Environmental and Social Impact Assessment (ESIA)/Environmental and Social Management Plan (ESMP) of The Mandalika Urban and Tourism Infrastructure Project

Draft prepared for

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ESC

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ABBREVIATIONS

AIIB	Asian Infrastructure Investment Bank (the "Bank")
ABR-SBR	Anaerobic Baffled Reactor-Sequencing Batch Reactor
AMDAL	*Analisa Mengenai Dampak Lingkungan* (Environmental Impact Analysis)
APBD	*Anggaran Pendapatan dan Belanja Daerah* (Regional Budget)
APBN	*Anggaran Pendapatan dan Belanja Negara* (State Budget)
BKKBN	*Badan Koordinasi Keluarga Berencana Nasional* (National Family Planning Coordinating Board)
BMKG	*Badan Meteorologi, Klimatologi, dan Geofisika* (Agency for Meteorological, Climatological and Geophysics)
BNPB	*Badan Nasional Penanggulangan Bencana* (National Board for Disaster Management)
BPBD	*Badan Penanggulangan Bencana Daerah* (Provincial Disaster Mitigation Agency)
BPD	*Badan Perwakilan Desa* (Village Representative Body)
BPN	*Badan Pertanahan Nasional* (National Land Agency)
BTDC	Bali Tourism Development Corporation
CDO/CRO	Community Development/Relation Officer
CDTP	Capacity Development and Training Plan
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CRC	Convention on the Rights of the Child
CSR	Corporate Social Responsibility
DDT	Defensive Driving Training
DED	Detail Engineering Design
DIPA	*Daftar Isian Pelaksanaan Anggaran* (Budget Implementation List)
DLHK	Dinas Lingkungan Hidup dan Kehutanan (Environment and Forestry Agency)
DPRD	Regional Legislative Council
DRM	Disaster Risk Management
EA	Environmental Assessment
EHS	Environmental Health and Safety
ESIA	Environmental and Social Impact Assessment Report
ESMP	Environmental and Social Management Plan
ESMPF	Environmental and Social Management Plan Frameworks
ESMS	Environmental and Social Management System

ESS	Environmental and Social Standards
EWS	Emergency Warning System
FGD	Focus Group Discussions
FPIC	Free, Prior, and Informed Consultation
GC	Grievance Contact
GIIP	Good International Industry Practices
GoI	Government of Indonesia
GRC	Grievance Redressal Committee
GRDP	Gross Regional Domestic Product
GRM	Grievance Redress Mechanism
GWT	Groundwater Tank
HPL	*Hak Pengelolaan* (Rights to Manage)
ICT	Information and Communication Technology
IFC	International Finance Corporation
ILO	International Labour Organization
IP	Indigenous Peoples
IPDP	Indigenous People Development Plan
IPPF	Indigenous Peoples Planning Framework
ITDC	Indonesia Tourism Development Corporation
IUCN	International Union for the Conservation of Nature
KA ANDAL	*Kerangka Acuan Analisis Dampak Lingkungan Hidup* (Environmental Impact Analysis Framework)
KBA	Key Biodiversity Area
KKPD	*Kawasan Konservasi Perairan Daerah* (Regional Water Conservation Areas)
KLHK/MoEF	*Kementrian Lingkunan Hidup dan Kehutanan* (Ministry of Environment and Forestry)
LAC	Land Acquisition Committee
LDGL	Landscape Design Guideline
LPC	Land Procurement Committee
LUDA	Land Utilization and Land Development Agreement
MA	*Masyarakat Adat* (Customary Community)
MHA	*Masyarakat Hukum Adat* (Customary Community Law)
MICE	Meetings, Incentives, Conventions and Exhibitions
MoU	Memorandum of Understanding
MPC	Main Power Control
MPWH	Ministry of Public Works and Housing

MUTIP	Mandalika Urban and Tourism Infrastructure Project (the "Project")
NRP	Nature Recreation Park
NTB (WNT)	*Nusa Tenggara Barat* (West Nusa Tenggara)
PAP	Project Affected People
PBB	*Pajak Bumi Bangunan* (Land and Building Tax)
PDAM	*Perusahaan Daerah Air Minum* (Regional Water Utility Company)
PKBL	*Program Kemitraan dan Bina Lingkungan* (Partnerships and Community Development Program)
PLN	*Perusahaan Listrik Negara* (National Electricity Company)
PMU	Project Management unit
PPA	Power Purchasing Agreement
PPLH	Izin Perlindungan dan Pengelolaan Lingkungan Hidup (Environmental Protection and Management Permits)
PPNPPI	*Program Prioritas Nasional Pembangunan Pariwisata Indonesia* (Indonesia Tourism Development Priority Program)
PT	*Perusahaan Terbatas* (Limited Liability Company)
PT PAIA	Perusahaan Air Indonesia Amerika
RKL-RPL	Environmental Management and Monitoring Plan
ROW	Rights of Way
RP	Resettlement Plan
RPF	Resettlement Planning Framework
RPJMN	*Rencana Pembangunan Jangka Menengah Nasional* (National Medium Term Development Plan)
SEP	Stakeholder Engagement Plan
SEZ	Special Economic Zone
SIYB	Start and Improve Your Business
SLS	Sewage Lift Stations
SME	Small and Medium Enterprise
SOE	State-owned Enterprise
SOP	Standard Operating Procedure
SPI	*Standar Penilaian Indonesia* (Indonesian Valuation Standards)
SWM	Solid Waste Management
SWMF	Solid Waste Management Facility
SWRO	Sea Water Reverse Osmosis
TA	Technical Assistance
TEA	Temporary Evacuation Areas

TES	Temporary Evacuation Shelters
TPS	*Tempat Pembuangan Sementara* (Temporary Disposal Site)
UMKM	*Usaha Mikro, Kecil dan Menengah* (Micro, Small and Medium Enterprises)
UN	United Nations
UNDG	United Nations Development Group
UNDRIP	UN Declaration on the Rights of Indigenous Peoples
WB	World Bank
WCS	Wildlife Conservation Society
WWF	World Wildlife Fund
WWTP	Waste Water Treatment Plant

CHAPTER 1
EXECUTIVE SUMMARY

1.1 Project Introduction and Background

1.1.1 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 priority project for stimulating the sector. The main objective of the proposed Asian Infrastructure Investment Bank (AIIB) financing for the Mandalika Urban and Tourism Infrastructure Project (the Project) is to provide sustainable core infrastructure for further development of a tourism destination in the 1,164-ha SEZ Mandalika. The Project will aim to 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 the 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, while contributing to Indonesia's tourism competitiveness. Public infrastructure is to be completed between 2019 and 2026. The Project loan will focus on a first phase (Phase-I) from 2019 to 2023. Development of the entire destination is proposed to be completed through the gradual release of salable lots, with maximum capacity expected to be reached in 2040.

The Mandalika SEZ is located along the southern coast of the island of Lombok within the jurisdictions of Pujut Sub-district, Central Lombok Regency, and Nusa Tenggara Barat (NTB) Province (**Figure 1-1**).

Figure 1-1 The Mandalika Project in Southern Lombok

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.

The Mandalika is divided into two main sections: the more mixed-use western part catering to the middle- and upper-middle income and the more exclusive eastern part, each centered around circular 'hubs' and connected by a main east-to-west artery. 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 percent 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 to construct a hotel to be operated by ITDC on behalf of ClubMed.

1.1.2 Demand Projections and Infrastructure Solutions

The destination's future demand for resources and estimates of associated environmental and social impacts will, to a large extent, depend on two factors: the number of rooms and the occupancy rate. In principle, the site could host as many as 27,869 rooms, if the maximum allowable number of rooms would be constructed on each of the site's 140 lots. However, to be cognizant of the natural and social environment's carrying capacity, to calibrate the site's intended visual amenity, and to prevent oversupply of rooms which could affect the sustainability of business operations, the actual number of rooms sanctioned by ITDC at full capacity in 2040 is expected to be around 15,000 rooms. Likewise, occupancy rates for a new tourism destination at the scale envisioned are likely to slowly increase from 40 to around 75 percent in 2040. The following demand assumptions therefore present both the maximum estimate (indicated by 'max.') assuming full build-up and 100 percent occupancy, as well as the conservative estimate assuming a controlled build-up and conservative occupancy rates (indicated by 'cons.'). In the following, solutions for each infrastructure will be outlined.

Water supply: At full capacity, demand for potable water is estimated to reach 20,210 m^3/day (max.). Clean water will be supplied to the Mandalika SEZ by construction and operation of two Seawater Reverse Osmosis plants (SWRO). Currently, one SWRO plant with a capacity of 3,000 m^3/day has been constructed in the western part, but is not yet operational.

Waste water treatment: Roughly 80 percent of potable water demand will constitute wastewater, due to usage and evaporation losses. This waste water will be transmitted through a combined gravity- and pump-based closed pipe network to Wastewater Treatment Plants (WWTPs) in each of the western and eastern zones with a maximum combined capacity of 20,000 m^3/day. Treated effluent, constituting 70 percent of waste water influent, 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/m^2/day. WWTP effluent will be the main water source for irrigating public and private greenery in the Mandalika SEZ. Total irrigation demand, including for the planned 98-ha golf course, is estimated to reach 9,752 m^3/day. Effluent will be distributed to 2 x 1,500 m^3 semi-submerged tanks for the western, and 3 x 2,340 m^3 for the eastern zone, while hotels are also required to provide for additional on-site backup storage. Due to irrigation water supply being primarily dependent upon the use of potable water, treated waste water effluent may, in case of low occupancy rates, not satisfy irrigation demand especially during the dry season, requiring ITDC, hotels and golf facilities to purchase additional irrigation water from the SWRO, PDAM or

third-party water vendors. As such, there is a risk that the project could contribute to the depletion of both ground and surface water in South Lombok, unless closely monitored and managed.

Solid waste management (SWM): Mandalika is expected to produce up to 600.5 m^3/day (max.) or 347 m^3/day (cons.), respectively, of solid waste at full capacity. A 5,000-m^2 solid waste management (SWM) facility will be established within the Mandalika SEZ and operated by ITDC. Leaseholders will be able to have their solid waste collected and processed by ITDC or use third-party solid waste collectors. In the on-site facility, solid waste will be sorted and processed as follows: organic waste will be composted and used for landscaping; non-organic waste will be reused/recycled to the extent possible; non-reusable/non-recyclable non-organic waste will be transported to a sanitary landfill at Pengengat village.

Roads and utility corridors: At present, 4.5 km of road have been constructed. At full capacity, Mandalika will feature 35.15 km of local roads (ROW8-30), 11.2 km of main collector roads (ROW45-50), a 6.03 km ROW60 east-west backbone, a 0.65 km ROW80 section and a 2.23 km ROW90 connecting to the future airport by-pass. All utilities such as water supply, sewerage, irrigation, power, telecommunications, and gas, will be housed in concrete utility corridors within the right of way.

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 SEZ, including: grids of swales made up of underground modular tanks and porous filling materials (for extreme local rainfall); river normalization and off-site retention ponds (for river overflow and flash flooding); and Project area elevation through earth works (for high sea water levels).

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 (DRM): The following hazards were deemed 'high' for the Mandalika area: flooding; flash flooding; extreme waves and erosion; earthquakes; drought; landslides; and tsunamis. A combination of soft and hard infrastructure, consisting of an Early Warning System (in cooperation with the Agency for Meteorology, Climatology and Geophysics, BMKG), breakwaters and fully equipped Temporary Evacuation Shelters, will serve both tourists and local residents in the event of a tsunami.

1.2 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 1-1**):

Table 1-1 Identified Environmental and Socioeconomic-Cultural Sensitive Receptors

Physical and Environmental Sensitive Receptors
• 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 (e.g. *Chelonia mydas* and *Dermochelys coriacea*) • Mangrove Ecosystems • Coral Reef Ecosystems • Seagrass Ecosystems.
Socioeconomic and Cultural Sensitive Receptors

• Project affected people of Kuta, Mertak, Sengkol, and Sukadana Villages, with specific focus on:
  ○ 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 *Bau Nyale, Mare Mradik/Madak, Ngapung,* and *Nazzar*.
• Cultural sites such as cemetry of local religious leader

1.3 Impact Assessments 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 1-2**).

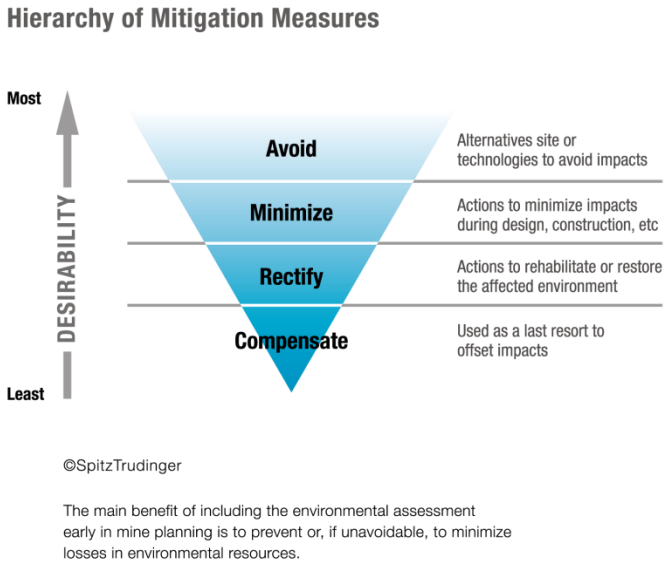


Figure 1-2 Hierarchy of Mitigation Measures

1.4 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 (positive impacts) 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 1-2** provides a summary of the potential Project-related impacts assessed in this ESIA.

Table 1-2 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
Sea Water Quality	+	SIG
Biological Components		
Terrestrial Flora	–	ns
Terrestrial Fauna	–	ns

Component	Anticipated Impact	Significance
	Positive/Negative (+/-)	Significant (SIG) Not Significant (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

1.5 Alternative Analysis

1.4.1 No-Project Scenario

The Mandalika Project is one of ten national priority tourism destinations identified by National Tourism Development Priority Program (PPNPPI). As such, the GoI has laid the groundwork for achieving the objectives of this Project by establishing the regulatory and institutional framework under which the destination would operate and by making considerable investments into core infrastructure and other public facilities within the SEZ.

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.

1.4.2 Solid-Waste Management (SWM) Alternatives

A number of alternatives with regards to SWM were considered. An alternative to the presently proposed on-site SWM facility would be to not construct such a facility, and instead directly

transport all solid waste collected within the Project Area to the Pengengat landfill. In addition, if an on-site facility were to be constructed, it could be sited within the western or eastern portion of the Project Area. Finally, the alternative analysis assessed whether on-site incineration of non-compostable, non-recyclable, and non-reusable waste should be considered. In this scenario, residual ash would be collected and transported to the Pengengat landfill for disposal.

The onsite alternative would centralize SWM within the Project Area, by diverting all solid waste collected by ITDC to one facility for processing. This would provide ITDC with more control over waste management standards, reducing the amount of solid waste diverted to 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. Lastly, on-site incineration of non-compostable, non-reusable, and non-recyclable waste presents the major disadvantage of potentially toxic emissions to air, thereby increasing risks to residents and tourists using the Project. Therefore, an on-site SWM facility in the eastern portion of the site without incineration capabilities is being proposed.

1.4.3 Wastewater Treatment Alternatives

Both alternatives for the technology and siting of waste water treatment facilities were analyzed. Wastewater within the SEZ will be collected through a closed-pipe network to, eventually, two Waste Water Treatment Plants (WWTPs) relying on a combined Sequencing Batch Reactor (SBR) and Anaerobic Baffled Reactor (ABR) system. Based on anticipated design specifications, a combined ABR/SBR process would maximize the removal of a wider variety of parameters to within national standards. An additional advantage to the ABR/SBR process is its 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 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.

WWTP sludge is planned to be reused as fertilizer for 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.

1.4.4 Drainage System Alternatives

Conventional urban drainage systems have historically focused on rapidly conveying storm water run-off directly to streams and other watercourses with little or no considerations for potential

impacts on ecosystems. In contrast, the Mandalika Master Plan prescribes an integrated drainage system consisting of measures intended to reduce uncontrolled run-off, including:

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

Drainage management systems of this nature lead to reduced flood risk, reduced pollution risks, reduced impacts on aquatic and marine life, and overall increased water quality in receiving water bodies.

1.4.5 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.

1.6 Public Consultation and Information Disclosure

ITDC's past consultations with the public and local residents were 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 throughout 2016 to 2018. Details on the dates, participants and key issues are compiled in Chapter 7: Public Consultation and Information Disclosure. As part of the AMDAL Addendum process, another public consultation was conducted on 24 April 2018.

A series of intensive consultations were conducted in August and September 2018, as part of the ESIA process, and involved meetings with community members including with: a worker at Kuta Cove Hotel; Head of Ebunot Subvillage, Kuta Village; Head of PKK (Pembinaan Kesejahteraan Keluarga or Family Welfare Development Organization) and LPM (Lembaga Pemberdayaan Masyarakat or Community Empowerment Organization) of Kuta Village; Head of Kuta Subvillage II; Head of Petiuw Subvillage, Sukadana Village and the Subvillage Secretary; a traditional fabric seller at Kuta Beach; a coconut seller and a shop owner at Kuta Junction; group representatives (leaders, women, elderly, disabled, youth) from Kuta, Sengkol, Sukadana, and Mertak Villages; enclave land owners in Ebunut Subvillage; and Head of Batu Guling Subvillage, Mertak Village.

Apart from these consultations under the regular development and disclosure of safeguards instruments, ITDC has engaged with stakeholders under their Corporate Social Responsibility

(CSR) programs , 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 Outdoor Hygiene and Cleanliness at The Mandalika targeting communities who participate in the Madak Tradition were also carried out on Kuta Beach on 6 September, 2017.

ITDC representatives also joined consultations organized by the West Nusa Tenggara Government "Acceleration Team," to settle land claims within the Project Area, which 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 2017 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, socialization of the beach layout with bungalow owners; and
- 16 July 2018, stakeholder workshop at the ITDC offices.

Community concerns and expectations gathered from the public consultation process are summarized in **Table 1-3.**

Table 1-3 Community Concerns and Expectations

Issue	Concerns and Expectations
Land	• Owners agree to sell to ITDC, but only at market prices. • Current price offered by ITDC (approx. Rp 500,000/m^2) is considered much lower than market price (Rp 1.5 – 2 million/m^2). • Land owners prefer land swaps. Land inside Mandalika is replaced with land outside Mandalika but of a 2 to 3 times larger land area. • Expect regular meetings between ITDC and affected villagers every 2 - 3 months. Also improve relations through informal meetings and visits.
Resettlement	• 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 in livelihood restoration.
Job Opportunities	• 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, such as those related to hospitality business or English
Business Opportunities	• Expect priority for business opportunities is given to locals. • Expect assistance to local community members who are starting their own businesses, such as 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	• Expect training in English, cooking, pastry, hospitality business, and entepreneurship. • 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	• Expect ITDC or government to setup a tourism vocational school in the Mandalika area.
Tradition	• Expect to continue practicing traditions such as with *Mare Mradik/Madak, Ngapung, Bau Nyale*, and *Nazzar*. • 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. • Corncerns exist about drugs and alcohol abuse.
Perceptions and Opinions of Project	• 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.

1.7 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).

1.8 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. The Project's ESMS complements and builds upon the Indonesian regulatory AMDAL process, by incorporating international best practices and the AIIB Environmental and Social Framework.

The Project will establish, maintain, and strengthen, as necessary, an organizational structure that defines roles, responsibilities, and authority to implement the ESMS. Environmental and social responsibilities will be defined, communicated, and understood by, as well as assigned to, specific personnel. Sufficient human and financial resources will be provided on an ongoing basis to achieve effective environmental and social performance and continual improvement.

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

- Construction/Operations Manager – ensure day-to-day compliance with ESMS;
- Environmental, Health and Safety (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.

1.9 Capacity Development and Training Measures

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 1-4**.

Table 1-4 Capacity Development and Training Measures

Key Training Initiatives
• Develop 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 1-5.**

Table 1-5 Specific ITDC Planned Training Initiatives

Planned ITDC Training Initiatives
• 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; • 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, and including provisions for the Chance Find Procedure; • Emergency response training for employees, including regular safety drills; and, • Grievance Redress Mechanism training for Project workers and representatives of local affected residents.

1.10 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 1-6**, **Table 1-7**, and **Table 1-8**.

Table 1-6 Mitigation Measures Associated with Physical Components

Component: AIR QUALITY
• 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: SO_2, NO_2, CO, NH_3, and TSP (Total Suspended Particulates).
Component: NOISE
• 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 vehicles 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, SEA WATER QUALITY
• 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 1-7 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 the 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 is part of Project design.
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 the road structure through channels; construction activities immediately adjacent to mangrove areas will be avoided as much as possible; construction in mangrove areas will be monitored and controlled. • 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 1-8 Mitigation Measures Associated with Socioeconomic and Cultural Components

Component: PUBLIC PERCEPTIONS AND ATTITUDES
• Project information disclosure in a timely and effective manner; • Direct consultation with local government representatives; • Direct consultation with community representatives; and • Public consultation meetings.
Component: EMPLOYMENT, INCOME, AND LIVELIHOOD

- 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 with the ITDC Company Regulation/Collective Labor Agreement.
- Project workers will be provided with the following:
    - 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:
    - 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:
    - 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 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 and 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 and communications 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 Planning 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 will be enhanced, or at a minimum, restored to pre-displacement levels.
- Sufficient resources will be provided to enable displaced people to share in Project benefits.
- Land acquisition will comply with National laws and regulations, including Law No 2 of 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 No 2 of 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 AIIB 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 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 may include:

- Road development and improvement;
- Deep well development
- Cash crop and agroforestry development and training;
- Nursery development and management;
- Agricultural mentoring and coaching services;

- Marketing links assistance;
- Fishing development and training;
- Fish/shrimp farming program development and training;
- Fishing gear improvement and enhancement program;
- Education scholarship program;
- 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;
- Mentoring and assistance for market revitalization;
- Business start-up extension and assistance;
- Micro-loan and business assistance program;
- Cultural enhancement programs (e.g., handicrafts, traditional dance, music, weaving);

Training activities targeting IPs will consist of:

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

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.

1.11 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.

1.12 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.

1.13 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.

1.14 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 1-9**). 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 AIIB policy requirements – as future requirements have not yet been designed and approved.

Table 1-9 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.

CHAPTER 2
INTRODUCTION TO PROJECT

This Chapter includes The Mandalika Project background and a description of the Project components. There are three levels of Project description to be considered:

- Project at the Master Plan level;
- Project elements proposed to be financed by AIIB (the Bank);
- Associated facilities.

For this document, information about the Bank funded project (the Project) is the most important level, and therefore sufficient Project description is provided, including Project development objectives, Project beneficiaries, Project components/activities, and institutional and implementation arrangements, to support the Project Appraisal. Background and supporting information are provided for the Project at the Master Plan level and for the associated facilities, especially those directly linked to the Project.

2.1 The Mandalika Project Background

Tourism development is one of the priorities in the National development plan of Indonesia. The Medium-term Development Plan (RPJMN) of 2015-2019 designates tourism as one of four sectoral development priorities. Along with RPJMN, the Government of Indonesia (GoI) launched the Indonesia Tourism Development Priority Program (PPNPPI) to accelerate the development of ten priority tourism destinations – including the area of The Mandalika in Central Lombok Regency of West Nusa Tenggara Province. The Mandalika project site is strategically located on the south coast of Lombok island with good access from the Praya International Airport. To date, the GoI has initiated and completed the following:

- Designated The Mandalika as a Special Economic Zone (SEZ) and a National Strategic Project (Presidential Regulation No. 3 of 2016);
- Renamed the previous Bali Tourism Development Corporation (BTDC) as the Indonesia Tourism Development Corporation (ITDC), while expanding its mandate to also cover the planning and development of The Mandalika;
- Prepared an integrated The Mandalika Master Plan that guides future tourism development to concentrate at The Mandalika, and Environmental and Social Impact Assessment (ESIA);
- Acquired almost all of the required land around The Mandalika area;
- Planned regional infrastructure investments such as a bypass road connecting the airport and The Mandalika site, expansion of the Lombok international airport, and others.

2.1.1 Project Objective

The main objective of the proposed AIIB financing for the Project is to provide sustainable basic infrastructure for the development of a new tourism destination in The Mandalika region of

Lombok. Critical basic and tourism-related infrastructure will be provided for 1,200 ha of land that has largely been acquired by the GoI. Serviced lands are to be leased to private investors to construct retail, accommodation, and other tourist facilities to an internationally acceptable standard. In addition, the Project includes improvements to basic infrastructure and services in selected surrounding communities that can serve both visitors and residents. The Project will aim to protect and enhance the unique cultural life, environment, and scenic attractions of the Project area which are its major tourism assets.

2.1.2 Project Beneficiaries

While the Project will focus on The Mandalika area as the entry point, the development is expected to benefit a wider set of communities in Lombok and support sustainable development and poverty reduction throughout the Island. The Project is expected to mobilize private capital and increase the number of foreign and domestic visitors to Lombok, thereby boosting foreign exchange earnings, local employment, and contributing to Indonesia's tourism competitiveness.

2.2 Overview of The Mandalika Master Plan

Given the fact that The Mandalika is likely to absorb a large share of demand for Lombok tourism for decades to come, concentrating facilities to accommodate this demand in a contained, well-regulated and competently managed environment could preempt disorganized tourism development in other parts of Lombok. This does, however, require that development control is well-enforced, particularly in the immediate vicinity of The Mandalika--which is in fact part of the Project.

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 segments. It aims to:

- Create a new tourism destination that complements existing destinations, such as Bali;
- Provide international standards of infrastructure and utilities; and
- Promote sustainable tourism development.

According to the Master Plan and latest market projection, the development of the entire destination is proposed to be completed through the gradual release of salable lots, with full capacity expected to be achieved in 2040. Public infrastructure is to be completed between 2019 and 2026.

As for the demand projection, the destination's future demand for resources and estimates of associated environmental and social impacts will, to a large extent, depend on two factors: the number of rooms and the occupancy rate. In principle, the site could host as many as 27,869 rooms, if the maximum allowable number of rooms would be constructed on each of the site's 140 lots. However, to be cognizant of the natural and social environment's carrying capacity, to calibrate the site's intended visual amenity, and to prevent oversupply of rooms which could affect the sustainability of business operations, the actual number of rooms sanctioned by ITDC at full capacity in 2040 is expected to be around 15,000 rooms. Likewise, occupancy rates for a new tourism destination at the scale envisioned are likely to slowly increase from 40 to around 75

percent in 2040. The following demand assumptions therefore present both the maximum estimate assuming full build-up and 100 percent occupancy, as well as the conservative estimate assuming a controlled build-up and conservative occupancy rates.

2.2.1 Planning and Land Use

The first "visioning" master plan for The Mandalika was developed by AECOM in 2012, followed by a detailed master plan by Bita Enarcon Engineering in 2015. In 2017, DEDs and architectural design as well landscape design guidelines, with some significant changes to the 2015 plan, were prepared by P.T. Perentjana Djaja and several other consultants, constituting the current version of the Master Plan.

Land use planning. The Mandalika is divided into two main sections: the more mixed-use western part catering to the middle- and upper-middle income and the more exclusive eastern part. The main access to the site will be through the western part, though a new entrance to the site is planned for the later stage when the bypass road to the airport is completed. In the following subsections, infrastructure planned for each sector will be described and evaluated.

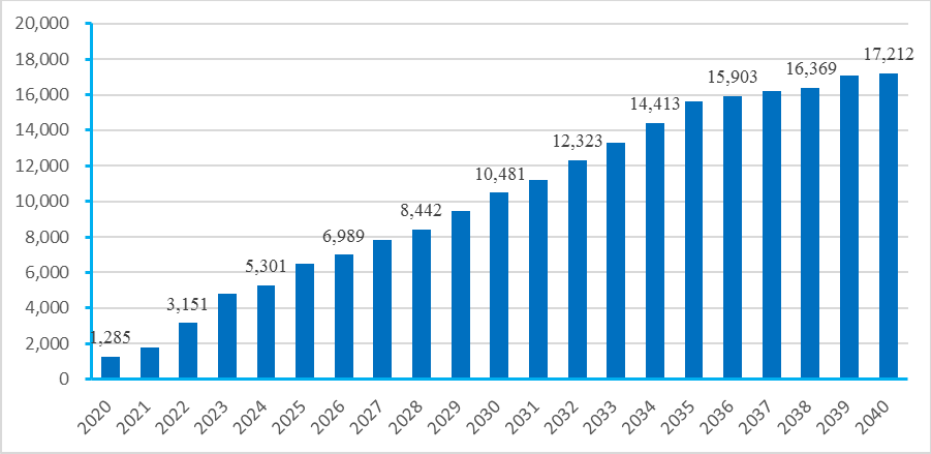


Figure 2-1 Envisioned Completion of Room Keys (2020-2040)

Figure 2-2 The Mandalika Master Plan, as Updated in December 2017

Public access to The Mandalika site and beachfront. The beachfront is open to the public in accordance with Indonesian regulations. Both resident and nonresident visitors will furthermore be able to access the popular Merese Hill and other elevated viewing spots without hindrance. A separate access to Gerupuk Village from the provincial road will be provided, with an elevated access road to the Mangrove Sanctuary area at the western periphery of the site passing over the Gerupuk access road. While the various north-south promenades from the beachfront into the site's interior, presently called '*amenity cores,*' will be publicly accessible, both resident and nonresident visitors will pass security checkponts at the western and eastern entrances to the site.

Arrangements with leaseholders--LUDA terms. Apart from financial and legal provisions, each Land Utilization and Land Development Agreement (LUDA) signed with leaseholders stipulates, among otherprovisions:

- Adherence to the Master Plan's lot-wise limitations on building setbacks, maximum building coverage, building height, and landscaping;
- Pedestrian and utility easements on the property and their maintenance;
- Provision by ITDC of a paved access road, and adequate lines for potable water, sewage disposal, electricity and telephone services, as well as common facilities such as roads, medial strips, cart paths, walkways, and landscaped areas;
- Approval of procedure for leaseholders' plans and drawings by ITDC's Design Committee and requirements for construction quality and building maintenance;
- Maximum time after which facilities on leased property should be operational.

Current status and uptake projections. To date, LUDAs have been committed or signed for roughly 30 percent of salable land, primarily in the western part of the site. Apart from the existing Novotel, ITDC is well advanced in the construction of Pullman, Royal Tulip, and Paramount hotels, with tender preparations ongoing in 2018 for a design and build contractor for a future to construct a hotel to be operated by ITDC on behalf of ClubMed.

2.2.2 Water Supply

At full capacity, demand for potable water by the site's tenants is estimated at 2.33 L/sec (20,210 m^3/day). This figure and all subsequent demand assumptions represent an upper bound, assuming the maximum number of allowable rooms is going to be constructed on each lot, totaling 27,869 room keys rather than the total given in **Figure 2-1**. This is to ensure that infrastructure solutions are equipped to deal with the maximum possible load, for water supply estimated at slightly above 725 liters/room/day.

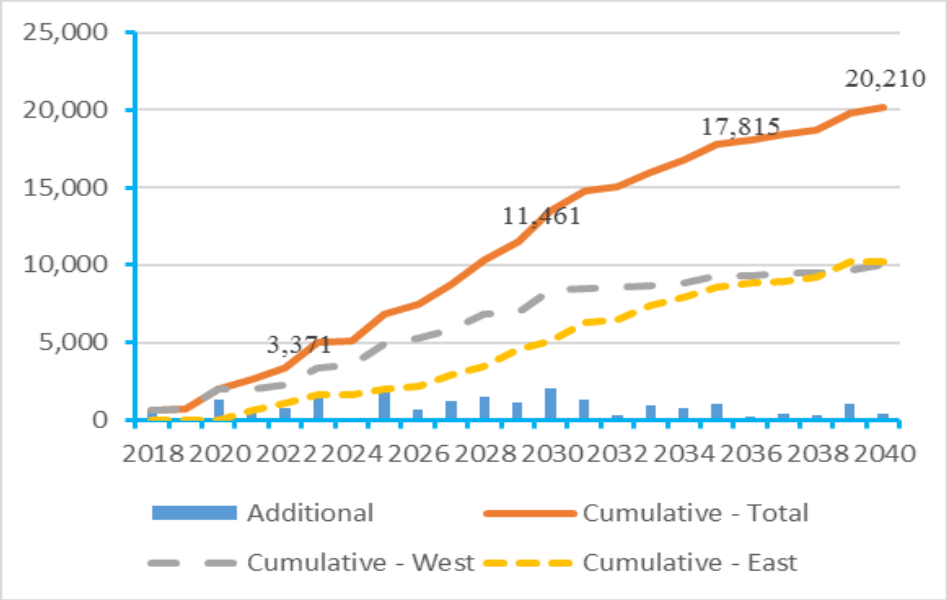


Figure 2-3 Potable Water Demand (m³/day)

Clean water can be supplied to the Project area from two main sources: two Seawater Reverse Osmosis plants (SWRO) and the regional water utility, PDAM (**Figure 2-4**). As ITDC expects both the quantity and quality of PDAM water to remain below tenant requirements at least in the near term, the Project intends to rely entirely on SWRO water for the foreseeable future. Ongoing discussions with PDAM will lead to construction of a tertiary treatment plant to equalize the quality of its supply of raw clean water with the SWRO supply of potable water, before delivering it to, and mixing it at, the Groundwater Tanks (GWTs).

Currently, one SWRO plant with a capacity of 34 L/sec (3,000 m³/day) has been constructed in the western part near the existing Novotel. The plant presently lies idle, without a brine discharge pipeline installed, until the first tenants are connected. With additional lots released and occupied in the eastern part of the site, a second SWRO plant is envisioned to supply the eastern section alone. Both plants are modular in nature and can be upgraded in increments of 3,000 m³/day to reach a maximum of 15,000 m³/day each at full capacity. The first expansion of the western SWRO will be required as early as 2022.

Water from SWRO and/or PDAM will be stored in partially submerged Groundwater Tanks (GWTs), located at topographically-higher locations in the East and West zones, with a total storage capacity equal to the Project area's water demand for two days. Six GWTs are planned to be constructed with a collective storage capacity of 45,000 m³ (three tanks in the West zone with a combined capacity of 24,000 m³ and three tanks in the East totaling 21,000 m³). The western GWTs will be constructed first, at full capacity, with a temporary connection to the East zone. The construction of the eastern GWTs is expected to be completed in 2022.

Four pumps, powered by the grid electricity line and backed by ITDC's local genset, will be deployed at each of the GWT sites. A network of pressurized distribution lines will then divert water from the GWTs to smaller storage tanks at each lot with a storage capacity equal to three days of demand.

2.2.3 Wastewater Treatment

The Project assumes that wastewater volume will equal roughly 80 percent of potable water supplied. 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. The two WWTPs will adopt Anaerobic Baffled Reactor-Sequencing Batch Reactor (ABR-SBR) technology as the central treatment process, with a maximum operational capacity of 20,000 m^3/day. Treated effluent, constituting 70 percent of waste water effluent, it will be compliant with national regulations (Minister of Environment Decree No 68/2016 on Domestic Sewage Quality Standard) and reused for irrigation of green spaces throughout the site. The produced sludge will be composted and used at ITDC's plant nursery.

Wastewater will be first collected into Sewage Lift Stations (SLS), a system comprising a wastewater storage tank and pump, located at lot boundaries. Smaller lots will share one SLS while larger lots will be assigned dedicated SLS. Leaseholders are responsible for providing and maintaining the sewage collection network within their lots and diverting sewage to the SLS storage tank provided by ITDC at the boundary, from where it is pumped to the main sewer. SLS pumps will work collectively, in relay, to ensure sufficient pressure.

2.2.4 Irrigation

Demand assumptions for irrigation water are based on per-lot building coverage ratios, a green open space coverage of 40 percent of the unbuilt component, and an irrigation water need of 5 L/m^2/day. Total irrigation demand, including for the planned 98-ha golf course, is estimated to reach 9,752 m^3/day. WWTP effluent will be the main water source for irrigating both public and private greenery in the Project area including the golf course. Wastewater effluent will be distributed to two 1,500 m^3 semi-underground tanks for the western, and to three 2,340 m^3 such tanks in the eastern zone, sufficient for 1 day of irrigation demand, while hotels are also required to provide for additional onsite backup storage. Three distribution pumps will be deployed at each WWTP.

As **Figure 2-4** indicates, due to the asymmetric development of wastewater treatment facilities and irrigation-demanding green spaces, treated wastewater effluent may not satisfy irrigation demand in some years, especially in the eastern part where golf facilities are located. During the dry season, hotels and the golf course will most likely require additional irrigation water either by purchasing from SWRO, PDAM or third-party water vendors.

As the Landscape Design Guidelines (LDGL) do not specifically call for vegetation with low water requirements and cannot restrict water abstraction outside of the Project area, there is a risk that the Project will contribute to the depletion of both ground and surface water in South Lombok. Without a proper mitigation plan, this practice may lead to the mirroring of the existing condition in Nusa Dua, Bali, where grey water supplied by the resort itself is proving insufficient to meet the irrigation demands of the resort. This has led to ITDC Nusa Dua requesting the local municipality to treat part of the municipality's wastewater in order to be able to close the existing supply gap. This is in the context of intense competition by Bali's tourism sector and other stakeholders for ever scarcer water resources in general (Cole and Browne, 2015).

