



Environmental and Social Impact Assessment of The Mandalika Urban and Tourism Infrastructure Project

Indonesia Tourism Development Corporation

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EXECUTIVE SUMMARY

1. Project Introduction and Background

1.1 Project Background

The Government of Indonesia (GoI) has prioritized tourism as an important growth sector, and has targeted The Mandalika Special Economic Zone (SEZ) as a development priority. The main objective of this proposed Asian Infrastructure Investment Bank (AIIB) The Mandalika Urban and Tourism Infrastructure Project loan (the Project) is to provide sustainable core infrastructure for further development of a tourism destination in The Mandalika region of Lombok, Indonesia. The 1,250-ha SEZ will aim to generate employment, improve local economy, increase state income, protect and enhance the unique cultural life, environment, and scenic attractions of the Project area. While the Project will focus on The Mandalika SEZ and immediately adjacent area, the development is expected to benefit a wider set of communities in Lombok and support sustainable development and poverty reduction in Lombok, and contribute overall to Indonesia's tourism competitiveness.

The Mandalika SEZ is located along the southern coast of the island of Lombok, Indonesia, and is within Pujut District, Central Lombok Regency (**Figure 1**). PT Pengembangan Pariwisata Indonesia (Persero), or also known as Indonesia Tourism Development Corporation (ITDC), is a state-owned enterprise that has been appointed by the Government of Indonesia to manage The Mandalika.



Figure 1 Location of Mandalika Project in Southern Lombok

1.2 The Mandalika Master Plan

The Mandalika aspires to be a multi-faceted destination appealing to tourists seeking both traditional beach relaxation but also catering to the halal, MICE, sports, and ecotourism markets. Development of the entire destination is proposed to be completed through the gradual release of salable lots, with maximum capacity (27,000+ rooms) expected to be achieved in 2040. Public infrastructure is to be completed between 2018 and 2026. The Project loan will focus on the Phase-I (2019-2023).

The Mandalika is divided into two main sections: (1) mixed-use western part catering to middle- and upper-middle income, and (2) a more exclusive eastern part. Main access to the site will be through the west. To date, Land Utilization and Development Agreements have been committed or signed for approximately 30% of salable land, primarily in the western part. Apart from the existing Novotel Hotel, construction of Pullman, Royal Tulip, and Paramount Hotels is currently in progress. Tender preparations are ongoing in 2018 for a design and build contractor for a future ClubMed.

Water Supply: At full capacity, demand for potable water is estimated at 234 L/sec (20,210 m³/day). Clean water will be supplied to The Mandalika SEZ by construction and operation of Seawater Reverse Osmosis plants (SWRO). Currently, one SWRO plant with a capacity of 34 L/sec (3,000 m³/day) has been constructed in the western part, but is not currently in operation.

Wastewater Treatment: Wastewater will be collected through a closed pipe network, constructed as a combined system of gravity- and pumping-based transmission, to Wastewater Treatment Plants (WWTPs) in each of the western and eastern zones with a maximum total capacity of 20,000 m³/day. Effluent will be compliant with National regulations and reused for irrigation of green spaces. Produced sludge will be also composted and used for landscaping purposes.

Irrigation: Irrigation demands, based on green-space coverage of 40% of the unbuilt component, are 5 L/m²/day. WWTP effluent will be the main water source for irrigating public and private greenery in The Mandalika SEZ, including a 98-ha golf course.

Solid Waste Management: Mandalika is expected to produce up to 385 m³/day of solid waste at full capacity. A 5,000-m² solid waste management (SWM) facility will be established within The Mandalika SEZ. Waste will be sorted as follows: organic waste will be composted and used for landscaping; non-organic waste will be reused/recycled to the extent possible; non-reusable/recyclable non-organic waste will be transported to an engineered landfill outside The Mandalika.

Roads and Utility Corridors: At present, 4.5 km of road have been constructed. At full capacity, Mandalika will feature a network of 50+ km of local roads (ROW 7-30 m), main collector roads (ROW 40-45 m), a 60-m ROW east-west main artery, and a 90-m ROW connector to the future airport bypass. Utility pipes and cables will be collected in utility corridors located in left and/or right side of the roads.

Drainage and Flood Protection: Four measures to overcome threats from extreme rainfall, high river discharge, and high sea level will collectively constitute an integrated flood protection system for the Project, including: bioretention (for extreme local rainfall); river normalization (for river overflow and flash flood); off-site retention ponds; and Project area elevation through earthfill works (for high sea water levels). These collective measures make up an integrated system against flood in The Mandalika.

Electricity Supply: Mandalika's projected power demand at full capacity will be 265 MVA. The State Electricity Utility (PLN) will be responsible for supplying reliable electricity to the Project while ITDC will be responsible for the transmission and distribution of electricity within The Mandalika area.

Disaster Risk Management: The following hazards were deemed 'high' for The Mandalika area: Flooding; flash flooding; extreme waves and abrasion; earthquakes; drought; landslides; and tsunamis. Development of an Early Warning System (in cooperation with Meteorology, Climatology and Geophysics Agency), in addition to Temporary Evacuation Shelters, is designed to serve both tourists and local residents.

2. Sensitive Receptors

Sensitive receptors identified for this ESIA – based on baseline environmental and social baseline conditions within and around the Project Area – include the following (Table 1):

Table 1 Identified Environmental and Socioeconomic-Cultural Sensitive Receptors

Physical and Environmental Sensitive Receptors
<ul style="list-style-type: none"> • Clean water wells of local residents • Rivers, wetlands, and freshwater aquatic biota • Seawater and marine ecosystems • Terrestrial habitat patches within Project Area • Protection Forests surrounding Project Area • Existing terrestrial fauna within Project Area • Potential endangered species (e.g., Christmas Frigatebird, Rainbow Bee-Eater) • Regional Marine Protected Area of Central Lombok – Gerupuk Bay • Marine biota (Plankton, Marine Benthos, Fish) • Nyale Sea Worms • Marine Turtles • Mangrove Ecosystems • Coral Reef Ecosystems • Seagrass Ecosystems.
Socioeconomic and Cultural Sensitive Receptors
<ul style="list-style-type: none"> • Project affected people of Kuta, Mertak, Sengkol, and Sukadana Villages, with specific focus on: <ul style="list-style-type: none"> ○ Women ○ Elderly ○ Children and youth ○ Disadvantaged (Economically, Mentally, and Physically). • Indigenous Peoples (Sasak) • Project-related workers • Visitors and tourists within and around the Project area • Subvillages adjacent to or near roads • Local traditions such as <i>Bau Nyale</i> • Cultural sites.

