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SUPPLEMENTARY ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR THE TIMOR-LESTE 72 MWac SOLAR IPP PROJECT

EDF power solutions & I-Environment Investment Pacific

PROJECT NUMBER 2025-TL-03

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ACRONYMS, ABBREVIATIONS, AND GLOSSARY

ADB	Asian Development Bank
AEP	Annual Exceedance Probability
ANLA	*Agencia Nacional de Licensiamento Ambiental* (National Environmental Licensing Agency)
AoI	Area of Influence
AQ	Air Quality
BESS	Battery Energy Storage System
BOD	Biological Oxygen Demand
CFU	Coliform Unit
CIA	Cumulative Impact Assessment
COD	Chemical Oxygen Demand
CSR	Corporate Social Responsibility
DLHK	*Dinas Lingkungan Hidup dan Kehutanan* (Environmental and Forestry Service – Laboratory in Kupang, Indonesia)
DO	Dissolved Oxygen
EAAA	Ecologically Appropriate Area of Analysis
EDTL	*Electricidade de Timor-Leste*
EHS	Environment, Health and Safety
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
EPC	Engineering, Procurement and Construction
EPRP	Emergency Preparedness and Response Plan
E&S	Environment and Social
ESIA	Environmental and Social Impact Assessment
ESHSMP	Environmental, Social, Health and Safety Management Plan
ESMS	Environmental and Social Management System
GBV	Gender-Based Violence
GHG	Greenhouse Gas
GIIP	Good International Industry Practice
GoTL	Government of Timor-Leste

GRM	Grievance Redress Mechanism
HRA	Human Rights Assessment
IBAT	Integrated Biodiversity Assessment Tool
IEE	Initial Environmental Examination
IFC	International Finance Corporation
IP	Indigenous Peoples
IPP	Independent Power Producer
IQR	Interquartile Range
ITSN	*Institut Teknologi Sepuluh Nopember*, Surabaya, Indonesia
IUCN	International Union for Conservation of Nature
KBA	Key Biodiversity Area
LMP	Labor Management Procedures
LRP	Livelihood Restoration Plan
MPN	Most Probable Number
MPW	Ministry of Public Works
NAPA	National Adaptation Program
NDC	National Dispatching Center
O&M	Operation & Maintenance
OHS	Occupational Health and Safety
PCR	Physical Cultural Resources
PM	Particulate Matter
PS	Performance Standard (IFC)
PV	Photovoltaic
RFQ	Request for Quotation
SEP	Stakeholder Engagement Plan
SIA	Social Impact Assessment
SIAMP	Social Impact Assessment and Management Plan
SNI	Standard Nasional Indonesia
SPS	Safeguard Policy Statement (ADB)
Suco	Village (Administrative Post Subdivision)
TA	Technical Assistance
TDS	Total Dissolved Solids

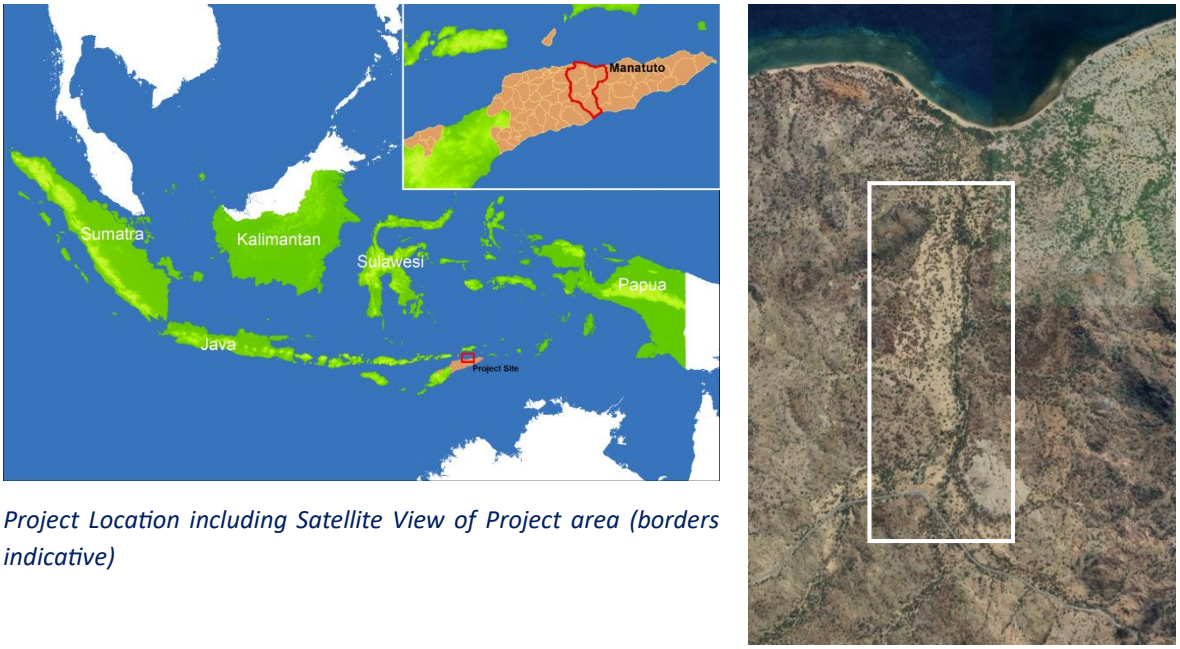
TL	Timor-Leste
ToR	Terms of Reference
TSS	Total Suspended Solids
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations International Children's Emergency Fund
USD	United States Dollar
WHO	World Health Organization

EXECUTIVE SUMMARY

ES1. Project Overview. The Laleia Solar Independent Power Producer (IPP) is a planned 72 MWac (90 MWdc) solar photovoltaic power plant with an 80 MWh Battery Energy Storage System (BESS). The project will occupy approximately 350 hectares in Lifau Suco, Laleia Administrative Post, Manatuto Municipality. Core infrastructure will be fenced and will cover less than one-third of the area, with the remainder reserved for buffers and drainage. The site is located between the Dili–Baucau national highway and the north coast of Timor-Leste.

ES2. Applicable Standards. This Supplementary ESIA has been prepared to complement the 2024 Environmental Impact Statement (EIS) and to address identified gaps, ensuring alignment with the International Finance Corporation (IFC) Performance Standards (2012) and the Asian Development Bank (ADB) Safeguard Policy Statement (2009), as required for project financing. The primary reference documents include the 2024 EIS and Environmental Management Plan prepared by Halona Serena Consultant Firm in November 2024.

ES3. Scope of the Supplementary ESIA. Key areas addressed in this Supplementary ESIA include the updated project description and area of influence; alternatives analysis; community and socioeconomic baseline; impacts on Indigenous Peoples; land use and livelihoods; construction and operation-related risks (particularly fire risks associated with the BESS); cumulative impacts; biodiversity and critical habitat; ecosystem services; human rights; stakeholder engagement; and the development of corresponding management plans.



Project Location including Satellite View of Project area (borders indicative)

ES4. Project Importance. Timor-Leste relies almost entirely on imported diesel fuel for electricity generation, making power generation costly, polluting, and highly vulnerable to global fuel price fluctuations. Average generation costs are among the highest in Asia. The Laleia Solar IPP will directly displace diesel generation, cutting greenhouse gas emissions by an estimated 2.5 million tons of CO_2 over its 25-year lifetime. The project will strengthen national energy security, reduce fiscal pressures from fuel imports, and demonstrate Timor-Leste's capacity to host large-scale renewable energy

infrastructure. Given Timor-Leste's status as one of the poorest countries in the Asia–Pacific region, with GDP per capita around USD 1,500, the project has outsized importance. Beyond its national benefits, even modest community development programs linked to the project can deliver significant local benefits.

ES5. Government and Community Support. The Government of Timor-Leste has prioritized renewable energy expansion and strongly supports the project. Community consultations held in Lifau and neighboring sucos have shown broad acceptance of the solar farm, provided that key local concerns are addressed. Community representatives highlighted three priorities: (i) maintaining access from the highway to the beach; (ii) preserving east–west corridors for cattle movement along the coast; and (iii) creating employment opportunities, especially during construction. The project's design and mitigation measures respond directly to these concerns.

ES6. Administrative and Social Setting. The project lies entirely within Lifau Suco, though neighboring sucos will also experience indirect effects. Lifau and Haraluton are the primary administrative units engaged in consultations. Land tenure is formally State-owned, but customary use rights for grazing and tree harvesting are widely recognized in practice. No households will be physically displaced, but restrictions on grazing, tamarind collection, and coastal harvesting will occur. These minor restrictions will be addressed through community benefit and livelihood support measures integrated into the project's Environmental, Social, Health and Safety Management Plan (ESHSMP).

ES7. Environmental Setting. The project area forms the lower part of a watershed that drains steep uplands into a flat coastal floodplain. This setting offers construction advantages but also poses risks of flooding and erosion. The site is predominantly scrubland and rangeland used for communal grazing. Tamarind trees, while not native, are common and locally valued for fruit and shade.

ES8. Coastal Zone. At the northern boundary, the drainage system discharges into seasonal ponds that become brackish in the dry season, supporting mangroves, migratory birds, and occasional saltwater crocodiles. These ponds, together with the adjacent coastal zone used for fishing, seaweed collection, and firewood harvesting, lie outside the project footprint but are of high community and ecological importance. Sensitive drainage design and light management will protect these features.

ES9. Ecosystem Services and Biodiversity. The site is currently used for communal grazing and tamarind collection. Approximately 70 to 80 hectares of mixed vegetation will be cleared. While no unique or endangered species are present within the footprint, biodiversity assessments confirm nearby Key Biodiversity Areas, fringing coral reefs, seagrass beds, and turtle habitats within 400 m of the project area.

ES10. Lamsanak Protected Area. Approximately 40 hectares of the overall allocated project area overlap with the terrestrial buffer of the Lamsanak Protected Area, which is primarily a marine conservation zone, but the actual project fenced footprint (less than 100 hectares) does not overlap with the terrestrial buffer of the Lamsanak Protected Area. The boundary of the Lamsanak Protected Area will require clarification by the Ministry of Agriculture and Fisheries. Given the area's marginal terrestrial ecological value, the issue is regulatory rather than ecological in nature.

ES11. Environmental and Social Considerations. Economic displacement will be managed through livelihood support integrated into the ESHSMP, with measures such as groundwater-fed fodder plots and livestock support considered as part of project development. A perimeter road will both serve as a firebreak and preserve community routes to the beach and cattle corridors. Artificial lighting will be minimized and shielded to avoid disturbing turtles and migratory birds. Seasonal ponds will be preserved and integrated into drainage design. Engineered drainage will manage stormwater flows and reduce downstream flood hazards. Groundwater potential may also be developed for dry-season cattle water supply and firefighting. See Table ES-1 for a summary of key environmental and social impacts, affected receptors, and mitigation / monitoring measures.

ES12. Community Development. Given Timor-Leste's poverty, the Project Owners recognize that even small initiatives—such as training, planting tamarind trees in upland catchments, or supporting waste collection—can deliver high visibility and impact. Site clearance will generate usable wood; equitable distribution under local oversight and in compliance with forestry law can provide a short-term community benefit.

ES13. Project Categorization. Under the ADB Safeguard Policy Statement (2009), the project is classified as Category B for Environment, Category C for Involuntary Resettlement (IR), and Category C for Indigenous Peoples (IP). The project is classified as Category B under IFC Performance Standards. This classification reflects that impacts are site-specific, reversible, and readily mitigated, with no physical or significant economic displacement, and no distinct Indigenous Peoples affected.

ES14. Conclusion. The Supplementary ESIA confirms that the Laleia Solar IPP poses no significant or irreversible environmental or social risks. Impacts are localized and manageable through well-established mitigation measures. By contrast, the benefits are transformative: reducing greenhouse gas emissions, strengthening energy security, lowering electricity costs, and demonstrating Timor-Leste's capacity to host flagship renewable energy projects. On balance, the Laleia Solar IPP offers substantial national and community benefits that far outweigh its manageable adverse impacts.

Table ES-1. Summary of Key Environmental and Social Impacts, Affected Receptors, and Mitigation / Monitoring Measures

No.	Impact Category	Description of Impact / Risk	Affected People / Receptors	Key Mitigation & Management Measures	Monitoring & Responsibility
1	**Land Use and Livelihoods**	Restriction of communal grazing over ~100 ha fenced area; loss of access to tamarind fruit trees in Project area.	Grazing households of Suco Lifau and Haturalan	Maintain east-west corridor for free cattle movement; install two groundwater wells to support water supply for cattle during dry season; and local hiring preference. Equitable distribution of cleared timber under supervision of Suco leaders.	Construction-phase livelihood monitoring; quarterly (construction) / annual (operation) review via GRM & SEP. Responsibility: Owner ESMS Team / Contractor.
2	**Community Access and Safety**	Potential disruption of highway–beach access and traditional cattle corridors; temporary traffic safety risk during transport.	Lifau and Haturalan residents; resident along coastal highway from Dili to the site; road users.	Retain access via perimeter road (also acts as firebreak); maintain designated livestock crossings along coastline. Prepare Traffic Management Plan with signage, speed limits, and driver induction.	Routine traffic audits; community feedback through GRM. Responsibility: Contractor HSE / Owner.
3	**Economic Opportunities**	Local employment and capacity building during construction and O&M.	Local workforce (Lifau, Haturalan).	Apply Local Hiring Plan prioritizing semi-skilled and unskilled labor; offer training in solar maintenance, safety, and technical skills.	Employment records; semi-annual reporting to ANLA.
4	**Biodiversity / Habitat Loss**	Clearing of ~70–80 ha mixed scrub/rangeland; no Critical Habitat triggered; sensitive ecosystems within 400 m north.	Terrestrial flora/fauna; marine turtles (EN).	Retain natural vegetation buffers and seasonal ponds; no works within 200 m coastal buffer; erosion and sediment controls during construction; adopt turtle-friendly lighting.	Annual radiance monitoring at beach in nesting season (Dec-Feb); seasonal bird/turtle surveys.

No.	Impact Category	Description of Impact / Risk	Affected People / Receptors	Key Mitigation & Management Measures	Monitoring & Responsibility
5	**Drainage, Flooding and Sediment Run-off**	Increased turbidity in runoff during construction; potential erosion at beach outfall; downstream sediment load to lagoon/reef.	Downstream mangrove, lagoon, reef; adjacent land users.	Construct engineered drainage with transitions structure at outfall; use sediment ponds and staged stabilization during construction.	Visual inspection after major rains; monthly turbidity checks during construction. Responsibility: Contractor / Owner's Environmental Engineer.
6	**Surface Water and Effluent Quality**	Possible contamination from construction effluents and domestic wastewater.	Seasonal ponds, coastal lagoon.	Collect sanitary wastewater in sealed tanks or septic units; no direct discharge; vehicle maintenance over impermeable surfaces.	Effluent quality monitored quarterly; compliance with IFC EHS Guidelines and TL standards.
7	**Noise and Air Quality**	Dust and noise during construction; nearest settlements >2–3 km.	Residents of Lifau and Haturalan.	Limit vehicle speeds; water unpaved roads; maintain equipment; restrict work hours to 7 am–7 pm.	Noise <55 dB(A) daytime / 45 dB(A) night at receptors; dust visual checks daily.
8	**Artificial Lighting**	Disturbance to turtle nesting and nocturnal fauna.	Marine turtles and coastal fauna.	Use fully shielded downward-facing lights, amber/red spectrum, and motion sensors; maintain dark buffer at north boundary.	Night-sky radiance < background; verified annually in nesting season.
9	**Solid and Hazardous Waste**	1,500 m^3 construction waste; ≤100 m^3/yr O&M; small volumes of oils, lubricants, batteries.	Local environment; waste workers.	Waste segregation at source; reuse/recycling; hazardous waste stored in bunded area, collected by licensed carrier.	Waste inventory & disposal receipts; quarterly audits.
10	**BESS Fire and Chemical Hazards**	Potential fire/explosion risk from lithium-ion BESS.	Workers, emergency services, nearby communities (2–3 km distant).	Conduct HAZID/HAZOP during detailed engineering stage; integrate into EPRP; provide fire	Annual emergency drills; incident reporting to ANLA.

No.	Impact Category	Description of Impact / Risk	Affected People / Receptors	Key Mitigation & Management Measures	Monitoring & Responsibility
				detection/suppression, separation distances, and trained response team.	
11	**Occupational Health and Safety**	Construction activities (electrical work, lifting, heat exposure).	Workers.	Implement OHS Plan, training, PPE, toolbox talks, and heat-stress controls.	Monthly audits; lost-time injury (LTI) rate reporting.
12	**Community Health, GBV and Labor Influx**	Influx of non-local workers; possible GBV and communicable disease risks.	Local residents, especially women/youth.	Apply Worker Code of Conduct; GBV awareness, local hiring preference, and worker accommodation standards; medical screening.	Contractor reporting; quarterly (construction) / annual (operation) GRM & SEP review.
13	**Cultural Heritage**	Chance discovery of archaeological or sacred sites.	Local communities; cultural agencies.	Apply Chance Find Procedure; halt works, notify authorities, follow Ministry of Culture guidance.	Incident log; audit by Owner E&S Team.
14	**Cumulative Impacts**	Interaction with potential future coastal or infrastructure developments; additive light effect on turtles.	Coastal ecosystems, communities.	Maintain low lighting; participate in inter-project coordination if new projects emerge; adaptive management of mitigation.	Annual review of cumulative conditions with ANLA / MAF.
15	**Climate and Disaster Risks**	Extreme rainfall, flooding, sea-level rise.	Project infrastructure, site drainage system.	Elevate key electrical equipment; design drainage for ≥1:100-year event; maintain firebreaks; climate-resilient structures.	Annual inspection before wet season.

1 INTRODUCTION AND BACKGROUND

1.1 Project Overview and Purpose of Supplementary ESIA

The Government of Timor-Leste, through *Electricidade de Timor-Leste* (EDTL), is advancing the development of a grid-connected Solar Independent Power Producer (IPP) Project near Laleia, Manatuto Municipality (Figure 1-1). The project, being developed by a consortium of EDF power solutions and I-Environment Investments Pacific Pyt Ltd (the 'Owner'), is proposed to include a 72 MWac Photovoltaic (PV) Plant integrated with an 80 MWh Battery Energy Storage System (BESS). An initial description of the project's nature, size, location, and technical components is provided in the 2024 Environmental Impact Statement (2024 EIS, Section 4.0), presenting a design concept currently being revisited and finalized by the Owner (Section 2).

To ensure the project meets the environmental and social requirements of international lenders, the Owner commissioned a supplementary assessment to benchmark the existing 2024 EIS against the International Finance Corporation (IFC) Performance Standards (PS) and relevant good international industry practice (GIIP). This process, detailed in the Scoping and Key Findings Report, identified a series of gaps requiring additional analysis and documentation to achieve Bankability.

The primary purpose of this Supplementary Environmental and Social Impact Assessment (ESIA) is therefore to address systematically and close those identified gaps. This report is designed as an addendum to the 2024 EIS and its associated Environmental Management Plan. It provides new and updated analysis on topics including, but not limited to, land use impacts, biodiversity, community baselines, and risk management. It augments, rather than replaces, the existing documentation, with frequent cross-references to the original sources to avoid duplication.

1.2 Project Proponent

Company	**EDF power solutions**	**I-Environment Investments Pacific Pyt Ltd**
Address	43 Boulevard des Bouvets CS 90310 92741 Nanterre CEDEX France	Level 23, Gateway, 1 Macquari Place, Sydney NSW 2000, Australia
Responsible Person for ESIA	Christophe Richou (Mr) P. +33 (0) 6 09 06 67 54 E. christophe.richou@edf-re.fr	Gabriel Chan (Mr) E.info@i-environment.com.au

1.3 Site Overview

Site Location

The project area is located on Timor-Leste's north coast, approximately 70 kilometers east of the capital, Dili, within the Laleia Administrative Post of Manatuto Municipality. Encompassing roughly 350 hectares, the site comprises a broad, low-lying valley, approximately 2.3 km long and 1 km wide, situated between the main coastal road and the shoreline (see Figure 1-2). Detailed descriptions of

the site's physical and ecological characteristics are available in the 2024 EIS (Section 6). For a visual overview of the project area, please refer to the attached photographs.

Land Cover and Use

The project area covers approximately 350 ha of State-owned land (*terra do Estado*), of which less than 100 ha will be enclosed within the fenced project footprint to accommodate the solar arrays, inverters, and auxiliary facilities. The remaining ~250 ha surrounding the fenced area will remain open and accessible to the community for traditional activities such as grazing and tamarind collection. Tamarind trees (*Tamarindus indica*) comprise most of the trees in the area. Although native to Africa and apparently not commercially cultivated, tamarind is a well-established and valued species in Timor-Leste's rural landscapes, prized for its fruit and the shade it offers.

The land has historically been classified as State property since the Portuguese period and has not been subject to private title registration. However, residents of Lifau and Haraluton sucos have long maintained customary use rights for seasonal grazing, fuelwood and tamarind collection, and small-scale coastal harvesting. These uses are informal but widely recognized by local authorities and were confirmed during consultations held in 2024–2025.

Livestock ownership in both sucos is small-scale, typically fewer than 5 head of cattle or goats per household. The fenced project area represents less than 5 percent of the estimated communal grazing land available within each suco (>2,000 ha combined). Therefore, the reduction in grazing area is minimal, and there is no significant risk of overgrazing or resource pressure in surrounding lands. Moreover, the project design maintains perimeter access tracks and designated corridors to allow continued movement of livestock around and between existing pasture zones.

Current land cover consists mainly of open grassland with scattered shrubs and tamarind trees, interspersed with small patches of secondary vegetation. No permanent dwellings or cultivated plots occur within the project footprint. Any localized grazing restrictions will be offset through livelihood-support and community-benefit measures integrated into the ESHSMP, including maintenance of access routes, local employment opportunities, and small-scale livestock support initiatives coordinated with the Lifau and Haraluton sucos.

Hydrology

Hydrologically, the project area is a flat, low-lying drainage basin that collects and channels surface runoff from upstream catchments, especially during the wet season. This moisture-retentive environment supports grazing activities into the dry season, as cattle and other livestock congregate in the valley when surrounding uplands become parched. The persistence of shallow groundwater further enhances the site suitability for grazing, providing water for longer periods than adjacent higher areas. Notable exceptions are three naturally occurring springs to the east and outside the project area (and unaffected by project activities), which supply water to cattle throughout the year. The year-round spring flows suggests that local groundwater resources can be considered drought-proof, though quantitative information on the springs and groundwater are limited. At the peak of the dry season, cattle typically move to the Laleia River to the east, which provides a reliable, year-round water source.

Supplementary baseline data on rainfall climatology, drawing from long-term satellite rainfall data (2014-2024), confirm a distinct wet season (November-April) and dry season (May-October) with typical tropical convective rainfall patterns (Figure 1-2). The project catchment area morphology,

characterized by steep gradients in the upper catchment draining to a coastal lowland, implies a potential for flood damage along surface drainage lower reaches during high rainfall events, as well as limited surface water availability in the dry season.

Seasonal Coastal Lagoon and Mangrove Habitat

Along the northern boundary of the site, the seasonal drainage channel interacts dynamically with the coastal zone, creating a distinctive geomorphological and ecological feature. During the wet season, storm runoff carries surface water through the channel and discharges directly into the sea. As flows decline in the dry season, tidal action gradually builds a sandbar across the channel mouth, cutting off the connection with the ocean. This process leaves behind an elongated water body that represents the deeper, lower reaches of the drainage system. With freshwater inflow reduced to zero, tidal surges introduce seawater, and the lagoon becomes increasingly brackish. The resulting habitat supports stands of mangroves and offers valuable feeding and resting grounds for migratory bird species. Local villagers also report occasional sightings of saltwater crocodiles in this coastal wetland.

Coastal Area

The site northern boundary is slightly inland from the coastline, which features a fringing coral reef. The shoreline is used by nearby residents for resource collection, including driftwood collection, seaweed harvesting, and occasional fishing activities, as evidenced by a temporary fishing hut. Since the site functions as a natural drainage basin, water erosion potential is a critical consideration for the project design, construction, and operational management, to protect structural foundation integrity as well as avoiding turbid runoff and sediments entering downstream coastal and marine environments. Constructing a drainage channel to manage stormwater as part of project development can reduce water erosion potential during storm events.

Ecosystems

The project area mixed vegetation cover is best described as scrubland/grassland used by humans. No unique or endangered species have been identified in the immediate project footprint. However, bird species such as the "Near Threatened" Timor Bush Warbler and the endemic Timor Friarbird have been observed. Local fishermen report diverse reef fish and occasional sightings of saltwater crocodiles.

The 2024 EIS and IBAT screening confirmed that the project area does not intersect any legally protected areas or designated critical habitats under national or international criteria. However, approximately 40 hectares of the overall allocated project area overlap with the terrestrial buffer of the Lamsanak Protected Area (PA), which is primarily a marine conservation zone. The Lamsanak PA is part of the Laleia KBA. The KBA is a global ecological screening layer, while the Lamsanak PA is a national protected area proposed within part of that KBA. The the Laleia KBA contains Javan Rusa (deer) and Sandalwood. The *Perairan Subaun* KBA (in 5.7 kmdistance) is home to marine Green Turtles and various corals.

Local Communities

The villages (suco) of Lifao and Haturalan (the latter the administrative center of Laleia), on the nearby Laleia River and approximately 3 km from the project area, are the nearest settlements, and there is essentially no human habitation or development in the vicinity of the site other than the highway. Laleia is a small coastal district that serves as a local hub for surrounding villages and communities engaged primarily in agriculture, fishing, and small-scale trading.

Wildfire Risks

In northern Timor-Leste, wildfires are relatively infrequent, particularly in the project area, due to the limited presence of dense vegetation such as bushes and trees (Figure 1-3). The surrounding landscape primarily consists of hills sparsely covered with grass, with considerable exposed soil, which further reduces the risk of widespread wildfires. While localized fires could occur under certain conditions, the overall fire threat to the site and its immediate environment remains low.

A fire risk analysis for the Laleia Administrative Post, utilizing NASA FIRMS satellite data from 2018-2025, confirms the "Low" overall fire risk level. Laleia ranks 20th out of 62 administrative posts nationally, with a composite risk score of 0.295 on a 0-1 scale. The analysis recorded 798 fire events within the administrative post during the assessment period, with an average fire intensity (Fire Radiative Power, FRP) of 5.19 MW and a maximum of 50.56 MW. Temporal patterns reveal a distinct dry season peak in monthly fire seasonality, particularly from August to October. Fire intensity categories show that close two-third of fires were "Low" intensity (1-5 MW); only 2 % were "High" (>15 MW).

1.4 Cross-Referencing to 2024 EIS and EMP

This document is a supplement to the existing environmental and social assessment for the Project. Its structure is designed to address specific gaps identified in the 2024 EIS and its associated EMP. To ensure a concise and efficient assessment and to avoid redundancy, this Supplementary ESIA adopts a "delta drafting" approach, highlighting changes to or modifications of the initial documents.

Content that was adequately covered in the original documents will not be repeated. Instead, this report will directly cross-reference the relevant section of the source document (e.g., "2024 EIS, Section X.X"). The narrative in this report will focus on presenting new or updated information required to close the identified gaps. The 2024 EIS and 2024 EMP should therefore be considered integral components of the overall project ESIA documentation, to be read in conjunction with this supplementary report.

1.5 Supplementary ESIA Consultant

Company	Greencorp LLC (Singapore) Pte. Ltd.
Address	BLK454 #04-256 Tampines Street 42 Singapore 520454
Responsible Person for ESIA	Dr Karlheinz Spitz MBA Phone: +62 812 808 808 24 Email: karlheinz.spitz@greencorpllc.com
Dr. Karlheinz Spitz *(ESIA Lead,* *Project Director)*	Environmental consultant with over 40 years of experience in environmental assessments in Southeast Asia, specializing in ESG

	and due diligence for financial institutions including IFC and World Bank.
Dr. Adi Prasetijo *(Social Safeguard Lead)*	Anthropologist with more than 20 years of experience in stakeholder engagement, land acquisition, resettlement planning, social impact assessment, and compliance with various international safeguards
Dr. Ivo Mateus Goncalves da Cruz Fernandes *(National Social Lead)*	Timor-Leste-based social specialist with over 20 years of experience in social impact assessments, community consultation, cultural anthropology, and social baseline work, including for the World Bank.
Adelina do Rego Soares *(Consultation and Gender)*	Ten years of experience in preparing environmental and social documents (SEIS, EMP, EIA) in line with ADB, World Bank, and Timor-Leste standards, with strong expertise in community engagement and gender-inclusive approaches.
Bakhtiar S Aji S.Hut, M.Si *(Biodiversity and Ecosystem Services)*	Environmental consultant specializing in forestry and terrestrial ecology, GIS, remote sensing, and critical habitat assessments, with more than 20 years of experience, including 10 years providing IFC PS6 expertise to financial institutions.
Zakirman *(GIS Support)*	Environmental consultant with more than 20 years of experience in GIS, fisheries and coastal environmental management, coral reef habitat mapping, and spatial data analysis.
Chuen Far Fong *(ESIA Peer Review)*	Environmental and social specialist with over 17 years of experience in leading ESIAs for international financial institutions across Southeast Asia (Aurecon).
Andries van der Merwe *(Technical Advisor)*	Engineer with 29 years of experience in project management, specializing in renewable energy initiatives, particularly solar PV and Battery Energy Storage Systems (BESS), and technical due diligence (Aurecon).

1.6 Project Categorization

The supplementary ESIA concludes that the project is classified as a Category B Project under IFC's Environmental and Social categorization because its potential adverse environmental and social impacts are site-specific, generally reversible, and can be readily mitigated through the application of standard management measures.

In line with ADB SPS (2009), the project is Category C for Involuntary Resettlement (IR), as no physical or significant economic displacement is anticipated and access routes for locals to grazing and coastal areas have been incorporated into the design; and Category C for Indigenous Peoples (IP), as communities in the project area (Galolen and Tetum) are not distinct from the mainstream population.

Key impacts—such as loss of communal grazing land, potential impacts on water runoff and quality, as well as temporary construction-related disturbances—are limited in scope and scale, with no significant, irreversible, or unprecedented risks identified. The project does not involve physical resettlement, critical habitats, or activities with significant or cumulative impacts beyond the immediate project area.

Note that the 2024 EIS/EMP states the project is Category A under Timor Leste Decree Law No. 39/2022 on Environmental Licensing because it (1) involves a large land footprint; (ii) requires major civil works in a coastal drainage basin (risk of flooding, erosion, sediment runoff); (iii) has potential ecological interactions (e.g., reef systems, marine turtles, crocodiles, tamarind woodlands); (iv) involves Battery Energy Storage Systems (BESS) with recognized fire and hazardous materials risks; and (v) it could create significant socio-economic impacts (loss of grazing land, access restrictions, community resource use).

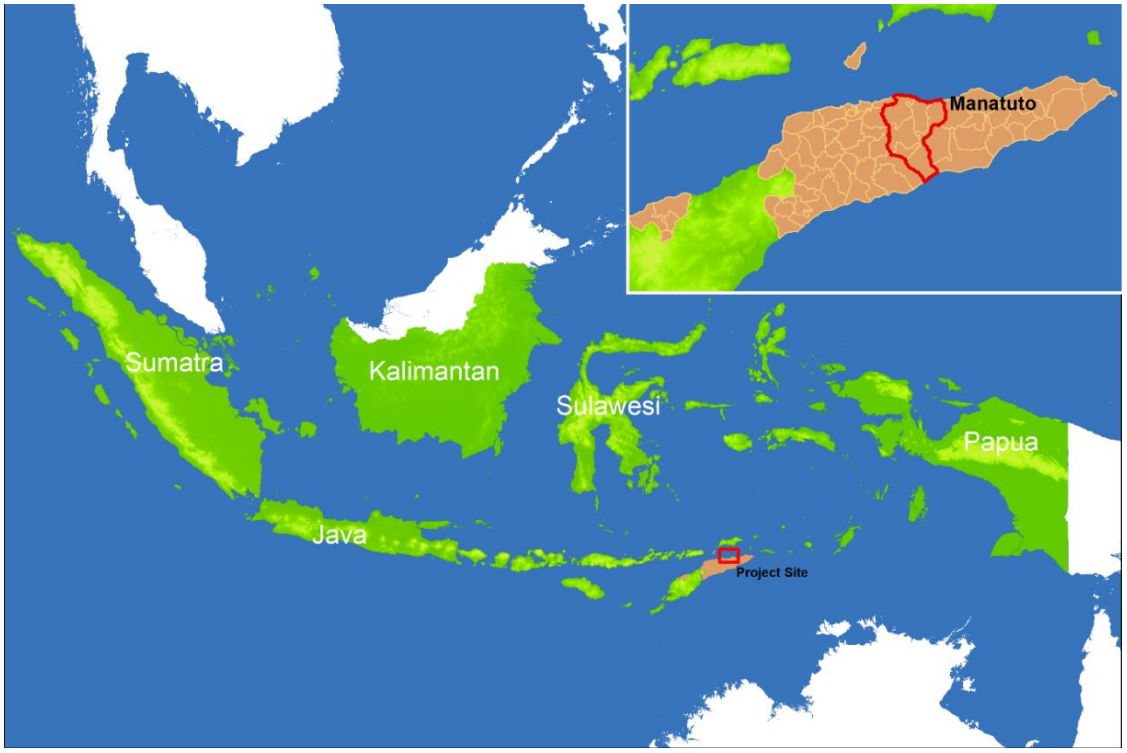
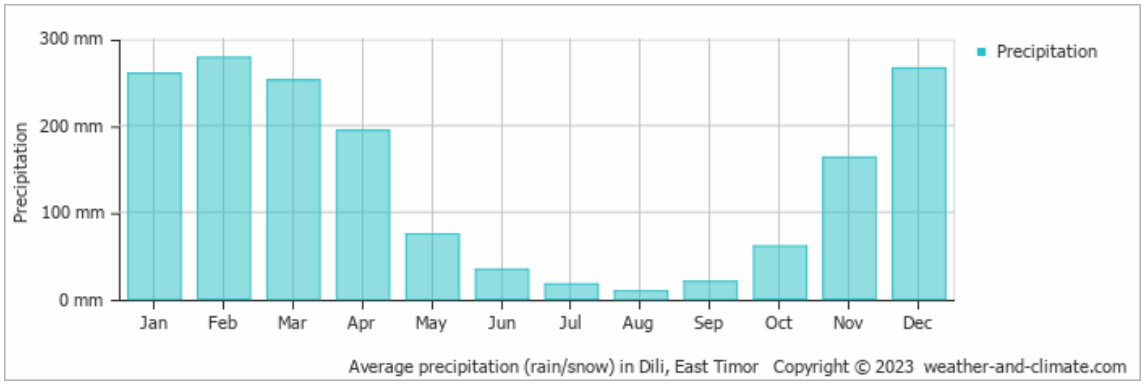


Figure 1-1 Project Location -Regional Scale



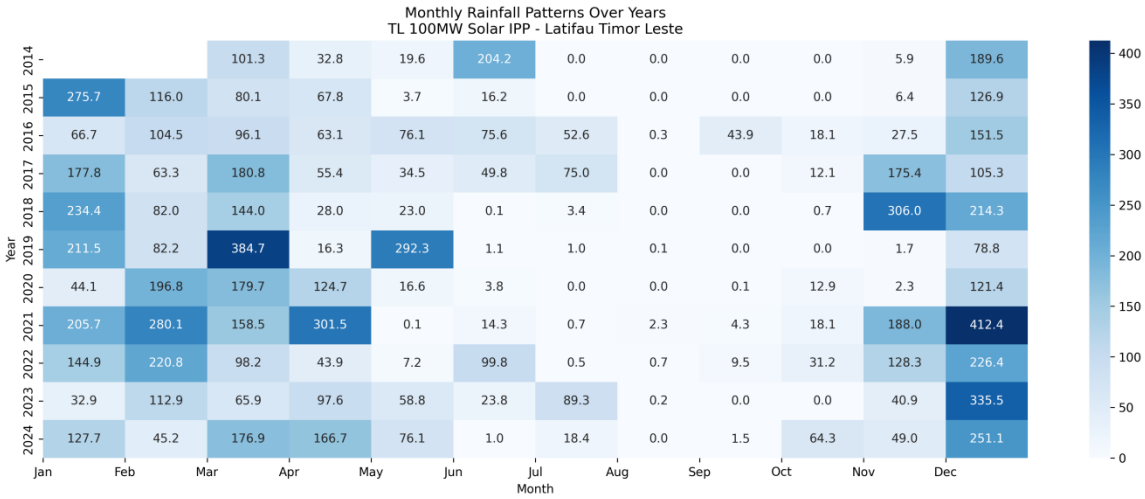
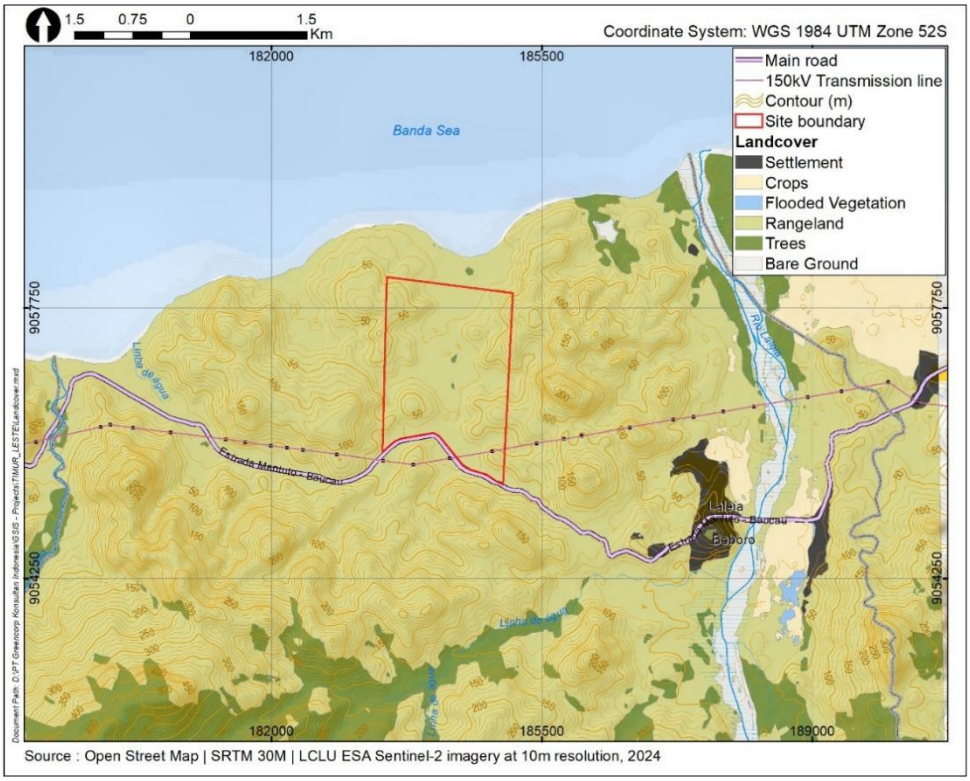


Figure 1-2 Average Precipitation at Dili Illustrating Tropical Convective Rainfall Pattern and Monthly Rainfall Patterns Over the past Ten Years



Note: Rangeland is classified as open areas with patchy cover of homogenous grasses with little to no taller vegetation; wild cereals and grasses with no obvious human plotting (i.e., not plotted fields). Mix of small clusters of plants or single plants dispersed on a landscape with considerable exposed soil and rock.

