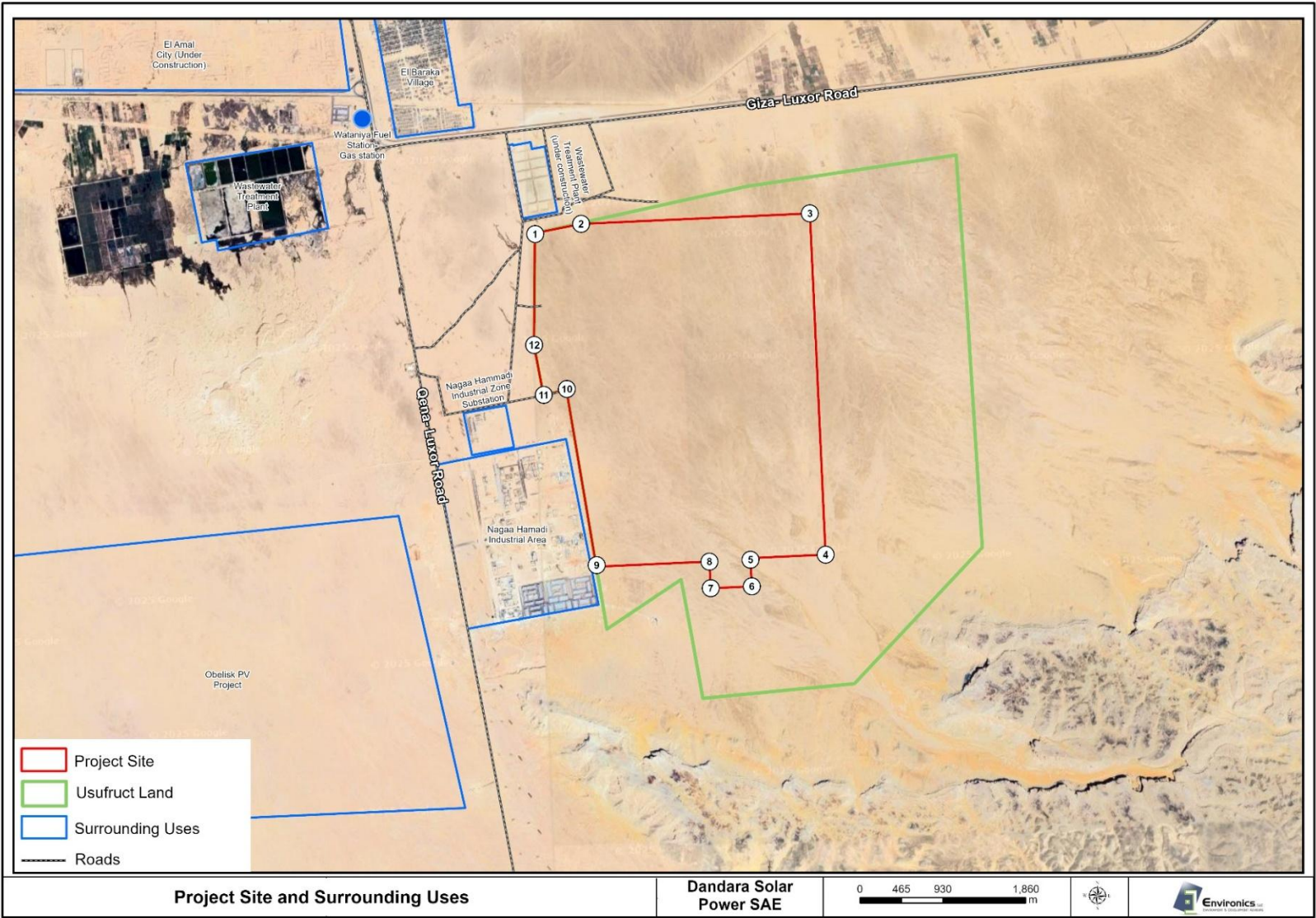


Figure 2: Project Site within Scatec’s usufruct land

Table 6: Location coordinates for the four corners of the Project Site

Corner No.	Latitude	Longitude
1	32° 19' 39.83" E	25° 56' 40.63" N
2	32° 19' 58.42" E	25° 56' 43.62" N
3	32° 21' 30.43" E	25° 56' 44.04" N
4	32° 21' 31.11" E	25° 54' 40.0" N
5	32° 21' 0.92" E	25° 54' 39.31" N
6	32° 21' 0.97" E	25° 54' 29.59" N
7	32° 20' 44.46" E	25° 54' 29.51" N
8	32° 20' 44.41" E	25° 54' 39.24" N
9	32° 19' 59.11" E	25° 54' 39.59" N
10	32° 19' 50.01" E	25° 55' 43.93" N
11	32° 19' 40.6" E	25° 55' 42.12" N
12	32° 19' 37.62" E	25° 56' 0.4" N

5.2 Climate and Meteorology

The Qena governorate experiences extreme temperature variations, with very hot summers, cold winters, and significant daily temperature differences. The region is characterized by arid conditions, minimal rainfall, and high solar radiation levels, particularly in summer.

- **Temperature:** The annual average temperature is 23.9°C, peaking at 37.9°C in July and dropping to 5.3°C in January.
- **Solar Radiation:** High solar radiation levels range between 2,191–2,264 kWh/m² per year, peaking in July at 27 MJ/m²/day and reaching a minimum of 12 MJ/m²/day in December.
- **Day Length:** Varies between 11 hours in December and 14.2 hours in June.
- **Wind Speed and Direction:** The average wind speed is 12 km/h, with a peak of 13.7 km/h in April. Winds predominantly blow from the north and northwest.
- **Precipitation:** Rainfall is negligible, with an annual peak of 0.4 mm in May.
- **Relative Humidity:** Ranges from 30% in May to 54.2% in December, with an annual average of 41%.

Dust and Sandstorms

The project site, similar to other areas in Upper Egypt, is exposed to dust, sandstorms, and haze, as recorded over a 22-year monitoring period:

- **Haze Events:** Recorded for 2,864 hours (1.5% of total time), peaking in February, and typically associated with low wind speeds.
- **Dust Storms:** Occurred for 544 hours (0.29% of total time), mainly in March, under moderate wind speeds (2–5 m/s).
- **Rising Sand:** Recorded for 446 hours (0.23% of total time), linked to high wind speeds (>5 m/s), peaking in March.
- **Sandstorms:** Rare, occurring for 34 hours (0.02% of total time), mostly in March, driven by strong westerly winds.

Air Quality

Air quality data from the Qena Meteorological Station (December 2023) indicate elevated PM₁₀ concentrations (166 µg/m³), exceeding the regulatory threshold of 70 µg/m³, primarily due to the surrounding desert environment. Other pollutants, including sulfur dioxide (SO₂), nitrogen dioxide (NO₂), and ammonia (NH₃), remained within safe limits.

Annual data from 2022 also recorded elevated PM₁₀ levels (149 µg/m³), surpassing both national and WHO guidelines, while SO₂ and NO₂ remained within acceptable ranges.

5.3 Geomorphology and Topography

The project site lies within the ancient alluvial plains, situated between rugged terrain and the limestone plateau to the south, and the younger alluvial plains along the valley to the north. The old alluvial plains form terraces at varying elevations above the younger plains.

According to Egypt's national soil map, the soils across the project area are primarily derived from limestone. Specifically, the site's soil type is classified as sandy loam, which is generally shallow or stony in nature.

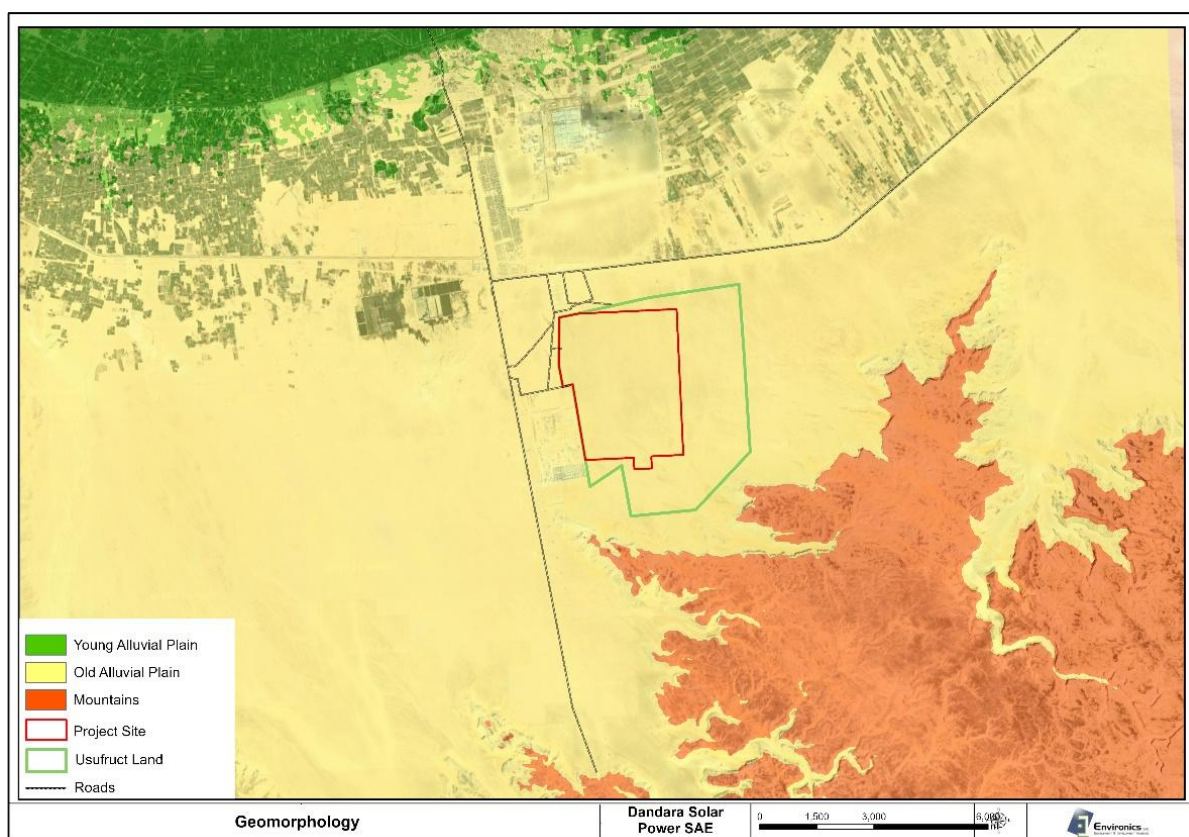


Figure 3: Geomorphological features of the Project Site

Topography

Elevations at the project site and its surroundings increase towards the south, reaching a maximum of approximately 450–500 m above mean sea level (MSL). Within the project site and the usufruct area, elevations generally range between 130 and 170 m above MSL, except in the southern part, where the elevation rises to a peak of about 220 m above MSL.

