NON-TECHNICAL SUMMARY (NTS)

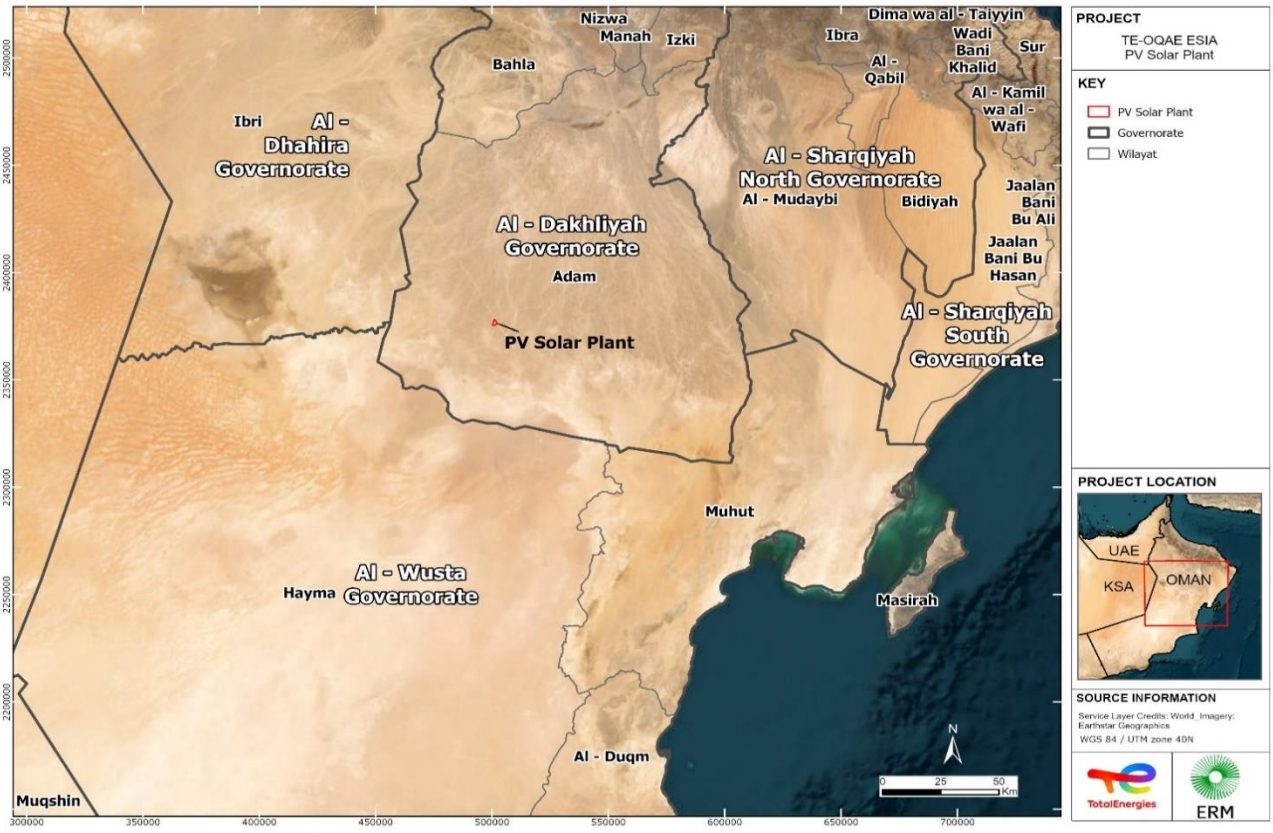
INTERNATIONAL ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA B) REPORT FOR THE NORTH OMAN SOLAR PV PROJECT IN QARN AL ALAM, SULTANATE OF OMAN

1 INTRODUCTION

TotalEnergies Renewables Development Middle East LLC (TTE) and OQ Alternative Energy LLC (OQAE) are working together to develop the proposed North Oman Solar PV Project to be located in the Wilayat of Adam, Governorate of Al Dakhiliyah, Sultanate of Oman. These two companies, referred to as the "Project Proponent" or "Project Company," will form a joint venture (JV) registered in Oman (name to be confirmed) that will manage the development of the Project (see Figure 1-1).

The Project will include a solar power plant with 218,805 solar panels, generating up to 105 MW of electricity. Other key parts of the Project include underground cables, a substation to increase voltage, internal roads, weather monitoring stations, and other facilities needed during construction and operation. The electricity produced will be supplied to Petroleum Development Oman LLC (PDO). To connect the power to PDO's grid, a 132 kV aerial transmission line, about 5 km long, will link the Project's substation to PDO's existing Saih Nuhaydah Depletion Compression substation. PDO will handle the design, construction, and management of the transmission line as a separate project, following its own environmental approval process.

FIGURE 1-1 PROJECT LOCATION



Source: ERM, 2024

A local Environmental Impact Assessment (EIA) that complies with Omani regulations, known as "ESIA A," was prepared by Five Oceans Environmental Services (5OES) and followed the requirements outlined in the Scoping Report. Local ESIA A was approved by the Environmental Authority (EA) in June 2024 and the corresponding EA's local permit conditions were issued in July 2024. It is noteworthy that this initial set of permit conditions was modified following a discussion about their applicability between the Project Proponent and EA on 23rd September 2024; being the final version of these permit conditions issued on 17th October 2024.