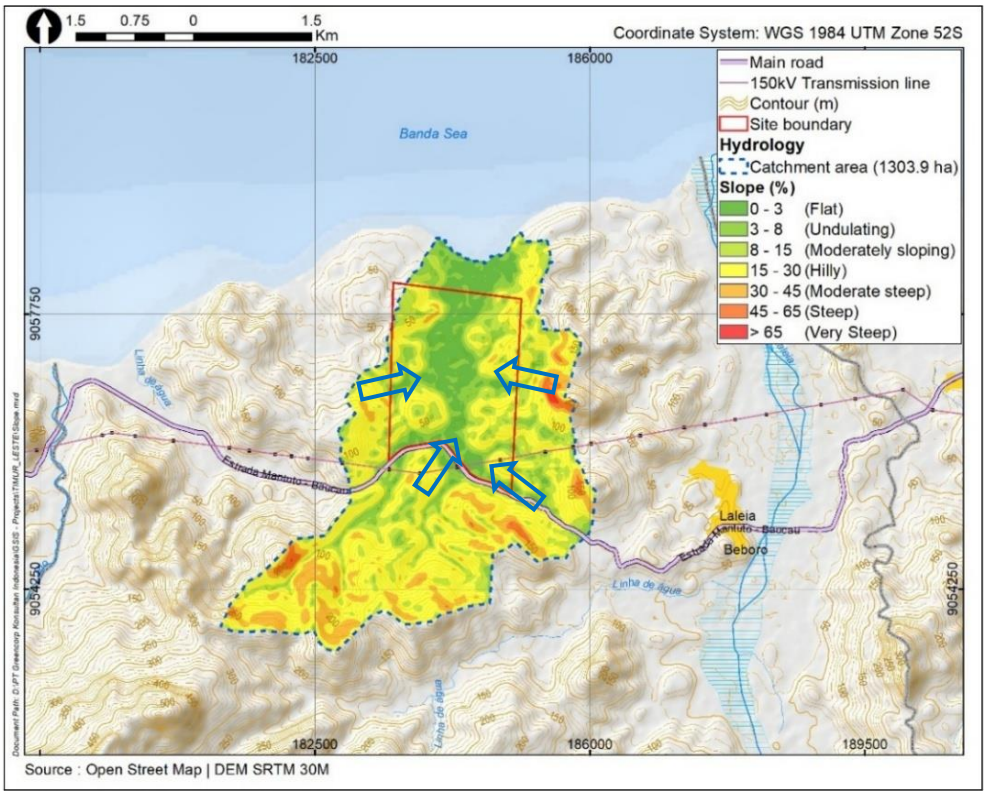


Figure 1-3 Project Location, Land Cover, and Topography -Local Scale

2 UPDATED PROJECT DESCRIPTION AND AREA OF INFLUENCE

2.1 Project Components

The fundamental components of the Laleia Solar IPP Project, including the solar PV array and substation, are outlined in the 2024 EIS (Section 4.4.1). This section provides an updated description, especially for the Battery Energy Storage System (BESS) and other associated facilities. Figure 2.1 illustrates the 350 ha area allocated for the Laleia Solar IPP Project; the actual fenced footprint will be less than 100 hectares (less than one-third of the allocated area) with the final layout depending on detailed engineering currently underway by the Owner's engineer. Changes in project layout will not affect the findings of this Supplementary ESIA if the final project footprint remains in the designated area (Figure 1-2).

Solar farms are one of the most established renewable electricity technologies and the cheapest form of electricity generation. Solar photovoltaic systems can be built quickly.

Table 2-1 Project Components and Ancillary Facilities

PROJECT COMPONENTS	
PHOTOVOLTAIC (PV) ARRAY	An array of ground-mounted solar PV modules with a planned capacity of 72 MWac / 90 MWdc. The modules will be mounted on fixed-tilt or tracking steel frames and will cover an area of less than 100 hectares (Figure 2.1).
BATTERY ENERGY STORAGE SYSTEM (BESS)	An 80 MWh BESS will be installed on-site, covering an area of less than one hectare (final layout depending on EPC design and spacing requirements for fire safety and access. This system will consist of multiple containerized battery units, each housing lithium-ion battery racks, thermal management systems (HVAC), and fire detection and suppression systems. The BESS will be located adjacent to the on-site substation for efficient grid connection. The primary function of the BESS is to provide grid stability services and store excess solar generation for dispatch during evening peak hours.
POWER CONVERSION UNITS	Inverter stations will be located throughout the PV array to convert the DC power generated by the panels into AC power. Similar power conversion systems will be integrated with the BESS.
ON-SITE SUBSTATION	The point of connection to the national grid is via a new substation, constructed within the project footprint to step up the voltage from the PV array and BESS to the level of the national grid (150 kV). It will include transformers, switchgear, and control buildings.
GRID CONNECTION	The proximity to the national was a key factor in selecting the solar farm site. The project will connect over approximately 300 m to the existing 150 kV transmission line along the site southern boundary, requiring a new transmission tower within or near the site. This

location maximizes use of existing infrastructure, minimizes impacts on the community and biodiversity, and reduces overall costs.

CABLING

The cabling for solar panels is installed both above and below ground. Wiring that connects the panels within each row is run above ground, secured to the mounting structures for ease of access and maintenance. However, the main electrical cables that carry power from the solar arrays to inverters, transformers, and the grid connection point are buried underground to protect cables from weather, physical damage, and interference, while also improving site safety and aesthetics.

ANCILLARY FACILITIES

PERIMETER FENCING

The project area (which is less than one third of the allocated 350 ha project area) will be secured with perimeter fencing approximately 2 to 2.5 m in height. Secure fencing is standard industry practice around the world for security, safety, and protection of both equipment and people. Additionally, fencing protects the facility from potential damage by livestock and wildlife and is commonly required by lenders and insurance providers.

ACCESS AND INTERNAL ROADS

A primary access will be constructed from the main coastal highway to the project area. As the site borders the coastal highway, the primary access road is short. A network of internal unpaved roads will be developed for maintenance and security access.

PERIMETER ROAD - PUBLIC RIGHTS OF WAY (PROW)

To maintain community access to the beach, the owner will construct an unpaved perimeter road along the outside of the fence line - currently planned along the eastern boundary - connecting the national highway to the shoreline. This new route will replace the existing dirt path through the site, which will be closed as a result of the solar farm development.

ANCILLARY BUILDINGS

An operations and maintenance (O&M) building, warehouse, and security gatehouse will be constructed on-site.

WORKER ACCOMMODATION

The Project will rely largely on local labor. Consequently, most workers are expected to commute daily from nearby communities, and on-site accommodation will not be required for the majority of the workforce. Senior construction management staff are likely to be housed in rented accommodation in Dili or in nearby towns, depending on the availability of suitable housing. Overall, dedicated worker accommodation at the project area will be required only for a small number of personnel.

DRAINAGE INFRASTRUCTURE

The solar farm is situated in a low-lying area that naturally receives runoff from the surrounding catchment. The site core is the valley bottom, which carries shallow flows in multiple shifting channels north to the coast. The site design includes a network of engineered

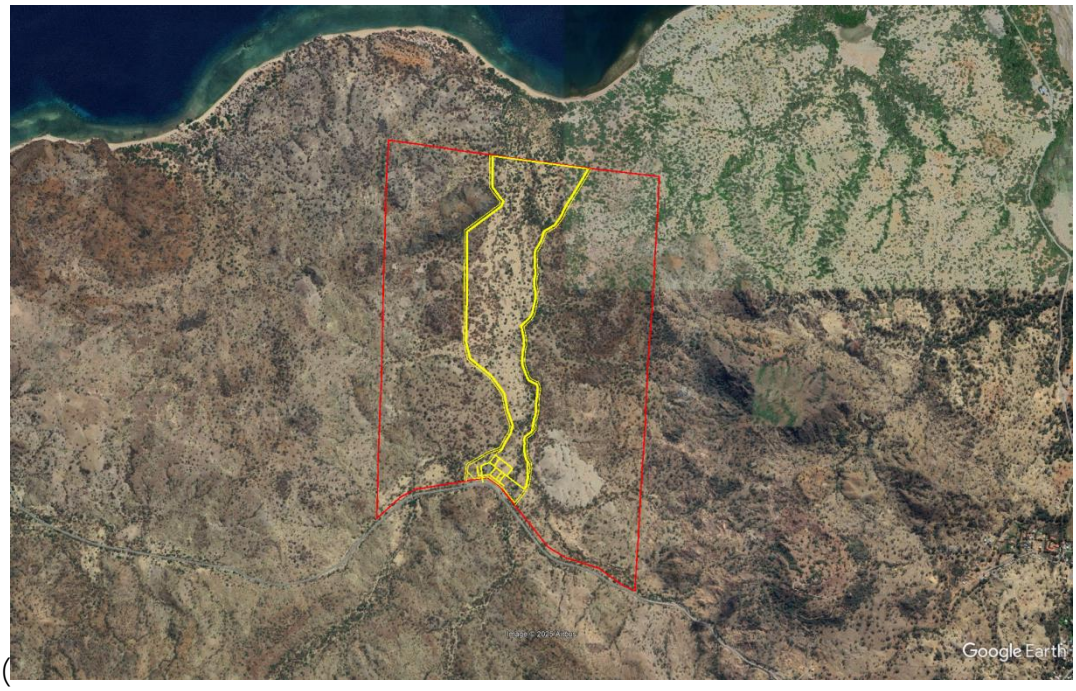
collection channels and one or more main flood channels to convey collected runoff northward. Since concentrating flows and discharging them from hard-lined concrete outfalls directly on an unconsolidated beach would create a high risk of erosion across the remaining 200 to 400 meters of coastal zone terrain, the design should include compact, purpose-designed transition to manage velocity, sediment, and debris. This will reduce flow velocity and minimize potential channel incision and beach erosion.

2.2 Delineation of Area of Influence

In line with IFC Performance Standard 1, the project's Area of Influence (AoI) must be systematically defined to encompass all areas subject to direct, indirect, and cumulative impacts. For this Supplementary ESIA, the AoI is defined to include the following three areas, as described below (1) Primary Project area; (2) Area of Direct Influence, and (3) Dili-Laleia Road Corridor.

Primary Project area

The 350-hectare land parcel where all primary project components (PV array, BESS, substation, buildings) will be located



(Figure 2-1). This area will experience direct impacts from land clearing, construction, and operational activities.

Area of Direct Influence

This includes the primary project area plus adjacent areas that may be directly affected by project activities (Figure 2-2). These include:

- Adjacent coastal area, including the beach and nearshore marine environment, which community members access via informal paths through the site for fishing and the collection of driftwood.
- Surrounding grasslands and hillsides that serve as a broader ecosystem for livestock grazing by communities from the Sucos of Haturalan and Lifao (and to a lesser decree Suco Cairui, which is across the coastal road, about 10 km to the south and only accessible via dirt road).
- Downstream drainage paths, ephemeral creeks, and the seasonal pond-lagoon at the northern seaward side of the project which receive surface water runoff from the project area.
- Sucos of Haturalan and Lifao, approximately 3 km away, are the nearest residential receptors and have livelihoods that are most directly linked to the project area.

Road Corridor (Dili-Laleia)

The primary port for importing project components is the Port of Dili, the main gateway for large-scale imports into Timor-Leste. From Dili, materials will be transported along the national coastal road to the project area in Laleia, Manatuto Municipality. The road corridor (Figure 2-3), as the route of material movement, constitutes a key element of the project's logistics and supply chain.

Under IFC PS1, the Area of Influence includes all areas where project activities may cause environmental or social impacts, directly or indirectly. Transportation routes, especially major roads used for heavy material delivery, are commonly considered part of the AoI because they can be associated with impacts such as road wear, traffic disruptions, safety concerns, and local community interactions. Therefore, the road corridor from the Port of Dili to the project area is included within the AoI for the supplementary ESIA. This ensures potential impacts related to transportation, such as increased traffic and safety considerations, can be appropriately assessed, managed, and mitigated. Additionally, engaging with local communities along this corridor may be necessary to address any social impacts associated with increased traffic or road use.

The area of indirect and cumulative influence is the broader area where the project's indirect or cumulative impacts may be felt, but which is excluded from the AoI in the Supplementary ESIA. This includes:

- Entire Laleia Administrative Post, regarding potential workforce influx, strain on local services, and cumulative impacts from other planned developments (e.g., proposed fishery infrastructure installation and shipyard).
- National electricity grid, which will be indirectly and positively affected by the injection of renewable energy.

With respect to the latter cumulative nationwide impact, development of the Laleia Solar IPP Project represents a significant step forward for Timor-Leste in achieving a more sustainable, secure, and inclusive energy future. By partially replacing costly and environmentally less favorable diesel power generation, the project contributes to multiple national priorities and delivers wide-ranging benefits to society.

2.3 Project Benefits

Economic Benefits

Transitioning to solar energy reduces the country's dependence on imported diesel fuel, resulting in substantial cost savings for the national utility and the government. These savings can be redirected towards other essential public services such as health, education, and infrastructure. The project also has the potential to create new job opportunities during both the construction and operational phases, contributing to local economic development and skill building.

Environmental and Social Benefits

Solar power generation produces no direct greenhouse gas emissions or local air pollutants, in contrast to diesel generators (Figure 2-4). By increasing the share of clean energy in Timor-Leste's energy mix, the Laleia Solar IPP Project will help reduce the nation's carbon footprint, improve local air quality, and support the government's commitments to climate action and sustainable development. Access to cleaner and more reliable electricity will improve quality of life for communities.

Energy Security and Reliability

Expanding domestic renewable energy capacity enhances Timor-Leste's energy security by diversifying supply sources and reducing exposure to volatile global fuel prices. The integration of solar power can also improve the stability and reliability of the national grid, benefitting households, businesses, and public institutions across the country.

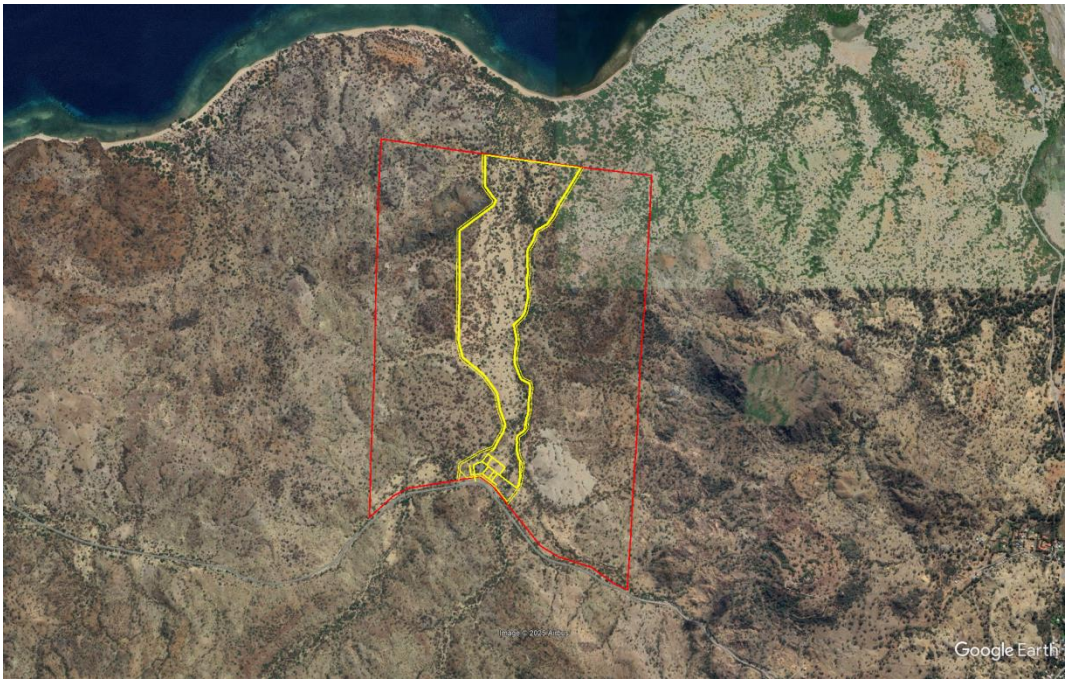


Figure 2-1 350 ha Allocated Project area in red (Actual 65 ha project footprint in yellow – largely limited to flat valley area and less than one-fifth of allocated total area)

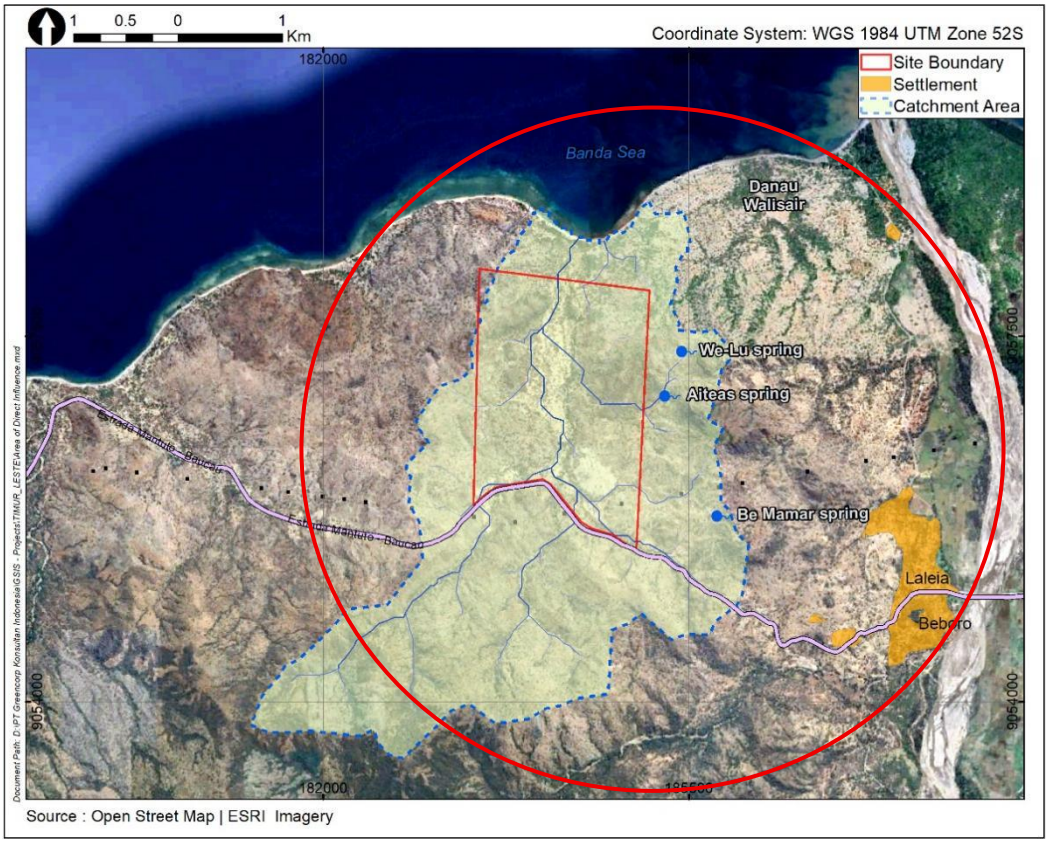


Figure 2-2 Area of Direct Influence

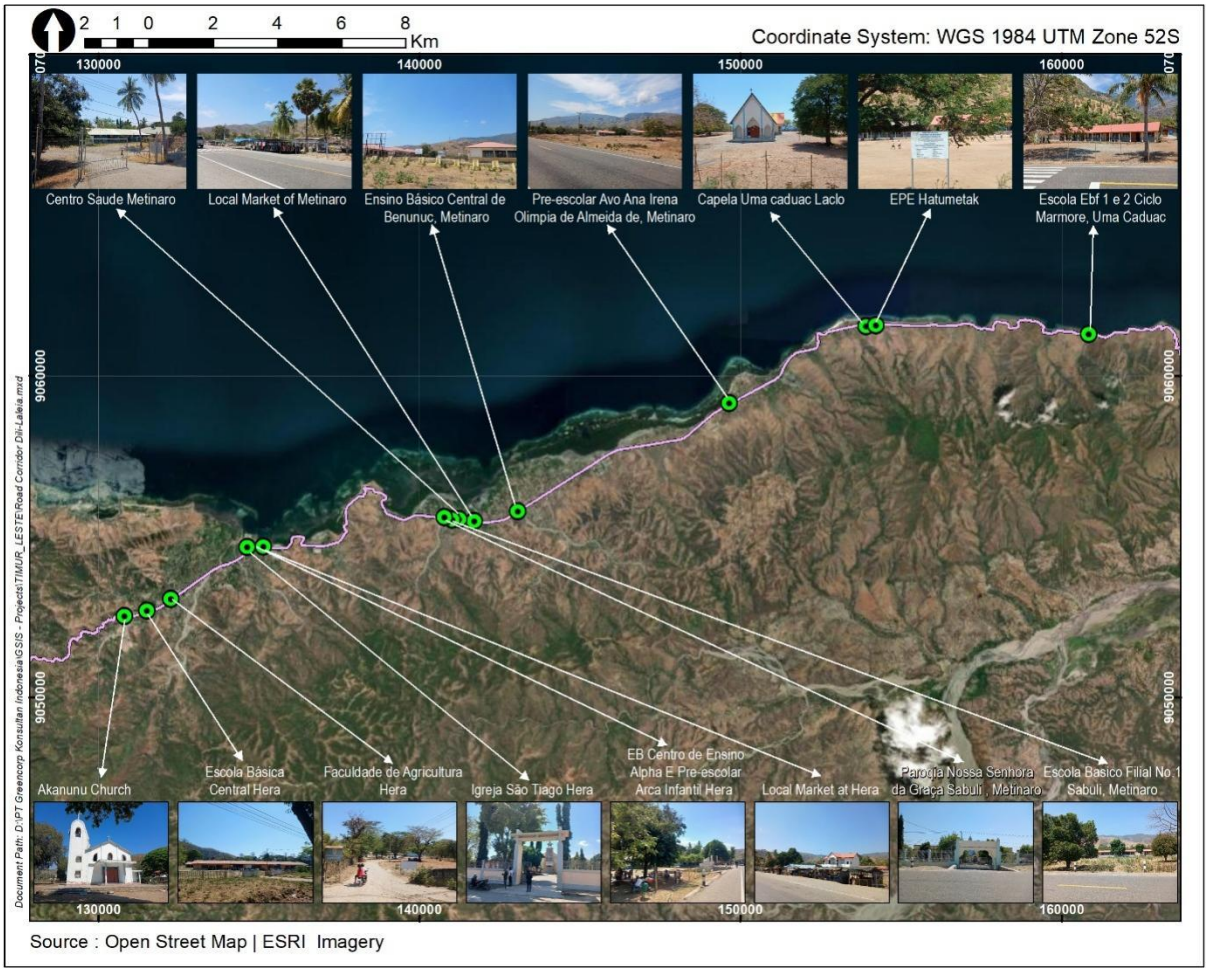


Figure 2-3 The Road Corridor Dili-Laleia and Sections of Particular Sensitivity

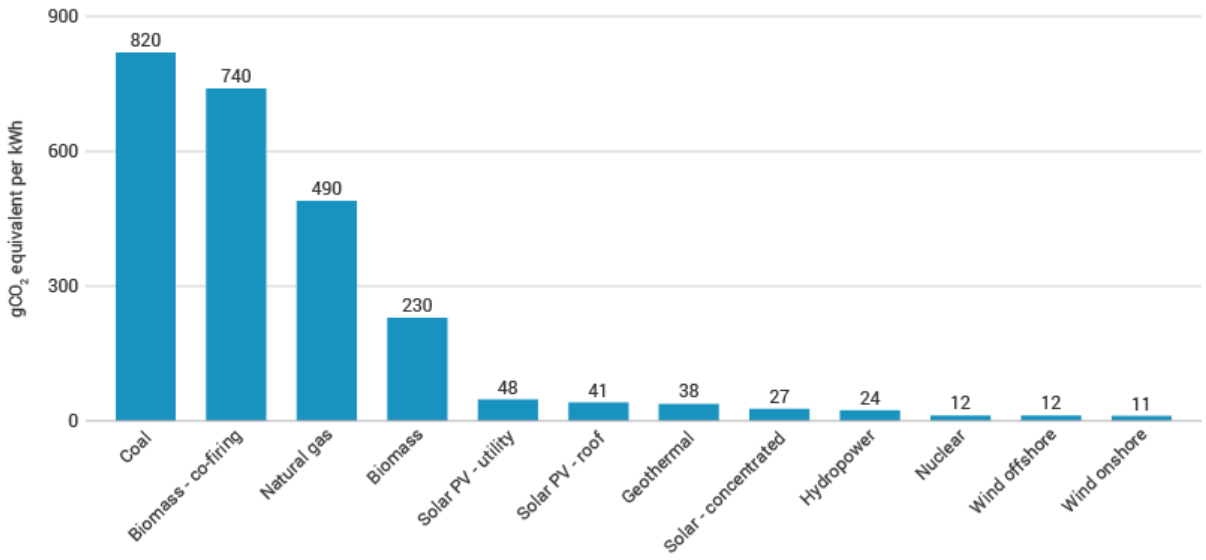


Figure 2-4 Average Life-Cycle Greenhouse Gas Emissions per Energy Source

(Source: IPCC)

3 ENHANCED ALTERNATIVES ANALYSIS AND SITE SELECTION JUSTIFICATION

3.1 'No Project' Scenario

The "No Project" scenario, which entails not developing the Solar Power Plant, has been evaluated and deemed not a viable option for Timor-Leste. The country currently faces a significant energy deficit and is heavily reliant on expensive and environmentally detrimental diesel-based power generation. The existing thermal synchronous generation capacity of 262.4 MW primarily utilizes diesel fuel. Continuing with the "No Project" scenario would result in:

- *Continued Energy Deficit:* Hindering national development and economic growth.
- *Increased Greenhouse Gas (GHG) Emissions*: Perpetuating reliance on fossil fuels, contrary to global climate goals and Timor-Leste's commitment to sustainable development. The project is projected to avoid approximately 2.5 million tons of CO_2 emissions over its 25-year lifespan, or roughly 100,000 tons per year.
- *Higher Electricity Costs*: Continuing to operate a cost-intensive power supply, which negatively impacts households and businesses.

The project will diversify the power generation mix, increase the percentage of clean energy, and improve the stability of the national grid. These positive environmental and economic benefits of the project strongly outweigh any value of the "No Project" alternative.

3.2 Expanded Rationale for Site Selection

The 2024 EIS (Section 8.2) identified the Laleia site for its strong technical and economic attributes, including high solar irradiance, proximity to the 150 kV transmission line, good road access, and relatively flat terrain suitable for large-scale solar development. However, a major shortcoming of the EIS was its failure to consider the site's importance for local livelihoods. The area somewhat inaccurately described as "barren," is in fact actively used by local communities for livestock grazing, firewood collection, tamarind harvesting, and access to the coast for fishing—resources vital to local households.

While the Laleia site is state-owned, local communities hold customary rights to utilize the land, as recognized under Timor-Leste's legal framework, including Law No. 13/2017, which acknowledges informal property rights and communal land use based on local customs.

This supplementary assessment revisits the alternatives considered in the original site selection process. Four sites were evaluated: three in Manatuto and one in Baucau. Even as the Laleia site stood out for its technical merits, the alternative sites posed greater environmental and social constraints, such as higher population density, more intensive agriculture, increased risk of displacement, and higher biodiversity values. Some alternatives were too small to accommodate the project, while others would have required physical resettlement—a more severe impact than the economic displacement associated with the Laleia site.

Field studies and community profiling for this supplementary ESIA confirm that land use at Laleia is extensive (grazing) and does not involve intensive agriculture or permanent residences. The impacts,

though potentially significant for some households, can be addressed through targeted livelihood support and community development measures, as detailed in Section 7.2.

Ultimately, the selection of the Laleia site is justified as avoiding physical resettlement and presenting manageable social impacts for which effective mitigation and compensation strategies can be implemented, in accordance with IFC PS5. Key characteristics of the selected site are compared with the two other top-ranked sites in Table 3-1 below.

In addition, Table 3.2 provides a comparative scoring table that justifies the selection of the Manatuto (Laleia) site over the next best Baucau alternative, using transparent criteria consistent with IFC PS1 and the ADB SPS Annex A approach for alternatives analysis.

Table 3-1 Updated Site Comparison

Category	Manatuto (Laleia)	Baucau	Liquica
Land Ownership	100% publicly owned state land (~350 hectares). No private ownership claims or disputes.	100% publicly owned state land (~153 hectares). No private ownership issues.	Mixed ownership: part government-owned (hillside areas) and the rest held by ~10 private families. Only ~30 ha is available for the project on the privately owned portion, which limits expansion.
Land Use (Current)	Vacant land with no productive agriculture. The area is essentially uninhabited and not cultivated; however, locals occasionally collect firewood and graze livestock there.	Barren, uncultivated land with natural shrubs and trees (hard limestone ground). Not suitable for cultivation due to rocky soil. The site is currently used as an informal dumping ground for solid waste.	Mostly uncultivated land with wild vegetation (significant forest cover of eucalyptus, tamarind, soursop, etc.). No active agricultural use or settlements on-site – one family claims the land for non-residential purposes, but there is no formal productive use.
Terrain & Physical Features	Predominantly flat coastal and flood plain, with mostly even terrain requiring minimal leveling. The site lies in a broad valley between the main road and the coast, with a large flat central area bounded by hills to the east and west. Soil is alluvial (gravelly/clayey) and generally suitable for construction.	Generally flat topography with no need for major filling. However, the surface is composed of hard limestone rock with rocky outcrops. Significant excavation/blasting would be required for civil works – leveling the hard rock could add ~20–30% to construction costs.	The site is an inland valley floor that is relatively flat, requiring no substantial filling or grading. It is surrounded by higher terrain (hills on either side of a river valley). The ground is stable and appears suitable, though geotechnical tests are needed to confirm soil bearing capacity.
Accessibility	Excellent accessibility. The site is directly adjacent to a national main road (Manatuto–Baucau highway), providing easy access for construction and operation. No additional roads are needed for site entry.	Moderate accessibility. An existing access road reaches the site, but it is in poor condition. Upgrades and rehabilitation of this road will be required to handle heavy equipment and regular maintenance traffic for the project.	Poor accessibility. There is no existing access road to the site. Currently the only approach is via a dry riverbed, making access difficult (during the wet season, the path floods and is passable only on foot). A new access road would

Category	Manatuto (Laleia)	Baucau	Liquica
			need to be constructed to enable project development.
Hydrology	Several minor dry watercourses (gullies) cross the site. In the rainy season, these turn into small streams (~4–5 m wide) that flow through the area, causing seasonal flooding over the flat plain. Drainage infrastructure is needed – a channel or levee around the site is preferable to divert floodwaters, adding to project cost. The coastal location means floodwater eventually drains to the sea, and flooding subsides within a few hours.	No significant surface water bodies on-site and no known flooding issues. The site's elevation and terrain allow natural drainage without inundation. Unlike the other locations, Baucau's site does not experience seasonal standing water. Standard stormwater management will suffice for this site.	The site is in an upland river valley. It contains small creek beds that are mostly dry outside the rainy season. During heavy rains, these creeks become flowing streams (shallow, intermittent) that run through the valley. While the site itself is not known to flood deeply, runoff can be strong, and the lack of formal drainage means water can temporarily impede access. Flood risk is mainly related to river swells and upstream runoff rather than on-site ponding.
Ecological Aspects	Moderately vegetated with wild trees (eucalyptus, tamarind, and similar native species) scattered across the site. Some habitat for common fauna, but no sightings of rare or endangered species were reported. While the site is *not* located within any protected area, it slightly overlaps with the Lamsanak PA terrestrial buffer zone. The nearest ecologically sensitive site is the Kaidaba KBA (~6 km away), which is a marine habitat for the Humphead Wrasse (an endangered fish). Tree and shrub clearing will be required for	Barren scrubland with hardy shrubs and scattered trees (including wild eucalyptus). No cultivated or fruit-bearing trees are present, and wildlife is limited to common species. Not located in any KBA or reserve. (The Kaidaba KBA on the coast, ~6 km away, is the closest protected area.) Vegetation clearance will be needed (the site has significant woody growth to remove, e.g. *ai bubur* (black eucalyptus) trees and brush). However, no endangered species or critical ecosystems are known on the site, reducing ecological sensitivity.	Densely vegetated compared to the other sites – considerable forest cover exists on and around the site. Tree species include eucalyptus, tamarind, soursop, and other secondary forest trees; some wild fruit trees were observed. Wildlife likely includes birds and small fauna typical of secondary forests. While the project area itself is not inside a protected area, Liquica municipality contains nearby conservation sites. Notably, Mount Fatumasin, Lagoa Maubara, and Mount Guguleur are protected areas in Liquica;

Category	Manatuto (Laleia)	Baucau	Liquica
	construction, but there are no critical habitats at risk on-site.		the Fatumasin Important Bird Area (KBA) is also in the region. None of these overlap the site, but they indicate higher biodiversity in the general area. The project will require clearing a portion of the forested land. Care will be needed to avoid impacts on any species utilizing the adjacent habitats (e.g. birds from the KBA).
Climate Risk/Vulnerability	Overall Risk Level: *Medium*. Climate risk modeling (ADB's Aware tool) rates Manatuto as medium risk for future climate hazards. The primary concerns are flooding and precipitation increases under climate change, as well as potential landslides in surrounding hills and changes in solar irradiance patterns.	Overall Risk Level: *High*. The Baucau site is classified as high climate risk by modeling assessments. Projected increases in intense rainfall and storm events elevate the risk of erosion and landslides in the vicinity. However, the site itself has moderate susceptibility to flooding and landslide damage (being on flat, rocky ground).	Overall Risk Level: *High*. Liquica is also assessed as high risk to climate change impacts. The area is prone to heavy precipitation events and flash flooding, and the steep terrain around the valley raises the possibility of landslides or mudflows. Increased rainfall intensity could periodically cut off access (as noted).
Power Evacuation Infrastructure	A high-voltage 150 kV transmission line runs very close to the site. Only a short transmission connection (~ 300 meters) is required, since the main line passes along the site's southern border. This makes power evacuation straightforward at Manatuto.	A 150 kV transmission line crosses through the Baucau site. Like Manatuto, a new substation within the project area can tie directly into the 150 kV line for grid connection. This proximity of the grid infrastructure means Baucau can export power with minimal new transmission build-out.	No existing high-voltage infrastructure nearby. There is no 150 kV line in the immediate vicinity of the Liquica site.
Historical/Religious Heritage	No known historical, cultural, or religious heritage sites are present at the Manatuto	No known cultural or religious heritage features on or near the Baucau site. The land	No heritage sites lie within the Liquica project area itself. However, a small

Category	Manatuto (Laleia)	Baucau	Liquica
	site. Surveys indicated no sacred places or objects within the project footprint, and there are no public heritage landmarks in the immediate area. Three culturally important springs are about 500 m to the east of the site, well outside the project area.	is undeveloped and does not host any cemeteries, sacred trees, or monuments according to local consultations.	community cemetery is located ~200 m away from the site boundary. This cemetery would not be physically affected by the solar project (it lies outside the project area), but its presence will require sensitivity during construction (e.g. avoiding any disturbance and allowing community access).