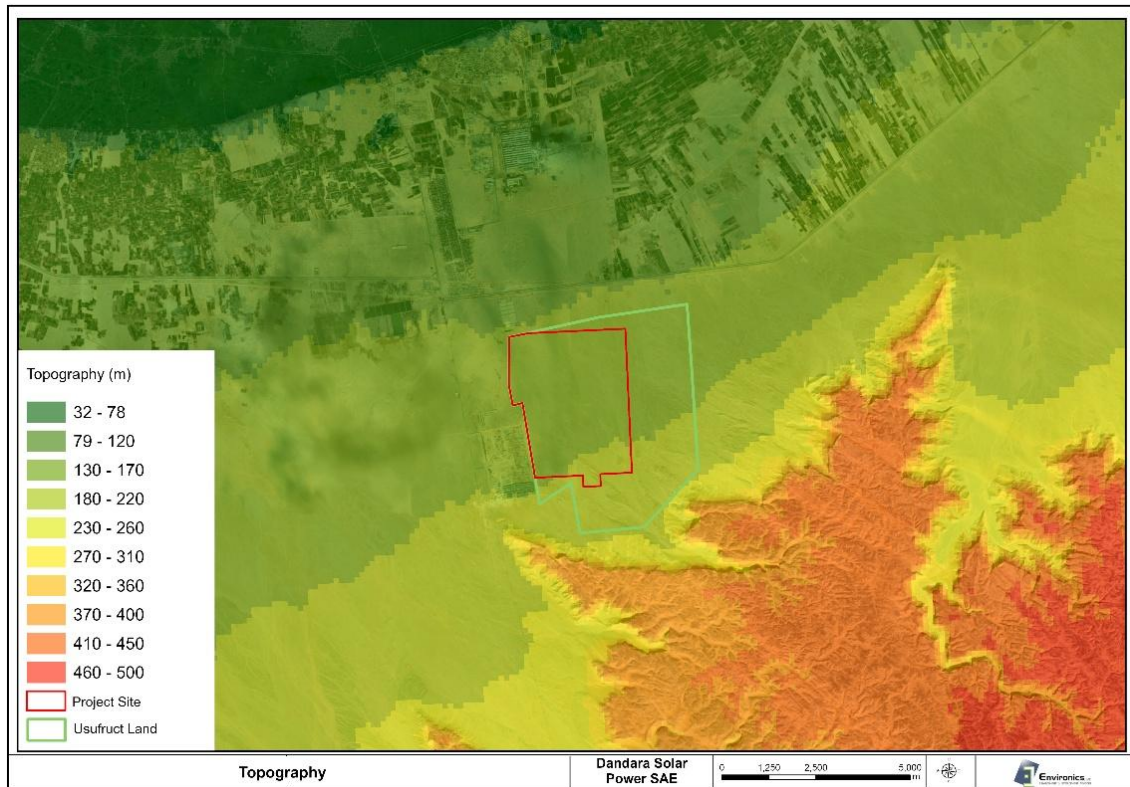


Figure 4: Topography of the Project Site (indicated in blue)

5.4 Hydrology and Hydrogeology

The Project Site is situated in the desert hinterland of Markaz Nagaa Hammadi. As such, the Project Site is devoid of any surface water bodies or surface canals within its boundaries. There are three water bodies near the Project Site. These are the Alranan Canal, Almarashda Canal, and the river Nile, all of which are located north of the Project Site. The Alranan Canal is the closest water body to the Project Site and is located 8.5 km north of it, then Almarashda Canal (9 km away from the project site).

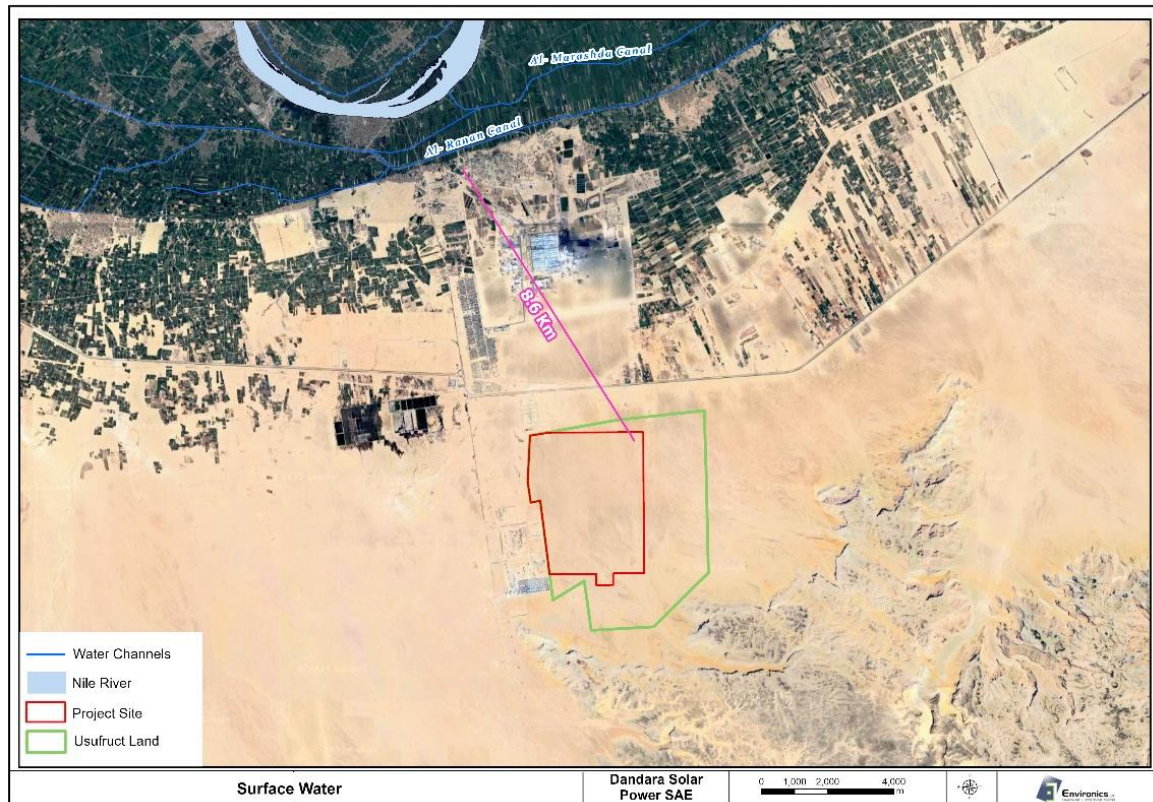


Figure 5: Surface water bodies and canals in close proximity to the Project Site

Groundwater

The site is underlain by the Quaternary aquifer, the primary groundwater resource in the Nile Valley. This aquifer consists of sand, gravel, and clay layers, with groundwater occurring under unconfined conditions. The thickness of the aquifer varies from about 200 m at the center of the cultivated floodplain to about 80 m at the desert fringes. It is recharged continuously from the excess irrigation water and occasionally from infrequent rainfalls. The old alluvial floodplain is characterized by moderate to very high recharge potentialities. The Project Site is located in an area of moderate recharge groundwater potentiality. The groundwater in the Project Site occurs at moderate depth that ranges between 36 meters to 41 meters.

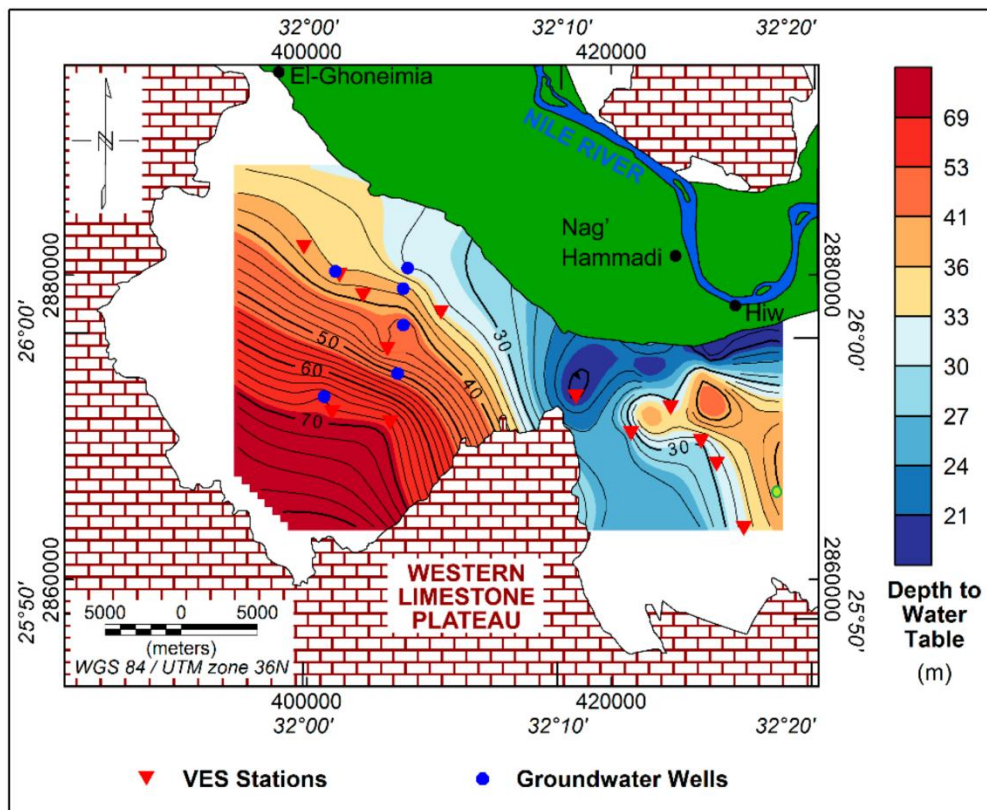


Figure 6: Depth to water contour map in relation to the Project Site

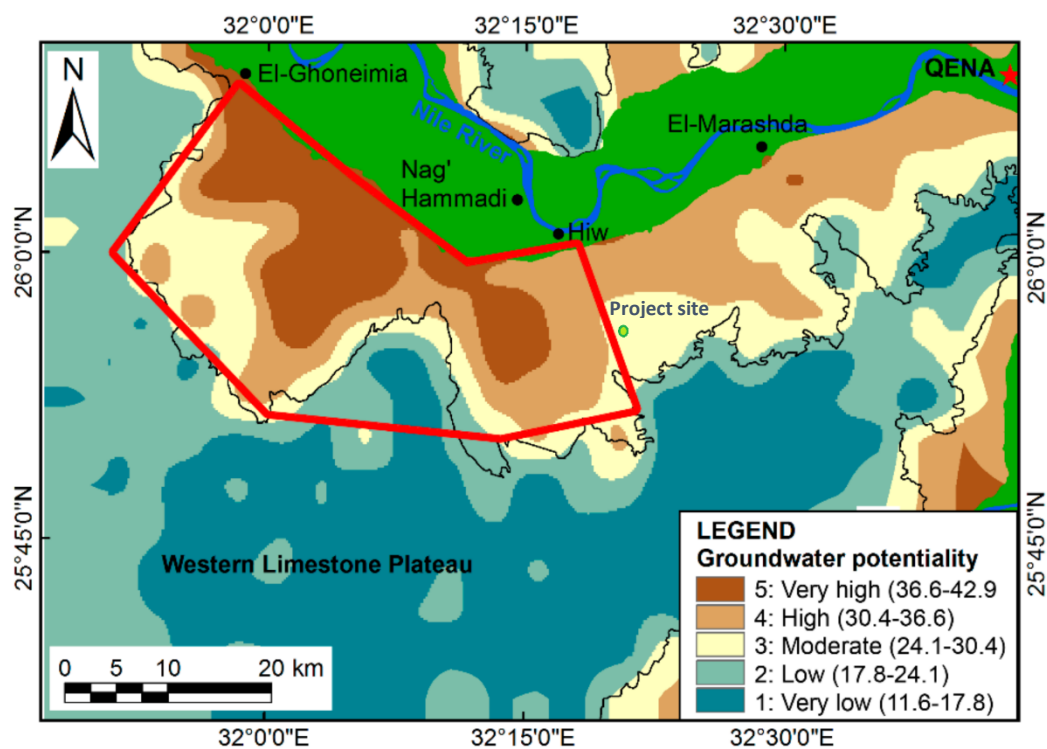


Figure 7: Groundwater recharge potentiality map including the Project Site, indicated by a green circle

Flash Flood Hazards

Despite low annual rainfall, Qena governorate is one of the most susceptible regions in the Nile Valley to flash flooding, particularly in winter (October–February). Historical records of flooding in the region date back to 1938.

The following provides a brief on the protection options against flash floods.