The current document is the Non-Technical Summary (NTS) of the International Environmental and Social Impact Assessment Report, referred to as "ESIA B," which was developed by Environmental Resources Management (ERM) in collaboration with 5OES. ESIA B is focused on meeting international standards for potential international financing. It also considers the permit conditions issued by the Environmental Authority (EA) in October 2024 as a result of the local ESIA A approval.

Finally, it is important to note that ESIA B will be updated later by ERM/5OES, under the name "ESIA C," to include the outcomes of social disclosure events.

2 LEGISLATION CHAPTER

Environmental protection within Oman is primarily governed by the "Law for the Conservation of the Environment and the Prevention of Pollution" (Royal Decree 114/2001) which is managed by the Environmental Authority (EA), formerly known as the Ministry of Environment and Climate Affairs (MECA). The environmental permitting process is regulated by Authority Decision 107/2023, issued in August 2023.

In accordance with national legislation (MD 48/2017), the Project is classified as a Category 'A' activity and requires an Environmental Impact Assessment (EIA). The EIA A (also known as ESIA A) received approval from Oman's Environmental Authority in July 2024, along with the associated permit conditions.

Since international financing is necessary for the Project to proceed, the guidelines set by the International Finance Corporation (IFC) regarding Environmental, Health, and Safety (EHS) standards and the Equator Principles (EP4) will be followed. As part of this process, three key studies have been prepared, among others: a screening Physical Climate Change Risk Assessment (CCRA), which assesses potential physical climate-related risks; a Human Rights Risk Assessment (HRRA), which evaluates potential human rights risks; and a screening Critical Habitat Assessment (CHA), which assesses if there are potential critical habitats that need to be considered by the Project..

TotalEnergies' corporate standards will also be implemented in the development of the Environmental and Social Impact Assessment (ESIA).

3 PROJECT DESCRIPTION

The Project involves building an onshore Solar PV farm with a capacity of 105 MW, utilizing 218,805 solar panels, each generating 585 W. There's also an alternative plan with fewer panels (206,460) but higher capacity (620 W), though the current description focuses on the first option.

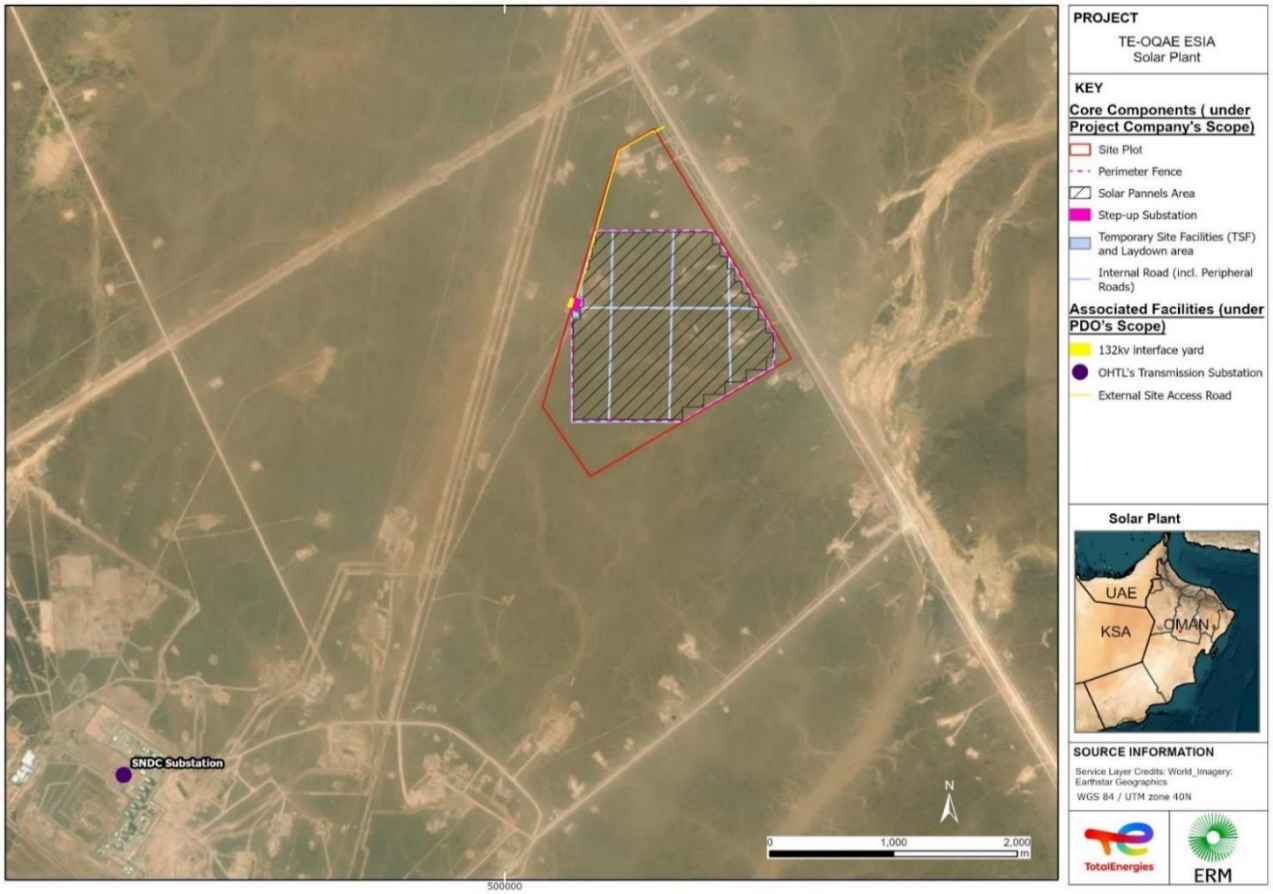
Electricity from the solar panels will travel through buried cables to a step-up substation on the farm's west side, where it will be transformed to meet PDO's requirements. To connect to

PDO's Saih Nuhaydah substation, a 132 kV transmission line will be constructed, although these elements are part of a separate project to be managed directly by PDO.