3. Environmental and Social Impact Assessment and Mitigation Measures

3.1 Impact Assessment Approach and Mitigation Measures

Direct and indirect Project-related impacts were assessed by examining the nature of potential impacts in relation to proposed Project-related activities, in the context of available baseline data and

existing environmental and social conditions. Anticipated environmental and social impacts were evaluated as post-mitigation impacts, and therefore represent potential residual impacts.

To avoid negative residual impacts to the greatest extent possible, the Project will adopt a Hierarchy of Mitigation Measures to address all potential Project-related environmental and social risks and impacts, by using the following priority mitigation sequence: (1) Avoid, (2) Minimize, (3) Rectify, and (4) Compensate (**Figure 2**).

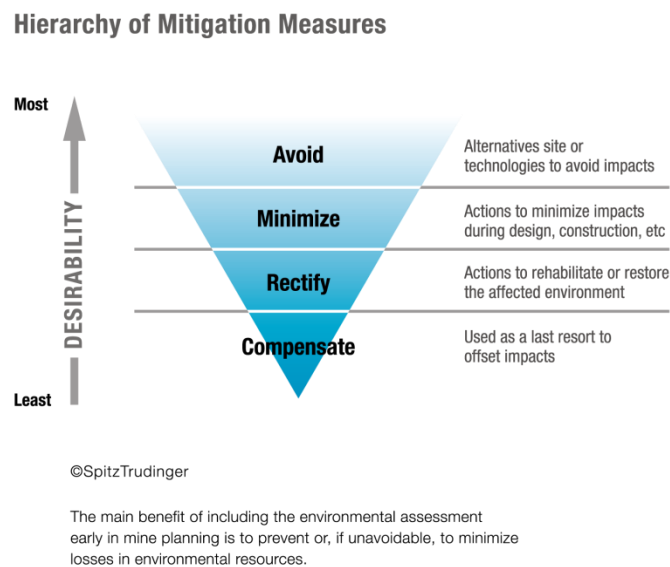


Figure 2 Hierarchy of Mitigation Measures

3.2 Summary of Impacts

The majority of potentially negative impacts of the Project are expected to occur during the construction phase, largely due to elevated environmental and social risks typically associated with major infrastructure construction. Risks of this nature include increased risks of erosion and runoff potentially resulting in water quality impacts, noise impacts on local residents, impacts on terrestrial and marine biota, and socioeconomic impacts resulting from an influx of migrant workers and changes to the local social fabric. However, construction-related impacts of this nature are expected to be manageable through active mitigation and monitoring, and strict adherence to international best practices and the AIIB Environmental and Social Framework. As well, impacts of this nature are predicted to be short-term and largely applicable to the construction phase only.

Upon full implementation of the operations phase, the Project is anticipated to result in a wide array of environmental and social benefits within and around the Project Area, over the life of the Project. Due to large investments in water management, waste management, social institutions, and community infrastructure improvements, anticipated improvements include improved quality of groundwater, surface water, and sea water, ultimately resulting in significantly better environmental conditions for local residents and organisms within and around the Project Area. As well, large significant socioeconomic benefits are anticipated over the life of the Project as a direct impact of the increased employment, business, and income levels the Project will bring to local residents, and the myriad consequential benefits such as improved health care, education, training, and support for

vulnerable groups. **Table 2** provides a summary of the potential Project-related impacts assessed in this ESIA.

Table 2 Summary of Potential Project-Related Impacts

Component	Anticipated Impact	Significance
	Positive/Negative (+/-)	Significant (SIG) Not Significant (ns)
DESIGN PHASE		
Physical	+	SIG
Biological	+	SIG
Socioeconomic and Cultural	+	SIG
CONSTRUCTION PHASE		
Physical Components		
Air Quality	-	ns
Noise	-	ns
Ground Water Quality	-	ns
Surface Water Quality	-	ns
Sea Water Quality	-	ns
Biological Components		
Terrestrial Flora	-	ns
Terrestrial Fauna	-	ns
Marine Biota	-	ns
Marine Turtles	-	ns
Mangrove Ecosystems	-	ns
Coral Reef Ecosystems	-	ns
Seagrass Ecosystems	-	ns
Socioeconomic and Cultural Components		
Public Perceptions and Attitudes	+	SIG
Employment, Income, and Livelihood	+	SIG
Environmental Health and Ecosystem Services	-	ns
Community Health, Safety, and Security	+	SIG
Infrastructure and Traffic	-	ns
Cultural Heritage	-	ns
Involuntary Resettlement	-	ns
Indigenous Peoples	+	SIG
OPERATIONS PHASE		
Physical Components		
Air Quality	-	ns
Noise	-	ns
Ground Water Quality	+	SIG
Surface Water Quality	+	SIG

Component	Anticipated Impact	Significance
	Positive/Negative (+/-)	Significant (SIG) Not Significant (ns)
Sea Water Quality	+	SIG
Biological Components		
Terrestrial Flora	-	ns
Terrestrial Fauna	-	ns
Marine Biota	+	SIG
Marine Turtles	+	SIG
Mangrove Ecosystems	+	SIG
Coral Reef Ecosystems	+	SIG
Seagrass Ecosystems	+	SIG
Socioeconomic and Cultural Components		
Public Perceptions and Attitudes	+	SIG
Employment, Income, and Livelihood	+	SIG
Environmental Health and Ecosystem Services	+	SIG
Community Health, Safety, and Security	+	SIG
Infrastructure and Traffic	+	SIG
Cultural Heritage	+	SIG
Involuntary Resettlement	+	SIG
Indigenous Peoples	+	SIG
Induced Development	+	SIG

4. Alternative Analysis

4.1 No-Project Scenario

The Mandalika Project is among the top-ten priority tourism developments identified at the National level. As such, the GoI has spent considerable time and investment on the objectives of this Project in the past decade, and considerable infrastructure and facilities have already been constructed.