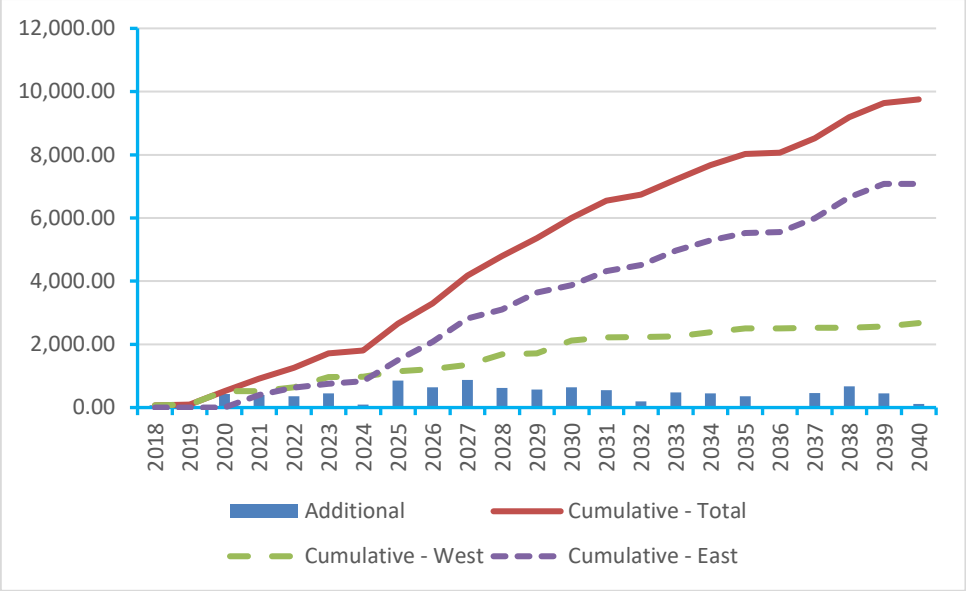


Figure 2-4 Irrigation Demand (m³/day)

2.2.5 Solid Waste Management (SWM)

Based on National solid waste standards and industry benchmarks (SNI 19-3983-1995, Bita 2015 Master Plan, and Pirani and Arafat, 2014) and a maximum, rather than a realistic, number of room keys, The Mandalika can be assumed to produce up to 600.5 m³/day (maximum estimate) or 347 m³/day (conservative estimate), respectively, of solid waste at full capacity in 2040. A breakdown by year and solid waste type is given in **Figure 2-5.**

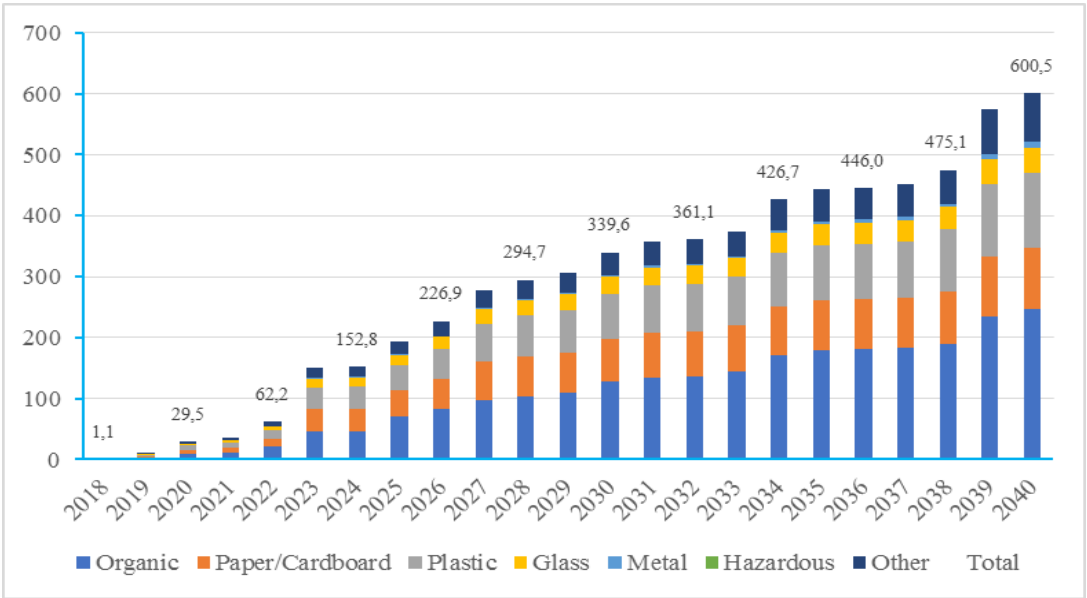


Figure 2-5 Solid Waste Production and Composition (m³/day)

In general, ITDC plans to transfer the SWM approach from Nusa Dua to The Mandalika. Leaseholders are charged for solid waste collection under the normal 'assessment fee' at a per m² rate. Leaseholders can choose not make use of ITDC's service, however, and instead sell unseparated/unsorted waste to third-party waste collectors. If utilizing ITDC's services, hotels are

required to separate waste at source. “Organic” (putrescible/decomposable) waste will then be composted onsite and used for landscaping, while “inorganic” (inert, non-toxic) waste sent to the Pengengat landfill in Praya. However, combustible and non-recyclable such wastes may be incinerated with the residual ash diverted to the Pengengat landfill, if a complete SWM facility is built with incineration. Under the Master Plan, two 5,000 m² solid waste management (SWM) facilities were to be established in the West and East zones. The Project loan component at present includes costs for a single SWM center, and a sufficient haulage fleet, which will be operated by ITDC. Incinerator funding will probably not be included.

If The Mandalika’s initially quite marginal but eventually significant solid waste production is factored into the capacity of the Pengengat landfill, 6 hectares of land (the current size is 2 hectare) will be required by 2030, increasing to 11.7 hectares in 2040, at which point The Mandalika will contribute nearly half of the wastes diverted to Pengengat. This calculation assumes 60 percent of solid waste in volume terms will be recycled onsite and follows the Ministry of Public Works’ assumptions on compaction rate (2.7), maximum landfill height of 15 meters, and an annual solid waste increase from non-The Mandalika waste of 1.13 percent, in line with historical population growth figures for the Regency.

A more urgent concern than solid waste produced onsite, however, may be the inevitable increase in solid waste production from induced development in the periphery of The Mandalika, where coverage of solid waste collection services may continue to be infrequent and unregulated. The Bank has sought to address this concern both through the addition of Component 1.2 and coordination efforts with the Regency government and the World Bank.

2.2.6 Roads and Utility Corridors

Given the spatial expanse of the site and the expected number of room keys, offering a high degree of mobility to a large volume of guests and visitors with different mobility needs and preferences will be a key priority for the Project. At present, a total of 4.5 kilometers have been constructed using a government funds ‘injection’ (State Equity Participation, *Penyertaan Modal Negara* or PMN).

The Project proposes a combination of promenades, universal sidewalks and dedicated cycle lanes, a bus service connecting different parts of the site, and parking plazas located along the amenity cores and in service areas. At full capacity, The Mandalika will feature a network of 35.15 km of local roads (ROW8-30), 11.2 km of main collector roads (ROW45-50), a 6.03 km ROW60 east-west backbone, a 0.65 km ROW80 section and a 2.23 km ROW90 connecting to the future airport by-pass(**Figure 2-6**). The ROW of each road segment has been selected based on topographic conditions as well as trip generation projections, in turn based on adjoining land uses and expected trip intensities.

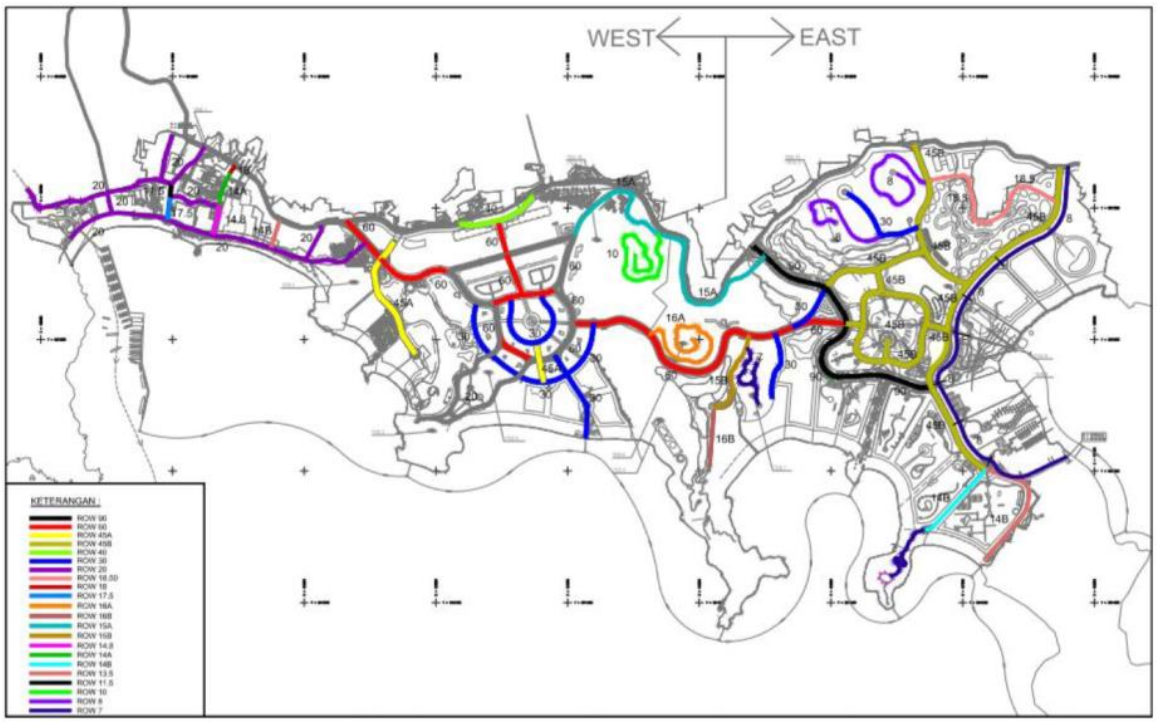
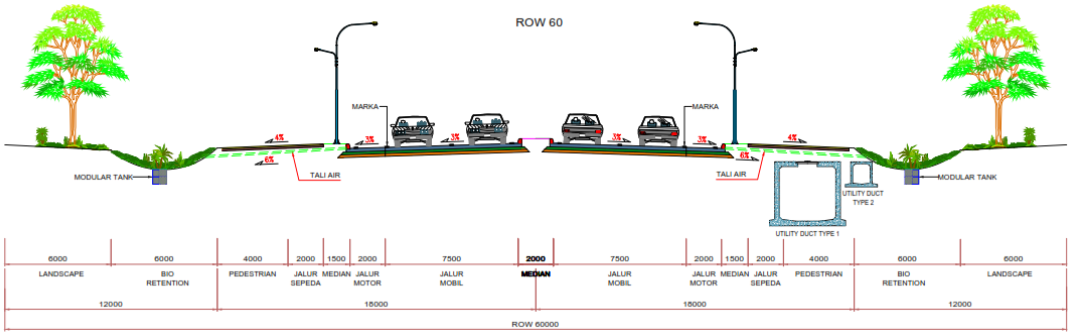
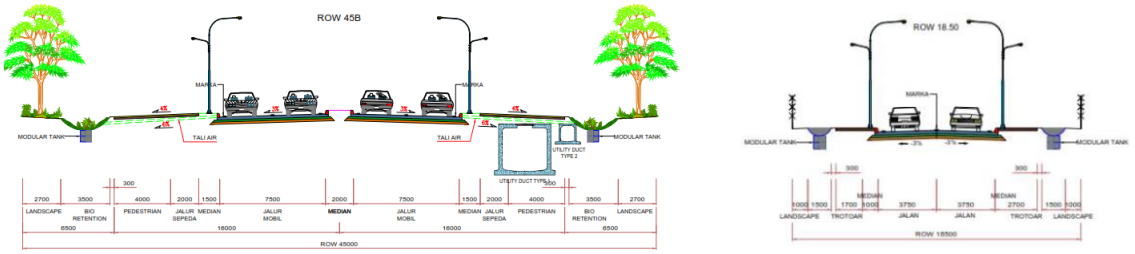


Figure 2-6 Proposed Alignment for ROWs at The Mandalika

Road designs comply with the Bina Marga National Highway Design Code in terms of geometric structure, construction materials specifications, safety provisions, and road signage. The average design speed is 30 km/h (National Standard RSNI T-14-2004 sets design speeds for local secondary roads at 30 to 50 km/h.). Various cross sections are reproduced in **Figure 2-7.**



ROW 60: Type: 2 x 1 lane (2 undivided lanes); Total width: 60 m; Pavement: 15 m



ROW 45B: 2 x 1 lane (2 undivided lanes); Pavement width: 15 m (left)
ROW 18.5: 2 x 1 lane (2 undivided lanes); Pavement width: 7.5m (right)

Figure 2-7 Examples of Cross Sections - ROW 17.5, 45B, and 60

All utilities such as water supply, sewerage, irrigation, power, telecommunications, and gas, will be housed in the utility duct within the right-of-way. The proposed utility corridor solution has been chosen considering its pros and cons, as follow.

- Advantages:
  - Easy access to utilities for maintenance and upgrading, and resulting cost savings over the lifecycle;
  - Reduced surface area required.
- Disadvantages:
  - High initial construction cost compared to traditional open excavation methods;
  - Difficulty installing the sewerage line as a combined gravity and pressurized network (due to difficulties ensuring minimum slopes for gravity flow, possibly causing deeper excavations and higher costs).

The underlying calculations provide reasonable confidence in the feasibility of the proposed solution.

2.2.7 Drainage and Flood Protection

The proposed Project is exposed to three main flood hazards: extreme local rainfall; high river discharge (river overflow and flash flood); and high sea water levels. Three different measures have been selected to overcome these threats which, collectively, will constitute an integrated flood protection for the Project: bioretention (for extreme local rainfall); river normalization (for river overflow and flash flood); and Project area elevation through earthfill works (for high sea water levels).

- ***Bioretention.*** Instead of being diverted through concrete channels (conventional drainage system), rainfall runoff will be diverted into grids of swales, made up of underground modular tanks and porous filling materials, storing the rainfall and then allowing it to infiltrate to the local soil. Statistical analysis, as well as soil permeability and storing capacity tests, have been carried out to estimate the design rainfall intensity, quantify the runoff volume, and thus determine the number of tanks and their alignments along the roadside. Leaseholders are held to comply with a zero-runoff requirement under each LUDA. The Design Committee will review the drainage plans and flood protection measures for each lot and request changes, if needed, before approval.
- ***River normalization.*** River normalization (deepening and widening) will be carried out to significantly increase the capacity of the surrounding rivers. Statistical analysis was conducted to estimate the maximum river discharge, with a return period of 50 years selected as the basis for design. This was used to calculate the river dimension required to cope with the design river discharge, and the potential debris load transported during flash flooding, without causing overflow into the Project area.
- ***Off-site retention ponds.*** River normalization will only be sufficient in the short and medium term as rainfall intensifies and the river capacity reduces due to sediment accumulation on the riverbed. ITDC has therefore engaged the local river basin organization (*Balai Wilayah Sungai Nusa Tenggara 1* or BWS) and the Ministry of Public Works and Housing (MPWH) in

proposing to construct seven retention ponds upstream of and outside the Project area. These ponds are projected to regulate the maximum river discharge, provide a first line of defense against debris during flash floods, and improve onsite water quality by capturing potential domestic sewage disposed upstream of the Project area. The proposal overlaps partially with the current work plan of the BWS, which had been planning to construct one of the proposed ponds and completed a DED in 2013. Both MPWH and BWS have responded positively to this proposal.

- ***Project area elevation.*** Studies and surveys were conducted on the tidal characteristics along the shoreline of the Project area with the main objective of estimating the high sea water level (HWL) currently and in the long term, also factoring in expected sea level rise due to climate change. Results were subsequently used to determine a flood-safe elevation for the Project area and to plan the earthworks needed to elevate it to such a level.

2.2.8 Electricity Supply

The Mandalika's projected power demand at full capacity will be 265 MVA. Electrical load for the Western Zone was estimated at 121 MVA, with 127 MVA for the Eastern Zone. The State Electricity Utility (PLN) would be responsible for supplying reliable electricity to The Mandalika. A MoU between PLN and ITDC was signed in 2018 to lay the foundation for establishing a new shared entity (foreseen to be in the form of a Joint Venture Company) that will manage electricity supply to the Project area. Therefore, for the coming two years, the two State Owned Enterprises (SOEs) have agreed to:

- Conduct a preparatory study for future formal cooperation; especially related to the legal, operational, technical, economic and financial aspects of the new entity;
- Conduct a joint study on the management of electric power in The Mandalika SEZ, including preparing a renewable energy generation and utilization plan focused on solar energy.

PLN currently has 20 MW of surplus capacity with expansion ongoing. The new Joint Venture will construct a 35 MW photovoltaic (PV) solar power plant at the northern site boundary under a Power Purchasing Agreement (PPA) with PLN, which will buy electricity back in bulk from PLN and sell it on to leaseholders.

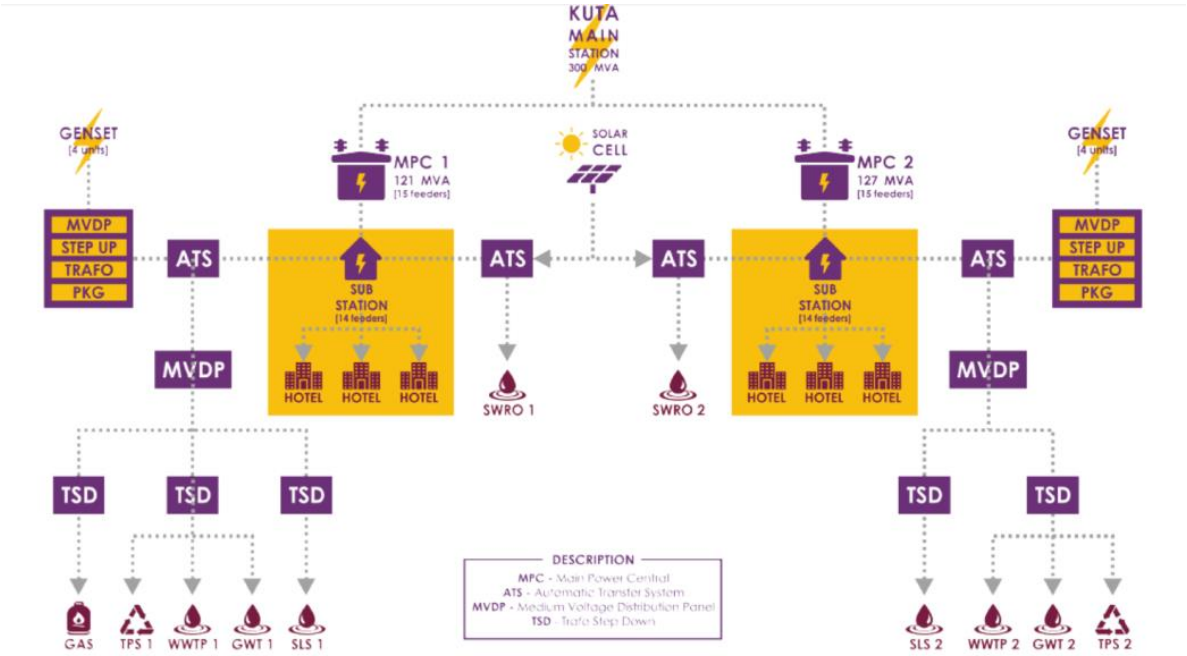


Figure 2-8 Power Distribution System in The Mandalika

Electric power for this area is planned to be supplied from the main substation located on the northern site boundary. Two Main Power Centrals (MPCs) of 144 MVA and 122 MVA will serve the Western and Eastern Zones, respectively, via 15 feeders, each with maximum load of 11 MVA, and 22 and 21 distributed substations, respectively. The applicable power standard will be the PLN Standard: General Rules of Electrical Installations.

The internal 20kV/220v distribution network will also be housed in the road-side subsurface utility duct. Connections from the utility duct to individual lots, and the provision of transformers, would be the responsibility of leaseholders. Any large hotel complex in need of three-phase systems will, in addition and in coordination with PLN, be supplied with 380V distribution. The system will be SCADA controlled. The MPC packages also include Automatic Transfer Switch (ATS)-controlled emergency generators with a capacity of 4 MVA each for the Eastern and Western Zones to ensure firefighting capacity and continued operation of SLSs, WWTPs, SWROs, ICT, EWS, and ITDC offices in the case of blackouts.

2.2.9 Disaster Risk Management (DRM)

According to a 2016 National Board for Disaster Management (*Badan Nasional Penanggulangan Bencana*, or BNPB) hazard risk score, the following hazards were deemed 'high' for The Mandalika: Flooding; flash flooding; extreme waves and abrasion; earthquakes (medium); drought; landslides; and tsunamis.

- Extreme wind conditions do occur, often in conjunction with heavy rainfall, but do not represent a material risk to permanent structures.
- Flash floods have a return period on the site of 10 to 12 years; their occurrence was considered in the calculations for the 'river normalization' works envisioned, assuming that the northern periphery retention ponds are not built.

- Risks for high waves are highest at the Kuta beach site, but will not affect structures due to the steep beach profile and a 100-meter setback from the shoreline.

While somewhat rare, tsunamis are the most severe potential disaster in the Project area. Particularly in response to the tsunami risk, the Project will provide a total of 11 elevated Temporary Evacuation Shelters (TESs) and two Temporary Evacuation Areas (TEAs) as common facilities. Leaseholders are required to provide elevated "evacuation zones" on rooftops. Detailed engineering designs for TESs and TEAs have been completed. The spacing of TESs and TEAs has been determined in such a way that even visitors with limited mobility would be able to reach the nearest TES within 15 minutes. The Emergency Action Plan of Nusa Dua will be replicated in The Mandalika, consisting of four components:

- Detailed study analyzing the potential risks;
- Communication of the tsunami risks to staff and guests;
- Constant monitoring of potential tsunami events;
- Enhancement of the resort's response capacity.

BMKG (Agency for Meteorological, Climatological and Geophysics) sensors notify the BNPB of seismic activity that could trigger a tsunami. The provincial Disaster Mitigation Agency (BPBD) has the authority to issue a tsunami warning that is communicated to local and national television and radio stations and ITDC The Mandalika. National regulations require the communication chain to the potentially affected public to be completed within at most four minutes.

The plan foresees DRM training for ITDC staff and an annual drill covering possible disasters to be conducted by all ITDC and hotel staff. Socialization measures for guests in the form of videos and direct communications are also part of the non-structural DRM measures. According to National regulation, ITDC also has the responsibility to provide shelter and emergency evacuation to the local population in the immediate vicinity of the site. Both staff capacity and physical facilities will be ensured to accommodate this additional demand.

Though the full EWS system will not be operational until 2025, the building in Kuta beach to house the monitoring capacity on an interim basis has already been constructed. The Emergency Warning System (EWS) control room and facilities are currently under procurement and will be completed in 2019. Until 2025, existing fiber-optic infrastructure (minimum capacity without backup) will be used to provide EWS services for the existing tenants. In 2025, monitoring functions will be transferred to the ITDC office building.

2.3 Proposed AIIB Project Description

According to the Master Plan, the development of The Mandalika tourism destination is proposed over a period between 2019 and 2026. The Master Plan defines the site's overall vision and branding, its preferred land uses, different neighborhood or 'zonal' characteristics, and an integrated infrastructure plan for the site and its integration with the public road and utility network of the area. The plan also defines mandatory building regulations to be followed by leaseholders. The Master Plan does not cover infrastructure improvements in surrounding villages.

In order to lay out a foundation for further development of The Mandalika site, the following key infrastructure elements are proposed to be developed in two phases, i.e., Phase I 2019-2023 and Phase II 2024 – 2026, with an estimated total investment of USD443 million of which USD248.4 million will be funded by a sovereign backed loan from the Bank financing. The latter is now known as The Mandalika Urban and Tourism Infrastructure Project (the Project). The Project will focus on Phase I of the development plan.

2.3.1 Component 1: Provision of Basic Infrastructure

The objective of Component 1 is to support the development of a new tourism destination in The Mandalika through provision of basic infrastructure. This component includes interventions in the following areas: (i) provision of basic infrastructure in The Mandalika area; and (ii) infrastructure improvements in selected villages in The Mandalika area and surroundings.

Subcomponent 1.1 - Construction of Basic Infrastructure in The Mandalika

Subcomponent 1.1 is to implement the first phase of essential infrastructure investments in The Mandalika SEZ of Lombok. This will include internal roads; drainage; water supply network, sewerage network; wastewater treatment; solid waste management; electricity distribution; landscaping, public and community facilities; and disaster risk management[1]. The location of infrastructure to be implemented first would be based on the location of leased or in-demand lots to facilitate optimal take up by investors, and the efficient integration of site infrastructure into the public utility network.

AIIB financing will cover the following:

(i) Carrying out of road and paving works, including the construction of 25.9 km roads, with culverts, crossing box drain, drainage, landscaping, street lighting, and utility corridors, connecting hotels and tourism facilities in the SEZ.

(ii) Construction of solid waste management facilities to collect, sort, and transport domestic and landscape garden wastes in the SEZ, including a waste management center with relevant buildings, fencing, and haulage fleet.

(iii) Construction of pipelines for potable water, sewerage, and irrigation water networks (including sprinklers) of 24.6 km each, with 1 water storage tank (west), sewage lift stations, 1 Waste Water Treatment Plant (west), installation of electrical cables (34.2 km) with 1 Main Panel Control (west) and distribution substations, to serve accommodation, retail, and other tourist facilities in the SEZ.

(iv) Carrying out of the integrated drainage works for the SEZ, including bio-retention (swales and modular tanks), river normalization (including river dredging and widening, retention ponds, lagoons, and wetlands) and flood protection through earth-fill work to overcome extreme local rainfall, high river discharge, flashfloods, and high tide and sea storms water level.

[1] Additional infrastructure investments by public and private sectors during this period would include the construction of green infrastructure assets in the form of a 35-Megawatt solar PV power plant and two SWRO plants, which will reduce reliance on limited natural resources in the island.

(v) Construction of disaster risk management facilities in the SEZ, including the installation of an Early Warning System connected to PCC-R, CCTV, and sirens, the construction of temporary evacuation shelters, escape routes, comprehensive signage.

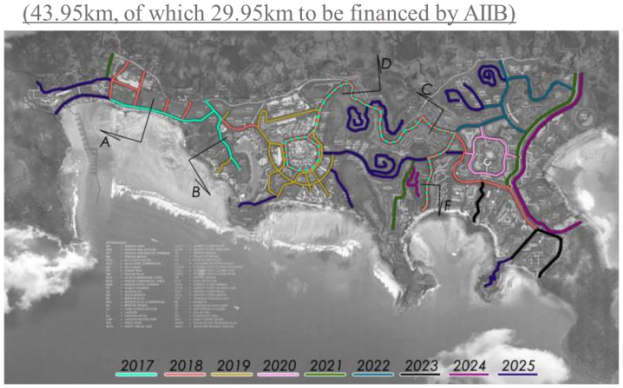
(vi) Construction of public facilities, including gates, amenity cores (public promenades leading from the beachfront into the interior of the site), a small mosque (east), and public spaces, to serve both visitors and residents in the broader Mandalika region.

The main collector and local road network, with culverts, drainage, landscaping, and street lighting, would be constructed under the Project to provide access to hotels and tourism facilities in The Mandalika area. Parking areas would be provided in the amenity core and in the service areas. All the utilities including water supply, sewerage, and irrigation water networks will be housed in the utility corridor within the rights-of-way.

Water would be supplied to The Mandalika area from two main sources, i.e., SWRO and PDAM. Initially all leaseholder properties would be supplied through the SWRO system. Under the Project, the water storage tank and distribution line would distribute potable water to the hotels, restaurants, and tourism facilities. The closed pipe network of sewage lines, sewage lift stations, and one WWTP (west) would be constructed to collect and treat the wastewater from The Mandalika area. The solid waste disposal system would include the collection and transportation of solid waste and landscape garden wastes for recycling and composting, including a temporary trash shelter with relevant buildings, fencing, and vehicles.

Road network

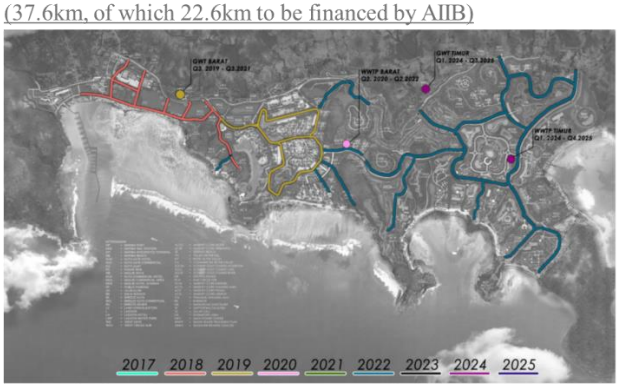
(43.95km, of which 29.95km to be financed by AIIB)



Note: Road network including culverts, drainage, landscaping, street lightings, and utility corridors.

Water, sewage, and irrigation

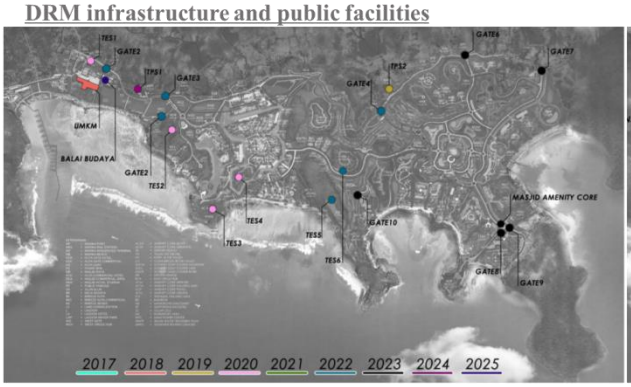
(37.6km, of which 22.6km to be financed by AIIB)



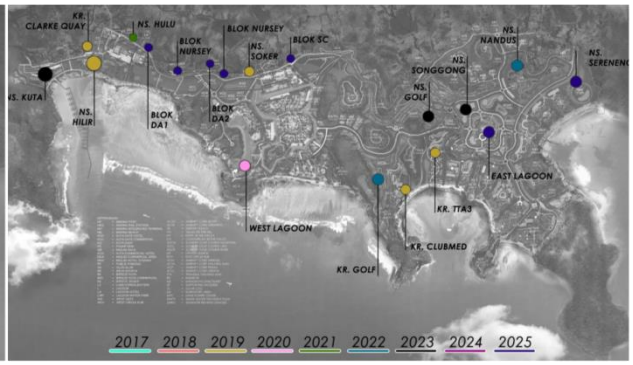
Note: Pipelines for water supply, sewage, and irrigation,
1 Ground Water Tank, Sewage Lift Stations,
1 Waste Water Treatment Plant (west), and sprinklers.

The integrated drainage system of The Mandalika area consists of bioretention (swales and modular tanks), river normalization, and Project area elevation through earthfill work will be developed under the Project to overcome extreme local rainfall, high river discharge, cloud burst storms, flash floods, and high tide and sea storm water levels. The Early Warning System (EWS) with PCC-R and sirens will be installed. As part of disaster risk management, Temporary Evacuation Shelters (TESs) and Temporary Evacuation Sites (TEAs) would be provided under the Project as common facilities, while leaseholders are required to provide so-called elevated "*Evacuation Zones*" on rooftops. This will also cover shelter and emergency evacuation for the local population in the immediate vicinity of the site.

DRM infrastructure and public facilities



Note: Early Warning System with PCC-R, sirens, Temporary Evacuation Shelters (TESs), Temporary Evacuation Areas (TEAs), gates, amenity core, UMKM, mosque, and bus stations.



Note: Land work & retaining wall, river normalization, retention ponds, lagoons, modular tank blocks.

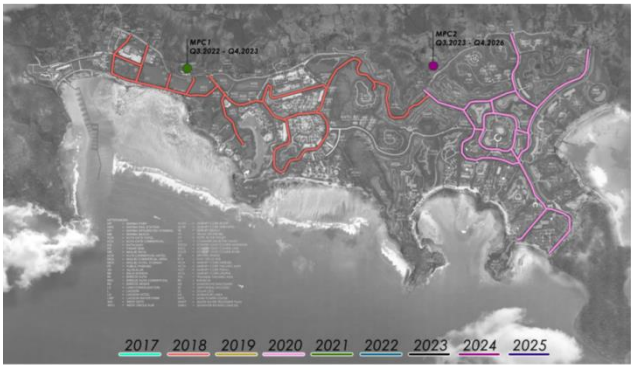
Public facilities, including gates, amenity cores, UMKM, mosque, and bus stations, will be provided to serve both visitors and residents in The Mandalika area. The amenity hubs on the western and eastern parts of The Mandalika would be constructed for information centers, restaurants, shops, and other tourism and commercial facilities. The multiple venues for Small and Medium Enterprises (SMEs) and local vendors would be created under the Project. Landscaping would be provided, according to the Landscape Design Guidelines (LDGL), with plants to be supplied from a nursery site within The Mandalika site. The effluent of the WWTPs will be used for irrigating both public and private greenery in the Project area, while the produced sludge will be composted at the ITDC's plant nursery site.

The electrical distribution network, a Main Panel Control (MPC), and distribution stations would be provided under the Project, to serve accommodation, retail, and other tourist facilities in The Mandalika area. Under the MoU signed by PLN and ITDC, PLN would undertake the work required to link The Mandalika to its local power system and assure that sufficient generating capacity to serve the future power demand in The Mandalika would be available as and when needed.

Additional infrastructure investments by public and private sectors during this period will include the construction of green infrastructure assets in the form of a 35-Megawatt solar photovoltaic (PV) power plant and two SWRO plants, which will reduce reliance on the limited natural resources on the Island. The SWRO plants investment is discussed in Subsection 2.4. Status of the PV power system investment is not completely clear at this writing.

Electricity

(43.2km, of which 34.2km to be financed by AIIB)



Note: Power cable lines, 1 Main Power Control (west), and distribution substations.

Subcomponent 1.2 - Infrastructure Improvements for Neighboring Communities

Subcomponent 1.2 would support infrastructure improvements for the selected surrounding villages, including water supply and sanitation, drainage, solid waste management, transport,

disaster risk reduction, protection of natural assets, and community facilities. This would ensure that an equitable share of the benefits of the Project reaches local communities, while helping to mitigate likely negative externalities from an increased influx of tourists and associated businesses.

One of the risks faced by the Project is that it could fail to materially improve, or even maintain, livelihoods, while negatively impacting on communities' sociocultural identities or access to land and natural resources. Alternatively, potential Project-related benefits such as increased employment and socioeconomic status may take so long to materialize so that broad community support for the Project is no longer given. It is therefore crucial that the Project benefit surrounding villages in a timely fashion, without having to wait for incidental spill-over effects. This Subcomponent aims to: (i) ensure buy-in and continued support from local communities to the Project during preparation, implementation, and operation; (ii) improve environmental conditions of surrounding areas and improve infrastructure linkages with The Mandalika tourism area; and (iii) improve livelihoods of surrounding local communities.

Basic Conditions in Concerned Villages. The geographical scope of Subcomponent 1.2 will broadly cover the four villages of Kuta, Sukadana, Mertak, and Sengkol. The total land area of these four villages is 6,412 hectares or five times of The Mandalika SEZ. According to official statistics, there are 77 subvillages (*dusun*), 9,448 households, and 32,857 persons in these four villages. Almost all local population are Sasak ethnic groups, and close to 50 percent of the local population belong to *Pra sejahtera*– "Pre-Welfare"--essentially the lowest welfare bracket set by the government. The weak economic condition is also reflected in limited local infrastructure in these villages. For example, not all village households have electricity access; about 80 percent of village roads have no pavement; and large proportions of households in these villages have no toilets and clean water supplies.

In order to ensure that an equitable share of the benefits of the Project reaches these local communities, extensive consultations were carried out by ITDC and consultants with representatives of these villages, which identified a range of activities to be included in the Subcomponent, covering improvements of various village infrastructure items. The maximum cumulative contract values for each village will be determined following a multi-criteria analysis based on population size, socioeconomic status, infrastructure needs, and proximity to, as well as likely induced impacts from, activities within the SEZ.

Eligible Infrastructure. Eligible expenditures can cover a range of contract sizes, though not exceeding the per-village cumulative contract value, depending on the number and nature of subprojects chosen by each of the four villages, and will include the following types of eligible infrastructure:

(i) **Clean Water supply:** construction or expansion of water supply network; repairs or replacement of water storage facilities;

(ii) **Sanitation**: construction or improvement of community toilets; purchase of septic tank pump-out trucks; construction or improvement of community septic tanks;

(iii) **Drainage:** improvement or construction of drainage infrastructure including culverts, underground and roadside drainage channels, swales, retention ponds;

(iv) **Solid waste management**: small-scale solid waste processing facilities; household-level collection equipment; garbage collection trucks and other collection equipment; small-scale biogas and composting equipment; temporary disposal sites;

(v) **Transport:** routine and preventive road maintenance; road improvement and reconstruction; road betterment including minor widening; improvement of sidewalks and bicycle paths; bridge routine and periodic maintenance; other road-related infrastructure such as street lighting;

(vi) **Disaster risk reduction:** construction of vertical evacuation structures or retrofitting of existing public-access buildings to perform as such; on-shore breakwaters, seawalls, or coastal forests; installation of sirens and integration with BPBD early-warning system; retrofitting of existing public buildings for earthquake resistance;

(vii) **Protection of natural assets:** rehabilitation of mangrove and coral reef habitats; small-scale water-efficient irrigation facilities; and

(viii) **Community facilities:** landscaping and beautification; hospitality training centers; cultural centers; small-scale medical facilities; improvement of existing piers and other low-impact coastal facilities.

Ineligible Expenditures. Subcomponent 1.2 funds cannot be used to finance: (i) purchase of land; (ii) economic activities involving revolving funds; and (iii) activities with significant adverse environmental and social impacts that are irreversible, cumulative, diverse, or unprecedented ("Category A") requiring a full AMDAL in accordance with Ministry of Environment Regulation No. 5 of 2012 and Ministry of Public Works and Housing Regulation No. 10 of 2008.

Upon determination of shortlisted subprojects, commencement of procurement of works is dependent on a written no objection by the Government of Central Lombok Regency in subproject agreements between Central Lombok Regency and ITDC. One subproject agreement is to be drafted for each of the four villages, covering all subprojects shortlisted in each of the villages. Works will then be procured by ITDC, subject to prior review of bidding documents and bids by the Bank. ITDC's procurement policies, the Bank's Policy on Prohibited Practices and the Project's Grievance Redress Mechanism will apply throughout the implementation of Subcomponent 1.2.

O&M. The above-mentioned subproject agreements will also outline the source of funds and the assignment of implementation responsibilities with regard to the long-term operation and maintenance of subproject infrastructure. Small-scale infrastructure and community facilities will be maintained by the community while larger-scale secondary infrastructure such as drainage, water supply, and secondary roads, will be maintained by the Regency government.