The solar farm site plot will occupy 302 hectares of leased land in the Wilayat of Adam, Al Dakhiliyah Governorate, with elevations between 126 m and 145 m. The flat desert site is home to scattered shrubs and is located about 4 km from PDO's Saih Nuhaydah facility, which helps maintain gas reservoir pressure. The nearest well is roughly 700 m away, and the closest airport (Qarn Al Alam), owned by PDO, is about 11 km south. The Project Proponent has secured a No Objection Certificate from the Civil Aviation Authority for the Project's development and operation.

The location of the Project site and key components of the project are shown in Figure 3-1.

FIGURE 3-1 PROJECT LAYOUT



Source: ERM, 2024

The Project comprises the construction and operation of an onshore solar farm and associated infrastructure. Key project components are summarized in Table 3.1

TABLE 3.1 KEY PROJECT COMPONENTS

Element	Details
PV Modules, Inverters and Mounting system	• 218,805 PV modules (7,545 strings of 29 in series), each with 585 W capacity. An alternative option is 206,460 modules at 620 W, but the current focus is on the first option. • 13 low-voltage to medium-voltage transformers. • Single-axis tracker mounting structure with 2,515 trackers.

Element	Details
External site access road (Associated facility)	• Access from public Road 31 via a new 1.67 km graded road to be built by PDO, outside the Project's scope.
Internal roads (incl. peripheral roads)	• Approximately 11.2 km of new internal roads, each about 6 m wide with 0.5 m shoulders.
On-site electrical connections and step-up substation	• Underground medium-voltage cables will connect the 13 transformers to the 33kV switchgear at the step-up substation, located in the west center of the Project area. Two high-voltage transformers will step up the voltage to 132 kV for PDO's grid.
Interface yard and overhead Transmission line (OHTL) (Associated facilities)	• PDO will construct an interface yard and a 5 km overhead transmission line from the step-up substation to PDO's SNDC substation, as part of Project agreements and outside the Project's scope.
Temporary construction compound	• A temporary compound of about 0.6 ha will be set up during construction, including areas for site facilities and storage. Shelters will protect electrical equipment from weather, and several temporary storage areas for PV modules and structures will be created on-site.
Meteorological stations	• Five meteorological stations will be installed throughout the Project site.
Perimeter fence	• A perimeter fence approximately 5.6 km long will be built to protect the valuable PV installations.

The Project schedule comprises the following three phases:

Construction/Pre-Commissioning/Commissioning Phase: This includes preparing the site, building a temporary construction area, a lay-down space, and a guardhouse. Internal roads and drainage will be built to connect the external access road, panel locations, and the step-up substation. Security fencing and a security system will be installed around the site. Workers will move in, and vehicles will be active during this phase. Equipment such as inverters, transformers, solar panels, meteorological stations, and electrical infrastructure will be set up, along with digging trenches for cables. Resources like water and energy will be used, and waste will be managed appropriately. Finally, construction equipment and temporary facilities will be removed, and the site will be prepared for operation.

During peak construction, around 500 workers are expected on-site, primarily locally based construction workers (e.g. low-skilled labourers). The Project will adhere to applicable Omani labour regulations and Omanisation quotas, with a 10-hour workday plus 2 hours of overtime for some workers. A shift system will be implemented for work scheduling. The project will maintain international and local standards for worker health, safety, and the environment, including having full-time doctors and paramedics available 24/7.

The project will utilize existing facilities and infrastructure in the area, such as the PDO accommodation camp and roads, with minor modifications made to some roads to access the site.

Operational Phase: This phase involves managing a much more reduced number of workers and vehicle movement, conducting regular inspections and maintenance to the assets, and maintaining the roads. Resources like water and energy will also be used. A robotic system will clean the solar panels during nighttime shifts. Waste and wastewater will continue to be managed, and power generation will be monitored remotely.

During operation, the project will require up to 10 full-time staff for maintenance, along with about 15 engineers or technicians outsourced from local companies for scheduled maintenance.

Decommissioning Phase: This includes removing and recycling or disposing of surface structures. Vehicles, equipment, and personnel will be active again during this time. There will be careful handling of fuels and chemicals, treatment and disposal of waste, and restoration of affected sites. The decommissioning phase of the project might be replaced by a repowering phase, which involves activities similar to both construction and decommissioning. However, this repowering or decommissioning is not part of the Project Proponent's scope; it will be handled by the Off-taker, PDO, when the solar farm is handed over in year 19 of the operational lifetime of the Project as part of the Project agreements. Therefore, PDO will be responsible for this phase.