Due to large planned Project-related investments in flood and erosion control and water retention structures, wastewater treatment and management, and solid waste management, water quality within the area is expected to improve dramatically over the life of the Project. Infrastructure investments in surrounding villages, including water supply and solid waste management, will directly benefit local residents. Clearly, the Project is in the best interests of all levels of government and most importantly, local residents and businesses. Conversely, not proceeding with the Project would contradict a National priority directive, be a waste of past investments, and forgo the large future socioeconomic and environmental benefits of the Project.

On this basis, the “No-Project” scenario is not considered a desirable or appropriate Project alternative in this case.

4.2 Solid-Waste Management (SWM) Alternatives

Current Project Descriptions call for an onsite SWM facility and waste processing. However, an alternative option for the management of solid waste exists in the form of not constructing a SWM facility, and directly transporting all solid waste collected within the Project Area to the Pengengat landfill – thereby avoiding the construction and operation of an on-site SWM facility. As well, siting of the facility presents two options: (1) a site within the Western portion of the Project Area, and (2) a site within the Eastern portion. Another SWM alternative is incineration of non-compostable, non-recyclable, and non-reusable waste. In this scenario, undiverted waste would be incinerated at the SWM facility, with ash collected and transported to the Pengengat landfill for proper disposal.

The onsite alternative would centralize SWM within the Project Area, by diverting all collected solid waste to one facility for processing. Processing at an onsite facility would provide ITDC more control over waste management standards, and the opportunity to divert solid waste more effectively from the Pengengat Landfill. The eastern site location has several advantages including a more remote location that will result in far fewer social issues and complaints. Conversely, the major disadvantage of the western location is its proximity to local residents and businesses. Onsite incineration of undiverted waste (non-compostable, non-reusable, and non-recyclable) presents the major disadvantage of potentially toxic emissions to air, thereby increasing risks to residents and tourists using the Project.

4.3 Wastewater Treatment Alternatives

Wastewater within the Project will be collected through a closed-pipe network and include one or both of two alternative technologies: Sequencing Batch Reactors (SBR) and Anaerobic Baffled Reactors (ABR). Based on anticipated design specifications, a combined ABR+SBR process would maximize the removal of a wider variety of parameters, particularly due to the preliminary use of ABR technology. The combined technology would be very effective in removing/reducing all parameters to within National standards. An additional advantage to the ABR+SBR process is higher energy efficiency. Annual energy cost of the ABR+SBR system is predicted to be significantly less than a SBR-only system. Despite the higher capital costs, an ABR+SBR system is more cost effective in the long-run, and will be less costly over the life of the Project. In addition, due to its multi-faceted design, an ABR+SBR system typically produces significantly less sludge than other alternatives.

The current plan for WWTP sludge is to reuse sludge for compost/fertilizer within Project-related vegetation management (landscaping). However, should the sludge be classified toxic hazardous (B3), options exist for alternative disposal by sending the sludge to a B3 waste landfill near Jakarta. Doing so involves several serious disadvantages, primarily very high costs, while foregoing more economical option of reusing sludge for onsite landscaping purposes. However, B3 classification of sludge is unlikely.

Siting of WWTPs within naturally occurring depressions offers the large advantage of permitting a gravity-feed system for sewage/grey water collection. As such, all sewage/grey water output from Project-related facilities (e.g., hotels, restaurants, resorts) will flow downhill to collection points, where collected raw wastewater will then be pumped into the WWTP for treatment and subsequent discharge. Alternative higher-elevation sites, previously under consideration, would not provide the

gravity-feed benefits of these low-elevation sites, and were therefore considered as less desirable alternatives.

4.4 Drainage System Alternatives

Conventional urban drainage systems have historically focused on rapidly conveying stormwater runoff directly to streams and other watercourses with little or no ecosystem considerations. In contrast, The Mandalika Project plan involves the design and construction of an integrated landscape drainage system consisting of a variety of environmental design criteria, including:

- Bio-retention
- River normalization
- Off-site retention ponds
- Project area elevation.

Drainage management systems of this nature view stormwater runoff as a resource with positive benefits if managed properly, including reduced flood risk, reduced pollution risks, reduced impacts on aquatic and marine life, and overall increased water quality.

4.5 Utility Network Alternatives

Conventional utilities networks are often, and historically, constructed as a series of single-purpose trenches or lines where each utility (e.g., electricity, fiber optic, gas, water, sewerage) network is constructed and managed separately. In contrast, The Mandalika Project will design, construct, and manage an integrated network of buried utility ducts, otherwise referred to as utility corridors. As such, all utilities will be housed in buried utility ducts within designated rights-of-way. While representing higher initial construction costs, utility management of this nature provides numerous long-term advantages that result in cost savings, more efficient management, and enhanced environmental benefits over the life of the Project.

5. Public Consultation and Information Disclosure

ITDC's past consultations with the public and local residents are extensive, and included the following activities.

As part of the legally mandated AMDAL process, ITDC hosted a public consultation meeting on 12 January 2012, at the Tatsura Hotel in Kuta, Lombok. Numerous other public consultations were also held in Kuta, Mertak, Sengkol, and Sukadana-Teruwai Villages. As part of the AMDAL Addendum process, another public consultation meeting was conducted on 24 April 2018.

Engagements specifically regarding Corporate Social Responsibility (CSR) programs have also been conducted with stakeholders, including a large consultation meeting on 22 February, 2017, at Tatsura Hotel, targeting local Village Heads and other government representatives. Another meeting related to social investment was held on 8 March, 2017, at the Segara Anak Hotel in Kuta, and targeted local business leaders. Consultations on Coastal Hygiene Safeguards for Implementing Communities *Madak* Traditions were carried out on Kuta Beach on 6 September, 2017.