Sources: Environmental and Impact Statement (EIS) Report, Nov 2024 (Table 8.2 and related analysis); Comparative site risk analysis in EISA (Table 8.3); Timor-Leste National Directorate for Environment – Project Scoping findings. Official government statements confirm the Manatuto (Laleia) site selection and land acquisition by EDTL.

Table 3-2. Site-Selection Comparison for the Laleia Solar IPP

Criterion	Weight (%)	Manatuto (Laleia)	Baucau Alternative Site	Justification / Notes
Proximity to Grid Connection Point	25	High (5/5) – <1 km from existing transmission line	Moderate (3/5) – >10 km from nearest grid substation; new high-voltage line and easements required.	Laleia provides direct, low-loss interconnection with minimal land or forest disturbance.
Land Availability and Ownership Status	20	High (5/5) – ≈350 ha of State-owned land, uninhabited, no customary claims.	Low (2/5) – Privately owned and mixed tenure; requires multiple compensation negotiations.	Manatuto site allows rapid permitting and minimal land acquisition risk.
Topography and Construction Feasibility	15	High (5/5) – Flat coastal plain, minor earthworks needed.	Moderate (3/5) – Undulating terrain with cut-and-fill requirements.	Gentle slopes (<2%) at Laleia minimize cost and erosion risk.

Criterion	Weight (%)	Manatuto (Laleia)	Baucau Alternative Site	Justification / Notes
Environmental Sensitivity / Habitat Impact	15	High (5/5) – Modified grassland with low biodiversity; no Critical Habitat.	Moderate (3/5) – Proximity to coastal forest and potential KBA species.	Laleia avoids intact vegetation and has low ecological sensitivity.
Social Context / Resettlement Risk	10	High (5/5) – No houses within site; economic displacement only (grazing, limited tamarind and wood collection).	Low (2/5) – Scattered settlements and cultivated plots within proposed footprint.	Manatuto avoids physical displacement and associated resettlement requirements.
Access and Logistics	10	High (5/5) – Direct access via Dili–Baucau national road.	Moderate (3/5) – Requires new access road through hills.	Reduces transport cost and construction footprint.
Flood and Erosion Risk	5	Moderate (4/5) – Flat terrain with seasonal ponding; manageable with drainage design.	Moderate–Low (3/5) – Rolling terrain but higher erosion potential.	Both manageable; Laleia offers easier engineering controls.
		Weighted Total Score: 4.8 / 5 (High Suitability)	**Weighted Total Score: 3.0 / 5 (Moderate Suitability)**	

The Laleia (Manatuto) location scored highest across nearly all evaluation criteria. It offers immediate grid proximity, state-owned land with no resettlement, flat topography, low biodiversity sensitivity, and straightforward logistics. In contrast, the Baucau option would require land acquisition from private owners, a longer transmission corridor, and potentially greater ecological and social impacts. Hydrological risks at Laleia are localized and can be effectively managed through engineered drainage.

4 SOCIOECONOMIC BASELINE AND COMMUNITY PROFILING FOR LALEIA ADMINISTRATIVE POST

4.1 Introduction

This section presents the socioeconomic baseline of communities within the Laleia Administrative Post, Manatuto Municipality, forming part of the Environmental and Social Impact Assessment (ESIA) for the Laleia Solar IPP Project.

The analysis combines findings from the 2024 baseline assessment and the 2025 supplementary socioeconomic survey, which included 158 household interviews across Suco Lifau and Suco Haturalan, supplemented by key informant discussions with local authorities, community leaders, and administrative officers.

Data sources include the Timor-Leste Population and Housing Census (2022), municipal development statistics, and field observations collected during consultation sessions. This integrated baseline provides a snapshot of the area's demographics, livelihoods, infrastructure, and social systems, serving as the foundation for assessing project impacts and planning mitigation measures.

4.2 Administrative and Spatial

Located in the central part of the country, Manatuto Municipality reaches both the south and north coasts of the island. It borders the Strait of Wetar to the north; the municipalities of Baucau and Viqueque to the east; the Timor Sea to the south; and the municipalities of Manufahi, Aileu and Dili to the west. It has a population of 42,742 inhabitants (Census 2010) and an area of 1,706 km². The district capital city is also named Manatuto. The longest river in Timor-Leste, the Laclo River, reaches the sea near Manatuto, between the Ponta de Subaio and Lanessana Bay. Manatuto comprises the districts (administrative posts) of Barique-Natarbora, Laclo, Laclubar, Laleia, Manatuto and Soibada. In addition to the official languages (Tetun and Portuguese), most of the population speaks Galóli, recognized as a "national language" by the Constitution.

Laleia Administrative Post comprises three sucos or villages: Cairui, Haturalan, and Lifau. The project area and indeed the entire watershed in which it is located lies entirely within Suco Lifau (Figure 4.1). Notably, the residential area of Lifau is about 3 km east of the site; the residential area of Haturalan is more or less contiguous to the south, about 3.5 east-southeast of the site and straddling the coastal national highway at the area perceived as the "town" of Laleia. Suco Cairui, approximately 10 km south of the project area, will be only marginally affected by the project. During a community meeting held on 26 August 2025, the Laleia Post Administrator noted that around 10 individuals from Suco Cairui occasionally use the project area as a route to access coastal fishing grounds. It is also worth noting that no significant land disputes exist.

4.3 Population and Demographics

Laleia's total population is 4,192 individuals living in 858 private households, with an average household size of five (Table 4-1). The gender distribution is nearly balanced (Figure 4-2).

Table 4-1 Population and Demography

Suco	Households	Population	Population Male	Population Female	Average Household Size
Cairui	432	2,162	1,095 (50.6%)	1,067 (49.4%)	5.00
Haturalan	210	1,004	518 (51.6%)	486 (48.4%)	4.78
Lifau	216	1,026	507 (49.4%)	519 (50.6%)	4.75
Total	**858**	**4,192**	**2,120 (50.6%)**	**2,072 (49.4%)**	**4.89**

Data Source: 2022 census data

Given Manatuto Municipality rural context and the socioeconomic characteristics typical of developing regions, the population pyramid for the district resembles a "Christmas Tree," an elongated pyramid. This shape reflects high birth rates and a large proportion of children and young people, with progressively fewer individuals in older age groups due to higher mortality and lower life expectancy. Such a demographic profile is common in rural areas where families are larger, and there is limited access to healthcare and other services.

Population growth in Manatuto has been relatively modest in recent years according to census data. The municipality's population increased from about 46,619 in 2015 to 50,989 in 2022 – an increase of roughly 9.4% over seven years. This corresponds to an average annual growth rate of approximately 1.3%, which is lower than the national average growth rate of 1.8% per year over the same period. In other words, Manatuto's share of the national population slightly declined (from 3.9% to 3.8% of the Timor-Leste population) as some other regions grew faster. The relatively slow growth may be influenced by out-migration and the region's predominantly rural economy.

It is notable that Manatuto remains one of the least densely populated municipalities (about 28 people per km²). The rural character of the area also means that most of Laleia's communities are stable or growing slowly, rather than experiencing rapid urban influx. Overall, the population trend is upward but steady, without the very rapid growth seen in Dili and certain other districts.

Survey Demographics

The 2025 household survey captured a representative cross-section of residents:

Table 4-2 Survey Demography

Villages	Male	Female	Total
Lifau	55	43	98
Haturalan	29	31	60
Total	***84***	***74***	**158**

Respondents ranged from 22 to 81 years old. The most common age group was 41–59 years (50%), followed by 60–70 years (23%) and 20–40 years (17%).

Table 4-3 Age

Ages	Suco Lifau	Suco Haturala	Total	%
20 - 40	17	60	77	49%
41 - 59	49		49	31%
60 - 70	23		23	15%
71 - 85	9		9	6%
Total	**98**	**60**	**158**	**100%**

The population structure reflects a young, rural demographic, with modest growth and limited urban migration.

4.4 Livelihoods and Employment

Agriculture remains the dominant livelihood in Laleia. Households depend primarily on subsistence farming, livestock rearing, and small-scale fishing, supplemented by petty trade or casual labor.

Most households in Laleia depend on agriculture and related rural livelihoods. Farming is the main source of income for most families – primarily subsistence cultivation of staple crops (such as maize, cassava, and vegetables) and small-scale livestock husbandry. Most residents engage in daily livelihoods such as agriculture, fishing, and animal husbandry. One of the main challenges faced by farmers is the destruction of maize crops—up to a hectare at a time—by wild pigs (*fahi fuik*). Agricultural work continues despite these challenges, although maize prices remain low. Agricultural support infrastructure includes irrigation pumps for watering maize and rice fields. Nationally, about two-thirds of Timorese families rely on agriculture, and Laleia's entirely rural population is no exception.

Livestock rearing in both Lifau and Haraluton sucos remains small-scale, typically limited to a few head of cattle, goats, or pigs per household. As discussed in Section 1.3 (Land Cover and Use), the fenced project footprint will occupy approximately 100 ha of State land within a 350 ha site, representing less than 5 percent of the wider communal grazing area. The remaining land will remain accessible, and designated corridors will allow livestock movement around the facility. Consequently, there is no anticipated risk of overgrazing or loss of livelihood capacity. Minor access restrictions will be offset through livelihood-support and community-benefit measures included in the ESHSMP.

In this coastal administrative post, some households also engage in fishing and gathering of marine resources to supplement their diets and income. The coastal sucos of Lifau and Haturalan provide access to the Wetar Strait fishing grounds, so activities like artisanal fishing, shrimp catching, and seaweed harvesting contribute to livelihoods for those communities.

Aside from farming and fishing, residents earn income through casual labor (e.g. working on other people's farms or construction projects), petty trade of local products, and seasonal work. Formal employment opportunities are very limited in the project area – there are few salaried jobs, so most work is informal and based on family labor. This is reflected in low official employment-to-population ratios; nationally only about 35% of the population aged 10 and above is considered employed, a figure likely similar or lower in rural Manatuto.

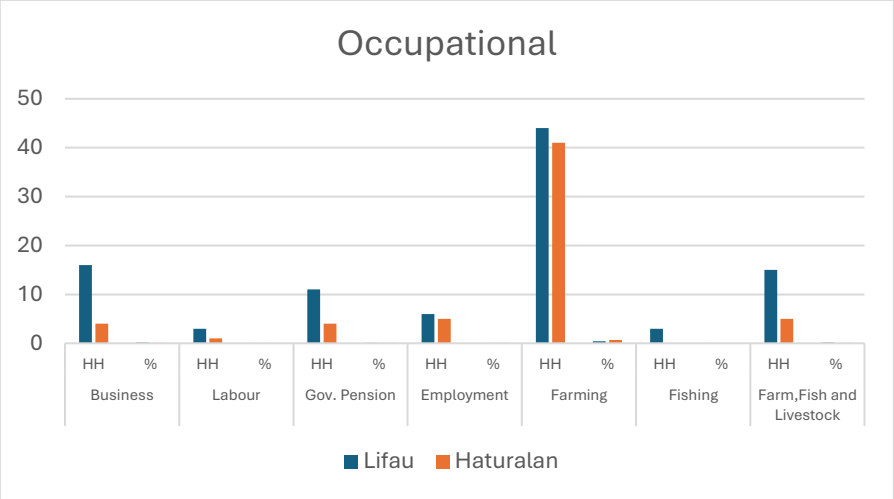
Underemployment is common, as many people are busy during planting and harvest seasons but have fewer income-generating activities in the off-season. During the dry season or between harvests, it is

not uncommon for working-age individuals (especially young men) to seek temporary work outside the suco – for instance, traveling to Dili or larger towns for construction jobs or other day labor. Such seasonal migration for work has become a coping strategy due to the lack of local job opportunities and reflects a broader rural-to-urban drift in Timor-Leste.

Women often engage in home-based livelihoods like weaving, basket-making, or selling prepared foods to contribute to household income. Overall, livelihoods in Laleia Administrative Post are characterized by a heavy reliance on subsistence agriculture, livestock rearing, and natural resource use, with limited alternative employment options.

Table 4-4 Main Occupation of Households

Sucos	Business		Labour		Gov. Pension		Employment		Farming		Fishing		Farm,Fish and Livestock	
	HH	%	HH	%	HH	%	HH	%	HH	%	HH	%	HH	%
Lifau	16	16%	3	3%	11	11%	6	6%	44	45%	3	3%	15	15%
Haturalan	4	7%	4	2%	15	7%	5	8%	41	68%	0	0%	5	8%



Communal grazing of livestock is an important part of livelihoods in Laleia. Many families raise goats, cattle, buffalo, and pigs, but individual land holdings for pasture are limited. Instead, residents rely on open communal lands – including the proposed project area – to graze their animals. Villagers typically release their animals to graze on common land and fallow fields by day and then herd them back to pens or yards in the evening. This traditional practice of open-range grazing on community lands is important because it allows even land-poor households to keep livestock, which serve as a key method of storing wealth and enhance food security (providing meat and milk).

The project area itself holds value to locals as communal land – not only for grazing but also for foraging and as a transit area to more distant pasture and the coast. As noted by the Laleia Administrator (community meeting 25 August 2025), about ten residents of Cairui Suco use the project area as a route to reach fishing spots on the coast. People also collect firewood and forest products (like wild fruits or timber) from these lands. In essence, the project area, while officially government-owned, supports subsistence needs, particularly for Lifau residents.

The primary impact concerns cattle and goats that graze, often unattended, within the project area. However, the owners of these animals are aware of their whereabouts and regularly monitor them. Based on the interview with Francisco da Costa (Metan), he declared that he personally owns more than 100 goats, 50 imported goats, and 20 head of cattle.

Prior to receiving information about this project, villagers understood that its benefits would only become evident once implementation began. The public consultation process was perceived as positive, having been conducted twice. Regarding the animals, villagers state that they can be relocated to other areas.

Overall, economic conditions remain constrained, and some households rely on loans from Kaebauk Bank, the local credit union, to meet their needs.

4.5 Settlement Patterns and Housing

The Laleia Administrative Post's population is unevenly distributed across its three sucos: Cairui (the largest, with 2,162 residents), Haturalan (1,004), and Lifau (1,026). The villages of Haturalan and Lifau are adjacent and cluster along the north coast road, effectively forming a single settlement hub. In contrast, Cairui's smaller hamlets are more isolated, located about 10 km south of the project area. Throughout Laleia, people typically live in small hamlets (aldeias) made up of extended family compounds, with households often spaced apart by agricultural fields and open land. This results in a low-density, dispersed rural settlement pattern, with Manatuto's average population density around 28 people per km².

Housing is generally simple and traditional. Most homes are single-story, constructed from timber, bamboo, and thatch, or more recently, concrete block and metal roofs in roadside areas. Traditional sacred houses (*uma lulik*) are still present, serving ceremonial and symbolic purposes. Households are often multigenerational, averaging about five members, and nearly all families occupy owner-built homes on land held by customary or informal rights. Rental housing is rare -- families without homes typically live with relatives. While some houses have access to electricity and improved water sources, many lack basic amenities. Overall, housing in Laleia reflects local traditions, limited economic resources, and the predominance of self-built, family-owned dwellings.

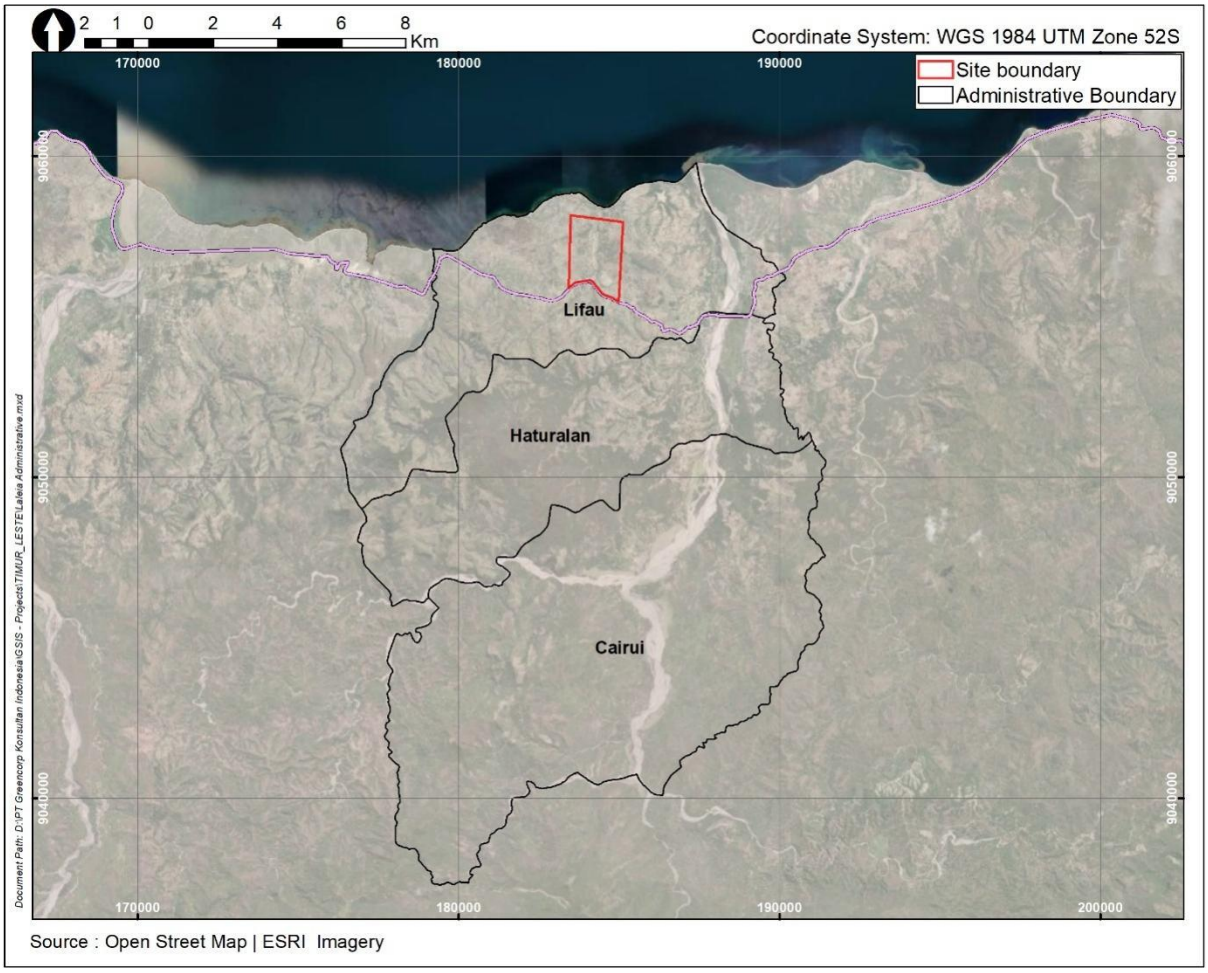


Figure 4-1 Laleia Administrative Post and its sucos: Lifau, Haturalan, and Cairui

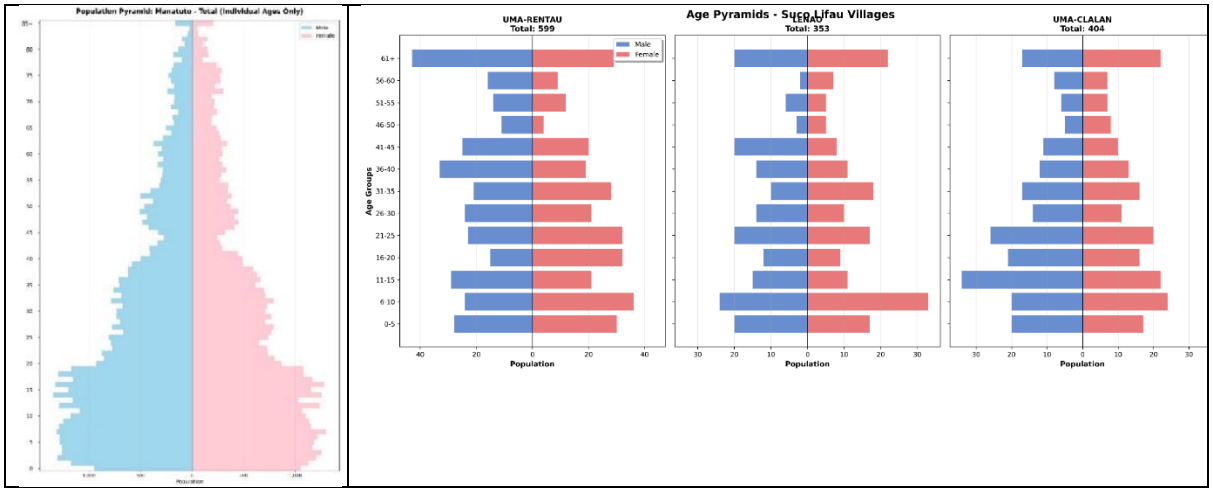


Figure 4-2 Population and Demographics of Suco Lifau 2025 (based on sign board at town hall, see Photolog)

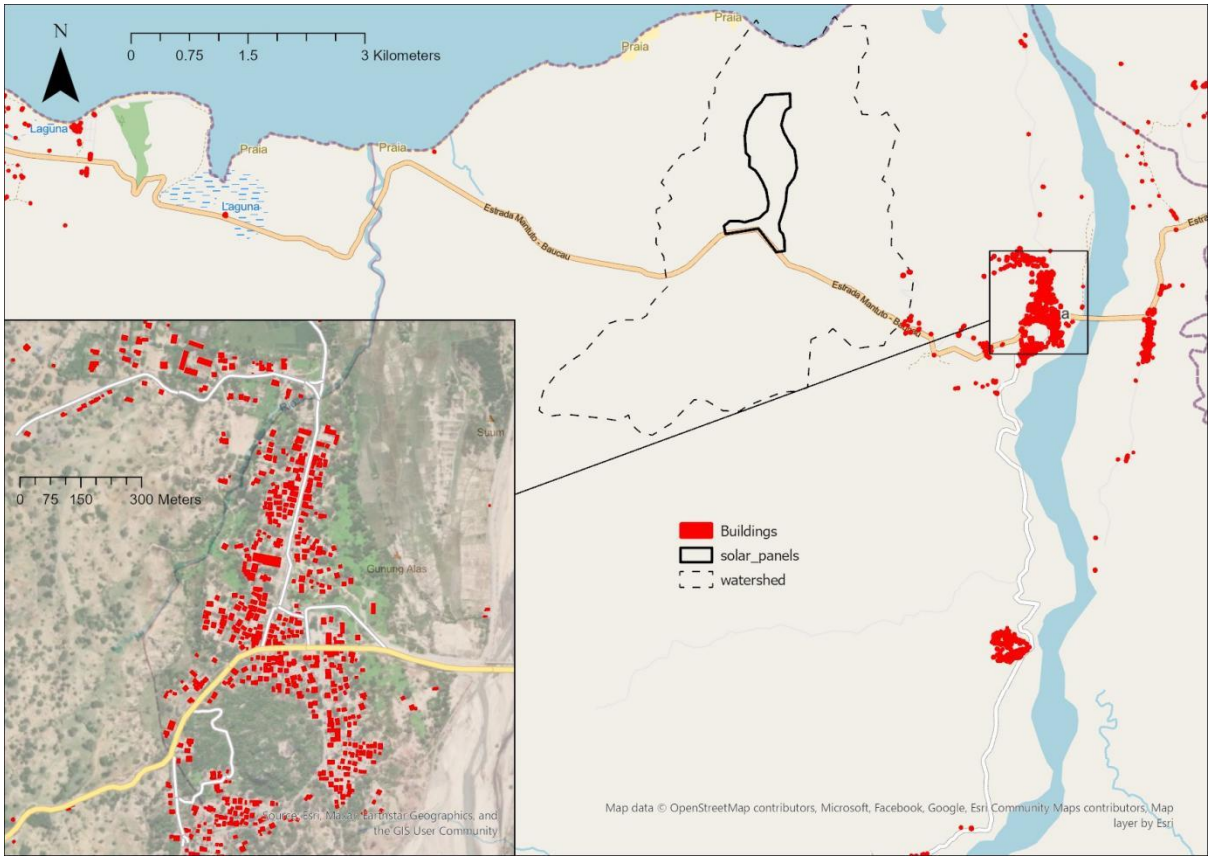


Figure 4-3 Location of Nearest Residential Areas Relative to Project area

4.6 Education

Each suco in Laleia Administrative Post - Cairui, Haturalan, and Lifau has at least one primary school, ensuring basic education is accessible within the community. Educational facilities in the area include primary (SD), junior secondary (SMP), and senior secondary (SMA) schools. However, some students, especially from remote aldeias, drop out after primary school.

Educational attainment in Laleia is improving, with rising literacy rates that mirror national trends. Most school-age children now attend primary school, but challenges remain: classrooms are often overcrowded, teaching materials are limited, and qualified teachers especially at higher levels are scarce. Some schools lack adequate water and sanitation facilities, affecting attendance and health. Girls and vulnerable children generally have equal access at the primary level, but their progression to secondary school is limited by economic constraints, domestic responsibilities, travel distance, and safety concerns, particularly during the rainy season.

Language differences and cultural attitudes can further hinder educational progress, although efforts to promote girls' education are making headway. Government and NGO initiatives, such as school feeding programs and subsidies, are helping to address these barriers. While primary education is broadly available in Laleia, supporting students to complete secondary education remains a key challenge, especially for girls and those from poorer households.

The surveyed communities in Lifau and Haturalan exhibit a wide range of educational backgrounds. Respondents' education levels span from no formal education to university degrees, with a significant number having completed primary or secondary schooling. Despite the presence of schools nearby,

challenges persist in the education sector, notably the shortage of qualified teachers and the lack of vocational training opportunities. These limitations hinder skill development and reduce access to alternative livelihood options, especially for younger and economically active members of the community (Table 4.4).

Table 4-5 Education level of Respondents

Education Level	Suco Lifau	Suco Haturalan	% from both Sucos
Illiterate	22	13	22%
Primary	17	8	16%
Pre-Secondary	7	2	6%
Secondary	44	26	44%
University	8	11	12%
Total	**98**	**60**	**100%**

4.7 Health and Healthcare Access

Health conditions in Laleia reflect broader rural Timor-Leste trends—improved basic services but persistent challenges in access and outcomes. Each of the three sucos (Cairui, Haturalan, Lifau) has a community health post offering primary care, such as vaccinations, basic treatment, and prenatal checks. For serious or emergency needs, residents must travel to Manatuto town or Dili, with journeys often delayed or disrupted by poor road conditions, especially during the rainy season.

Common health issues include respiratory infections, diarrheal diseases (linked to poor sanitation and water quality), skin infections, and parasites. Malaria has declined, but dengue fever remains a seasonal risk. Chronic malnutrition and stunting are widespread, with nearly half of Timorese children under five affected. Maternal and child health services have improved—more births are attended by skilled personnel and vaccination rates are rising—but gaps remain, especially for remote households still relying on traditional birth attendants.

Healthcare quality is limited by under-resourced clinics, periodic medicine shortages, and a lack of trained personnel. Emergency response is a major challenge, with long delays in reaching hospitals during floods or landslides. Preventive health efforts—such as nutrition education and malaria prevention—are expanding, but high rates of stunting and hygiene-related illnesses persist. Chronic diseases and mental health needs are emerging concerns, but are poorly addressed at the local level.

Overall, Laleia has basic healthcare infrastructure and shows some progress in public health, but faces ongoing barriers in staffing, supplies, and reliable access. Improving transportation, clinical resources, and outreach services will be essential to better health outcomes for the community.

4.8 Water, Sanitation, and Hygiene (WASH)

Access to clean water and adequate sanitation in Laleia Administrative Post is limited but gradually improving. Most households rely on local sources such as shallow wells, springs, or surface water for drinking and cooking. Water is also supplied by the public water utility (PAM). In the main village centers, especially in Lifau and Haturalan, some boreholes and communal taps provide improved water access, but many remote aldeias, particularly in Cairui remain dependent on unprotected sources or

rainwater. Water scarcity is common during the dry season, and contamination by runoff and latrines poses ongoing health risks.

Sanitation facilities are basic for most households. While some families in village centers have pour-flush or pit latrines, many still practice open defecation, especially in remote areas. Around 70% of rural households in Timor-Leste lack improved sanitation, a situation reflected in Laleia. Community-led sanitation campaigns and NGO projects have led to some improvements, but open defecation remains widespread, increasing the risk of waterborne and insect-borne diseases.

Hygiene practices are improving slowly, with more emphasis on handwashing and health education in schools. However, less than a third of rural households have a designated place for handwashing with soap. Water scarcity and ingrained habits can hinder good hygiene, and bathing and laundry usually take place at rivers or wells. Health education efforts have increased awareness of boiling or filtering water, but consistent practice is limited by fuel costs and traditional beliefs.

WASH challenges in Laleia stem from limited infrastructure and traditional behaviors. The lack of reliable water and sanitation facilities contributes to frequent illness, especially among young children and women. Construction activities, such as the solar project, will need to ensure adequate water and sanitation for workers to avoid straining local resources or creating new risks. There is also potential for such projects to contribute positively by supporting community WASH improvements.

Public Water System

In the main village centers of Lifau and Haturalan, the construction of a water supply system commenced on 25 May 2023 and was completed in the same year at a budget of about USD 138,000 (Figure 4-4). According to the village head, Miguel da Costa, the project has experienced delays in its implementation. The project, titled *Supply and Installation of Prefabricated Liner Tanks*, has the capacity to provide clean water to approximately 1,350 residents. However, according to various sources, the water volume and pressure are currently very low, reaching only a limited number of households. As a result, BTL, E.P. the state-owned company responsible for studying, drilling, and supplying clean water to communities—plans to drill an additional well to improve supply and ensure broader coverage.

Figure 4-4 Public Water Supply – Administrative Building and Water Tank

4.9 Infrastructure and Services

Fire-Fighting and Emergency Services

Fire-fighting capacity in Laleia is extremely limited. The nearest small fire brigade is in Manatuto town, leaving Laleia's rural communities reliant on basic community efforts in the event of a fire. Equipment and training for complex incidents, such as industrial fires at battery energy storage systems (BESS), are lacking. Any external emergency response would likely be delayed and under-resourced.

Roads and Transportation

Laleia is accessible via the main northern coastal highway, which passes through Lifau and Haturalan and provides vital year-round access to Manatuto and beyond. In contrast, Cairui is reached by a rough, unpaved road that often becomes impassable during the rainy season, severely isolating the village. Most local roads and tracks are poorly maintained, and many aldeias can only be reached by motorbike or on foot. Public transport is scarce and mainly consists of infrequent minibuses or trucks. Motorcycles are the primary means of personal transport, with most households lacking access to cars or trucks.

Electricity

Electricity access has expanded rapidly, and nearly all villages are now connected to the grid. Lifau and Haturalan enjoy near-universal household connections, while Cairui has seen recent improvements through grid extensions and some solar home systems. Although the supply is not always reliable—blackouts and voltage fluctuations are common—electricity has significantly improved quality of life, enabling lighting, communications, and refrigeration in homes and public facilities.

Communication Networks

Mobile phone coverage is generally good along the highway and in main villages, but patchy in remote areas such as Cairui. Most households have at least one mobile phone, though internet access is limited by signal quality and cost. There are no internet cafes or community Wi-Fi centers. Radio and, increasingly television are important sources of information. Traditional word-of-mouth and community meetings remain key for local communication.

Markets and Trade

There are no formal markets in Laleia. Small family-run kiosks provide basic goods in villages, with larger purchases made in Manatuto town, which hosts daily markets. Weekly rural markets and periodic trading days occur in the area and in neighboring administrative posts. Most households are largely self-sufficient, with limited surplus production or cash cropping. Farmers and fishers occasionally sell goods in Manatuto, but market access is hindered by weak transport links and lack of price information. Financial services are minimal -- banking is only available in Manatuto, though some use mobile money for remittances.

Solid Waste Management

Timor-Leste's only large municipal disposal site is the Tíbar dumpsite near Dili, which currently functions as an open dump pending rehabilitation; recycling and commercial collection services are available in Dili via Caltech Group. Outside Dili, including Manatuto/Laleia, formal collection is limited and uncontrolled dumping/burning remains common. The Project will therefore segregate wastes on site, contract a licensed Dili-based collector/recycler for transport of recyclables and residuals, and

prohibit on-site burning. Hazardous wastes (used oils, filters, batteries, e-waste) will be stored safely and exported for treatment (e.g., under the Australia–Timor-Leste Article-11 arrangement or supplier take-back), as no in-country hazardous treatment exists.

Other Services

Police presence is minimal, with serious law enforcement managed from Manatuto. Local resilience depends on strong community networks and mutual assistance, as formal emergency and social services are sparse.

4.10 Vulnerable Groups

Several vulnerable groups in Laleia Administrative Post mirror national patterns in Timor-Leste.

Women play central roles in both agriculture and the household but often have lower formal education, limited access to formal employment, and less decision-making power. Traditional gender norms create a heavy burden of domestic and farm work. Economic dependence on male relatives is common, and gender-based violence remains a concern, though government and NGO interventions are ongoing.