4 ASSESSMENT OF ALTERNATIVES

The site selection process was part of PDO's scope, considering the potential solar resource and energy demand in the area. After evaluating the feasibility study, PDO chose the project site for further development and released the bid documents with specified capacity in megawatts (MW). They also set Minimum Functional Specifications (MFS) and design limits for the bidding process for this renewable energy project. The Project Proponent participated in this process and proposed the project layout and design.

Choosing not to develop the project was not considered, given the advantages of generating energy through renewable energy sources (solar) and aligning with national strategies and global trends on reducing greenhouse emissions and reducing the effects of climate change scenarios.

5 STAKEHOLDER ENGAGEMENT

The preparation of a Stakeholder Engagement Plan (SEP) is crucial for sustainable development and the Environmental and Social Impact Assessment (ESIA) process. This plan involves engaging those who are interested in or affected by the proposed project to identify opportunities, risks, and concerns. Effective engagement and public consultation are essential for successful project development. TTE/OQAE is dedicated to engaging with stakeholders throughout the project's lifecycle.

The SEP outlines the project's stakeholders, previous engagement activities, and the commitments of the Project Proponent regarding stakeholder engagement and addressing grievances as the project progresses.

The main goals of stakeholder engagement are to:

- Maintain openness and transparency.
- Be accountable for potential impacts associated with the project.
- Foster a relationship based on listening, dialogue, trust, and commitment.

- Respect stakeholders' interests and ensure safe participation.
- Collaborate with stakeholders to find solutions that benefit everyone.
- Respond promptly to stakeholders' needs and concerns.
- Act proactively to anticipate information needs or potential issues.
- Ensure fair treatment of all stakeholders and consider their concerns based on equal rights.
- Be accessible to stakeholders, making sure they feel heard and informed.
- Include all relevant stakeholders in the engagement process.

5.1 ENGAGEMENT PROCESS TO DATE

Stakeholders identified so far include organizations and individuals who may be positively or negatively affected by the project or who may influence its implementation.

Engagement was part of the baseline process for developing the ESIA report and took place from July 9 to 11, 2024, led by a team from the Project Proponent, 5OES and ERM, with execution on field by OQ and 5OES. The field survey aimed to:

- Collect socioeconomic, health, and human rights data at the local level.
- Establish initial contact with key stakeholders and introduce the project.

Meetings were held in July 2024 with the Wali of Adam, local government representatives, and women's associations to share basic project information and gather feedback.

Initial feedback from stakeholders was largely positive, recognizing the benefits of the project for PDO, the country's leading exploration and production company with a 60 percent government stake. While potential impacts were noted, they did not lead to detailed discussions. Stakeholders pointed to recent wind and solar projects in the region, agreeing that there were no significant negative impacts from those projects.

The discussions primarily focused on the project's benefits. There is an expectation that oil and gas companies in the area should invest locally, though it is recognized that these companies have their own protocols and standards for social investment, which may not always align with community expectations for socioeconomic contributions.

Employment remains a national priority, with each Wilayah aiming to reduce the number of registered job seekers, an important consideration for all stakeholders involved.

5.2 ESIA DISCLOSURE

As mentioned before, main results coming from the local ESIA A were disclosed with relevant stakeholders in July 2024. Section 5 of the Stakeholder Engagement Plan and Appendix F of the ESIA detail how stakeholder feedback influenced this International ESIA B. A summary of the feedback received from stakeholders is provided below:

TABLE 5.1 OVERVIEW OF THE KEY FEEDBACK RECEIVED DURING THE ESIA A DISCLOSURE PHASE HELD IN JULY 2024

Subject	Ad Dakhiliyah
Project's perception	• Overall positive welcome of the Project • Query regarding location selection rationale and if the Project would meet PDO's energy requirements.

Subject	Ad Dakhiliyah
Local economy and livelihoods	• The primary sources of income include selling camels and private sector jobs in oil and gas companies operating in the area. • Employment rate amongst residents of the Wilayat is dependent on the opportunity/ role. Some residents have Master's and PhD qualifications. • Oil and gas companies use a centralized system for employment which does not enable prioritization for local employment
Community land uses (e.g., grazing, access rights)	• Residents of Abu Thaylah graze in the area of the Project site. However, the importance of the Project site as a grazing area could not be confirmed by those attending the stakeholder's meeting.
Community health, safety and development needs	• Dust and traffic related accidents, sometimes involving camels with suggestions to install road fencing.
Unique regional culture and heritage (e.g., language, traditions of local tribes, handicrafts)	• It was confirmed that the predominant tribe in Abu Thaylah and Sayh An Nuhaydah is Al-Durai. • It was clarified that there are no archaeological sites in the area.
Environmental, Health and Social Impacts	• Query on the environmental impact and impact on nearby residents and their camels as well as expected benefits to the nearby settlements. • Anticipation of various benefits, including employment, provision of electricity and other contributions to the communities.
Project Social Investment and Responsibility	• Emphasis on the importance of focusing on social and economic returns/benefits to the Wilayah, with priority to locals and LCCs • Extending the project's output supply to serve the nearby settlements is suggested
Stakeholder Engagement	No Feedback received
Grievance mechanism	• Suggestion to involve members of the municipal council in the grievance mechanism.

The final International ESIA B Report in English and a Non-Technical Summary (NTS) in Arabic will be available to stakeholders and the public for 30 days. Access will be provided through a link.