Meetings of the West Nusa Tenggara Government “Acceleration Team,” to settle required land claims within the Project Area, took place on 7 December 2016, and 17 March 2017. Land surveys were conducted in consultation with Village Elders and leaders on 2 – 4 July, and again between 25 and 28 July 2018. Other public consultations organized by ITDC included: 22 February 2017, and 8 March 2017 related to the Kuta Mandalika beach layout; 24 April 2018 to disclose Project changes and potential impacts to villages; 31 October 2017, and 20-21 June 2018, ITDC visited bungalow owners for socialization of the beach layout; and 16 July 2018, ITDC held a stakeholder workshop at the ITDC offices.

A series of intensive consultations were also conducted within August and September 2018, as part of this ESIA process, and involved meetings with community members including with: a worker (Oki) at Kuta Cove Hotel, Head of Subvillage (Rahmat Tanye) of Ebunot Subvillage/Kuta, Head of PKK and LPM (Kuta Village), Head of Kuta Subvillage II (Awaluddin), Head of Petiuw Subvillage (Sukadana) and Subvillage Secretary, a traditional fabric seller (Idakna) at Kuta Beach, a coconut seller (Marjasih) and a shop owner (Minarsih) at Kuta Junction, group representatives (leaders, women, elderly, disabled, youth) from Kuta, Sengkol, Sukadana, and Mertak Villages, enclave land owners in Ebunot Subvillage (Muhadi), and Head of Batu Guling Subvillage (Mertak).

Community concerns and expectations gathered from the public consultation process are summarized in **Table 3** Error! Reference source not found..

Table 3 Community Concerns and Expectations

Issue	Concerns and Expectations
Land	<ul style="list-style-type: none"> • Owners agree to sell to ITDC, but only at market prices. • Current price offered by ITDC (approx. Rp 500,000/m²) is considered much lower than market price (Rp 1.5 – 2 million/m²). • Actually land owners prefer land swaps. Land inside Mandalika is replaced with land outside Mandalika but 2 to 3 times larger. • Expect regular meetings between ITDC and affected villagers every 2 - 3 months. Also improve relations through informal meetings and visits.
Resettlement	<ul style="list-style-type: none"> • Inhabitants (legal and illegal) expect ITDC to provide dwelling places in a resettlement area outside, but still nearby, The Mandalika area. • The sooner resettlement occurs, the better (to remove uncertainty). • Expect ITDC to assist livelihood restoration.
Job Opportunities	<ul style="list-style-type: none"> • Expect priority for employment opportunity is given to locals. • Expect threshold of qualification requirements is lowered for locals. • Expect skills training related to the development of Mandalika.
Business Opportunities	<ul style="list-style-type: none"> • Expect priority for business opportunities is given to locals. • Expect provision of calves, lambs, equipment for husbandry and fishery, • Expect seafood produced by the locals is purchased by ITDC and other companies in The Mandalika area. • Expect skills training to start, manage, and improve businesses.
Training	<ul style="list-style-type: none"> • Expect training in English, cooking, pastry, hospitality business, and entrepreneurship.

	<ul style="list-style-type: none"> • Expect assistance in animal husbandry, specifically provision of calves, lambs, equipment for cattle feed production, and chicken raising. • Expect field mentoring in agriculture. Special interest in setting up integrated farming, i.e., self sustained agriculture-animal husbandry-aquaculture combination. • Expect assistance in fisheries, especially provision of fishing equipment and boats.
Education	<ul style="list-style-type: none"> • Expect ITDC or government to setup a tourism vocational school in The Mandalika area.
Tradition	<ul style="list-style-type: none"> • Expect to continue practicing traditions such as with <i>Mare Mradik/Madak, Ngapung, Bau Nyale, and Nazzar</i>. • Concerns exist about negative changes in traditions and religious practices specifically related to inappropriate dress, tattoos, body piercing, hair coloring and styles. • Concerns exist about the emergence of prostitution in Mandalika area. • Concerns exist about drugs and alcohol abuse.
Perceptions and Opinions of Project	<ul style="list-style-type: none"> • Overwhelmingly positive and supportive of The Mandalika development Project. • Pleased with positive changes in terms of improvement of infrastructure, more tourist visitors, more jobs and business opportunities. • Only one individual opposed the Kuta Beach layout, due to concerns of impacts on the local culture and traditions, as well as blocking community access to the Beach.

6. Stakeholder Engagement Plan (SEP)

A SEP was developed using a stakeholder engagement methodology, including: (1) Key Stakeholder Identification, (2) Stakeholder Mapping, and (3) Stakeholder Issue Identification. From this process, a comprehensive SEP has been developed and will be implemented for all identified Project-related stakeholders; it identifies the levels of engagement and types and frequencies of engagement over the life of the Project. Key features of the SEP include:

- Quarterly and As-Needed meetings and correspondence with all government stakeholders at the local and Provincial levels
- Quarterly and As-Needed meetings and correspondence, including media campaigns, with key NGO stakeholders (e.g., WWF, Conservation International, The Nature Conservancy)
- Quarterly and As-Needed meetings and correspondence, including newsletters, with all community stakeholders (e.g., Village Representative Groups, Village Heads, Religious Leaders)
- As-Needed consultation with scientific organizations (e.g., Bird Life International, LIPI, University of Mataram)
- Biannual, Quarterly, and As-Needed meetings, workshops, and focus groups with key business stakeholders (e.g., Chamber of Commerce, Indonesian Tourism Association)
- As-Needed communications, including public displays, websites, newsletters, and media campaigns, with key media stakeholders (e.g., local newspapers, local television and radio).