- The project site will be protected against flash floods via a trapezoidal open channel spanning from the mouth of the wadi south of the project site and running south to north along the eastern fence line of the project site. The design will accommodate a 100-year event. The open channel will largely maintain the natural stream path and not change the point of discharge. The outlet will be designed such that no change in the natural velocity occurs at the discharge point.
- Alternatively, the project site will be protected by means of a compacted earthen berm (with erosion protection on the stream side) running south to north along the eastern fence line of the project site. Energy dissipation measures will be employed at the outlet end of the project site, ensuring no increase to the natural discharge velocity downstream.

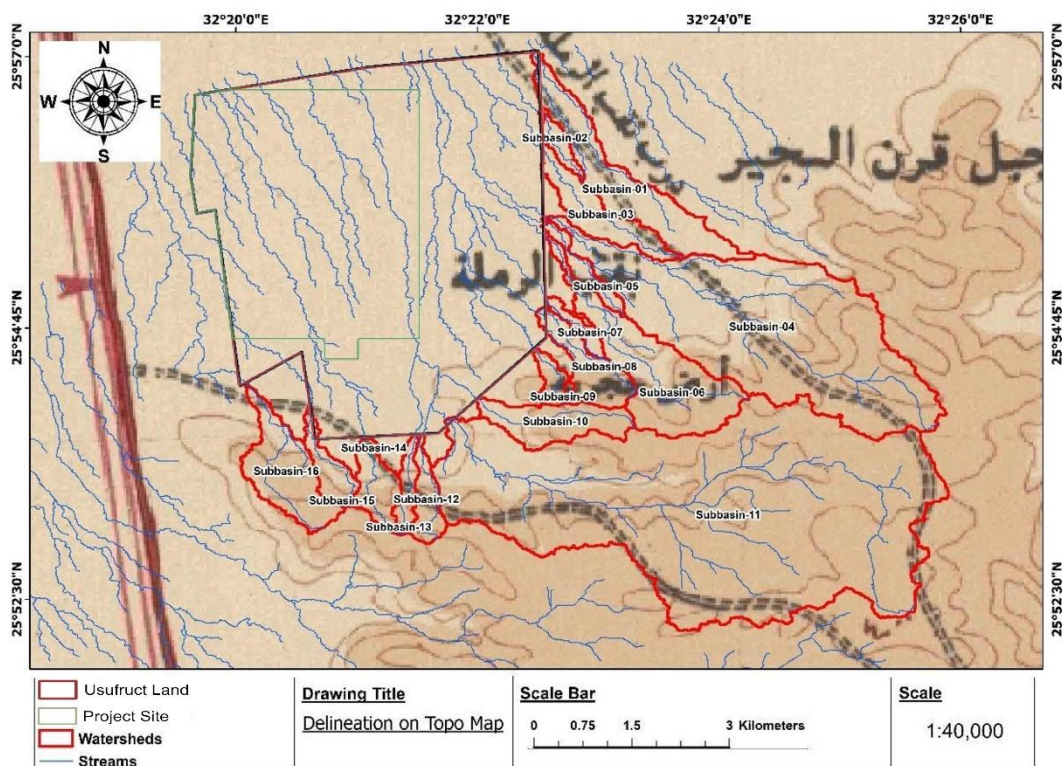


Figure 8: Natural Wadis in the project area

5.5 Biological Environment

The Project Site is located within the Middle limestone Plateau (MLP) of the Western Desert, a vast arid region covering two-thirds of Egypt's total area. This plateau extends from latitude 25° N to 29° N and includes several oases that rely on groundwater for sustenance. The Project

Site is specifically situated in the southeastern part of the MLP, characterized by dry sandy terrain with minimal vegetation.

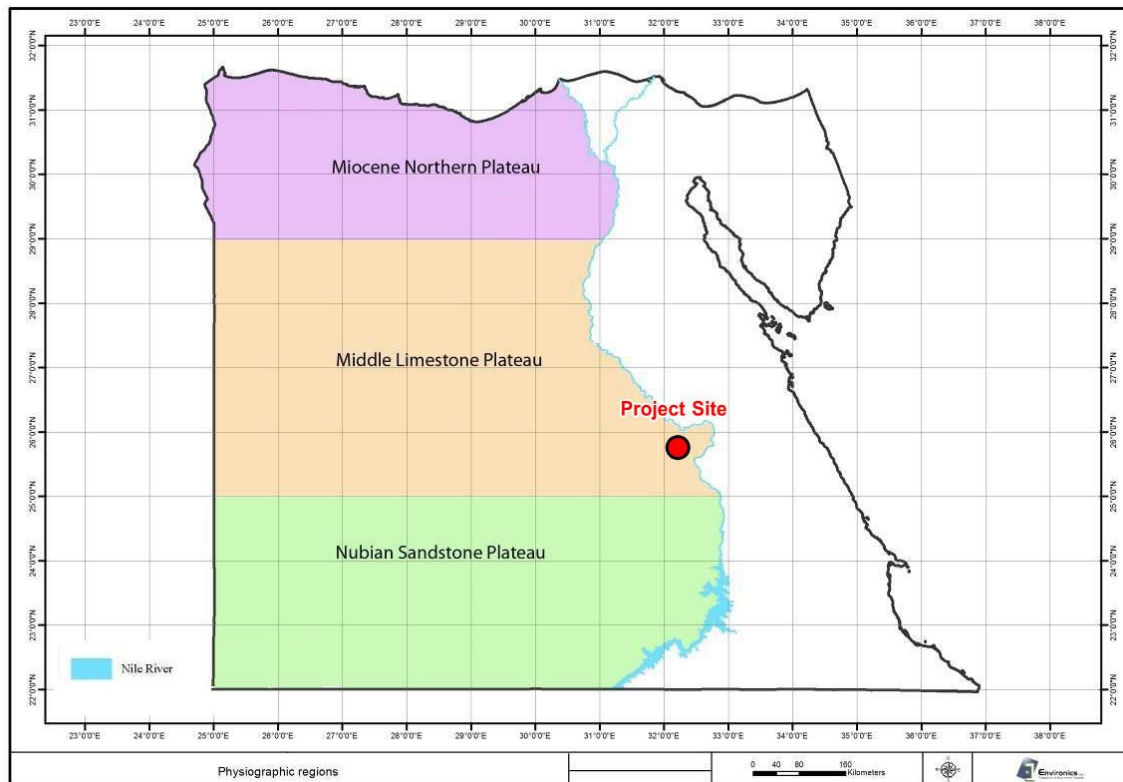


Figure 9: Physiographic regions of the Western Desert and location of the Project Site

Habitat Near the Project Site

The habitat topologies of the ecosystems in close proximity to (i.e., localities situated 15 km or less away from the Project Site) can be broken down into four main habitat types:

Nile Valley Farmlands: Located about 8.5 km north of the project site, separated by the Aswan–Giza Road. These are essentially nearly completely modified habitats, providing habitat for a variety of weeds and ruderal plants in the fields, canals, and drain banks.

Reclaimed Agricultural Lands: The closest reclaimed desert agricultural areas is 1 km north of the project. Additional reclaimed lands are located to the north and northwest of the project site.

Urban Habitats: Scattered throughout the Nile Valley farmlands and reclaimed agricultural lands, such as banks of canals and drains, roadsides, railways and wastelands, home to exotic plants and trees introduced for ornamental purposes, as well as opportunistic fauna associated with human activities (e.g., feral dogs, rats, and birds).

Middle Limestone Plateau: Arid, dry sand plateau with very little or no precipitation, and outside of its depressions and oases, the only other habitats available are bare ground habitats. It is totally devoid of flora, save for a few desert-adapted floral species distributed as scattered, isolated shrubs throughout the plateau. The Project Site is located within the southeastern part of the Middle Limestone Plateau.



Figure 10: Cattle Egrets (*Bubulcus ibis*) in a reclaimed agricultural land



Figure 11: A Common Hoopoe (*Upupa epops*) in a reclaimed agricultural land

The Project Site Conditions

Two complementary surveys were conducted to cover all habitats potentially influenced by the project, as shown in Figure 12. One survey was conducted by Scatec in August 2025, and the other by Environics in October of the same year. The surveyed locations and tracks are also illustrated in Figure 12.

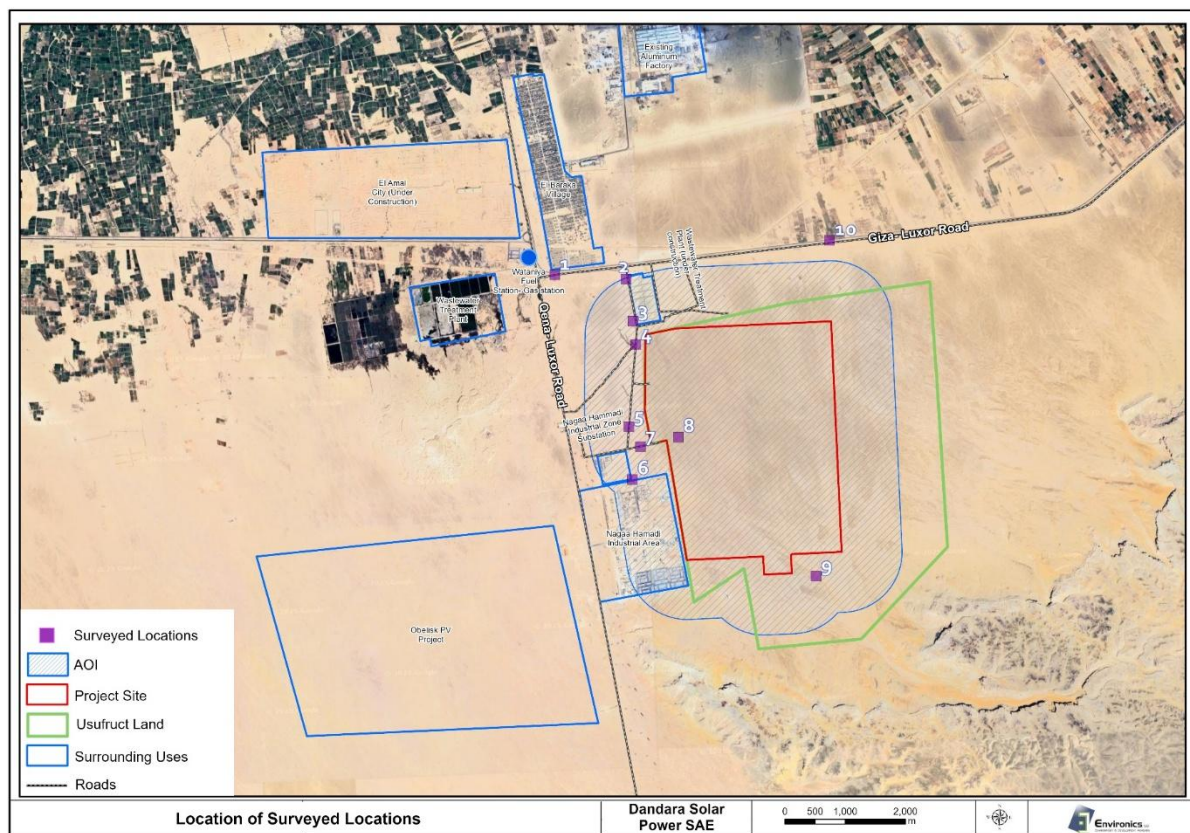


Figure 12: Location of surveyed sites during the October 2025 field visit

The site survey and remote sensing analysis confirmed that the entire Project Site consists of bare ground with no significant vegetation or water sources. According to IFC Performance

Standard 6 (IFC PS6), the Project Site is categorized as a natural habitat, meaning it remains largely undisturbed by human activity.