Stakeholders can give feedback through:

- Feedback forms available at the same link where the ESIA and Non-Technical Summary are posted.
- A phone number: **+968 92120082**, available throughout the disclosure period.
- Email communication at **NOS.Grievance@og.com** during the disclosure period.

Anonymous feedback is also welcome.

6 PROJECT BASELINE CONDITIONS

6.1 PHYSICAL ENVIRONMENT

Oman's climate is very dry and experiences large temperature changes throughout the year. The area is affected by the Indian monsoon, which starts in May and lasts until mid-September. Temperatures range from an average low of 7°C in January to an average high of 47.9°C in July. Rain is rare but tends to occur more in December and March, as well as during summer storms. Overall, the area is mostly sunny, making it suitable for solar energy.

There are no permanent sources of air pollution at the project site, although some oil and gas facilities nearby may emit pollutants. Air quality is generally good, with occasional minor exceedances of certain pollutants, but no violations of standards. Noise levels are also low, mostly from natural sources like wind.

The project is located on flat, gravelly plains in central Oman, near the Hajar Mountains, and there are no protected geological features in the area. The soil is mainly silty sand with some gravel, compacting into stronger materials at deeper levels. Wind erosion has left a protective layer of gravel on the surface, and while there is no soil contamination, disturbed areas may produce more dust.

Water for construction and operation will come from desalinated groundwater rather than directly from the ground. The project area contains shallow freshwater lenses and the Umm er Radhuma aquifer, which separates usable groundwater from deeper layers.

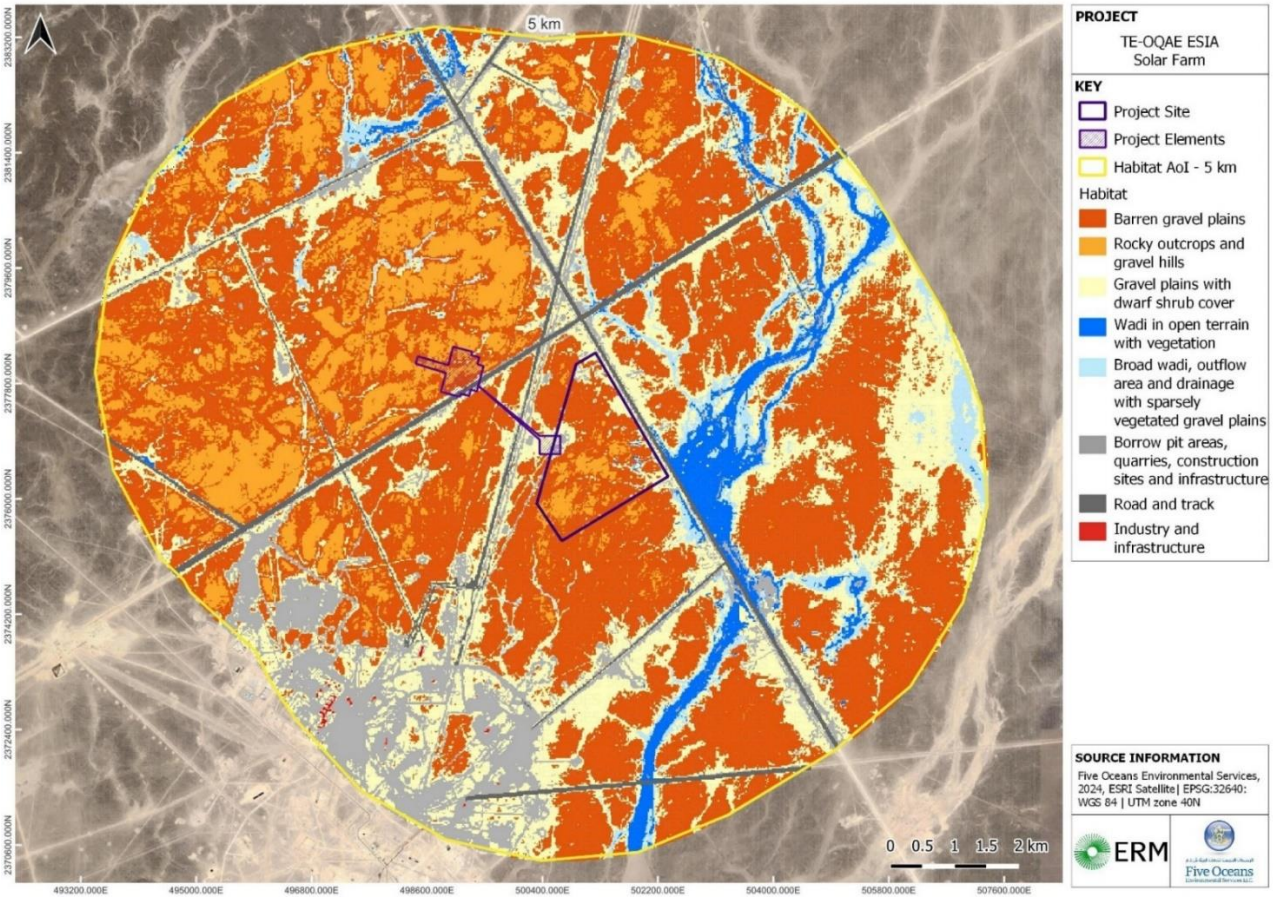
The site is in a flat, undeveloped desert area with no significant features and does not fall within any national landscape designation. It is also near a major wadi flow path that contributes to runoff into the project area.