7. Environmental and Social Management Plan

7.1 Environmental and Social Management System (ESMS)

Through this ESIA, Project-related environmental and social risks and impacts were identified and evaluated. Systems and plans were developed containing specific mitigation measures and monitoring actions to avoid or mitigate adverse impacts, maximize Project-related benefits, and improve performance. At the core of the Project's ESMS, this mitigation and monitoring program complements and builds upon the Indonesian regulatory AMDAL processes, by incorporating International Best Practices including the IFC Performance Standards and the AIIB Environmental and Social Framework.

Many of the environmental and social mitigation measures specified in this document are specific investments engineered into overall Project design, such as: wastewater treatment plants, flood and erosion control reservoirs, solid waste management facilities, drainage control and water management infrastructure, road design and construction, and landscaping and vegetation management.

7.2 Institutional Setting, Stakeholders, and Responsibilities

The Project will establish, maintain, and strengthen, as necessary, an organizational structure that defines roles, responsibilities, and authority to implement the ESMS. Specific personnel, including management representative(s) will be designated, with clear lines of responsibility and authority. Key environmental and social responsibilities will be defined, communicated, and understood by specific personnel and the entire Project organization. Sufficient management sponsorship and human and financial resources will be provided on an ongoing basis to achieve effective environmental and social performance and continual improvement.

Potential specific key roles and primary responsibilities could include, but are not limited to:

- Construction/Operations Manager – ensure day-to-day compliance with ESMS;
- EHS Manager – ensure overall compliance with ESMS programs;
- Security Manager – ensure compliance with ESMS security practices and measures;
- External Relations Manager – implementation of Stakeholder Engagement Plan;
- Human Resources Manager – ensure compliance with HR practices of ESMS;
- Supply Chain Manager – ensure supply chain compliance with ESMS.

7.3 Capacity Development and Training Measures

As an international-quality development organization, and consistent with the AIIB Environmental and Social Framework guidelines, ITDC is committed to helping local communities build capacity through

the provision and delivery of training opportunities. As such, ITDC will develop and deliver a Capacity Development and Training Plan (CDTP) as outlined in **Table 4**.

Table 4 Key Training Initiatives and Capacity Development and Training Plan (CDTP)

Key Training Initiatives
<ul style="list-style-type: none"> • ITDC will develop and deliver a Capacity Development and Training Plan (CDTP). • Assign a human resource officer responsible for the implementation of the CDTP. • Provide training facilities for the implementation of the CDTP, including classrooms, outdoor training spaces, and associated equipment and training aids. • Provide sufficient annual funding for the efficient and effective delivery of the CDTP.

Specific capacity development and training initiatives that will be included in the CDTP, over the life of the Project, include but are not limited to those described in **Table 5**.

Table 5 Specific ITDC Planned Training Initiatives

Planned ITDC Training Initiatives
<ul style="list-style-type: none"> • Vocational training for local residents, specifically targeted toward enhancing Project-related employment opportunities; • Induction training for new employees, including training in ITDC corporate social and Health, Safety, and Environment (HSE) commitments and policies; • HSE competency requirements for staff working on the Project, to ensure delivery of HSE training to personnel; • Occupational health and safety training at levels appropriate to specific job descriptions and risks for Project-related workers; • Environmental training for workers associated with, or in positions where performance may affect, effective implementation of environmental management and monitoring programs; • Traffic and road safety training (e.g., Defensive Driving Training) for operators of construction and other industrial-grade vehicles consistent with National driving laws and standards; • Security work force training, including training in the use of force and appropriate conduct toward workers and other stakeholders; • Management training for key Project management personnel appropriate to job description and risks; • In cases of economic displacement, resettlement and transitional support training including retraining opportunities and vocational training, and the facilitation of restoring livelihood through training opportunities; • Waste management training to relevant Project workers, including the handling, use, and disposal of hazardous materials; • Engagement of local health agencies and institutions to conduct regular training and information campaigns on public health matters relevant to local residents and Project-associated workers; • Stakeholder engagement training to managers and other relevant staff; • Cultural awareness training for Project workers, including managers, contractors, and subcontractors, including provisions for the Chance Find Procedure; • Emergency response training for employees, including regular safety drills; and,

Planned ITDC Training Initiatives

- Grievance Redress Mechanism training for Project workers and representatives of local affected residents.

7.4 Key Mitigation Measures

Key mitigation measures that are currently being implemented, or will be implemented by the Project for Physical, Biological, and Socioeconomic and Cultural components are provided in **Table 6**, **Table 7**, and **Table 8**

Table 6 Mitigation Measures Associated with Physical Components

Component: AIR QUALITY
<ul style="list-style-type: none"> • Adherence to the Project-related use of vehicles and equipment that meet exhaust emission standards; • Adherence to frequent and regular vehicle and equipment maintenance schedules; • Preferential use of electrical and battery-operated equipment whenever possible as alternatives to the use of combustion engines; • Adherence to a dust suppression program involving regular and adequate road watering; and • Quarterly air quality monitoring during construction phase to document compliance with ambient quality standards for the following parameters: SO₂, NO₂, CO, NH₃, and TSP (Total Suspended Particulates).
Component: NOISE
<ul style="list-style-type: none"> • Adherence to Project-related use of vehicles and equipment that meet noise standards; • Adherence to frequent and regular vehicle and equipment maintenance schedules; • Preferential use of light vehicles and equipment over heavy vehicle and equipment whenever and wherever possible; • Preferential use of electrical and battery-operated equipment including vehicle whenever possible as practical; • Minimizing construction activities, to the greatest extent possible, between the hours of 6 pm and 6 am, and during designated holidays; • Avoiding noise generating activities in proximity of known residential locations to the greatest extent possible; and • Monthly noise monitoring during the construction phase to document compliance with ambient noise standards, or determine the need for management improvements.
Component: GROUNDWATER, SURFACE WATER, SEAWATER QUALITY
<ul style="list-style-type: none"> • Construction and use of sediment traps at construction areas to capture and precipitate suspended solids; • Construction, use, and management of drainage systems within Project areas; • Construction and use of water retaining wells or basins; • Construction and use of artificial lakes or large ponds to store rainwater; • Construction and use of check dams;

- Protection of river mouths;
- Minimizing vegetation clearing and soil disturbance to the greatest extent possible;
- Limit development in forest areas to the greatest extent possible;
- Protection and retention of mangrove areas as part of Project design;
- Installation and use of two Wastewater Treatment Plants;
- Environmental design of SWRO brine discharge systems;
- Landscape/vegetation management of all green spaces within the Project Area.