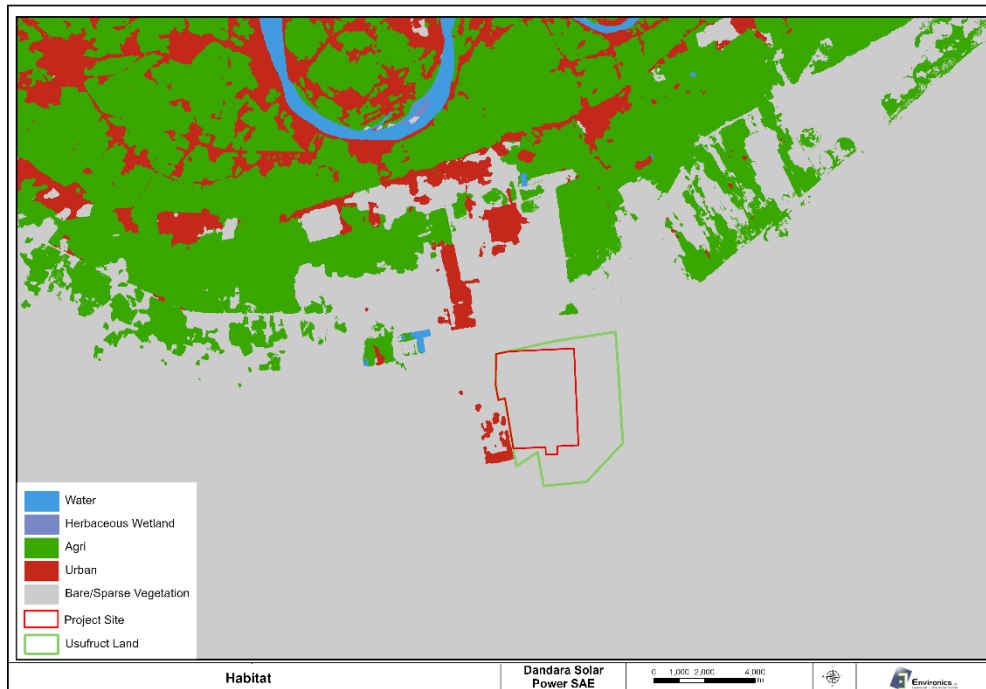


Figure 13: Habitat types of the Project Site and the localities within its vicinity

Flora

The Project Site in the Western Desert (WD) and Middle Limestone Plateau (MLP) is extremely arid, with poor plant diversity and no permanent vegetation. The only plant life found in the surrounding region includes drought-resistant species such as Syrian mesquite (*Prosopis farcta*) and *Caroxylon imbricatum*. However, the October 2025 survey found the site completely devoid of vegetation.

Fauna

Snakes: The Project Site could potentially host desert-welling snakes, including Sahara Sand Viper (*Cerastes vipera*), Homed Viper (*Cerastes cerastes*), Saharan Sand Snake (*Psammophis aegyptius*), and Diadem Snake (*Spalerosophis diadema*). However, no traces of these species were found during site surveys.

Lizards: Species like the Desert Monitor (*Varanus griseus*) and Bosc's Fringe-toed Lizard (*Acanthodactylus boskianus* subsp. *asper*) could occur in the area, along with geckos such as the Elegant Gecko (*Stenodactylus sthenodactylus*) and Anderson's Short-fingered Gecko (*Stenodactylus petrii*).

Birds:

Resident Birds: The site lacks food, water, and shelter, making it inhospitable for breeding birds. However, the nearby wastewater treatment plant attracts several birds, including species typical to the mesic habitats of the Nile Valley, such as the House Sparrow (*Passer domesticus*) and the Spur-Winged Lapwing (*Vanellus spinosus*). The later species was

recorded in the modified habitat of the water treatment plant near the project site during the site visit in October 2025.

Migratory Birds: There are 16 migratory soaring bird species with a likelihood of crossing over the Project Site. Despite this, the Project Site is not an important location for migratory birds. On the other hand, the Project Site has a low 'intensity passage', a low number of individuals per species passing over it. This is probably because the barren and arid nature of the Project Site does not provide any advantages to migrating avifauna in terms of providing food, shelter, and water required during rest-stops. In addition, most of the 16 migratory birds are categorized at the global level as species of Least Concern (LC) in terms of their susceptibility to extinction.

Mammals: Possible species include Rüppell's Fox (*Vulpes rueppellii*), which is well-adapted to desert conditions, and Fennec Fox (*Vulpes zerda*), that can survive without water.

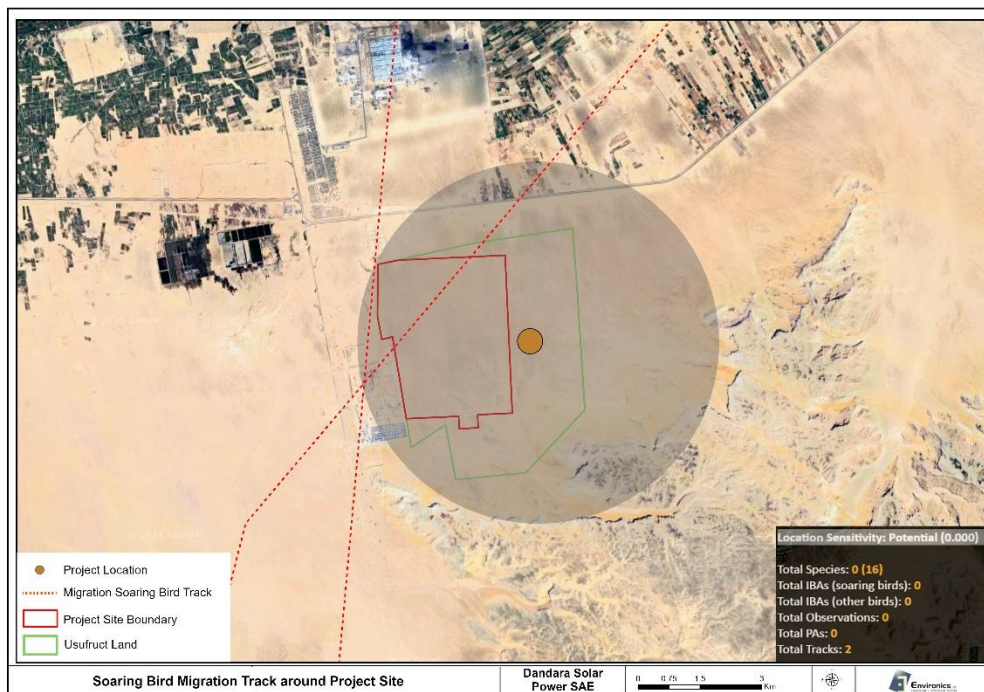


Figure 14: Location sensitivity of the Project Site to migratory soaring birds

Ecological Value and Significance

The Project Site does not encompass any Key Biodiversity Areas (KBA) or Protected Areas (PA). The only KBA in the vicinity, located about 33 km east of the Project Site, is the Upper Nile IBA. There is one PA also in the vicinity of the Project Site, the Dababia PA. However, this PA is not considered a KBA. The Dababia PA is a geological protectorate and is located approximately 45.6 km southeast of the Project Site and is separated from it by the Nile Valley (Figure 15).

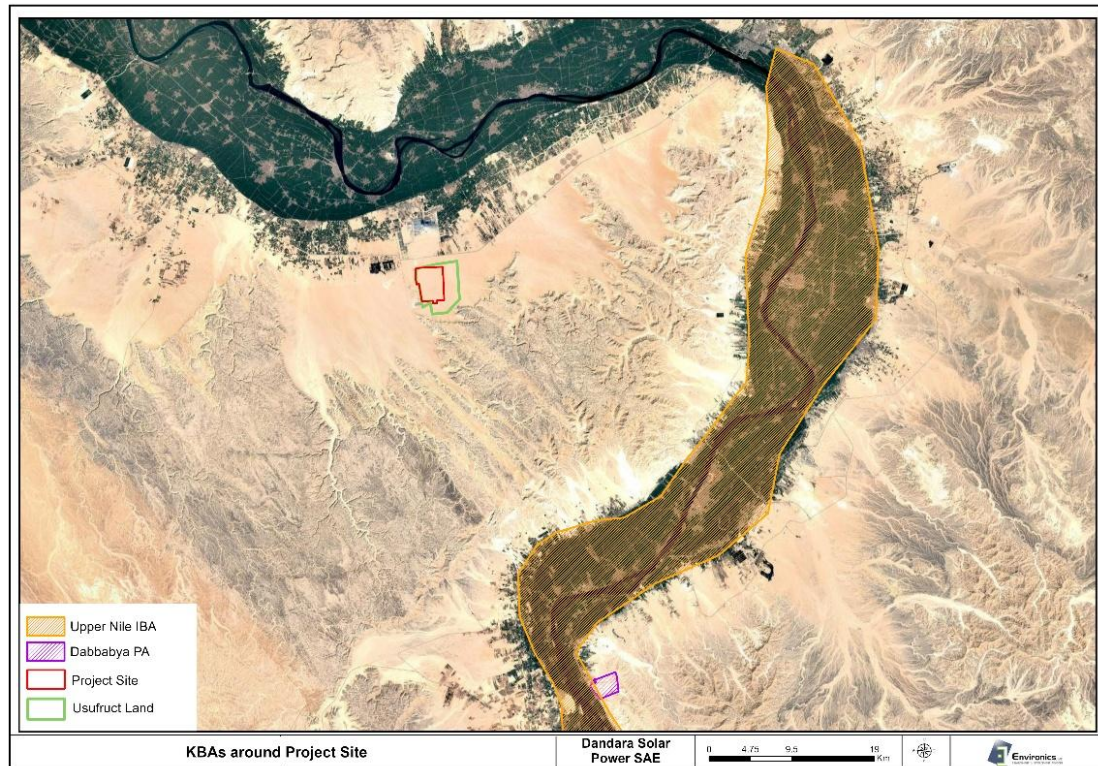


Figure 15: Nearest Key Biodiversity Areas (KBAs) to the Project Site



Figure 16: Location of Wadi Qena proposed PA Related to the Location of the Project Site

Ecological Value and Biodiversity

The Project Site is located in an area of low to medium rarity-weighted richness, i.e., its relative importance is moderate to the global distribution of different categories of species, ranging between low and moderate importance. An assessment using international biodiversity databases showed minimal species occurrence in the area. Over a 25-year period, only one bird species, the Osprey, was recorded around 7 km north of the site, and it is not considered a conservation concern. No mammals, reptiles, or amphibians were recorded.