6.2 TERRESTRIAL ECOLOGY

The project site is not located in or near any National Nature Reserves (NNRs) or protected areas that would indicate special conservation value. The closest reserve is the Jebal Akhdar National Scenic Reserve, about 200 km to the north. The nearest Important Bird Area (IBA) is Jiddat Al Harasis, approximately 60 km to the south. Other IBAs, like Jebal Akhdar IBA and Bar Al Hikman IBA, are more than 180 km and 140 km away to the north and southeast, respectively. Additionally, there are no World Heritage Sites or Alliance for Zero Extinction sites within 50 km of the project site.

The distribution of habitats within a 5 km area of interest includes five types, with barren gravel plains and rocky outcrops being the two most common habitat types found at the project site.

FIGURE 6-1 HABITAT MAPPING OF THE PROJECT AOI FOR TERRESTRIAL ECOLOGY (5KM)



Source: ERM & 5OES, 2024

A Critical Habitat Assessment (CHA) has been prepared and is specifically intended to address the requirements of *IFC Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources* ("IFC PS6"). IFC PS6 requires that projects identify the presence and extent of ***modified, natural and/or critical habitat*** (as defined by the standard) in the Project's Area of Influence. The assessment concluded that no critical habitats are present at the North Oman Solar PV Project site.

The observed plant community matches the dominant vegetation in Oman's central desert, with low vegetation cover primarily consisting of barren gravel plains and some floral community restricted to drainage channels. However, at the Project site only one individual example of *Prosopis cineraria* (Ghaf) were observed. These habitats have low ecological value but do support camel grazing. No invasive plant species were found, though *Prosopis juliflora* was observed nearby (4.5 km to the SE of the site).

Expected wildlife includes ungulates, reptiles, and small nocturnal mammals typical of desert habitats. One species of lizard, Carter's Rock Gecko (*Pristurus carteri*), was observed, which is common in Oman. Larger mammals likely to be present include the Arabian Fox, Arabian Gazelle, and Cape Hare, although no species of conservation concern were identified. All mammals in Oman are protected under Royal Decree 114/2001. Evidence of camels was noted on site, with camera traps confirming their presence.

Species diversity is expected to remain low year-round, but migrating water birds may visit during migration seasons (September-November and February-May). The Greater Flamingo (*Phoenicopterus roseus*) has been recorded nearby but not at the project site.

6.3 SOCIOECONOMICS

The Project is situated in Block 6, an oil and gas concession area in central and southern Oman operated by PDO. The site is undeveloped, lacking permanent structures or utilities, and the surrounding areas have been altered by PDO's hydrocarbon production activities.

While the oil and gas industry operate in these regions, its impact on local employment is minimal. It mainly supports the economy by sourcing services from local businesses rather than providing direct jobs.

The area of influence (AoI) for the North Oman Solar PV Project extends 15 km around the site, located in the Ad Dakhiliyah Governorate, specifically in the Wilayat of Adam. Within 5 km of the site, there are no settlements or residential areas. The nearest inhabited settlement, Abu Thaylah, is about 14.9 km away and has approximately 14 houses and nine agricultural compounds. According to the 2020 census, Abu Thaylah has an estimated population of 161, with 43% being non-Omani residents.

Tribes living within 50 km of the site have unique cultures and languages, with the Al Durai tribe being prominent around Qarn Alam.

Income-generating activities in the Project's social AoI include:

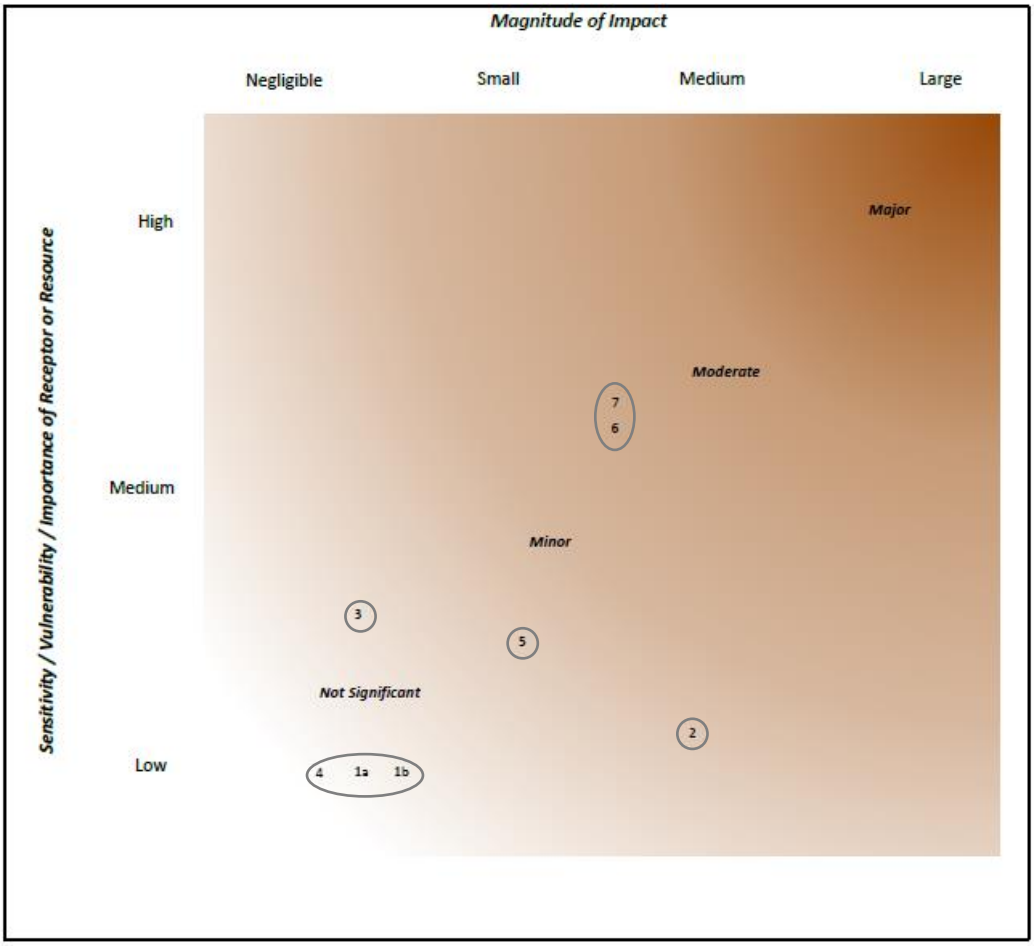
- **Small Businesses:** Ownership of small businesses, such as retail shops, tailoring, and restaurants, is a vital income source.
- **Public and Private Sector Employment:** Jobs in both sectors provide key income.
- **Agriculture and Livestock:** Some families engage in animal husbandry, primarily raising and selling camels, which are significant both economically and culturally.