Outline Terms of Reference for Subcomponent 1.2 Consultant. A consultant to be hired under Subcomponent 1.2 and reporting to the PMU and the Bank will:

(i) Conduct in-depth consultations with communities within the geographical scope to identify a long list of infrastructure interventions down to the *dusun* (subvillage) level;

(ii) Jointly, with a representative cross-section of communities and the four respective *Musyawarah Desa* (Village Councils), and in consultation with MPWH, Central Lombok Regency, and the WB, agree on a shortlist of infrastructure interventions, taking into account

existing annual and medium-term development plans and implementation schedules as well as estimated resource requirements for operation and maintenance of infrastructure;

(iii) For the shortlisted subprojects with signed subproject agreements, conduct combined feasibility studies, detailed engineering designs and provide project management and construction supervision consultants' services;

(iv) Provide regular reports to the Bank on implementation progress;

(v) Provide training on infrastructure O&M to local government and communities directly benefiting from or responsible for deployed infrastructure under Subcomponent 1.2.

2.3.2 Component 2: Implementation Support and Capacity Building

This Component will provide Technical Assistance (TA) to strengthen the ITDC Project Management unit (PMU) for carrying out Project activities to ensure that Project implementation is consistent with Project objectives and in compliance with the loan agreement and long-term sustainable destination management.

Subcomponent 2.1. Project Management Support

To ensure the effective implementation of the Project, the ITDC will strengthen PMU's project management capacity by hiring a Consultant, separate from, and in addition to, a supervision consultant so as to assist the ITDC in the following tasks: procurement, financial management, monitoring and evaluation, coordination among all stakeholders, compliance with environmental and social safeguards, stakeholder engagement and communications. This Subcomponent will provide Project-related professional training, workshops, and public information for ITDC staff and relevant stakeholders in topics related to the tasks listed above as well as ensuring that Project implementation benefits local communities (men and women) to the greatest extent possible. This Subcomponent will also finance consultancy services to carry out feasibility studies, detailed design studies, as well as environmental and social impact assessments, to enable the implementation of Subcomponent 1.2.

Subcomponent 2.2. Construction Management

Given the complexity of works and leaseholders' quality requirements, a strong focus will be given to ensuring sufficient personnel will be available for contract management and construction supervision. This Subcomponent will support the employment of consultants to: (i) review and refine detailed engineering design and contract documentation for the works to be undertaken for the Project; and (ii) supervise the construction of these works.

Subcomponent 2.3. Establishing Economic Linkages

This Subcomponent will build on ITDC's existing Corporate Social Responsibility (CSR) activities and target direct interventions strengthening economic linkages of The Mandalika resort with the local economy by: (i) providing both assistance in linking hotels with local suppliers of goods and services as well as training for business/enterprise development, language, and hospitality skills for local populations, ensuring that these are accessible by men and women and those of different education levels. This will familiarize suppliers with the quantity, quality, and reliability requirements of large hotel chains and ways to meet them *well before Project completion* while

convincing hotel chains of the benefits of local sourcing for both branding and sustainability; (ii) developing business and hospitality skills for the semiskilled and unskilled, micro and small enterprises as well as craft makers in and around The Mandalika while identifying ways to close financing gaps; and (iii) training and organizing of local guides as skilled mediators between tourists on the one hand and local culture/natural assets on the other.

Subcomponent 2.4. Destination Management and Monitoring

This sub-component aims to assist ITDC in establishing the organizational mechanisms, expertise, and legal instruments required to manage Mandalika in line with international best practice on the sustainable management of tourism destinations. The component will provide TA to ITDC to work towards the achievement of the 104 Sustainable Tourism Destination indicators outlined in Ministry of Tourism Decree No. 14 of 2016. This will include the development of various sectoral plans and their implementation arrangements required to achieve some of these indicators. This implies it is envisioned that some of the Decree's indicators will be met before the operational phase commences. This is to ensure a sound policy foundation has been established alongside the requisite internal expertise as early as possible, for ITDC to manage the destination to the highest international standard. A Destination Management Manual will be developed to guide this aspect of ITDC's operation.

Furthermore, evidence from large tourism resorts globally indicates that these often induce significant, sometimes uncontrolled, urban expansion in the periphery of managed estates. Sub-component 2.4 will thus determine a baseline of urban expansion around Mandalika using an established methodology for analysis of satellite imagery to ensure comparability of results after project completion. This information will be made available to BAPPEDA, MoPWH and Central Lombok Regency as primary data to evaluate the enforcement of planning regulations in Core Zone 2 and the Buffer Zone as outlined in the district strategic plan for the area.

Finally, Sub-component 2.4 will support preparatory studies for the development of Phase-II of the development of Mandalika (2024-2026) and future tourism development.

The breakdown of costs by Project activities is presented in **Table 2-1**.

Table 2-1 Breakdown of Costs by Project Activities

Component	Cost Amount (USD in million)	Financing source	
		AIIB	GoI/ ITDC
Component 1: Provision of Basic Services and Infrastructure			
(i) Roads, including culverts, road drainage, landscapes, street lighting, and utility corridors			
(ii) Water supply, sewerage, and irrigation network, including a GWT (west), SLSs, and sprinklers			
(iii) Public and community facilities, including gates, amenity core, UMKM, mosque, and bus stations			
(iv) Storm water drainage, flood management, and DRM facilities, including TESs, river normalization, and modular tank blocks			
(v) WWTPs (west)			
(vi) SWM facility, including a TPS with relevant buildings, fencing, and vehicles			
(vii) Electricity distribution including electrical cables with a MPC (west) and distribution substations			
(viii) Infrastructure improvements in selected nearby villages			
Component 2: Implementation Support and Capacity Building			
(i) Project management support			
(ii) Construction management			
(iii) Establishing economic linkages			
(iv) Destination management and monitoring			
Land Purchase			
Base Cost			
Contigencies (Physical and Price)			
Front-end Fee			
Interests and Commitment Fee during Construction			
Percentage			
Total Project Cost			

2.4 Associated Facilities

Associated facilities are facilities or activities that are not funded as part of the Project and, in the judgement of the Bank are (a) directly and significantly related to the Project; (b) carried out, or planned to be carried out cotemporaneously with the Project; and (c) necessary for the Project to be viable and would not have been constructed or expanded if the project did not exist.

Subcomponent 1.1 of the Project includes provision of a potable water distribution system that consists of water tanks, pumping system, and distribution pipeline network. The main supply of the potable water in The Mandalika will be generated by two Sea Water Reverse Osmosis (SWRO) plants, one in each of the West and East zones. The SWRO plants are owned and operated by PT PAIA (Perusahaan Air Indonesia Amerika) and not part of the Project financed by the Bank. Therefore, the SWRO plants are categorized as associated facilities to this Project. Beside supply from the SWRO plants, some of the potable water will also be supplied by PDAM, the local water company owned by the government. Since supply from PDAM is relatively minor, the discussion of associated facilities will focus on the SWRO plants only in terms of potable water supply.

Similarly, the Project includes a provision of a solid waste management facility (SWMF) located in the East zone. The facility includes buildings, fencing, and garbage trucks. Domestic solid wastes wil be collected from the hotels, other businesses, and public facilities and transported to the SWMF to be sorted. “Organic” (putrescible) wastes will be composted. “Inorganic” (inert) solid wastes are segregated for recycling purposes or sold to third parties. The rest of the solid waste will be transported to the landfill managed by the Central Lombok Regency Government at Pengengat, outside of The Mandalika area. Therefore the Pengengat Landfill is also considered an associated facility to this Project.

2.4.1. Sea Water Reverse Osmosis Plants

The maximum need for clean water for The Mandalika area is estimated at around 21,000 m³/day. To ensure a clean water supply with adequate quality and quantity, the Project will mostly rely on Sea Water Reverse Osmosis (SWRO) plants. There will be two SWRO plants to be developed, located in the West and East zones, each with a capacity of 10,000 m^3/day. At present, there is already an SWRO plant in the West zone at Lot EC1, with a capacity of 3,000 m^3/day (see **Figure 2-9**). When needed, the capacity is expandable in modular fashion.

The clean water produced by the SWRO plants will be distributed to customers within The Mandalika area through a water pipeline network, which is funded by the Bank as part of Subcomponent 1.1 of the Project. For every cubic meter of sea water intake to the SWRO plants, they will produce 400 L of clean water and 600 L of high-salinity brine water to be discharged. At the maximum planned capacity of 2 x 10,000 m^3/day , the SWRO plants will involve large water intake from the beach wells (around 50,000 m^3/day) as well as a large discharge of brine water (around 30,000 m^3/day). If not managed properly, discharges of this nature could have adverse impacts on marine biota and intertidal biota in the vicinity of the SWRO plants brine discharge.

Based on Government Regulation 27 of 2012, PT PAIA as the owner and operator of the SWRO plants must have an environmental permit, which is a prerequisite for obtaining and maintaining other business permits. Depending on the degree of impacts, the business must conduct an AMDAL study (environmental and social impact assessment) or compile a UKL-UPL (environmental and social management and monitoring plan). The existing 3,000 m^3/day SWRO plant already has an approved UKL-UPL and Environmental Permit since 2017. PT PAIA is obliged to implement the UKL-UPL and report the results every 6 months to the Environmental Bureau of Central Lombok Regency.

Copies of these documents have not available to review the environmental and social performance of PT PAIA for this ESIA. No records have been examined on public consultation and

information disclosure specifically regarding the SWRO. To date, there have been no known complaints from the community regarding the SWRO. This may be because it has never been in operation up to the present.

Any expansion of the SWRO capacity at the exisiting location will require a renewal of Environmental Permit through revision and resubmission of the UKL-UPL. Similarly, the East zone SWRO plant will need to obtain the UKL-UPL and Environmental Permit prior to construction.

In the existing UKL-UPL it is stated that PT PAIA must apply for two environmental protection and management permits (PPLH) as follow: 1) brine water discharge permit and 2) temporary storage of hazardous wastes permit. The UKL-UPL, however, does not mention about a required third permit, i.e., the one to allow it to abstract saline water from its beach wells. It does not appear PT PAIA holds any of these permits as yet.

Figure 2-9 Existing SWRO Plant (White Roof) and Nearby Lagoon (on Left of Image)

2.4.1.1 Brine Discharge Options

PT PAIA is considering three options to discharge the process effluent brine water:

1. Direct discharge to the sea (via a pipeline)
2. Discharge to a nearby lagoon (see **Figure 2-9**)
3. Discharge by injection into the ground.

Environment Minister Regulation No 12 of 2006 regulates requirements and procedures for permitting to discharge wastewater into the sea. The requirements for obtaining the discharge permit include the following:

- Calculation of carrying capacity of the local marine environment
- Characterization of the brine to be discharged
- Description of local marine environment that will receive the brine discharge
- Assessment of impacts of the brine discharge

- Description of impact mitigation and monitoring plans.

An environmental study is being planned to select which option is the best to discharge the brine water.

Discharge to Ocean

Coastal brine discharge, or marine outfall, would be considered the most common method, and the usual approach, for disposal of brine from desalination facilities. In this case, brine is piped directly from the facility into the sea. Brine properties can cause discharge plumes into sea water to behave differently from other types of marine outfall discharges. Since the density of brine plumes exceeds the density of ambient sea water, the plume could settle on the sea floor and expose benthic biota to potentially stressful levels of salinity and other brine elements.

As a result, the key design consideration for a marine brine discharge system is location of the outfall, ensuring it is at a sufficient distance from shore, and set at a proper depth, to avoid negative environmental effects on marine and intertidal ecosystems. To determine the optimum brine output location in this case, the usual approach would be to perform an environmental impact study specifically focusing on predicted brine discharges. To accomplish this, quantitative oceanographic modeling to estimate the mixing patterns of discharged brine water is the recommended approach.

A discharge-to-sea scenario has several key advantages:

- Relatively well-known (and simple) technology with a proven track record around the world;
- Can be sufficiently studied and modelled to provide accurate design specifications to avoid environmental effects;
- Predictable outcome with little risk of failure; and
- Exports brine off site.

The major disadvantage of discharging to sea would most likely be the costs associated with the construction, operation, and maintenance of a discharge-to-ocean system, particularly if the required output location were to be sited far from shore. However, marine outfalls of several kilometers in length are common around the world, and the system is expected to function for many years or decades.

Based on the combined environmental advantages of a predictable technology with little chance of failure to export brine off site, the discharge-to-ocean alternative is considered a favorable option.

Discharge to Ground

Discharging brine to ground involves the use of injection wells. An injection well is a drilled or bored hole into the ground that is used to place waste fluids deep underground, typically into porous rock formations, almost certainly meaning into aquifers, which may in fact be saline. Injection wells are usually constructed of solid-walled pipe to a depth that prevents the injected fluid (brine in this case) from mixing with the surrounding environment. Unlike marine outfalls, injection wells utilize the earth to partially or completely filter or clean waste liquid (brine in this case) before it reaches the receiving water (ocean in this case)—assuming the aquifers actually

discharge to the sea. Dilution of the brine depends on the salinity of the aquifer and the time delay before discharge into marine water (if it in fact discharges).

Concerns surrounding the use of injection wells are typically related to the risk of injected brine polluting receiving waters by unexpected leakage and seepage, resulting in groundwater contamination. Since owner-operator PAIA obtains its saline water from wells, there is the additional risk that the discharge wells contaminate the water supply wells with increased salinity. Determining design specifications for a brine discharge-to-ground scenario would require extensive hydrogeological and ecological assessments and modeling to determine optimal locations and depths of injection wells for this Project. Drilling costs can be high, and long-term outcomes may not be easily predictable.

A discharge-to-ground scenario, while perhaps more cost effective than a marine outfall alternative, has several key disadvantages:

- Prone to leakage and seepage;
- Elevated risks of groundwater, sea water, and SWRO water supply contamination; and
- Brine is not exported off site.

While a commonly-used technology for the disposal of waste liquids, based on well-documented potential risks and uncertainties associated with leakage and seepage to ground and sea water within the Project Area, the discharge-to-ground alternative is not considered a favorable option in this case.

Discharge to Lagoon

This brine discharge alternative would involve discharging brine into a nearby tidal lagoon. The identified lagoon covers a footprint of approximately 5,170 m^2, and is located in the immediate vicinity of the existing SWRO facility. In this scenario, brine would be discharged directly into the lagoon to settle and incorporate tidal activity as a mixing mechanism to cause the brine to enter the ocean.

Based on field observations, the lagoon is often or usually without standing water, but will likely fill to varying depths with sea water at maximum (spring) tides and possibly contain some brackish water during parts of the wet season. During site visits in March and July 2018, the lagoon was empty but the substrate was moist and teeming with benthic organisms – thus indicating a thriving benthic ecosystem. Determining design criteria for this brine discharge alternative would require extensive environmental assessment work to determine baseline ecological conditions, tidal cycles, and potential environmental impacts, so as to develop mitigation measures and a long-term monitoring program.

While likely the most inexpensive option, the discharge-to-lagoon alternative suffers from serious disadvantages:

- Environmental effects on the lagoon and surrounding ecosystem are at present unknown;
- Environmental risks to the lagoon and surrounding ecosystem are high;
- Unknown and untested alternative with significant risk of failure;
- Would require extensive environmental effects studies and assessments; and,

- Brine is not exported off site.

As a result of these serious environmental risks, the discharge-to-lagoon alternative is not considered a favorable option.

2.4.2. Saline Water Intake

There are three beach wells equipped with pumping system to supply the existing 3,000 m^3/day SWRO plant, which is located in the West zone. The beach wells were tested by 15 x 24 hours of pumping with salinity (or TDS, as a proxy) conitinuously being monitored. According to PAIA, the TDS was close to that of sea water and stable during the pumping test, indicating that the water from the beach wells indeed originate from the sea and that the pumping did not not draw fresh water from the inland side of the surrounding aquifer. Furthermore, PAIA has already identified seven other beach well locations for the SWRO plant in the West zone, ready for up to 10,000 m^3/day future expansion. The locations are left undrilled for the time being until it they become needed.

It is to be noted that the risks of long-term adequacy of saline water supply from the beach wells has not been assessed in either qualitative or quantitative terms. Such assessment would require a hydrogeological study to gain a better appreciation of the long-term availability of the saline groundwater. The first step of the assessment is to collect hydrogeological related data such as:

- Geological units
- Aquifer system (including hydrogeological parameters such as aquifer thickness, permeability, storability, confined, unconfined aquifers, etc.)
- Recharge and discharge areas
- Existing groundwater users

A conceptual model can be created based on the data collected, followed by a numerical model to assess the impact of saline water intake for the SWRO plant to the saline water-freshwater interface. It aims to provide recommendation on the optimum yield from each beach well to fulfil the ultimate proposed rate of saline water abstraction. The model can also be used to provide answers regarding groundwater drawdown, saltwater intrusion threat, and possibility of water recirculation from re-injection to abstraction wells or from lagoon water to abstraction wells (if the Project opts for brine discharge into the lagoon).

Requirements to Commence Operation

Considering much still needs to be done before requirements can be fulfilled, it would probably take around one year before PAIA can obtain the brine discharge permit and the other permits, i.e., pumping water from the beach wells and temporary storage for hazardous wastes. ITDC, as the authority for The Mandalika SEZ, has made it clear to investors, PT PAIA included, that they will not be allowed to start operation unless they have all the permits required by the GoI.

A location in the East zone has been allocated for the other SWRO plant. Other than that, nothing hs been done to prepare for the eastern SWRO plant. Similar studies and permitting process must be done before the eastern SWRO can be constructed and operated.

2.4.3. Pengengat Landfill

Pengengat landfill is established by the Central Lombok government in September 2015 to service three districts within the Regency, i.e., Pujut (population 97,857), Praya (104,950), and Central Praya (60,579) (see **Figure 2-10**). The sanitary landfill is located about 20 km to the east of Praya City. Since the Project area is located in the Pujut Sub-District, it is elligible for solid waste management service by the Pengengat landfill. Actually, The Mandalika area to date has already been using the Pengengat landfill to dispose of unrecyclable solid wastes. This practice will continue even after the solid waste management facility in The Mandalika is established.

The land area needed for the Pengengat landfill in 2023 is projected at 19,861 m^2. This will be divided into two blocks: Block 1, area 8,000 m^2, and Block 2, area 11,861 m^2. The leachate treatment plant will require an area of 1,525 m^2 while the office and supporting area will need 6,184 m^2. Thus the total area needed in 2023 is estimated at 27,570 m^2. The Government of Central Lombok has allocated 10 ha (100,000 m^2) of land for the Pengengat landfill, more than enough for expansion well beyond 2023. The rest of the land that is not being used is required as a buffer zone.

Figure 2-10 Sanitary Landfill at Pengengat, Central Lombok Regency

Total solid waste generated by The Mandalika SEZ is projected at 153 m3/day in 2023 (see **Figure 2-5**). However, significant percentages of the solid wastes will be composted and recycled. Therefore the quantity that will be disposed at Pengengat will be significantly less than 50% of the total generation of solid wastes. The capacity of the Pengengat landfill in 2023 is projected at between 415 – 742 m3/day. It is not clear whether this has taken into account the solid wastes coming from The Mandalika. The solid waste generation of Praya itself is said to be around 300 m3/day. However, ITDC has been coordinating with the management at Pengengat to make sure that the capacity of the landfill is adequate to service The Mandalika area when needed.

It is unknown to the ESIA compilers whether Central Lombok Regency ever conducted public consultation. It is said, however, that one of the reasons the landfill site was moved from a previous location was to move away from residential areas. There are news stories on the

internet about the inauguration of the Pengengat Landfill on 10 September 2015 by the Regent of Central Lombok. There is also one grievance, found on the Metromini news website, about the landfill from the Budget Watch Society (Masyarakat Peduli Anggaran) of West Nusa Tenggara about construction of the leachate processing facility in 2014 as not having been done in accordance with the required engineering design, which could result in poor performance of the leachate treatment. The variation from the design is suspected (in the news item) as being related to corruption. No further news stories on this can be found.

There is no environmental and social report available to assess the performance of the landfill. Further, there is no information about the environmental permitting status of the Pengengat landfill. However, permitting should not be a problem since the landfill is owned and operated by the Regency Government.

CHAPTER 3
ENVIRONMENTAL AND SOCIAL LEGISLATIONS, REGULATORY FRAMEWORK AND INSTITUTIONAL FRAMEWORK IN INDONESIA

This Chapter presents an overview of Indonesian laws and regulations on environmental and social aspects, specific laws and regulations applicable to The Mandalika Urban and Tourism Infrastructure Project; relevant environmental health and safety guidelines; environmental quality standards related to the Project for air, water (surface water, groundwater, and seawater), soil, and effluent discharge standards; relevant laws and regulations concerning land acquisition, and indigenous people; and applicable AIIB environmental and social policies and other policies, standards, and guidelines used.

3.1 Overview of Indonesian Administration and Governance

The regulatory framework comprises laws and government regulations and commitments that govern social and environmental practices such as environmental impact assessment, environmental permitting, environmental regulations, social and land use regulations, and international treaties and agreements to which Indonesia is a signatory.

Indonesia is divided into administrative zones in five layers **(Figure 3-1**). At the top level is the Nation, the Republic of Indonesia, which consists of 34 provinces. Each province is headed by a governor. Provinces (otherwise known as Level 1 Regions) are further subdivided into kabupaten or regencies (Level 2 Regions, headed by a bupati or regent), which are further subdivided into kecamatan (districts) and desa (villages). Within provinces, there are also municipalities or city governments, which have the same status as regencies as Level 2 Regions. They are referred to as kota, and each is headed by a walikota (mayor).

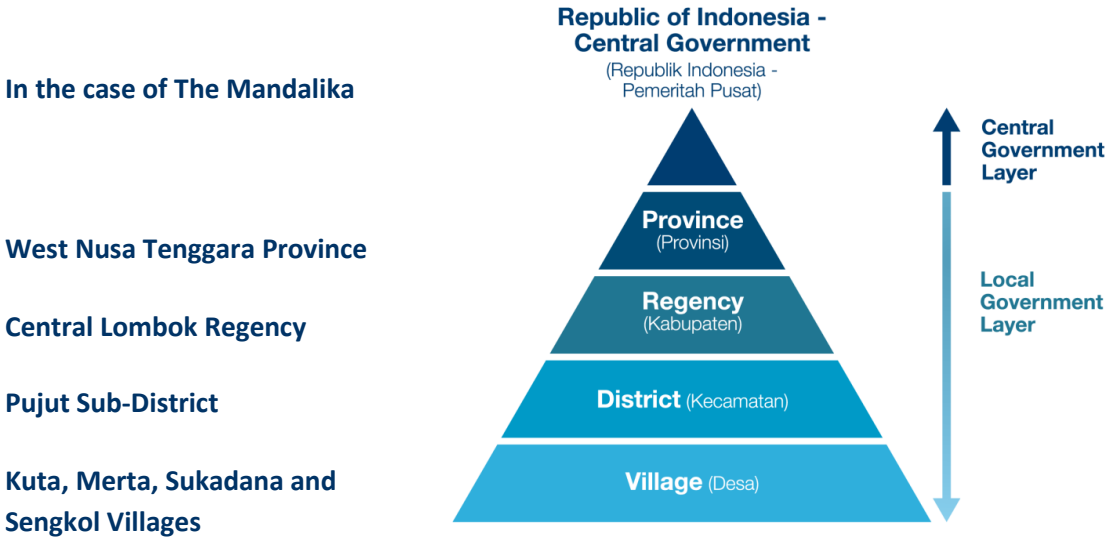


Figure 3-1 Five Layers of Government of Indonesia

The Central Government issues laws and regulations relating to or directly governing environmental management and protection in Indonesia. These are complemented by environmental regulations at province and regency levels. The Mandalika Project (the Project) must comply with both National and regional/local regulations.

3.2 Applicable Indonesian Laws and Regulations

The Mandalika Project must comply with Indonesian environmental and social legislation and regulations, as well as rules on land acquisition and compensation, resettlement, and Indigenous Peoples.

3.2.1 Key Laws and Regulations on General Environmental and Social Issues

The following Table lists the key laws and regulations related to environmental and social issues.

Table 3-1 Laws and Regulations Relevant to Environmental and Social Issues

No	Regulation	Theme and General Objectives
1.	Law No 32 of 2009	**Environmental Protection and Environmental Management.** Fosters environmentally sustainable development by means of an environmental planning policy and the rational exploitation, development, maintenance, restoration, supervision, and control of the environment. Environmental protection and management are planned through: inventory of data and information on natural resources, stipulation of ecoregions, and the formulation of environmental protection and management plans.
2.	Law No 18 of 2008	**Domestic Solid Waste Management.** Protects environmental quality and public health and establishes domestic solid wastes as resources. Regulates the management of domestic solid wastes and similar wastes from industrial estates, special estates, social, and public facilities..
3.	Law No 5 of 1994	**Ratification of United Nations Convention on Biological Diversity.** The Government of Indonesia fully adopts the Biodiversity Convention of the United Nations. As one of the richest countries in biodiversity, Indonesia commits to actively participate in efforts to protect the sustainability of biodiversity
4.	Government Regulation No 27 of 2012	**Environmental Permits.** Requires that every business and/or activity with impacts on the environment to hold an environmental permit prior to project implementation. The environmental permit is a prerequisite to obtain and to maintain the validity of other business permits. When environmental permits are suspended or cancelled, automatically all other business permits are also suspended or cancelled and thus operations must stop.
5.	Government Regulation No 47 of 2012	**Corporate Environmental and Social Responsibility. S**tipulates that implementation of environmental and social responsibility is mandatory for companies with businesses related to natural resources.

No	Regulation	Theme and General Objectives
6.	Government Regulation No 82 of 2001	**Water Quality Management and Control of Water Pollution. D**esigned to control management of water quality and water pollution in an integrated manner using an ecosystem approach. Integrated pollution control is applied to the planning, implementation, supervision, and evaluation phases.
7.	Government Regulation No 41 of 1999	**Air Pollution Control**. Aims of air pollution control are: (a) protect and maintain the essential function of conserving the atmosphere so that the quality of air supports the health protection requirements for humans and other creatures ; (b) raise public awareness of the environment so as to achieve harmony, suitability, and equilibrium between humans and the environment; (c) controll the use of resources wisely; and (d) controll sources of pollution as part of implementing the Law on Environmental Management and Protection.
8.	Government Regulation No 81 of 2012	**Management of Domestic Solid Wastes and Similar Wastes**. Protects the sustainability of environmental functions and public health, and aims at designating domestic solid wastes as resources.
9	Government Regulation No 101 of 2014	**Management of Hazardous Wastes.** Regulates the management of toxic and hazardous waste substances ("hazardous wastes"), covering: procedures for identifying, storing, collecting, transporting, utilizing, processing, and disposal of hazardous wastes and addresses risk mitigation and emergency procedures.
10.	Minister of Environment Decree No 51 of 2004	**Seawater Quality Standard**. Regulates seawater quality standards for seaports, marine tourism, and marine biota uses. Sea water not in seaport or marine tourism areas shall comply with the standards for marine biota, subdivided into standards for coral reefs, seagrass, mangroves, and "natural."
11.	Minister of Environment and Forestry Regulation No P.68/Menlhk-Setjen/2016	**Domestic Liquid Waste Standard.** Provides a reference for management (responsible party) of businesses or activities in planning for managing domestic liquid and for the preparation of environmental management documents (AMDAL or UKL-UPL).
12.	Minister of Environment Decree No 111 of 2003	**Guidelines on Requirements and Procedures for Permitting Wastewater Discharges to Water or Water Sources** and **Guidelines for Studies. R**equires that businesses and activities that discharge wastewater shall obtain permits from bupatis or mayors. The permit application is based on the results of an environmental study following the guidelines provided.
13.	Minister of Environment Decree No 45 of 2005	**Guidelines for Reporting Implementation of Environmental Management and Monitoring Plans (RKL-RPL).** Provides mandatory format for reporting the implementation of environmental management and monitoring plans to improve legal certainty. Such reports can be used as evaluation materials in determining environmental management policy.
14.	Minister of Environment Regulation No 16 of 2012	**Guidelines for Preparation of Environmental Documents.** This regulation contains references for drafting environmental

No	Regulation	Theme and General Objectives
		documents in the form of Environmental Impact Assessments (AMDAL), Environmental Management Efforts and Environmental Monitoring Efforts (UKL-UPL), or Statement of Environmental Management and Monitoring Capability.
15.	Minister of Environment Regulation No 17 of 2012	**Guidelines for Public Participation in Environmental Impact Assessment and Environmental Permit Process.** Provides references for implementing public participation in Environmental Impact Assessment and Environmental Permitting Process. The regulation stipulates the requirement for the number of public consultations within the process for preparation of AMDAL (full EA--twice) and UKL-UPL (partial EA--once).

3.2.2 Laws and Regulations Relevant to Land Acquisition and Resettlement

In Indonesia there are two mechanisms used in land procurement, differentiated by the implementer of land procurement. The first mechanism is through Location Designation, which is regulated by Law No 2 of 2012 on land procurement for developments in the public interest and its implementing regulation, Presidential Regulation No 71 of 2012. These regulations replace the previous Presidential Regulation No 36 of 2005, which was the legal basis for land acquisition through the Location Designation mechanism. They regulate the process of land procurement for development in the public interest, i.e., projects undertaken and initiated by government institutions or entities using government budget.

Private entities are not entitled to utilize the Location Designation mechanism. The regulations stipulate the establishment of a Land Procurement Committee (LPC) as the implementer of land acquisition. This committee is appointed by the local government (provincial or regency) in which the project is located. The LPC Procurement team, as the representative of the State, conducts the land acquisition process and directly negotiates compensation for the land with land owners.

Table 3-2 Laws and Regulations on Land Acquisition and Resettlement

No	Regulation	Theme and General Objectives
1.	Law No 2 of 2012	**Land Acquisition for Development of Public Infrastructure.** Intends to accelerate land acquisition processes for infrastructure development in the public interest. It sets out the land acquisition process and requirements and their institutional arrangements in four steps: planning, preparation, implementation, and hand over.
2.	Presidential Regulation No 40 of 2014	**(First) Changes to Presidential Regulation No 71 of 2012.** Specifies the funding sources for operational and supporting costs for the implementation of land acquisition for the assigned State-Owned Enterprisess and for upstream oil and gas public infrastructure; increases the size of small-scale land acquisition from 1 ha to 5 ha.
3.	Presidential Regulation No 99 of 2014	**(Second) Changes to Presidential Regulation No 71 of 2012.** Specifies in more detail the determination of compensation, the procedures for hiring or selection of appraisal services, expanded

No	Regulation	Theme and General Objectives
		timing for giving compensation from 7 to 14 days after validation from the head of the land acquisition implementation team is received by the agency that needs the land. This regulation outlines the process and requirements for land acquisition incomplete after the end of December 2014 that can be extended until the end of December 2015.
4.	Presidential Regulation No 30 of 2015	**(Third) Changes to Presidential Regulation No 71 of 2012.** Allows business entities that obtained authority/power based on agreements with National institutions, ministries, non-ministerial institutions, provincial, district or city, and SOEs that are specifically assigned by the central government to provide infrastructure in the public interest. Further allows business entities acting on behalf of those parties who need the land to prefinance land acquisition, so as to be reimbursed by the concerned agencies/ministries after land acquisition process is completed. Specifies in more detail the process and requirements for the incomplete land acquisition after the end of December 2014 (that can be extended until the end of December 2015) in relation to the determination of development location.
6.	Presidential Regulation No 148 of 2015	**(Fourth) Changes to Presidential Regulation No 71 of 2012.** Stipulates the institutions responsible for or assigned to land acquisition for infrastructure developments in the public interests. Shortens the length of time for the preparation and implementation for land acquisition and for submission of the results of land acquisition. Also regulates small-scale land acquisition (up to 5 ha) and streamlines procedures (eliminates need to obtain determination of development location letter, and utilizes an appraiser's service for defining compensation).
7.	Presidential Regulation No 102 of 2016	**Financing Land Acquisition for Development of National Strategic Projects for Public Interests. S**tipulates the process and procedures of land acquisition for National strategic projects (as defined in Presidential Regulation No 3 of 2016). It covers procedures and requirements for funding land acquisition for national strategic projects that will be implemented by ministries and/or SOEs. This regulation allows the prefinancing for land acquisition by business entities (SOEs or private business entities) that have been assigned by ministries to build infrastructure in the public interest. The regulation also contains the procedures and requirements for prefinancing and reimbursement of the compensation that has been paid by the business entities.
8.	Presidential Regulation No 56 of 2017	**Handling Social Impact of Land Acquisition for National Strategic Projects (as defined in Presidential Regulation No 3 of 016 and its update, Presidential Regulation No 59 of 2007).** Stipulates that the Government will manage the social impacts on the occupants of land owned by the Government (National, provincial, and regency/city), state-owned enterprises, and local-government

No	Regulation	Theme and General Objectives
		enterprises that will be used for National strategic projects. The regulation specifies the criteria for such occupants (have ID cards endorsed by kecamatan and do not have rights on the land; have physically controlled and used the land continuously for 10 years, and have controlled and used land with good intention openly, uncontested, and recognized and proven true by the land owner(s) and/or head of village); coverage of compensation (costs for dismantling houses, mobilization, house rents, and support for income loss). The regulation requires the land owners to prepare a Social Impact Management Plan (SIMP) to be submitted to the Governor, who will then establish an Integrated Team to make an inventory and verify the occupants and the occupied land; assign independent party to calculate the compensation; facilitate issues; recommend the list of occupants eligible for compensation, amount of compensation based on the calculation of the independent party, mechanism and procedures to give the compensation to the occupants; and control the implementation of the delivery of the compensation. The Integrated Team consists of various government officials from province and regency/city, and land owners. Based on the recommendation from the Integrated Team, the Governor will establish the list of eligible occupants for compensation; amount of compensation; and mechanism and procedures to give the compensation. Also specifies that the land owner(s) should provide the financing for the compensation and the compensated occupants should move off the land in a maximum of seven days after compensation is received.
9.	Head of National Land Agency Regulation No. 5 of 2012 (since issuance, has been amended twice:e of the Minister of Spatial Development/Head of National Land Agency Regulations No 6 of 2015 and No 22 of 2015).	**Technical Guidelines on Land Acquisition.** Specifies in detail the preparation for Implementing Land Acquisition that includes: inventory and identification of the affected land, determination of appraisal services and task of appraisers, discussions/negotiations on the forms and values of compensation, compensation payment or provisions for non-cash compensation, process and procedures in providing compensation in special circumstances, custody of compensation/consignment, release of objects of land acquisition, documentation of field map, nominative lists, and administrative data. Also specifies submission of results of land acquisition; taking of the consignment; monitoring and evaluation; financing land acquisition; small-scale land acquisition; coordination forimplementation of land acquisition; and transitional provisions. Accompanied by a set of various formats as annexes.
10.	Minister of Spatial Development/ Head of National Land Agency Regulation No. 6 of 2015	**Changes to Head of National Land Agency Regulation No. 5/2012.** Elaborates the amendments to Presidential Regulation No 71 of 2012 as specified in Presidential Regulations No 40 of 2014, No 99 of 2014, and No 30 of 2015. This regulation specifies that land management rights could be given to the National institutions, ministries, nonministerial institutions, provincial, regencies, or cities, and to SOEs thatare assigned by the central government to

No	Regulation	Theme and General Objectives
		cooperate with business entities. Business entities with agreements with one of these institutions could be given building rights or use rights. Also explains that land acquisition funds are included in budget documents (DIPA) of government institutions or budgets of SOEs. Stipulates processes and procedures for small-scale land acquisition (up to 5 ha) and land acquisition for infrastructure not for public interests. Contains process, procedures, and requirements for incomplete land acquisition that has obtained Determination of Development Location Letter, including requirement to apply the compensation level that is assessed by the land appraisers as specified in Law No 2 of 2012 for land that was assessed under the requirements of previous regulations with lower compensation levels.
11.	Minister of Spatial Development/Head of National Land Agency Regulation No 22 of 2015	**Second Changes to Head of National Land Agency Regulation No 5 of 2012.** Amends Regulation No. 5/2012 (elaborating amendments of Presidential Regulation No 71/2012) as specified in Presidential Regulation No 30/2015. Specifies that business entities who act on behalf of agencies/ministries, provincial/regency/city governments, and SOEs that were assigned by the Government to acquire land can prefinance land acquisition, and will be reimbursed by the concerned agencies/ministries/ and local governments through National or Regional Income and Spending Budget (APBN or APBD) after land acquisition process is completed. The funds can be obtained through a special account mechanisms.

Table 3-3 Other Laws and Regulations Relevant to Land Acquisition

No	Regulation	Theme and General Objective
1.	Law No 5 of 1960	**Basic Agrarian Law.** Establishes rights to land that can be granted to individuals or institutions
2.	Government Regulation No 40 of 1996	**Right of Cultivation, Right to Build, and Right to Use of Land.** Elaboration of Law No 5 of 1960, Chapter II, Article 16--explains requirements for granting Land Rights. Identifies relevant authorities and responsibilities of all concerned parties. Defines the status of land and the objects on it, and the changes to status that occur when the land rights expire.
3.	Government Regulation No 24 of 1997	**Land Registration.** Establishes certification of land ownership and rights.
4.	Minister for Agrarian Affairs Regulation No 2 of 1993	**Location Permit and Land Acquisition.** This regulation describes procedures to obtain Location Permits and Land Titles for a Company within the Framework of Capital Investment.
5.	Minister for Agrarian Affairs Regulation No 2 of 1993	**Location Permit.** Regulates the maximum area that can be owned, the permit period, procedures to provide lLcation Permits, and the rights and obligations of owners. Stipulates the legal basis for Location Permit mechanism. Private business may implement land

No	Regulation	Theme and General Objective
		procurement through direct negotiation with land owners on a 'willing seller-willing buyer' basis.
6.	Minister for Agrarian Affairs Decree No 22 of 1993	**Guidelines for Granting Location Permits.** This decree provides implementation procedures for Regulation No 2 of 1993 and addresses land compensation requirements and procedures.
7.	Minister for Agrarian Affairs Decree No 21 of 1994	**Land Titles.** Apply to a Company within the Framework of Capital Investment.
8.	State Minister for Agrarian Affairs/Head of BPN Circular Letter No 460-3697 of 26 December 1995	**Location Permit.** Announcement prohibits any Company from acquiring lands without previously obtaining a Location Permit.
9.	Minister for Agrarian Affairs/Head of BPN Regulation No3 of 1997	**Land Registration.** Implementing Provisions of Government Regulation No24 of 1997 on Land Registration, describes responsible legislation for planning, the implementation of land parcel mapping measurements, and all land acquisition phases/processes
10.	Head of National Land Agency Regulation No 5 of 1999	**Land Issues.** This regulation addresses Community Communal Rights Issues and Guidelines for Settling Customary Law.