Children make up nearly half of Laleia's population. While strong family and community networks offer support, many face risks of malnutrition, stunting, and gaps in education, especially beyond primary school. Some children drop out early due to economic needs or health issues. Child mortality has declined but remains a challenge, with preventable illnesses still common.

Elderly people (over 60) are few and often physically vulnerable due to limited mobility, chronic illnesses, and lack of specialized care. Most are cared for by family, supported by a modest government pension. As younger adults migrate for work, some elders risk social isolation, though traditional respect for elders provides some protection.

People with disabilities face barriers to education, mobility, and participation in community life, largely due to inaccessible infrastructure and limited institutional support. Most rely on family care, and while attitudes are generally sympathetic, opportunities for inclusion and assistance are scarce. Not all are formally documented so as to access government disability pensions.

Economically vulnerable households include female-headed families and those with high numbers of dependents, who may struggle to meet basic needs.

The only indigenous / ethnic minority in Laleia is the Galolen or Galoli. But this population is recognized as culturally and linguistically Timorese, sharing common ancestral traditions. Further information is provided in the Indigenous Peoples Assessment (Chapter 5.0) below.

Community meetings and planning efforts are increasingly inclusive, with women represented on suco councils and youth engagement encouraged. Any project-related land acquisition or resettlement, including livelihood enhancement and capacity building, must pay particular attention to the needs of these vulnerable groups, ensuring equitable support and compensation.

4.11 Land Tenure and Use

Land tenure in Laleia Administrative Post is shaped by both formal government ownership and deeply rooted customary practices. Most farmland and residential plots are managed by families or clans

under traditional tenure, with boundaries recognized by local consensus and inheritance rather than legal title. Formal land documents are rare, and official land registration is still underway in Timor-Leste. Despite this, customary land rights are generally respected within the community, and disputes are usually resolved through mediation by elders or suco leaders.

Large tracts of land, including the project area, are formally state-owned but function as communal resources. Residents routinely use these lands for grazing livestock, collecting firewood, foraging, and other subsistence activities. Access to such public or communal land is considered a vital part of rural livelihood strategies and is tolerated as long as use remains non-exclusive and for personal or community benefit.

Communal land use is further governed by traditional rules and rituals, such as *Tara Bandu* (literally don't forbid), which can temporarily protect certain areas and resources from private claims and exploitation. Private land, typically house gardens and crop fields, is recognized within the community as belonging to specific families, though often without formal title. Land transactions are rare and usually informal.

While overt land conflicts in Laleia are uncommon, the lack of formal documentation creates underlying tenure insecurity. Unclear boundaries, overlapping claims from different eras, and potential changes brought by land development projects (such as fencing off state land for the solar project) could spark grievances if not managed sensitively.

4.12 Social Organization and Governance

Laleia's community leadership blends formal state structures with traditional authority. Each suco (Cairui, Haturalan, Lifau) is led by an elected Suco Chief and a Suco Council, which includes Aldeia (hamlet) Chiefs, elders, and mandated representatives for women and youth. In the project area, the village chief C*hefe Suco*) is recognized for performing his duties effectively. Women and young people have a voice in local governance, even though cultural norms may still limit their participation.

Decision-making is highly communal. Village meetings, called by suco or aldeia chiefs, are the main forum for discussing community issues, planning projects, and resolving disputes. Elders and traditional leaders (*lian-na'in*) play a respected advisory role, especially in matters of custom, land, and conflict mediation. Customary law and rituals—such as *Tara Bandu* for regulating resource use—are enforced in partnership between formal and traditional leaders.

The government-appointed Administrator for Laleia coordinates between sucos and the municipality but relies on local leaders to mobilize the community for public works and information campaigns.

Community-based organizations, although few, are important at the local level: farmers' groups, youth and women's groups, and especially the Catholic Church, which organizes both religious and social activities. Church leaders often overlap with secular leadership, helping to maintain social cohesion and support for vulnerable members.

Traditional authorities remain influential, providing cultural legitimacy to local governance and mediating conflicts through customary justice mechanisms. These culturally grounded practices help maintain harmony and reinforce shared values.

Recent government programs, such as PNDS[1] (*Programa Nasional Desenvolvimentu Suku* or, in English, National Program for Village Development), have further encouraged community participation by giving sucos a budget for infrastructure, decided through inclusive village meetings. Women and youth involvement is required by law, while their actual influence is increasing gradually with targeted support.

4.13 Religion and Cultural Practices

Religion is central to life in Laleia, with nearly all residents identifying as Roman Catholic—reflecting Timor-Leste's status as one of the world's most Catholic nations. Each suco has its own church or chapel, and parish activities—such as Sunday Mass, feast days, and catechism—structure the weekly routine and bring the community together. Religious celebrations, especially the annual patron saint feasts, are major social events that reinforce unity and identity.

Traditional cultural practices remain strong and are often blended with Catholic rituals. Many families maintain an Uma Lulik (sacred house) for ancestral ceremonies related to birth, marriage, and death. It is common for life events to include both church rituals and traditional offerings to ancestors. Community decisions and new developments, such as the solar project, may be accompanied by both Catholic blessings and traditional rituals seeking permission or forgiveness from ancestral spirits.

The Tara Bandu ceremony, which imposes customary rules (such as protecting trees or setting communal norms), is another important tradition. These events typically combine Catholic and indigenous elements, with prayers led by both religious and customary leaders.

The Catholic Church and traditional elders often collaborate in community life, supporting moral guidance, education, conflict resolution, and social justice. Church groups and catechists play active roles in organizing youth, women's activities, and community service, reinforcing values of solidarity and mutual help.

Cultural events—including weddings, funerals, and traditional dances like *Likurai* and *Tebe-tebe*—are celebrated with extended family gatherings, gift exchanges, and ritual speeches. The church frequently supports these activities, highlighting the integration of faith and tradition.

4.14 Community Safety and Security

Community consultations in Lifau and Haturalan indicate that residents generally feel safe during the day. Women, in particular, reported comfort moving about in daylight but expressed concerns about safety at night due to inadequate street lighting.

Formal security is provided by the National Police of Timor-Leste (PNTL), which implements a community policing model across the country. Community Police Councils (CPCs), operating in every suco, regularly mediate disputes and help resolve local issues—such as land boundaries, livestock movement, and petty theft—before they escalate. Serious crimes are referred to the PNTL for formal investigation.

[1] Programa Nasional Desenvolvimentu Suku is a flagship community-driven development program of the Government of Timor-Leste, launched in 2012. PNDS provides annual block grants to every suco (village) in the country for small-scale infrastructure projects, such as water supply, roads, bridges, irrigation, and community buildings.

The most common conflicts involve livestock, particularly cattle theft, with stolen animals reported to the police and subsequently brought before the courts. Generally, livestock in the area graze together without incident, as each owner is familiar with their own animals.

Official crime statistics at the suco level are scarce, but local feedback suggests that most conflicts and minor offenses are resolved through customary dialogue, *Tara Bandu* (customary law), or community meetings, with police involvement as a last resort.

Emergency response capacity is limited in Laleia. While the municipal capital, Manatuto, has a small fire brigade, rural areas including Laleia rely mainly on community self-help in emergencies. In the event of major incidents—such as a fire at the planned BESS installation—external assistance would likely be delayed.

4.15 Gender Roles and Social Inclusion

Gender roles in Laleia reflect broader rural Timor-Leste patterns. Women are actively involved in agriculture (planting, tending small livestock), household management, and petty trade, while men typically handle cattle, heavy fieldwork, and tasks such as fishing for household consumption. This division of labor is observed across local aldeias, such as Uma Clalan (Lifau), where women raise small animals and cows and men manage bulls.

Decision-making at the community level is increasingly inclusive, with national reforms requiring women and youth representation on suco councils and community policing forums. The National Police (PNTL) has introduced a Gender Strategy to promote women's participation in the force and to support gender-responsive services, important for creating safer and more accessible reporting pathways for women in rural areas like Laleia.

Both women and men informally access state and communal land for essential activities such as fuelwood collection, tamarind harvesting, and livestock grazing. Women report positive relationships with local health posts and awareness of family-planning services, though their night-time mobility is constrained by poor lighting.

Local norms place high value on customary ceremonies, sacred places, and access routes, which are important for all community members, including women, elders, and herders. While gender-based violence (GBV) is under-reported at the local level, national partners emphasize the importance of gender-sensitive community policing and referral systems for survivors.

4.16 Natural Resource Use and Ecosystem Services

Local livelihoods in Laleia, particularly in Lifau, rely heavily on land and coastal resources. As stated elsewhere, the project area, though state-owned, is used informally by villagers for grazing livestock, collecting fuelwood, and harvesting tamarind. Coastal households supplement their diets through small-scale fishing and occasional seaweed harvesting, making these provisioning services (fodder, fuel, food) important for household resilience.

The site ecosystem services include seasonal water retention and sediment deposition provided by ephemeral creeks and a floodplain that fills during the rainy season. While these features help support natural processes, they also pose flood risks.

Laleia, like much of Manatuto, faces environmental challenges from flash flooding, sedimentation, and soil erosion—pressures exacerbated by upstream deforestation and shifting cultivation. Ongoing tree-cover loss increases the need for catchment-sensitive land management.

4.17 Previous and Ongoing Development Initiatives

Several government and donor-led projects have directly impacted Laleia in recent years. Notable government investments include the Laleia River Protection project (2017) and road rehabilitation works, such as the Jct. A01 Laleia to Lifau Tasi upgrade, which have improved local mobility, flood safety, and market access for agriculture and fisheries.

At the suco level, communities report positive experiences with prior assistance from organizations like JICA (rice seed support) and World Vision (support for savings groups and cooperatives). Residents emphasize the importance of being included in decision-making, transparent project communication, and prioritizing local hiring. There are high expectations for future initiatives to offer skills training and demonstrate corporate social responsibility through small community projects.

WASH and social services have seen incremental improvements through national programs led by UNICEF and other partners, which have expanded access to basic water and sanitation in rural areas and schools. While not all such interventions have reached Laleia directly, they provide useful models for hygiene promotion and facility upgrades that future projects in the area can build upon.

Laleia has also benefited from the national *Programa Nasional Desenvolvimentu Suku* (PNDS), which provides annual grants for community-prioritized infrastructure projects. Under PNDS, residents have participated in planning and implementing works such as water tanks, small bridges, and drainage improvements. The program has strengthened local experience with participatory development, financial management, and transparency, shaping community expectations for new initiatives and reinforcing the importance of inclusive processes.

4.18 Migration and Mobility

Patterns of migration in Laleia reflect broader trends in Manatuto and Timor-Leste. Community consultations report significant youth out-migration to Dili and overseas, particularly for work opportunities. Participation in Australia's Pacific Australia Labour Mobility (PALM) scheme is rising, with thousands of Timorese—some from Manatuto—engaged in seasonal or temporary employment abroad.

Key drivers of migration include limited local wage employment and the need for cash income, with most migrants working in construction, agriculture, or services in Dili, or taking up PALM placements in Australia. Social networks and national programs facilitate these movements, though precise suco-level data are not yet available.

The impacts of migration on households are mixed. While remittances are important for supporting food, education, and housing, labor shortages during peak farming seasons place extra burdens on women and elders. Family separation and related social challenges are noted, highlighting the need for support services for migrants and their families.

Community members in Laleia have expressed hope that new local employment opportunities—such as those offered by the proposed project—could help retain youth and reduce out-migration.

5 INDIGENOUS PEOPLES ASSESSMENT

The 2024 EIS and Social Impact Assessment (SIA) concluded that no Indigenous Peoples (IP) are affected by the project (2024 SIA, Section 5.3). This conclusion was based on local recognition and the absence of officially designated Indigenous territories in the area. However, this definition does not fully align with the broader criteria of IFC Performance Standard 7, which identifies Indigenous Peoples based on shared characteristics—such as collective attachment to territory, distinct cultural practices, and customary institutions—rather than on official government recognition alone.

This Supplementary ESIA acknowledges that, under the World Bank's Indigenous Peoples Policy (OP 4.10), the project could be viewed as operating in an area where "essentially everyone in Timor-Leste is considered indigenous." The World Bank's Indigenous Peoples Plan (IPP) for the Dili–Ainaro Road Corridor Project adopted this interpretation and concluded that an IPP was not required, provided that free, prior, and informed consultations were undertaken to ensure that local communities participate in and benefit from the project, and that any potential adverse impacts are avoided, minimized, or mitigated.

Following this precedent, the Laleia Solar IPP adopts the same principle. Consistent with the ADB Safeguard Policy Statement (2009), screening confirms the project as Category C for Indigenous Peoples, as there are no distinct or vulnerable ethnic groups within the project's area of influence that meet the ADB SPS or IFC PS7 criteria. Communities in Laleia and surrounding sucos share similar cultural, linguistic, and social characteristics with the broader population of Timor-Leste.

The project nevertheless applies the intent of IFC PS7 by ensuring that the project adheres to the specific requirements of IFC PS7, including:

- Meaningful community participation through free, prior, and informed consultations during project implementation, with ongoing engagement efforts in targeted villages (see Section 10. Stakeholder Engagement).
- Culturally appropriate benefits that respect local socio-economic conditions, beliefs, and traditional practices, with mechanisms to ensure equitable inclusion of both men and women.
- Adverse impacts on communities are minimized, mitigated, or compensated, with a grievance system rooted in traditional community structures, such as the Suco-level dispute resolution processes.
- Transparent disclosure of key project documents, including the Project Design and Environmental Management Plan (EMP), translated into Tetum and communicated through oral, visual, and written formats to accommodate low literacy levels and diverse communication needs.

The Stakeholder Engagement Plan (Section 10.2) has been designed to be culturally appropriate and to ensure potentially vulnerable groups within the community (including ethno-linguistic groups) are specifically included in consultation and benefit-sharing activities. A culturally appropriate Grievance Redress Mechanism Section 10.3) will also be established, as per PS1, PS5, and PS7 requirements.

6 BIODIVERSITY AND CRITICAL HABITAT SCREENING

The biodiversity baseline and Critical Habitat Assessment (CHA) for the Laleia Solar IPP were conducted in line with IFC Performance Standard 6 (PS6) and the ADB Safeguard Policy Statement (SPS, 2009). The assessment draws on remote sensing, desk studies, stakeholder consultation, and verification field surveys, with full details presented in the "Habitat Mapping and Critical Habitat Assessment Report" (Appendix 4). The purpose of the screening is to establish the biodiversity values present in and around the project footprint, determine whether Critical Habitat thresholds are triggered, and evaluate the potential risks of project development.

The study area for biodiversity screening was defined as the project allocated area of about 350 ha hectares (with the actual footprint being less than 100 hectares) and a wider Ecologically Appropriate Area of Analysis (EAAA) encompassing approximately 12,231 hectares (Figure 6-1). The EAAA includes the project area, adjacent coastal habitats, and nearshore marine ecosystems, thereby capturing both direct and indirect ecological interactions. Habitat mapping using Sentinel-2 satellite imagery confirmed that the project area itself is dominated by Modified Habitat.

The CHA applied PS6 criteria systematically (Table 6-1). Candidate species were first identified through the Integrated Biodiversity Assessment Tool (IBAT) and cross-referenced with previous biodiversity studies and IUCN Red List assessments. Species considered included those classified as Critically Endangered (CR) or Endangered (EN), as well as restricted-range, endemic, and migratory or congregatory species. in detailed, assessment of critical habitat species candidate is presented on Appendix 4.

Under **Criterion 1** (CR/EN species), a total of 42 species were assessed, and none were found to qualify or meet the thresholds to trigger Critical Habitat within the EAAA.

For **Criterion 2** (Endemic/Restricted-range species), total of 15 candidate species were identified through screening and literature review. None of these species meet the thresholds to qualify as Critical Habitat trigger species. Field observations and available data indicate that local population levels for all assessed species fall below the IFC PS6 thresholds, and the project area does not support globally significant concentrations.

Criterion 3 (Migratory/Congregatory species), there is evidence that the coastal area may serve as potential nesting habitat for marine turtles, including the Green Turtle and the Hawksbill Turtle. Although the EAAA does not meet the thresholds for Critical Habitat for these species, continued monitoring is recommended given their conservation importance and the low number of records to date.

Criterion 4 (Unique ecosystems) - Fringing coral reefs and seagrass beds occur offshore of the project site and are recognized as sensitive ecosystems. However, they are limited in extent and do not represent ≥5% of the global extent of any ecosystem type that would qualify as Critically Endangered (CR) or Endangered (EN) under the IUCN Red List of Ecosystems. The Ecologically Appropriate Area of Analysis (EAAA) has not been assessed as a highly threatened ecosystem, and the project footprint itself lies predominantly within modified habitats.

Criterion 5 (Evolutionary processes) - Although no specific physical features within the project footprint were identified as directly associated with evolutionary processes, the broader EAAA lies within the Wallacea biogeographic zone, a globally recognized center of endemism shaped by complex

geological history. Several endemic species recorded in the area illustrate this evolutionary significance. On this basis, Criterion 5 is considered to be triggered at the regional scale. However, within the project footprint itself, habitats are largely modified and the contribution to maintaining these processes is limited. Careful management of endemic species is therefore recommended, but the project is not expected to result in significant adverse impacts on evolutionary processes at the regional level.

Table 6-1 IFC PS6 Criteria and Thresholds for Determining Critical Habitat

Criterion	Thresholds
Criterion 1 Critically Endangered (CR) and Endangered (EN) Species	Areas supporting ≥0.5% of the global population and ≥5 reproductive units of a CR or EN species. Areas supporting globally important concentrations of a Vulnerable (VU) species, where loss would lead to uplisting to EN or CR. Areas with important concentrations of nationally or regionally listed EN/CR species.
Criterion 2 Endemic and Restricted-Range Species	Areas supporting ≥10% of the global population of a species with a restricted range (<50,000 km²).
Criterion 3 Migratory and Congregatory Species	Areas supporting ≥1% of the global population of a migratory or congregatory species. Sites sustaining species concentrations that meet Ramsar or BirdLife thresholds (e.g., >20,000 waterbirds or >10,000 pairs of seabirds).
Criterion 4 Highly Threatened or Unique Ecosystems	Areas representing ≥5% of the global extent of an ecosystem type classified as Critically Endangered (CR) or Endangered (EN) by IUCN. Other ecosystems of high priority for conservation, even if not yet formally assessed.
Criterion 5 Key Evolutionary Processes	Areas maintaining processes essential for speciation, genetic exchange, population viability, or climate refugia. Determination is based on expert judgment, scientific literature, or ecological modelling.

The Critical Habitat Assessment confirms that the EAAA does not meet any of the Critical Habitat thresholds under IFC PS6. The project footprint is situated within Modified Habitat, with only small patches of Natural Habitat present. Species of global conservation significance have a low likelihood of occurring within the site, and no populations meeting IFC PS6 thresholds were identified.

Accordingly, while the project itself does not overlap with Critical Habitat, it is situated near biodiversity values of high conservation importance. Indirect and cumulative impacts — including artificial lighting, erosion and sedimentation, drainage outfall design, and disturbance to turtle nesting beaches — must therefore be carefully managed. With adequate mitigation, monitoring, and adaptive management, residual impacts are expected to remain localized and consistent with IFC PS6 requirements.

Approximately 40 ha of the allocated project area (terrestrial portion) overlaps with the proposed Lamsanak Protected Area (as per World Database on Protected Areas or WDPA). However, the actual project footprint does not overlap, and this Protected Area has not yet been formally designated, and its boundaries remain under discussion. The authority for boundary demarcation lies with the Department of Forest Conservation under the Ministry of Agriculture and Fisheries. Because Lamsanak is primarily designated as a marine protected area, with terrestrial lands acting largely as buffer zones, the overlap in land is unlikely to pose significant ecological conflict — i.e., the terrestrial overlap does

not incorporate intact critical habitat, and ecological values are low. Nevertheless, the overlap of the allocated project area is a regulatory and administrative issue that requires resolution. Practically, the government may need to adjust or rezone the terrestrial buffer zone boundaries to exclude the development footprint or formalize the Protected Area boundary so that no conflict remains. Alternatively, the government may wish to reduce the allocated project area by 40 ha to avoid overlap.

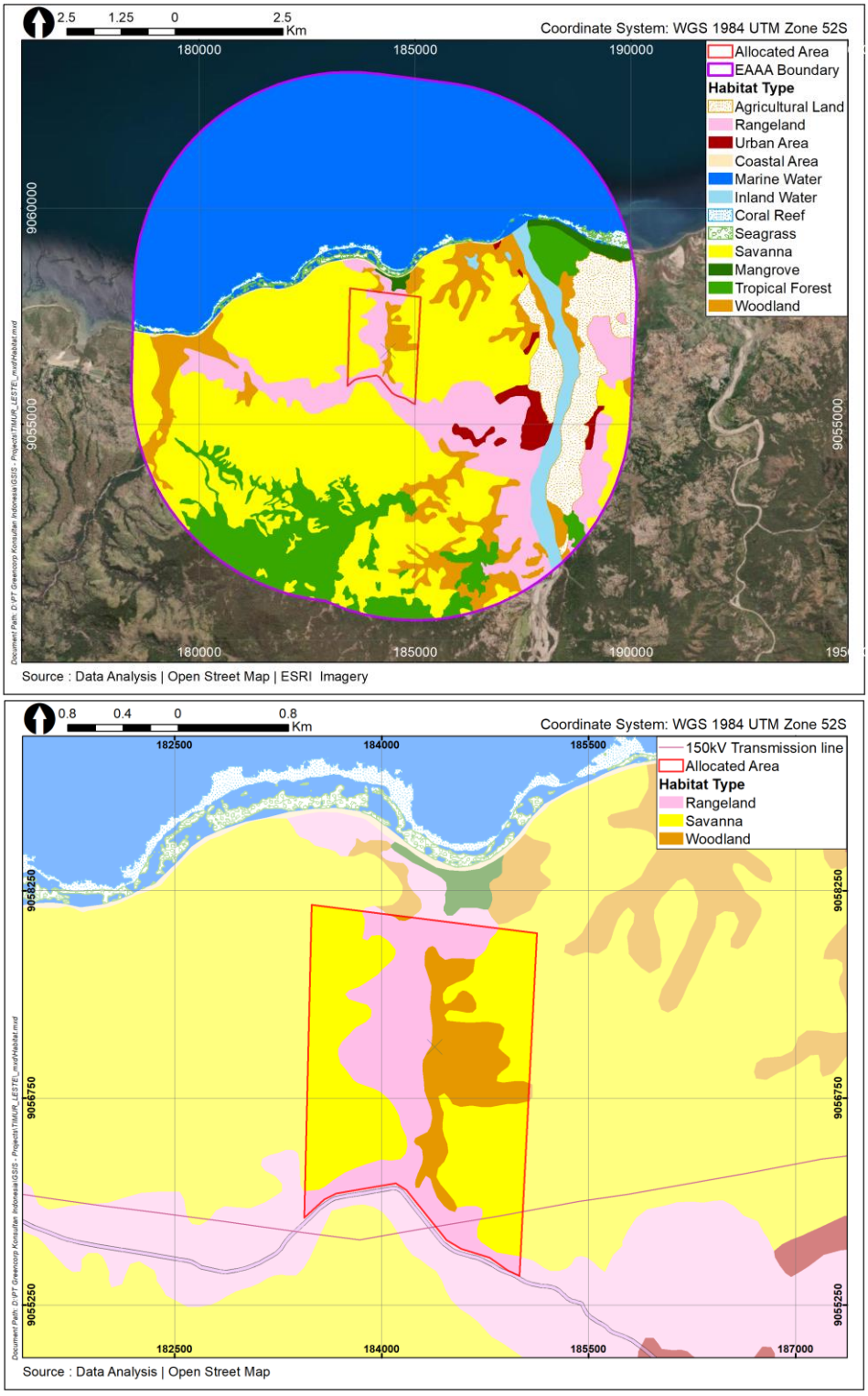


Figure 6-1 Habitat Mapping of The EAAA (above) and Allocated Project Area (below)

7 PROJECT RISK ASSESSMENT

7.1 Technical Risks

The most significant technical risk associated with the project, in terms of environmental and community health and safety, is the potential for thermal runaway and fires in the Battery Energy Storage System (BESS). Lithium-ion batteries are vulnerable to overheating from internal faults, electrical malfunctions, or external factors, which can trigger thermal runaway—a rapid, self-sustaining chain reaction that can result in intense fires and even explosions.

Standard fire-fighting methods are often inadequate, and in Timor-Leste; these challenges are compounded by limited fire-fighting resources. The nearest professional fire brigade is in Manatuto town, while the project area itself is rural and lacks adequate local fire-fighting infrastructure. Given the limited local emergency resources and the specialized nature of BESS fires, there is a heightened risk of delayed and inadequate response and uncontrolled fire spread.

Several factors influence the likelihood and severity of a BESS fire and its impact:

- Surrounding Vegetation: The project area is characterized primarily by barren / grassland with scattered trees, rather than dense forest cover. During the dry season, this grassy vegetation becomes particularly flammable, creating conditions conducive to the rapid ignition and spread of fire in the event of a BESS incident. While grass fires typically burn quickly and are generally easier to control than fires in dense forests—due to lower fuel loads and less intense heat output—they can still spread rapidly, especially under extreme windy conditions. The presence of scattered trees may contribute to localized increases in fire intensity or act as ignition points for embers carried by the wind. Though the risk of a large-scale, uncontrollable wildfire is lower than in forested areas, grass fires can still pose significant threats to nearby land, air quality, and, if unchecked, may threaten infrastructure or disrupt access routes.
- Season of Fire Occurrence: Fires during the dry season are more likely to spread rapidly and are harder to control, while the wet season may limit fire spread but can make emergency access more difficult. Strong prevailing winds - especially during the dry season - would heighten the risk of a BESS fire spreading to surrounding grasslands and trees. In addition, strong winds can carry smoke and embers toward surrounding lands and potentially residential areas, which, while at least 3 km from the site, could still be affected by poor air quality.

On an annual basis, the prevailing winds at this location are predominantly from the north-northwest and the southeast. The average wind speed over the nearly ten-year period between 1 December 2015 and August 2025, is 2.4 m/s, with the most common wind speeds falling within the 2-4 m/s range (Copernicus Climate Change Service, Climate Data Store, (2023): ERA5 hourly data on single levels from 1940 to present. Copernicus Climate Change Service (C3S) Climate Data Store (CDS)). The maximum wind speed recorded was 9 m/s. Calm conditions, characterized by wind speeds below 0.5 m/s, are infrequent, accounting for only 3.0% of the total observations. The most common single wind direction is 338°, which corresponds to a north-northwesterly wind.

The time series data from 2015 to 2025 clearly illustrates a consistent and cyclical pattern in both wind speed and direction. There is a regular annual switch between the northwesterly winds of the wet season and the stronger southeasterly winds of the dry season (Figure 7-1). The periods of highest

wind speeds consistently coincide with the southeasterly wind regime of the dry season. This predictable annual cycle appears to be a stable feature of the local climate. The location experiences a tropical wet and dry climate, and the observed wind patterns are consistent with the influence of the West Pacific Monsoon:

- Wet Season (November - March): During the wet season, the wind is predominantly from the northwest. Wind speeds are generally moderate, with a significant number of observations falling in the 2-4 m/s and 4-6 m/s ranges. This season experiences a higher percentage of calm conditions compared to the dry season, at about 5%.
- Dry Season (May - September): The dry season is characterized by a dramatic shift in wind direction, with strong and persistent winds from the southeast. This period has the highest wind speeds, with a large proportion of winds in the 4-6 m/s and 6-8 m/s ranges. It is the least calm period, with a calm percentage of less than 1%.
- Transition Season (April, October): The transition months of April and October exhibit a more variable wind pattern, with winds originating from both the northwest and the southeast. This variability leads to the highest percentage of calm conditions, as the dominant seasonal wind patterns are not fully established.

Prevailing south-easterly winds during the dry season offer a degree of protection to nearby settlements in the event of a BESS fire at the project area. With the closest residential areas, Laleia, on the nearby Laleia River, located approximately 3 km to the east and the ocean directly to the north, both fire and smoke would likely be driven away from populated areas and toward the sea. This wind pattern significantly reduces the risk of fire or smoke impacting residents, although ongoing attention to vegetation management and emergency preparedness remains essential.

Vegetation management would involve actively reducing and controlling flammable plant material around the project area to minimize fire risk, especially along the northern project boundary, which coincides with the coastal buffer zone between the solar farm and the coastline. This includes regularly removing dry or dead vegetation and pruning scattered trees, a continuation of the current firewood collection. Vegetation management also includes establishing and maintaining clear firebreaks around the solar farm to help prevent the rapid spread of fire and create safer conditions for emergency response.

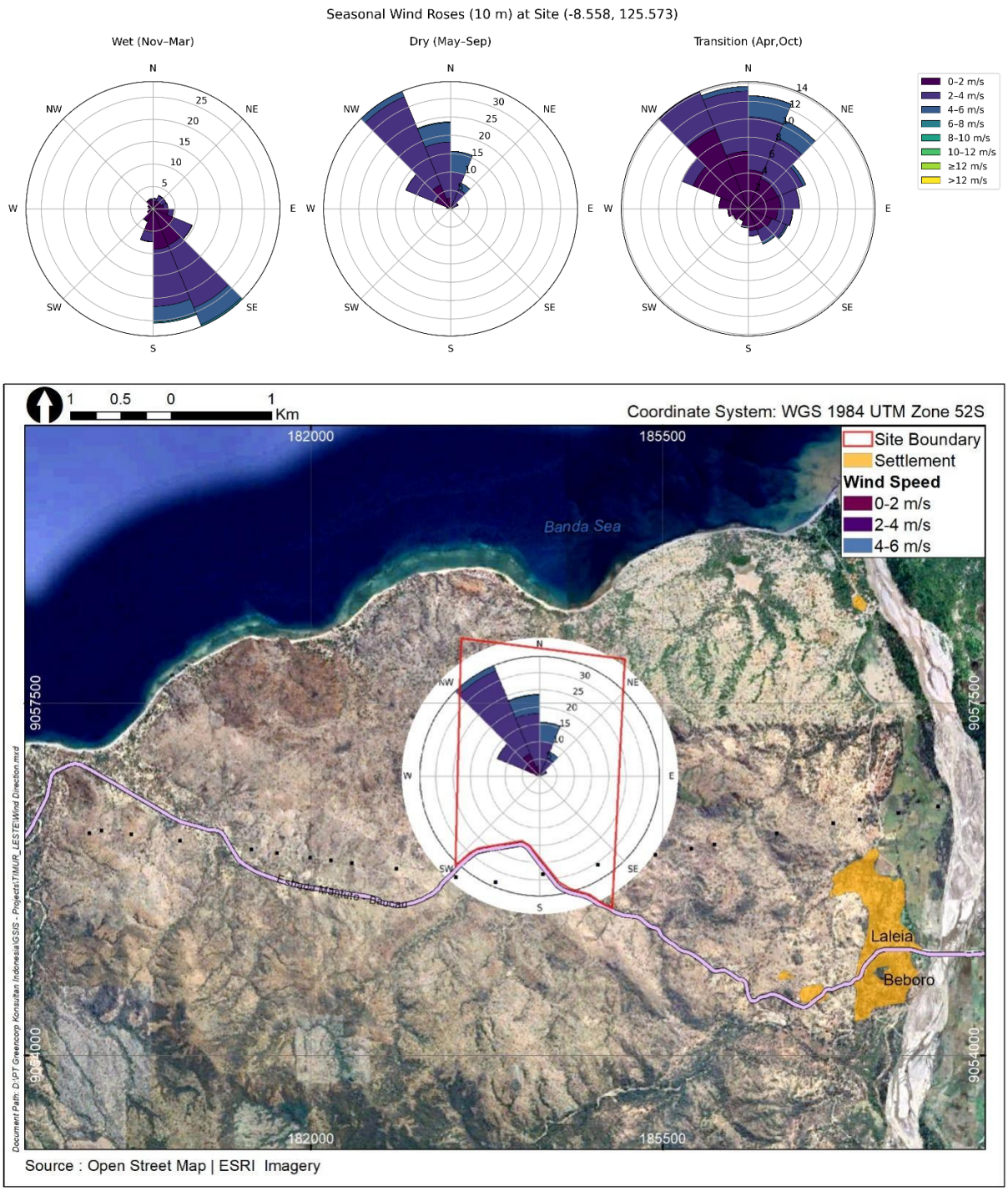


Figure 7-1 Seasonal Wind Roses at Project Location

7.2 Environmental Risks

The significance of each potential environmental or social impact is determined by considering both the magnitude of the predicted change and the sensitivity (or value) of the receptor that may be affected. Each impact is first rated before mitigation and then after mitigation (the residual impact). This semi-quantitative approach is consistent with IFC and ADB good-practice guidance.

Criteria for Evaluating Impact Significance

Criterion	Definition
Magnitude	The scale or degree of change expected in an environmental or social parameter. **High** – Large, widespread, long-term or irreversible change. **Moderate** – Noticeable but limited change; short- to medium-term; largely reversible. **Low** – Localised, short-term change of small extent or intensity. **Negligible** – Barely perceptible change within natural variation.
Sensitivity / Receptor Value	The importance or vulnerability of the receptor. **High** – Legally protected, critical habitat, residential area, or vulnerable population **Medium** – Partially modified environment or moderately sensitive community use. **Low** – Disturbed or low-use environment; tolerant receptor.

Impact Significance Matrix

MAGNITUDE ↓ / SENSITIVITY →	Low	Medium	High
High	Moderate	Major / High	Major / High
Moderate	Minor	Moderate	Major
Low	Negligible	Minor	Moderate
Negligible	Negligible	Negligible	Minor

Definition of Significance Ratings

Rating	Description
High / Major	Substantial adverse change; long-term or irreversible; requires strong mitigation and monitoring.
Moderate	Noticeable but limited effect; mitigable through standard good practice and monitoring.
Minor	Small, short-term, or localised effect; readily mitigated.
Negligible	Insignificant or imperceptible change.

Residual Impact Evaluation

Each impact is assessed twice: (1) Pre-mitigation significance – the potential significance assuming no mitigation; and (2) Residual significance – the level remaining after mitigation and management measures are applied. An impact is considered significant if it is rated Moderate or High prior to mitigation. Residual impacts rated Minor or Negligible are regarded as acceptable within the project's environmental and social management framework.

The 2024 EIS and this Supplementary ESIA conclude that the Laleia Solar IPP Project has a favorable risk profile, with no major adverse impacts. The most significant negative impacts are temporary and occur during the construction phase, while the long-term operational phase yields substantial positive environmental and social benefits.