Historically, local communities have used the Project site and surrounding areas for grazing, often traveling long distances with their livestock. Livestock grazes in the desert rangelands and adjacent wadis. Depending on annual rainfall, herders may need to supplement their animals' diets, incurring extra costs. Engagement with local authorities confirmed that residents of Abu Thaylah graze their livestock in the Project area.

7 IMPACT ASSESSMENT

Visual summaries of the impact assessment results, shown in Figure 7-1 and Figure 7-2, illustrate the residual impact significance after implementing mitigation and management measures. All impacts are deemed tolerable following the application of appropriate mitigation measures.

FIGURE 7-1 SUMMARY OF RESIDUAL IMPACTS FOR PROJECT CONSTRUCTION/ DECOMMISSIONING/ REPOWERING

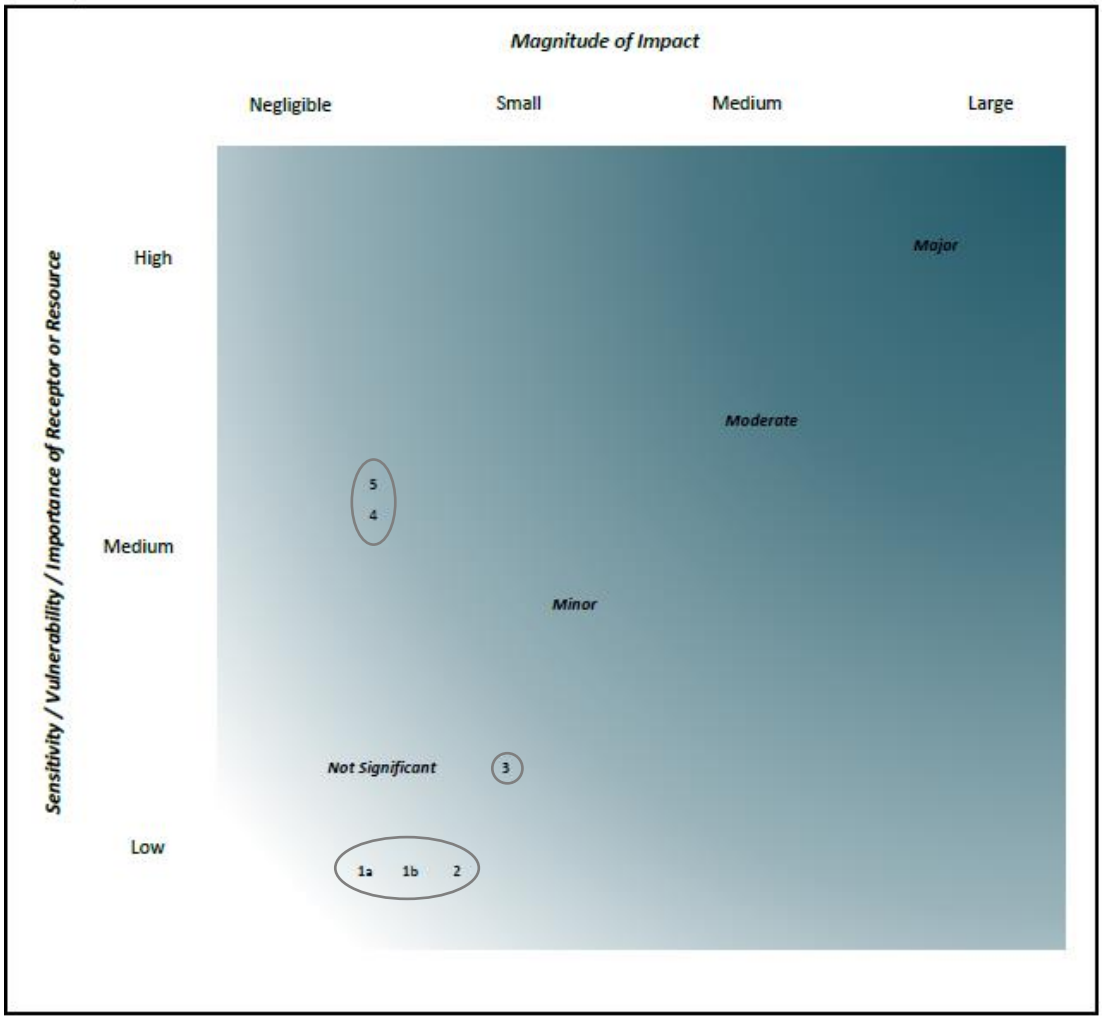


ID	Receptor	Impact
1a.	Geology and soils	Increase of soil compaction and decrease of soil quality
1b.	Geology and soils	Minor spills/leaks
2.	Surface water	Changes to drainage and surface water flows during construction
3.	Air Quality	Dust from construction activities and emissions from construction related traffic
4.	Terrestrial habitats, flora, and fauna	Site Clearance Resulting in Loss and Fragmentation of Habitats
5.	Public infrastructure and services	Increased traffic volume
6.	Community health and safety	Increased incidence of communicable or infectious diseases
7.	Labour and Working Conditions	Impacts associated to labour rights and working conditions

Note: Impacts pre-mitigation assessed in the ESIA as "not significant" have not been reported in the heatmaps.

Impact significance	Definition
Not significant	A resource/receptor (including people) will not be affected by a particular activity, or the predicted effect is deemed to be 'imperceptible' or is indistinguishable from natural background variations.
Minor	A resource/receptor will experience a noticeable effect, but the impact magnitude is sufficiently small (with mitigation) and/or the resource/receptor is of low sensitivity/ vulnerability/ importance. In either case, the magnitude will be well within applicable standards.
Moderate	Has an impact magnitude that is within applicable standards but falls somewhere in the range from a threshold below which the impact is minor, up to a level that might be just short of breaching a legal limit.
Major	An accepted limit or standard may be exceeded, or large magnitude impacts occur to valued/sensitive resource/receptors.

FIGURE 7-2 SUMMARY OF RESIDUAL IMPACTS FOR PROJECT OPERATION



ID	Receptor	Impact
1a.	Geology and soils	Increase of soil compaction and decrease of soil quality
1b.	Geology and soils	Minor spills/leaks
2.	Surface water and groundwater	Changes to drainage and surface water flows during operation
3	Public infrastructure and services	Increased traffic volume
4.	Community health and safety	Increased incidence of communicable or infectious diseases
5	Labour and Working Conditions	Impacts associated to labour rights and working conditions

Note: Impacts pre-mitigation assessed in the ESIA as "not significant" have not been reported in the heatmaps.

Impact significance	Definition