3.2.3 Indigenous Peoples Laws and Regulations

Application of AIIB's Indigenous Peoples Policy (ESS 3; see following section) is complicated by the complexity of indigenous issues in Indonesia. The discussions on *adat* land rights and *hak ulayat* in the previous subsection is actually an explanation of how the Republic's diverse indigenous culture and remnant legal systems remain important factors in the modern legal system.

There are also GoI policies concerning isolated, disadvantaged communities that exist with total dependence on natural resources and very little access to technology. These are separated from mainstream culture and suffer when their isolation is broken or their lands are used for development. These situations are comparable to the types of Indigenous Peoples issues often addressed in multilateral finance institution and ILO policies; but these policies are not relevant to The Mandalika Project and are not addressed here.

Table 3-4 Laws and Regulations Relevant to Indigenous Peoples

No	Regulation	Theme and General Objective
1.	Law No 5 of 1960	**Agrarian Basic Principles**. Defines the fundamental types of rights that may be held by private individuals and entities.Describes the roles of the State with regard to its direct use of land as well as its regulation of private rights and private uses of land. Indonesia's agrarian law recognizes *adat* law, or Indonesia customary law, as long as it does not conflict with the National interest or other regulations set out in the Law.
2.	Law No 41 of 1999	**Forestry**. Article 1 point 6 of this Law was changed by

No	Regulation	Theme and General Objective
	Amended by Law No 19 of 2004	Constitutional Court Decision No. 35/PUUX/2012 and now reads"…customary forest is a forest located within the area of an indigenous community…" Before, the word "State" was in the article. With the elimination of the word "State" from the definition, it is now understood that customary or *adat* forests are now no longer State forests.
3.	Law No 6 2014	**Villages.** Acknowledges existence and rights of Customary Law Communities or *Masyarakat Hukum Adat* (MHA), provided that they are recognized and MHA may opt to establish adat villages with their own institutional structures and authority. However, this Law suffers from the lack of guiding regulations and institutional mandates to make such provisions operational. The Law grants a desa adat the authority to conduct adat-based public administration. In contrast with previous laws, this Law adopts optional, noncumulative criteria for recognition of MHAs, with the existence of territory being mandatory.
4.	Law No 27 of2007 Modified and replaced by Law No1 of 2014.	**Coastal Zone and Small Island Management.** Beginning in 2007 acknowledged Customary Community (MA), and in 2014 this became Customary Law Community (MHA) with a clearer definition. Both Laws acknowledge the existence of MHAs provided they are recognized and require consultations with MHA for any development in coastal areas. Stipulates specific provisions on public consultations for the development of coastal management plans. Such consultations stress the needs for accuracy, transparency, and access to information. Conflict resolution may be handled through customary processes.
5.	Law No 23 of 2014	**Regional Government.** Recognizes the existence of Customary Institution (*Lembaga Adat*) by granting these rights of "empowerment." Determines that adat law is an additional rule for particular purposes such as village elections. Establishes adat or adat law as a basis upon which to conduct local development, or as a parameter to measure social cohesiveness.
6.	Law No 11 of 2010	**Cultural Heritage.** Recognizes Customary Law Communities (MHA) as the owners of their cultural heritage and grants them the authority to manage it. Requires observation and data collection on cultural heritage that may be affected by Project activities.
7.	Minister of Forestry Regulation No. P.39/Menhut-II/2013	**Empowerment Through Forest Partnership.** Effort to enhance local communities' capabilities and autonomy to benefit from forest resources in an optimal and equitable way, to increase the welfare of local communities. Requires forest concession holders to engage in partnership with communities based on principles of mutual agreement, participation, transparency, and trust. Such benefit sharing schemes may include smallholder plantations, livelihood activities, training, and facilitation. However, for these community members to be able to engage in

No	Regulation	Theme and General Objective
		the schemes, they need to provide valid proof of identification (ID card, or reference letter from the village head) and reside within the concession areas, demonstrate reliance on natural resources, and have capacity to engage in productive and sustainable activities.
8.	Minister of Spatial Development/Head of National Land Agency Regulation No. 9 of 2015	**Procedures for Determination of Communal Land Rights.** Procedures for the determination and transitional provisions for communal land rights of MHA and local Communities Located in a Specific Area of MHA. and community residents located in a specific area. It Stipulates requirements and criteria for confirming the MHA's communal land rights and community members' land rights, outlines the procedures and requirements to apply for the land rights for MHA and community members who live in the specific area, identification, verification and field check, and reporting and determination of communal land rights as well as requirements for the MHA and the community members in the specific areas to manage the land that has been given rights.
9.	Minester of Interior Regulation No 52 of 2014	**Guidelines for Recognizing and Protecting MHA.** Guidance for protecting indigenous groups, starting from the formation of the committee, the stages of recognition and protection, dispute resolution, guidance and supervision, as well as funding.

Table 3-5 Indonesian Indigenous People Laws Compared to Related UN Convention

Core Conventions	Ratified / Accepted by GOI
ILO Indigenous and Tribal Peoples Convention No 169, 1989	Not ratified yet.
UN Declaration on the Rights of Indigenous Peoples (UNDRIP), 13 September 2007	Endorsed.
International Convention on the Elimination of All Forms of Racial Discrimination (ICERD) 4 Jan 1969	25 June 1999 with a reservation
International Convention on Civil and Political Rights (ICCPR) 23 March 1976	23 Feb 2006 with a declaration
International Convention on Economic, Social, and Cultural Rights (ICESCR) 3 Jan 1976	23 Feb 2006 with a declaration
Convention on the Rights of the Child (CRC) 2 Sept 1990	5 Sept 1990
Convention on the Elimination of Discrimination Against Women (CEDAW) 3 Sept 1981	13 Sept 1984 with a reservation
The Special Procedures of the Human Rights Council, 2006	
The Guidelines on Indigenous Peoples' Issues of UNDG, February 2008 *)	

*)Source: *http://www.un.org/esa/socdev/unpfii/documents/UNDG_Guidelines_indigenous_FINAL.pdf*

3.2.4 Tourism Industry Laws and Regulations

Table 3-6 Specific Laws and Regulations on Tourism

No	Regulation	Theme and General Objective
1.	Law No 10 of 2009	**Tourism.** Basic law for Tourism in Indonesia, regulates tourism development, tourism strategic regions, tourism business rights and obligations, Government authorities, Tourism Promotion Agency, Indonesia Tourism Industry Association, human resources, standardization, and certification.
2.	Law No 39 of 2009	**Special Economic Zones (SEZs) or Kawasan Ekonomi Khusus. KEKs** are developed through the preparation of areas that have 'geoeconomic and geostrategic advantages' and serve to accommodate industrial activities, exports, imports, and other economic activities that have high economic value and international competitiveness.
2.	Law No 11 of 2010	**Cultural Heritage.** The purpose of the Law is to protect Indonesian cultural heritage. The scope of cultural heritage conservation includes: protection, development, and utilization of cultural heritage.
3.	Government Regulation No 50 of 2011	**Master Plan for National Development of Tourism.** Describes the National Tourism Development Plan 2010 – 2025. Includes tourism destinations, tourism marketing, tourism industry, and tourism institutions as based on the Master Plan.
4.	Government Regulation No 52 of 2014	**Special Economic Zone (SEZ) The Mandalika.** Establishes The Mandalika SEZ/KEK as a strategic National economic development.
5.	Government Regulation No. 52 of 2012	**Tourism Competency and Tourism Business Certifications.** Establishes National standards for certification of both tourism professional employees and for businesses providing tourism products, services, and management.
6.	Ministry of Public Works and Housing, Regional Infrastructure Development Agency, Document SFG4028, January 19, 2018	**Environmental and Social Management Framework for the Indonesian Tourism Development Program.** Describes policies and the legislative and regulatory framework. Compares World Bank Environmental and Social Safeguards Policies with applicable Indonesian Laws and Regulations and presents gap assessment and measures to address identified gaps.
7.	Government Regulation No 50 of 2008	**Capital Investment into BTDC.** Republic of Indonesia's State capital investment into share capital of company (*Persero*--Shareholding) PT Bali Tourism Development
8.	Government Regulation No 33 of 2009 Revision of Government Regulation N 50 of 2008.	**Capital Investment into BTDC.** Additional State capital investment into share capital of PT Bali Tourism Development

3.2.5 International Conventions and Agreements Ratified by GOI

Indonesia is a signatory to environmental conventions and international agreements that are relevant to major projects in Indonesia, many of which have subsequently been ratified by the Indonesian Parliament and implemented by the Indonesian Government, including:

- Kyoto Protocol to the United Nations Framework Convention on Climate Change (ratified by Indonesian Law No. 17 of 2004).
- International Convention on Civil Liability for Oil Pollution Damage, as amended by Protocol 1992 (implemented by Presidential Decree No. 18 of 1978 and Presidential Decree No. 55 of 1999).
- Montreal Protocol on Substances that Deplete the Ozone Layer 1985 and the Vienna Convention for the Protection of the Ozone Layer 1985, as amended (implemented by various Presidential Decrees and Presidential Regulations).
- International Convention for the Prevention of Pollution from Ships 1973 and Protocol 1978 relating to the International Convention for the Prevention of Pollution from Ships 1973 (implemented by Presidential Decree No. 46 of 1986).
- United Nations Convention on the Law of the Sea 1982 (ratified by Indonesian Law No. 17 of 1985).
- Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal 1989 (implemented by Presidential Decree No. 61 of 1993).
- International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage (implemented by Presidential Decree No. 19 of 1978).
- Stockholm Convention on Persistent Organic Pollutants 2001 (ratified by Indonesian Law No. 19 of 2009).
- Paris Agreement to the United Nations Framework Convention on Climate Change (ratified with effect on 30 November 2016).

3.3 Environmental and Social Standards and Guidelines Relevant to Project

This section addresses AIIB policies, Good International Industry Practice as represented by IFC Environment and Social Sustainability Performance Standards and Environmental Health and Safety Guidelines, and environmental quality standards, both those established by the GoI and those established or applied in the IFC Guidelines.

3.3.1 Asian Infrastructure Investment Bank (AIIB) Environmental and Social Policy

The AIIB Environmental and Social Policy applies to Project funded by the Bank, and sets out the general processes and requirements for Project screening and categorization, environmental and social due diligence, environmental and social assessment, environmental and social management plans, environmental and social assessment tools and management plan framework, information disclosure, public consultation, monitoring and reporting as well as grievance redress. It also

defines the roles and responsibilities between the Bank and the clients. The Policy must be complied with to secure Bank financing

Environmental and Social Standard 1: Environmental and Social Assessment and Management

This standard requires clients/borrowers to implement environmental and social assessment and management, using appropriate studies proportional to potential risks and impacts. It requires that the assessment process be supported by effective information disclosure and consultation with a grievance mechanism in place and the scope of the assessment should include pollution prevention, biodiversity impacts, resource efficiency, climate change, sustainable use of natural resources, vulnerable groups, access to resources, impacts on livelihood, resettlement, cultural resources, working conditions, and community health and safety.

Environmental and Social Standard 2: Involuntary Resettlement

This Standard aims to avoid involuntary resettlement wherever possible; to minimize Involuntary Resettlement by exploring Project alternatives, where avoidance is not feasible, to enhance or at least restore, the livelihoods of displaced persons in real terms relative to the pre-project Levels, to improve the overall socioeconomic status of the displaced poor and other vulnerable groups, and to conceive and implement resettlement activities as sustainable development programs, providing sufficient resources to enable the persons displaced by the project to share in project benefits. This Standard would be applicable should The Mandalika Project require involuntary resettlement.

Environmental and Social Standard 3: Indigenous People

This Standard aims to design and implement Projects in a way that fosters respect for Indigenous Peoples (IP) identity, dignity, human rights, economy and culture, as defined by the Indigenous Peoples themselves, so that they: (a) receive culturally appropriate social and economic benefits, (b) do not suffer adverse impacts as results of projects, and (c) can participate actively in projects that affect them. This standard is applicable because the majority Sasak community affected by The Mandalika Project have been classified as IP.

3.3.2 Good International Industry Practices (GIIP)

The International Finance Corporation (IFC) Performance Standards for Environmental and Social Sustainability (the eight Performance Standards or PS 1 through PS 8) and Environmental Health and Safety (EHS) Guidelines represent the generally accepted state of the art in sustainability performance in private sector and multilateral project finance. They represent the requirements of World Bank Group “Safeguards” policies that have been to some degree adopted worldwide by multilateral, bilateral, and private financial institutions. These policies represent a detailed expression of the requirements of the AIIB ESS policy described above, and are referenced throughout this ESIA document.

The IFC EHS Guidelines are technical reference documents with general and industry-specific examples of GIIP, as defined in IFC Performance Standard 3: Resource Efficiency and Pollution Prevention. The Guidelines contain the performance levels and measures that are acceptable to international financial institutions(IFIs) and that are generally considered to be achievable in new facilities at reasonable costs by existing technology. Compliance with the requirements is

considered as GIIP, commonly acceptable to IFIs involved in project financing. As such, this ESIA derives Good International Industry Practices not only from the IFC Performance Standards as noted above, but also from the IFC EHS Guidelines, specifically the following:

- IFC's General EHS Guidelines;
- IFC's Environmental, Health, and Safety Guidelines for Tourism and Hospitality Development.

The sets out the specific environmental quality standards to be applied to the Project as attached in Appendix A.

CHAPTER 4
ENVIRONMENTAL AND SOCIAL BASELINE CONDITIONS OF PROJECT AREA

4.1 Project Setting

The following section presents the physical, biological and socioeconomic baseline data and information relevant to The Mandalika Tourism Special Economic Zone (SEZ) and The Mandalika Tourism and Urban Infrastructure Project. The Project is located within four villages, Kuta, Sukadana, Mertak, and Sengkol, all located in Pujut Kecamatan (District), Central Lombok Regency. The administrative areas in which the Project is located are shown in **Figure 4-1**. The Project is also directly adjacent to five bays (*teluk)*, namely, Kuta Bay, Serenting Bay, Aan Bay, Kelili Bay, and Gerupuk Bay.

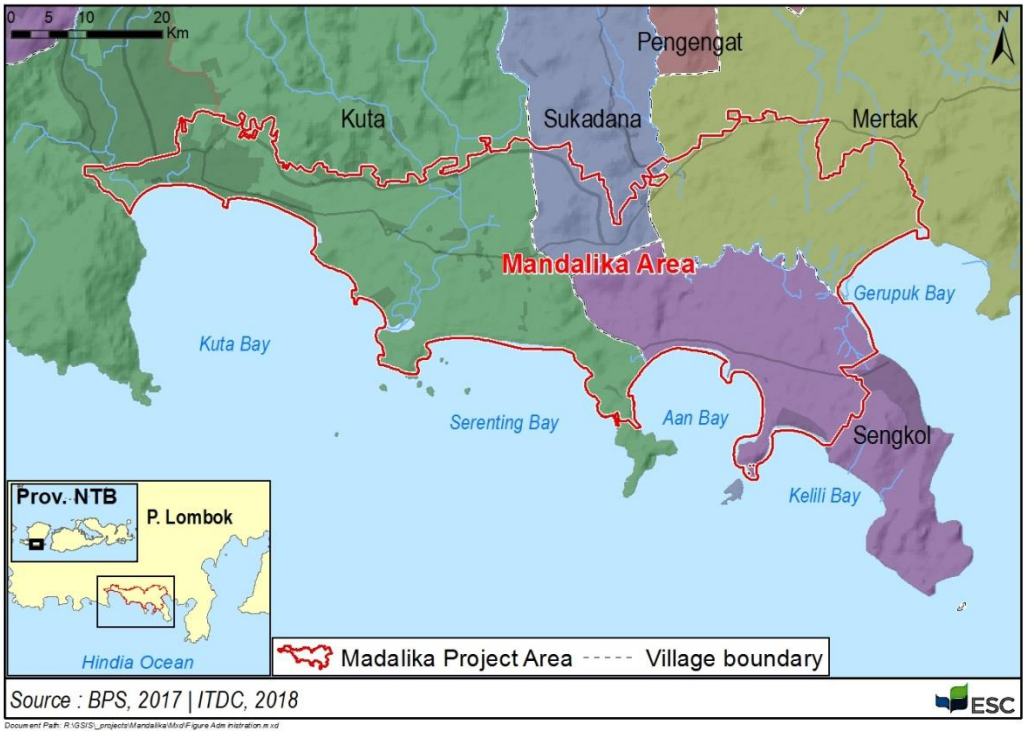


Figure 4-1 Administrative Areas of The Mandalika Tourism SEZ Project

All available and relevant secondary data pertaining to the Mandlika Tourism Resort and this ESIA were compiled and analyzed. The following secondary data sources were used to establish this environmental and social Project setting:

- ITDC (Indonesian Tourism Development Corporation) 2018. *AMDAL Addendum.* PT. Pengembangan Pariwisata Indonesia, Central Lombok Regency, West Nusa Tenggara, Indonesia.
- Central Bureau of Statistics:
  - Pujut Sub-District in Figures, 2012-2017.
  - Central Lombok Regency in Figures, 2017.

- Department of Hydro-Oceanography, 2003.
- Ministry of Environment and Forestry:
  - Conservation mapping, 2017.
  - Land cover mapping, 2017.
  - Marine ecosystem mapping, 2017.
  - Watershed mapping, 2017
- USGS (United States Geological Survey), seismic and earthquake mapping, 2018
- DEM (Digital Elevation Mapping) V3 SRTM (Shuttle Radar Topography Mission):
  - Slope, 2015
  - Topography mapping, 2015
- IBAT for Research and Conservation Planning.

4.2 Land Cover

Based on the existing land cover map (**Figure 4-2**), the land cover condition of the project area is dominated by human-modified land cover. The land cover is mainly filled with paddy fields, dry agriculture, shrubs, open areas and aquaculture. Fragmented areas of settlements are also found in the area. This is indication that the project area is already altered by human activities.

Remnants of natural habitat can be found in the project location. On the east side of the project area, small patches of secondary dryland forest are present. In addition, a relatively moderate portion of the west side is that of a secondary mangrove forest. The patches of forest on the west may be connected with the large patch of secondary dryland forest located at the north-western part of the project area, which may have been fragmented due to human alteration.

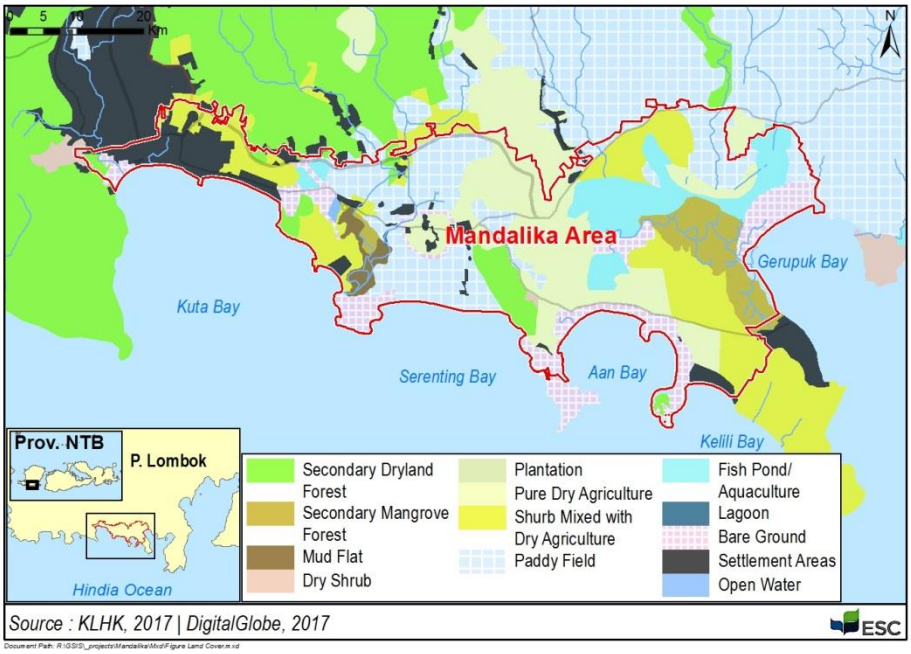


Figure 4-2 Land Cover

4.3 Geophysical and Chemical Components

4.3.1 Summary

The geophysical and chemical condition of the study area is typical of the region. The climate is categorized as Type C climate according to the Schmidt and Ferguson climate classification. The project location intersects with three (3) watersheds, which are the Eat Tabelo Watershed, Eat Ngolang Watershed, and Kali Balak Watershed. As it is located at the coast, the project area encompasses a significant proportion of Eat Ngolang and Kali Balak's downstream area.

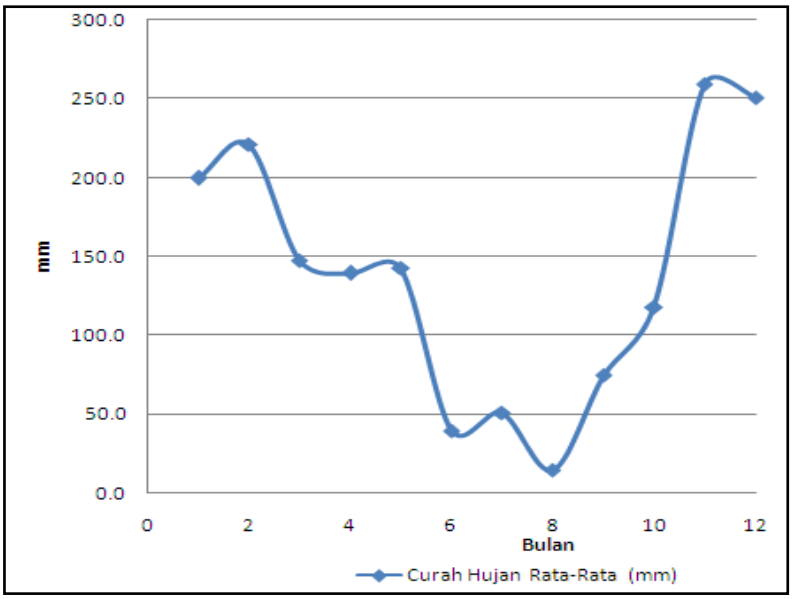
The environmental parameters are also generally within allowable limits. According to the baseline data taken for the AMDAL Addendum (2018), the current air quality fulfilled the national standard despite the area filled with human activities. The overall noise level was also in accordance to national allowable variation limit. As for surface water quality, generally almost all parameters met the national standards, except occasional exceedances in Total Dissolved Solids (TDS), Biological Oxygen Demand (BOD), Nitrite, Zinc, and Lead. Likewise, in groundwater quality, most parameters fulfilled the national standards, except for coliform concentration. These exceedances were considered to be linked with human settlements around the study area.

In terms of oceanography, the project location possesses similar characteristics as other beaches on southern coasts in Indonesia, such as sandy beaches, cliffs, and deep water depth. For the sea water quality, many parameters were reportedly above the national standards: turbidity, ammonia, phosphorus, nitrate, dissolved oxygen (DO), zinc, sulfide, copper, and lead. These exceedances were associated with exceedances reported in the connecting surface water quality as well as surrounding human factors.

4.3.2 Climatology

From AMDAL Addendum (2018), the study area is categorized as a Type C climate (relatively wet) according to the Schmidt and Ferguson climate classification. Based on the acquired climate data, the Q values are between 33.3% and 60%. Q is defined as the average number of dry months divided by the average number of wet months. The average of Q during the 10-year observation period was 58.4% with an annual average of 3.8 dry months and 6.5 wet months.

The dominant monsoons in East Indonesia are divided into the West Monsoon (December, January ,and February) and East Monsoon (June, July, and August). During the west monsoon, there is abundant rainfall while relatively little rainfall occurs during the east monsoon, thus forming a V-shape pattern of total monthly rainfall from January to December every year (Figure 4-3). Based on 10 years (2008-2017) of data record acquired from Selaparang Ampenan Airport Meteorology Station in Mataram, largest city on Lombok and Capital of the Province of West Nusa Tenggara, the average annual rainfall is 1,558 mm with 65 rainy days.

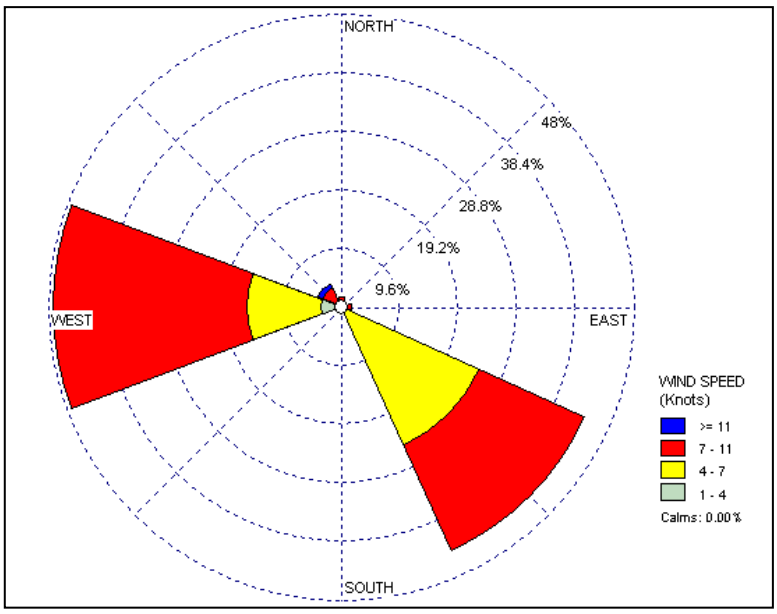


Source: AMDAL Addendum, 2018

Figure 4-3 Average Monthly Rainfall

Average annual temperatures measured at Selaparang Ampenan range from 23.2 °C to 31.7 °C, with an average of 26.6 °C in the Project area. In the hours when maximum temperatures were recorded, they could reach 33 °C. Such high readings at the Project area can be attributed to the location's open landscape, which is exposed to high intensity solar irradiation. The relative humidity (RH) based on data from the same station show the average annual relative humidity in the Project area is 79%.

Data from the Mataram Airport Meteorology Station also show that the dominant wind direction is eastward with a velocity range of 7 to 11 knots (**Figure 4-4**). The maximum wind velocity is 11.4 knots while the annual average is 6.5 knots.



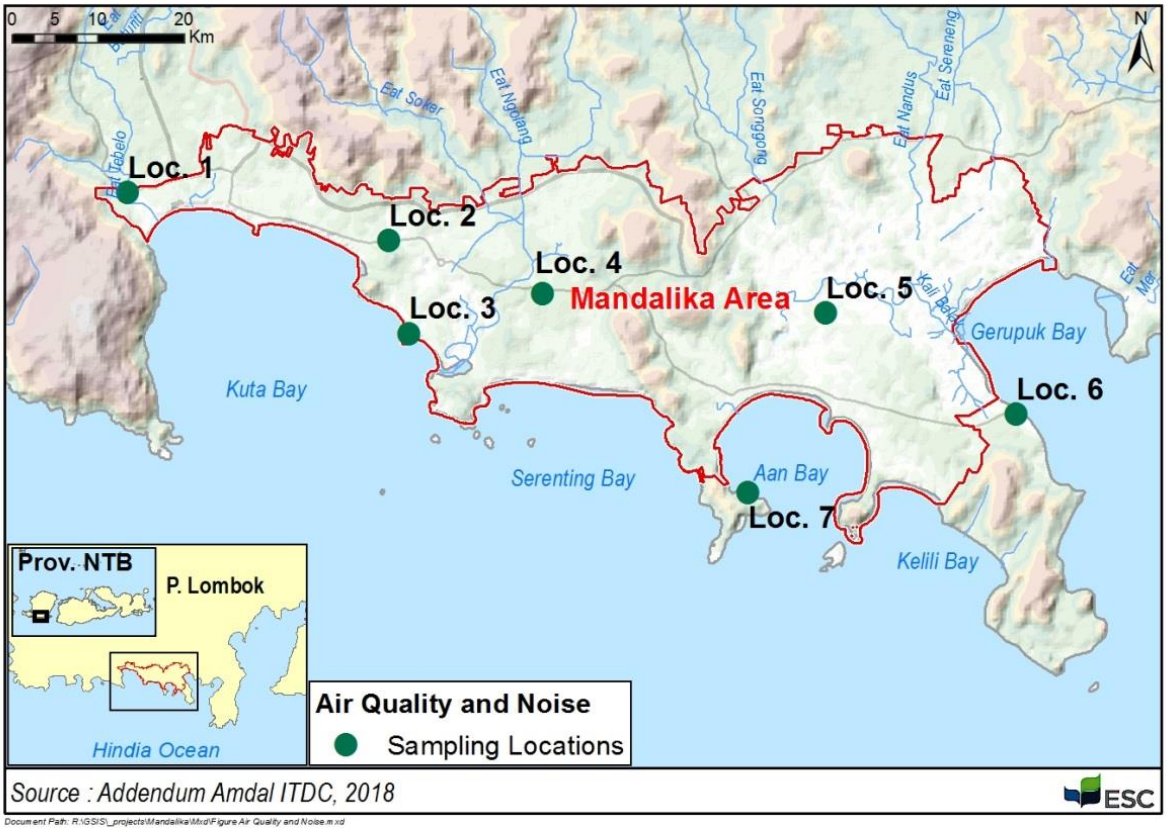
Source: Selaparang Ampenan Meteorological Station, Mataram, and AMDAL Addendum, 2018

Figure 4-4 Wind Rose of Western Lombok

4.3.3 Air Quality

As reported in the AMDAL Addendum (2018), air quality samples were taken and tested in 2017 at seven (7) different locations, as shown in **Figure 4-5**. These locations are Ketapang Hamlet, Rangkap Hamlet, Seger Bay, Ebunut Road Crossing, and Gerupuk Hamlet. **Table 4-1** presents the analytic results for all seven locations, compared to the Indonesia Ambient Air Quality Standards of Government Regulation No 41 of 1999 on Air Pollution Control. As is evident on **Table 4-1**, none of the parameters in the sampling locations exceeds the standards.

Air quality of a certain area that is within acceptable standards generally represents natural existing condition. However, the project area is already heavy with human-modified environments, such as agriculture, degraded forest, and cleared land. Even so, air quality still exhibits acceptable standards, which shows that the area is still liveable for the local stakeholders despite the habitat are no longer natural. This may be due to the lack of industries and motored vehicles in the area which allow the local people to live traditionally and pollution-free.



Location 1 : Katapang Hamlet
Location 2: Rangkap Hamlet
Location 3: Seger Bay
Location 4: Ebunut Road Crossing
Location 5: Gerupuk River Field
Location 6: Gerupuk Hamlet
Location 7: Molok Bay, Gerupuk Hamlet

Figure 4-5 Air Quality and Noise Sampling Sites, The Mandalika Project Area, 2018

Table 4-1 Results of Air Quality Sampling

No	Parameter	Unit	Standards (GoI Reg 41/1999)	Measurement Results						
				Ketapang Hamlet	Rangkap Hamlet	Seger Bay	Ebunut Road Crossing	Gerupuk River Field	Gerupuk Hamlet	Molok Bay, Gerupuk Hamlet
A	**Environmental Conditions**									
1	Temperature	ºC	-	30.6	30.5	29.8	29.35	31.05	29.9	30.8
2	Wind Speed	m/s	-	2.5	2.3	5.4	0.7	2.25	1.6	1.7
3	Dominant Wind Direction		-	South	West	West	West	North	North	North
4	Humidity	%	-	66.3	66.1	66.25	66.3	64.25	68.4	67.4
5	Pressure	kPa	-	100.68	100.66	100.63	100.61	100.62	100.68	100.68
B	**Chemical**									
1	NO_2	µg/Nm^3	400	< 10	< 10	< 10	< 10	< 10	< 10	< 10
2	SO_2	µg/Nm^3	900	94.76	71.06	< 25	< 25	< 25	< 25	40.06
3	CO	µg/Nm^3	30000	180	220	145	165	155	165	250
4	HC	µg/Nm^3	-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
C	**Physical**									
1	Dust (TSP)	µg/Nm^3	230	12	8	14	16	14	16	11

Source: AMDAL Addendum, 2018

4.3.4 Noise

The following baseline data are derived from the AMDAL Addendum (2018), which includes a field survey of noise levels. As with air quality sampling, noise levels in the Project area were measured in seven (7) locations in June 2017. As seen on **Table 4-2**, almost all locations comply with the noise level standards regulated in the Minister of Environment Decree No. Kep-48/MENLH/11/1996. Exceedances were recorded in Ketapang Hamlet and Gerupuk Hamlet, which had noise levels above the residential area standard (55 dBA). According to the Minister of Environment Decree No. Kep-48/MENLH/11/1996, these exceedances are still within the allowable variation limit of the residential area standard (55+3 dBA).

Table 4-2 Noise Level Measurements in Project Area

No.	Location	Unit	Standards (MoE Decree Kep-48/MENLH/11/1996)	Measurement Results
1.	Ketapang Hamlet	dBA	55*	57.16
2.	Rangkap Hamlet	dBA	55*	53.78
3.	Seger Bay	dBA	70**	55.43
4.	Ebunut Road Crossing	dBA	60***	49.03
5.	Gerupuk River Field	dBA	60***	30.83
6.	Gerupuk Hamlet	dBA	55*	58.53
7.	Molok Bay, Gerupuk Hamlet	dBA	70**	48.01

Note: Standards for Noise Level based on the MoE Decree Kep-48/MENLH/11/1996
*Standard for residential area.
**Standard for recreational area.
***Standard for governmental and public area.

Source: AMDAL Addendum, 2018

4.3.5 Physiography and Geology

4.3.5.1 Physiography

Lombok Island is within the volcanic arc of Nusa Tenggara, which in turn, is part of the east Sunda arc and west volcanic arc of Banda. This arc extends from Java to Nusa Tenggara before bending around the Banda Sea. The Project site of The Mandalika SEZ and vicinity consists of wavy to hilly physiography and is situated at 0 to 10 m above sea level. At a regional level, the Project site is located on an uplifted landform, which is formed due to uplifting of the undulating surface. The Project site contains flat areas and hills.

Some of the land managed by ITDC can be characterized as “low-lying land”, or in other words, situated below high water level (HWL). That means, this area is prone to water intrusion should the water level increases. The surveyor’s report indicates that about 307 ha, or just under 25% of the area, is classified as low-lying land. In fact, 23.5 ha or 1.88% of The Mandalika is below mean sea level therefore underwater most of the time.

With the datum set at -0.73 meters below sea level, this means the HWL is 1.63 m above sea level, and thus one quarter of the project location is at a lower level. This area is partly around the lagoon in the West zone, but concentrated along the Kali Balak in the East zone. The area is currently dominated by coastal fish ponds (*tambak*) and a large area of secondary mangrove forest to the south. It is most likely that in the past, most of this area was dominated by mangrove ecosystems, and was gradually converted to *tambak* by local residents.

According to the survey, the tidal range is 2.36 m and the 100-year HWL is 1.95 m above sea level, and the SEZ minimum grade is set at 2.95 m above sea level. If we assume that, rather than all this area being 1.63 m deep at high tide, it averages half that, then the minimum fill will average at 1.135 m. Over 307 ha (or 3.07 million m^2), then 3.484 million cubic meters of fill will be needed to bring these areas up to grade. This is an enormous amount of required fill.

4.3.5.2 Geology

Based on the geological map of Lombok Island **Figure 4-6**, the study area is covered by alluvial deposits, situated above, but not in alignment with, older rocks (Baturape-Cindako Volcano rocks). The spread is very wide especially within the Project site and its surroundings. The older rocks were formed during the Quarternary Age (alluvium) and in the regional geology of alluvial deposits of river, swamp, and beach (Qac). Based on lithological characteristic, alluvial deposits are the youngest rocks in the region, generally made up of coarse and fine sand, silt, and clay and occasionally pieces of marine organisms.

In addition, there are units of intrusives (Tmi), composed of andesitic and dacitic rocks. These are believed to have been formed during the Miocene. These rocks can be found in southern Lombok, such as Silon Blanak, Mereje Westa, Pengulu, and Sekotong and at Janggala in northern Lombok.

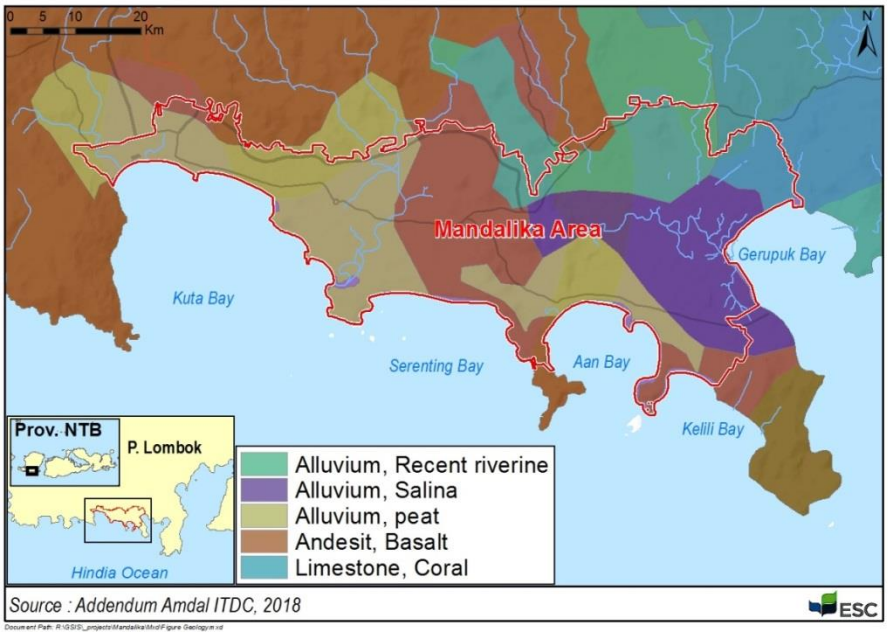


Figure 4-6 Underlying Geology of Project Area

4.3.5.3 Earthquakes

Based on existing seismic studies as well as the Indonesian Earthquake Zoning Map (Public Works 2010), the location of the Project site is within the zonation of 0.30-0.40 g of ground motion. This is considered moderate. Similarly, based on the seismic map (**Figure 4-7**), from the history and geological structure described, it can be concluded that the Nusa Tenggara region, especially West Nusa Tenggara, is a region of active tectonics. There is one active volcano on the island, Mount Rinjani, located in North Lombok. Mount Rinjani recently erupted on 27 September 2016, spewing ash that reached 2-kilometer into the atmosphere. Lombok Island is surrounded by active volcanoes (part of the Pacific "Ring of Fire") and active tectonic plates. The formation processes for mountains and volcanoes are closely related to collisions among tectonic plates.