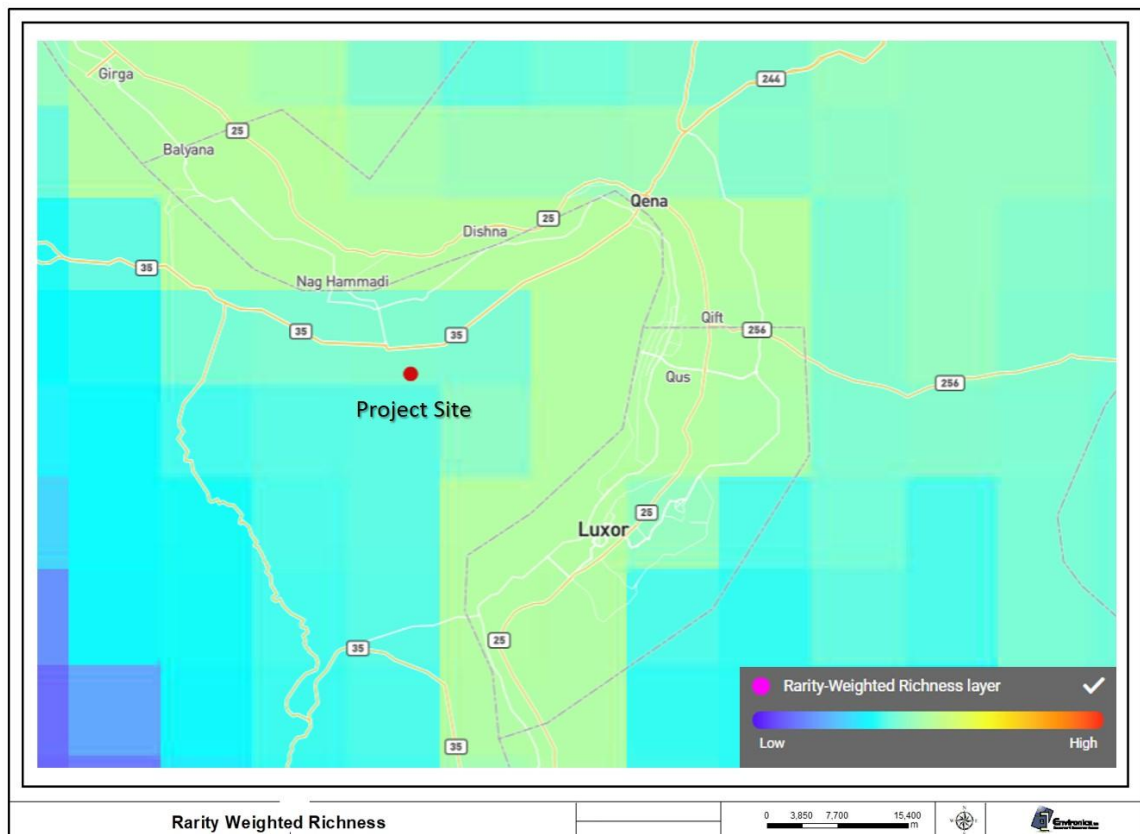


Figure 17: Rarity-weighted richness map of the Project Site

Ecosystem Services

- Provisioning services, which are the products people obtain from ecosystems such as food, freshwater, timber, fibers and medicinal plants.
- Regulating services, which are the benefits people obtain from the regulation of ecosystem processes such as surface water purification, carbon storage and sequestration, climate regulation and protection from natural hazards.
- Cultural services, which are the nonmaterial benefits people obtain from ecosystems and may include natural areas that are sacred sites and areas of importance for recreation and aesthetic enjoyment, and
- Supporting services, which are the natural processes that maintain the other services.

Critical Habitat Assessment

The area does not qualify as a Critical Habitat (CH) under international biodiversity standards. However, four species (Desert Monitor, Egyptian spiny-tailed lizard, Rüppel's Pipistrelle, and Fennec Fox) were identified as Priority Biodiversity Features (PBFs) and may occasionally pass through the area.

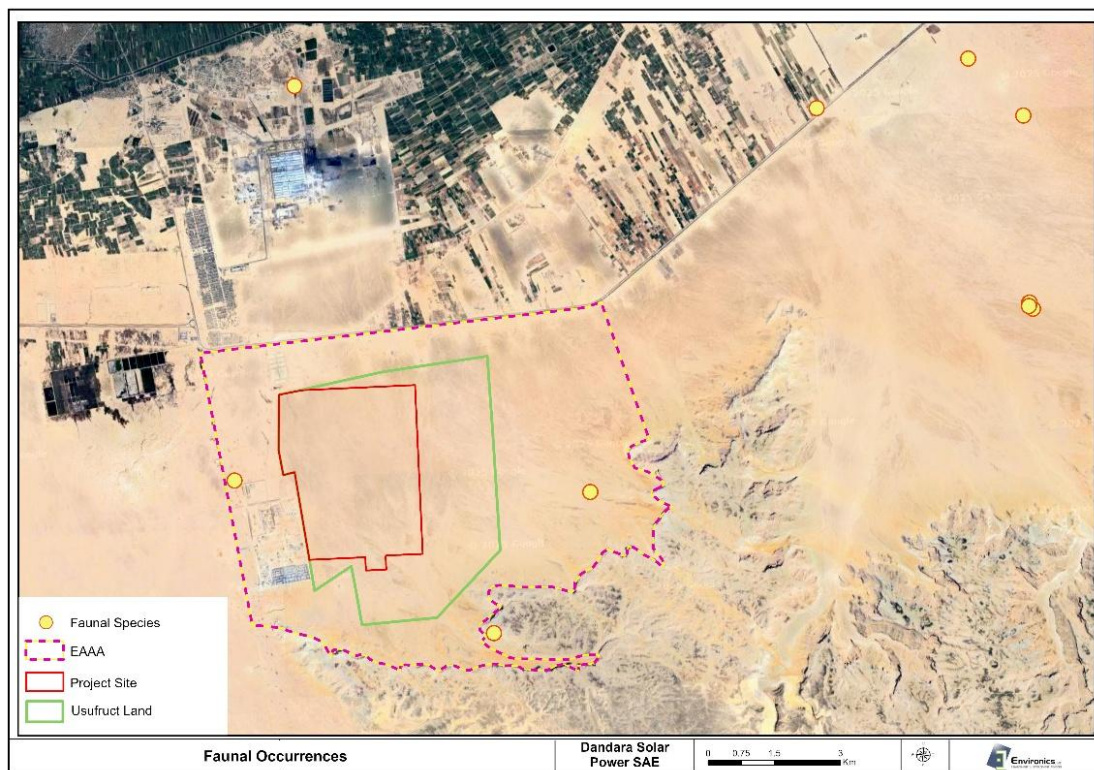


Figure 18: Faunal occurrences within and adjacent to the Project Site's EAAA

5.6 Socio-Demographic Overview

The Qena governorate is one of Egypt's South Upper Egypt governorates. It is known for its strong agricultural and industrial economic sectors, particularly as the nation's leading producer of sugar cane, tomato, banana, sesame, and hibiscus. The governorate covers an area of 10,798 km², with 16.11 % of this being inhabited land.

Population & Settlements

- Qena has a population of approximately 3.16 million, with an almost equal gender distribution.
- Around 81% of residents live in rural areas, while 19% live in urban centers.
- The governorate is divided into several districts, villages, and hamlets, including Markaz Nagaa Hammadi, where the project is located, with a population of about 578,000.

Labour Force & Economy

- The labour force in Qena totals around 927,000 people, with men comprising 75% and women 25%.
- In Markaz Nagaa Hammadi, the labour force is approximately 182,000.
- Key economic sectors include manufacturing, construction, food services, transportation, and retail trade.

Occupations & Education

- Men are mainly employed in skilled trades, agriculture, and machine operations.
- Women are primarily engaged in services, sales, and clerical positions.

- Education levels vary: many workers have technical education, while others hold university degrees or have no formal education.

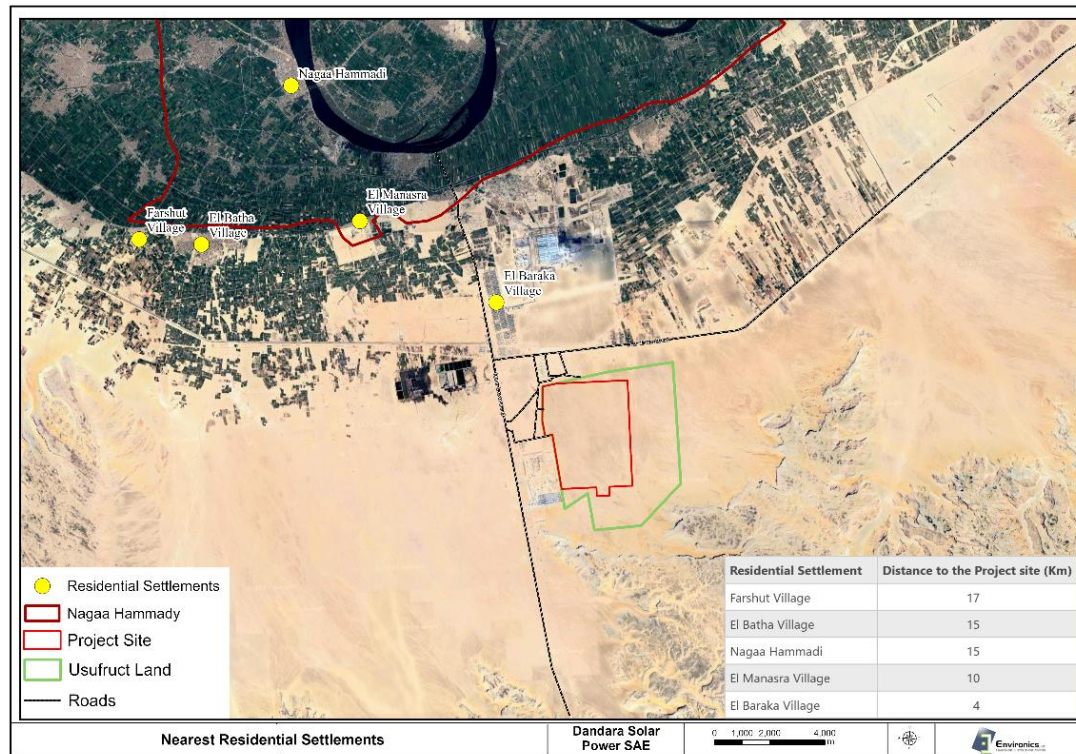


Figure 19: Location of residential settlements in close proximity to the Project Site

5.7 Land Use Types

The Project Site is not currently utilized for any anthropogenic purposes. However, land use types in close proximity to the Project Site (**Error! Reference source not found.** 20) are as follows:

- The Nagaa Hammadi industrial zone (200 m west of the Project Site)
- Reclaimed agricultural lands (1 km north of the Project Site)
- Wastewater treatment plant (2.5 km northwest of the Project Site)
- Under construction wastewater treatment plant (300 m northwest of the project site).
- The Giza – Luxor Road (950 m north of the Project Site)
- A residential area (5.6 km northeast of the Project Site)
- Other local communities located between 3 km and 9 km northwest of the Project Site

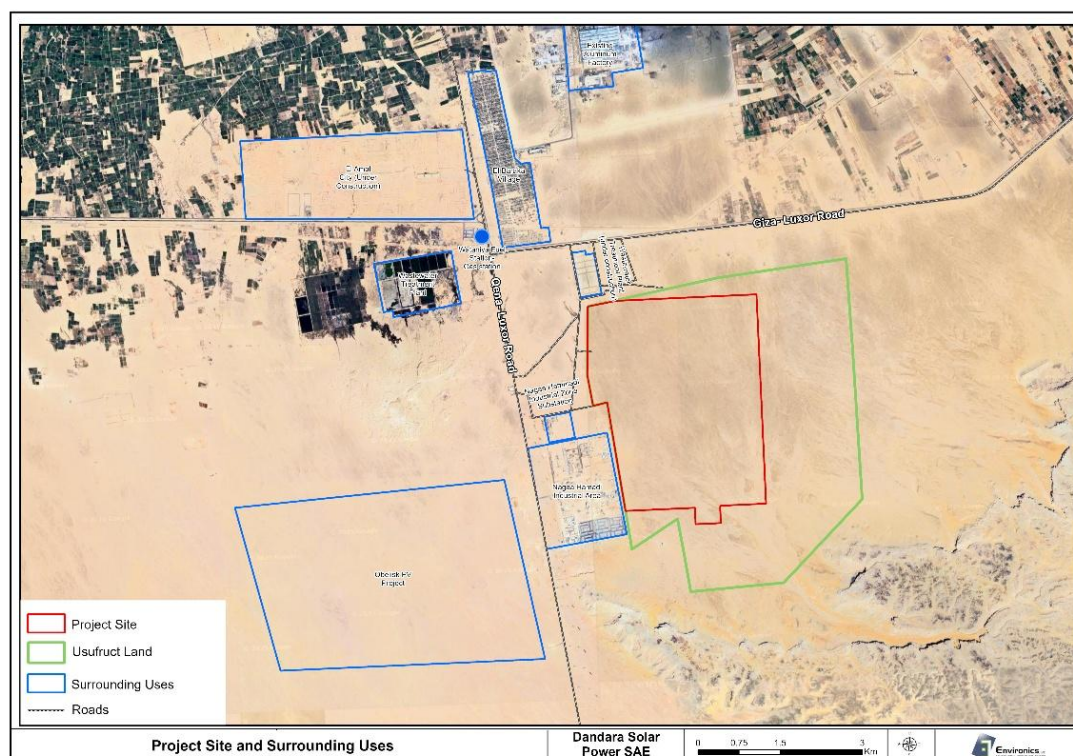


Figure 20: Land use types in close proximity to the Project Site

Infrastructure, Utilities, and Services

The Qena governorate boasts a total of 52 hospitals, 46 intensive care units ICUs, and over 200 health units. Nearest health facilities are shown in Table 7.