Table 7 Mitigation Measures Associated with Biological Components

Component: TERRESTRIAL FLORA and FAUNA

- Vegetation clearing and disturbance will be minimized and no unnecessary vegetation clearing will be permitted.
- Natural or critical habitat areas will be protected and conserved to the extent possible.
- Vegetation and habitat specifically associated with river mouths will be protected.
- Development in forest areas will be avoided or minimized to the extent possible.
- Protection and retention of mangrove areas is part of Project design.
- Disturbed areas with exposed soil that are not built upon will be revegetated, with preferential use of native plant species.
- Landscaping and revegetation of managed green spaces will be performed with preferential use of native plant species.
- Use of invasive plant species for revegetation purposes will be prohibited.
- Invasive plant species will be controlled, removed, and managed to extent possible.
- Vehicle speeds and driving practices will be controlled and enforced within the Project Area of Influence.
- Hunting or otherwise unauthorized killing, capture, and disturbance of fauna by Project-related employees, contractors, and management will be prohibited.
- Sources of disturbance such as noise and light will be controlled and minimized to the extent possible, and focused on areas of remaining habitat value.
- Protection forests outside the Project (adjacent to the west boundary) will be entirely avoided.
- Protection of natural wetlands and associated habitats.

Component: MARINE BIOTA, MARINE TURTLES, and MARINE ECOSYSTEMS

- Water quality and vegetation management mitigation measures, as listed and described above, will be applicable to the avoidance and mitigation of Project-related impacts on marine ecosystems, largely due to the avoidance and reduction of risks associated with Project-related runoff and other water flowing into the ocean, with associated sediment transport.
- Protection and retention of mangrove areas is part of Project design; construction within mangrove areas, where anticipated to occur, will allow for tidal flows across road fills; construction activities immediately adjacent to mangrove areas will be avoided as possible; construction in mangrove areas will be monitored and controlled as deemed necessary.
- Construction activities on or near sand beaches will be avoided and minimized to the extent possible.
- No use of sand beaches or beach sand for construction purposes will be permitted.

- Beach vegetation zones will be protected and avoided to the extent possible.
- Noise and lighting near sand beach habitat will be minimized to the extent possible.
- Construction activities on or near sand beach habitat will be avoided during night hours (6 pm to 6 am) to the extent possible.
- In the event marine turtle nesting is observed in the vicinity of Project activities, an ecological assessment will be conducted by a qualified professional.
- Killing of marine turtles and collection of marine turtle eggs by Project-related workers and associated family members will be prohibited, and sanctioned if known to occur.
- Adherence to protection of marine biota values within Gerupuk Bay (Marine Protected Area).

Table 8 Mitigation Measures Associated with Socioeconomic and Cultural Components

Component: PUBLIC PERCEPTIONS AND ATTITUDES
<ul style="list-style-type: none"> • Project information disclosure in a timely and effective manner; • Direct consultation with local government representatives; • Direct consultation with community representatives; and • Public consultation meetings, including vulnerable groups, such as women, elderly, diffable, and those who are poor and lack education.
Component: EMPLOYMENT, INCOME, AND LIVELIHOOD
<ul style="list-style-type: none"> • Employment opportunities will be preferentially provided to local residents, to the extent possible, given the limitations associated with required qualifications for skilled labor and management positions. • Project workers will be qualified and properly trained for their job description. • Project-related employment agreements and situations will be consistent with the Indonesian Labor Code, and the ITDC Company Regulation/Collective Labor Agreement. • Project workers will be provided with the following: <ul style="list-style-type: none"> ○ Clear and understandable written terms of employment, made available in an accessible manner; ○ Timely payment for Project-related work; ○ Adequate periods of rest; ○ Timely notice of termination of the work relationship; ○ Employment on the basis of equal opportunity, fair treatment, and nondiscrimination; ○ Compliance with all Indonesian laws relating to worker organizations and collective bargaining; and ○ Accessible, understandable, and transparent grievance mechanism made available at the time of hiring. • Social development and inclusion will be promoted by the following measures: <ul style="list-style-type: none"> ○ Promoting equality of opportunity and nondiscrimination by improving employment opportunities to poor, disadvantaged, and disabled people; ○ Removing any potential employment barriers to vulnerable groups, including women and indigenous peoples. • Gender Equality will be promoted by the following measures: <ul style="list-style-type: none"> ○ Identifying potential gender-specific employment opportunities;

- Identifying potential gender-specific employment risks and impacts, and develop mitigation measures to avoid or minimize such risks and impacts;
- Enhancing the design of the Project to promote equality of employment opportunities for, and empowerment of, women.
- Child and forced labor will be avoided by the following measures:
 - Children under the age of 18 will not be employed by the Project or associated contractors, except under compliance with Indonesian National and regional laws.
 - No person under any circumstances will perform any activity in connection with the Project in an involuntary manner, or in a manner exacted under threat of force or penalty – including any kind of forced or compulsory labor, such as indentured labor, bonded labor, or similar contracting arrangement, or labor by trafficked persons.