Not Significant	A resource/receptor (including people) will not be affected by a particular activity, or the predicted effect is deemed to be 'imperceptible' or is indistinguishable from natural background variations.
Minor	A resource/receptor will experience a noticeable effect, but the impact magnitude is sufficiently small (with mitigation) and/or the resource/receptor is of low sensitivity/ vulnerability/ importance. In either case, the magnitude will be well within applicable standards.
Moderate	Has an impact magnitude that is within applicable standards but falls somewhere in the range from a threshold below which the impact is minor, up to a level that might be just short of breaching a legal limit.
Major	An accepted limit or standard may be exceeded, or large magnitude impacts occur to valued/sensitive resource/receptors.

8 ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING FRAMEWORK

The Framework Environmental and Social Management and Monitoring (ESMM) Framework is a key component of the ESIA Report, serving as a foundation for developing a detailed Environmental and Social Management and Monitoring Plan (ESMMMP) for the Project.

The ESMM Framework enables the identification, assessment, and management of environmental and social risks, including community health and safety, throughout the construction and operational phases. It helps TTE/OQAE comply with relevant authorizations, legal requirements, and International Project Standards systematically.

Developed to meet the requirements of IFC Performance Standard 1 (PS1), the framework integrates various management and mitigation measures identified in the ESIA, as well as the IFC General Environmental, Health, and Safety Guidelines, the Equator Principles 4, and TTE's EHS requirements. It also incorporates conditions from the Environmental Authority's permit, which are currently under revision.

The ESMM Framework outlines specific management plans that will be operational before Project activities commence to address potential environmental and social impacts. A Design Change Management procedure will also be implemented to identify and manage impacts of any changes effectively.

Following the ESIA stage, the following specific management plans will be developed:

- Traffic Management Plan
- Pollution Prevention and Control Plan
- Waste Management Plan
- Hazardous Materials Management Plan
- Water and Wastewater Management Plan
- Climate Change Risk Management Plan
- Stakeholder Engagement Plan (including an updated community grievance mechanism)
- Human Resources Policy
- Local Content and Procurement Policy
- Workers' Management Plan (including a Code of Conduct and Camp Management Procedure)
- Occupational Health and Safety Plan
- Community Health and Safety Management Plan
- Emergency Preparedness and Response Plan
- Decommissioning Management Plan

Environmental, social, and health management activities will occur throughout the Project's lifecycle. Monitoring guidelines will be established in the CEMMP and OEMMP to evaluate the effectiveness of environmental management plans and identify areas for improvement, aiming to minimize significant negative impacts.