Construction Phase Impacts (Duration: approximately 24 Months)

The construction phase will generate the most significant, albeit temporary, adverse impacts. These are primarily localized and can be effectively managed through adequate environmental and social construction management planning *(residual impact significance in italic).*

Impact and Significance	Description
Traffic Safety (moderate – short term, local)	Community health and safety risks may occur in villages located along the Dili–Laleia transport route, particularly near schools, market areas, and residential clusters where pedestrian activity is higher. While the coastal highway is generally well developed and carries low to moderate traffic volumes, increased movement of heavy vehicles during construction could temporarily elevate safety risks.
residual risk - minor and short-term in nature	These risks can be effectively minimized through implementation of a Traffic and Transportation Management Plan, including measures such as strict speed limits within villages, advance signage and flagmen near schools, scheduling of truck movements outside peak pedestrian hours, and driver induction and monitoring. With these controls in place, the residual risk to communities is expected to be minor and short-term in nature.
Air Quality Degradation (moderate – short term, local)	Airborne dust from earthworks, vehicle movement, and material handling is certain to occur, but with the nearest settlement approximately 3 km away, off-site air quality impacts can be effectively mitigated using standard operating procedures and dust control measures.
residual significance -- minor	No significant residual risks are anticipated with proper management (water spraying, speed limits, truck covers, community notice). In addition, prevailing south-easterly winds during the dry season offer a degree of protection to nearby communities. Construction dust would likely be driven away from populated areas and toward the sea.
Noise and Vibration (minor – temporary increase)	For noise, the nearest receptors/ settlements are ≥2–3 km (Lifau/Haturalan). The Project will adopt IFC EHS residential guidelines 55 dB(A) day / 45 dB(A) night at receptors; predicted levels at 2–3 km are far below these limits: Using spherical spreading (no barriers, flat ground), sound level falls with distance as: $L_2 = L_1 - 20 \log_{10}(r_2 / r_1)$

Impact and Significance	Description
residual significance in 2 km distance-- negligible	If we ask, "How loud would a source need to be at 1 m to exceed 55 dB(A) at 2 km?", the responding noise level would approximate as follows: r_1 = 1 m, r_2 = 2,000 m → $20 \cdot \log_{10}(2000) \approx 66.0$ dB L_source,1m (threshold) = 55 + 66.0 = 121.0 dB(A) Even very loud construction noise (e.g., 95–105 dB(A) at 1 m) attenuates to well below IFC receptor limits at 2–3 km. Only extremely high peak sources (≥111–125 dB(A) at 1 m) could challenge the limits, which are atypical for this project's activities.
Water Use/ Surface Water Pollution (moderate – localized and temporary during rainfall) *residual significance— minor (localized and short-term)*	Water demand for construction is estimated averaging at about 60 m³/day to be provided by truck. Construction activities pose risks of soil erosion, sedimentation, and potential fuel or chemical spills, particularly impacting seasonal watercourses and, by extension, nearby coastal coral reefs. Elevated turbidity during construction is a key concern, underscoring the need for engineered erosion, sediment, and spill control measures to prevent downstream ecological impacts. Constructing perimeter drainage and diversion channels, either temporary or permanent, around the work area is essential for intercepting and redirecting surface runoff away from exposed soils.
Vegetation Clearance and Habitat Loss (moderate)	Clearing up to 100 hectares of mixed vegetation, including wild tamarind trees, will result in localized habitat loss. While no unique or endangered species are present, minimizing disturbance remains important for ecosystem health. Although the project area is formally classified as state land and trees are legally state property, customary ownership and use rights are widely recognized in practice. In line with Timor-Leste law and international standards (e.g., IFC PS5, ADB SPS), it is best practice—and a local expectation—to provide benefit-sharing to customary tree owners. Before clearance, the project owner should conduct a participatory tree inventory, identify customary owners, and ensure benefit-sharing are fair, documented, and transparent. Additionally, a mutually agreed wood distribution plan should be developed with suco councils and affected households prior to any clearance.
Waste Generation (moderate)	Construction will generate waste streams such as construction waste, debris, packaging, scrap materials, and domestic waste from workers (estimated to be in the order of ~1,500 m³). Given Timor-Leste's limited waste management infrastructure, there is a heightened need for site-specific waste handling and disposal plans

Impact and Significance	Description
	to prevent uncontrolled dumping and environmental harm. Inert and non-hazardous waste may be stored permanently at site at a designated engineered area.
Temporary Employment (moderate positive)	The project will create temporary jobs during construction, offering a valuable economic stimulus in a region with high unemployment. Maximizing local hiring, transparency in recruitment, and fair employment practices are essential to ensure community benefit and manage expectations.
Worker Accommodation (moderate)	The Project will rely largely on local labor. Consequently, most workers are expected to commute daily from nearby communities, and on-site accommodation will not be required for the majority of the workforce. Senior construction management staff are likely to be housed in rented accommodation in Dili or in nearby towns, depending on the availability of suitable housing. Overall, dedicated worker accommodation at the project area will be required only for a small number of personnel.
Restricted Access to Coast (moderate)	The project area lies along traditional access routes used by residents of Lifau and nearby sucos to reach coastal resources north of the property, including areas for fishing and seaweed collection. During construction, temporary restrictions may occur until the perimeter access road is completed. Alternative routes to the coast remain available, although they involve slightly longer travel distances. Once the perimeter road is in place, community access to the shoreline will be fully maintained, and residual impacts on coastal access are expected to be minor and short-term.

Operational Phase Impacts and Benefits (Duration: 25 Years)

During its operational life, the project's adverse environmental and social impacts are minimal. In contrast, it delivers substantial and lasting positive contributions to Timor-Leste's climate goals and economic development.

Impact and Significance	Description
Visual/Landscape Impact (minor)	The solar arrays will introduce a modern industrial element into a previously undeveloped rural landscape. However, due to the site's remote location and absence of sensitive visual receptors (such as residences or tourist destinations), the impact is considered minor. As Timor-Leste's first large-scale solar project, the site has potential as a local landmark or educational destination. (Establishing an on-site education or visitor center could potentially enhance community

Impact and Significance	Description
	engagement and create additional social value.) Artificial lighting may potentially affect turtle nesting activities along the beach on the north, however, as the distance from the project boundary is 350 meters, and with implementation of mitigation measures to prevent light spill toward the shoreline, the impact is anticipated to be minor and controlled.
Operational Noise (minor / negligible)	Operational noise from inverters and transformers will be minimal, as the equipment is enclosed and located far from any residential area. Noise levels are expected to remain compliant with standards, with negligible impacts on the community. No further mitigation is anticipated.
Waste Generation (minor)	The Project will produce minor quantities of waste during operation, estimated to total at 100 m^3 per year. The Project will segregate wastes on site, contract a licensed Dili-based collector/recycler for transport of recyclables and residuals, and prohibit on-site burning. Inert and non-hazardous waste may be stored permanently at site at a designated engineered area. Hazardous wastes (used oils, filters, batteries, e-waste) will be stored safely and exported for treatment (e.g., under the Australia–Timor-Leste Article-11 arrangement or supplier take-back).
Water Use (moderate)	Water consumption during operation will be moderate (<60 m^3/day), limited to periodic panel cleaning, and dry-cleaning is under consideration. Water supply via truck (or alternatively, via groundwater)
Greenhouse Gas Emissions Avoidance (major positive)	The project will displace diesel-fueled power generation, avoiding approximately 2.5 million tons of CO_2 emissions over its 25-year lifespan (~100,000 tons per year). This is the project's most significant environmental benefit, positioning Timor-Leste as a regional leader in low-carbon energy. Ongoing monitoring and transparent reporting of avoided emissions are recommended to maximize recognition and stakeholder support.
Regional Air Quality Improvement (moderate positive)	By reducing the reliance on diesel combustion for electricity, the project will lower regional air pollutants such as particulate matter and nitrogen oxides. This will yield measurable improvements in air quality and associated health and environmental benefits for the broader region. These co-benefits should be communicated to stakeholders.
Renewable Energy Demonstration (minor positive)	The project serves as a large-scale demonstration of clean energy technology in Timor-Leste, supporting the achievement of national renewable energy targets. Its demonstration effect is significant for

Impact and Significance	Description
	accelerating the adoption of renewables. Documentation and sharing of lessons learned is encouraged to support replication.
Improved Energy Security and Reliability (major positive)	The addition of up to 72 MW of reliable power to the national grid will significantly improve electricity supply, reduce load shedding, and support stable power for homes, businesses, and public services. Enhanced grid stability will deliver broad social and economic benefits, supporting national development priorities and quality of life.
Long-term Economic Benefits (significant positive)	By reducing dependence on expensive imported fossil fuels, the project will lower the national cost of energy generation. While solar requires higher upfront investment, the significant long-term financial, social, and environmental benefits far outweigh continued reliance on diesel, making this a sound investment for Timor-Leste's future.
National Development Contribution (moderate positive)	The project directly advances Timor-Leste's goals for energy independence and sustainable development, enhancing the country's resilience and strategic autonomy, and aligning strongly with national policy priorities.
Skill Development (minor positive)	The project will provide opportunities for the local workforce to gain skills in the construction and maintenance of renewable energy infrastructure, fostering a new green-collar sector. Developing local technical capacity has a moderate positive impact, supporting future solar projects and a sustainable skilled workforce.

Decommissioning Phase

The decommissioning of the project, over 27+ years in the future, will involve the disassembly and removal of all project components, including solar panels, mounting structures, and buildings.

Impact and Significance	Description
Anticipated Impacts	Environmental and social impacts during decommissioning are expected to mirror those of the construction phase, including temporary and localized dust, noise, increased traffic, and waste generation. Given Timor-Leste's limited waste management infrastructure, proactive planning will be essential, particularly regarding the safe removal, recycling, or disposal of solar panels, batteries, and associated materials. Early engagement with specialized recycling partners, and the development of a decommissioning

waste management plan focused on maximizing material recovery and minimizing environmental harm, are recommended.

7.3 Contextual Risk Assessment of Labor and Working Conditions

Timor-Leste's labor context presents several external factors that may influence the project's ability to maintain fair, safe, and equitable working conditions. Although the Laleia Solar IPP will implement a robust Labor Management Procedure (LMP) and Contractor Environmental and Social Management Plan, contextual risks related to the broader social and institutional environment must also be recognized and managed.

Labor Influx and Community Interface. During peak construction, approximately 150–200 workers are expected on site, including foreign and non-local personnel. Temporary influx into small rural sucos such as Lifau and Haturalan could generate tension over perceived job competition, social interaction, or local resource use. Clear local-hiring targets (at least 40 percent of semi-skilled positions) and a transparent recruitment process through Suco Chiefs will minimize friction. Continuous community liaison and culturally appropriate induction sessions will be maintained.

Worker Accommodation Standards. Where on-site or near-site worker housing is required, facilities will comply with the IFC/EBRD Worker Accommodation Guidance Note (2009). Minimum standards will include adequate living space (>4.5 m²/person), potable water supply, sanitation and waste management, vector control, recreation areas, and gender-segregated amenities. Regular inspections will be undertaken by the Owner's E&S team.

Occupational Health and Safety (OHS). Timor-Leste's regulatory enforcement capacity remains limited; therefore, the project will apply Good International Industry Practice (GIIP) and the IFC EHS Guidelines for Renewable Energy Projects. A detailed OHS Plan will address electrical safety, working-at-height, heat stress, fire prevention, emergency response, and first-aid readiness. All personnel will undergo induction and daily toolbox talks, and near-misses will be logged and reviewed weekly.

Gender-Based Violence, Harassment, and Non-Discrimination (GBVH). Given the male-dominated workforce and proximity to small rural communities, GBV and sexual-harassment risks require proactive management. All employees and contractors will sign a Code of Conduct prohibiting harassment, SEA/SH, and discrimination. Mandatory awareness training and confidential reporting mechanisms will be in place, supported by a gender-sensitive grievance channel managed by the Community Liaison Officer.

Child and Forced Labor. Recruitment procedures will include age verification and prohibition of any forced or unpaid family labor. Contractor audits will be undertaken quarterly.

Institutional Weakness and Oversight. In view of limited national labor inspection capacity, the project will conduct self-monitoring through periodic internal audits and third-party verification as part of the ESMS. Results will be shared with ANLA and the Ministry of Labor.

Summary of Mitigation Measures

Risk Factor	Key Mitigation / Management Measure	Timing

Labor influx	Local-hiring preference, community liaison, code of conduct	Pre-construction & construction
Accommodation	Apply IFC/EBRD camp standards; periodic inspection	Construction
OHS	Implement comprehensive OHS Plan; training and PPE	Continuous
GBVH	Mandatory code of conduct; awareness training; gender-sensitive GRM	Continuous
Child/forced labor	Age verification; contract compliance audits	Continuous
Oversight	Internal and external labor audits; disclosure to GoTL	Semi-annual

The above measures collectively ensure that labor practices under the Laleia Solar IPP remain consistent with IFC PS2 objectives—promoting safe, healthy, and fair working conditions while preventing adverse community interactions.

7.4 Human Rights Risks

In alignment with international standards and best practices, the project recognizes the importance of respecting and protecting human rights throughout all phases of development. Large infrastructure projects can introduce a range of human rights risks affecting workers, local communities, and vulnerable groups. The table below summarizes the main categories of human rights potentially at risk in the context of this project, along with practical examples of how such rights may be inadvertently violated if not properly managed.

Human Right	Examples of Violation*
LABOR PRACTICES AND EMPLOYMENT RIGHTS	
Right to work	Failure to ensure a minimum wage sufficient for a decent living.
Freedom to choose and accept work	Discriminatory hiring, promotion, or working conditions based on gender, ethnicity, or other personal attributes.
Right to just and favorable conditions at work	Failure to provide a safe and healthy work environment, leading to accidents, injuries, or illnesses among workers.
Right to strike	Restricting or penalizing workers for engaging in lawful strikes or collective bargaining.
Right to equal pay for equal work	Unequal pay for men and women or different groups performing the same tasks.
Freedom of association	Preventing workers from forming or joining trade unions or worker associations.
ENVIRONMENTAL ISSUES AND HUMAN RIGHTS	
Right to health and life	Project activities contaminating drinking water sources, or excessive resource extraction depriving communities of essential resources like clean water.

Human Right	Examples of Violation*
Right to a clean and healthy environment	Air, water, or soil pollution from project operations affecting the health and livelihoods of residents.
LAND ACQUISITION AND HUMAN RIGHTS	
Freedom of movement	Project infrastructure (e.g., fences or haul roads) limiting villagers' ability to move freely within their community.
Right to adequate housing	Forcible eviction of people from their homes without fair process or compensation.
Right to choose place of residence	Involuntary resettlement or displacement due to project activities.
Right to fair compensation	Inadequate compensation for loss of land, property, or resources.
RIGHTS OF INDIGENOUS PEOPLES AND LOCAL COMMUNITIES	
Free, Prior, and Informed Consent (FPIC)	Failing to properly consult or obtain consent from indigenous or local communities before commencing activities on traditional lands.
Minority rights	Lack of meaningful consultation, participation, or representation for minority groups.
Right to effective remedy	Absence of accessible mechanisms for affected individuals or communities to seek redress for grievances or human rights violations related to the project.
Freedom of religion and belief	Disturbance or destruction of sites important to the cultural or spiritual heritage of local communities.
SECURITY ISSUES AND HUMAN RIGHTS	
Right to liberty and security of person	Inappropriate or excessive use of force by security personnel protecting the project, leading to harm or intimidation of community members or activists.
Protection of human rights defenders	Threats, harassment, or violence against community activists or human rights defenders opposing project activities.
OTHER RIGHTS	
Right to equality between men and women	Women facing risks of gender-based violence, harassment, or discrimination; women's economic opportunities being disproportionately affected.
Right to an adequate standard of living	Communities not receiving a fair share of project benefits, leading to inequitable development; traditional livelihoods (e.g., agriculture or fishing) undermined by project activities.

**Examples are illustrative and not exhaustive*

EDF and Itochu Corporation ("Itochu", the parent company of IEI-P), are internationally recognized companies with strong commitments to upholding human rights in all aspects of their operations. EDF, as a leading global energy provider, adheres to high social responsibility standards and integrates respect for human rights into its corporate policies, including those related to labor, community engagement, and environmental protection. Similarly, Itochu, a major Japanese trading and investment company, is guided by a corporate philosophy that emphasizes ethical business conduct and the protection of human rights throughout its supply chains and project activities.

Both companies are signatories to international initiatives such as the United Nations Global Compact and align their practices with the UN Guiding Principles on Business and Human Rights.

Through this project, EDF and Itochu aim to ensure that these high standards are maintained and that the rights and well-being of all stakeholders are respected and protected. As such, the project is committed to proactively identifying, mitigating, and monitoring human rights risks in all its activities. This commitment will be operationalized through a combination of policies, management systems, and community engagement processes. Key measures include:

- Adherence to National and International Standards: All project activities will comply with Timor-Leste's laws and regulations, as well as international frameworks such as the IFC Performance Standards and the UN Guiding Principles on Business and Human Rights.
- Inclusive Stakeholder Engagement: The project will conduct ongoing, meaningful consultations with affected communities and stakeholders, ensuring that the perspectives of vulnerable groups—including women, minorities, and indigenous peoples—are integrated into decision-making processes.
- Free, Prior, and Informed Consent (FPIC): Where applicable, the project will obtain FPIC from local communities and indigenous peoples before commencing activities that may affect their rights or livelihoods.
- Grievance Redress Mechanism (GRM): An accessible and transparent grievance mechanism will be established, enabling individuals and communities to raise concerns or complaints without fear of retaliation and ensuring timely and fair resolution.
- Fair Labor Practices: The project will enforce non-discriminatory hiring, provide safe and healthy working conditions, and ensure fair wages and benefits for all workers.
- Environmental and Social Safeguards: Project planning and operations will be designed to avoid or minimize negative impacts on the environment, natural resources, and community health, including measures to protect water sources, land, and culturally significant sites.
- Monitoring and Accountability: Regular monitoring and independent audits will be conducted to assess human rights performance, and corrective actions will be implemented when needed.

7.5 Cumulative Risks and Impacts

Overview and Geographic Scope

Cumulative effects are assessed across the Laleia Administrative Post, with a focus on (i) the coastal valley that hosts the Solar IPP; (ii) the national highway frontage; and (iii) the Dili–Laleia transport corridor. Within this footprint, reasonably foreseeable developments include the proposed Japanese shipyard (site options in Manatuto, including Laleia, have been under active consideration since 2023

and were publicly reaffirmed by national leaders and the proponent in mid-2025) and ongoing/upcoming road programs that could increase traffic capacity east–west along the north coast. [1]

Reasonable Foreseeable Projects

Japanese shipyard (Tsuneishi) - Government releases and press coverage indicate a continued intent to develop a new shipyard in Manatuto, with Laleia repeatedly cited as a candidate location; earlier screening also mentioned the Sau area as an alternative. As of June–July 2025, high-level statements reaffirmed the plan while suggesting site studies were still in progress. If sited at Laleia, the project would introduce a large industrial footprint, heavy marine and road logistics, and a sizable workforce.[2]

Road upgrades / connectivity - Timor-Leste continues to roll out climate-resilient road programs (national projects include sections affecting the east and south coasts and the broader north-coast spine). While not specific to Laleia alone, incremental improvements typically increase axle loads/speeds and traffic volumes through Manatuto.[3]

Small public-service and rural energy schemes - Development partners are delivering piecemeal water/energy improvements in Manatuto (such as the recent upgrade of public water supply at Laleia Administrative Post); these have micro footprints but can modestly influence in-migration and service demand. [4]

Community Perception vs. Land Availability

Community meetings voiced a worry that “if many projects come, there may be no land for future generations.” Based on current evidence, that risk appears low: the Solar IPP occupies a defined valley footprint, and other candidate investments (like the shipyard) would likely cluster on separate coastal parcels. Land within the Administrative Post remains extensive for local growth.

Cumulative Impact Pathways

Traffic, road safety, and dust - The Solar IPP already elevates heavy-vehicle movements during construction. Layering shipyard construction and operational logistics (steel, machinery, fuel, workforce shuttles) could materially increase heavy goods vehicles volumes on the Dili–Laleia corridor and local access roads, compounding collision risk, congestion at village pinch points, dust on unsealed links, and nuisance for roadside receptors.

Surface-water, erosion, and coastal processes - Concentrating the Solar IPP’s stormflows at the northern boundary already requires energy dissipation to avoid incision/erosion. Superimposing a shipyard with coastal earthworks, quays, and dredging (if any) could alter nearshore sediment dynamics and magnify turbidity episodes during extreme rain.

Land use and access - The Solar IPP’s fencing and security already reshape historical access to grazing and the beach (with perimeter alternatives provided). A neighboring shipyard could add marine exclusion zones, truck marshalling yards, and workforce compounds.

Workforce influx and services - Simultaneous construction peaks would amplify temporary population influx into Laleia/Manatuto (contractor camps, rentals), stressing water supply, waste, and policing.

Noise, light, and community amenity - Shipyard fabrication yards and 24/7 marine logistics (if realized) would elevate industrial noise and night lighting. In combination with the IPP's substation/BESS hum and security lighting, this could cumulatively degrade amenity for receptors along the Lifau–Haturalan corridor.

Cumulative Impacts on Turtle Nesting from Artificial Lighting

The coastline north of the project area forms part of the nesting habitat for two protected marine turtle species recorded in the Laleia area: the green turtle (*Chelonia mydas*) and the hawksbill turtle (*Eretmochelys imbricata*). Both are classified as rare and vulnerable in Timor-Leste and are fully protected under national legislation. Turtle nesting occurs sporadically along sandy beaches, with females coming ashore at night to lay eggs. Artificial light is a well-documented disturbance to both nesting females and hatchlings, as it disorients adults during nesting attempts and misguides hatchlings away from the sea.

On its own, the solar project is expected to introduce limited permanent light sources, primarily from perimeter security lighting and the substation/BESS compound. With careful design, including the use of downward-shielded fixtures, motion-activated lights, and low-wavelength "turtle-friendly" bulbs, the project's operational lighting footprint can be minimized. However, cumulative risks must be considered in the context of other foreseeable coastal developments. Should large-scale facilities such as a shipyard or associated port be established nearby, the combined night-time illumination could substantially increase skyglow and direct beachfront light, amplifying disturbance to turtle nesting.

Community consultations have not reported intensive turtle nesting immediately adjacent to the project footprint, but fishers confirm sightings in the wider nearshore area. Given the sensitivity of these species, a precautionary approach is warranted.

7.6 Cultural Heritage

Regulatory Background

The applicable law on Cultural Heritage in Timor-Leste is Decree-Law Nº 33 of 2017 on Legal Regime of Cultural Heritage (6 September 2017). Law 33/1017 has a definition of Cultural Heritage (CH) compatible with international standards and most countries' approach. In general, this legislation is similar in its requirements to CH laws virtually everywhere. The CH definition (Article 4) applies to "*All cultural elements, tangible and intangible, movable or immovable, that contribute to the country's cultural and national identity…" The wording "member of the Government responsible for Culture"* throughout the law identifies the official and agency enforcing the law.

The specific government office or individual to be dealt with will need to be determined in project planning. The main responsibility for "management, protection, conservation, enhancement and revitalization of inventoried and classified cultural assets" is vested at the Municipality level of government (Article 7b).

Law 33 notes that *"…. heritage directly or indirectly related to the national liberation struggle is of particular importance."* Thus, quite recent sites related to the 1975-1999 Indonesian occupation might be considered of cultural value. Interestingly, the Law also considers of value heritage that *"…bears*

witness to chapters of the common history with… Portuguese-speaking countries…" Article 9 recognizes that many key CH assets are in the possession, and for the use of, the Catholic Church.

Law 33, Article 5, item u, on *"Landscape heritage with cultural value,"* addresses *"places and elements of nature invested with importance,"* and specifically mentions springs. The Law does not appear to cover paleontological items such as fossil sites. Article 17 divides *"patrimonial assets"* into heritage of national interest and local interest. A *"special protection zone of 50 metres*" applies only to heritage of national interest (Article 23). Article 8 makes it a duty of all citizens to *"preserve, defend and value"* national Cultural Heritage. (A logical recommendation for We-Lu Spring is that it be judged a critical water resource and made off-limits to project personnel, while encouraging and assisting local authorities in protecting the spring and its immediate surroundings.)

Article 40 of Law 33 has a conventional definition of intangible Cultural Heritage referencing international practices and agreements. The culture authority will determine what elements need to be Inventoried and set procedures for doing so. Classification of such heritage is by the Consultative Committee on Cultural Heritage, with written consent of the individuals or communities involved, and approved by the Culture authority. At this time, it does not seem likely intangible heritage will be an issue in Project planning and development. However, awareness of potential such issues should be maintained, though more in line with Indigenous Peoples compliance efforts.

It also seems likely any Cultural Heritage existing or identified on the Project area or in the surrounding region will be mainly of local interest, absent an unexpected important discovery. The two main considerations for the Project under Decree-Law 33/2017, again, will be a preconstruction Cultural Heritage Resources Survey, and the Chance Find Procedure for all earthworks.

Preliminary Cultural Heritage Assessment

A preliminary assessment of cultural heritage was conducted for the project area, through site inspections (in 2024 as part of the 2024 EIS, and for the Supplementary ESIA on 15 July 2025, 25 and 26 August 2025 plus subsequent field work during the period of 1 to 17 September 2025) and interviews with residents and community leaders (concurrent to the site visits). Based on the findings of these activities, no known sites of cultural, historical, or archaeological significance are present within the project footprint. Thus, the project is not expected to directly impact any identified tangible or intangible cultural heritage.

However, there are three important springs situated to the east of the project area, outside the project boundaries (Figure 7-2). These springs are valued by the local community for their cultural and practical significance, as all three springs provide water to cattle throughout the year. One, We-Lu Spring, was identified in the EIS as having particular cultural significance. Although the project will not physically encroach upon these springs, the project acknowledges their importance and is committed to ensuring that construction activities do not disturb or negatively affect these areas. Specific measures will include clear instructions to all construction workers to avoid entering or disturbing the spring sites, reinforced through induction briefings and site signage as needed.

Chance Find Procedure

Under Article 38 of Decree-Law Nº 33/2017 Accidental Findings, any discovery of "potential interest" requires the proponent immediately notifying local authorities or the cultural heritage services. The owner is responsible for "provisional conservation" of movable property or "traces of a real estate nature found on the land" and is considered the trustee until the government takes "definitive

measures." The Chance Find Procedure presented as Annex VIII of the EIS (Annex III in the EMP) for Archaeological Chance Finds is generally adequate and responsive to Article 38.

The Chance Finds Procedure will ensure that if any cultural heritage items (such as artifacts, structures, or human remains) are encountered unexpectedly during construction, all work in the vicinity will be stopped immediately. The findings will be secured and reported to the relevant government authorities, and work will only resume once proper assessment and, if necessary, mitigation measures have been determined in consultation with local stakeholders and heritage specialists.

The overall site setting, a valley and drainage channel flowing to the coast at a point where marine resources are at present routinely exploited at the subsistence-artisanal level, indicates traces of historical and prehistoric settlement potentially exist and may be discoverable. The most likely sites for such discoveries would appear along the inland margin of the coastal zone at the north, as well as the east and west margins of the valley bottom upslope of the main flow paths to where slopes steepen.

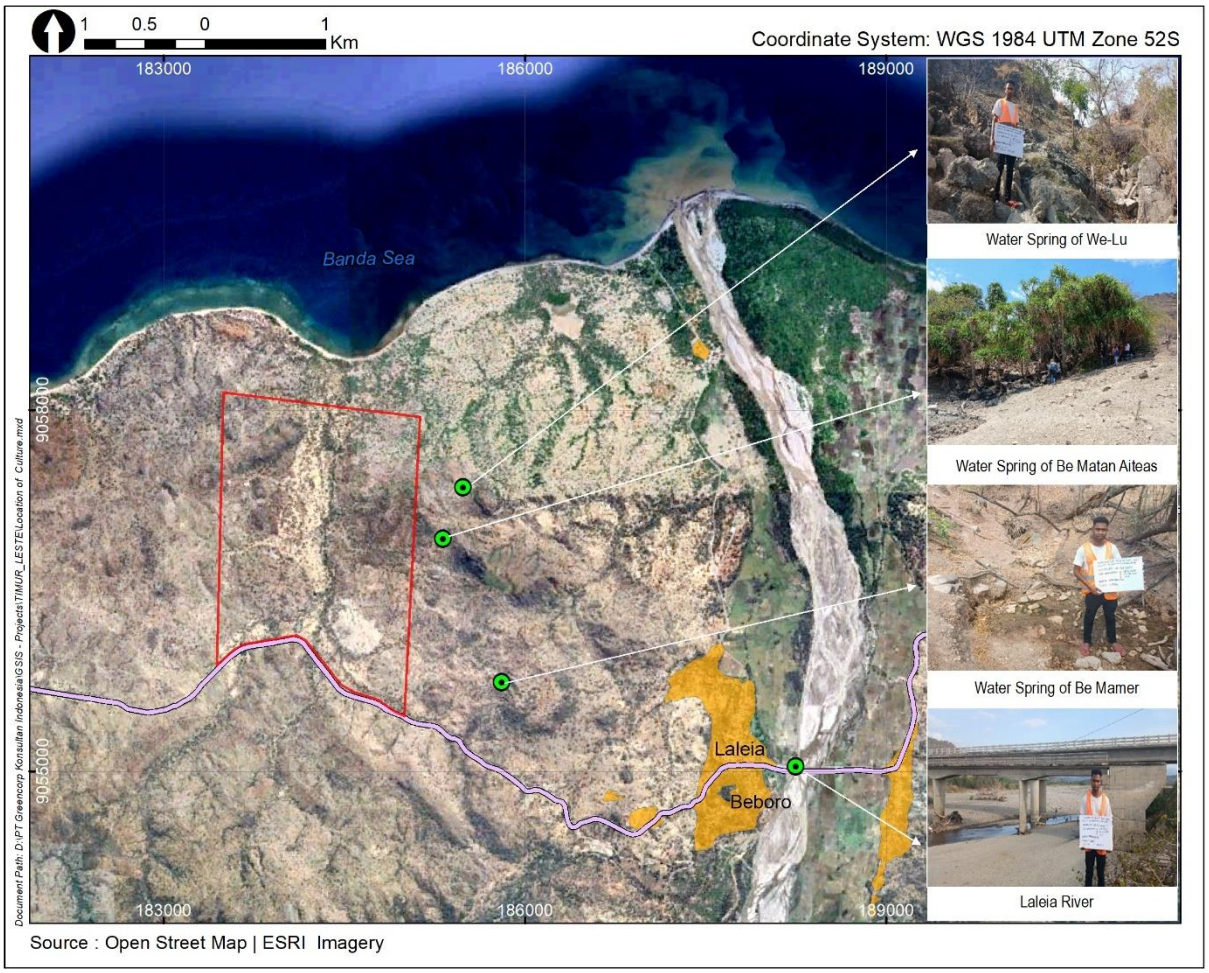


Figure 7-2 Location of Three Culturally Significant Springs in Relation to the Project Area

7.7 Climate Change Risks

Timor-Leste is recognized as highly vulnerable to climate change due to its geography, limited adaptive capacity, and reliance on climate-sensitive livelihoods. The Laleia Solar IPP, as a long-lived

infrastructure investment in a low-lying coastal setting, must consider both direct climate hazards and indirect community impacts.

The project area presents an array of environmental conditions that pose risks to project development, particularly in the context of climate change. While these risks are not entirely new, their characteristics, frequency, and intensity are expected to evolve with changing climate patterns. The most significant climate change implications for this area include sea level rise and increased rainfall intensity.

Sea Level Rise

Although the project area is located inland of the shoreline, its northern boundary is directly connected to a coastal drainage system. Project lifetime (25 years) coincides with projections of sea level rise in the range of 0.2–0.3 m by 2050 (IPCC, AR6, median estimate). While modest in absolute terms, this rise could exacerbate tidal backflow, and storm surge impacts at the drainage outflow.

Changes in Rainfall Patterns

Analysis of available climatic data for this Preliminary ESIA for the site region, applying the Palmer Drought Severity Index (PDSI), indicated there is no statistically significant long-term trend in drought severity over the period 1958 to 2023. Conditions are not getting significantly wetter or drier overall. PDSI values have fluctuated considerably from year to year, indicating alternating periods from extreme drought to extreme wet conditions. There were several periods of drought, notably with the mid-1960s being a period of moderate to severe drought. Periods of above-normal wetness have also occurred; the early 1970s were an extremely wet period. Wetter periods also occurred in the early 1980s and mid-1990s. After 2000, data indicate an increased variability compared to earlier years, with more frequent swings between wet and dry conditions that potentially could be linked too climate change.

Long-term projections suggest that while the overall rainfall in Timor-Leste may remain consistent with current patterns, there will likely be an uptick in extreme rainfall events. This shift is expected to intensify the existing high risk of flash floods and coastal plain flooding at the site.

Community Implications

Communities adjacent to the project rely on agriculture, livestock, and coastal resources that are highly climate-sensitive. Climate change may heighten local grievances if resource access is restricted. By integrating livelihood resilience measures - such as small-scale groundwater supply systems and coastal zone protection - the project can contribute positively to local climate adaptation.

8 SUPPLEMENTARY IMPACT ASSESSMENT AND MANAGEMENT PLANS

This section presents the supplementary impact assessment for key environmental and social topics, addressing the gaps identified in the 2024 EIS. For each topic, it outlines the potential impacts and proposes specific management and mitigation measures.

8.1 Access to Natural Resources and Livelihood Impacts

The 2024 EIS and SIA understate the project's impact on local livelihoods by not fully accounting for the communal use of the 350-hectare site (2024 EIS, Section 10.4.9; 2024 SIA, Section 5.6). As established in Section 4.2 of this report, the site provides ecosystem services to local communities. The construction of a perimeter fence and the development of the solar plant will result in complete restriction of access, leading to the following direct and indirect livelihood impacts:

As stated elsewhere, communal land use remains the norm in rural Timor-Leste, with access governed by customary law (*Tara Bandu*) and community consensus. While flexible and adaptive, this system relies on the availability of sufficient communal land. The Soar IPP Project will result in loss of communal land and will work closely with the sucos of Lifao and Haturalan to identify feasible alternatives and avoid undermining local livelihoods and social cohesion.

The affected project area is traditionally managed collectively by Lifao and Haturalan sucos. The area is not registered under formal titles but is governed by customary norms, with community elders and traditional leaders overseeing access and use. In case of this project, consultation meetings and consultation with women groups in Lifao and Haturalan made clear residents are aware of losing access to resources on the project area, and to the coastal resources north of the site.

Customary rules typically define who may use communal land and for what purposes. In general, members of the local community have the right to graze livestock, collect firewood, and utilize other natural resources. However, access may be restricted to outsiders or neighboring villages unless there is a social agreement or kinship tie. Within a suco, grazing rights and patterns are often organized at the aldeia or extended family level, with certain areas informally allocated for use by specific groups or families, especially during the dry season or when resources are scarce. The social baseline study suggests residents believe providing both an alternative access route to the coast and some level of mitigation or offset for loss of access to site resources are appropriate if not expected.

Specific areas may be set aside for particular uses—such as communal grazing, or firewood collection—based on seasonal needs and community agreements. Allocation is generally flexible and negotiated through local consensus, but traditional leaders (such as the *chefe suco* or *lia nain*) play key roles in resolving disputes and enforcing customary restrictions.

In the project area, the coastal area (featuring low growing trees and bushes) is traditionally allocated for firewood collection. As this area is excluded in the project design, traditional land use will be unaffected by the Project if access to the area is allowed. Grazing area is however lost. Fortunately, communal land use is adaptive; if a portion of land is lost to development or other uses, communities may seek alternative grazing areas within their customary territory or negotiate access with neighboring communities. In this project, there is no evidence that the capacity to relocate livestock is constrained by the availability of suitable land, pre-existing agreements, adverse terrain conditions, or

and ecological limitations based on extensive interviews with village heads and members from both villages. Note that additional mitigation measures are in place as outlines in Chapter 10.

8.2 Surface Water Management Plan

8.2.1 Introduction

The Laleia project area is located in a broad coastal valley that functions as a natural drainage and conveyance basin. Seasonal channels traverse the site, collecting stormwater runoff from the upland catchments and conveying it towards the coast. During heavy rainfall events, these channels carry large volumes of water, which can shift course and create new gullies. During construction activities, earthworks and new drainage structures, if unmanaged, could accelerate flows, concentrate discharges, and exacerbate erosion or sedimentation downstream. During operation, engineered drainage channels will continue to influence natural hydrology at the site, creating a concentrated water release at the northern project boundary, requiring compact, purpose-designed transition from hard-lined concrete channel to unconsolidated beach.to manage velocity, sediment, and debris—e.g., replacing the abrupt channel end with a short flared section and a low-profile armored apron sized for the 1:100 event.

8.2.2 Objectives

The objectives of the Surface Water Management Plan are to:

- Maintain the natural drainage function of the site while protecting infrastructure.
- Prevent erosion, gullying, and sedimentation during construction and operation.
- Protect downstream water users, including communities reliant on coastal resources.
- Ensure compliance with IFC EHS guidelines and national environmental regulations.
- Monitor and adapt management practices over time, particularly in response to climate variability.