Component: COMMUNITY HEALTH, SAFETY, AND SECURITY

- Provide integrated health management services to workers and local communities, specifically mothers and toddlers, through implementation of *posyandu* and related services, in cooperation with local and regional public health agencies.
- Work proactively with local communities through ongoing public consultation to address any community health and safety concerns.
- Maintain a functioning Grievance Resolution Mechanism (GRM) to deal with complaints and concerns about community health and safety.
- Address thoroughly road and traffic safety concerns of local communities, and
 - Provide Defensive Driving Training (DDT) to Project and contractor vehicle operators;
 - Ensure specifications of and maintenance programs for all vehicles and road-using equipment employed in the Project.
- Develop and maintain a security force and presence within the Project Area that will ensure the safety and security of all people within the Project Area, and will:
 - Provide checkpoints for traffic entry points to The Mandalika tourism SEZ;
 - Cultivate positive relationships with surrounding communities and local government and law enforcement;
- Prevent private security personnel from increasing risks to community safety by applying the actions and principles for security workers.
- ITDC will implement worker health and safety measures by developing an Occupational Health and Safety Management System for workers in the construction phase, based on its Company Regulation/Collective Labor Agreement, as described below.
- ITDC will implement a Contractor Management Plan that will apply to all contractor and subcontractor workers, providing them with substantially the same protections as the Company Regulation, as required by Indonesia's labor laws and regulations.
- ITDC will maintain its Human Resources Policies and Procedures in the form of a Company Regulation/Collective Labor Agreement in accordance with National laws and regulations. The Company Regulation is a legal document regulating the relationship between management and employees.
- Project will document and report on accidents, diseases and incidents among workers.
- Project will maintain an Emergency Action Plan, preventive and emergency preparedness and response plans to avoid or minimize adverse risks and impacts on the health and safety of Project workers, guests/tourists, and local communities.

Component: ROAD INFRASTRUCTURE AND TRAFFIC DISRUPTION

- Maintain existing roads adequately and regularly to ensure existing roads are kept in good condition.
- Perform required road upgrades to address and accommodate Project-related road access requirements.
- Design, construct, and develop new roads that will result in an overall adequate road network (i.e., existing, upgraded, and new roads combined) to address foreseeable traffic volumes within and around the Project Area.
- Construct and maintain Project-related roads to national standards and provide the width, surface, and shoulder specifications required to accommodate predicted traffic volumes.
- In the event of construction-phase congestion, traffic will be directed at locations that are prone to traffic congestion, by policemen or task-trained security personnel, who will be provided with necessary personal protective equipment.
- Project-related roads will be equipped with proper traffic signage, particularly at intersections.
- Three main alternative routes will be developed leading into the Project Area (Awang Line, Selong Belanak line, and Sengkol line).

Component: CULTURAL HERITAGE

- Vegetation clearing and soil disturbance will be minimized to the greatest extent possible and no unnecessary vegetation clearing or soil disturbance will be permitted.
- Ongoing and comprehensive public consultation will occur prior to construction-related activities. Doing so will reveal known culturally significant sites or artifacts prior to ground disturbance.
- Culturally significant sites or artifacts identified by local residents prior to the construction phase will be located and assessed in the field by a qualified professional. Site-specific assessments of this nature will provide an appropriate plan for managing the site or artifact in the context of Project plans, and will include the option of site preservation and management.
- In the event of a culture heritage site or artifact discovery during the construction process (i.e., incidental discovery), ITDC will implement the Chance Find Procedure.
- Specific and focused attention will be provided to the annual Nyale Festival, to ensure this critically important local cultural tradition remains intact and vibrant.

Component: INVOLUNTARY RESETTLEMENT

Mitigation and Management pertaining to Involuntary resettlement are comprehensively described in the **Resettlement Policy Framework** report. The following specific mitigation actions apply:

- Involuntary resettlement will be avoided wherever and whenever possible.
- Involuntary resettlement will be avoided by exploring other alternatives.
- Livelihood of displaced people relative to local real-world levels, will be enhanced, or as a minimum, restored.
- Overall socioeconomic status of displaced vulnerable groups will be improved.
- Sufficient resources will be provided to enable displaced people to share in Project benefits.
- Resettlement activities will be implemented as sustainable development programs.
- Land acquisition will comply with National laws and regulations, including Law No 2/2012.
- ITDC will not proceed with construction on a site until all land acquisition issues have been settled.
- Land appraisals will be conducted by independent Professional Appraisers, consistent with Law 2/2012.

- Valuation will consist of physical components, including: land, space above and below ground, buildings, and amenities and support facilities.
- Valuation will also consist of nonphysical components, including: disposal rights, transaction costs, waiting period compensation, loss of value of remaining land, and physical damages.

The following AIB policies will be enforced. Project-Affected People (PAP) will be:

- Informed of their options and rights;
- Consulted on, and offered choices among, and provided with feasible resettlement alternatives;
- Provided with prompt and effective compensation at full replacement costs for losses of assets;
- Provided with assistance such as moving and transportation allowances;
- Provided with residential housing and sites equivalent to the original housing and sites;
- Offered support after displacement for a transition period;
- Provided with development assistance in addition to compensation.

Component: INDIGENOUS PEOPLES

Mitigation and Management pertaining specifically to Indigenous Peoples affected by the Project are described in the **Indigenous Peoples Development Plan (IPDP)** report. The following specific mitigation actions apply, as detailed in the IPDP.

Key livelihood and skills development initiatives for IPs include::

- Road development and improvement;
- Deep well development
- Cash crop and agroforestry development and training;
- Nursery development and management;
- Extension services and coaching;
- Marketing links assistance;
- Livestock program development and training;
- Livestock insemination program;
- Fishing development and training;
- Fish/shrimp program development and training;
- Fishing gear improvement and enhancement program;
- Education scholarship program;
- Provision of learning toys and equipment;
- Vocational training courses (e.g., gardening, carpentry, vehicle maintenance, security training, hospitality, computers, English);
- Health facilities construction (e.g., *Posyandu*);
- Solid waste management program enhancement;
- Health extension and education;
- Market revitalization extension and assistance;
- Business start-up extension and assistance;
- Micro-loan and business assistance program;
- Cultural enhancement programs (e.g., handicrafts, traditional dance, music, weaving);
- Sports facilities and equipment program (e.g., football field, balls, nets).

Training activities targeting IPs will consist of:

- Tourism awareness training;
- Educational travel program;
- Cultural and art exhibitions program;
- Language training (e.g., English, Chinese);
- Hospitality industry training;
- Marketing and business training;
- Vocational training;
- Construction worker training;
- Educational scholarship programs.