Being low-lying coastal plain fronting on the Indian Ocean, the Project Area is susceptible to tsunamis. The "tsunamogenic" Sunda Trench is a short distance offshore, and the south coast of Lombok has suffered tsunami disasters in the past.

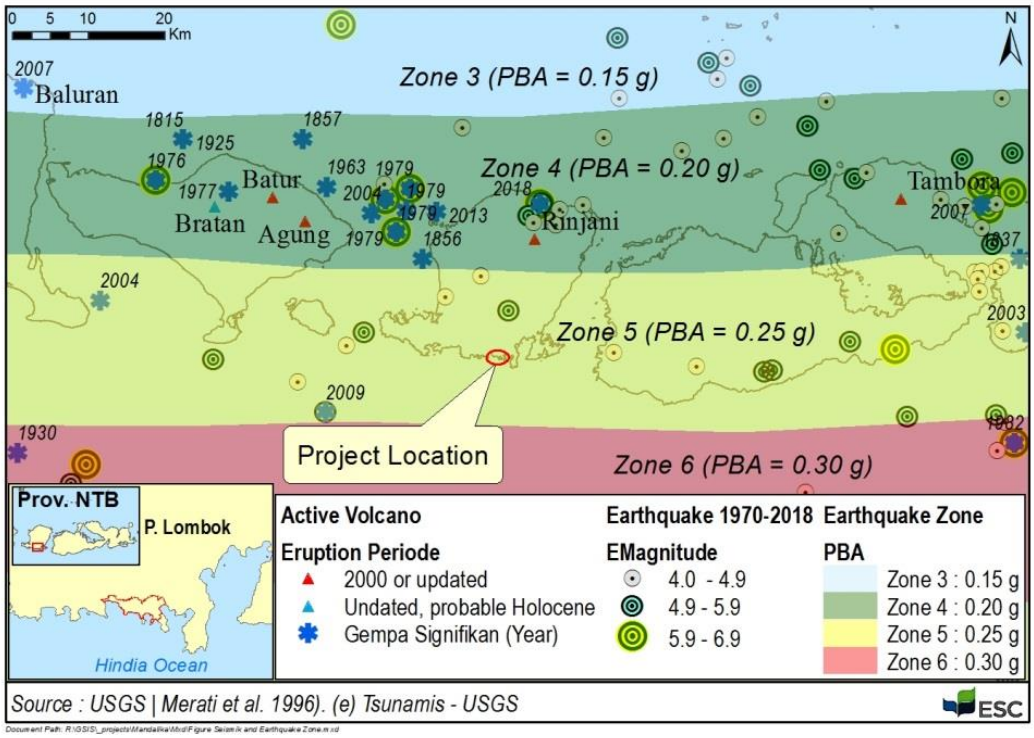


Figure 4-7 Historical Earthquakes and Seismicity in and around West Nusa Tenggara

4.3.6 Soil Erosion

According to the AMDAL Addendum (2018), soil erosion in the project location is relatively moderate. Using the Universal Soil Loss Equation (USLE) formula, it is concluded that the predicted annual erosion rate is 122.3 tonnes/ha/year (**Table 4-3**). Based on the environmental quality scale, the erosion condition indicates that the environmental quality in the Project location is moderate or medium. This soil erosion rate is within the range for agriculture area in many places in Indonesia (Arsyad 2010 in Bunga 2018), which is consistent with the land cover of the project location.

Table 4-3 Prediction of Soil Erosion Rate (ton/ha/year) in Study Area

Land Cover Type	R	K	LS	C	P	A (tonnes/ha/year)	Environmental Quality
Shrubs	1257	0.2	6.95	0.2	0.35	122.3	3

Notes: Environmental Quality Scale: 5 – Excellent (0-15 tonnes/ha/year); 4 – Good (15-60 tonnes/ha/year); 3 – Medium (60-180 tonnes/ha/year); 2 – Bad (180-460 tonnes/ha/year); 1 – Very bad (>460 tonnes/ha/year)

4.3.7 Hydrology

4.3.7.1 Water Catchment Area

The project area generally intersects three (3) catchment areas, which are the Eat Tabelo Watershed, Eat Ngolang Watershed, and Kali Balak Watershed. As it is located at the coast, the project area encompasses a significant proportion of Eat Ngolang and Kali Balak's downstream area.

The rivers from Eat Ngolang Watershed that enters the project area are Eat Ngolang and Eat Soker, which then unites with Eat Ngolang before reaching emptying to Kuta Bay. In Kali Balak Watershed, the rivers that enter the project area are Eat Songgong, Eat Nandus, and Kali Balak, which empties to Gerupuk Bay. On the contrary, only a small fraction of the Eat Tabelo downstream area intersects with the project area. The river in this watershed that flows through the project area is Eat Tabelo, which empties to Kuta Bay.

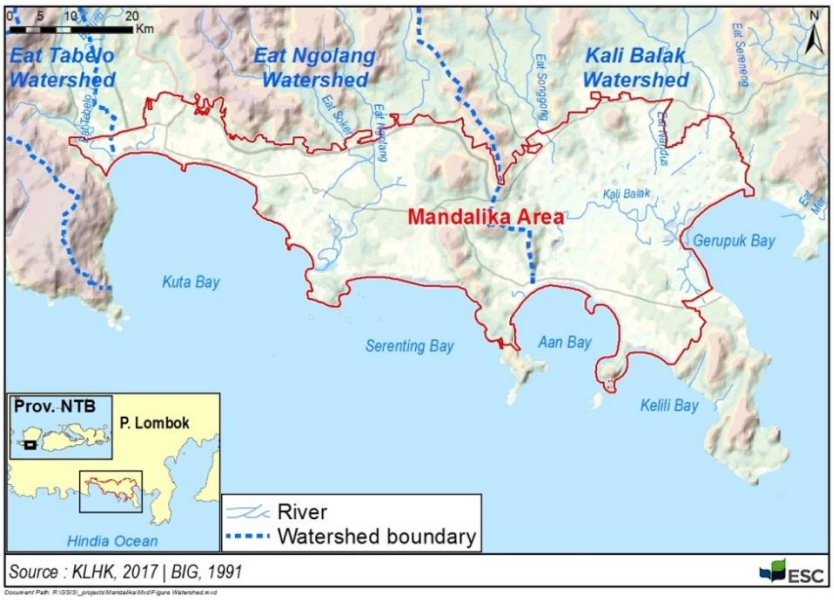


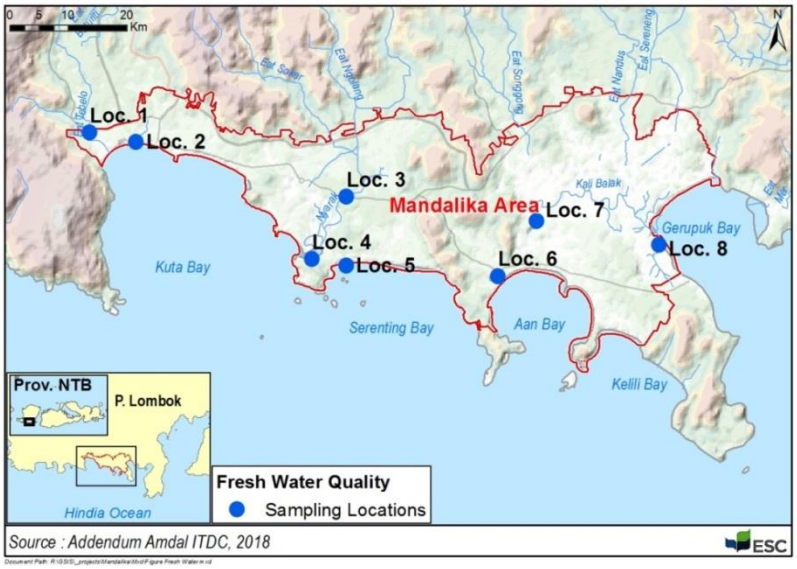
Figure 4-8 Water Catchment in Project Area

4.3.7.2 Surface Water Quality

In the study area, local communities still widely use river water for irrigation purposes, livestock, bathing, cleaning, and sanitation. As reported in the AMDAL Addendum (2018), the water quality of

the rivers around the Project site were measured at two points along Ai Lengis River, two points along Nyarak River, two points along Tanjung Aan, and two points along Gerupuk River. The sampling locations are illustrated below. The results were then compared with Government of Indonesia Regulation No. 82 of 2001 on Management of Water Quality and Control of Water Pollution. The rivers were classified as Class II, given that there has been no regional regulation concerning classes of rivers in Central Lombok Regency. The results of the surface water quality are presented in **Table 4-4**.

Generally, almost all parameters met the required standards, except occasional exceedances in Total Dissolved Solids (TDS), Biological Oxygen Demand (BOD), Nitrite, Zinc, and Lead. TDS was found to be above the standard (1,000 mg/L) in Ai Lengis 1, reported at 1,720 mg/L. High TDS content may be due to sedimentation (WHO and UNICEF 2017). Biological Oxygen Demand (BOD) was reportedly above the standard at Tanjung Aan 2, Gerupuk 1, and Gerupuk 2. The exceeded levels of BOD content may be attributed to domestic waste disposed in the channels (WHO and UNICEF 2017). As for nitrite, zinc, and lead, they were reported to be above the given standards in at least six of the sampled locations. Nitrite pollution in water bodies is often contributed from agriculture wastes and/or untreated animal/human sewage (Gorski et al. 2017). Pollution by zinc and lead is often associated with corrosion of old piping and fittings (Hasan et al. 2017). Zinc and lead may also result from removal of untreated solid waste and effluent from the nearby industries (Hasan et al. 2017). It is reported in the AMDAL Addendum (2018) that an artisanal/traditional gold mine is located northeast of The Mandalika.



Location 1: Ai Lengis River 1
Location 2: Ai Lengis River 2 (estuary)
Location 3: Nyarak River 1
Location 4: Nyarak River 2 (estuary)
Location 5: Tanjung Aan River 1
Location 6: Tanjung Aan River 2
Location 7: Gerupuk River 1
Location 8: Gerupuk River 2

Figure 4-9 Surface Water Quality Measurements in Project Area

Table 4-4 Surface Water Quality in Study Area

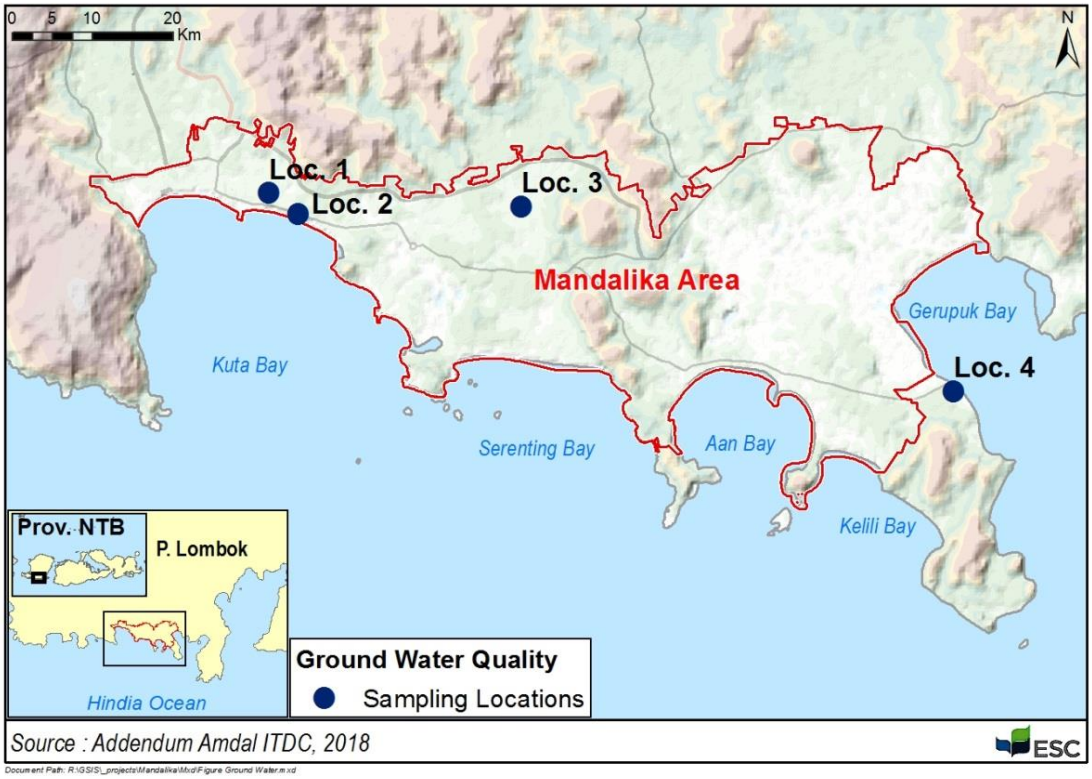
NO	PARAM	UNIT	Standards (GoI Reg 82/2001)	Sampling Results								METHOD
				Ai Lengis 1	Ai Lengis 2	Nyarak 1	Nyarak 2	Tanjung Aan 1	Tanjung Aan 2	Gerupuk 1	Gerupuk 2	
	PHYSICS											
1.	Smell	-	-	No smell	No smell	No smell	No smell	No smell	No smell	No smell	No smell	organoleptic
2.	Dissolved Residue (TDS)	mg/L	1,000	465.7	**1,720**	714.1	985	865	765	855	765	SNI 06.6989.27-2005
3.	Conductivity	µmhos/cm	-	546.8	3.751	1567	1585	1650	1560	1655	1240	SNI 06-6989.1-2004
4.	Turbidity	NTU	-	3.62	3.14	8.29	3.50	30.7	82.1	83.2	82.3	SNI 06.6989.25-2005
5.	Flavors	-	-	Tasteless	Tasteless	Tasteless	Tasteless	Tasteless	Tasteless	Tasteless	Tasteless	organoleptic
6.	Temperature	ºC	Deviation of 3	25	24	25	25	25	25	25	25	SNI 06.6989.24-2005
7.	Color	TCU	-	15	<5	<5	12	15	10	15	10	NI 06.6989.23-2005
	CHEMISTRY											
1.	Aluminum (Al) *	mg/L	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	SNI 06 - 6989.35 -2005
2.	Ammonia (NH_3-N)	mg/L	-	0.35	0.45	0.38	0.18	0.22	0.1	0.12	0.18	SNI 06-6989.30-2005
3.	Arsenic (As)	mg/L	1	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	SM 3114 –C **
4.	Besi (Fe)	mg/L	-	<0.01	0.29	0.20	0.1	0.05	0.12	0.18	0.18	SNI 06.6989.4-2009
5.	BOD_5	mg/L	6	4.8	4.5	4.8	5	5	**12**	**18**	**10**	SNI 6989.72:2009
6.	COD	mg/L	50	<5	<5	<5	24.85	24.5	34.5	42.2	39.5	SNI 6989.2:2009
7.	Dissolved Oxygen (DO)	mg/L	>3	12.46	12.49	14.33	6.27	14.38	19.53	19.57	14.29	SNI 06-2424-1991
8.	Phenol	mg/L	0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	SNI 06-6989.21-2004
9.	Cadmium (Cd) *	mg/L	0.01	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	SNI 6989.16:2009
10.	Chloride (Cl-)	mg/L	-	531.75	283.6	673.58	235	285	198.5	98.5	184.3	SNI 6989.19:2009
11.	Cobalt (Co)	mg/L	0.2	<0.01	<0.01	<0.01	0.02	0.02	0.02	0.05	<0.02	Hach Method 8078
12.	Total Chrome (Cr)	mg/L	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	SNI 6989.17:2009
13.	Mercury (Hg)	mg/L	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	SNI 6989.78:2011
14.	Oil and fat	mg/L	1	<1	<1	<1	<1	<1	<1	<1	<1	SNI 06-6989.10-2004
15.	Nitrite (NO_2)	mg/L	0.06	**0.37**	0.02	**0.11**	**0.12**	**0.08**	**0.18**	**0.18**	**0.19**	SNI 06-6989.9-2004
16.	Zinc (Zn)	mg/L	0.05	**0.06**	**0.28**	**0.78**	**0.12**	**0.10**	**0.08**	**0.08**	**0.10**	SNI 6989.7:2009
17.	Lead (Pb)	mg/L	0.03	0.02	0.01	**0.04**	**0.05**	**0.06**	**0.04**	**0.08**	**0.08**	SNI 6989.8:2009

Source: AMDAL Addendum, 2018

4.3.7.3 Groundwater Quality

As reported in the AMDAL Addendum (2018), the groundwater samples were taken from the closest residential wells to the Project site at four locations, as illustrated in **Figure 4-10**. The groundwater samples were analyzed and compared to the Minister of Health Regulation No. 32 of 2017 on Environmental Standards of Water for Hygienic and Sanitation Purposes, Swimming Pools, Solus Per Aqua and Public Baths. The results are presented on **Table 4-5**. The groundwater class applied was water for Hygienic and Sanitation Purposes.

It is evident from that almost all locations fulfilled the standards. The only exception was the exceedance in concentration of coliform at Gerupuk Hamlet. High levels of coliform in residential groundwater generally represents lack of sanitary facilities, as is prevalent in Lombok and many developing countries.



Location 1: Mr. Agus's Well in Katapang Hamlet, Kuta Village
Location 2: Mr. Giri's Well in Rangkat 1 Hamlet, Kuta Village
Location 3: Well in Ebunut Mushola, Ebunut Hamlet, Kuta Village
Location 4: Mr. Saidin's Well, Gerupuk Hamlet, Kuta Village

Figure 4-10 Groundwater Quality Measurements in Project Area

Table 4-5 Results of Groundwater Quality in Study Area

No	Parameter	Unit	Standards (MoH Reg 32/2017)	Sampling Results				Method
				Ketapang Hamlet	Rangkap Hamlet	Ebunut Hamlet	Gerupuk Hamlet	
	PHYSICAL							
1	Smell	-	No smell	No smell	No smell	No smell	No smell	Organoleptic
2	Total Dissolved Solids (TDS)	mg/L	1,000	693.2	393.3	1,261	873.4	SNI 06.6989.27-2005
3	Turbidity	NTU	25	3.08	5.28	4.15	4.65	SNI 06.6989.25-2005
4	Taste	-	Tasteless	Tasteless	Tasteless	Tasteless	Tasteless	Organoleptic
5	Temperature	ºC	Air temperature ± 3	24.3	24.8	24.4	24.5	SNI 06.6989.24-2005
6	Color	TCU	50	<5	40	20	20	SNI 06.6989.23-2005
	CHEMICAL							
1	Arsenic (As)*	mg/L	0.05	<0.005	<0.005	<0.005	<0.005	SM 3114 - C **
2	Iron (Fe)	mg/L	1	0.06	0.05	<0.01	0.01	SNI 06.6989.4-2009
3	Phenol	mg/L	-	<0.005	<0.005	<0.005	<0.005	SNI 06-6989.21-2004
4	Cadmium (Cd)*	mg/L	0.005	<0.003	<0.003	<0.003	<0.003	SNI 6989.16:2009
5	Chloride (Cl^-)	mg/L		319.5	496.3	638.1	673.55	SNI 6989.19:2009
6	Total Chromium (Cr)	mg/L	0.05	<0.01	<0.01	<0.01	<0.01	SNI 6989.17:2009
7	Manganese (Mn)	mg/L	0.5	0.08	0.08	0.08	0.08	SNI 06-6855-2002
8	Mercury (Hg)	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	SNI 6989.78:2011
9	Oil and Grease	mg/L		<1	<1	<1	<1	SNI 06-6989.10-2004
10	Nitrite (NO_2)	mg/L	1	0.12	0.10	0.15	0.16	SNI 06-6989.9-2004
11	pH	-	6.5-8.5	8.32	8.44	8.24	8.44	SNI 06-6989.11-2004
12	Salinity	‰		7.52	4.31	16.54	1.0	Potensiometri
13	Selenium (Se)	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	SM 3114 - C **
14	Sulphate (SO_4^{2-})	mg/L	400	226.8	134.08	25.44	52.32	SNI 06-6989.20-2009
15	Lead (Pb)	mg/L	0.05	<0.01	<0.01	<0.01	<0.01	SNI 6989.8-2009
16	Potassium Permanganate ($KmnO_4$)	mg/L	10	<0.1	<0.1	<0.1	<0.1	SNI 06-6989.22-2004
	MICROBIOLOGY							
1	Coliform	ind/100mL	50	14	20	4	**1.1×10^3**	SM 9221 B **

Source: AMDAL Addendum, 2018

4.3.8 Oceanography

4.3.8.1 Bathymetry

The Project site on southern Lombok Island possesses similar characteristics as other beaches on southern coasts in Indonesia, such as sandy beaches, cliffs, and deep water depth. The bathymetry map is shown in **Figure 4-11**. In The Mandalika area, water depths of 10 m can be found about 100 meters from the coastline, while a water depth of >30-m is only about 150 meters from the coastline, with a slope of 20%.

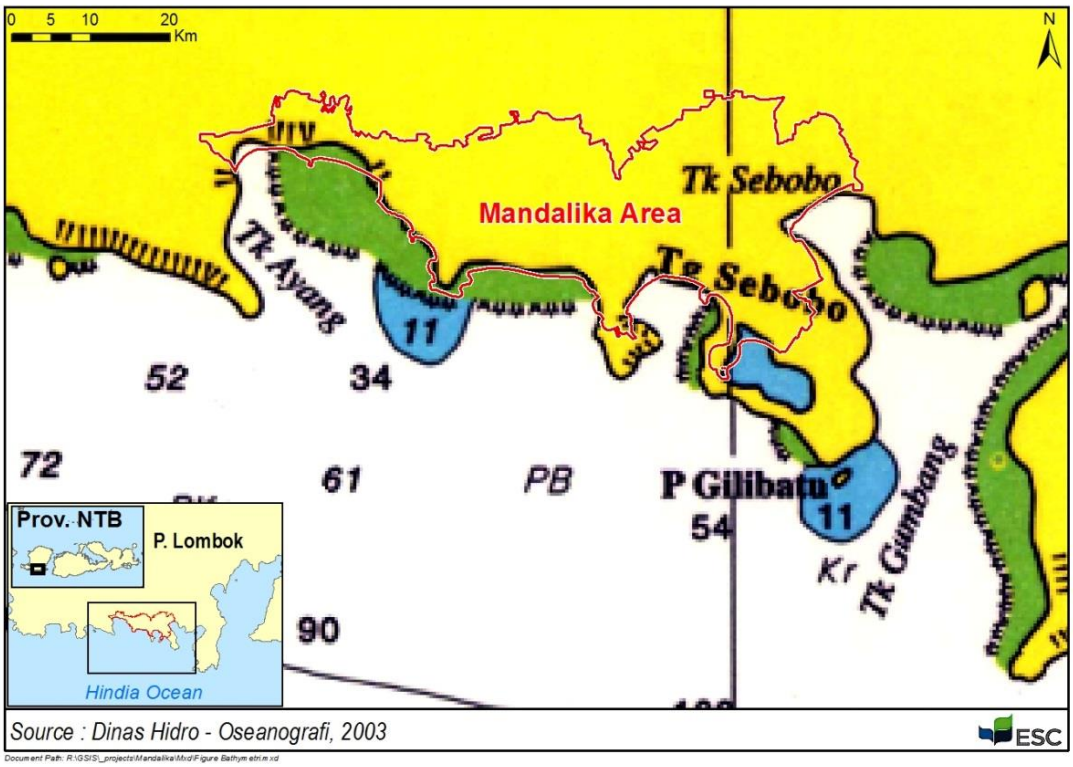
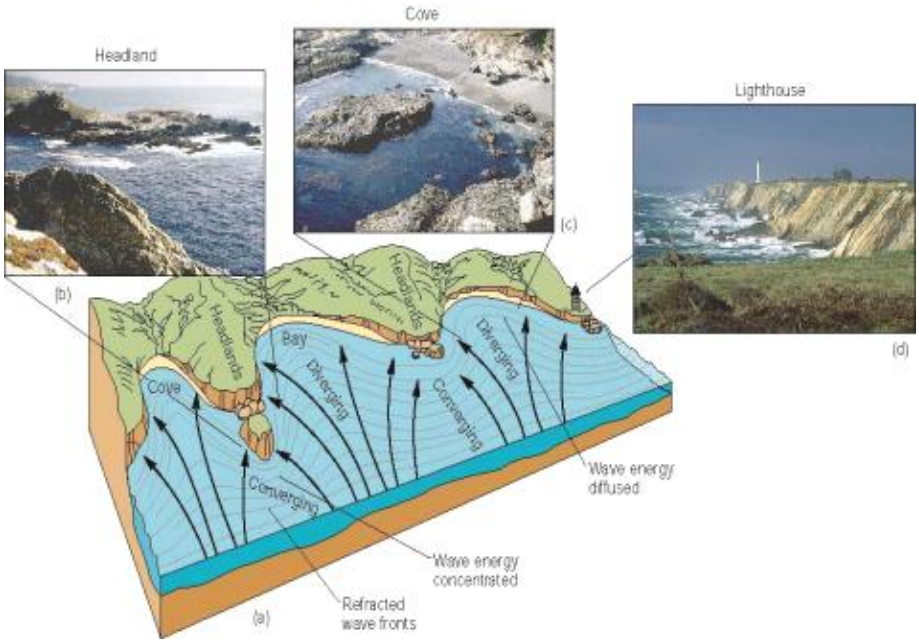


Figure 4-11 Bathymetry Map surrounding Project Area

4.3.8.2 Wave

Wind is the primary cause forming oceans waves, such as sea wind waves and swells. Based on the Meteorology, Climatology and Geophysics Agency data from 20 to 30 October 2017, the ocean waves off Southern Lombok averaged between 0.3 and 1.5 meters, with an average maximum height between 0.75 and 2 meters. In beaches where there are headlands, the waves can reach above 2 m in certain seasons. This phenomenon is because headlands tend to experience greater magnitude of wave breaking, as illustrated in **Figure 4-12**.



Source: AMDAL Addendum, 2018

Figure 4-12 Wave Refraction at Headland and Bay

4.3.8.3 Ocean Patterns

Ocean current is an important parameter in the study of coastlines and sea, given that a current can transport and distribute chemicals present in the ocean water. From the secondary data collected by INSTANT Rotation Cruise 2005 LEG 1 (Jakarta-Lombok Strait-Timor-Kupang), the current velocity in Southern Lombok was found to be 0.1 to 0.3 m/s.

4.3.8.4 Ocean Tides

As reported in the AMDAL Addendum (2018), tides in the Project area are considered mixed semi diurnal with Folmz value of 1.39, where two high tides and two low tides generally occur each day, with different height and time, although sometimes there is only one high and one low tide.

Table 4-6 Tidal Constituents in Lombok Island

Constituent	S_O	M_2	S_2	N_2	K_2	K_1	O_1	P_1	M_4	MS_4
Amplitude (cm)	110	27	16	-	11	36	24	13	-	-
Phase Difference (°)		52	43	-	42	76	96	77	-	-

Source: List of Tides, Hydro-Oceanography Service of the Navy, AMDAL Addendum (2018).

M_2 = Principal Lunar Component (semi diurnal).
S_2 = Principal Solar Component (semi diurnal).
N_2 = Lunar Elliptic Component.
K_2 = Lunar Component.
K_1 = Lunar Component.
O_1 = Principal Lunar Component (diurnal).
P_1 = Principal Solar Component (semi diurnal).
M_4 = Principal Lunar Component (quarter diurnal).
MS_4 = Principal Lunar-Solar Component.
SO = Mean Sea Level (MSL).

4.3.8.5 Sea Water Quality

As reported in the AMDAL Addendum (2018), sea water samples were taken at Seger Bay, Serenting Bay, Aan Bay, Kelili Bay, Gerupuk Bay, Kuta 1 Bay and Kuta 2 Bay, as shown in **Figure 4-13**. The sampling results were then compared with the Minister of Environment Decree No. 51 of 2004 on Standards for Marine Biota, Appendix III. The results are summarized in **Table 4-7**, where exceedances were reported in the parameters turbidity, ammonia, phosphorus, nitrate, dissolved oxygen (DO), zinc, sulfide, copper, and lead.

Exceedances in turbidity were reported in Kelili Bay and Gerupuk Bay. High turbidity in sea water is generally a byproduct of human activities (Coban et al. 2009). As most of the land cover in the Project area is degraded, soil abrasion is prevalent and contributes to turbidity levels above the standards.

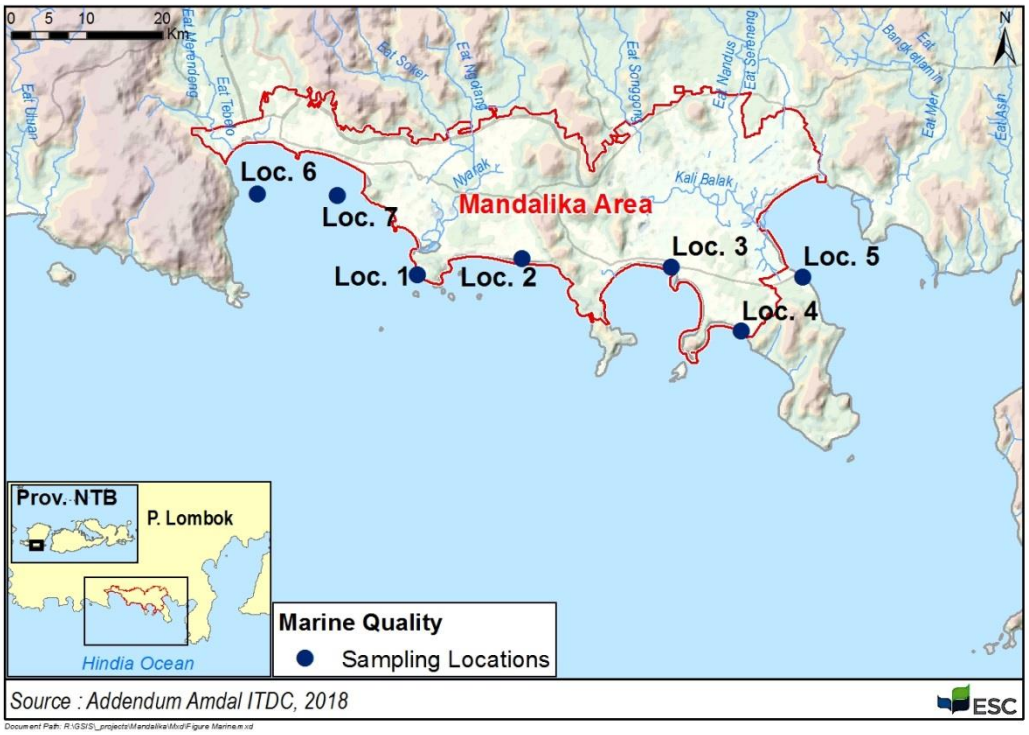
Ammonia exceedance was reported in Aan Bay, Kelili Bay, and Gerupuk Bay whereas nitrate exceedance was reported in all locations. In general, ammonia and nitrate pollution in the water bodies are results of organic decay, which may occur due to agriculture waste and/or untreated human/animal sewage (Gorski et al. 2017). The results are in correlation with the high nitrite concentration in the river bodies. This indicates that the pollutants are flown from the river to the sea.

Phosphorus exceedances were reported in all locations except Gerupuk Bay. Phosphorus pollution is mainly due to man-made sources, such as fertilizers and farming, detergents, and sewage (Golterman 1973). This correlates with the current environmental condition, where most of the Project area is been inhabited with fairly dense human settlement.

Low DO level was reported in Serenting Bay, although the DO levels in other locations fulfilled the standard. Low DO levels are often correlated with high organic matter content in the water as a result of decomposition (Watson et al 2016). Although high concentrations of nitrate and phosphorus were reported in other areas outside Serenting Bay, only in Serenting Bay was the DO level reported below the standard.

Sulfide (as H_2S) was reported in all locations. Sulfide pollution in water is often associated with natural causes, such as volcanic gases and sulfur springs, and man-made causes, such as industrial plants, gas works, fungicides/pesticides, and fertilizers (Nakahara et al. 1977).

Exceedances in heavy metals (Zn, Cu, and Pb) were reported in all locations. Heavy metal pollution in sea water is often correlated with human activities in the coastal area (Coban et al. 2009). Sources of heavy metal pollution in the sea water may occur from solid waste from nearby industries (Coban et al. 2009). In the case of the Project area, a traditional gold mine is located northeast of The Mandalika, which may contribute to the pollutants that flow to the sea. The high heavy metals concentrations in the sea water may also be related to the high heavy metals concentration in the rivers, as obviously pollutants in the rivers end up in the sea.



Location 1: Seger Bay
Location 2: Serenting Bay
Location 3: Aan Bay
Location 4: Kelili Bay
Location 5: Gerupuk Bay
Location 6: Kuta Bay 1
Location 7: Kuta Bay 2

Figure 4-13 Seawater Sampling Locations in Project Area

Table 4-7 Sea Water Quality in the Study Area

No	Parameter	Unit	Standard (Moe Decree 51/2004)	Sampling Results							Methods
				Seger Bay	Serenting Bay	Aan Bay	Kelili Bay	Gerupuk Bay	Kuta 1 Bay	Kuta 2 Bay	
A	**Physical**										
1.	Brightness	m	>3	3,5	3,4	3,5	2,55	3,65	2,55	2,75	Secci Disk
2.	Turbidity	NTU	<5	3,19	2,23	2,24	**42,8**	**15,5**	2,65	2,85	SNI 06-6989.25-2005
3.	Suspended Residue (TSS)	mg/L	80	45	38	48	78	74	37	42	SNI 06-6989.3-2004
4.	Temperature	ºC	28 - 32	28,7	28,6	28,6	28,7	28,6	28,7	28,7	SNI 69-6989.23-2005
B	**Chemical**										
1.	Ammonia (NH_3-N)	mg/L	0,3	0,12	0,12	**0,45**	**0,38**	**0,44**	0,11	0,12	SNI 06-6989.30-2005
2.	Arsenic (As) *	mg/L	0,005	<0,005	<0,005	<0,005	<0,005	<0,005	< 0,005	< 0,005	SM 3114 - C **
3.	BOD_5	mg/L	20	18	18	20	20	20	15	16	SNI 6989.72:2009
4.	Phenol	mg/L	0,002	<0,005	<0,005	<0,005	<0,005	<0,005	< 0,005	< 0,005	SNI 06-6989.21-2004
5.	Phosphorus (PO_4)	mg/L	0,015	**0,05**	**0,04**	**0,3**	**0,56**	<0,01	**0,03**	**0,01**	SM 4500 - P. D **
6.	Cadmium (Cd) *	mg/L	0,001	<0,003	<0,003	<0,003	<0,003	<0,003	< 0,003	< 0,003	SNI 6989.16:2009
7.	Chromium (Cr) $^{6+}$	mg/L	0,002	<0,01	<0,01	<0,01	<0,01	<0,01	< 0,01	< 0,01	SNI 6989.71:2009
8.	Mercury (Hg) *	mg/L	0,001	<0,001	<0,001	<0,001	<0,001	<0,001	< 0,001	< 0,001	SNI 6989.78:2011
9.	Oil and Fats	mg/L	1	<1	<1	<1	<1	<1	< 1	< 1	SNI 06-6989.10-2004
10.	Nickel (Ni) *	mg/L	0,05	<0,005	<0,005	<0,005	<0,005	<0,005	< 0,005	< 0,005	SNI 6989.18:2009
11.	Nitrate (NO_3)	mg/L	0,002	**1,35**	**2,33**	**1,18**	**2,28**	**0,98**	**1,15**	**1,65**	SNI 6989.79:2011
12.	Dissolved Oxygen (DO)	mg/L	>6	6,77	**1,79**	13,54	6,85	6,90	6,77	5,76	SNI 06-2425-1991
13.	pH	-	7,0 - 8,5	7,95	7,24	7,29	8,04	7,9	7,85	7,65	SNI 06-6989.11-2004
14.	Salinity	‰	33 - 34	32	35	34	34	32	30	31	Potentiometry
15.	Zinc (Zn) *	mg/L	0,05	**0,10**	**0,58**	**0,30**	**0,07**	**0,11**	0,05	0,05	SNI 6989.7:2009
16.	Cyanide (CN) *	mg/L	0,05	<0,05	<0,05	<0,05	<0,05	<0,05	< 0,05	< 0,05	SNI 6989.77:2011
17.	Sulfide as H_2S	mg/L	0,0002	**0,01**	**0,02**	**0,02**	**0,06**	**0,05**	**0,01**	**0,01**	SNI 6989.70:2009
18.	Copper (Cu) *	mg/L	0,008	**0,02**	**0,02**	**0,02**	**0,03**	**0,01**	**0,01**	**0,02**	SNI 6989.67:2009
19.	Lead (Pb) *	mg/L	0,008	**0,01**	**0,01**	**0,02**	**0,01**	**0,02**	**0,01**	**0,02**	SNI 6989.8:2009

Source: AMDAL Addendum (2018)

4.3.8.6 Sediment Characteristics

According to the AMDAL Addendum (2018), sediment characteristics in the coastal area near the Project location are as shown below. The sedimentation parameters were taken at six locations, namely, Aan Bay, Seger Bay, Kuta Bay, Gerupuk Bay (2 points), and Palawang, as shown in **Figure 4-14**. As can be seen from Table 4-8, Kuta Bay, Gerupuk Bay, and Palawang have coarser sand texture than Aan and Seger Bays. The soil texture in the Project area is dominated by sand, which is expected given the sampling locations are along the coastline. This implies that, due to the soil's low water holding capacity, the rate of water drainage in the soil is high, i.e., water moves out of the soil mass quickly.