8.2.3 Construction Phase Measures

During construction, the EPC contractor will be required to implement stormwater and erosion controls in accordance with good international industry practice. Stockpiles of soil should be covered or stabilized to prevent erosion, and disturbed areas should be revegetated or compacted as quickly as possible.

Particular care must be taken at the northern site boundary, where the valley drains directly toward the coast. Direct concentration of flow into a single point should be avoided, as this could trigger rapid erosion and degrade coastal ecosystems. Instead, multiple smaller outfalls and energy dissipation structures should be considered to spread flows across a wider area.

8.2.4 Operational Phase Measures

Once operational, the project's drainage system will continue to play a critical role in managing runoff. Perimeter drains and internal channels should be maintained to ensure they remain clear of debris and vegetation that could obstruct flow. Long-term risks of erosion at the northern boundary will be addressed through compact, purpose-designed transition from hard-lined concrete channel to unconsolidated beach.to manage velocity, sediment, and debris—e.g., replacing the abrupt channel end with a short flared section and a low-profile armored apron sized for the 1:100 event. These will

reduce the speed and force of outflows before they enter the coastal zone, minimizing the risk of incision and protecting beach stability.

8.2.5 Community Safety Considerations

Beyond the protection of infrastructure and coastal ecosystems, the management of stormwater flows should also be viewed through the lens of community health and safety. Based on professional judgement, under natural "without-project" conditions, a 100-year flood event could generate upstream flow velocities exceeding 3 m/s, with flood depths of 1.5 meters and flood widths of up to 200 meters across the valley floor. Such conditions would present an extreme hazard to anyone present in the floodplain, including fishers or villagers accessing the coastal area.

With the construction of the solar farm, these broad surface flows will be captured and conveyed through engineered drainage channels. While flow velocities within this structure may reach 4 m/s, the controlled conveyance of extreme flood events through engineered drainage represents a significant improvement over existing conditions, if community access to drainage channels is carefully restricted.

To ensure public safety, the following measures will be incorporated into drainage design and site management:

- Fencing and access control along major drainage channels to prevent accidental entry.
- Warning signage in Tetum and local languages at channel crossings and access points, alerting communities to flood hazards and prohibiting entry during heavy rainfall events.
- Escape ladders or steps installed at intervals along deep channel sections to allow self-rescue for maintenance workers or if accidental entry occurs.
- Community awareness campaigns, integrated with stakeholder engagement activities, to explain flood risks and reinforce safe behavior around drainage infrastructure.

8.2.6 Monitoring and Reporting

The effectiveness of surface water management will be monitored through regular site inspections. Indicators will include evidence of erosion or scouring at engineered discharge points. Monitoring will also include photographic documentation of key drainage features during both dry and wet seasons.

8.2.7 Roles and Responsibilities

The EPC contractor is responsible for preparing the detailed Construction Surface Water and Drainage Plan, designing and implementing erosion and sediment controls, and ensuring their proper maintenance throughout the construction period. The Owner will oversee contractor performance, review monitoring results, and maintain stormwater infrastructure during operations. Both parties are responsible for ensuring compliance with environmental license conditions and IFC EHS guidelines.

During operation, the Site Manager will be responsible for monitoring the effectiveness of surface water management through regular inspections, particularly following significant rainfall events.

8.3 Dust Management Plan

8.3.1 Introduction

Construction of the Laleia Solar IPP Project will inevitably generate dust, particularly during land clearing, excavation, and the movement of trucks and heavy machinery along unsealed roads. Dust has the potential to reduce visibility, damage sensitive equipment, and cause health risks for workers. For surrounding communities, although settlements lie at some distance from the project, nuisance impacts still warrant consideration. The nearest villages—Lifau and Haturalan—are located roughly three kilometres to the east of the site. During the dry season, prevailing winds are predominantly south-easterly, blowing towards the north-west; under these typical conditions, dust generated by site preparation and earthworks will be carried away from these communities and toward the coastal plain and offshore. Routine community exposure is therefore expected to be low. Residual risks may arise during temporary wind shifts (e.g., local convective events or frontal changes), during activities conducted on the eastern margin of the site, or where traffic movements intersect the national road. During operations, dust generation will be considerably less but may still arise from traffic on access roads, occasional maintenance activities, and wind erosion of bare surfaces.

This Dust Management Plan therefore provides a framework to manage dust throughout the life of the project, with emphasis on construction but with provisions for the operational phase as well. The Plan is aligned with IFC's Environmental, Health, and Safety Guidelines and represents good international industry practice in controlling emissions from infrastructure projects.

8.3.2 Objectives

The purpose of this Plan is to ensure that dust emissions are minimized to the extent practicable, thereby protecting the health of workers and nearby communities, avoiding damage to equipment and interference with project activities, and maintaining compliance with national and international standards.

8.3.3 Dust Sources and Risks

During construction, dust will mainly arise from earthworks, grading, and excavation, as well as from the handling of soil, sand, and aggregates. The transport of materials to and from the site, if trucks are not adequately covered, may also contribute to airborne dust. Windy and dry conditions, which are common in the project area, can further exacerbate dust emissions from exposed surfaces and stockpiles.

Once the solar facility is operational, dust levels will decline significantly. Remaining risks will relate primarily to the use of unpaved internal roads by security patrols and maintenance vehicles, and to occasional ground clearance activities. Dust accumulation on photovoltaic panels and battery equipment is another potential operational concern, as it can reduce efficiency if not regularly addressed.

8.3.4 Mitigation Measures

The Project will implement a combination of engineering, operational, and management measures to minimize dust impacts. During construction, water (imported by truck) will be sprayed on unsealed roads and construction areas to suppress dust during dry and windy periods. Haul roads will be stabilized with gravel or other materials where practical, and construction materials such as soil, sand,

and aggregates will be transported in covered trucks, as practical. Stockpiles will be wetted or covered to prevent excessive dispersion, and earthworks will, as far as possible, be scheduled for times when wind speeds are lower. Workers will be supplied with personal protective equipment, including masks, and trained to understand the risks associated with dust and the practices required to minimize it.

In the operational phase, the focus will shift to maintaining road surfaces to minimize dust from vehicle use. Regular grading and occasional watering of unpaved tracks will reduce emissions. Where feasible, surfaces will be stabilized using gravel or vegetation cover. Dust accumulation on solar panels will be addressed through routine cleaning, ensuring both efficiency and equipment integrity. Vegetation management strategies will also be used to reduce wind erosion in sparsely covered areas.

8.3.5 Monitoring and Reporting

Monitoring will be carried out through daily visual inspections during the construction period and routine site inspections once operations commence. Complaints from workers or local communities will be captured and addressed through the project's Grievance Redress Mechanism.

8.3.6 Responsibilities

The EPC contractor will be responsible for implementing dust control measures during construction, training workers, and maintaining monitoring records. Oversight will rest with the site Environmental, Health and Safety Officer, who will conduct inspections and ensure compliance. During operations, the project operator will take responsibility for road and vegetation management, equipment cleaning, and continued monitoring and reporting as part of the overall Environmental and Social Management System.

8.4 Construction Traffic Management Plan

8.4.1 Introduction

The construction of the Laleia Solar IPP Project will bring a significant temporary increase in the movement of vehicles transporting equipment, materials, machinery, and personnel between Dili and the project area. This has the potential to create traffic congestion, generate noise and dust, and increase the risk of accidents along the road corridor and at the project area. Communities living in proximity to the road network and project area may be directly exposed to these impacts (with special attention to be given to sections of sensitivity such as schools, churches, and markets, see Section 2.2).

The 2024 EIS identified traffic-related risks under community health and safety considerations, and both the EIS and EMP annexes included a generic traffic management framework. This Construction Traffic Management Plan builds on those earlier documents, ensuring that traffic and transport are managed safely, efficiently, and in coordination with national and municipal authorities. The Construction Traffic Management Plan is a draft to be finalized by the appointed EPC Contractor.

8.4.2 Objectives

The objectives of this Traffic Management Plan are to:

- Safely manage the transport of equipment, materials, and personnel during construction, operation, and decommissioning phases.
- Minimize risks of accidents involving vehicles, pedestrians, and livestock along the transport corridor and within the site.

- Reduce nuisance impacts such as congestion, noise, dust, and road damage.
- Coordinate with local authorities to ensure transport planning aligns with public safety and infrastructure capacity.
- Provide a framework for monitoring, reporting, and continuous improvement of traffic safety performance.

8.4.3 Approach to Traffic and Transport Management

Road Corridor - The primary route for all major cargo movements will be from the Port of Dili along the national coastal road eastwards to Laleia. This corridor will be assessed and maintained for its suitability to handle heavy trucks, oversized loads, and sensitive cargo. An inventory of the materials and equipment to be transported will be compiled, including tonnage, volume, and frequency of loads. Particular attention will be given to oversized and hazardous cargo, with accompanying safety data sheets and delivery protocols.

In collaboration with the Ministry of Public Works and transport authorities, each section of the Dili–Laleia corridor, including bridges, culverts, and drainage structures, will be assessed for safety and load-bearing capacity. Detour routes will also be identified for emergency or temporary use.

Internal and Perimeter Roads - Within the project area, the civil engineering design will provide for an internal road network connecting the site entrance, substation, BESS, and PV arrays. Roads will be designed for heavy vehicle access, periodic maintenance, and emergency movements. Perimeter roads will be constructed to serve multiple functions: providing community access to the beach, acting as a firebreak, and contributing to site security. These roads will require signage, fencing, and controlled crossings to manage interactions between local users and project activities.

8.4.4 Mitigation Measures

Mitigation measures will follow good international industry practice, with emphasis on prevention and control. The following measures will guide implementation:

- Deliveries will be scheduled during daylight hours to reduce accident risk.
- Loads of construction materials will be covered and secured.
- Vehicle speeds will be restricted on unsealed roads and within communities.
- Flag persons and warning signs will be used during critical maneuvers such as crossing villages or sharp bends.
- Drivers will receive training on defensive driving and site-specific safety requirements.
- Vehicle maintenance and inspections will be enforced to ensure roadworthiness.
- Incidents, near misses, and accidents will be systematically recorded and investigated, with lessons applied to improve safety performance.

8.4.5 Monitoring and Reporting

Traffic and transport activities will be monitored throughout the project lifecycle. Key performance indicators will include the number and severity of traffic incidents, compliance with speed limits and delivery schedules, and community feedback on road safety. Regular reports will be submitted to EDTL, ANLA, and financing institutions as part of the Environmental and Social Management System.

8.5 Solid Waste Management Framework

8.5.1 Introduction

The construction and operation of the Laleia Solar IPP will generate a variety of solid and liquid wastes. The majority will arise during the construction phase, including packaging materials, scrap metals, timber, concrete residues, and excavated spoil. Hazardous waste such as oils, solvents, batteries, and potentially broken photovoltaic panels must also be anticipated. Domestic waste from the construction workforce will contribute further volumes. During the operational phase, the quantities of waste will be far smaller but will continue to include routine domestic waste, maintenance residues, and defective or end-of-life equipment components.

Waste management in Timor-Leste presents challenges. Engineered landfill facilities are not yet available, and open dumping remains common practice. Without careful management, project waste could therefore result in soil and water contamination, visual impacts, and risks to community health. This Waste Management Plan provides the framework for avoiding such outcomes, guided by international standards and good industry practice, while recognizing that the detailed Construction Waste Management Plan must be prepared by the EPC contractor prior to commencement of works.

8.5.2 Objectives

The objectives of this plan are to:

- Minimize waste generation by promoting efficient use of resources.
- Ensure that waste is segregated, stored, handled, and transported safely.
- Promote reuse and recycling wherever feasible.
- Identify appropriate disposal routes for residual wastes, in consultation with municipal authorities.
- Protect the health of workers and nearby communities.
- Comply with national legislation and IFC Performance Standards.

8.5.3 Guiding Principles

The plan adopts the IFC Waste Management Hierarchy—reduce, reuse, recycle, dispose—as its foundation. This hierarchy emphasizes prevention of waste at the source, followed by maximizing opportunities for recycling and recovery, with disposal only as a last resort.

8.5.4 Construction Phase Provisions

During construction, contractors will be required to apply good housekeeping and efficient procurement practices to minimize waste. All waste must be segregated into categories such as organic, recyclable, hazardous, and sanitary. Designated storage areas will be established within the site, clearly signposted, and equipped with appropriate containment systems. Hazardous waste such as oils and solvents will be stored in bunded areas with impermeable flooring, and batteries will be kept in covered facilities until transferred to licensed handlers.

Spoil and inert construction residues may be reused in site levelling or landscaping wherever possible. Scrap metal, timber, and packaging will be sold or transferred to recyclers where markets exist. Domestic waste will be collected daily from worker camps and construction areas and transferred to appropriate disposal sites, avoiding open dumping. Current planning is to transfer domestic waste to

Timor-Leste's only large municipal disposal site, the Tíbar dumpsite near Dili. Septic tanks with scheduled desludging will be installed for sanitation facilities, in line with the requirements of national policy.

8.5.5 Operational Phase Provisions

Waste generation during operation will be limited. The principal streams will include domestic refuse from staff and offices, small volumes of packaging from maintenance activities, defective components (such as cables or inverters), and potentially broken or end-of-life solar panels or batteries.

Operational waste (estimated to be around 100 m^3/y) will be managed through continuation of segregation practices, secure storage, and removal by licensed contractors (e.g., recycling and commercial collection services are available in Dili via Caltech Group). Broken or end-of-life PV panels will be collected and stored in covered, bunded areas prior to transfer to approved recycling or disposal facilities abroad, in accordance with IFC EHS guidelines. Hazardous waste such as used oil and batteries will be handled under similar controlled conditions. Routine domestic waste will be collected weekly and disposed of at approved municipal sites.

8.5.6 Monitoring and Reporting

The EPC contractor will establish a system to record types and volumes of waste generated, compliance with segregation procedures, and the final destination of each waste stream. Monitoring will include routine inspections of storage areas, audits of disposal records, and checks on contractor compliance.

During construction, monitoring results will be reported quarterly to the Owner and ANLA. During operation, reports will be prepared on an annual basis. Records of any waste-related incidents or community grievances will be maintained and corrective actions implemented without delay.

During operation, waste manifest and transfer records will be maintained.

8.5.7 Roles and Responsibilities

The EPC contractor bears full responsibility for preparing the detailed Construction Waste Management Plan, implementing all waste handling measures, training workers, and ensuring compliance. The Owner will supervise implementation, verify compliance through audits, and liaise with regulatory authorities. Once the facility enters operation, the project operator will assume responsibility for routine waste management as part of the Environmental and Social Management System.

8.6 Emergency Preparedness and Response Plan

8.6.1 Introduction

This Emergency Preparedness and Response Plan (EPRP) has been prepared for the Laleia Solar IPP Project to ensure that potential emergencies associated with construction and operation are managed in a systematic and effective manner. The plan provides a framework for prevention, preparedness, and response, aligned with the requirements of Timor-Leste's environmental legislation, the 2024 Environmental Impact Statement and Environmental Management Plan, and international standards such as the IFC Performance Standards and Good International Industry Practice (GIIP).

The EPRP recognizes the specific characteristics of the Laleia site, including its location within a low-lying coastal basin and the integration of a Battery Energy Storage System (BESS), and translates these into practical measures to safeguard workers, nearby communities, and the environment.

8.6.2 Objectives

The purpose of the EPRP is to ensure that foreseeable risks are anticipated and managed in a way that minimizes harm. It sets out procedures to protect human life and health, maintain the integrity of project assets, and reduce environmental impacts. The plan also clarifies the roles and responsibilities of project stakeholders and establishes communication and coordination mechanisms with local authorities and communities.

8.6.3 Standards and References

- Timor-Leste Decree Law No. 39/2022 on Environmental Licensing.
- IFC Performance Standard 4 (Community Health, Safety, and Security).
- IFC/World Bank Environmental, Health, and Safety Guidelines.
- NFPA 855 – Standard for the Installation of Stationary Energy Storage Systems.
- UL 9540A – Test Method for Evaluating Thermal Runaway Fire Propagation.
- ISO 45001 – Occupational Health and Safety Management Systems.

8.6.4 Emergency Scenarios

A review of the project's technical design and site conditions indicates several categories of potential emergency (Table 8-1). Technical risks include fires within the BESS or inverters, electrical faults, and hazardous material spills. Natural hazards that must be considered are flooding and flash floods, erosion and landslides, earthquakes, and tropical storms or cyclones. Wildfire, while generally of lower likelihood at the Laleia site, is also recognized. External risks include traffic accidents on the adjacent highway and, although unlikely, possible civil disturbance.

Table 8-1 Summary of Risks and Response Measures

Emergency Scenario	Main Causes	Potential Impacts	Response Measures
BESS fire / thermal runaway	Overheating, equipment failure, lithium-ion instability	Toxic gas release; fire/explosion; damage to assets; health risks	Activate suppression system; isolate affected units; use non-conductive extinguishers; evacuate staff upwind.
Inverter or substation fire	Electrical faults, overloads	Localized fire; damage to electrical infrastructure	Isolate circuits; use dry chemical extinguishers; notify fire service and authorities.
Flooding / flash floods	Intense rainfall; drainage exceedance	Inundation of site; equipment damage; risk to personnel	Shut down arrays and inverters; evacuate to high ground; secure materials; implement flood monitoring.
Erosion / landslides	Heavy rainfall, poor soil cover	Undermining of foundations; safety risks	Maintain drainage; stabilize slopes; suspend works in hazardous areas.

Emergency Scenario	Main Causes	Potential Impacts	Response Measures
Earthquake	Regional tectonic activity	Structural damage; worker injury	Evacuate to safe areas; suspend operations; inspect equipment before restart.
Cyclone / severe storm	Regional tropical weather	High winds; equipment damage; injury risks	Secure site infrastructure; suspend activities; evacuate if required.
Wildfire (external)	Dry season vegetation burning	Spread to site; risk to infrastructure	Maintain fire breaks; patrol perimeter; deploy extinguishers; coordinate with authorities.
Hazardous material spill	Fuel/lubricant leakage during handling	Soil/water contamination; worker exposure	Contain spill; use absorbents; report incident; dispose via licensed contractor.
Traffic accident	Vehicle collision on adjacent highway	Injury to workers/public; damage to substation/BESS	Provide medical support; notify police/ambulance; maintain highway safety barriers.
Civil disturbance	Protests, unrest	Security threat; disruption of operations	Engage with authorities; secure access points; suspend activities if needed.

8.6.5 Prevention and Preparedness

The most effective form of emergency management is prevention through careful engineering and operational planning. The drainage system for the solar farm is being designed for at least a one-percent annual exceedance probability flood event, reducing the risk of inundation. Fire safety for the BESS is enhanced through separation from other infrastructure, structural barriers, and the installation of advanced detection and suppression systems. Protective berms will be used to minimize the risk of vehicle accidents from the adjacent highway impacting critical facilities.

Operational practices reinforce these measures. All hazardous materials, such as fuels and lubricants, will be stored in secure, bunded areas. Fire breaks will be established around the project boundary, while emergency exits and muster points will be always clearly marked and accessible. Preventive maintenance of equipment will be undertaken systematically, and automatic shut-off mechanisms will be installed to isolate electrical systems in the event of fire or flood.

Preparedness also depends on people. All workers will receive induction training on emergency procedures, with more specialized training provided for electrical safety, firefighting, and first aid. Simulation drills will be held regularly to test readiness and ensure that both contractors and operations staff can respond effectively.

8.6.6 Response Procedures

The guiding principle of emergency response is the protection of human life. In the event of a major incident, the on-site Emergency Response Team (ERT) will provide the initial response until external services arrive. ANLA, the Ministry of Public Works, EDTL, and municipal authorities will be notified within 24 hours, and a full incident report will be submitted within five working days.

Different types of emergencies require tailored responses. In the case of a BESS fire or thermal runaway, the automated suppression system will be activated, the affected unit will be isolated, and non-conductive extinguishing agents will be used, while staff are evacuated upwind due to the risk of toxic gases. Fires in inverters or substations will be managed by isolating circuits and applying dry chemical extinguishers. In addition, firefighting efforts will focus on containing the incident within the facility and preventing any spread beyond the Laleia Solar IPP power plant, including the potential ignition of surrounding vegetation that could lead to wildfire.

Flood events will trigger automatic shut-off of arrays and evacuation of staff to higher ground. Earthquakes and cyclones require immediate suspension of operations and movement of personnel to designated safe areas. Traffic accidents or incidents outside the project boundary will be addressed through coordination with local police and health services, supported by on-site medical personnel.

8.6.7 Roles and Responsibilities

Overall responsibility for implementing the EPRP lies with the Project Company (to be established by the project owners, EDF power solutions and IEI-P). The PMU of EDTL will provide oversight and coordinate reporting to authorities. During construction, the EPC contractor will prepare site-specific emergency sub-plans, while the operations and maintenance (O&M) contractor will be responsible for maintaining emergency systems and conducting drills once the project is operational. A dedicated Emergency Response Team will be established on site, comprising trained staff tasked with implementing immediate response measures, including evacuation, first aid, and communication.

8.6.8 Communication and Coordination

Effective communication is critical in emergencies. Internal communication will be ensured through radios, mobile phones, and a public address system, while external coordination will be established with the Manatuto municipal administration, police, health services, and fire authorities. Local communities, particularly in Lifau and Haturalan sucos, will be informed of potential risks and the procedures to be followed in the unlikely event of a major emergency.

8.6.9 Training, Drills, and Review

Preparedness is sustained through continuous training and practice. Emergency drills will be carried out at least once per year, covering key scenarios such as BESS fires and flooding. Following each drill or incident, lessons learned will be integrated into updated procedures. All staff and contractors will receive annual refresher training, and the EPRP itself will be reviewed and revised every 12 months or following any significant incident.

8.7 Security Management Plan

8.7.1 Introduction

Large-scale infrastructure projects in rural settings require effective security arrangements, both to safeguard personnel and assets and to maintain constructive relations with surrounding communities. For the Laleia Solar IPP Project, security risks are considered moderate. Residents and authorities have expressed broad support for the project, and the area lacks other major industrial activities that might attract conflict. Nonetheless, the presence of valuable equipment, the movement of vehicles and workers, and the need to manage interactions with communities highlight the importance of a proportionate and transparent Security Management Plan.

This Plan complements the broader Environmental and Social Management System (ESMS) and aligns with the International Finance Corporation (IFC) Performance Standard 4 on Community Health, Safety, and Security. It also responds to gaps identified in the 2024 EIS, which only briefly referred to fencing and security patrols.

8.7.2 Objectives

The key objectives of the Security Management Plan are to:

- Ensure the safety of project personnel, contractors, and visitors.
- Protect project assets and infrastructure against theft, vandalism, or accidental damage.
- Prevent and respond proportionately to security incidents without infringing on community rights or creating unnecessary tension.
- Align security practices with international human rights standards and good industry practice.
- Foster a cooperative and respectful relationship with local communities through transparent communication and engagement.

8.7.3 Security Context

Timor-Leste is generally peaceful, though it continues to experience localized security challenges. Petty crime, including theft and vandalism, is relatively common; political tensions may rise during election periods; and trust in state security institutions varies. While violent conflict is unlikely in the Laleia area, local communities do maintain longstanding customary rights to land and resources within the project area. Residents have highlighted the loss of access to grazing areas, firewood, tamarind trees, and coastal paths. Managing these expectations will be critical to avoid misunderstandings and potential disputes (see also Chapter 10).

Community policing initiatives in Timor-Leste have improved relations between residents and police, with strong emphasis on cooperation at the suco level. These positive developments can be built upon by adopting a security approach that emphasizes proportionality, transparency, and community collaboration.

8.7.4 Security Arrangements

Physical Security Measures - The project area will be enclosed by perimeter fencing, with controlled entry points and patrols to prevent unauthorized access. Perimeter roads will double as firebreaks, security patrol routes, and community access corridors, ensuring security measures also support safety and community needs. Lighting and surveillance systems will be installed at access gates and sensitive facilities such as the substation and Battery Energy Storage System (BESS).

Personnel - Security personnel will be deployed at the site gates and on regular patrols. Recruitment will prioritize individuals from local communities wherever feasible, ensuring familiarity with the local context and building trust. All security staff will be trained in:

- Human rights and the Voluntary Principles on Security and Human Rights.
- Conflict sensitivity and engagement with local residents.
- Emergency response and coordination with project health, safety, and environment teams.

8.7.5 Community Interaction

Community relations are central to maintaining a safe and secure project environment. Measures will include:

- Constructing a perimeter road outside the fence to maintain community access to the beach.
- Coordinating with community leaders and local police to manage occasional livestock grazing near the fence.
- Providing clear communication to residents about project boundaries, access points, and security protocols.
- Ensuring grievances related to security incidents are addressed through the project's Grievance Redress Mechanism (GRM).

8.7.6 Coordination with Authorities

While day-to-day security will be managed by the project, coordination with the Community Protection Unit and Traffic and Road Safety Unit of the national police will be maintained, particularly for incidents involving public roads or community disputes. Any request for police support will be carefully managed to ensure actions remain proportional and respectful of human rights.

8.7.7 Mitigation Measures

Security risks will be managed through prevention, monitoring, and community engagement. Core measures include:

- Transparent communication of project security policies to workers and communities.
- Training all security staff in use-of-force protocols, with force used only as a last resort.
- Maintaining a code of conduct for security staff, with disciplinary measures for breaches.
- Establishing incident reporting and investigation procedures.
- Integrating security planning with the Construction Traffic Management Plan and Emergency Preparedness and Response Plan.

8.7.8 Monitoring and Reporting

The Security Management Plan will be monitored as part of the ESMS. Key indicators will include:

- Number and type of security incidents.
- Community complaints related to security staff or arrangements.
- Compliance of security personnel with training and code of conduct.
- Results of regular audits of security procedures and facilities.

Annual reports will be submitted to EDTL and ANLA, and periodic reviews will be undertaken to ensure the Plan remains effective and proportionate.

9 ENVIRONMENTAL AND SOCIAL MANAGEMENT SYSTEM

9.1 Owner Environmental and Social Policy Statement

In accordance with IFC Performance Standard 1, each project is required to establish a project-specific Environmental and Social (E&S) Policy that sets out the guiding principles for environmental protection, occupational health and safety, social performance, and community engagement.

At the time of this Supplementary ESIA, the legal entity that will own and operate the Laleia Solar IPP has not yet been constituted. Consequently, a project-specific E&S Policy is not yet in place. The Owner, a consortium of EDF power solutions and IEI-PIEI-P, recognizes this requirement and confirms that such a policy will be prepared, adopted, and disclosed prior to the start of construction.

The project-specific E&S Policy will be aligned with the IFC Performance Standards, the Equator Principles, and Good International Industry Practice (GIIP). It will also draw directly from the corporate-level E&S commitments of both EDF power solutions (see Attachment 3) and IEI-P, which already encompass strong principles of environmental stewardship, respect for human rights, safe and fair labor conditions, and constructive engagement with stakeholders.

The Laleia Solar IPP E&S Policy will therefore:

- Provide a clear statement of the project's commitment to environmental protection, social responsibility, and ethical conduct;
- Establish the framework for the Environmental and Social Management System (ESMS);
- Guide contractors, subcontractors, and service providers in meeting the project's E&S standards; and
- Serve as a reference point for ongoing monitoring, reporting, and engagement with regulators, lenders, and local communities.

9.2 Labor and Working Conditions

As internationally recognized corporations, both EDF (*Electricité de France*) and Itochu Corporation maintain well-established human resources (HR) policies that reflect global good practices and high standards of corporate responsibility.

EDF—a leading multinational utility—has a long-standing commitment to fair labor practices, diversity, and employee well-being, as evidenced by its adherence to international frameworks such as the UN Global Compact and the ILO's core conventions. EDF's HR policies emphasize non-discrimination, equal opportunity, and support for professional development and work-life balance. The company is recognized for its proactive approach to occupational health and safety, implementing rigorous safety management systems and fostering a culture of continuous improvement and dialogue with employees. EDF regularly features in sustainability and corporate responsibility indices, reflecting its transparent approach to labor relations and stakeholder engagement.

Itochu Corporation—one of Japan's largest trading companies—likewise upholds comprehensive HR policies rooted in respect for human rights and ethical business conduct. Itochu is a signatory to the UN Global Compact and has established its own human rights policy in line with international standards. The company is committed to promoting diversity and inclusion, preventing harassment,

and providing a safe and healthy work environment. Itochu's global HR management system ensures fair employment contracts, grievance mechanisms, and support for employee welfare and skill development across its international operations.

In the context of the Laleia Solar IPP Project, both EDF and IEI-P bring these strong corporate HR frameworks to bear as project Owners. Their global experience and high standards provide assurance that labor and working conditions will be managed ethically and responsibly, in full compliance with IFC Performance Standard 2 and Timor-Leste law. The Project will ensure that both direct employees and contractor staff are treated with dignity and respect throughout all phases.

Construction Phase (EPC Contractor Responsibility)

During construction, the EPC contractor must establish and enforce labor and working conditions that fully comply with IFC PS2 and Timor-Leste labor law. Key requirements include:

- Fair Employment: All workers will have written contracts outlining their rights, wages, working hours, and benefits. Recruitment, promotion, and discipline will be fair and non-discriminatory.
- Prohibition of Child and Forced Labor: The EPC contractor will strictly prohibit child labor and forced labor, ensuring all workers meet the minimum age requirements.
- Safe and Healthy Working Conditions: The EPC contractor will develop and implement an Occupational Health and Safety (OHS) plan, provide necessary PPE, and deliver regular safety training. High-risk activities will be managed with strict controls.
- Worker Accommodation: If worker housing is provided, it will meet minimum standards for safety, hygiene, privacy, and access to clean water and sanitation.
- Grievance Mechanism: Workers will have access to a clear, confidential, and responsive grievance mechanism.
- Third-Party Workers: All subcontractors and suppliers must comply with the same labor standards. The EPC contractor will monitor and enforce compliance through regular inspections and worker consultations.

Operation Phase

During operations, the Operator will:

- Maintain Fair Working Conditions: All operational staff will be employed under clear, fair contracts. Equal opportunity and non-discrimination will be upheld in all employment practices.
- Health and Safety: The Operator will maintain an OHS plan, provide necessary training and equipment, and ensure a safe work environment.
- Grievance Mechanism: Operational staff will have access to a grievance mechanism for complaints or concerns.
- Continuous Improvement: The Operator will monitor labor practices, conduct regular reviews, and address any issues promptly.

Supply Chain and Ethical Sourcing

The Project will encourage ethical labor practices among key suppliers and vendors (largely applicable to the construction phase). Due diligence will be carried out to identify and manage risks of child or forced labor, and corrective actions will be taken if issues are found.

Diversity and Inclusion

The Project will promote an inclusive workplace culture, providing equal opportunities regardless of gender, ethnicity, religion, disability, or other personal characteristics. Special attention will be given to the protection of vulnerable groups.

9.3 Contractor Oversight and Compliance Plan

To ensure the Laleia Solar IPP Project is delivered in accordance with international standards and local requirements, an adequate contractor oversight and compliance framework will be established. This framework is designed to ensure environmental, social, health, and safety (ESHS) requirements are fully integrated into construction activities, and that risks are effectively managed throughout the construction period.

The EPC contractor will be contractually required to develop and implement a stand-alone Environmental & Social Management System (ESMS) for the construction phase. This ESMS will align with IFC Performance Standards, Owner's E&S policies, and applicable Timor-Leste laws and regulations. The ESMS will include management plans for key issues such as air quality, noise, waste, water management, biodiversity protection, traffic safety, community engagement, and occupational health and safety.

IEI-P/EDF, as the project Owner, will establish clear and comprehensive E&S requirements in all contractual documents and specifications provided to the EPC contractor. These requirements will set site-specific expectations for compliance, reporting, and performance monitoring during construction.

Once construction is underway, IEI-P/EDF will conduct regular oversight of the EPC contractor's performance (Figure 9-1). This will include:

- Monthly site inspections and E&S performance reviews to verify compliance.
- Document reviews of monitoring reports, incident logs, and corrective actions.
- Ongoing communication and feedback loops to address non-conformances and support continuous improvement.

Where necessary, IEI-P/EDF will provide targeted support or require corrective actions to address deficiencies or adapt to changing site conditions. The Owner will also engage with local authorities and communities to ensure project transparency and accountability.

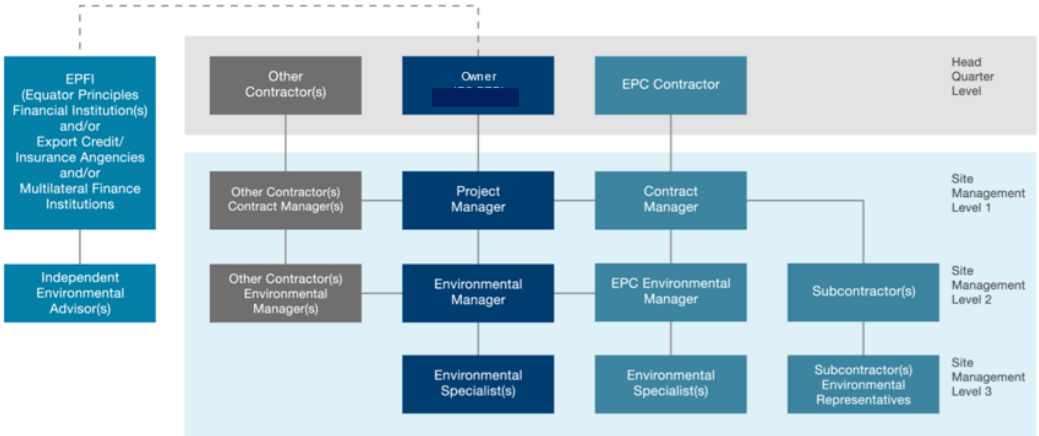


Figure 9-1 Construction Phase Environmental Management Lines of Responsibility

9.4 Institutional Arrangements

During the operational phase, the Laleia Solar IPP Project will implement a fit-for-purpose Environmental and Social Management System (ESMS) to ensure responsible operation, compliance with regulations, and the protection of environmental and social values. Given the small operational workforce and low-impact nature of solar energy generation, the institutional arrangements are streamlined but still maintain adequate oversight and accountability.

Organizational Structure and Responsibilities

Owner's Oversight: IEI-P/EDF, as project owners, will retain overall responsibility for E&S performance, ensuring that the ESMS remains aligned with international standards and Timor-Leste's legal requirements.

Site Manager: A dedicated Site Manager will oversee daily operations, supervise site staff, and ensure all ESMS procedures are followed. The Site Manager will act as the main point of contact for environmental, social, health, and safety issues.

E&S Coordinator: An Environmental & Social Coordinator (this may be a dedicated staff member or a shared responsibility, given the small team) will be responsible for E&S monitoring, incident reporting (OHS), community engagement, and ensuring compliance with management plans.

Support Staff: All operational staff will receive regular training on ESMS procedures, safety protocols, emergency response, and environmental awareness.

Capacity Building and Continuous Improvement

Management will provide ongoing training and refresher courses to ensure all staff are aware of their E&S responsibilities. The Site Manager and E&S Coordinator will conduct routine inspections and monitoring to identify risks, ensure compliance, and implement corrective actions as needed. Regular internal reviews and periodic audits will drive continual improvement.

Scope of the Operational ESMS

The ESMS will cover all routine activities at the Laleia Solar IPP Project, including:

- Control room operations
- Maintenance of solar panels, inverters, substation, circuits, and BESS units
- Vegetation management to reduce fire risk and biodiversity management
- Waste management and pollution prevention
- Water management
- Occupational health and safety procedures
- Security management
- Community engagement and grievance management
- Emergency preparedness and response, especially for fire or severe weather events

Stakeholder Engagement and Reporting

The project will maintain open communication with local authorities and communities, including clear procedures for lodging and addressing grievances (Section 10.0). Performance reporting, compliance checks, and engagement with stakeholders will be part of ongoing operations.