Intensive ongoing public consultation and information disclosure – including Free, Prior, and Informed Consultation (FPIC) – has formed the foundation of the IPDP, and will continue to guide management and enhancement of IP issues and concerns.

A comprehensive Grievance Redress Mechanism (GRM), specifically for use by local residents and IPs, has been developed and will be in place for the life of the Project.

7.5 Supporting Environmental and Social Management Plan Frameworks

As identified within the 2018 ESC Environmental and Social Gap Analysis report, work to date – primarily the 2012 AMDAL and 2018 Addendum – does not adequately identify or evaluate a number of key issues and concerns, as required for long-term compliance with the AIIB Environmental and Social Framework. As such, potential future assessments and associated Supporting ESMP Frameworks include:

- Terrestrial Critical Habitat Assessment,
- Marine Turtle Abundance and Nesting Assessment,
- Biodiversity Impact Assessment,
- Nyale Marine Worm Life Cycle and Population Assessment,
- Marine Critical Habitat Assessment,
- Coastal Marine Resources and Fishing Assessment,
- Cultural Resources Management Plan,
- Brine Discharge Evaluation and Outlet Selection,
- Mangrove Management Plan.

8. Grievance Redress Mechanism

A grievance is a concern or complaint raised by an individual or a group of people affected by the Project. Grievances can originate from a variety of sources including employees, outside stakeholders, governments, and local residents and communities. The focus of this GRM is on grievances originating within local communities and expressed by local residents.

The Project does not currently have a formal grievance redress mechanism for affected people and communities. Currently, grievances from the community are addressed through direct dialogue with

Village Heads. The objective of this approach is that all community-related grievances are resolved effectively and in a timely manner.

However, as part of its long-term commitments to the community, ITDC will establish an appropriate and formal grievance mechanism that allows concerns and grievances about the Project's social and environmental performance raised by individuals or groups among Project-affected communities and facilitate their resolutions. A proposed grievance procedure in this case involves six steps: (1) complaint received, (2) complaint recorded, (3) complaint reviewed by EHS team, (4) response delivered, (5) complaint resolved = closed; (6) complaint not resolved = legal recourse.

Project-related grievances can be in the form of general concerns, or particular incidents and impacts, or even perceived impacts. The ITDC GRM will address verbal or written grievances, which includes providing sufficient information about the complaint or claim so that a proper and informed evaluation of the grievance can be made. When a grievance is filed, it will be logged and evaluated using the process outlined in the GRM. All grievances will be tracked for monitoring and reporting purposes and to ensure timely and proper resolution.

9. Monitoring and Evaluation

Within the Indonesian AMDAL system, projects with significant environmental and social impacts, such as The Mandalika Project, are assessed for impacts and prescribed appropriate management and mitigation actions that must be applied to achieve permit approval. As part of the AMDAL requirements, the project proponent must prepare and implement an Environmental Management Plan (abbreviated RKL) and an Environmental Monitoring Plan (RPL). Within the 2018 AMDAL Addendum, the RKL/RPL Environmental Management/Monitoring Plans are provided in the form of a monitoring and evaluation matrix, which will form the basis for monitoring and evaluation purposes on this Project.

The AIIB Environmental and Social Framework also requires clients to provide periodic monitoring reports pertaining to Project performance with respect to environmental and social risks and impacts. Specific required actions are: Establish and maintain appropriate monitoring procedures; Verify compliance with specific measures and indicators; Document and disclose monitoring results and identify necessary corrective actions; Follow up on these actions; and Furnish the Bank with periodic monitoring reports on environmental and social measures.

A key component, therefore, of the monitoring and evaluation system will be the provision of English versions of RKL/RPL Implementation Reports, consistent with AIIB requirements.

Based on the 2018 AMDAL Addendum, the Project monitoring matrix is provided as part of this ESIA. The matrix represents a listing of potential Project-related physical, biological, and socioeconomic impacts during all Project phases, along with associated and specific monitoring actions and indicators (measured parameters), consistent with the AMDAL Addendum RPL report. The matrix also provides specific detail on: responsibilities, frequency of monitoring, sample locations, and data collection and analysis methods.

Monitoring and evaluation of all identified parameters will occur quarterly during the life of the Project. Summary reporting of monitoring activities and results will be provided annually.

9.1 Projected Costs of Annual Monitoring and Evaluation

Implementation of the RPL-mandated annual monitoring and evaluation for The Mandalika Project is expected to involve the following components and associated costs (**Table 9**). These estimates do not cover all costs of long-term monitoring and evaluation measures, over the life of the Project, required to achieve compliance with ITDC corporate and AIB policy requirements – as future requirements have not yet been designed and approved.

Table 9 Summary of Projected Annual Monitoring and Evaluation Costs (USD), 2019 – 2023

Component	Activities	Year				
		2019	2020	2021	2022	2023
Community Perception	Socialization	808	889	977	1,075	1,183
	Focus Group	1,010	1,111	1,222	1,344	1,478
	Surveys	3,366	3,702	4,072	4,480	4,928
Air Quality	Sampling	1,010	1,111	1,222	1,344	1,478
	Vehicle Checks	4,039	4,443	4,887	5,376	5,913
	Reforestation	1,683	1,851	2,036	2,240	2,464
Flora and Fauna	Replanting	3,366	3,702	4,072	4,480	4,928
	Surveys	8,078	8,885	9,774	10,751	11,826
Water Resources	Monitoring	337	370	407	448	493
	Sampling	337	370	407	448	493
	Discharge sampling	0	0	0	8,078	8,885
	Effluent quality	0	0	0	8,078	8,885
Solid Waste	Surveys	1,683	1,851	2,036	2,240	2,464
	Evaluations	1,683	1,851	2,036	2,240	2,464
Environmental	Documentation	4,039	4,443	4,887	5,376	5,913
Annual Totals (USD)*		31,435	34,579	38,036	57,995	63,795

*All values are in USD, converted from original estimates in IDR at 1 USD = 14,856 IDR.