Table 7: Hospitals and other healthcare facilities in the Qena Governorate

Healthcare Facility Type	Quantity
Central Hospitals	11
Specialised Hospitals	11
Private Hospitals	14
Health Insurance Hospitals	1
Educational Hospitals	1
Dialysis Centres	18
Health Units	241
University Hospitals	2
Specialised Medical Centres	1
Military Hospitals	1
Oncology Institutes	1
Ambulance Points and Centres	52
Ambulances	92
Highway Ambulance Units	20
Regional Blood Banks	1
Intensive Care Units	46

Furthermore, there are three healthcare facilities located in close proximity to the Project Site: the El-Baraka Village Health Unit (3 km north of the Project Site), the Aluminum City Hospital (located 7.5 km north of the Project Site), and the How Village Health Unit (9.5 km northwest of the Project Site) (Figure 21).

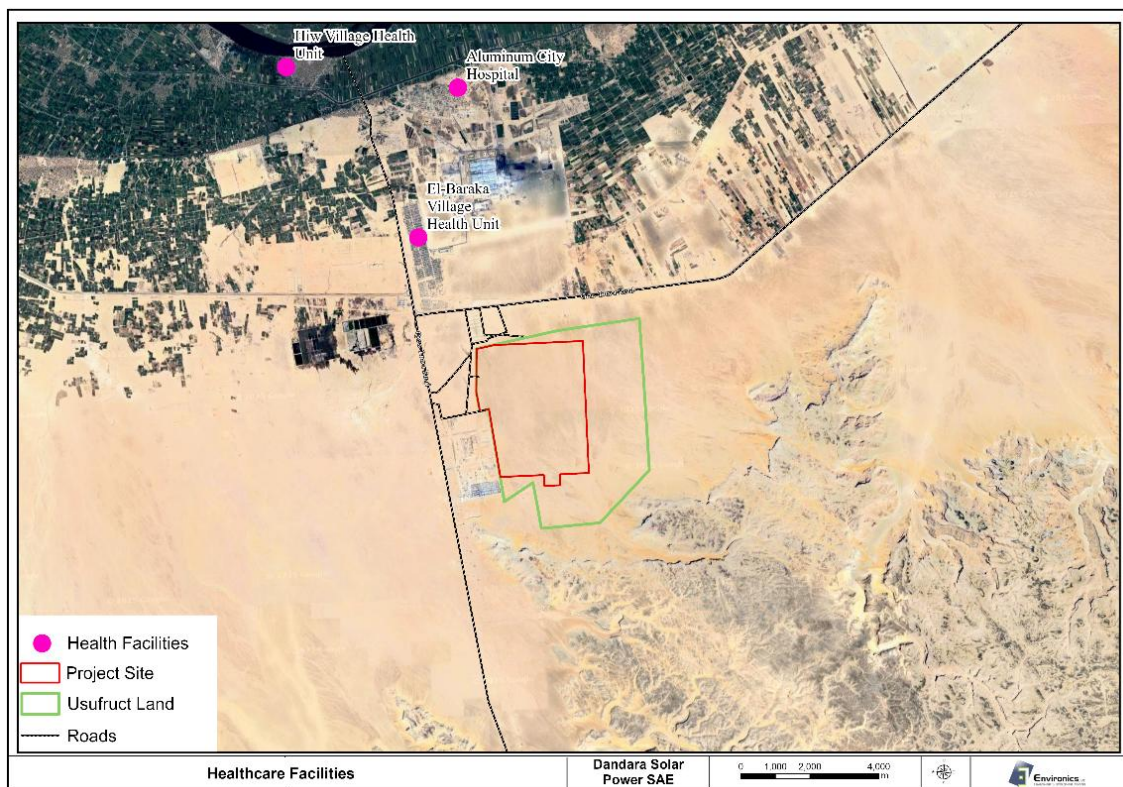


Figure 21: Healthcare Facilities in Close Proximity to the Project Site

Potable Water

99.58% of urban households and 95.92% of rural households are connected to the public water supply. Remaining households rely on wells, pumps, or bottled water.

Sewage Facilities

15.47 % of households are connected to public sewage networks. Additionally, 82.14% rely on cesspits, while a small percentage use private systems or open drains. 9 sewage treatment plants process 48.1 million m³ of sewage per year, with 207,000 m³/day capacity. Recent government initiatives (e.g., Hayah Karima) have improved sewage infrastructure.

Transport Infrastructure

- The Giza – Luxor Road runs parallel to the northern boundary of the Project Site, approximately 5 km away from this northern boundary.
- The Giza – Luxor Road consists of two separate lanes, each 9 meters wide.
- A paved, single lane road serving the industrial area west of the Project Site, located approximately 0.5 km east of the Project Site.

5.8 Cultural Heritage

Tangible Cultural Heritage

According to the Egyptian Archeological Map (EAM) (2022) and the UNESCO World Heritage List of Egypt, there are no registered antiquities or cultural heritage sites within the Project Site. However, there are five archaeological sites and monuments located in close proximity to the Project Site:

- **Abu Amuri:** an archaeological mound found in the Qena governorate, but one that has not yet been excavated. It is located around 9 km north of the Project Site.
- **Hur:** recently excavated by the Supreme Council of Antiquities, revealing several mud-brick tombs dating to the Old Kingdom. It is located about 9.5 km north of the Project Site.
- **Hiw:** known for its extensive cemeteries and settlements dating back to the Naqada I-II of the Predynastic Period. Hiw is located in the Qena governorate and was the capital of the 7th Upper Egyptian Nome. The Hiw site is located approximately 11.5 km north of the Project Site.
- **Gebel El-Arqi:** essentially solely contains archaeological remnants. The Gebel El-Arqi site is located about 14 km northwest of the Project Site.
- **El-Halfaya Qibli:** This archaeological site consists of the prehistoric small village of El-Halfaya Qibli and its associated large Predynastic cemetery. No evidence of permanent architecture was found at the site. It is located about 15 km northeast of the Project Site.

UNESCO World Heritage Site

- **Ancient Thebes and its Necropolises:** Thebes is the only UNESCO world heritage site located in the vicinity of the Project Site, as it is situated roughly 36 km south of it. Ancient Thebes was the capital of Egypt during the Middle and New Kingdoms. Today, Thebes is a striking testimony to Egyptian civilization at its height, with its temples and palaces at Karnak and Luxor, and the necropolises of the Valley of the Kings and the Valley of the Queens (UNESCO, 2025a).

Intangible Cultural Heritage

Based on UNESCO's List of Intangible Cultural Heritage (ICH) in Egypt, none of the identified ICH elements are practiced within the Project Site. However, some elements may be practiced by the local communities in the vicinity of the Project Site. Examples include the following.

- **Handmade Weaving in Upper Egypt:** A traditional craft facing decline due to reduced economic viability and limited transmission.
- **Tahteeb (Stick Game):** A martial art **turned** folk dance performed with sticks, symbolizing strength, honor, and cultural identity.
- **Al-Sirah Al-Hilaliyyah Epic:** A rare **surviving** Arabic oral epic narrating the migration of the Bani Hilal tribe to North Africa.
- **Date Palm Knowledge & Traditions:** Cultural practices linked to date palm cultivation, essential to the region's heritage and livelihoods.

No impact on such culture is expected for the following reasons:

- The workers will be local hires (from the wider region and not necessarily from the closest villages)
- A part of the non-local workers will be accommodated in an onsite worker camp, with no major interaction with the community
- The whole construction period, during which the demand for labor will be substantial, is limited in time.

6. Summary of Impacts and Mitigation Measures

Table 8: Summary of the Project Impacts and Mitigation Measures

Environmental and social Aspects	Expected Impacts	Mitigation Measures Summary	Residual Impacts
Construction Phase			
Air Quality			
<ul style="list-style-type: none"> Air Quality <p>Impacts from levelling, excavation and backfilling activities from construction vehicles machinery as well as use of transportation vehicles to transport the PV panels and other components equipment and construction materials.</p>	MINOR	<ul style="list-style-type: none"> Implementing policies to reduce idling times for vehicles and machinery; Maintaining machinery and vehicles in good working conditions to minimize fugitive emissions and exhaust; Speed restriction on site to minimize dust emissions; Ensuring workers with awareness of safe driving and maintain good practices in machinery usage; and, Conducting periodic measurements for stacks of generators to ensure their compliance with Law 4/1994 	INSIGNIFICANT
Ambient Noise			
<ul style="list-style-type: none"> Equipment and machinery Vehicle Movement Power Generators 	MINOR	<ul style="list-style-type: none"> Ensuring regular maintenance of construction equipment and machinery to minimize noise emissions; Use low-noise machinery and equipment, where possible; Schedule high-noise activities to avoid simultaneous operations that could amplify noise levels; Schedule high-noise activities to take place in morning hours, as possible; and, Provide hearing protection equipment to workers exposed to high noise levels. 	INSIGNIFICANT
Impacts on Soil			
<ul style="list-style-type: none"> Domestic wastewater tanks, material and wastes storage, and accidental spills 	MINOR	<ul style="list-style-type: none"> Conduct maintenance of vehicles, trucks, and construction equipment off-site to reduce on-site emissions and spills; Collect and dispose of spillages from tank filling or generator operation as hazardous waste; Maintain good housekeeping practices to ensure a clean and organized construction site; Collect and transport wastewater by authorized contractors to ensure proper disposal and prevent contamination; and Implement precautionary measures to protect local wildlife from construction activities. 	INSIGNIFICANT

Environmental and social Aspects	Expected Impacts	Mitigation Measures Summary	Residual Impacts
		<ul style="list-style-type: none"> Develop spill prevention and management plan. Non-Hazardous Solid Waste: <ul style="list-style-type: none"> Collect waste at designated collection points and store it in appropriate containers following regulations; and Use licensed contractors for collection and disposal of non-hazardous waste. Hazardous Waste: <ul style="list-style-type: none"> Establish marked and physically separated bunded storage areas for hazardous waste; and Use licensed contractors for the collection and disposal of hazardous waste. 	
Impacts on the Biological Environment			
<ul style="list-style-type: none"> Waste and wastewater generation Fence construction 	MINOR	<ul style="list-style-type: none"> Ensure proper housekeeping onsite and offsite; Ensure proper speed limits onsite and offsite; and Provide awareness to the workers. A visible fence to fauna and avifauna , and The lowest wires should provide some distance at different intervals to allow wildlife species to crawl under them without injury. 	INSIGNIFICANT
<ul style="list-style-type: none"> Offsite driving 	MINOR	<ul style="list-style-type: none"> implement and update waste and wastewater management plans; Provide awareness to the workers; Ensure proper housekeeping practice; Ensure speed control and the prohibition of off-track driving; and Ensure the proper maintenance of construction equipment. 	INSIGNIFICANT
<ul style="list-style-type: none"> Habitat disruption, flora, fauna, and avifauna 	INSIGNIFICANT	<ul style="list-style-type: none"> Develop, implement, and update a solid waste management plan to include waste collection, storage, transport, and disposal in an environmentally sustainable manner to avoid the attraction of vermin. 	INSIGNIFICANT
Impacts on the Social Environment			
<ul style="list-style-type: none"> Water Resources 	INSIGNIFICANT	<ul style="list-style-type: none"> A water management plan will be developed 	INSIGNIFICANT
<ul style="list-style-type: none"> Worker Influx 	Moderate	<ul style="list-style-type: none"> Prioritize hiring local workers to reduce the number of incoming workers and minimize social disruption; Implement and maintain a community grievance mechanism; and, Selection of labour accommodation, as far away from existing communities as possible, and considering establishing a labour camp on site. Develop workers' code of conduct and provide awareness on GBV and SEAH related issues 	INSIGNIFICANT