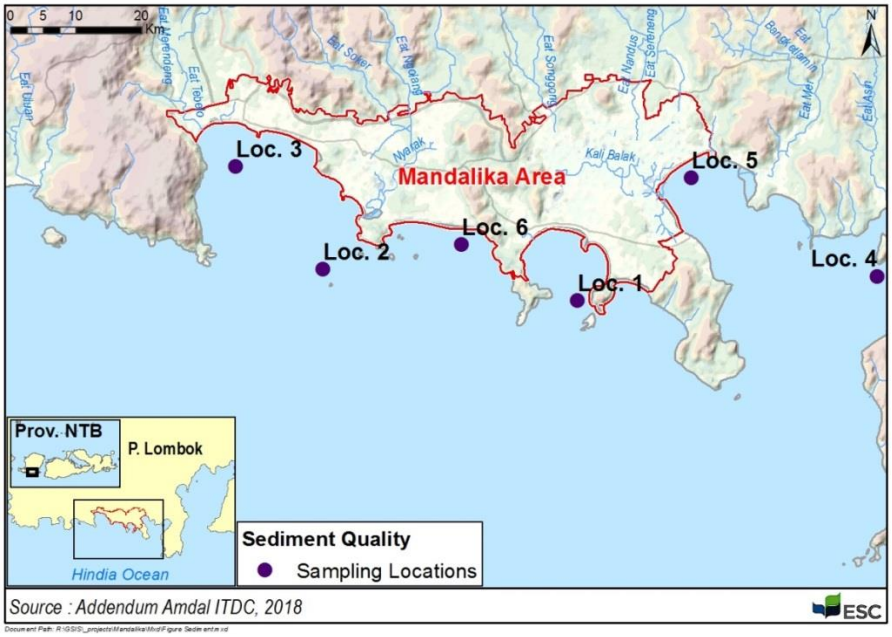


Figure 4-14 Sediment Sampling Locations in Project Area

Table 4-8 Sedimentation Fraction in the Study Area

Location	Sand			Clay (%)	Silt (%)
	Coarse (%)	Medium (%)	Smooth (%)		
Aan Bay	2	36	54	7	1
Seger Bay (Medas)	5	62	27	5	1
Kuta Bay (Scorpion)	79	9	8	8	1
Gerupuk 1	80	7	8	8	1
Gerupuk 2	82	7	5	5	1
Pelawang	77	7	9	5	1

4.4 Biological Components

4.4.1 Summary

Assessment of habitat types uses a land cover approach that is used by the Ministry of Environment and Forestry. The habitat types are divided into terrestrial ecosystems and marine ecosystems.

For terrestrial ecosystem, the habitats are divided into two: natural habitat and modified habitat. Natural habitat consisted of dryland forest, mangrove forest, and scrubs. The dryland forest was dominated by *Acacia auriculiformis, Mallothus paniculatus, Macaranga triloba, Grewia excels, Lannea coromandelica,* and *Homalanthus populneus*. As for mangrove forests, the vegetation was thought to be dominated by *Rhizopora mucronata*, *Rhizopora apiculata*, *Rhizopora Stylosa*, *Avicennia afficinalis*, *Avicennia alba*, *Sonneratia griffithii*, and *Sonneratia alba*. Scrubs were dominated by *Chromolaena odorata, Lantana camara, Athrophyllum diversifolium, Zizyphus canoplea,* and *Bridelia monoica.* All of the natural habitat in the study area did not have any species with high conservation significance. On the contrary, modified habitat consisted of paddy fields and fish ponds.

In the marine ecosystem, two important habitats were identified: coral reefs and seagrass beds. The coral reef was mainly dominated by a mix of hard coral and dead coral. Some areas were also reported to be disturbed. As for seagrass, *Cymodocea rotundata* and *Syringodium isoetifolium* were evenly distributed across all areas in the study area. Some study seagrass beds were more diverse than others, but the overall composition was similar.

4.4.2 Habitats

4.4.2.1 Terrestrial Ecosystems

Natural Habitat

Dry Land Forest

Dry land forest ecosystems are located in hilly areas around the Project location. Dry land forest is a lowland forest ecosystem with an altitude of 0 - 105 m above sea level. Topographically, the landscape varies from flat to undulating hilly. Dry land forests are found in hilly areas and in several patches around the Project site. Lowland forests that tend to be quite dense are found on Mount Tunak, which is 4 km east of the Project site.

The condition of the dry land forests is degraded. The dominant pioneer species recorded were *Acacia auriculiformis, Mallothus paniculatus, Macaranga triloba, Grewia excels, Lannea coromandelica,* and *Homalanthus populneus*. Some species recorded with low dominance are *Anacardium occidentale, Cassia siamea, Dalbergia latifolia, Sesbania grandiflora,* and *Alstonia scholaris*.

Mangrove Forest

Mangrove is a type of forest growing along tidal mudflats and shallow coastal water areas extending along rivers and streams where water is generally brackish (Ratnayake 2004). Mangroves can be found spreading in small patches on the Project site and surrounding areas in degraded conditions. Mangrove forest is located east of the Project location on the estuary of Bala River. In addition, mangrove rehabilitation results can be found around the Novotel Hotel.

Based on Ministry of Fisheries data, species of mangrove in Central Lombok Regency are dominated by *Rhizopora mucronata*, *Rhizopora apiculata*, *Rhizopora Stylosa*, *Avicennia afficinalis*, *Avicennia alba*, *Sonneratia griffithii*, and *Sonneratia alba*. Species that are sparse are *Bruguiera gymorhiza*, *Bruguiera sexangula*, *Ceriops decandra*, *Ceriops tagal*, *Excoecaria* sp., *Xylocarpus mollucensis*, *Xylocarpus granatum*, *Aegiceras corniculatum*, *Aegiceras annulata,* and *Lumnitzera recemosa* (Soeroyo, 1989).

In the Project location and surroundings, a study recorded the association between mangrove vegetation and coastal vegetation. The recorded mangrove vegetation species were *Sonneratia alba, Avicenia alba, Ceriops tagal, Xylocarpus moluccensis, Lumnitzera racemosa,* and *Rhizophora mucronata*. Coastal vegetation recorded included *Pandanus tectorius*, *Casuarina equisetifolia*, and *Pongamia pinnata*.

Table 4-9 Mangrove and Coastal Vegetation Species

No	Species	Family	Habitat	Conservation Status		
				IUCN	PP7/99	CITES
1	*Sonneratia alba*	Soneratiaceae	Mangrove	LC	-	-
2	*Avicennia alba*	Aviceniaceae	Mangrove	LC	-	-
3	*Lumnitzera racemosa*	Myrsinaceae	Mangrove	LC		-
4	*Excoecaria agallocha*	Euphorbiaceae	Mangrove	LC	-	-
5	*Rhizophora mucronata*	Rhizophoraceae	Mangrove	LC	-	-
6	*Xylocarpus moluccensis*	Meliaceae	Mangrove	LC	-	-
7	*Ceriops tagal*	Rhizophoraceae	Mangrove	LC	-	-
8	*Crinum asiaticum*	Amarylidaceae	Lowland up to montane	LC	-	-
9	*Pandanus tectorius*	Pandanaceae	Coastal	-	-	-
10	*Premna integrifolia*	Verbenaceae	Coastal	-	-	-
11	*Scaveola taccada*	Scaveolaceae	Coastal		-	-
12	*Clerodendrum inerme*	Verbenaceae	Coastal	-	-	-
13	*Pongamia pinnata*	Fabaceae	Coastal	-	-	-
14	*Tacca palmata*	Taccaceae	Coastal	-	-	-
15	*Amorphophalus sp.*	Araceae	Coastal	-		-
16	*Calotropis gigantea*	Asclepiadaceae	Coastal	-	-	-
17	*Cerbera odolam*	Apocynaceae	Coastal	-	-	-
18	*Vitex trifolia*	Verbenaceae	Coastal	-	-	-

No	Species	Family	Habitat	Conservation Status		
				IUCN	PP7/99	CITES
19	*Ipomoea pres-caprae*	Convolvulaceae	Coastal	-	-	-
20	*Casuarina equisetifolia*	Casuarinaceae	Coastal	-	-	-

Note: LC = Least Concern, PP = Peraturan Pemerintah (Government Regulation), IUCN = International Union for Conservation of Nature, CITES = Convention on International Trade in Endangered Species of Wild Fauna and Flor

Scrubs

Scrubs are represented by ground cover species vegetation. They are present on disturbed areas and hilly coastal areas. Several species common in hilly coastal area are *Chloris barbata, Eleusine indica, Chrysopogon aciculatus, Eragrostis tenella, Cynodon dactylon* and *Paspalum conjugatum*, while shrub species that dominate terrestrial area are *Chromolaena odorata, Lantana camara, Athrophyllum diversifolium, Zizyphus canoplea,* and *Bridelia monoica*.

Modified Habitat

Paddy Field

Wet rice fields are found to be dominant in the western part of the Project location. “Paddy” fields are wetland agricultural land with irrigation systems.

Fish Pond

Fish ponds are artificial ponds used as aquaculture facilities. Aquatic biota commonly cultured are fish, shrimp, and shellfish. The fish ponds are located behind mangrove formations or in river channels, or brackish estuarine zones. Ponds are also found around the rivers.

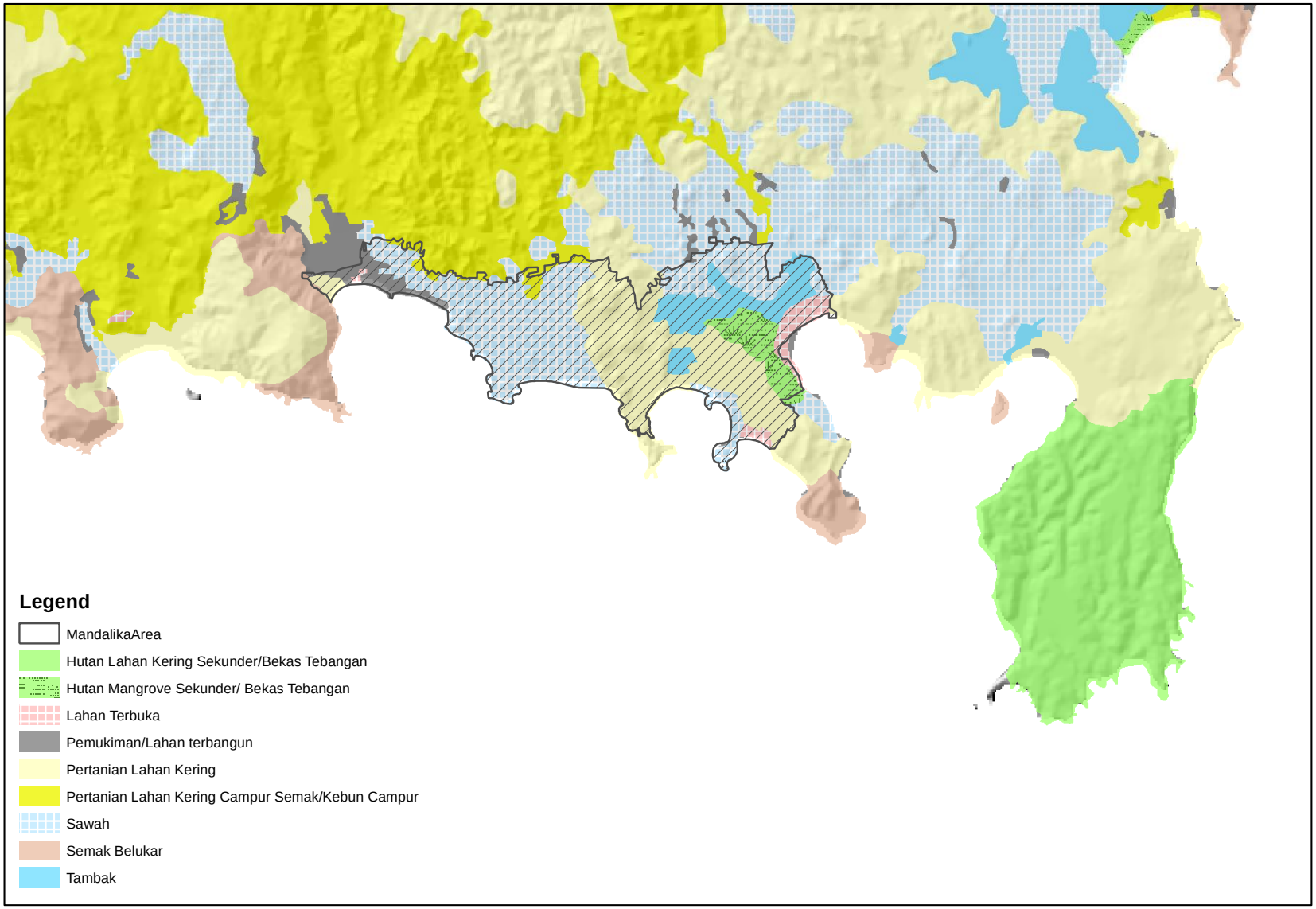
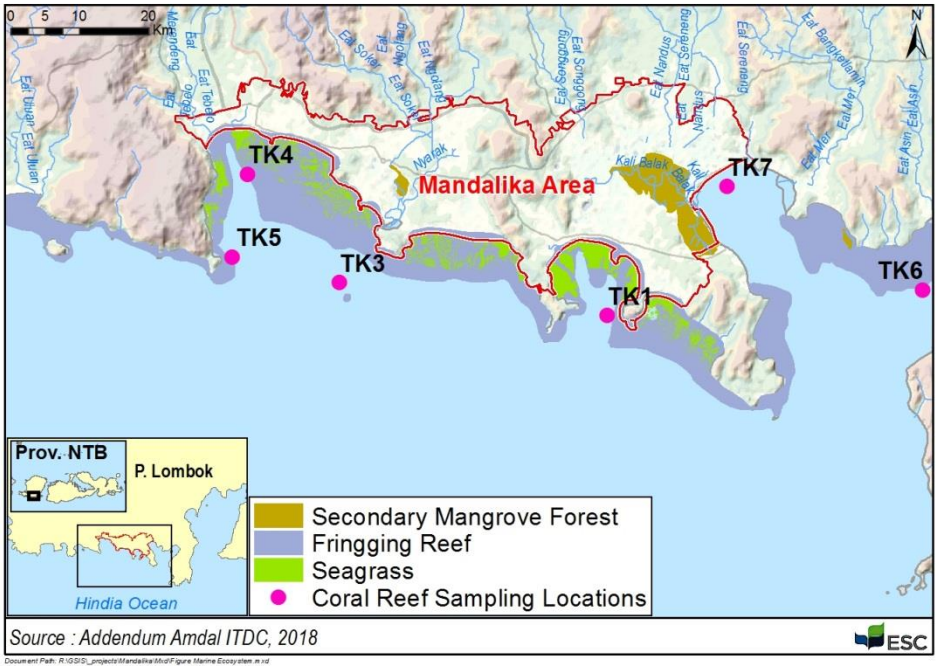


Figure 4-15 Habitat Map

4.4.2.2 Marine Ecosystems

Sampling Locations

Key local marine ecosystems are in two important habitats: coral reefs and seagrass beds; **Figure 4-16** shows Project area marine habitats and sampling locations.



Note: TK1 = Tanjung Aan 1, TK2 = Tanjung Aan 2, TK3 = Medas, TK4 = Scorpion, TK5 = Palawang, TK6 = Gerupuk 1, TK7 = Gerupuk 2

Figure 4-16 Marine Habitat and Sampling Locations

Coral Reef

The study identified at least six locations where coral reefs are present. Three locations had very damaged conditions, with almost 80% dead coral; these were Medas, Pelawang, and Gerupuk. Three study locations with good conditions were Tanjung Aan (two locations) and Scorpion. **Table 4-10** presents the sampling results of coral reef cover.

Table 4-10 Coverage Percentages of Coral-Reef

Life-form	Coverage Percentage		
	TK1	TK 2	TK 4
Hard Coral			
Acropora Branching (ACB)	0	12.74	14
Acropora Digitate (ACD)	0	2.04	0
Acropora Submassive (ACS)	0	24.14	26.5

Life-form	Coverage Percentage		
	TK1	TK 2	TK 4
Coral Branching (CB)	0	1.18	7.35
Coral Foliose (CF)	0	0	0.85
Coral Massive (CM)	8.26	2.28	2.15
Millepora (CME)	0.41	0	0
Coral Submassive (CS)	2.48	0.59	0
Total of Hard Coral	**11.16**	**42.96**	**50.85**
Dead Coral (DC)	6.07	0	0
Dead Coral with Algae (DCA)	30.70	28.77	42.55
Total of Dead Coral	**36.77**	**28.77**	**42.55**
Other Biotic			
Soft Coral (SC)	40.33	1.42	1.5
Other (OT)	0.99	0	0
Total of other Biotic	**41.32**	**1.42**	**1.5**
Alga			
Macroalgae (MA)	3.10	25.67	2.6
Total of Alga	**3.10**	**25.67**	**2.60**
Abiotic			
Rubbel (RB)	0	1.18	2.5
Sand (S)	7.02	0	0
Water (W)	0.62	0	0
Total of Abiotic	**7.64**	**1.18**	**2.50**

Source: AMDAL, 2017

Tanjung Aan 1 (TK1)

Coral was found at depths of 6 to 8 meters at sampling location TK1. Water condition is turbid with visibility approximately 1 to 2 meters. The coral reef consists of hard coral (11%); other biota (41.3%) of which soft coral is 40.3%; macro-algae (3.1%), dead coral (36.8%), and abiotic components (7.6%). In addition to soft coral, the other biota also recorded are star fish and sea cucumber.

Coral fish are dominated by families of Chaetodontidae, Ephiphedae, Pomacentridae, Acanthuridae, Apogonidae, Gobiidae, Scaridae and Labridae.

The high level of Total Suspended Solid (TSS) at the sampling location is caused by the river estuary at Tanjung Aan. These conditions cause macro-algae to thrive in the bottom waters, especially on the surface of the dead coral. Turbid waters can result in reduced penetration of sunlight, thus causing coral reefs to not grow optimally. Referring to Ministry of Environment Decree No. 400/2004, the condition of coral reef on TK1 is categorized as **Poor Condition**.

Tanjung Aan 2 (TK 2)

The coral reef has a depth of 2 – 3 meters with turbid water conditions. The coral reef composition is dominated by hard coral with estimated cover 43%, dead coral of 28.77%, macro algae of 25.67%, soft coral of 1.42%, and abiotic of 1.18%.

This coral reef is associated with a seagrass community. Several other biota that were recorded on TK2 are sea urchins, starfish (*Linckia laevigata*), *Ophiomastix* sp., and various reef fish including Families of Serranidae, Apogonidae, Chaetodontidae, Pomacentridae, and Labridae. Based on the regulation, the condition of the coral reef at TK 2 is in the "medium" category. This location is used as fishing ground by local communities.

Medas (TK3)

This coral reef is located at a depth of 15 - 18 meters. The reef is dominated by mostly dead soft coral and hard corals. The location has high abundance of various coral fish and pelagic fish because of its location, where it is separated from the mainland.

Scorpion (TK4)

The condition of coral reef in TK4 is good. The coral reef coverage is dominated by hard coral at approximately 50.85% and dead coral at 42.55%, the rest is macro algae (2.6%), abiotic (2.5%), and other biotic (1.5%).

Palawang (TK5)

Sampling in the Tanjung Palawang area was in sloping contours at a depth of 2-3 meters, with an approximate distance of 100 meters from the coastline, which then drops off to depths of 8 to 15 meters with a strong current.

The coral reef condition is highy disturbed. It is dominated by soft coral reef while hard corals are mostly dead. In this location, coral reef is close the estuarine area; during rainy seasons, the water becomes turbid due to high dissolved particles and sediments. The condition of coral is poor and dominated by soft coral.

Gerupuk 1 (TK6) and Gerupuk (TK7)

Both TK6 and TK7 are in poor condition because of turbidity. The coral reef of TK6 is dominated by *Halimeda* sp. (macro-algae) and soft corals. At TK7, the coral reef is dominated by life forms of Acropora submassive, including *Favia sp*., *Porites sp*., and *Pocillopora* sp.

Seagrass

Table 4-11 shows the results of the seagrass sampling and identification, with the survey recording ten species of seagrass. Based on species composition, Gerupuk and Kuta are more diverse than other locations. *Cymodocea rotundata* and *Syringodium isoetifolium* are species with widespread distribution. Some species that are not commonly found in the study area include *Cymodocea serrulata*, *Halodule pinifolia,* and *Halophila spinulosa*.

Table 4-11 Species Coverage of Seagrass in Study Area

Species	Coverage (percentage, %)				
	Kuta	Benjon	Serenting	Tanjung Aan	Gerupuk
Cymodocea rotundata	29.35	41.6	36.8	9.8	8.5
Cymodocea serrulata	-	-	-	15.3	-
Enhalus acoroides	27.4	-	-	20.8	20.87
Halodule pinifolia	-	10	-	-	-
Halodule uninervis	<5	17.9	-	-	<5
Halophila ovalis	<5	-	-	<5	<5
Halophila spinulosa	-	-	-	<5	<5
Syringodium isoetifolium	17.04	30.3	10.5	19.7	16.12
Thallasia hemprichii	14.20	-	52.6	<5	10.4
Thalassodendron ciliatum	<5	-	-	26.3	34.15
Total	**100**	**100**	**100**	**100**	**100**

Source: AMDAL, 2017

Cymodocea rotundata and *Enhalus acoroides* are dominant species in Kuta. *Thallasia hemprichii* is quite dominant at the Serenting sampling location but low in coverage at other sampling sites.

4.4.3 Fauna

4.4.3.1 Terrestrial Fauna

Mammals

Table 4-12 is list of mammals in the study area found through direct observation and interviews with community. In general, the study area is a disturbed habitat for wildlife mammal species. *Macaca fascicularis* primates and various bats are the species that were recorded as directly observed. These species were recorded in dry land forests and vegetated coastal areas.

Using the local resident interview approach, several species, including Sunda porcupine, wild pig, and Muntjac, were identified as being found in the forest areas, but are very rarely found due to various factors.

Table 4-12 Species of Mammals in Study Area

Species	Local Name	English Name	Habitat	IUCN	PP7/99	CITES
*Sus scrofa**	Babi hutan	Wild pig	Dryland Forest	LC	-	-
Macaca fascicularis	Monyet Ekor Panjang	Long tailed macacaque	All location	LC	-	II
*Hystrix javanica**	Landak	Sunda porcupine	Dryland Forest	LC	P	-

Species	Local Name	English Name	Habitat	IUCN	PP7/99	CITES
*Tragulus sp**	Kancil	Mouse deer	Dryland Forest	-	-	-
*Muntiacus muntjak**	Kijang Muncak	Southern Red Muntjac	Dryland Forest	LC	P	-
-	Kelelawar gua	Bat	Cave area	-	-	-

*Note: * = interview with community*

PP = Peraturan Pemerintah (Government Regulation), IUCN = International Union for Conservation of Nature, CITES = Convention on International Trade in Endangered Species of Wild Fauna and Flora

Birds

Species diversity and abundance have close correlations with habitat diversity. Generally, bird habitats are divided into several types, such as wetland habitats (include mangrove and tidal areas and paddy fields), dry land agriculture and scrub, beach habitat, and dry-land forest.

The study recorded 49 species of 30 avian families. The figure below lists the bird species in the study area. Estrilididae (6 species) and Ardidae (6 species) are the most abundant bird families in the list and occupy the dominant habitat types in the study area. Estrilidae is the family of Munia birds that inhabit scrub and agriculture areas, while Ardidae is a water bird family with wetland areas as habitats, including mangrove, paddy fields, and tidal zones in coastal areas. Several water bird families of Ardeidae and Rallidae recorded in the study area were Great White Egret, Grey Heron, Purple Heron, Javan Pond-heron, Little Egret, Cinnamon Bittern, and White-breasted Waterhen. The wetland areas are important for water birds as feeding grounds and shelter cover habitat. Mangrove forest has important roles related these functions.

Several species that are representative of dry land forests were recorded, such as Grey-capped Emerald Dove, while several species are representative of beach ecosystem species including Australasian Pipit and Christmas Frigatebird.

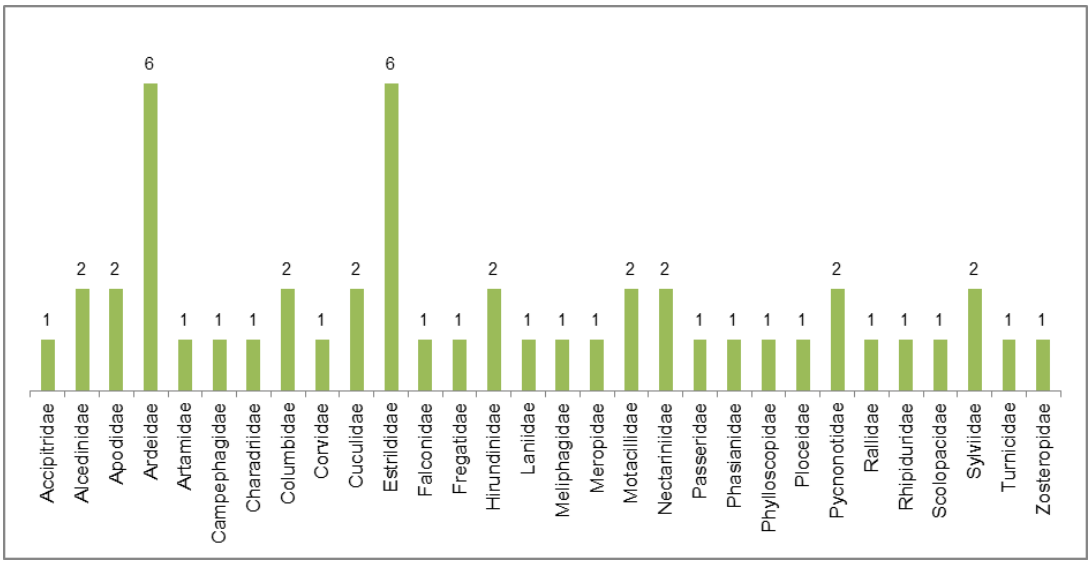


Figure 4-17 Number of Species by Family

Six species are identified as important values species based on their conservation status, among others:

- Two Threatened species based on IUCN Categories: Christmas Frigatebird (Critically Endangered) and Java Sparrow (Vulnerable)
- Six Protected species under Indonesian Regulation (PP7/1999): Great White Egret, Kentish Plover, Spotted Kestrel, Christmas Frigatebird, Black Eagle, and Java Sparrow
- Four species listed on CITES Appendix: Christmas Frigatebird (Appendix I), Spotted Kestrel (Appendix II), Black Eagle (Appendix II), and Java Sparrow (Appendix II).

Estimated distribution map of Christmas Frigatebird based on IUCN (www.iucnredlist.org) (above). The south coast of Lombok is at the limits of its range. Photo species was recorded on study area during baseline data survey (left).

Figure 4-18 Estimated extent of occurrence of Christmas Frigatebird

Based on IUCN website description, Christmas Frigatebird nests are commonly (more than 65%) found in tall tree of beach forest, such *Terminalia catappa* and *Celtis timorensis*. This species has a very slow breeding process based on ecological behavior, with such factors as:

- Only capable of raising a maximum of one fledgling every two years
- Forages on flying fish, squid, and other marine creatures, and is largely dependent on subsurface predators to drive prey to the surface
- Replacement rate of pairs is thought to be extremely slow (15-25 years), rendering the population slow to recover following declines
- Evidence suggests that breeding birds frequently forage hundreds of kilometers from the colony.

Table 4-13 Bird Species Recorded in Study Area

No	Species Name			Family	Habitat*	Conservation Status			Distribution
	Scientific	Indonesian	English			IUCN	PP7/99	CITES	
1	*Alcedo coerulescens*	Raja udang Biru	Cerulean Kingfisher	Alcedinidae	Mangrove	LC	-	-	Southern Part of Sumatra, Java, Bali and West Nusa Tenggara
2	*Amaurornis phoenicurus*	Kareo Padi	White-breasted Waterhen	Rallidae	Paddy Field, Mangrove	LC	-	-	
3	*Anthus novaeseelandiae*	Apung Tanah	Australasian Pipit	Motacilidae	Paddy Fields and Dry land Fields	LC	-	-	
4	*Ardea alba*	Cangak Besar	Great White Egret	Ardeidae	Mangrove	LC	P	-	
5	*Ardea cinerea*	Cangak Abu	Grey Heron	Ardeidae	Mangrove	LC	-	-	
6	*Ardea purpurea*	Cangak Merah	Purple Heron	Ardeidae	Mangrove	LC	-	-	
7	*Ardeola speciosa*	Blekok Sawah	Javan Pond-heron	Ardeidae	Mangrove	LC	-	-	
8	*Artamus leucorynchus*	Kekep Babi	White-breasted Woodswallow	Artamidae	All locations	LC	-	-	
9	*Cacomantis sepulcralis*	Wiwik Uncuing	Brush Cuckoo	Cuculidae	All locations	LC	-	-	
10	*Charadrius alexandrinus*	Cerek tilil	Kentish Plover	Charadriidae	All locations	LC	P	-	
11	*Centropus bengalensis*	Bubut Alang-alang	Lesser Coucal	Cuculidae	All locations	LC	-	-	
12	*Chalcophaps indica*	Delimukan Zamrud	Grey-capped Emerald Dove	Columbidae	All locations	LC	-	-	
13	*Cisticola juncidis*	Cici padi	Zitting Cisticola	Sylviidae	Paddy Field, shrub	LC	-	-	

No	Species Name			Family	Habitat*	Conservation Status			Distribution
	Scientific	Indonesian	English			IUCN	PP7/99	CITES	
14	*Cisticola exilis*	Cici merah	Golden-headed Cisticola	Sylviidae	Paddy Field, shrub	LC	-	-	
15	*Collocalia esculenta*	Walet Sapi	Glossy Swiftlet	Apodidae	All locations	LC	-	-	
16	*Aerodramus fuciphagus*	Walet Sarang-putih	Edible-nest Swiftlet	Apodidae	All locations	LC	-	-	
17	*Corvus macrorhynchos*	Gagak Kampung	Large-billed Crow	Corvidae	All locations	LC	-	-	
18	*Coturnix chinensis*	Puyuh Batu	Blue-breasted Quail	Phasianidae	Paddy field and dry land agriculture	LC	-	-	
19	*Egretta garzetta*	Kuntul kecil	Little Egret	Ardeidae	Mangrove and paddy field	LC	-	-	
20	*Falco moluccensis*	Alap alap sapi	Spotted Kestrel	Falconidae	Dryland Forest	LC	P	**II**	
21	*Fregata andrewsi*	Cikalang christmas	Christmas Frigatebird	Fregatidae	Coastal	**CR**	P	**I**	Migratory Bird
22	*Halcyon chloris*	Cekakak Sungai	Collared Kingfisher	Alcedinidae	All locations	LC	-	-	
23	*Heteroscelus brevipes*	Trinil ekor kelabu	Grey-tailed Tattler	Scolopacidae	All locations	LC	-	-	
24	*Hirundo rustica*	Layang-layang Asia	Barn Swallow	Hirundinidae	All locations	LC	-	-	
25	*Hirundo tahitica*	Layang layang Batu	Pacific Swallow	Hirundinidae	All locations	LC	-	-	
26	*Ictinaetus malayensis*	Elang hitam	Black Eagle	Accipitridae	Dryland Forest	LC	P	**II**	
27	*Ixobrychus cinnamomeus*	Bambangan Merah	Cinnamon Bittern	Ardeidae	Paddy Field	LC	-	-	

No	Species Name			Family	Habitat*	Conservation Status			Distribution
	Scientific	Indonesian	English			IUCN	PP7/99	CITES	
28	*Lalage sueurii*	Kapasan Sayap-putih	White-shouldered Triller	Campephagidae	All locations	LC	-	-	
29	*Lanius schach*	Bentet Kelabu	Long-tailed Shrike	Laniidae	All locations	LC	-	-	
30	*Lichmera lombokia*	Isap madu Topi-sisik	Scaly-crowned Honeyeater	Meliphagidae	All locations	LC	-	-	
31	*Lonchura leucogastroides*	Bondol Jawa	Javan Munia	Estrildidae	All locations	LC	-	-	
32	*Lonchura pallida*	Bondol Kepala-pucat	Pale-headed Munia	Estrildidae	All locations	LC	-	-	
33	*Lonchura punctulata*	Bondol Peking	Scaly-breasted Munia	Estrildidae	All locations	LC	-	-	
34	*Lonchura quinticolor*	Bondol pancawarna	Five-colored Munia	Estrildidae	All locations	LC	-	-	Lombok, sumbawa, Flores, Alor, Sumba, Roti, Timor, Sermata, Babar, and Kep. Tanimbar (Yamdena)
35	*Merops ornatus*	Kirik-kirik Australia	Rainbow Bee-eater	Meropidae	All locations	LC	-	-	Migratory Bird
36	*Motacilla flava*	Kicuit Kerbau	Western Yellow Wagtail	Motacillidae	All locations	LC	-	-	
37	*Nectarinia jugularis*	Burungmadu Sriganti	Olive-Backed Sunbirds	Nectariniidae	All locations	LC	-	-	
38	*Orthotomus sepium*	Cinenen Jawa	Olive-backed Tailorbird	Nectariniidae	All locations	LC	-	-	

No	Species Name			Family	Habitat*	Conservation Status			Distribution
	Scientific	Indonesian	English			IUCN	PP7/99	CITES	
39	*Lonchura oryzivora*	Gelatik Jawa	Java Sparrow	Estrildidae	All locations	**VU**	P	**II**	
40	*Parus major*	Gelatik batu Kelabu	Great Tit	Estrildidae	All locations	LC	-	-	
41	*Passer montanus*	Burunggereja Erasia	Eurasian Tree Sparrow	Passeridae	All locations	LC	-	-	
42	*Phylloscopus trivirgatus*	Cikrak Daun	Mountain Leaf-warbler	Phylloscopidae	All locations	LC	-	-	
43	*Ploceus philippinus*	Manyar Tempua	Baya Weaver	Ploceidae	Paddy field and dryland agriculture	LC	-	-	
44	*Pycnonotus aurigaster*	Cucak Kutilang	Sooty-headed Bulbul	Pycnonotidae	All locations	LC	-	-	
45	*Pycnonotus goiavier*	Merbah Cerukcuk	Yellow-vented Bulbul	Pycnonotidae	All locations	LC	-	-	
46	*Rhipidura rufifrons*	Kipasan Dada-hitam	Rufous Fantail	Rhipiduridae	All locations	LC	-	-	
47	*Streptopelia chinensis*	Tekukur Biasa	Spotted Dove	Columbidae	All locations	LC	-	-	
48	*Turnix suscitator*	Gemak Loreng	Barred Buttonquail	Turnicidae	Dryland agriculture and shrub	-	-	-	
49	*Zosterops chloris*	Kacamata Laut	Lemon-bellied White-eye	Zosteropidae	Dryland forest and mangrove	LC	-	-	

Source: AMDAL, 2018

Note: LC = Least Concern, VU = Vulnerable, P = Protected, CR = Critically Endangered, PP = Peraturan Pemerintah (Government Regulation), IUCN = International Union for Conservation of Nature, CITES = Convention on International Trade in Endangered Species of Wild Fauna and Flor

Herpetofauna

Table 4-14 lists Herpetofauna findings in the study area. The survey recorded four species of reptiles and three species of amphibians. The list of amphibians shows that the representative habitat is modified habitat areas. *Bufo melanostictus* is commonly found in anthropogenic areas, such as settlements and built-up areas. Meanwhile, the habitat of *Limnonectes sp* is commonly shrub and forest ground. *Fejervarya sp* is abundantly recorded in paddy fields and other wetland habitats.

Based on interviews with the community, two species of marine turtles can potentially be found in the study area, *Dermochelys coreacea* and *Chelonia mydas*. Two locations that are indicative of these turtles' habitats are the beaches of Bukit Benjon and Gunung Siwak. Potential componenst of sea turtle nesting habitat is gentle slope of beach with width of 30 to 50 meters and beach vegetation such as pandanus (*Pandanus tectorius*).

Table 4-14 List of Herpetofauna Species

Order	Species	English Name	IUCN	CITES	PP7/1999
Reptiles	*Chelonia mydas**	Green Turtle	EN	I	P
	*Dermochelys coriacea **	Leatherback Turtle	EN	I	P
	Varanus salvator	Common Water Monitor	-	-	-
	Emoia sp	-	-	-	-
Amphibians	*Bufo melanostictus*	-	-	-	-
	Limnonectes sp	-	-	-	-
	Fejervarya sp	-	-		

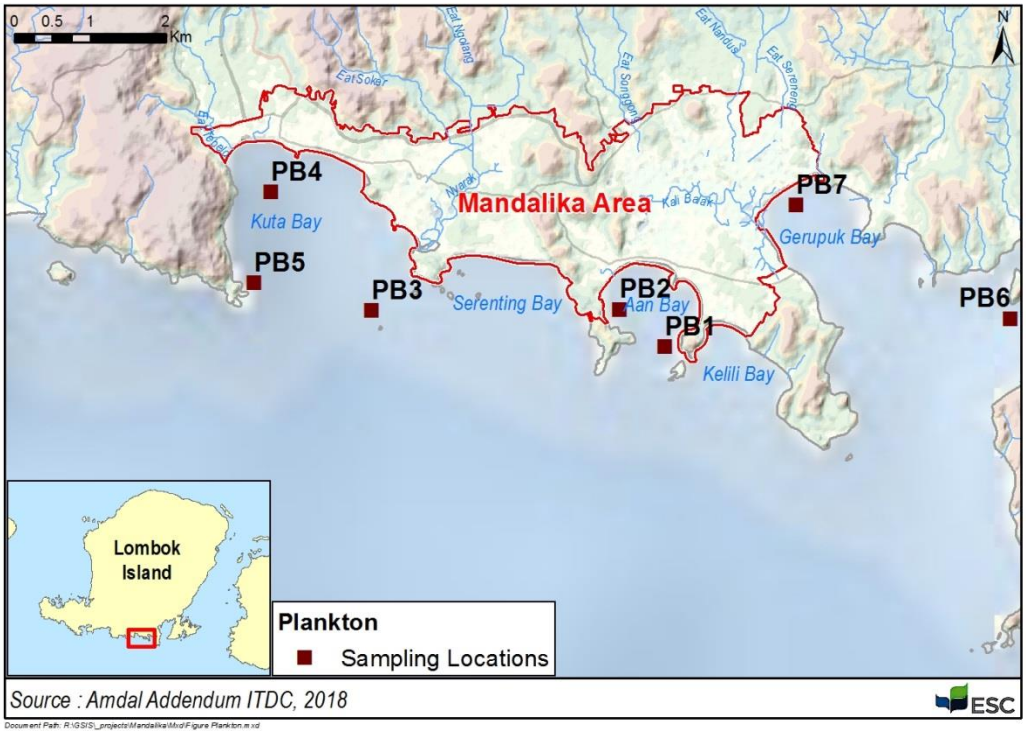
*Note: * = interview with community*

Note: EN = Endangered, P = Protected, PP = Peraturan Pemerintah (Government Regulation), IUCN = International Union for Conservation of Nature, CITES = Convention on International Trade in Endangered Species of Wild Fauna and Flor

4.4.3.2 Marine Fauna

Sampling Locations

The sampling locations of plankton, as was recorded in AMDAL Addendum (2018), are shown in **Figure 4-19**.