10 STAKEHOLDER ENGAGEMENT

10.1 Stakeholder Engagement Plan

Introduction

This Stakeholder Engagement Plan (SEP) outlines the strategy and approach for engaging with stakeholders throughout the entire lifecycle of the Project—from planning and construction through operation and eventual decommissioning. It establishes a framework for transparent, inclusive, and culturally appropriate communication between the Project Proponent, contractors, and affected communities. The detailed SEP, including stakeholder mapping, engagement calendar, and KPIs, is provided in Appendix 8.

The SEP has been developed in line with IFC Performance Standard 1: Assessment and Management of Environmental and Social Risks and Impacts, the IFC Good Practice Handbook on Stakeholder Engagement (2022), and relevant national legislation of Timor-Leste. The plan ensures that stakeholder engagement is systematic, documented, and responsive to the evolving needs and expectations of affected and interested parties.

The objectives of this SEP are to:

- Ensure early, continuous, and meaningful engagement with stakeholders;
- Identify and understand stakeholder concerns and incorporate them into decision-making;
- Disclose timely and accessible information about the Project, its risks, and mitigation measures;
- Maintain mechanisms for two-way communication and grievance resolution; and
- Strengthen mutual trust between the Project and communities through transparency and accountability.

Stakeholder Identification and Analysis

Stakeholders were identified through desk review, field visits, and consultations with local authorities and community representatives. Stakeholders have been categorised according to their level of influence, interest, and the potential impact from the Project. The key stakeholder groups include (Table 10-1):

Table 10-1 Key Stakeholders

National Agencies	*Electricidade de Timor-Leste* (EDTL) as the national electricity utility, responsible for power generation, transmission, and distribution.
	Ministry of Environment (licensing and oversight), Ministry of Petroleum and Minerals, Ministry of Public Works, Ministry of Cultural Heritage (protection of cultural sites), Ministry of Health (public health oversight), and Ministry of Interior/Security (including National Police, PNTL), with representation at both national and municipal levels.

Local Authorities	Manatuto Municipality administration and sectoral departments.
	Laleia Administrative Post chief, suco chiefs (*chefe suco*), aldeia heads, and village councils in the affected area.
Local Communities	Households, farmers, herders, and fishers in the sucos of Haturalan, Lifau, and Cairui, with interests in land access, livelihood security, environmental protection, cultural heritage, and potential socio-economic benefits (jobs, infrastructure, community development).
	Liurai (traditional chiefs), elders, and customary authorities involved in land, resource, and cultural site management.
Vulnerable Groups	Female-headed households, families with high dependency ratios, and Indigenous Peoples as defined under PS7. In Timor-Leste, all communities are generally considered indigenous; however, differentiated attention will be given to Galolen language speakers in Lifao and Haturalan, and traditionally oriented sub-groups identified through further fieldwork.
Religious Leaders and Institutions	Catholic Church (parish priests, catechists, church councils) serving the Sucos of Haturalan, Lifau, and Cairui, and the wider Manatuto area. The church's involvement is vital for community engagement, dissemination of information, support for vulnerable groups, and cultural heritage considerations.
Communities along the Transportation Corridor	Villages located on the Dili–site route, particularly where traffic safety concerns arise near schools.
Civil Society and NGOs	Organizations active in rural livelihoods, environmental protection, women's rights, or community development in Manatuto (e.g., World Vision, local NGOs, church groups).
Private Sector and Contractors	Local businesses and service providers who may participate in construction, maintenance, or supply chains.
Development Partners	International agencies and donors supporting related projects in the region (e.g., JICA, World Bank, IFC, ADB, UNICEF).

Engagement Principles

The Project's engagement is guided by the following principles:

- *Transparency and Accountability*: Information will be shared in a timely and accessible manner.
- *Inclusiveness:* All affected and interested parties, including vulnerable groups, will have opportunities to express their views.
- *Cultural Sensitivity:* Local customs, rituals, and traditional governance systems will be recognised and respected.
- *Responsiveness*: Concerns raised will be addressed promptly and incorporated into decision-making.

- *Gender Equality:* Women's participation will be promoted through dedicated consultation opportunities and targeted support.

Past Engagement Activities

In 2022, two main rounds of public consultations were held for the Timor-Leste Solar IPP project Appendix 2).

The first round took place in August 2022 across several sucos and aldeias in Laleia Administrative Post, Manatuto. Community members from Haturalan Suco (Uma Iuk, Weboro, Ralan) and Lifao Suco (Uma Rentau, Lenao, Uma Clalan) participated. Attendance records show large turnouts – for example, Uma Iuk had 65 households represented (225 people, almost evenly split between men and women), Weboro brought together 470 participants, and Ralan over 400. Similar numbers were seen in Lifao's aldeias, such as Lenao and Uma Rentau.

The concerns raised centered on agriculture and land use, electrification, job opportunities for locals, and maintaining access for cultural and livelihood activities. Separate gender-focused discussions were also held, particularly highlighting women's livelihoods and community development programs.

The second round occurred in November–December 2022. Consultations were again held in Haturalan Suco (Uma Iuk, Weboro, Ralan). These later consultations reinforced earlier issues while also emphasizing the need for transparent information sharing, grievance mechanisms, and fair employment opportunities during construction and operation.

In addition to community-level meetings, discussions were also conducted with government agencies (e.g., Ministry of Justice – National Cadastral Service, Ministry of Higher Education, Secretary of State for Professional Training and Employment) and NGOs such as Conservation International – Timor-Leste. In 2025, additional consultation were held with the management authorities of the Lamsanak PA (see Chapter 6 and Appendix 4 for details).

In 2025, the Owner held two additional town hall meetings on 25 and 26 August 2025 (Appendix 3), with subsequent follow up consultations by the ESIA Consultant to gain a better appreciation of the importance of ecosystems provided by the project area. All consultations revealed a set of recurring themes, summarized in Table 10-2.

Table 10-2 Past Consultation Outcome

Theme	Expressed Comments and Suggestions
Grazing Land	Concerns about loss of grazing land for cattle, goats, and sheep, as well as reduced access to water sources for livestock.
Tamarind Trees	Potential loss of tamarind trees.
Fishing Access	Worries about restricted access to coastal fishing areas and potential impacts on household protein sources and income.
Local Employment	Strong desire for local job opportunities, with requests for employment prioritization for residents of Haturalan and Lifao.
Capacity Building	Requests for training and skill development programs to promote community benefits beyond temporary employment.

Rituals and Ceremonies	Emphasis on the importance of conducting traditional rituals and ceremonies prior to project initiation and at key project milestones.
Land for Future Generations	Concerns about the availability of land for future generations' housing, especially in the context of increasing development pressures in Laleia.
Women's Specific Concerns	Requests for support for women's small businesses, improved public lighting, and access to refrigeration to enhance household food security and safety.

Project Responses to Community Consultations Integrated into Design

Project responses integrated into the design include (see also Section 1.3):

- Preservation of a 200 to 300-meter-wide coastal belt to facilitate cattle movement between east and west.
- Feasibility studies for installing shallow wells within the project region to improve water availability for livestock during the dry season.
- Maintenance of alternative beach access routes to support continued fishing and community activities.
- Development of a local employment plan prioritizing residents of directly affected villages, particularly Haturalan and Lifao.
- Formal incorporation of traditional rituals and ceremonies into the project schedule at key milestones.
- Targeted measures to address women's specific concerns, including support for small businesses, through community development initiatives.

Stakeholder Engagement Programme

Stakeholder engagement activities will be implemented throughout the Project lifecycle, structured into pre-construction, construction, and operational phases Table 10-2.

Table 10-3 Stakeholder Engagement Programme

Activity	Description / Approach	Timeline
Prior to Construction		
Awareness Training	Disseminate project information through posters, flyers, and information sessions in each suco to ensure residents understand the timeline, activities, and potential impacts plus management plans in place. Inform on GRM.	1 – 2 months before construction start
Initial Town Hall Meeting	Conduct an open town hall with local authorities, suco leaders, and communities to formally announce the construction start	2 – 3 weeks before construction

	and outline the works. Inform on GRM and environmental and social management plans.	
Traditional Rituals	Support and participate in local customs and ceremonies to mark the start of construction, including a ground-breaking event.	Just before construction commencement
During Construction		
Regular Updates & Feedback	Hold regular town hall meetings to present updates, gather feedback, and document issues and responses.	Throughout construction
Labor Recruitment & Local Business Participation	Implement transparent recruitment prioritizing local residents; engage local businesses for services such as tree transport and earthworks.	At start of construction and on-going
Tree Management	Communicate land clearing in advance; discuss use of felled trees with community; coordinate with Manatuto Forestry Department for oversight.	Before and during land clearing
Temporary Beach Access Restrictions	Notify communities of temporary access restrictions for safety; share updates on new access road completion timeline.	During coastal construction activities
Engagement Principles	Uphold openness, respect for customs, and prompt issue resolution through responsive communication.	Continuous throughout construction
Operation Phase		
Inauguration Ceremony	Host a formal opening with government, suco leaders, church, and community to celebrate project commissioning.	At commencement of operations
First Year Anniversary Event	Organize a public event marking the first year of operations to share updates and reaffirm commitments.	12 months after commissioning
Accessible Communication Channels	Maintain the grievance mechanism and display information on how to submit feedback at suco offices.	Continuous throughout operation
Periodic Updates	Provide advance notice of any maintenance or operational changes affecting communities.	As needed

Operational Jobs	Prioritize local hiring for limited roles (e.g., 2–4 security staff) via transparent recruitment with suco leaders.	During initial operational hiring & renewal
Maintenance of Perimeter Road	Employ local residents to maintain the access road to the beach.	Quarterly or as required
Fire Hazard Reduction	Employ residents for selective clearing of underbrush to prevent fires.	Twice annually or as needed
Dialogue & Responsiveness	Maintain open, respectful communication with community leaders to address concerns promptly.	Entire project lifecycle

Information Disclosure and Consultation Process

Information disclosure will occur at least two weeks prior to any major engagement activity to allow stakeholders sufficient time for preparation. Communication will use appropriate and accessible formats, including non-technical summaries, posters, local radio announcements, and social media updates.

Consultation methods will vary according to stakeholder groups and may include:

- Individual or small-group meetings with key informants;
- Focus group discussions for targeted issues (e.g., women's livelihoods);
- Public meetings and town-hall sessions for broader updates; and
- Electronic correspondence and a community hotline for ongoing communication.

All disclosed information will be culturally appropriate and provided in the relevant local languages.

Informed Consultation and Participation

The Project will apply the IFC principle of Informed Consultation and Participation (ICP) by fostering iterative dialogue and joint analysis with affected communities. Consultations will begin early, continue throughout the Project cycle, and be free from coercion or manipulation.

Community input will directly inform mitigation measures and community development initiatives. Each engagement activity will be documented with records of participants, issues raised, and agreed follow-up actions.

10.2 Grievance Redress Mechanism

Introduction

A transparent and accessible Grievance Redress Mechanism (GRM) is essential for addressing concerns and complaints from stakeholders affected by the Laleia Solar IPP Project throughout its construction, operation, and decommissioning phases. The GRM will ensure that any individual or group especially local community members, can express concerns, have them considered fairly, and receive prompt

resolution without fear of retaliation. This approach is consistent with IFC PS 1 and ADB Safeguard Requirements 2.

Objectives

The Grievance Redress Mechanism (GRM) is designed to ensure that all community members and stakeholders have access to a clear, transparent, and culturally appropriate process for raising concerns or complaints related to the project (presented as a stand-alone document in Appendix 7). By providing a structured approach for receiving, evaluating, and resolving grievances, the GRM aims to promote early identification and resolution of issues, thereby minimizing potential adverse impacts and strengthening trust between the project and local communities. Special emphasis is placed on ensuring that vulnerable groups including women, elders, and linguistic minorities can access the mechanism easily and have their concerns addressed fairly and respectfully.

Scope

The GRM is open to all stakeholders, including residents, workers, contractors, business owners, and community-based organizations, and covers all project-related activities and impacts.

Institutional Responsibilities

The Community Liaison Officer (CLO) will serve as the primary focal point for receiving and managing grievances. The CLO will maintain regular presence within the community and ensure the process is well-communicated and easily accessible.

The Project Manager will oversee the overall implementation and ensure appropriate resources are allocated for grievance management. Sensitive or high-risk grievances (e.g., involving gender-based violence, discrimination, or human rights) will be handled with strict confidentiality and referred to appropriate authorities or specialist support services as necessary

Grievance Procedure

Step 1: Grievance Submission	Grievances can be submitted verbally or in writing, in Tetum, Galolen, or Portuguese. Submission channels include: ▪ Grievance forms available at suco offices and project offices. ▪ Dedicated project phone number and WhatsApp line. ▪ Suggestion/complaint boxes at key locations (e.g. suco office, worker camp). ▪ Email or through the project website (if available). ▪ Direct verbal submission to a designated Community Liaison Officer (CLO).
Step 2: Grievance Registration and Acknowledgement *(within 2 working days)*	All grievances are logged in a Grievance Register by the CLO within 2 working days of receipt. The complainant receives written or verbal acknowledgement, including information on next steps and estimated time for resolution.

Step 3:
Grievance Assessment and Investigation
(within 10 working days)

The CLO reviews the grievance and, if needed, conducts an investigation, including site visits and consultation with relevant parties. Sensitive grievances (e.g. those related to gender, discrimination, or safety) are handled confidentially and with appropriate sensitivity.

Step 4:
Resolution and Communication
(within 15 working days)

The project aims to resolve grievances within 15 working days. The CLO presents the proposed resolution to the complainant, seeking agreement. If the issue is resolved, the outcome is documented, and the case is closed in the Grievance Register. If the complainant is not satisfied, the grievance is escalated to senior project management and, if necessary, to relevant local authorities or an external mediator.

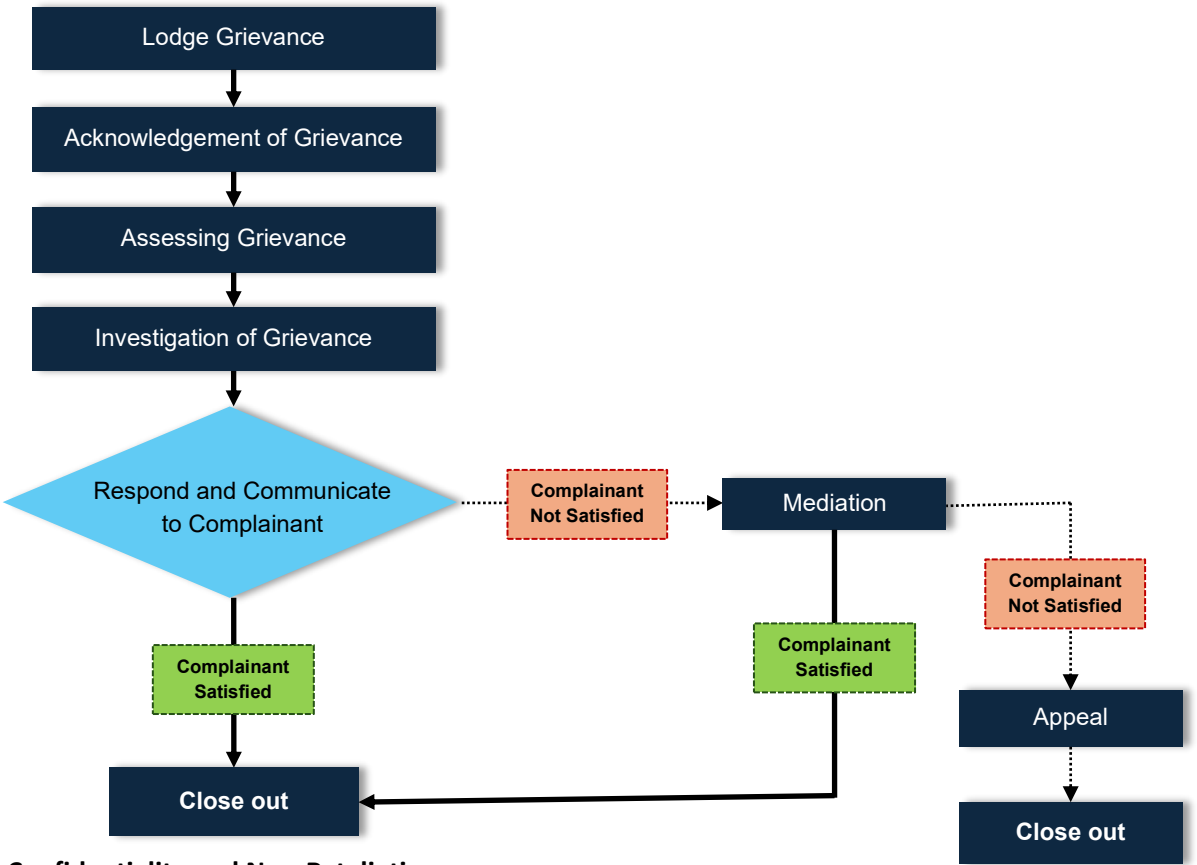
Step 5:
Appeals and External Recourse
(as needed)

If the grievance remains unresolved, the complainant may appeal to municipal authorities, seek assistance from the national Ombudsperson, or pursue legal remedies as per Timor-Leste law. The project will provide information and support for external referral if requested.

Step 6:
Monitoring and Reporting
(ongoing)

The project will regularly analyze grievance trends and report summary information (excluding personal details) to stakeholders at community meetings and in project reports. The effectiveness of the GRM will be reviewed annually, with improvements made as necessary.

Figure 10.1 Grievance Mechanism Process



Confidentiality and Non-Retaliation

The Project commits to maintaining the confidentiality of complainants and to ensuring that no individual suffers retaliation for lodging a grievance in good faith. Anonymous complaints will be accepted and handled with equal diligence. Only authorized personnel will have access to grievance records.

Documentation and Record-Keeping

All grievances, investigations, and resolutions will be systematically documented in a Grievance Register maintained by the CLO. The register will include:

- Date and mode of submission;
- Complainant's name (if provided);
- Description of the issue;
- Actions taken and outcomes;
- Dates of acknowledgment, resolution, or escalation.

Records will be securely stored and made available for review by IFC, ADB, and government authorities upon request.

Continuous Improvement

The GRM will evolve based on feedback, lessons learned, and stakeholder evaluations. Regular training will be provided to Project staff and contractors to strengthen capacity for effective grievance handling and communication.

Community Awareness

The Grievance Redress Mechanism will be introduced and explained during pre-construction consultations, at regular community meetings, and through printed materials available at suco offices and other public places. To ensure the mechanism is effective and locally relevant, the GRM procedure including the six-step process described above will be finalized in close consultation with residents and community leaders.

10.3 Community Development Plan

The Community Development Plan outlines how the Laleia Solar IPP Project will bring tangible benefits to nearby communities, particularly in Haturalan and Lifao. Community programs focus on livelihood enhancement and capacity building, not displacement compensation. The plan focuses on creating local economic opportunities, managing natural resources responsibly, supporting replanting efforts, and building awareness about renewable energy and sustainability. All initiatives will be carried out in close collaboration with suco councils, customary leaders, and relevant government agencies to ensure transparency, fairness, and long-term value for the community.

Local Employment and Business Opportunities

The construction phase offers an important opportunity for local residents to gain jobs and income. The project will prioritize hiring from nearby sucos, especially for unskilled and semi-skilled roles such as laborers, drivers, and helpers. Local recruitment will be done in an open and transparent way, with information shared through suco meetings and local notice boards.

Apart from direct employment, the project will also encourage local business participation. During construction, there will be demand for services such as food catering, transport, small equipment hire, and construction materials (e.g., gravel, sand). Wherever possible, these will be sourced from local providers who meet basic safety and quality requirements.

The project will organize a business seminar for interested community members and small businesses. This will help local suppliers meet project expectations and improve their future business prospects.

Sustainable Wood Utilization

As part of site clearance, tamarind and other trees will need to be felled. Rather than letting this resource go to waste, the project aims to turn it into an opportunity for community benefit, in full compliance with national laws on timber use.

In collaboration with the suco councils and relevant authorities, the project will develop a fair and transparent system to record, distribute, or sell the wood generated. Possible approaches include:

- *Direct Distribution:* Giving a portion of the wood to affected households for use as firewood or construction material.
- *Community Sale and Reinvestment:* Selling higher-value timber in bulk and using the proceeds for local development priorities agreed by the community.
- *Collective Use*: Using some of the wood for community projects like repairing meeting halls or school buildings.

All steps from inventory to final use will be discussed openly and documented to ensure accountability and fair benefit-sharing.

Tamarind Tree Planting in Upper Catchments

As part of community development initiatives, the project could support tamarind trees *(Tamarindus indica)* planting in the upper catchment near the site. These plantings would serve multiple purposes: partially compensating for the removal of tamarind trees in the valley, stabilizing soils on upland slopes, and enhancing long-term water retention in the landscape. Tamarind is a drought-resistant species once established, requiring only moderate care during the seedling stage, and it has long-term livelihood value for local households through fruit harvests, shade, and firewood.

Renewable Energy Education

As Timor-Leste's first large-scale solar farm, the project will serve as a valuable educational example for local schools. The project team will collaborate with nearby schools to organize site visits and learning sessions on renewable energy, environmental protection, and climate change.

Students will have the chance to see how solar power works, learn about sustainable energy use, and understand the role of renewable projects in supporting national development. This program aims to inspire local youth, promote environmental awareness, and build pride in the country's clean energy transition.

Enhanced Beach Access for Fishing and Community Activities

Access to the beach is important for local communities who use it for small-scale fishing, recreation, and traditional activities. The project acknowledges that construction may temporarily affect beach access and that the existing dirt road becomes difficult to use during the wet season.

To support continued access and improve safety, the project proposes to develop an all-weather access road connecting the villages to the coast. The preferred alignment is along the western fence line, which can also serve as a fire break, subject to final engineering design.

The road will be designed to minimize environmental impact, avoid sensitive areas, and use appropriate drainage and erosion control. This improvement will benefit local fisherfolk and community members by providing safer, more reliable coastal access year-round.

Targeted Support for Women's Needs and Economic Empowerment

Recognizing the key role of women in household and community resilience, the project will promote women's participation and economic empowerment through targeted initiatives.

The project will explore partnerships with local women's groups and entrepreneurs to organize an annual business seminar focused on practical skills. For many families in Timor-Leste, such knowledge can help unlock new income sources and strengthen household financial stability.

These programs will be designed in consultation with local women to ensure their needs and priorities guide implementation, and that the activities are culturally appropriate and sustainable.

Implementation and Monitoring

The project company will coordinate all community development activities in partnership with the EPC contractor, suco councils, and government departments such as Forestry and Education. Regular progress updates will be shared during community meetings and through the Stakeholder Engagement Plan.

Feedback and grievances related to these initiatives will be addressed through the project's Grievance Redress Mechanism (GRM) to ensure transparency and responsiveness.

Each program will be reviewed annually with community representatives to track progress, identify lessons learned, and plan for continuous improvement.

11 KEY FINDINGS AND GENERAL RECOMMENDATIONS

The Supplementary Environmental and Social Impact Assessment for the Laleia Solar IPP confirms that there are no environmental, social, or cultural constraints likely to prevent project development. The project has been classified as a Category B project under the IFC Performance Standards, reflecting that impacts are site-specific, reversible, and readily mitigated with established measures. The project's safeguard classification under ADB SPS (2009) is: Category B for Environment, Category C for Involuntary Resettlement, and Category C for Indigenous Peoples. At the same time, under Timor-Leste's Environmental Licensing Decree Law 39/2022, the project is classified as Category A due to its scale and location, which necessitated a full EIS and EMP.

Two issues emerged as particularly important for the local communities. First, maintaining north-south access across the site, so that villagers can continue to move freely from the highway to the shoreline for fishing, seaweed collection, and other coastal uses. Second, ensuring east-west access for livestock grazing, so that cattle can move seasonally across the valley between upland areas. Both access needs have been incorporated into project design through perimeter roads and dedicated passageways, and they will remain key considerations in stakeholder engagement and livelihood support.

It is worth noting that the project enjoys strong Government of Timor-Leste support, as it contributes directly to national priorities for renewable energy, climate action, and energy security. As the first large-scale independent power producer (IPP) based on renewable energy in the country, it is a flagship initiative demonstrating Timor-Leste's capacity to host bankable infrastructure aligned with international standards.

Timor-Leste remains one of the poorest countries in the Asia-Pacific region, with a GDP per capita of approximately USD 1,500 and a Human Development Index ranking in the lower third globally. In this context, any new investment has disproportionate importance. The project will generate significant positive benefits nationally by reducing dependence on imported diesel fuel. However, it must also be recognized that rural households are highly vulnerable; even small negative changes - such as restrictions on land access - can have meaningful adverse impacts on livelihoods.

11.1 Overriding Project Benefits

The primary benefit of the project is the replacement of expensive, polluting diesel-based electricity with clean, renewable solar energy. Over its 25-year operating life, the plant is expected to avoid approximately 2.5 million tons of CO_2 emissions. This will reduce Timor-Leste's dependence on volatile fossil fuel imports, improve national energy security, and lower the cost of electricity generation. The project will also contribute to Timor-Leste's climate change commitments and demonstrate the country's capacity to host large-scale renewable infrastructure.

11.2 Scale and Nature of the Project

By international standards, the Laleia Solar IPP is not a complex project. It involves established photovoltaic (PV) and battery energy storage technologies, to be deployed on state land with straightforward grid interconnection. The site is directly accessible by the national highway, and no physical resettlement is required. These features reduce overall project risk, simplify implementation, and enhance bankability.

11.3 Grid Connection

The Laleia site is highly favorable in terms of grid integration. The national 150 kV transmission line runs adjacent to the project boundary, enabling a direct and efficient interconnection. This minimizes the need for additional transmission infrastructure and reduces both costs and environmental impacts. Grid stability and reliability will benefit from the integration of solar power and battery storage, supporting Timor-Leste's energy security and reducing reliance on diesel generation.

11.4 Site Setting and Drainage Design

The project core is a floodplain, which offers advantages of flat terrain and road access but also carries risks of flooding, erosion, and high-velocity runoff. Drainage systems must therefore be designed to safely convey major storm flows while maintaining some natural retention. Preserving ponds at the northern end of the catchment will help regulate water, provide emergency firefighting reserves, and serve as habitat for migratory birds. Importantly, an engineered drainage system at the lower end of the catchment can also reduce flood hazards for downstream villagers (e.g., fishermen) by managing flows before they reach the coastal zone.

11.5 Groundwater Potential and Strategic Use

Professional judgement suggests that the valley underlying the project area has groundwater potential, supported by the presence of perennial springs in the wider Laleia area. Developing shallow wells or boreholes could provide an important supplementary water source for livestock during the dry season along the coastal belt, helping to mitigate the impacts of restricted grazing access. At the same time, groundwater reserves could serve as a critical resource for emergency firefighting, particularly in the event of a BESS-related incident, where the priority would be to contain the fire and prevent its spread rather than to extinguish the battery fire itself. Integrating groundwater use into the project's water management strategy would therefore strengthen both community livelihood resilience and site safety.

11.6 Stakeholder Consultation

Consultation to date indicates broad community acceptance of the project. At the same time, communities emphasized the importance of continued engagement and recognition of cultural practices. Future consultations should include local ceremonies and community gatherings, as outlined in the Stakeholder Engagement Plan. Examples include blessing ceremonies before land clearing and involving suco leaders in decision-making around grazing alternatives. Maintaining these culturally appropriate engagement approaches will be essential for long-term community support.

Close coordination with the Catholic Church is recommended, given its strong influence in Laleia and across Timor-Leste more broadly. The Church plays a central role in community cohesion, education, and moral guidance, and is widely trusted by local populations. Engaging Church leaders in communication about the project, community development initiatives, and environmental stewardship can help reinforce project messages, ensure broad acceptance, and provide an additional avenue for transparent and inclusive dialogue with affected communities.

11.7 Land Use and Livelihoods

The 350-hectare site is currently used for communal grazing, tamarind collection, and coastal resource harvesting. While no households will be physically displaced, the project will restrict access to land and resources, constituting economic displacement under IFC PS5. Livelihood impacts are minor and addressed through community access design (retained coastal routes, grazing corridors, and water wells). A stand-alone Livelihood Restoration Plan is not required under ADB Category C, but livelihood support measures are integrated within the ESHSMP. Interventions will be designed with input from suco leaders, women's groups, and youth to ensure inclusivity.

11.8 Management and Beneficial Use of Cleared Wood

During site clearing operations, substantial quantities of wood will be generated. Subject to the Government of Timor-Leste's regulations and ownership rights over state land, these woody materials present a temporary but meaningful benefit for local communities. With coordination and agreement from government authorities, the project should explore options to allocate cleared timber and firewood to villagers for domestic use (e.g. cooking, heating), fodder for livestock (if appropriate species), or small-scale carpentry. This not only helps reduce waste but also supports livelihoods. Additionally, using this wood under controlled management can reduce demand on remaining natural forest resources, aligning with national policy toward sustainable forest use. Proper local oversight (through suco leadership and customary authorities), in compliance with forestry law, should govern distribution to ensure equal benefit for all community members.

11.9 Coastal Zone and Community Access

The project area drains into a coastal zone used for occasional fishing, seaweed collection, and firewood harvesting. This area is of clear community importance. Construction of a perimeter access road will preserve community routes to the beach and help maintain good relations. The site also contains a unique seasonal lagoon that becomes brackish in the dry season, supporting mangroves, migratory birds, and occasional saltwater crocodiles. Protecting this feature through sensitive drainage design, light management, and community stewardship (e.g., a community coastal ranger program including waste collection) will reduce cumulative ecological impacts while offering opportunities for local employment.

11.10 Biodiversity and Cumulative Impacts

Although the project footprint does not overlap with critical habitats, nearby Key Biodiversity Areas (KBAs) support species of conservation importance, including green sea turtles and reef ecosystems. Artificial lighting, drainage alterations, and other cumulative pressures must be carefully managed. Light shielding, ecological monitoring, and coordination with other planned developments in Laleia (e.g., proposed shipyard or fisheries facilities) will be required to avoid cumulative ecological impacts.

11.11 Fire and Emergency Risk Management

NASA FIRMS data classify Laleia as a "low fire risk" administrative post. Nevertheless, localized hazards remain. Two categories of risk require attention: (1) Wildfires, which, although infrequent, could occur in surrounding landscapes. (2) Electrical and BESS-related fires, which present safety concerns due to

thermal runway and toxic gas emissions. Local firefighting capacity is inadequate to address a large-scale BESS fire. Prevention is therefore paramount, with design and operation aligned to NFPA 855, UL 9540A, and other international standards. Site systems should focus on containment and preventing the spread of fire, particularly to surrounding landscapes where wildfire ignition could cause broader community impacts.

11.12 Wind Patterns

Prevailing wind directions in the Laleia area are generally favorable for project development. During the dry seasons, winds tend to blow offshore, reducing the risk of dust emissions being carried toward nearby settlements during construction or operation. This natural advantage will help minimize nuisance impacts on communities and is highlighted as a positive environmental condition.

11.13 Employment Opportunities

The project will generate the greatest number of job opportunities during the construction phase, when demand for unskilled and semi-skilled labor is highest. Employment levels during the operational phase will be considerably lower, limited to plant operators, maintenance staff, and security personnel. This distinction should be clearly communicated during community consultations to manage expectations. At the same time, training and capacity-building programs during construction can help ensure local workers gain transferable skills that benefit them beyond the project.

11.14 Access Road and Logistics

The national coastal highway connecting Dili to Laleia is generally in good condition, providing a reliable logistics corridor for transporting equipment, materials, and personnel to the project area. While localized sections may require monitoring for heavy-load transport, no major upgrades are expected. The project's Traffic Management Plan will ensure safe and efficient movement of construction traffic along this corridor and through local communities.

11.15 Conclusion

In conclusion, the project's safeguard classification under ADB SPS (2009) is: Category B for Environment, Category C for Involuntary Resettlement, and Category C for Indigenous Peoples. The Category C determination for IR and IP reflects that design measures maintain community access to grazing, fishing, and collection areas, and that no distinct Indigenous Peoples are present within the project's area of influence. All livelihood and access considerations are managed through integrated ESHSMP measures and ongoing community engagement.

Overall, the Laleia Solar IPP represents a positive and strategically important investment for Timor-Leste. The project's environmental and social impacts are site-specific, generally minor in scale, and can be effectively managed through the application of established mitigation measures and good international industry practice. By contrast, the benefits are substantial—displacing costly diesel generation, reducing greenhouse gas emissions, and strengthening energy security. In addition, the Project will create local employment opportunities, albeit only temporarily during the construction phase. On balance, the project's positive national and community-level contributions far outweigh its

manageable adverse impacts, supporting its development as a flagship initiative for Timor-Leste's renewable energy transition. It is therefore recommended that the project proceeds.

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Appendix 1: 2022 Stakeholder Engagement Summary (All Held in Administrative Post Laleia, Manatuto)

Date*	Location / Hamlet	Suco	Participants / Households	Notes / Concerns
Aug 2022	Uma luk	Hatularan	65 households, 225 people (115 M / 110 F)	Agriculture, electrification, jobs, land use
Aug 2022	Weboro	Hatularan	146 households, 470 people (246 M / 224 F)	Employment, land, cultural ceremonies
Aug 2022	Ralan	Hatularan	110 households, 419 people (200 M / 219 F)	Agriculture land, electrification, livelihoods
Aug 2022	Uma Rentau	Lifao	175 households, 434 people (222 M / 212 F)	Rice farming, livelihoods
Aug 2022	Lenao	Lifao	103 households, 384 people (188 M / 196 F)	Rice farming, land size, electrification
Aug 2022	Uma Clalan	Lifao	(numbers not stated)	Women's livelihoods, NGOs, PNDS program
24 Nov 2022	Sede Suco Hall	Hatularan	Public consultation session	10:00–11:45 official recorded date
Nov–Dec 2022	Uma luk, Weboro, Ralan	Hatularan	(covered in group consultations)	General awareness, employment, electrification

**Exact day not listed in most 2022 records*

Appendix 2: 2022 Public Consultations

Appendix 3: Community Meetings 25 to 26 August 2025

Suco Lifau - August 25th 2025

Mr. Karlheinz (Greencorp)

Mr. Kajiyama (Itochu)

Mr. Frenky (Translator)

Director of EDTL (Manatuto)

Police Commandant of Manatuto

Number of participants = 36

Objectives of consultation

The objectives of consultation were to share information about the company that won the project got the information from villagers about the project to the potentially affected population and seek cooperation in order to incorporate their views and suggestion for implementation of the project.

Information disclosure

Participants	:	1. Administrator of Laleia 2. Chief of Suco Lifau and Haturlaran 3. Chief de Aldeias in Suco Lifau and Suco Haturlaran 4. Community members
Main Discussion Points	:	1. Tomas D.R. Ximenes (Chefe Suco Haturlaran) ➢ Confuse about the company or Government who come to visit and conducted the public consultant? ➢ How about their cattle when the project implement? How about the negative and positive impact when project implement? Response: ➢ Frenky Monteiro (Translator): Government like EDTL also come and before send also letter to local authority here. ➢ Karl and Kajiyama: due these questions that's why we have this public consultation. ➢ Director of EDTL: conduct this consultation about all from 2022-2024, last public consultation about visibility study of the project but today's consultation about the company that won the project and the objective is to know the community aspiration and to complete the public consultation before and the project implementation process. ➢ Frenky Monteiro (Translator): this consultation about project implementation and the company who won this project is from Japan and France. 2. Administrator of Laleia. ➢ I have just been inaugurated as a sub-district head in 2024. ➢ What is the topic today? Is the agreement letter ready or not? Do we have the agreement letter? Is the land owned by the cultural group or the government? Because we do not have the archive.