Environmental and social Aspects	Expected Impacts	Mitigation Measures Summary	Residual Impacts
• Cultural heritage	INSIGNIFICANT	• Develop chance find procedures to indicate the actions to be taken in case of any finds during the construction activity excavations	INSIGNIFICANT
Infrastructure			
• Land use	INSIGNIFICANT	• No land ownership claims or other types of land uses exist at the project site. This was confirmed during stakeholders' meetings with local government representatives and nearby land uses and no risks are perceived in this regard	INSIGNIFICANT
• Traffic	MODERATE	• Dandra shall develop Transportation Management Procedures that apply to Dandra projects and operations, as well as their contractors and subcontractors. The procedure defines the minimum safety requirements for Dandra's transportation activities. The requirements are supplementary to national regulatory specifications and project or business unit specifications and/or insurance requirements	MINOR
Occupational Health and Safety			
• Impacts on workforce health and safety	Moderate	<ul style="list-style-type: none"> • The excavation sites will be surrounded with warning signs to prohibit access to these places; • Contractors will ensure that construction workers will be continuously supervised, through the continuous presence of on-site supervisor(s) for close inspection and management of the construction activities; • Ensure proper training for operators, regular maintenance of equipment, and implementation of safety protocols. • Provide adequate hydration, schedule work during cooler parts of the day, and allow for regular breaks in shaded areas. • Restrict vehicles speed so that they do not exceed the safety limit inside the site premises (15-20 km/h) • All equipment will be inspected before the start of the job to ensure the safety of the workers; • Use of personal protective equipment (PPE) • Provide hearing protection, implement noise control measures, and schedule regular breaks for workers. • Provide training on proper lifting techniques, and the use of mechanical aids. • Implement fire prevention measures, maintain fire extinguishers on-site, and conduct fire safety training. 	MINOR

Environmental and social Aspects	Expected Impacts	Mitigation Measures Summary	Residual Impacts
Operation Phase			
Air Quality			
<ul style="list-style-type: none"> Emissions from emergency generator 	MINOR	<ul style="list-style-type: none"> Optimize the operation of backup generators to reduce usage and emissions. 	INSIGNIFICANT
Ambient Noise & Vibration			
<ul style="list-style-type: none"> Operation of Transformers, and other operational components of battery energy storage systems. Use of backup generators during power outages 	MINOR	<ul style="list-style-type: none"> Potential noise generating machines and equipment are designed to meet statutory regulations concerning noise. Workers at noise generating machinery and equipment will be provided with suitable personal protective equipment (PPEs). A grievance mechanism will be adopted for assessing complaints, which would cover operation noise, if any 	INSIGNIFICANT
Impact on the Biological Environment			
<ul style="list-style-type: none"> Waste and wastewater generation 	MINOR	<ul style="list-style-type: none"> Ensure proper housekeeping onsite and offsite; Ensure proper speed limits onsite and offsite; and Provide awareness to the workers. 	INSIGNIFICANT I
<ul style="list-style-type: none"> Offsite driving 	MINOR	<ul style="list-style-type: none"> implement and update waste and wastewater management plans; Provide awareness to the workers; Ensure proper housekeeping practice; and Ensure speed control and the prohibition of off-track driving. 	INSIGNIFICANT
Impact on the Social Environment			
<ul style="list-style-type: none"> Water Resources 	INSIGNIFICANT	<ul style="list-style-type: none"> Wastewater generated during the operation phase is minimal and will be collected by an approved contractor and discharged to designated treatment plants. 	No residual impact
Impacts on Occupational Health and Safety			
<ul style="list-style-type: none"> Impacts on workplace 	INSIGNIFICANT	<ul style="list-style-type: none"> A health and safety policy will be applied Abide by all national occupational health and safety regulations, Law 14/2025 Provision of suitable PPE Sufficient drinking water supply 	INSIGNIFICANT

7. Environmental and Social Management Plan (ESMP)

The project will develop and implement an Environmental and Social Management Plan (ESMP) outlining specific mitigation and monitoring measures to ensure compliance with all applicable legal and institutional requirements, as well as EBRD Performance Requirements. The ESMP encompasses the following key components:

- Summary of Impacts and Mitigation Measures
- Health, Safety and Environment (HSE) Plan
- Transportation Management Plan
- Noise Management plan
- Hazardous and Non-hazardous Waste Management Plan
- Water and Wastewater Management
- Chance Find Procedure
- Preventive and Corrective Maintenance
- Wastewater Management Plan
- Biodiversity Management Plan
- Housekeeping and Cleanliness
- Social Management Plan includes Dandara's SEAH and GBV Management Plan
- Institutional Arrangements: Defined roles and responsibilities for implementing the ESMP, involving the project proponent, contractors, and relevant government agencies to ensure accountability and effective coordination among stakeholders.
- Capacity Building: Provisions for training and capacity building for project staff and contractors on best practices in environmental and social management, enhancing their ability to effectively implement the ESMP.

Table 9 below provides a comprehensive overview of the project management plan, including potential environmental aspects identified in the ESIA for both the construction and operation phases of the project, as well as the proposed mitigation measures designed to minimize these impacts.

Table 9: Overview of the ESMP Plan

Aspect	Issues of concern	Actions	Party Implementing the Action	Indicator of completion	Estimated Cost	Required Completion Date
Construction Phase						
Air Quality	Dust emissions	<ul style="list-style-type: none"> - Reduce idling times for vehicles and machinery; - Maintaining machinery and vehicles in good working - Speed restriction on site s; - Ensuring workers with awareness of safe driving and maintaining good practices in machinery usage; and, - Periodic measurements for stacks of generators 	Construction contractor	<ul style="list-style-type: none"> - Monitoring plan - Air quality measurements 	Cost of measurements in the monitoring plan below	Throughout the construction phase period
	working conditions of machinery	<ul style="list-style-type: none"> - Ensure good working conditions through frequent inspection of all construction equipment 	Construction contractor	Maintenance logs	Cost of maintenance	
Noise Level	working conditions of machinery	<ul style="list-style-type: none"> - Regular maintenance of construction equipment - Use low-noise equipment, where possible; - Schedule high-noise activities to avoid simultaneous operations that could amplify noise levels; - Schedule high-noise activities to take place in morning hours 	Construction contractor	Noise measurements and Maintenance logs	Cost of measurements in the monitoring plan + cost of maintenance	Throughout the construction phase period
	Provision of PPEs	<ul style="list-style-type: none"> - Providing necessary PPEs for workers 	Construction contractor			
Soil	housekeeping practices	<ul style="list-style-type: none"> - Develop and implement site management plan, solid waste management plan and spill prevention plan 	Construction contractor Developer (include provisions in the construction contracts. Developers to ensure contractors compliance)	<ul style="list-style-type: none"> - Solid/hazardous waste and wastewater management contract - Contractor follow up documents 	<ul style="list-style-type: none"> - Part of construction activities management 	Throughout the construction phase period
	Waste/wastewater management				<ul style="list-style-type: none"> - Cost of transportation and disposal of waste 	

Aspect	Issues of concern	Actions	Party Implementing the Action	Indicator of completion	Estimated Cost	Required Completion Date
Construction Phase						
Occupational Health and Safety	Site Staff and Workplace Safety	- Developing HSE procedures according to national requirements and international standards	Contractor	HSE provisions in the construction contracts	Construction cost	Before construction activities
Emergency Response plans	Site Staff and Workplace Safety	- Develop procedures for emergency control	Contractor	Emergency response plan		Before project commissioning
Waste management	Worker's health	- Developing a solid waste management plan	Construction contractor	Solid waste management contract	Cost of transportation and disposal	Throughout the construction phase period
Biological Environment	Pests and invasive species	- Good housekeeping and proper waste management	Construction contractor	Waste management contract		Throughout the construction phase
	Disturbance to wildlife	- Awareness (toolbox talks and awareness signs) - Implementation of mitigation measures - Supervision and implementation of deterring measures	Construction contractor	Requirements specified in contracts		Throughout the construction phase
Social Environment	Workers influx	- Prioritize hiring local workers - Implement and maintain a community grievance mechanism; and, - Selection of labour accommodation, away from existing communities, as possible, and considering establishing a labour camp on site. - Develop HR policies including GBV and SEAH plans	Developer/Construction contractors	Labour management plan, workers accommodation inspection checklist GBV and SEAH policies Workers Awareness		Throughout the construction phase period
	Cultural heritage	- develop chance find procedure	Developer/Construction contractors	Developed procedures	Management cost	Before construction activities

Aspect	Issues of concern	Actions	Party Implementing the Action	Indicator of completion	Estimated Cost	Required completion Date
Operation Phase						
Air quality	Backup generator emissions	- Optimize the operation of backup generators to reduce usage and emissions.	Developer	Emission measurements	Operation cost	Periodically Throughout operation stage
Noise	Transformers and BESS	- Provide workers at noise generating machinery and equipment will be provided with suitable (PPEs). - A grievance mechanism will be adopted for assessing complaints,	Developer	Noise measurements	Operation cost	Periodically Throughout operation stage
Biological Environment	Same as for construction phase	- Same as for construction phase	Developer	Reports	Operation cost	Throughout the project lifetime
Impact on social environment	Water consumption	- Wastewater generated during the operation phase is minimal and will be collected by an approved contractor and discharged to designated treatment plants	Developer	Wastewater management plan	Operation cost	Throughout the project lifetime
Labour rights and welfare	working conditions	Develop Human Resources policy	Developer	Contracts (with workers)	Operation cost	Throughout the project lifetime
Training and Awareness	competence of the project personnel	training for the personnel according to the particular responsibility	Developer	Training plans	Training cost	Throughout the project lifetime
Occupational Health and Safety	Site Staff and Workplace Safety	- Developing HSE procedures	Developer	Development of HSE policies	Operation cost	Before project commissioning
Emergency Preparedness and Response	Operation risk management	- Adopt a probabilistic risk assessment framework	Developer	Emergency response plan	Operation cost	Before project commissioning
Community health, safety and site security	- risk of road traffic accidents - Site security	- Develop site security and safety plan - Develop grievance mechanism	Developer	- security plan - SEP and grievance mechanism and register	Operation cost	Throughout the project lifetime

Environmental and Social Monitoring Plan

Ensuring compliance with regulatory standards and the effectiveness of mitigation measures through regular checks of air quality and noise levels in workplace. Also, the project will regularly monitor community satisfaction, local needs (healthcare, water, etc.), understanding of the grievance mechanism, and unresolved grievances.