Note: PB1 = Tanjung Aan 1, PB2 = Tanjung Aan 2, PB3 = Medas, PB4 = Scorpion, PB5 = Palawang, PB6 = Gerupuk 1, PB7 = Gerupuk 2.

Figure 4-19 Sampling Locations of Plankton

Plankton

The table below shows the plankton diversity in the study area. The diversity indices of the study area ranged between moderate to high (H' ranged between 2.12 and 2.66).

There is high species abundance and richness in Bacillariophyceae, which is relatively higher in the coastal areas compared to the samples in the rivers. Sachlan (1972) notes that phytoplanktons belonging to the Baccilariophyta group are often found in coastal water due to its salinity level. As for zooplankton, there is a significant high abundance of *Copepoda* (Crustacea) in the study area. Copepoda in general dominate all ocean bodies as it is the main herbivore in marine ecosystems (Nybakken 1992). The abundance of Copepoda indicates that the food chain in the study area provides plentiful resources for pelagic organisms.

Table 4-15 List of Plankton Species

NAME OF TAXA	LOCATION CODE						
	PB 1	PB 2	PB 3	PB 4	PB 5	PB 6	PB 7
Bacillariophyceae							
Bacillaria sp.	0	1421	135	0	1926	0	0
Biddulphia sp.1	0	299	92	86	544	0	0
Biddulphia sp.2	0	673	0	0	1333	0	0

NAME OF TAXA	LOCATION CODE						
	PB 1	PB 2	PB 3	PB 4	PB 5	PB 6	PB 7
Chetoceros sp.1	819	449	165	90	1033	416	2499
Chetoceros sp.2	0	1047	98	0	832	0	1126
Chaetoceros sp. 3	177	0	0	135	599	0	0
Coscinodiscus sp.	251	1346	300	691	1131	808	782
Hyalodiscus sp.	0	0	0	0	0	0	448
Hyalotheca sp.	0	0	0	300	0	0	0
Navicula sp.1	128	73	116	0	238	542	681
Navicula sp.2	0	177	0	0	275	0	0
Nitzschia sp.1	770	374	86	391	0	268	243
Nitzschia sp.2	0	897	0	0	783	0	0
Rhizosolenia sp.	110	523	0	893	526	514	1077
Streptotheca sp.	92	897	177	575	1192	838	720
Thallasiosirra sp.	0	0	0	0	0	661	929
Thallasiothrix sp.	697	1570	92	0	1400	0	0
Cilliata							
Cilliata sp.1	135	0	61	0	0	0	0
Tintinopsis sp.	49	98	0	128	214	117	216
Crustacea							
Copepoda	98	150	79	300	465	170	193
Crustacea sp.1	55	0	0	190	177	227	184
Crustacea sp.2	0	0	0	0	92	0	0
Nauplius 1	98	449	49	73	147	158	439
Dinoflagellata							
Ceratium sp.	0	0	0	153	110	0	95
Leprotintinopsis sp.	0	150	0	73	0	710	1028
Chrolococcus sp.	0	0	0	0	0	94	880
Total	**0**	**150**	**0**	**226**	**110**	**804**	**2003**
Diversity Index (H')	**2.12**	**2.54**	**2.36**	**2.32**	**2.66**	**2.37**	**2.50**

Benthos

The table below shows the plankton diversity in the study area, at the same sampling locations as those of planktons. The diversity indices of the study area have high variety, as the H' ranged between 1.36 and 2.63. The diversity indices in PB 6 and PB7 are particularly above average (2.44 and 2.63 respectively), which is considered to be due to its location adjacent to a secondary mangrove forest. One of the ecological functions of the mangrove forest is its function for nutrient provision. Plant matter (such as leaves and debris) that falls into the water becomes food resources for detritus eaters.

Table 4-16 List of Benthic Species

NAME OF TAKSA	LOCATION CODE						
	PB 1	PB 2	PB 3	PB 4	PB 5	PB 6	PB 7
BACILLARIOPHYCEAE							
Pharella acutidens	44	0	89	0	44	44	44
Mactra sp.	89	89	0	0	311	267	133
Liochoncha ornata	0	0	0	0	178	133	89
Paphis sp.	0	0	0	0	0	89	64
Scapharca sp. 2	0	0	0	0	0	44	178
Codakia sp.	0	0	0	89	0	44	192
Scapharca sp. 1	0	0	0	44	0	0	0
GASTROPODA							
Architectonica maxima	0	0	133	0	0	89	133
Cerithium echinatum	0	0	44	133	44	0	0
Chantarus sp.	0	0	311	133	44	267	133
Cheritidea sp.	0	0	44	0	44	0	0
Conus sp.	0	0	89	133	0	0	89
Cymatium muricinum	0	0	44	0	0	0	89
Cypraea sp.	133	0	89	44	0	0	0
Mitra sp. 1	44	0	356	44	0	89	44
Mitra sp. 2	267	178	489	489	133	578	44
Nerita sp.	0	0	444	44	0	0	44
Oliva sp.	0	133	0	0	0	133	0
Patelloida sp. 1	0	0	44	89	44	44	0
Patelloida sp. 2	0	0	0	44	0	0	0
Terebra maculata	44	133	133	178	44	0	44
Trochus sp.	0	0	0	0	0	44	44
Umbonium sp.	0	0	0	0	0	133	178
Xenophora sp.	0	0	0	0	0	89	0
SCAPHOPODA							
Dentalium sp.	0	0	0	267	0	44	0
	0	**0**	**0**	**267**	**0**	**311**	**222**
	1.54	**1.36**	**2.21**	**2.24**	**1.87**	**2.41**	**2.63**

4.4.4 Legally Protected and Internationally Recognized Areas

4.4.4.1 Terrestrial Protected Area

Biodiversity Hotspots: Wallacean Zone

Using the Wallace and Lydekker lines, Wallacea area covers central islands in the Indonesian archipelago such as three biogeographic subregions: Maluku, Sulawesi, and the Lesser Sundas and Timor-Leste between the Sunda and Sahul continental shelves. This region covers an area of 33.8 million hectares.

The Wallacea hot spot is a distinct biogeographic zone recognized internationally as a biodiversity hotspot. Wallacea contains distinctive transitional flora and fauna representing a mix of Asian and Australasian species; the area's terrestrial habitat consists of monsoon forests and savannah woodlands (Whitten and Whitten 1992).

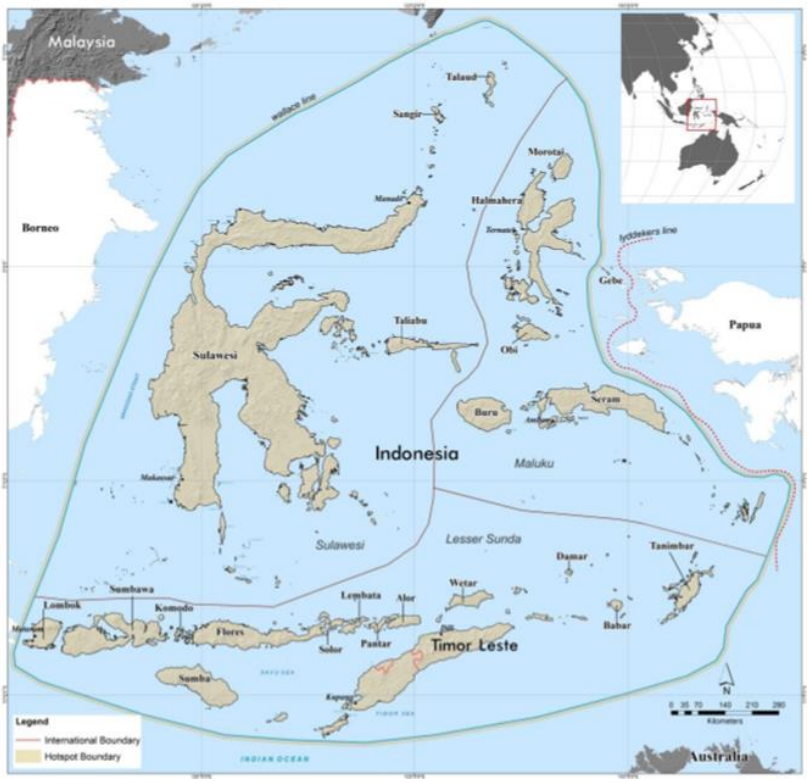


Figure 4-20 Wallacea Hotspot

Northern Nusa Tenggara Endemic Bird Area

The Northern Nusa Tenggara Endemic Bird Area (EBA) comprises the northern chain of the Lesser Sunda islands from Lombok to Alor, in Nusa Tenggara Barat and Nusa Tenggara Timur provinces of Indonesia. These are mountainous islands with numerous volcanoes, many of which are active, such as Mt Rinjani on Lombok at 3,726 masl. The restricted-range species of this EBA, which include the

monotypic endemic genus *Caridonax*, are almost all forest birds, but their precise habitat requirements are not fully understood.

EBA has close relationship with Wallacea Zone, the transitional area that represents Asian and Australian region, causing high endemicity of both flora and fauna, including the bird groups. There are at least 25 landscapes identified as habitat of endemic and restricted range species.

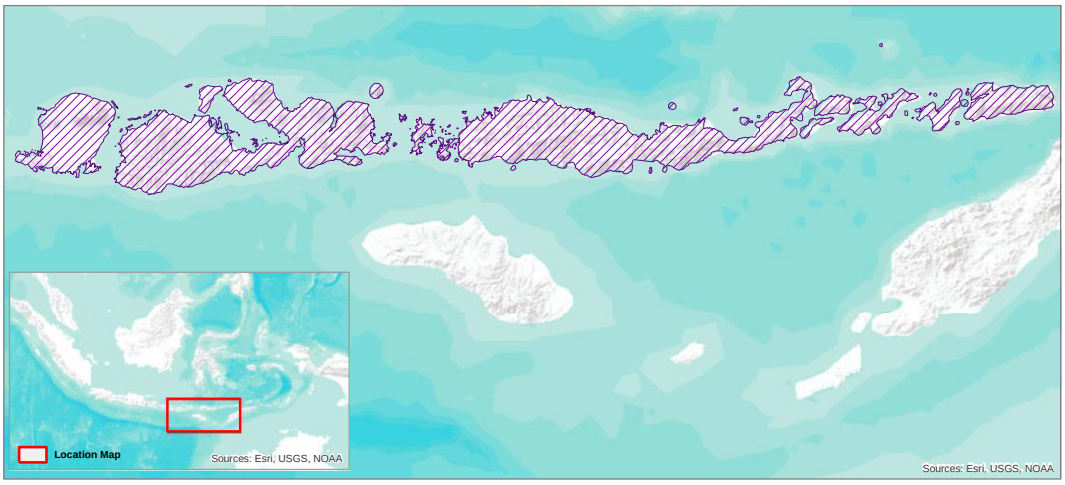


Figure 4-21 Endemic Bird Area (EBA): Northern Nusa Tenggara

Nusa Tenggara Dry Forest Ecoregion

According to secondary data from IBAT, the Project location is located in the ecoregion of Nusa Tenggara Dry Forest. The Nusa Tenggara Dry Forest ecoregion represents the semievergreen dry forests in the Nusa Tenggara area, extending east from the islands of Lombok and Sumbawa to Flores and Alor.

This ecoregion is separated from Bali and Java to the west by Wallace's Line, which marks the end of the Sunda Shelf. With an average annual rainfall of 1,349 mm, this region is the driest and also the most seasonal in Indonesia. Based on the Köppen climate system, this ecoregion has a tropical dry climate zone (National Geographic Society 1999 in WWF 2018). This distinctive climate has given rise to a vegetation that is strikingly different from that of the rest of the archipelago. Much of the natural habitat is composed of monsoon forests and savannah woodlands (Whitten and Whitten 1992 in WWF 2018).

Particularly in Lombok, the type of dry forest in the region is called dry thorn forest (Monk et al. 1997 in WWF 2018). This forest formation still exists along the southeast coast of Lombok and the southwest coast of Sumbawa, but is being cleared due to anthropogenic factors—human pressure.

Key Biodiversity Area (KBA)

Key Biodiversity Area (KBA) is defined as a site identified as a conservation priority for one or more species based on the quantitative criteria used in the complementary approaches for identification of Alliance for Zero Extinction sites (AZEs), Birdlife Important Bird and Biodiversity Areas (IBAs), IUCN

Freshwater KBAs, and KBAs identified through the Critical Ecosystem Partnership Fund (CEPF) hotspot profiling process. These sites form the starting point for the list of sites to be endorsed using the new IUCN KBA Standard.

Three KBAs can found in southern part of Lombok Island; they are Sekaroh, Bumbang and Batu Gendang.

Table 4-17 Description of Key Biodiversity Areas on Surrounding of Project Location

No	Name of KBA	Trigger of KBA	Habitat Type	Distance to Study Area (km)
1	Sekaroh	Significant populations of globally threatened species: • Milky Stork (*Mycteria cinerea*) • Java Sparrow (*Lonchura oryzivora*)	○ Dry-land Agriculture ○ Primary and Secondary Mangrove ○ Shrub/Bush	19
2	Bumbang	○ Significant populations of globally threatened species: • Java Sparrow (*Lonchura oryzivora*) • Lombok Cross Frog (*Oreophryne monticola*) ○ Significant populations of endemic species known only to be found in a limited area: • *Terminalia kangeanensis*	Dry-land forest	5
3	Batu Gendang	Significant populations of globally threatened species: • Java Sparrow (*Lonchura oryzivora*) • Sunda Fruit Bat (Acerodon mackloti) • Sunda Pangolin (Manis javanica) • Javan Tailless Fruit Bat (*Megaerops kusnotoi*) • Merawan (*Hopea sangal*) • Burmese Rosewood (*Pterocarpus indicus*) • Terminalia kangeanensis • Burmese Python (*Python bivittatus*)	Dry-land forest	35

Source: www.ibat-alliance.org

4.4.4.2 Marine Protected Area

Based on IFC PS, protected areas are defined as clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values. The assessment uses

data from National and international spatial data to identify the protected areas surrounding the Project location.

Table 4-18 Legally Protected and Internationally Recognized Areas in Southern Lombok Island

No	Category	Description	Area Name
1	Protected areas: National-level	IUCN management categories V, VI	KKPD Kabupaten Lombok Tengah
2	Protected areas: regional	Natura 2000	-
		Regional Seas	-
3	Protected areas: international	Natural/Mixed World Heritage sites	-
		Wetland Ramsar sites	-
		UNESCO Man and the Biosphere Reserves	-
4	Priority sites for biodiversity	Key Biodiversity Areas	○ Sekaroh ○ Bumbang ○ Batu Gendang
5	Regions of conservation importance	Endemic Bird Areas	Northern Nusa Tenggara
		Biodiversity Hotspots	Wallacean Zone
		High Biodiversity Wilderness Areas	-

Regional Marine Protected Area of Central Lombok Regency

The Regional Marine Protected Area of Central Lombok Regency (*Kawasan Konservasi Laut Daerah Kabupaten Lombok Tengah*) was established in 2012, as stated in the Regent Regulation 2/2011. This area encompasses 22,940 ha, which includes the coastline area as well as adjacent small islands on the south part of Lombok Island. Geologically, the beach area consists of white sand and steep rocks. The shallow area consists of several ecosystems, which are mangrove forests, seagrass, and coral reefs. The area has been utilized for residential area, tourist site, agriculture, fisheries, and mining (Yulius et al 2018). There is very limited published information regarding this marine protected area which calls for more related studies in the future. This marine protected area is part of the Coral Triangle (Yulius et al 2018).

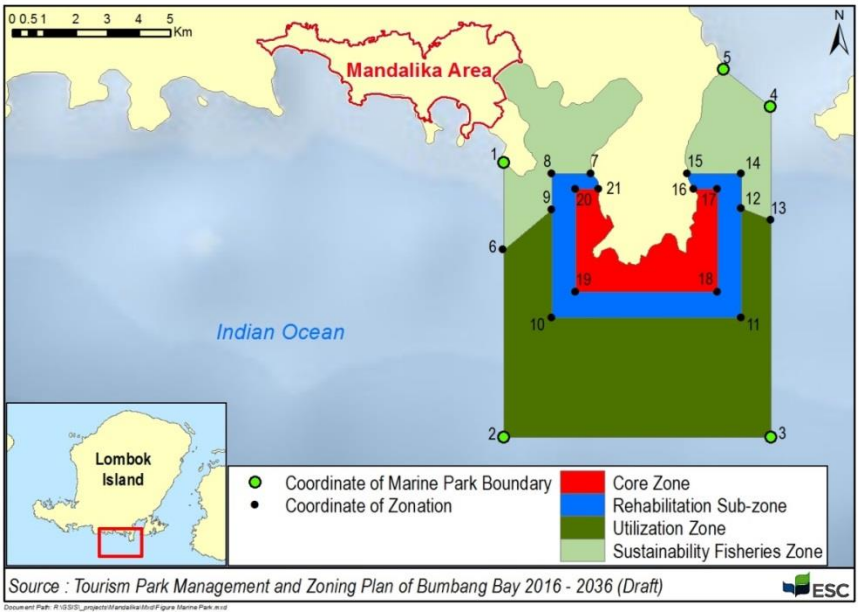
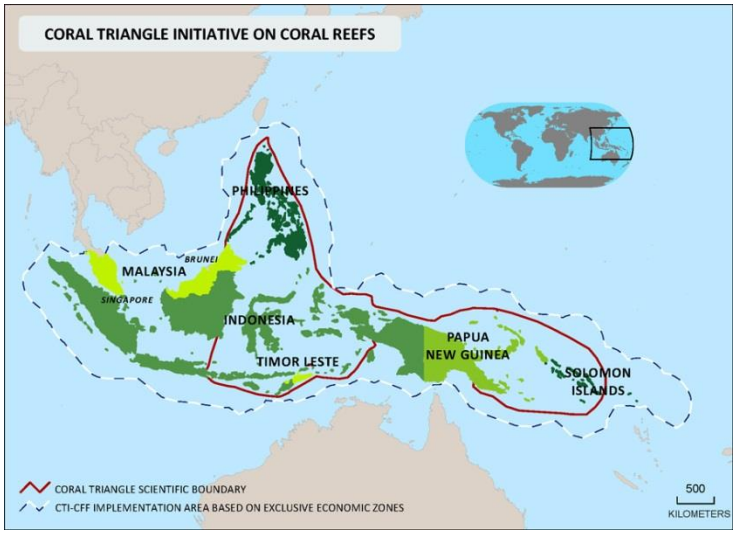


Figure 4-22 Map of Marine Park Zonation

Coral Triangle

Lombok is, together with all of eastern Indonesia, part of the Coral Triangle. The Coral Triangle is known to be a global epicenter of abundant marine life and diversity, located between the Indian and Pacific Oceans (Allen 2007). It encompasses the national borders of Indonesia, Malaysia, Papua New Guinea, Philippines, Solomon Islands, and Timor Leste. Albeit it covers approximately 1.6% of the planet's ocean area, it hosts 37% of all known coral reef fishes, 53% of the world's coral reefs, as well as the largest mangrove forest area in the world. It is also known for its provision of natural resources for the people living in that area.



Source: NOAA

Figure 4-23 Coral Triangle Scientific Boundary

4.5 Social and Economic Components

The Mandalika Resort will affect communities near the project site, mainly from pre-construction, construction and operational stages. It covers 1,175 ha of area in Pujut Sub-District, Central Lombok Regency, West Nusa Tenggara Province. Although the project is located within just one district, it crosses a total of 4 villages: Kuta Village, Sukadana Village, Mertak Village and Sengkol Village. This section provides the socio-economic conditions in the affected area in more detail.

4.5.1 Summary

Considering the socio-economic information that will be presented in this sub-section, the residents in affected villages (Kuta, Sukadana, Mertak and Sengkol) have yet to enjoy benefits that many in more developed provinces are accustomed to. Many local communities have low human development index, as a result of low educational attainment, lack of skills, adequate infrastructure and public facilities. For instance, many households in affected villages are in Non-welfare Class, that is, they struggle to meet their basic needs, such as education, daily food and clothing. In fact, majority of the villagers attain only middle school or primary school degrees. Only a few manage to continue their education up to university level. Moreover, infrastructure of affected villages is still lacking. Many still rely on wells to get clean water and communal toilets (MCK or *Mandi, Cuci, Kakus*), and access to healthcare among the residents in still limited – there are only a few doctors and Puskesmas (Community Health Center) in affected villages. In addition, most of the roads in affected villages are unpaved.

Majority of residents in affected villages are either farmers or fishermen, many of whom are still getting low income. However, many of the residents, especially in Kuta Village, are starting to work in the hospitality sector. This sector is expected to grow along with the development of The Mandalika SEZ, which will attract more trans-migrants, and thus, increasing the population of affected villages. Almost all of the residents of Kuta Village are Sasak people, who are considered as Indigenous people. Although no ethnicity information are available for other affected villages, their ethnic compositions are expected to be similar to Kuta Village.

4.5.2 Project Affected People

Due to the development of project facilities, there is a need to acquire lands from some members of the local community. As such, some groups of people will inevitably be affected by The Mandalika project. In the context of this project, there are four types of land:

1. Enclaved land –lands legally owned by other parties with sufficient ownership evidence.
2. Claimed land – lands legally owned by ITDC but are claimed by individuals who do not possess some land ownership evidence.
3. Litigated land – lands owned by ITDC but are disputed in the courts by other parties, who possess some land ownership evidence.
4. Clean-and-clear land – lands owned by ITDC (no dispute or claim by other parties) but nevertheless there are people who occupy or use the land.

The following table details the people who will be affected by the Project as a result of land acquisition. Satellite imageries of the following lands are presented in Appendix B.

Table 4-19 Land Status within The Mandalika Project Area

Types of Land	Enclaved Land	Claimed Land	Litigated Land	Clean-and-clear land
Number of owners	6 people	-	-	-
Number of claimants	-	8 claimants	-	-
Number of Litigation cases	-	-	2 cases	-
Number of squatter households	-	-	-	49 dwellings and 3 homestays
Total Area (ha)	1	2.4	10.4	106
Affected Village	Kuta, Mertak	Ujung, Pelemong, Tobelo and Serenting Sub-Villages	Sengkol, Mertak	-

Source: ITDC

4.5.3 Social and Cultural Sphere

4.5.3.1 Demography

Table 4-20 provides an overview of the population numbers in the affected villages and district. The village with the highest population density is Sukadana, at 663.9 people per km^2. On the other hand, Kuta is the village with the lowest population density at 385.5 people per km^2. However, among the affected villages, Sengkol is the most populated. In fact, it consists of 11,013 people – roughly twice that of Sukadana which has 5,198 individuals. Kuta and Mertak are inhabited by 9,120 and 7,526 people, respectively. In regards to administrative area, Kuta (23.66 km^2) covers the most area, which is thrice that of Sukadana (7.83 km^2). Mertak and Sengkol also encompass areas substantially higher than Sukadana; they cover 14.27 km^2 and 18.36 km^2, respectively.

Overall, families across the affected area are composed of average 3-4 people per household. For example, the household size in Pujut Sub-District is 3.41 people per household. Similarly, the household size in the affected villages ranges from 3.18 people per household (Mertak) to 4.03 people per household (Kuta).

Table 4-20 Population of Affected Villages, 2016

No.	Village	Area (Km^2)	Male	Female	Total	Sex Ratio (Male: Female)	Number of Household	Density (people/km2)	Household Size
Pujut Sub-District		233.55	49,702	53,954	103,656	0.92	30,354	443.83	3.41
1	Kuta	23.66	4,544	4,576	9,120	0.99	2,262	385.46	4.03
2	Mertak	14.27	3,697	3,829	7,526	0.97	2,364	527.40	3.18
3	Sengkol	18.36	5,255	5,758	11,013	0.91	3,212	599.84	3.43
4	Sukadana	7.83	2,468	2,730	5,198	0.90	1,610	663.86	3.23
Subtotal (of Villages)		64.12	15,964	16,893	32,857	-	9,448	-	-
% of Pujut		27.5	32.1	31.3	31.7	-	31.1	-	-

Source: Pujut Sub-District in Figures, 2017.

In terms of population growth (**Table 4-21**), Pujut Sub-District grew 5.2% from 98,534 people in 2012 to 103,656 people in 2016. Its annual average growth is 1.30% although the district experienced a slower growth rate in 2015-2016. Looking at each affected village, as presented below, Kuta Village experienced the highest influx of residents from 2012-2016. In fact, in 2015-2016 alone, the population grew by 11%. The trend as observed in Kuta village is in contrast with Mertak Village, where the population tended to gradually shrink over the years. In 2015-2016, the population of Mertak Village decreased by as much as 4.4%. Like Kuta Village, the populations in Sukadana and Sengkol Villages also tend to increase albeit at smaller pace. The annual growth rates for Sukadana and Sengkol Villages are 0.9 and 1.2% respectively.

Table 4-21 Population Growth of Affected Villages

Village	2012	2013	2014	2015	2016	Growth Rate (%)		
						Overall	Annual Average	Latest
Pujut Sub-District	98,534	99,258	101,745	102,659	103,656	5.2	1.3	0.97
1. Kuta Village	7,886	7,944	8,142	8,216	9,120	15.6	3.9	11.0
2. Sukadana Village	5,012	5,049	5,175	5,221	5,198	3.7	0.9	-0.4
3. Mertak Village	7,553	7,609	7,799	7,869	7,526	-0.4	-0.1	-4.4
4. Sengkol Village	10,500	10,576	10,842	10,941	11,013	4.9	1.2	0.7

Source: Pujut Sub-District in Figures, 2017; Pujut Sub-District in Figures, 2016, Pujut Sub-District in Figures, 2015, Pujut Sub-District in Figures, 2014, Pujut Sub-District in Figures, 2013

4.5.3.2 Population by Gender

Table 4-20 indicates the sex ratio (male: female) in affected villages, District and regency. The ratios range from 0.90 to 0.99 among the affected villages, indicating that there are more females than males in these areas. For instance, Kuta boasts the highest sex ratio at 0.99, which essentially means that although there are more females than males, the difference between the two sexes is minute. On the other hand, Sukadana has the lowest sex ratio among the affected villages; its sex ratio stands at 0.90, which means that there are 90 males for every 100 females. Central Lombok Regency and Pujut Sub-District have similar sex ratios at 0.90 and 0.92, respectively.

4.5.3.3 Population by Age Group

Pujut Sub-District

Table 4-22 and Table 4-23 show the population demography in Pujut Sub-District based on sex and age groups, as well as the dependency ratio. This is illustrated in a population pyramid in **Figure 4-24.** It is clear that the productive population exceeds the non-productive population; in fact, the former constitutes about 64.3% of the population, while the elderly (> 65 years old) and the young people (< 15 years old) are only 30.9% and 4.8% of the total population. These result in a dependency ratio of 55.6%, slightly higher than the Central Lombok Regency average of 52.3% and the Indonesian average of 49%. Pujut Sub-District is seeing a growing population; the population pyramid shows a significantly higher number of young people (especially 0-4 years old) compared to the older generations.

Table 4-22 Population Demography by Age Group in Pujut Sub-District, 2015

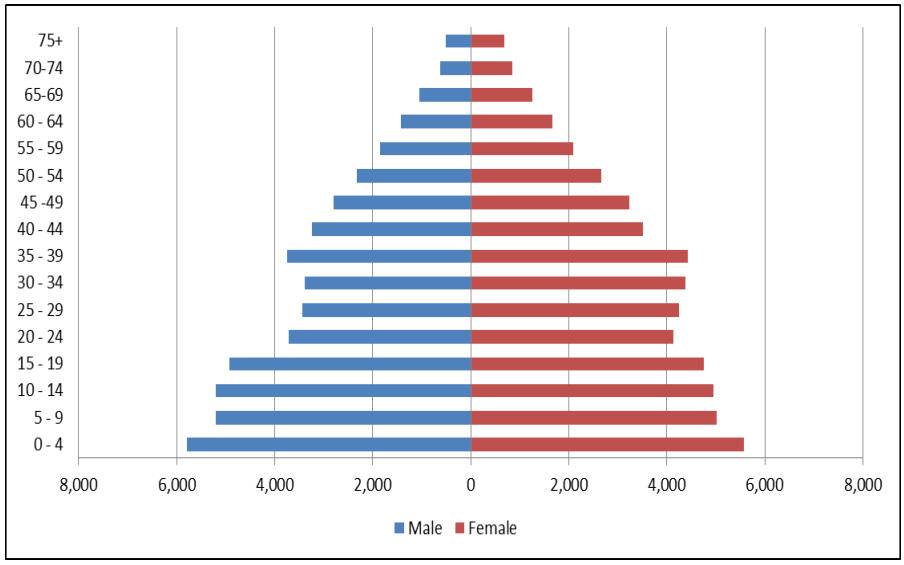
Age	Pujut Sub-District				
	Male	Female	Non-productive age	Productive age	Dependency ratio (%)
0 - 4	5,785	5,575	11,360		
5 - 9	5,207	5,025	10,232		
10 - 14	5,207	4,946	10,153		
15 - 19	4,932	4,757		9,689	
20 - 24	3,722	4,141		7,863	
25 - 29	3,437	4,248		7,685	
30 - 34	3,386	4,382		7,768	
35 - 39	3,753	4,434		8,187	
40 - 44	3,233	3,510		6,743	
45 -49	2,805	3,235		6,040	
50 - 54	2,317	2,660		4,977	
55 - 59	1,846	2,084		3,930	
60 - 64	1,419	1,658		3,077	
65-69	1,045	1,257	2,302		
70-74	625	840	1,465		
75+	509	679	1,188		
Total	**49,228**	**53,431**	**36,700**	**65,959**	**55.6**

Source: Pujut Sub-District in Figures, 2017

Table 4-23 Population Percentage by Age Group in Pujut Sub-District, 2015

Age Group	Pujut Sub-District			
	Population		Total	Percentage
	Male	Female		
0-14	16,199	15,546	31,745	30.9
> 65	2,179	2,776	4,955	4.8
15-64	30,850	35,109	65,959	64.3
Total	**49,228**	**53,431**	**102,659**	**100.0**
Dependency Ratio				**55.6**

Source: Pujut Sub-District in Figures, 2017



Source: Pujut Sub-District in Figures, 2017

Figure 4-24 Population Pyramid in Pujut Sub-District

Kuta, Sukadana, Mertak and Sengkol Villages

As with Central Lombok Regency and Pujut Sub-District, productive population is the dominant age group in Kuta and Sukadana, two of the affected villages. In 2015, the dependency ratio of both Kuta and Sukadana was the 55.7%, which meant that every 56 members of the non-productive population (e.g. children or the elderly) are supported by 100 members of the productive population. The dependency ratios of Mertak and Sengkol Villages are 55.8 and 52.8, respectively. These are detailed in **Table 4-24**.

Table 4-24 Population by age group in Affected Villages, 2015

Age	Kuta Village				Sukadana				Mertak				Sengkol			
	Male	Female	Total	%	Male	Female	Total	%	Male	Female	Total	%	Male	Female	Total	%
0-14	1,346	1,199	2,545	31	816	798	1,614	30.9	1272	1165	2,437	31.0	1718	1462	3,180	29.6
>65	181	214	395	4.8	110	143	253	4.8	2422	2628	5,050	64.2	3274	3748	7,022	65.4
15-64	2,567	2,709	5,276	64.2	1,554	1,800	3,354	64.2	172	210	382	4.9	231	298	529	4.9
Total	4,094	4,122	8,216	100	2,480	2,741	5,221	100	3,866	4,003	7,869	100.0	5,223	5,508	10,731	100.0
	Dependency ratio			55.7	Dependency ratio			55.7	Dependency ratio			55.8	Dependency ratio			52.8

Source: Pujut Sub-District in Figures, 2017

4.5.3.4 Education and Skill Base

Pujut Sub-District

In 2015, there were 108 primary schools in Pujut Sub-District, considerably higher than middle schools (52 schools) and high schools (20 schools). The student-teacher ratio in Pujut Sub-District was between 5 and 10, meaning there were at most 10 students for every teacher.

Table 4-25 Number of schools, students and teachers in Pujut Sub-District, 2015

Types of School	Number of Schools	Number of Students	Number of Teachers	Student-Teacher Ratio
Kindergarten	64	1,265	247	5
Primary School	108	14,109	1,388	10
Middle School	52	5,760	893	6
High School	20	2,079	413	5
Vocational School	5	921	98	9

Source: Pujut Sub-District in Figures, 2017

Kuta, Sengkol, Mertak and Sukadana Village

Among the affected villages, Sengkol has the most primary schools (9 institutions), kindergarten (5 institutions) and middle schools (3 institutions), although it only has 1 high school. The number of educational institutions in the affected villages can be seen in **Table 4-26.** The student-teacher ratios in Kuta, Mertak and Sengkol Villages are considerably higher than Sukadana Village, especially from the kindergarten to the middle school level. Mertak Village has the highest student-teacher ratio (17) in both primary school and kindergarten levels, while Kuta Village has the highest ratio (10.3) for middle school level. Sengkol Village has the highest ratio for high school level. Based on the National Statistics Agency report, there is no high school in Mertak Village.

Table 4-26 Number of schools, students, teachers in the affected villages, 2015

Types of School	Kuta				Sukadana				Mertak				Sengkol			
	I	S	T	S:T	I	S	T	S:T	I	S	T	S:T	I	S	T	S:T
Kindergarten	4	217	19	11.4	4	87	13	6.7	3	184	11	16.7	5	189	18	10.5
Primary School	3	782	53	14.8	4	382	42	9.1	6	994	60	16.6	9	1304	135	9.7
Middle School	3	579	56	10.3	2	184	38	4.8	2	477	49	9.7	3	860	86	10.0
High School	2	197	45	4.4	1	48	13	3.7	0	0	0	0.0	1	430	62	6.9

Note: I = Institutions (Number of Schools); S = Student; T = Teachers; S:T = Student-to-Teacher ratio

Source: Kuta Village Profile 2017, Sukadana Village Profile 2017, Mertak Village Profile 2017, Sengkol Village Profile 2017

Table 4-27 shows the educational level in the affected villages, such as Kuta, Sengkol, Mertak and Sukadana Villages, as presented in the AMDAL Addendum 2018. As can be inferred from the table, the educational level of the residents is fairly low. The number of residents who pursue university degrees is very low – only 1-3% of the residents manage to attain university degree. In contrast, the number of residents who finish either elementary or middle school is high. For instance, up to 30% and 25% of Kuta village residents are middle school graduates and primary school graduates, respectively. Similar trends can be observed in other villages. The villages with the highest percentage of elementary school graduates are Sengkol and Mertak with 34% of the residents each. Sukadana has the highest percentage of middle school graduates at 39% of the residents. On the other hand, the number of residents who never attended school is relatively low among the villages, ranging from 3-7% of the residents, most of them are of older generations above 40 years old.

Table 4-27 Educational Level in the Affected Villages

No.	Educational Level	Kuta				Sengkol				Mertak				Sukadana			
		M	F	T	%	M	F	T	%	M	F	T	%	M	F	T	%
1	Currently in kindergarten or elementary school	23	31	54	25	11	12	23	23	9	11	20	15	11	17	28	19
2	Elementary school graduates	21	34	55	25	14	19	33	34	17	27	44	34	14	21	35	24
3	Middle school graduates	27	39	66	30	11	7	18	18	13	18	31	24	25	32	57	39
4	High school graduates	15	12	27	12	8	7	15	15	15	12	27	21	9	7	16	11
5	Graduates with Diploma III	3	2	5	2	0	0	0	0	0	0	0	0	0	0	0	0
6	University graduates	4	1	5	2	2	1	3	3	1	1	2	2	1	0	1	1
7	Never attend schools	2	5	7	3	2	4	6	6	2	4	6	5	4	7	11	7
	Total	**95**	**124**	**219**	**100**	**48**	**50**	**98**	**100**	**57**	**73**	**130**	**100**	**64**	**84**	**148**	**100**

Note: M = Male; F = Female; T = Total.

Source: AMDAL Addendum 2018

4.5.3.5 Religion and Ethnicity

Religion

As with most other regions in Indonesia, the most widely practiced religion in Pujut Sub-District and the affected villages is Islam. In fact, Muslims make up more than 99% of Pujut Sub-District and each of the affected villages. Other religions, such as Christianity, Hinduism and Buddhism, are only embraced by less than 1% of the population. These are also reflected in the number of religious facilities, as shown in Table 4-28. There are 139 Mosques and 68 Musholas in Pujut Sub-District. As for the affected villages, Sengkol has the most Mosques and Musholas, with totals of 17 and 23 facilities. There is no facility dedicated to other religions.

Table 4-28 Religious Facilities in Central Lombok Regency and Affected Villages, 2015

Village	Mosque	Mushola	Church	Pura	Vihara
Pujut Sub-District*	139	68	0	0	0
1. Kuta	7	17	0	0	0
2. Merta	12	7	0	0	0
3. Sukadana	9	11	0	0	0
4. Sengkol	17	23	0	0	0

Source: Pujut Sub-District in Figures, 2017.

**Data from 2016*

Table 4-29 Population Composition of Central Lombok Regency by Religion, 2016

Village	Muslim (%)	Protestant/Catholic (%)	Hindu (%)	Buddhist (%)	Total (%)
Pujut Sub-District	99.9	0.0	0.1	0.0	100
1. Kuta	99.4	0.1	0.5	0.0	100
2. Merta	99.0	0.0	1.0	0.0	100
3. Sukadana	100.0	0.0	0.0	0.0	100
4. Sengkol	99.7	0.0	0.3	0.0	100

Source: Pujut Sub-District in Figures, 2017.

Ethnicity

In Kuta village, Sasak people are the dominant ethnic group, making up 99% of the population, as shown in **Table 4-30**. There are other ethnic groups in the village, including few foreigners, but they accounted for only about 1% of the population. According to key informant interviews conducted by ESC, the ethnic composition of Mertak village is roughly composed of 94% of Sasak people, 5% Bajo people, while Balinese, Javanese and others are about 1%. Unfortunately, no ethnicity profile is available for Sukadana and Sengkol; however, they are expected to have similar ethic group composition as Kuta and Mertak with Sasak people being the dominant ethnic group.