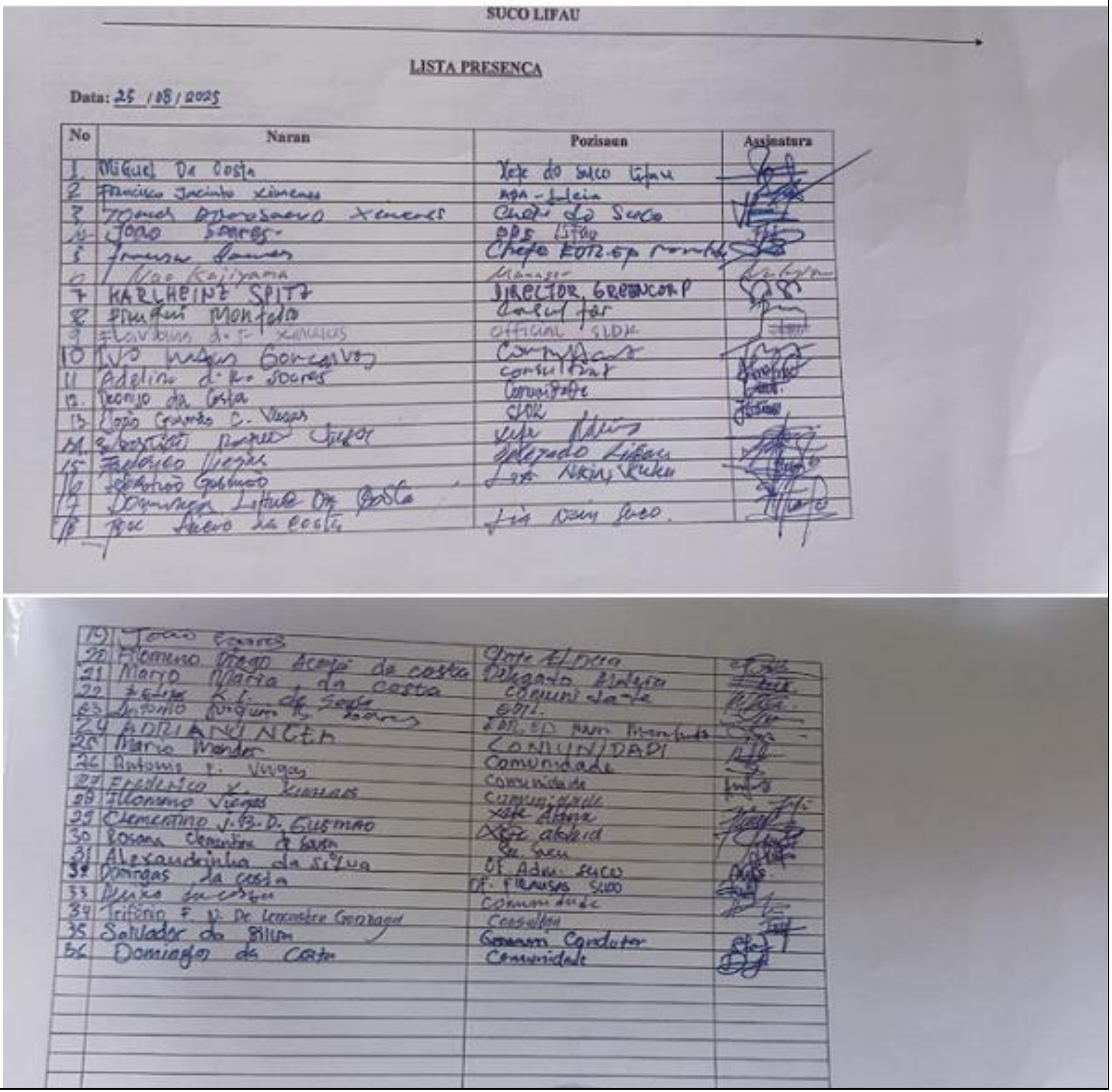
		➢ Suggestion: it is better if you consult with me first before you come. For tomorrow's consultation, we must prepare well. Actually, please inform us earlier so we can prepare properly. Also, please provide snacks for the public consultation participants because some of them live far from here. Response: ➢ Frenky Monteiro (Translator): I am the one who contacts, and I ask EDTL to prepare the letter for this consultation. The land is considered state-owned. The land document is signed by the Minister of Justice and given to EDTL. Today, the company holds the consultation, but tomorrow it is with the bank representatives to listen directly to the community's concerns and to confirm the environmental situation, because they want the project to have no negative impact on the environment. 3. Frederico Viegas. ➢ I know they came before to take water samples there, and they say they will leave 100 meters of space from the beach for the cows and goats in the area. ➢ The land also has cultural value, so we must respect the existing culture. That's why the cultural group and the government must work together. It's not that we do not agree, but everything must be done properly and without any problems. ➢ The consultation has done before and the groundbreaking ceremony is already done, the implementation is supposed to begin now. Response: ➢ Joao Soares Viegas (Community member): the groundbreaking is not done yet; it is only a marking. ➢ Frenky Monteiro (Translator): it is only marking to do the visibility study. 4. Jose Soares (Aldeia/Sub-village Chief) ➢ The Solar Plant project in Suco Lifau, Aldeia Umarentau creates difficulties for us because there is already a sardine factory in this area. This raises the question: where will our livestock go? The available land becomes limited. Therefore, we kindly ask if it is possible to relocate this project to another area. The population is also increasing, and the community needs space to live and grow in the future. Response: ➢ Karlheinz (GreebCorp): This public consultation is held to find a solution. 5. Frederico Xavier Ximenes ➢ Our concerns regarding our cattle and goats. ➢ How about the puddles those closed? ➢ Suggestion: as well as the cultural aspects, must be carefully considered, along with the secret spring water and the secret land, which require careful attention. Response:

		➢ Frenky Monteiro (Translator): The puddles, Darius is situated 100 meters from the project area and create place for cattle and goats in that location. ➢ Director of EDTL: culture should be considered before implement the project. 6. Frederico Viegas ➢ If the project is implemented, do local people need to work there? ➢ We, the people of Laleia, have many universities graduates every year. Response: ➢ Frenky Monteiro (Translator): Projects in a certain area usually require local residents to work there, as is commonly done in Timor-Leste. However, this is not a formal agreement, it has simply become a customary practice. 7. Laleia Administrator ➢ Suggestion from Laleia Administrator: Foreigners coming here must coordinate well with the police because they are accompanied by other foreigners as well. ➢ Suggestion from Police Commandant: The company must have good coordination with the police to ensure everything runs smoothly. ➢ Suggestion from Tomas Ximenes (Suco Chief): should see secret land and spring water. 8. Frenky Monteiro (Translator) ➢ How many secret places there? Response: ➢ Community member: there are 3 water springs.

Photo Documentation

	
During Site Visit (Be Matan Aiteas)	During Site Visit
	
During Public Consultation (Suco Lifau Office)	During Public Consultation (Suco Lifau Office)
	
During Public Consultation (Suco Lifau Office)	During Public Consultation (Suco Lifau Office)

Attendance List



SUCO LIFAU

LISTA PRESENCA

Data: 25 / 08 / 2025

No	Naran	Pozisaun	Assinatura
1	Miguel Da Costa	Xefe do suco Lifau	[signature]
2	Francisco Jacinto Ximenes	APA - Laleia	[signature]
3	Tomas [illegible] Ximenes	Chefe do Suco	[signature]
4	João Soares	PPS Lifau	[signature]
5	[illegible]	Chefe EDTL.EP [illegible]	[signature]
6	Nao Kajiyama	Manager	[signature]
7	KARLHEINZ SPITZ	DIRECTOR, GREENCORP	[signature]
8	[illegible] Monteiro	[illegible]	[signature]
9	Flaviana d. F. Ximenes	Official SLDK	[signature]
10	Ivo [illegible] Gonçalves	Consultant	[signature]
11	Adelino d. R. Soares	Consultant	[signature]
12	[illegible] da Costa	Comunidade	[signature]
13	João Graciano C. Viegas	SLDK	[signature]
14	[illegible]	Xefe Aldeia	[signature]
15	Federico Viegas	Delegado Lifau	[signature]
16	[illegible] Gusmão	[illegible]	[signature]
17	Domingos Lifau Da Costa		[signature]
18	[illegible] da costa	[illegible]	
19	João Soares		
20	Florencio Diogo Araújo da costa	[illegible]	[signature]
21	Mario Maria da costa	Delegado Aldeia	[signature]
22	[illegible] L. de Sousa	Comunidade	[signature]
23	Antonio Joaquim S. Soares	EDTL.	[signature]
24	ADRIANI NGEH	EDF, ED [illegible]	[signature]
25	Mario Mendes	COMUNIDADE	[signature]
26	Antonio F. Viegas	Comunidade	[signature]
27	Frederico X. Ximenes	Comunidade	[signature]
28	Ilommo Viegas	Comunidade	[signature]
29	Clementino J. B. D. Gusmão	Xefe Aldeia	[signature]
30	Rosana Clementina da Silva	Xefe Aldeia	[signature]
31	Alexandrinha da Silva	[illegible]	[signature]
32	Domingas da costa	Of. Adm. Suco	[signature]
33	[illegible]	Of. Finansas Suco	[signature]
34	Trifónio F. V. De Lencastre Gonzaga	Comunidade	[signature]
35	Salvador da Silva	Consultor	[signature]
36	Domingos da Costa	Comunidade	[signature]

MINUTES OF MEETING OF PUBLIC CONSULTATION

Suco Lifau

August 26th 2025

IFC/World Bank Member

ADB Member

Mr. Karlheinz (GreenCorp)

Mr. Kajiyama (Itochu)

Mr. Frenky (Translator)

Director of EDTL (Manatuto)

Police Commandant of Manatuto

Number of participants = 41

Objectives of consultation

The IFC, ADB, JICA, EDTL Itochu and Greencorp conducted public consultation at Lifau village office, on August 26, 2025. The objectives of consultation were to share information about the company that won the project got the information from villagers about the project to the potentially affected population and seek cooperation in order to incorporate their views and suggestion for implementation of the project.

Information disclosure

Participants	:	5. Administrator of Laleia 6. Chief of Suco Lifau and Haturlaran 7. Chefie de Aldeias in Suco Lifau and Suco Haturlaran 8. Community members
Main Discussion Points	:	1. Tomas D.R. Ximenes (Chefe Suco Haturlaran) ➢ We are very pleased that the project is being placed in our area, but what are the benefits of the project for us? because in the future community have less land in the future Response: ➢ Social Safeguard Specialist IFC): it is my pleasure to hear people asking, I also have question what benefit for people here. I understand you had many public consultations but what about your concern? 2. Filomeno Viegas (Sub-Village Chief)

		➢ When Solar Plant implement, what benefit will we get? We also express concern about our animals. During the rainy season cows and goats stay in that area. Response: ➢ Frenky Monteiro (IFC Social Safeguard Specialist): where do animal go when dry season? If the project implements what will happen? ➢ Community member: they go to Laleia river when dry season they also go to other place around 8-9 km from the project area. The animals such as goats, cows, buffalos, and sheep. ➢ Joao Gusmao (community member): they will find the way due to the nature. ➢ Tomas Ximenes (Chefe Suco Hatur Laran): this is not an issue effect to project. 3. IFC Social Safeguard Specialist. ➢ What kind of area will benefit during public consultation last time? Do you think about it? Response: ➢ Tomas Ximenes (Chefe Suco Hatur Laran): some community will get the job from company. ➢ Social Safeguard Specialist (IFC): Do you already know how many people will be working in this project? 4. Sub-village Chief ➢ If community member who live near the project area, will they get the facilities like water and electricity? Response: ➢ Social Safeguard Specialist (IFC): I will discuss with team about electricity and water. 5. Vitor Viegas ➢ The company must provide capacity building for the Laleia community and people from Laleia should be prioritized to work in this company. Response: ➢ Social Safeguard specialist (IFC): Our job is to provide you with information and offer opportunities, but those opportunities will be given based on your abilities and according to the existing job

		descriptions. It won't happen right now, but we will inform you and hope it can be developing your village ➢ Capacity building, do you know information what kind of capacity building? ➢ Vitor Viegas: capacity building of welding and electricity. ➢ Lenao Sub-village chief: Cleaner, security should from community of Laleia. ➢ Social Safeguard specialist (IFC): You are aware of the benefits that will get from this project, but it is not a formal agreement and it is something we continue to discuss. 6. Francisco da Costa ➢ We have experience from other company like that, they hire people outside to work here not people from Laleia. That's why we ask for capacity building, it can capacitate people from Laleia to work for the project. Response: ➢ Social Safeguard specialist (IFC): noted, we have to be transparent about that when the project starts. ➢ ADB member: I just understand more about the land, and now I woman is the one answer about project area. 7. Vitor Viegas ➢ When project implement, they will build tourism place, restaurant or kios by the woman that area, is it possible? Response: ➢ Social Safeguard specialist (IFC): everything is possible, but the potential is very small for this solar project. However, for those living in the project area, capacity building can still be provided. 8. ADB Member ➢ Are there any local products here? And for selling how many people? For the people passing by the beach or the project area, when the project starts running, which route will you take? ➢ How many people that access that road? Only that road they access? Definitely the fisherman will a problem that affect from project. Response: ➢ Community member: We have tamarind, some for consumption and some for selling. Around 20 houses that use for selling.

		➢ Paul Nicolao da costa: Can the company build a new road for us? ➢ Community member: people from 2 sucos that access that road. ➢ Vitor Viegas: base on the last public consultation, the company will leave the area 100 meter from the project area for fisherman and other activities. 9. ADB Member ➢ How many regular fishermen? ➢ Is there any protected area? Response: ➢ Administrator of Laleia: around 57 fishermen, the have the small boat and include 10 people from Cairui. ➢ Frederico Viegas: there are 3 secret water springs, one (1) of them did not yet identify. 10. Karlheinz (Greencorp) ➢ Based on the question, do all community houses here have access to electricity? Response: ➢ Community member: all houses here access to electricity. 11. Social Safeguard specialist-IFC ➢ Are you use the water spring? Response: ➢ Community member: Yes the fishermen, hunter and cattle. 12. Arteria Consultant ➢ Are there any other activities in the project area besides cattle raising and fishing? ➢ What the most activities there? Response: ➢ Community member: yes, there is place for community collect the woods and the stones for build the house. ➢ The most activities there is cattle and fisherman. 13. Social safeguard specialist (IFC) ➢ Collect the stones, is it belong to any company? ➢ What are the negative impacts of this project, can you mention them? ➢ What kind of impact would you not want to happen when the project implement?

		Response: ➢ Community member: No, it is belonged to community (individual) ➢ Tomas Ximenes (Chefe Suco Hatur Laran): The problem is that the land will become limited, where will the people live in the future? ➢ Community member: it is a dust. ➢ Social safeguard specialist: if the project start Suco will inform. 14. Administrator of Laleia ➢ Where will company dump the waste? Response: ➢ Social Safeguard Specialist (IFC): Regarding environmental risk, company must comply with international standards. Waste must be properly managed by separating wet and dry waste. The bank will ensure this by requiring the company to submit and implement good practices, if the fail to do, the Bank will not provide funding. 15. Vitor Viegas ➢ Will a project in hot area like this have a negative impact? ➢ Payment for workers should be transparent. Response: ➢ Social Safeguard Specialist (IFC): transparent based on the level because it will be different skill, suggest; before sign the contract should be properly read. 16. Francisco da Costa ➢ Suggestion: Capacity building should be conducted before project implementation Response: ➢ Social Safeguard Specialist (IFC): How many months before? ➢ Franscisco da Costa: 6 months before.

Appendix 4: Critical Habitat Assessment and Habitat Mapping

Appendix 5: Laleia Solar Independent Power Producer (IPP) Project -Non-Technical Summary (NTS)

Prepared for disclosure under the Environmental and Social Impact Assessment (ESIA) for the 72 MWac Solar IPP Project in Laleia, Manatuto Municipality, Timor-Leste.

1. Project Overview

The Laleia Solar Independent Power Producer (IPP) Project will be the first large-scale solar power plant in Timor-Leste. It will have a capacity of 72 megawatts (MWac) of solar panels and an 80 megawatt-hour (MWh) Battery Energy Storage System (BESS) to store electricity. The project area covers about 350 hectares of State-owned land in Suco Lifau, Laleia Administrative Post, Manatuto Municipality, about 70 kilometres east of Dili, close to the existing coastal transmission line. The fenced project footprint will occupy approximately 100 hectares. The solar farm will feed clean electricity directly into the national grid operated by Electricidade de Timor-Leste (EDTL). The Project Owners are EDF Power Solutions and I-Environment Investments Pacific Pty Ltd, working under the Government's renewable-energy program. Construction is expected to begin in mid-2026 and take about 24 months, with commercial operation planned for late 2028 and an operational life of at least 25 years.

2. Purpose of the ESIA

The environmental assessment for the Laleia Solar IPP was conducted in two stages. First, an Environmental Impact Statement (EIS) and Environmental Management Plan (EMP) were prepared in 2024 under Timor-Leste's Decree Law No. 39/2022 on Environmental Licensing. In 2025, a Supplementary Environmental and Social Impact Assessment (ESIA) was prepared to meet the requirements of international lenders. This Supplementary ESIA builds upon and complements the 2024 EIS, filling information gaps and aligning the assessment with Good International Industry Practice (GIIP)—particularly the International Finance Corporation (IFC) Performance Standards (2012) and the Asian Development Bank (ADB) Safeguard Policy Statement (2009). The Supplementary ESIA also incorporates the results of the 2025 socio-economic survey and the Critical Habitat Assessment, ensuring that the full assessment meets both national and international standards.

3. Project Benefits

The Laleia Solar IPP will make a major contribution to Timor-Leste's transition toward clean and reliable energy. At present, almost all electricity in the country is generated by diesel power plants—an expensive, polluting, and fuel-dependent system. By contrast, solar power is renewable, locally available, and emission-free. The project will directly displace diesel generation, cutting greenhouse-gas emissions by about 2.5 million tons of CO_2 over 25 years. It will strengthen national energy security, reduce government spending on fuel imports, and demonstrate Timor-Leste's capacity to host modern renewable energy infrastructure.

In addition to environmental benefits, the project will generate around 200 temporary jobs during construction and up to 30 long-term positions during operation. The Project Owners will prioritise local hiring from nearby communities (Lifau and Haturalan) and provide training so that local residents can gain new skills in solar technology and electrical maintenance. Local businesses will benefit from

increased demand for transport, accommodation, food, and materials. A Community Development Program will support small, high-impact initiatives such as tree planting, beach clean-ups, and groundwater access for cattle during the dry season.

Key Benefits at a Glance:
• 72 MWac solar generation capacity
• 2.5 million tonnes CO_2 avoided (lifetime)
• ≈200 construction jobs; 20–30 long-term jobs
• ≈USD 2 million in local procurement and services during construction.

4. Key Environmental and Social Findings

The project area is well suited for development, with manageable risks and no major constraints. The land is largely open scrubland used for grazing cattle and collecting tamarind fruit, with no permanent settlements or structures within the project boundary. The nearest villages—Lifau and Haturalan—are located 2–3 kilometres away. Field surveys confirmed low ecological sensitivity within the site itself, though the nearby coastal zone (200–400 metres north) contains mangroves, seagrass beds, coral reefs, and nesting beaches used occasionally by green and hawksbill turtles. These areas will not be directly affected, and lighting and drainage designs will prevent indirect impacts.

A Critical Habitat Assessment confirmed that no Critical Habitat exists within the project footprint. Approximately 40 hectares of the allocated land overlap the terrestrial buffer of the Lamsanak Protected Area (a marine reserve). This overlap is administrative and has little ecological significance; the project layout avoids intrusion into the buffer, and coordination with the Ministry of Agriculture and Fisheries will clarify boundaries before construction.

Hydrological assessments show that the site lies on a coastal floodplain that can experience short-term flooding during heavy rainfall. Engineered drainage with sediment control and energy dissipation will manage stormwater safely, avoiding erosion or impacts to downstream lagoons and reefs.

Social studies confirmed no physical displacement of households. However, fencing about 100 hectares will restrict communal grazing, representing economic displacement. Livelihood support will include access-maintenance measures, groundwater-fed cattle supply, and local hiring to restore livelihoods.

5. Main Environmental and Social Impacts and Mitigation

The ESIA identified site-specific, reversible, and manageable impacts. After mitigation, all residual impacts are of low to moderate significance. Key potential impacts and mitigation measures are summarised below.

Environmental or Social Aspect	Potential Impact	Key Mitigation and Monitoring Measures
Land Use	Reduced access to communal grazing and tamarind trees	Implement livelihood support; maintain cattle corridors; distribute cleared wood equitably.
Biodiversity	Disturbance to turtles, birds, and near-shore habitats	Apply no-work coastal buffer; control sediment; use turtle-friendly

		amber lighting; monitor beach radiance.
Drainage and Erosion	Flooding and sediment at outfall	Construct engineered drainage with silt traps and energy dissipation; revegetate disturbed areas.
Noise and Dust	Temporary construction nuisance	Maintain equipment; water unpaved roads; limit work hours 07:00–19:00.
Waste Management	Improper disposal of waste	Segregate and recycle; dispose through licensed carriers; maintain records.
Worker Safety	Construction and electrical hazards	Implement OHS Plan, PPE use, training, and emergency drills.
Battery System Risk	Fire or chemical hazards from BESS	Complete HAZOP; install fire suppression; update Emergency Plan.
Community Health and GBV	Labor influx, communicable diseases, gender risks	Apply Code of Conduct; health screening; GBV awareness; maintain open GRM.
Cultural Heritage	Chance discovery of cultural items	Apply Chance Find Procedure and coordinate with authorities.
Climate Resilience	Extreme rainfall and sea-level rise	Elevate equipment; design drainage for ≥1:100-year event.

6. Community Engagement and Grievance Mechanism

Community consultations were held in August 2022 (EIS stage) and August 2025 (Supplementary ESIA). Meetings in Lifau and Haturalan involved suco chiefs, elders, women's groups, youth, and local officials. Communities expressed broad support for the project, emphasising continued beach access, cattle movement, and local jobs—all incorporated into the project design.

A Stakeholder Engagement Plan (SEP) provides for quarterly meetings during construction and semi-annual meetings during operation. A bilingual Grievance Redress Mechanism (GRM) allows any person to lodge complaints or suggestions in Tetum or local languages via multiple channels—village leaders, project staff, or phone. Complaints will be recorded, investigated, and resolved within a defined timeframe, with feedback provided to the complainant. Ongoing disclosure will occur through community noticeboards, the municipal office, and the project website.

7. Monitoring and Reporting

The Project's Environmental, Social, Health and Safety Management Plan (ESHSMP) outlines how performance will be monitored, recorded, and reported. During construction, the EPC contractor will

monitor dust, noise, waste, lighting, and worker safety. The Project Owner will oversee compliance, supported by the National Environmental Licensing Authority (ANLA). Regular monitoring reports will be submitted to ANLA and shared with communities and lenders. If impacts exceed expected levels, corrective actions will be taken immediately.

8. Overall Conclusion

With the proposed mitigation and monitoring measures, the Laleia Solar IPP is expected to comply with national regulations and international lender standards. The project presents low, site-specific risks while offering substantial benefits for Timor-Leste: clean energy generation, reduced greenhouse-gas emissions, enhanced energy security, and new opportunities for local employment and training. The Laleia Solar IPP stands as a model for sustainable development and renewable investment in the country.

Appendix 6: Environmental, Social, Health & Safety Management Plan Register

Appendix 7: Grievance Redress Mechanism (GRM)

1. Purpose and Scope

This Grievance Redress Mechanism (GRM) provides a formal channel through which individuals, communities, and other stakeholders can raise concerns or complaints about the environmental, social, health, or safety aspects of the Laleia Solar Independent Power Producer (IPP) Project. The GRM applies during all phases of the project—construction, operation, and eventual decommissioning—and complements existing government and community dispute-resolution processes. It supports compliance with IFC Performance Standard 1, the ADB Safeguard Policy Statement (2009), and Timor-Leste's Environmental Licensing Decree Law No. 39/2022.

2. Guiding Principles

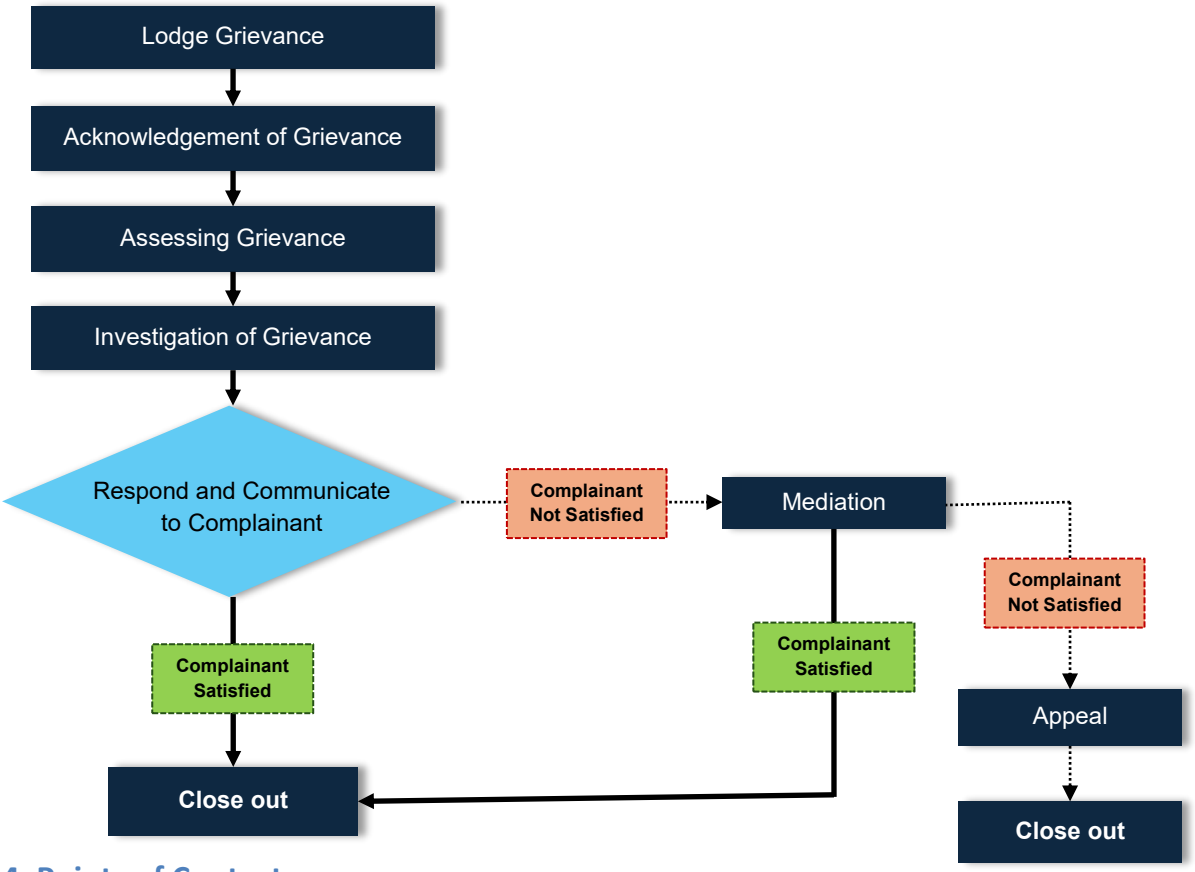
PRINCIPLE	DESCRIPTION
Accessibility	Open to all persons, free of charge, and available in Tetum and local languages.
Transparency	All grievances are logged, tracked, and reported regularly.
Timeliness	Clear steps and defined response times ensure prompt action.
Confidentiality	Complainants may remain anonymous; personal data are protected.
Non-retaliation	No one will be penalised for raising a legitimate concern.
Fairness	All grievances are reviewed objectively and resolved through dialogue.

3. Process Overview

All grievances will be handled according to the following sequence:

STEP		DESCRIPTION
1	**Complaint Submission**	Verbal or written via CLO, Suco Chief, site office, phone/WhatsApp, or GRM drop box.
2	**Registration and Acknowledgement**	Complaint logged and acknowledged within three (3) working days.
3	**Screening and Referral**	Issue categorised and referred to the responsible unit within seven (7) days.
4	**Investigation and Response**	Resolution proposed within thirty (30) days.
5	**Feedback to Complainant**	Resolution discussed; case closed when accepted.

6	**Appeal or Escalation**	Complainant may request review by Project Manager, Owner, or ANLA.
7	**Reporting And Disclosure**	Biannual summary shared with ANLA, local authorities, and community representatives.



4. Points of Contact

ACCESS CHANNEL	DESCRIPTION / CONTACT PERSON
Community Liaison Officer (CLO)	On-site office at Laleia; phone +670 XXX XXX XXX / WhatsApp +61 XXX XXX XXX
Suco Chiefs (Lifau & Haturalan)	Receive oral or written grievances and forward to CLO.
Project area Office Drop Box	Locked box near main gate; collected weekly by CLO.
Contractor HSE Manager	Handles worker or labour-related grievances.
Email	info@laleiasolar-grm.tl
Anonymous Option	Complainants may withhold their name; a tracking ID will still be issued.

5. Roles and Responsibilities

LEVEL	RESPONSIBILITY
Community Liaison Officer (CLO)	Receive, log, and acknowledge complaints; maintain GRM Register.
HSE / ESG Manager	Assess category and coordinate investigation.
EPC Contractor / Project Manager	Implement corrective or preventive measures.
Owner (EDF Power Solutions / I-Environment)	Oversight, reporting to ANLA and lenders.
ANLA	Regulatory monitoring and external oversight; National Environmental Licensing Authority (ANLA)

6. Record Keeping and Reporting

Each grievance is assigned a unique ID and recorded in the GRM Register (Excel-based). Fields include: date received, name/contact (optional), category, description, responsible party, status, and closure date. The CLO updates the register weekly and provides summaries in quarterly ESHS monitoring reports. Summaries of cases and resolutions will be shared during community meetings and posted on noticeboards.

7. Monitoring Indicators

Indicator	Frequency	Target
% complaints acknowledged within 3 days	Quarterly	≥ 90%
% complaints resolved within 30 days	Quarterly	≥ 80%
# of grievances by category	Quarterly	Tracked for trends

8. Confidentiality and Protection

The Project will safeguard complainant identities upon request and ensure no retaliation or discrimination occurs. Anonymous complaints will receive equal attention and investigation.

9. Disclosure and Language

The GRM will be disclosed publicly in both English and Tetum. Copies of this annex and a simplified poster with flowchart and contact details will be distributed to Suco offices, the Laleia Administrative Post, the site noticeboard, and local schools or health posts.

10. Continuous Improvement

Feedback on the GRM will be invited during regular stakeholder meetings. The mechanism will be reviewed annually and refined based on lessons learned and community feedback.

Prepared by: EDF power solutions & I-Environment Investments Pacific Pyt Ltd -Date: October 2025

Appendix 8: Stakeholder Engagement Plan (SEP)

1. Purpose and Scope

This Stakeholder Engagement Plan (SEP) outlines the strategy and program for engaging communities and stakeholders throughout all phases of the Laleia Solar Independent Power Producer (IPP) Project—from pre-construction to operation and eventual decommissioning. The SEP aims to ensure meaningful, inclusive, and ongoing consultation, in accordance with IFC Performance Standard 1, ADB Safeguard Policy Statement (2009), and Timor-Leste Decree Law No. 39/2022. It complements the Grievance Redress Mechanism (Annex X) and forms part of the Environmental and Social Management System (ESMS).

2. Guiding Principles

Transparency	Open, timely sharing of information in accessible formats and languages.
Inclusiveness	Participation of all stakeholder groups, including women, youth, and vulnerable persons.
Respect	Recognition of local customs, values, and leadership structures.
Responsiveness	Timely and appropriate responses to concerns and feedback.
Cultural sensitivity	Communication adapted to local context and language.
Accountability	Consistent documentation and reporting of engagement outcomes.

3. Stakeholder Identification and Mapping

Stakeholders have been identified and grouped according to their interests, influence, and the nature of project impacts.

Stakeholder Group	Interest / Concern	Potential Impact / Influence	Engagement Method	Frequency
Residents (Lifau, Haturalan)	Access to beach, grazing routes, job opportunities	High – directly affected	Suco meetings, house visits, noticeboards, WhatsApp info	As needed during construction
Women & Youth Groups	Employment, safety, voice in decision-making	Moderate	Separate focus group discussions, training sessions	Quarterly
Fishers / Seaweed Collectors	Beach access	Moderate	Seasonal briefings, coordination with MAF	As needed
Suco & Administrative Post Leaders	Coordination and community updates	High	Formal coordination meetings	Quarterly during Construction;

Stakeholder Group	Interest / Concern	Potential Impact / Influence	Engagement Method	Frequency
				annually during operation
Municipality / ANLA / MAF	Compliance and oversight	High	Technical coordination meetings	Quarterly during construction; annually during operation
Schools / Health Posts / Church	Community information sharing	Low	School talks, posters, public notices	As needed

4. Engagement Methods and Frequency

Engagement Method	Phase	Frequency
Public disclosure meetings (English/Tetum)	Pre-construction	At least 1 per suco prior to works
Suco coordination meetings	Construction	Quarterly
Public meetings	Construction	Quarterly
Open office hours (CLO desk)	Construction	Weekly
Targeted briefings (lighting, drainage, traffic)	Construction & Operation	Prior to each season/event
Public meetings	Operation	Annual/ as needed
Information posters & WhatsApp updates	All phases	Ongoing

5. Roles and Responsibilities

Position / Institution	Key Responsibility
Community Liaison Officer (CLO)	Lead day-to-day community engagement, maintain SEP and GRM registers, and report monthly.
Contractor Community Officer	Support CLO in notifications, traffic advisories, and community safety coordination.
HSE / ESG Manager	Supervise engagement quality, ensure documentation, and compile quarterly reports.

Project Manager	Allocate resources, oversee corrective actions, and interface with authorities.
ANLA / Local Authorities	Provide oversight and participate in key meetings as observers.

6. Documentation and Reporting

All engagement activities will be documented using standard templates (attendance sheet, minutes, photo log, disclosure record). Summaries of engagement and outstanding issues will be included in regular ESHS reports to ANLA and lenders, as required. Records will be stored electronically by the CLO and backed up monthly.

7. Key Performance Indicators (KPIs)

Indicator	Frequency	Target
% of scheduled meetings held and documented	Biannual	≥ 90%
% of agreed actions closed within deadline	Biannual	≥ 80%
% of community meetings with Tetum materials	Biannual	100%
% women participation in mixed meetings	Biannual	≥ 40%
# SEP–GRM summary reports disclosed	Biannual	≥ 2 per year

8. Engagement Calendar (Construction Phase Example)

A rolling engagement calendar will be maintained and updated monthly by the CLO. The example below illustrates planned activities during a typical 24-month construction period:

- Month 1–3: Public disclosure and job information sessions.
- Month 4–6: Boundary walk-throughs; traffic safety briefings.
- Month 7–9: Quarterly public meetings; turtle-lighting awareness.
- Month 10–12: Drainage construction updates before wet season.
- Month 13–24: SEP/GRM results sharing; operations handover briefing.

9. Budget and Resources

The Project Owner will allocate sufficient budget to implement the SEP, including staff salaries (CLO, assistant), translation and printing costs, meeting logistics (venues, refreshments, transport), and materials for noticeboards and posters.

10. Language and Accessibility

All engagement materials and announcements will be prepared in Tetum. Posters and leaflets will use plain language and visual symbols to reach people with limited literacy. Meetings will be held at convenient times and venues, ensuring access for women, elderly, and persons with disabilities.

11. Monitoring and Review

The SEP will be reviewed annually and updated as necessary based on stakeholder feedback, project phase changes, or lessons learned. Revisions will be disclosed to the communities and shared with ANLA and the lenders.

Prepared by: EDF power solutions & I-Environment Investments Pacific Pyt Ltd -Date: October 2025