Table 10: Proposed Environmental Monitoring Plan

Receptors / Source of impact/risk	Type of monitoring		Monitoring location	Target / Indicators	Frequency of monitoring	Responsibility	Implementation	Approximate annual costs
Construction phase								
Workplace and neighbouring industrial area	Noise measurements		Project site and borders near the industrial zone	Compliance of noise intensity to standards	Measurement at two locations quarterly	All contractors and sub-contractors, supervised by Dandra	Third party (research entity or certified lab)	~10,000 EGP
	Air emissions		Project site and borders near the industrial zone	Compliance of air emission standards	Measurement at two locations quarterly	All contractors and sub-contractors, supervised by Dandra	Third party (research entity or certified lab)	~ 35,000 EGP
	Biodiversity	Habitats and biodiversity	Project site and Vicinity (Aol)	- Absence of hazards to wildlife and habitats - Proper implementation of mitigation measures	Daily	All contractors and sub-contractors, supervised by Dandra	Project personnel	Included in staff salaries
		Fauna		- Number of fauna encounters - No or reduced number of fatalities (such as road mortalities)	Chance encounters			
		Pests		- Good housekeeping - Absence of pests	Daily			
Operation phase								
Workplace	Noise measurements		Transformers and inverters area	Compliance of noise intensity to standards	Annually	Project	Third party (research entity or certified lab)	~10,000 EGP
Emergency generators stacks	Exhaust measurements		Stacks of emergency generators (SO ₂ , NO ₂ , CO, PM ₁₀)	Compliance with point source air emissions standards	Annually	Project	Third party (research entity or certified lab)	~ 25,000 EGP
Project site and vicinity	Biodiversity (same as for construction phase)		Same as for construction phase	Same as for construction phase	Same as for construction phase	Project	Project personnel	Included in staff salaries

8. Stakeholders Engagement

8.1 Stakeholder Identification and Analysis

This section outlines the stakeholder groups identified for the project, with ongoing reviews and updates. Stakeholders were determined based on the Project's Area of Influence (Aoi) and potential impacts.

Stakeholder Groups:

Primary stakeholders: those who will be directly affected, positively or negatively by a development. These would, in particular, include low-income and marginalized groups who have traditionally been excluded from participating in development efforts and outcomes; as well as the local community-based organizations which might represent their interests in the project, and in all cases, can help to access communities in general and these groups in particular.

Secondary stakeholders: include agencies, experts, interested parties and anyone able to influence the outcome of the development. These mainly include Central Government, line ministries, local government/authorities, implementing agencies, national and international lending institutions, media, and academic institutions. Secondary stakeholders are important as they provide valuable data and information specific to the area, i.e. they are a source of secondary data.

A preliminary stakeholder analysis was conducted to assess their importance, roles, and engagement approach.

Stakeholders have been identified considering the following factors:

- Project's nature and activities.
- Geographical extension and location of the project; and
- Environmental and Social aspects and potential impacts of the project

Accordingly, the following preliminary key stakeholder groups have been identified in Table 11 below:

Table 11: Stakeholders Groups

Stakeholder Category	Stakeholders	Impact, Influence and Interests
Primary Stakeholders		
Local Businesses & Industry	Small business owners in the nearest cities and towns	Economic interest in the project (providers of goods and services).
	Neighbouring Nagaa Hammadi Light Industries area	Potentially affected by the project construction activities

Stakeholder Category	Stakeholders	Impact, Influence and Interests
Interested organizations	NGOs ²	National and local, which can provide social context and effective contacts to concerned communities
Local Communities/ residents	Nearest communities to the project site ³	Provision of workforce, may include key leadership figures of community stakeholders
Workers	Employees of the developer and the contractors	Exposure to occupational health and safety risks Economic benefits
Vulnerable groups (specific vulnerable groups will be identified as the Project development proceeds)	women groups, disabled groups, elderly groups, etc..	Such groups have a vested interest in the project due to mainly potential for job opportunities. In addition, such groups could be impacted by other potential negative impacts (e.g., worker influx, Gender Based Violence and Harassment (GBVH), etc.)
Secondary Stakeholders		
National Regulators/ agencies & Permitting Authorities	NREA EEAA EIA,	Includes authorities and agencies responsible for project permitting approvals.
Other relevant agencies	Egyptian Electricity Transmission Company Ministry of Transport (roads and bridges Authority) Water and Wastewater company	Mostly related to utilities infrastructure such as the OHTL, water and wastewater services
Local Government	Qena Governorates and Nagaa Hammdai city.	The Governorate is of political importance and are home to the primary stakeholder and therefore could have a role in maximizing benefits and/or controlling adverse impacts. They also have a key role in issuing project construction permits as well as supplying utility services and security. In addition, support in facilitating advertisement of job opportunities and receiving applications from the communities
Healthcare Providers and emergency services	Main hospitals and healthcare units	Would need to cater to the large workforce attracted by the project
Media	National and local mass media and newspapers	Channel to disseminate information; key public opinion influencers.

²On the local level the following CDAs have been identified Elderb NGO, Baraka Village Charity Organization and “Moaasaset Al Nedaa El Khaireya, Enfaa Baladak Charity NGO have been identified so far and on the national level Nature Conservation Egypt, the local representative of BirdLife International. The updating, mainly expansion, of these lists on both levels will be a continuous activity throughout the project lifetime .

³ Include El Baraka village, Nagaa Mubarak village and agriculture reclamation activities

8.2 Stakeholder Engagement Process and Previous Consultation during the Scoping and ESIA stages

As stakeholder engagement is an ongoing process, future engagement activities during the pre-construction and mobilization, construction and operations will ensure that information disclosure and consultation activities are effective and meaningful for all stakeholders over the lifetime of the project. Initial stakeholder consultation activities were initiated at the scoping and ESIA stage. The following table presents a brief summary of the stakeholders' consultation activities to date:

Table 12: Summary of the Stakeholder's Consultation Activities to Date

Stakeholders	Issues discussed
27th July 2025	
Qena Governorate Meeting	<ul style="list-style-type: none"> – The meeting primarily focused on the land allocation issue and the possible options for selection. One of the key selection criteria discussed was the availability of land suitable for the solar project while ensuring the avoidance of any potential land ownership disputes. – The meeting also addressed flood hazards at the proposed locations and the corresponding flood protection requirements
6th October 2025	
EEAA- Central EIA department	<ul style="list-style-type: none"> – A phone call took place with the head of energy projects at the central EIA department of EEAA. The discussions primarily focused on the categorization of the PV project where it has been advised that the project is to be categorised as Scoped B, which does not require organizing public disclosure meetings. As per the national environmental law, EEAA is to issue its opinion on the ESIA within 30 days from receipt of the ESIA for review.
27th October 2025	
Qena City Council Local Office	<ul style="list-style-type: none"> – The duration of project construction phase is expected to be maximum 18 months. This stage is the most labour intensive where the number of labour is expected to range within an average of 5000 workers during peak construction. During operation the expected number of labour would be about 100 personnel – The labour qualifications required for construction works will include low and semi-skilled labour as well as highly skilled technical qualifications. All contractors are encouraged to continuously increase the percentage of local content. – for the installation of the PV panels in addition to project management engineers. During operation, the labour required include highly qualified and experience technical personnel for operating and maintaining the operation of the PV and the substation. – The sources of labour will be primarily from the local communities from the surrounding villages as well as from Nagaa Hammadi city and Qena governorate. It was emphasized that in cases of lack qualifications within the local communities and/or the Qena governorate, such qualifications will be sought from around Egypt. – Job opportunities announcements will be through Qena governorate. – In case there are grievances related to the hiring process that are submitted to the governorate or the company, Scatec investigates each case and notifies the governorates about the grievance investigation results. – It was indicated that as result of concentration of workers accommodation within the village significant increase of rental prices which decreased the availability of apartments to the local communities. Accordingly, Sactec instructed all contracts to withdraw their workers from the El Baraka housing and provide alternative housing in the surrounding urban centers in addition to the onsite workers camps. – No workers accommodation with take place at El Baraka village for the proposed Dandara project. In addition, with maximizing the number of workers form the local communities, the need for accommodation of workers will considerably decrease. – The potential impact on nearby community resources, such as food, water, etc., as result of workers influx, was reported to be insignificant since the labour needs are sought for allover the governorate. – Moreover, as result of the project, the project will result in saving energy that would have been consumed by the EgyptAlum from the electricity grid and make it available for other development purposes

Stakeholders	Issues discussed
	<ul style="list-style-type: none"> – The water needs of the current Obelisk project are sought from Nagaa Hammadi water plant that has the capacity to meet the demand of the new Dandara project especially that there will not be significant overlap between the two project activities. – The project's wastewater is managed through the existing wastewater treatment plant northwest the project site. Reportedly, a new wastewater treatment plant is currently under construction to meet the expansion needs of Nagaa Hammadi industrial area.
Nagaa Hammadi Industrial area	<ul style="list-style-type: none"> – The land area required for the Dandar PV project could not be accommodated within the limited land areas available within EgyptAlum premises. Moreover, the area within EgyptAlum is subject to various air emissions form the Aluminium production which may deposit on the surface of the PV panels and affects its production efficiency. In addition, allocation for renewable energy projects is managed and granted through the New and Renewable Energy Authority (NREA). – Regarding wage gaps, it was also advised that this issue may be result due to the fact that the PV projects are committed to comply with the national minimum wage rates that are higher than those currently offered by the manufacturing facilities. – It was advised that the industries can participate in the bidding requirements issued for food and material supply. A list of available industries and their specializations and products will be compiled and provided to Scatec to enable identifying areas of potential cooperation in the future. – Based on the experience with the current Obelisk project the noise from ramming did not reach the industrial area and no impacts have been identified. However, dust was identified as occasional issues mainly during windy conditions. With the continued implementation of existing dust suppression measures—such as soil damping—dust impacts are expected to be minimized. The same mitigation measures would be implemented for the proposed Dandara project.
28th October 2025	
El Baraka Healthcare unit	<ul style="list-style-type: none"> – The project team emphasized the importance of hiring from local communities near the project area. – The project team advised that the issue has been addressed through maximizing the local employment enhancing the on-site accommodation in workers camps. Contractors has also been instructed to minimize the accommodation in El Baraka and provide alternative the accommodation within larger urban areas. – The strain on local resources as result of workers influx was raised. It was advised by the attendees that no shortage in resources, food, water, or other services and utilities has been experienced as result of workers influx. – Regarding the community benefits and potential community support, the project team indicated that the proposed project together with the existing one, will help strengthen the electricity grid, thereby indirectly benefiting grid users by making additional power available and minimize the national regular power cuts that has been witnessed in Egypt over the last years. – In addition, Scatec through its corporate social responsibility plans (CSR) has provided support to various families through projects that would ensure sustainable income.
Enfa'a Baladak "Support your community" Charity NGO	<ul style="list-style-type: none"> – The project team clarified that the duration of project construction phase is expected to be maximum 18 months. This stage is the most labour intensive where the number of labour is expected to range within an average of 5000 workers during peak construction. During operation the expected number of labour would be about 100 personnel – The hiring policy and procedures were explained, and the attendees were encouraged to follow the jobs advertisements and apply through the governorate. – The project team also stressed that women are encouraged apply for jobs depending on their qualifications.

Stakeholders	Issues discussed
<p>Local communities: Nagaa Mubarak Village next to El Baraka Village - Hiw</p>	<ul style="list-style-type: none"> – Regarding community support, the project team clarified that Scatec through its corporate social responsibility plans (CSR) has provided support to various families through projects that would ensure sustainable income – The project team reaffirmed Scatec’s strong commitment to maximizing local employment and ensuring high local content during both construction and O&M phases. The employment is done typically through advertisement on the governorate website as well as social media. – The project team explained that the issue of increase housing rental was addressed through the following measures: <ul style="list-style-type: none"> ○ Conducting labor and accommodation influx assessments to quantify impacts, identify hotspots, and determine suitable alternative accommodation areas for workers. ○ Requiring contractors to avoid high-impact areas and seek housing options in lower-density zones. ○ Monitoring implementation of these measures, which reportedly helped stabilize and reduce rental prices – Regarding the community benefits and potential community support, the project team indicated that the proposed project together with the existing one, will help strengthen the electricity grid, thereby indirectly benefiting grid users by making additional power available and minimize the national regular power cuts. Through Scatec corporate social responsibility plans (CSR) support was provided to various families through projects that would ensure sustainable income. – Attendees advised that the ongoing Obelisk project has a positive impact on the local business in the area specifically in areas of food services areas. It was advised that the increased demand as result of the project did not put pressure on the availability of food or the food prices.