Table 4-30 Ethnic Composition in Kuta Village, 2016

Ethnic Group	Percentage (%)
Sasak	99.02
Balinese	0.58
Sundanese	0.15
Australian	0.13
Makassar	0.05
American	0.03
Madura	0.01
Bugis	0.01
Timor	0.01
Chinese	0.01

Source: Kuta Village Profile

4.5.3.6 Indigenous People

Indigenous people are defined as a group of people that are culturally, socially or linguistically different from the mainstream population. They are generally associated within a certain geographic range either due to their connection to their ancestral lands or dependency on its natural resources. Their cultural, economic, social and political institutions are also distinct from those of the mainstream population. They can also be vulnerable as a group.

Sasak people are considered the Indigenous people in the project area. While they are the dominant ethnic group in the project area, other groups are also present, such as those from Java, Bali, South Sulawesi, Kalimantan, Sumatra, Maluku and East Nusa Tenggara. According to the AMDAL Addendum 2018, these ethnic groups have co-existed for a long time, eventually creating mix ethnicity among the current population.

The Indonesian government recognizes 1,128 ethnic groups, which includes the Sasak people. Although the Sasak people mainly converse in their own languages, they are also well-versed in the national language (Bahasa Indonesia). They are mostly concentrated within the Lombok Island and dpend on the local natural resources. For the purpose of this ESIA, Sasak people are categorised as Indigenous people.

4.5.3.7 Vulnerable Communities

The need to respect differences is paramount to the IPDP. Vulnerable (groups of) people are those who experience higher risks of impoverishment and social exclusion compared to the general population. Vulnerability may stem from an individual's or group's ethnicity, color, gender, gender identity, language, religion, age, disablement, political or different other opinion, national or social origin, property, birth, and or status. A separate consultation ftor women and vulnerable groups is normally held to accommodate the special needs of those groups and to voice hear their questions, concerns, opinions, and suggestions that normally are not unheard of. The consultation for these groups can be effective using participatory techniques. Stakeholders that are considered to be most vulnerable are listed below and might need special attention for implementation of IPDP.

- **Women** – in patriarchal societies, females can readily be overlooked or excluded in the development. Hence, specific provision must be made for women, which ensure women's needs are addressed.
- **Minorities** – the IPDP should specifically identify minorities based on religious, cultural, ethnic, or other grounds, and seek to ensure that provision is made for their equal access to the stakeholder engagement process.
- **Elderly** – the elderly are particularly vulnerable, and are easily left out or exempted from activities. Addressing their rights to express concerns, views, and cultural knowledge should be provided for.
- **Handicapped or illiterate** – the same applies as for elderly and minorities.
- **Disadvantaged isolated communities** – this group of people have little influence and power among other communities. Their rights, involvement, and equal access to stakeholder engagement should be allowed for and made available.
- **Indigenous Peoples** - social groups with identities that are distinct from mainstream society which are often among the most marginalized and vulnerable segments of the population. In many cases, their economic, social, and legal status limits their capacity to defend their rights to, and interests in, lands, natural and cultural resources, and may restrict their ability to participate in and benefit from development. This IPDP is based on the assumption that all Sasak local residents are Indigenous Peoples (IP), but the possibility that other IP groups exist among the PAP must be allowed for.

As shown under the sub-section Population by Age Group, the number of elderly -- whose age is above 65 years old – accounts for 4.8% the total population at the District level. Sasak are considered as indigenous people on Lombok. Women, on the other hand, comprise more than half of total population. These vulnerable groups should be part of the IPDP. Sasak is a predominant ethic group in Kuta Village who account for 99% of the total population.

4.5.3.8 Community Welfare

According to BKKBN (Badan Koordinasi Keluarga Berencana Nasional or National Family Planning Coordinating Board), a household's level of welfare is categorized into five groups:

1. Non-welfare – households that are not able to fulfil their basic needs, such as food, clothing, education, adequate housing and easy access to medical facilities;
2. Welfare I – households that are able to fulfil their basic needs, but not their psychological needs, such as rights to pray, ability to consume meat/fish/egg, new clothing, adequate space in their houses, adequate literacy and income.
3. Welfare II – households that are able to fulfil their basic and psychological needs, but not their developmental needs, such as information from newspapers or radio, opportunity to increase their religious knowledge, income savings as cash or tangibles, and family dinner/lunch/breakfast to enhance family communication.
4. Welfare III – households that are able to fulfil their basic, psychological and developmental needs, but not self-esteem needs, such as active participation in community/social organizations or regular donation to social causes.

5. Welfare III Plus – households that are able to fulfil their basic, psychological, developmental and self-esteem needs.

Therefore, according to the criteria above, **Table 4-31** shows the numbers of families in each of the welfare level. Based on data from the National Statistics Agency, in 2015, majority of the population in the affected villages belonged to the non-welfare level. For instance, in Mertak, 1,745 families are unable to fulfil their basic needs, such as food (at least twice a day), access to medical treatment or adequate housing. In contrast, only a handful of families could meet their basic, psychological and developmental needs; they are able to receive information, earn sufficient income, or be active in their community. For instance, Mertak only has 55 families in Welfare III level.

Table 4-31 Households by Welfare Level in Affected Villages, 2015

Village	Percentage of Households by Welfare (%)					
	Non welfare	Welfare I	Welfare II	Welfare III	Welfare III Plus	Total
Pujut	47.1	31.7	15.4	5.8	0.0	100.0
1. Kuta	49.9	30.0	14.0	6.1	0.0	100.0
2. Sukadana	60.0	28.0	8.8	3.2	0.0	100.0
3. Mertak	55.0	33.3	9.9	1.7	0.0	100.0
4. Sengkol	30.9	37.3	19.7	12.1	0.0	100.0

Source: Pujut in Figures, 2017

ESC also conducted Focus Group Discussions (FGD) from 31st August to 1st September 2018. In those discussions, ESC inquired about the community's perceptions towards welfare of a household. Majority of the participants tend to view wealthy households as those who possess an abundance of physical assets, including cars, houses, lands, cash, jewelleries and even livestock. A well-off household should also have stable jobs, thus sufficient stream of income. Some mentioned education level as an indicator of a welfare of a household. Few stated that a household's welfare can be indicated by the intangibles, such as being a tight-knit household or possessing the courage and ability to pursue their dreams. In contrast, many see poor households as those who lack basic necessities, including adequate housing, food, stable income, land and education.

4.5.3.9 Cultural Heritage

Cultural heritage is the legacy of physical objects (monuments, artefacts or areas) or intangible attributes (traditions, languages or rituals) that are passed down from the previous generations and preserved for the benefits of future generations.. The most-known cultural heritage in Pujut Sub-district is 'Bau Nyale', an annual festival where local community members (and nowadays tourists) gather to catch Nyale, a type of edible marine worm (Bachtiar et al., 2016). The festival usually takes place on the fifth day after full moon in February or March. This event is crucial from the economical, historical, sociological and ecological perspective. It is widely considered as an important tradition to the local communities.

However, since becoming a tourist attraction, the Bau Nyale festival has undergone multiple adjustments. For instance, cultural performances are no longer done by community members along with local artists; rather, the government invites artists from other cities to perform. The

traditional culture has been mixed with pop culture so as to attract more tourists. In addition, the festival has included even more people even those outside from Pujut Sub-district. Traditionally speaking, the festival is only done by community members who have blood ties with the Pujut ancestry.

As for any physical cultural heritage, the AMDAL Addendum (2018) concludes the project area does not consist of any historical artefacts with high anthropological values. However, based on interviews with community leaders as reported in the AMDAL Addendum, there is a mosque and a tomb of a religious/community leader called the Makan Soker (Syayyid Burhanuddin). The leaders expected that the area will be respected such that it can be a cultural heritage for the next generations.

Another example of cultural heritages around The Mandalika tourism resort is the Ende Tourism Village, which is located in Sengkol Village. There are 38 traditional houses that are wholly made of wood and bamboo. The roofs are made of woven alang-alang (*Imperata cylindrica*) designed to last from 80-100 years. In addition, the floors are made of *Bale Tani*, which is essentially a mixture of soil and cow or bull dung. To maintain its stability, homeowners would polish the floor with cow dung monthly. Other cultural heritages are Ancient Mosque of Pujut Mountain (*Masjid Kuno Gunung Pujut*), Ancient Mosque of Rembitan (*Masjid Kuno Rembitan*) and The Tomb of *Wali Nyatuk*. All of these are located in the Pujut sub-district. In addition to being important historical legacies, these mosques are also considered as places of worship.

Tomb of Wali Nyatuk

Ancient Mosque of Rembitan

Ende Tourism Village

Weaving at Ende Tourism Village

Source: ESC Site Visit (29 August – 3 September 2018)

Figure 4-25 Cultural Heritages

4.5.4 Economic Aspect

4.5.4.1 Land Holding

The AMDAL Addendum includes a primary survey on the ownership of lands (farms and plantations) among the local residents in the four villages, as shown in **Table 4-32.** According to the AMDAL Addendum, 46.04% of the residents own farms while 69% own plantations; however, this concept of ownership is broadly based not only on existing legal documents from government or cultural institutions, but also acknowledgments from other residents. They could own lands through clearing land themselves, purchasing existing lands or inheritance.

As can be seen from the Table, most of the respondents do not own any farms or plantations. Among those who do, majority have lands between 1000 m^2 and 5000 m^2. However, it is apparent that only 2000 to 3000 m^2 of lands are effectively utilized, which may be due to lack of manpower and capital.

Table 4-32 Farm and Plantation Ownership in Affected Villages

Area of Owned Land	Kuta	Sengkol	Mertak	Sukadana	Total	Percentage (%)
A. Farms						
less than 1000 m^2	2	3	1	0	6	3.2
1000 m^2 - 2 000 m^2	2	7	4	4	17	9.2
2001 m^2 - 3000 m^2	4	8	5	4	21	11.4
3001 m^2 - 4000m^2	3	7	6	2	18	9.7
4001 m^2 - 5000 m^2	3	4	7	3	17	9.2
More than 5000 m^2	2	5	3	3	13	7.0
No land	25	31	22	15	93	50.3
Total	41	65	48	31	185	100.0
B. Plantations						
Less than 1000 m^2	2	0	0	0	2	1.1
1000 m^2 - 2 000 m^2	4	15	5	3	27	14.6
2001 m^2 - 3000 m^2	7	9	7	4	27	14.6
3001 m^2 - 4000m^2	11	13	9	6	39	21.1
4 001 m^2 - 5 000 m^2	6	4	8	3	21	11.4
More than 5 000m2	3	3	4	4	14	7.6
No land	8	21	15	11	55	29.7
Total	41	65	48	31	185	100.0

4.5.4.2 Gross Regional Domestic Product

Gross Domestic Product (GDP) is one of the indicators of economic progress of a region; it is defined as the total value-added of goods and services produced in a year in a region.

Economic growth rate in Central Lombok Regency is summarized in **Table 4-33**. Since 2013, the Regency has seen a steady economic growth with an annual rate of 5.94%. The strongest economic growth was observed in 2013 and 2014, although it dipped to 5.67% in 2016.

Table 4-33 Growth Rate of Gross Regional Domestic Product of Central Lombok Regency at 2010 Constant Market Price

Year	Growth Rate (%)
2013	6.24
2014	6.28
2015	5.58
2016	5.67
Average	5.94

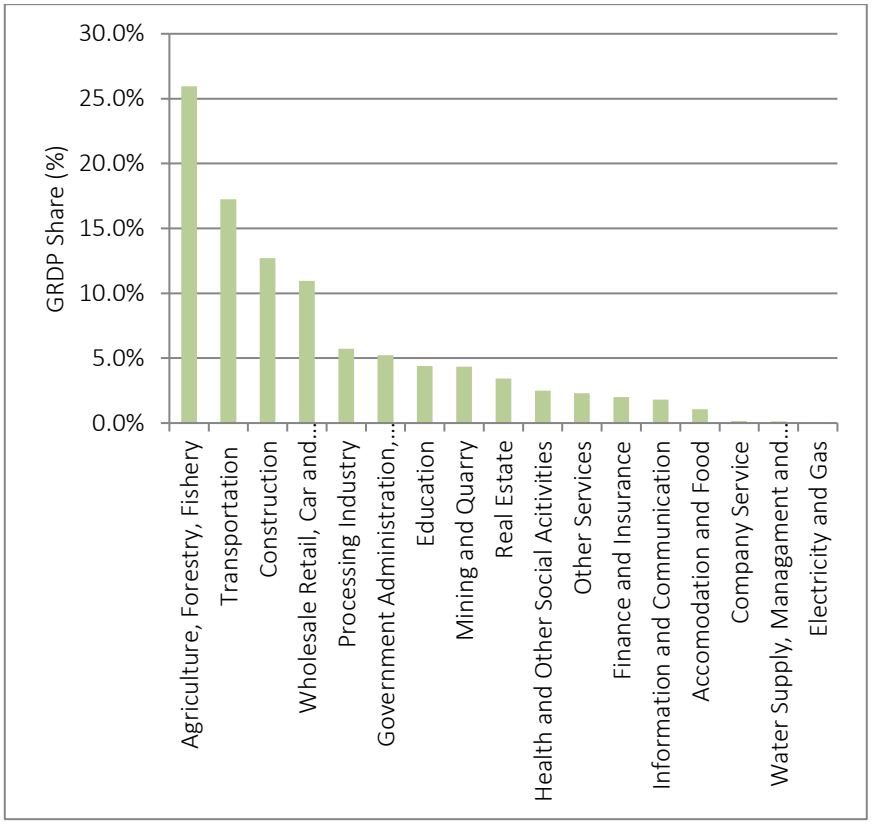
Source: Central Lombok Regency in Figures, 2017

In Central Lombok Regency, Agriculture, Fishing and Forestry is the largest sector (around 26% of the total GRDP), while Electricity and Gas is the smallest. The Transportation industry and the Construction Industry are also two of the largest – with around 17% and 12% of the total GRDP, respectively. The industry rank based on its respective GRDP contribution can be seen in and illustrated in **Table 4-34** and **Figure 4-26**.

Table 4-34 Gross Regional Domestic Product at 2010 Constant Prices by Industry in Central Lombok Regency (billion rupiahs), 2016

Industry	GRDP (2016)	Industry Share (%) to GRDP
Agriculture, Forestry, Fishery	2,817.45	26.0%
Transportation	1,872.47	17.3%
Construction	1,379.07	12.7%
Wholesale Retail, Car and Motorcycle Reparation	1,188.74	11.0%
Processing Industry	621.49	5.7%
Administration, Defence and Mandatory Social Security	568.92	5.2%
Education	475.78	4.4%
Mining and Quarry	470.92	4.3%
Real Estate	373.15	3.4%
Health Services and Other Social Activities	270.50	2.5%
Other Services	249.01	2.3%
Finance and Insurance	217.36	2.0%
Information and Communication	195.21	1.8%
Accommodation and Food	116.37	1.1%
Company Service	15.75	0.1%
Water Supply, Management and Recycling of Waste	13.54	0.1%
Electricity and Gas	8.21	0.1%
Total	10,853.94	100.0%

Source: Central Lombok Regency in Figures, 2017



Source: Central Lombok Regency in Figures, 2017

Figure 4-26 Share of GRDP of Industries in Central Lombok Regency, 2016

4.5.4.3 Labor Force and Employment

A primary survey was conducted as part of preparing the AMDAL Addendum (2018). In total, the survey involved 219 respondents from Kuta Village, 98 respondents from Sengkol, 130 respondents from Mertak and 148 respondents from Sukadan. From the results in **Table 4-35,** it can be deduced that the main occupation among the residents is farmers, followed by fishermen. Among all respondents within all affected villages, 19.2% identify as farmers, while 4.5% identify as fishermen.

Table 4-35 Occupation of Survey Respondents in the Affected Villages

Occupation	Kuta				Sengkol				Mertak				Sukadana				Total	%
	M	F	T	%	M	F	T	%	M	F	T	%	M	F	T	%		
Farmer	21	5	26	11.9	11	2	13	13.3	33	2	35	26.9	38	2	40	27.0	114	19.2
Fisherman	11	3	14	6.4	12	0	12	12.2	1	0	1	0.8	0	0	0	0.0	27	4.5
Tourist Guide	4	0	4	1.8	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	4	0.7
Hotel Manager	1	0	1	0.5	0	0	0	0.0	0	0	0	0.0	0	7	7	4.7	8	1.3
Hotel Staff	2	0	2	0.9	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	2	0.3
Driver	1	0	1	0.5	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	1	0.2
Construction Labourers	3	0	3	1.4	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	3	0.5
Livestock	1	0	1	0.5	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	1	0.2
School Management	1	0	1	0.5	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	1	0.2
Retail	2	16	18	8.2	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	18	3.0
Shops and Kiosks	3	11	14	6.4	0	0	0	0.0	0	3	3	2.3	0	4	4	2.7	21	3.5
Working abroad	0	3	3	1.4	0	2	2	2.0	0	2	2	1.5	0	3	3	2.0	10	1.7
Teacher	2	2	4	1.8	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	4	0.7
Musicians	1	0	1	0.5	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	1	0.2
Civil Servant	3	1	4	1.8	0	2	2	2.0	1	1	2	1.5	2	0	2	1.4	10	1.7
Military	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0.0
Breeder	0	0	0	0.0	0	0	0	0.0	1	0	1	0.8	0	0	0	0.0	1	0.2
Housekeeping	0	37	37	16.9	0	19	19	19.4	0	34	34	26.2	0	34	34	23.0	124	20.8
Unemployed	12	15	27	12.3	9	11	20	20.4	12	20	32	24.6	11	15	26	17.6	105	17.6
Attending School	27	31	58	26.5	16	14	30	30.6	9	11	20	15.4	13	19	32	21.6	140	23.5
Total	**95**	**124**	**219**	**100**	**48**	**50**	**98**	**100**	**57**	**73**	**130**	**100**	**64**	**84**	**148**	**100**	**595**	**100**

Note: M = Male; F =Female; T=Total

Source: AMDAL Addendum, 2018

The majority of the respondents, however, are not in the labour force (e.g. housekeeping, attending schools) or are unemployed. In fact, out of the respondents surveyed, 17.6% claim they are being unemployed, 20.8% are housekeeping and 23.5% are still in schools. The unemployment rate is substantially higher than the unemployment rate of Central Lombok Regency, which was 7.4% in 2015 (Central Lombok Regency in Figures, 2017).

4.5.4.4 Economic Livelihood in Surveyed Area

Table 4-36 summarizes the primary data collected in the AMDAL Addendum document. The income below does not include the subsistence components of income, such as food from the farmers' own crops. Among the residents surveyed in the affected villages, a majority of the respondents earn a salary above Rp. 243,000 per month. However, a substantial portion of the population earns less than Rp. 168,500 per month, substantially lower than the Provincial Minimum Wage of West Nusa Tenggara of Rp. 1,825,000 per month. Remittances from abroad and other parts of Indonesia of labor migrants are not accounted for with available data. They are known to be significant for West Nusa Tenggara Province.

However, based on the interviews with key informants conducted by ESC, it is known that the current salary of residents in the Project area tends to be above Rp. 1,000,000. For instance, based on the interviews, the average income of residents in Sukadana village is about Rp. 1,500,000 while the residents in Kuta Village generally earn more than Rp. 2,500,000. The relatively higher salary range in Kuta Village is due to new employment opportunities and business ventures, such as vehicle rentals, as a result of the growing tourism sector. In Mertak Village, on the other hand, the average income is still less than Rp. 1,000,000, with the income of farmers at about Rp. 50,000 per day.

Table 4-36 Cash Income per capita (monthly) of affected villages based on primary survey, 2017 (not including subsistence components of income)

Cash Income per capita	Kuta	Sengkol	Mertak	Sukadana	Total	%
< Rp 168,500	4	14	7	11	36	19.5
Rp 168,500 - Rp 199,000	9	5	4	4	22	11.9
Rp 199,000 - Rp 243,750	10	5	8	3	26	14.1
> Rp 243,000	18	41	29	13	101	54.6
Total	**41**	**65**	**48**	**31**	**185**	**100**

Source: AMDAL Addendum, 2018

4.5.4.5 Expenditure for Community Development

In Indonesia, there exists a mechanism to alleviate poverty and reduce unemployment level at the village-level, PNPM (*Program Nasional Pemberdayaaan Masyarakat Mandiri Pedesaan* or the National Prgram for Development of Independent Communities in Villages). Based on data from the National Statistics Agency, the expenditures for this program are compiled in **Table 4-37.** Mertak has the most funds allocated for community development, while Sengkol has the least. In fact, Sengkol's fund is dwarfed in comparison to those of other villages. It has only 19 million Rupiah for the PNPM Mandiri program, while Mertak has almost 300 million Rupiah. This can possibly be explained, however, by the income and welfare data by village presented above. It can

be noted (Table 4-36) that Sengkol has the largest percentage of people in the highest income bracket (63%), compared to 43% in Kuta and 42% in Sukadana. Mertak does have the second highest at 60%. Per **Table 4-31**, Sengkol has the lowest percentage in the Non-welfare category while Mertak has the second highest. Sengkol also has the highest percentage in the Welfare III category (almost double that in Kuta), while Mertak has by far the lowest.

Table 4-37 Expenditures of PNPM Mandiri, 2015

Village	Community Development Fund (Rupiah)
Kuta	162,351,600
Sukadana	276,596,300
Mertak	289,071,900
Sengkol	19,805,706
Pujut Sub-District	2,769,600,000

Source: Pujut Sub-District in Figures, 2017

4.5.4.6 Poverty Conditions

Poverty is viewed as lack of income/ expenditure of a person to meet daily food and non-food basic needs including food, clothing, and shelter. A person whose income per capita per month is below the poverty line is considered poor. **Table 4-38** shows the poverty line and number of poor people for Provincial and Regency levels. Poverty line in 2012 was Rp 285,665 and slightly increased, adjusting to the inflation rate, to Rp 355,337. Number of poor people in the last 5 years in West Nusa Tenggara slightly decreased from 18.63% in 2012 to 16.07% in 2017 of total Provincial population. Similarly, the percentage number of poor people at the Regency level of Central Lombok also slightly decreased from 16.72% in 2012 to 15.80% in 2016. The number at both Provincial and Regency levels is considered high at above 10 percent of total population. There are no poverty data available at the District and village levels, nor data for other vulnerable groups.

Table 4-38 Poverty Line and Number of Poor People in West Nusa Tenggara 2012-2016 and Central Lombok Regency, 2012-2017

Year	Poverty Line (Rupiah)	Number of Poor People			
		West Nusa Tenggara		Central Lombok Regency	
		Total	Percentage	Total	Percentage
2012	285,665	862,516	18.63	148,200	16.72
2013	306,311	843,660	17.97	145,200	16.20
2014	319,518	820,818	17.24	145,180	16.03
2015	335,286	823,890	17.10	147,940	16.26
2016	357,337	804,445	16.48	145,370	15.80
2017	n.a	793,776	16.07	n.a	n.a

Source: West Nusa Tenggara in Figures 2017 and National Socio Economic Survey in West Nusa Tenggara in Figures 2017

4.5.5 Transportation Aspect

4.5.5.1 Road

Majority of the roads in Pujut Sub-District and the affected villages are dirt roads. Out of 816-km of roads in Pujut Sub-District, 71.9% are dirt roads (unpaved) while only 17.6% are paved with asphalt. Similarly, the roads in the affected villages are mostly dirt roads; for example, 70% of Kuta village's roads and 87% of Sukadana village's roads are unpaved.

Table 4-39 Length Roads by Type in the Affected Villages as Percentages, 2015

Locations	Asphalt		Hardened		Soil		Total
	Length (km)	%	Length (km)	%	Length (km)	%	
Pujut Sub-District	144	17.6	85	10.4	587	71.9	816
1. Kuta	20	25.0	4	5.0	56	69.7	80
2. Sukadana	4	8.7	2	4.3	40	86.7	46
3. Mertak	17	17.3	3	3.1	78	79.4	98
4. Sengkol	10	11.2	6	6.7	73	81.9	89

Source: Pujut Sub-District in Figures, 2017

4.5.5.2 Land Transportation

As shown in **Table 4-40**, majority of people in both Pujut Sub-District and the affected villages rely on motorcycles as their primary mode of transportation. For instance, there were 5,558 motorcycles in Pujut Sub-District (or about 64.7% of the total land transportation) in 2016. The affected villages also had similar numbers. More than 60% of the total land transportations in all respected villages were motorcycles. However, aside from motorcycles, the residents also seemed to depend on bicycles to get around. In fact, there were 2,175 bicycles in Pujut Sub-District alone. Among the affected villages, Sengkol and Kuta have the highest numbers of bicycles with 264 and 180 bicycles, respectively. The abundance of motorcycles in the area could reflect the income level of the residents. Such heavy reliance on motorcycles as their mode of transportation, like many in Indonesia, indicate that they are at least able to afford fuels, albeit it being cheap in Indonesia. The fuel cost in Indonesia is typically less than a dollar per litre. In West Nusa Tenggara, the price of fuel ranges from Rp 7,800.00 (0.52 USD) to Rp 12,100.00 (0.81 USD) (Kompas, 2018), depending on the type of fuel.

Table 4-40 Number of land transportation in Pujut Sub-District, 2016

Location	Wagon	Bicycle	Colt/Bus/Truck	Motorcycle	Total
Pujut Sub-District	110	2,175	744	5,558	8,587
1. Kuta	23	180	93	593	889
2. Sukadana	7	107	28	270	412
3. Mertak	0	171	28	326	525
4. Sengkol	18	264	87	706	1,075

Source: Pujut Sub-District in Figures, 2017

4.5.5.3 Air Transportation

The main airport in Lombok island is the Lombok International Airport (IATA: LOP, ICAO: WADL), which was officially inaugurated in 2011, eventually replacing the Selaparang Airport as the island's only fully operational airport. With a 2,750-km runway, it can accommodate both wide-body and smaller aircrafts. It serves various domestic and international airlines, such as AirAsia, Batik Air, Citilink, Garuda Indonesia, Korean Air, Lion Air, Name Air, SilkAir and Wings Air.

In 2016 alone, it served 34,975 domestic airplanes and 1,967 international airplanes, as well as 3,156,918 domestic passengers and 1,967 international passengers. These are shown in **Table 4-41.**

Table 4-41 Amount of Domestic and International Airplanes, Passengers, Baggages and Cargos arriving and departing from International Lombok Airport in 2016

Type	Status			Total
	Arrival	Departure	Transit	
Domestic				
Airplane	15,415	15,422	4,138	34,975
Passengers	1,562,785	1,471,894	122,239	3,156,918
Baggage	11,079,776	11,081,336	-	22,161,112
Cargo	5,523,627	6,392,811	-	11,916,438
International				
Airplane	990	977	-	1,967
Passengers	139,851	124,815	-	264,666
Baggage	1,665,538	893,208	-	2,558,746
Cargo	381	79,959	-	80,340

Source: Central Lombok in Figures, 2017

4.5.5.4 Electricity Network

Out of the 30,036 households in Pujut Sub-District in 2015, a majority were powered with electricity. Only a mere 4.2% were not. Like Pujut Sub-District, the affected villages (Kuta, Sukadana, Mertak and Sengkol) also boasted high electrification ratio, which ranged from 91.8% in Mertak to 99.5% in Sengkol.

Table 4-42 Number of households in Pujut Sub-District that are electrified, 2015

Locations	Total number of household	Number of households with electricity	Percentage (%) of household with electricity
Pujut Sub-District	30,036	28,777	95.8
1. Kuta	2,239	2,159	96.4
2. Sukadana	1,579	1,488	94.2
3. Mertak	2,340	2,147	91.8
4. Sengkol	3,180	3,165	99.5

Source: Pujut Sub-District in Figures, 2017

4.5.5.5 Communication/Media

In Pujut Sub-District and two of the affected villages, Kuta and Sukadana, radios and televisions are still prevalent as a form of communication and source of information. For example, in 2016, there were 11,232 televisions and 2,379 radios in Pujut Sub-District. Records from the National Statistics Agency showed that Kuta had considerably more televisions, but fewer radios, than Sukadana. There is only one post office in Pujut Sub-District, and it is located in Sengkol Village. Sengkol Village also happens to have the most radios and televisions among the affected villages.

Table 4-43 Number of Communication Facilities in Pujut Sub-District, 2016

Locations	Post Office	Radio	Television	Telephone
Pujut Sub-District	1	2,379	11,232	17
1. Kuta	-	130	660	9
2. Sukadana	-	183	317	-
3. Mertak	-	234	267	-
4. Sengkol	1	288	2,211	8

Source: Pujut Sub-District in Figures 2017

4.5.5.6 Land Use

As shown in **Table 4-44**, the dominant land use in Pujut Sub-District, as well as Kuta village, is dry land, which is characterized by a scarcity of water. The second most dominant cover is agricultural land, which covers up to 29.1% of the land – perhaps not surprising since the agriculture industry is the largest in the Regency. Large amount of land is similarly observed in other affected villages, namely Sukadana, Mertak and Sengkol, at more than 20% of the total area each. On the other hand, Kuta only has a small area of agricultural land – around 4%.

Forests are not a dominant land cover in Pujut Sub-District; however, as can be seen in , it covers significant swaths of land in both Kuta and Mertak village. In fact, it covers around 32% of the lands in both Kuta and Mertak.

Table 4-44 Land Cover (ha) in Pujut Sub-District, 2015, in Percentage

Village	Agricultural Land		Dry Land		Building		Forest		Others		Total
	Area	%	Area	%	Area	%	Area	%	Area	%	
Pujut Sub-District	6,785	29.1	9,906	42.4	3,158	13.5	2,003	8.6	1,503	6.4	23,355
1 Kuta	100	4.0	1,446	57.4	143	5.7	812	32.3	16	0.6	2,517
2 Sukadana	196	22.2	192	21.8	494	56.0	0	0.0	0	0.0	882
3 Mertak	227	24.0	286	30.2	94	9.9	312	32.9	28	3.0	947
4 Sengkol	725	29.7	719	29.4	263	10.8	0	0.0	738	30.2	2,445

Source: Pujut Sub-District in Figures, 2017

4.5.6 Public Health Aspect

4.5.6.1 Health Facilities

The following **Table 4-45** shows the numbers of health facility in the affected villages. These are derived from the village profiles documents as obtained by ESC; where data for some facilities are not available from the profiles, these are completed from AMDAL Addendum (2018). This rings true for Kuta and Sengkol Village, in which the data on health facilities is lacking. Kuta Village possesses the highest number of health facilities, from pharmacy to community health centre (*Puskesmas*). In contrast, there is no recorded health facility in Mertak Village. The most prevalent health facility in Sukadana and Kuta Village is the *Posyandu* or the Integrated Service Post. In Indonesia, Posyandu refers to a medical event organized by and for the community, with guidance from trained medical personnel. No health facility is recorded on the Mertak Village Profile.

Table 4-45 Health facilities in the affected villages.

Health Facilities	Sukadana	Kuta	Sengkol	Mertak
Puskesmas (Community Health Centre)	0	1	1	0
Pustu (Community Health Sub-center)	1	5	4	0
Polyclinic	0	2	0	0
Posyandu (Integrated Service Post)	14	21	88	0
Maternity Hospital	2	2	0	0
Total	17	31	93	0

Source: Kuta Village Profile 2017; Sukadana Village Profile 2017; AMDAL Addendum 2018; Mertak Profile 2017

4.5.6.2 Health Workers

Based on available data from the village profiles (acquired during ESC's site visits), this sub-section compiles the number of health workers in each affected village. Where data for some workers are not available from the profiles, these are completed from AMDAL Addendum (2018). This rings true for Kuta and Sengkol Village, in which the data on health workers is lacking. The most common health worker in Sukadana and Mertak Villages are trained maternal witch doctors (*dukun persalinan terlatih*) who are traditional yet informal witch doctors, usually prevalent in rural areas. There are 16 and 10 of these witch doctors in Sukadana and Mertak Villages, respectively. Moreover, in these villages, midwives are nurses are also prevalent. In Kuta Village, there are 28 nurses and 7 midwives.

Table 4-46 Number of health workers in the affected villages

Occupation	Village			
	Kuta	Sukadana	Mertak	Sengkol
Dentist	1	0	0	0
Trained maternal witch doctor	1	16	10	0
Midwife	7	8	3	10
Nurse	28	7	2	31

Medical witch doctor	0	0	0	4
Doctor	1	0	0	3

Source: Kuta Village Profile 2017; Sukadana Village Profile 2017; AMDAL Addendum 2018; Mertak Profile 2017

4.5.6.3 Prevalent Diseases in Surveyed Area

The following data on the most prevalent diseases is referred from the AMDAL Addendum (2018), which combines available data from Kuta, Sengkol and Truwai Villages. It is worth noting that Truwai Village does not overlap with the Project Area. Nevertheless, the most common disease found is acute infections in the upper respiratory system, at 19% of the total cases. Muscle pain is also fairly common, attributing to 15% of the total cases. Other common diseases are skin infection and diarrhoea at 15.2% and 8.6%, respectively.

Table 4-47 Ten (10) most common diseases in Kuta, Sengkol and Truwai Village

No	Types of Disease	%
1	Acute diseases in the upper respiratory system	19.7
2	Muscle pain	15.4
3	Skin infection	15.2
4	Other diseases	13.6
5	Diarrhea	8.6
6	Skin allergy	7.7
7	Gastritis	5.9
8	Other diseases in the upper respiratory system	5.6
9	Fungal skin diseases	5.0
10	Hypertension	3.3
Total		**100**

Source: AMDAL Addendum 2018

4.5.6.4 Sanitation

Table 4-48 presents a summary of the sanitation facilities within the affected villages, concerning infiltration wells, MCK (*Mandi Cuci Kakus*, which is a communal facility for taking bath, washing and defecating), households with toilets and the availability of drainage system. This summary is obtained from the village profiles acquired by ESC during the site visits. Based on these documents, Kuta Village is the only one with infiltration wells; in fact, 120 households owned such facility. MCK facility is also prevalent in the affected villages, particularly Mertak and Kuta Villages, although none is available in Sukadana Village. In addition, Mertak village does not have an established drainage system, whereas Sukadana and Kuta Villages do. Unfortunately, no data on the sanitation facilities is available on the Sengkol Village Profile.

Table 4-48 Sanitation Facilities in the affected villages.

Sanitation Facility	Mertak	Sukadana	Kuta
Number of household infiltration wells	0	0	120

Public MCK (Mandi Cuci Kakus)	10	0	12
Number of household with toilets	1,237	615	400
Drainage system/wastewater disposal system	None	Present	Present

Source: Kuta Village Profile 2017; Sukadana Village Profile 2017; Sengkol Profile 2017; Mertak Profile 2017

4.5.6.5 Clean Water

Table 4-49 presents the types and numbers of clean water sources in the affected villages, as outlined in the village profiles that were acquired by ESC. Majority of the residents still rely on wells, either dug wells or well pumps, to obtain their share of clean water. For instance, there are 1,465 dug wells and 506 well pumps in Mertak Village alone. There are also 18 retention basins accessible to the villagers for their clean water. Aside from the well pumps and dug wells, the residents of Kuta and Sukadana Villages also rely on spring water. In the affected villages, there is no public hydrant, rainwater tank and water treatment facility. Unfortunately, no data on sources of clean water is available on the Sengkol Village Profile.

Table 4-49 Sources of clean water in the affected villages

Source	Number of facility		
	Sukadana	Kuta	Mertak
Well pump	37	58	506
Dug well	58	267	1465
Public hydrant	0	0	0
Rainwater tank	0	0	0
Clean water tank	1	0	0
Retention basin	0	0	18
Spring	1	1	0
Water treatment facility	0	0	0

Source: Kuta Village Profile 2017; Sukadana Village Profile 2017; Sengkol Profile 2017; Mertak Profile 2017

4.6 Environmental Sensitive Areas

4.6.1 Sensitive Habitats

4.6.1.1 Gunung Tunak Nature Recreation Park

Gunung Tunak Nature Recreation Park (NRP) is a natural tourist park located at the southern tip of Lombok Island where it directly faces the Indian Ocean. It is located approximately 5 km from the project area, separated by Kelili Bay. The landscape in this NRP is dominated by dry evergreen forest (JIFPRO 2015).

This NRP was established in August 9th 1996 based on the Minister of Forestry Decree Letter No. 425/Kpts/1996 with an area of 312 Ha. This area would then be enlarged two times in 1998, to 624 Ha (based on MoH Decree Letter No. 52/Kpts-II/1998), and 2009, to 1,218 Ha (based on MoH

Decree Letter No. 598/Menhut-II/2009). Before it was established, it was a Convertible Production Forest as well as land belonging to the village.

According to the IUCN Protected Area Categories, Gunung Tunak NRP is classified as Category V. Category V Protected Area is fulfils the following essential characteristics (IUCN 2018): 1) Landscape and/or coastal and island seascape of high and/or distinct scenic quality and with significant associated habitats, flora and fauna and associated cultural features; 2) A balanced interaction between people and nature that has endured over time and still has integrity, or where there is reasonable hope of restoring that integrity; and 3) Unique or traditional land-use patterns, e.g., as evidenced in sustainable agricultural and forestry systems and human settlements that have evolved in balance with their landscape. In summary, Gunung Tunak NRP fulfils all of these categories.

Gunung Tunak NRP, together with several other protected areas, is part of the remaining forest remnants of south Lombok (JIPFRO 2015). The surrounding area of the NRP, including the project location, is dominated by dry agriculture and other types of modified habitat. Inadvertently, this area has become a wildlife refuge in the area and is essential to the region as a whole. In addition, the Gunung Tunak NRP area overlaps with Bumbang Key Biodiversity Area in south Lombok (see subchapter **4.4.3.1**) (IBAT 2018) where globally threatened bird species identified by BirdLife International were reportedly found in the area, such as the Java Sparrow (*Lonchura oryzivora*).

In addition, the coastal area of Gunung Tunak NRP is used as sustainable fishing area. The fishing area encompasses much of Gerupuk Bay and Bumbang Bay. This is proof that human practices are still present in the area, although the practice is limited to traditional and sustainable fishing.

4.6.1.2 Tanjung Tampa Nature Recreation Park

Tanjung Tampa Nature Recreation Park (NRP) is a natural tourist park located at the south area of Lombok Island where it directly faces the Indian Ocean. It is located directly on the west side of the project area. Tanjung Tampa is situated at an elevation between 0 and 170 masl, with various landscape profiles from flat, decline to incline.

This NRP was established in October 2nd 2009 based on the Minister of Forest Decree Letter No. 598/Menhut-II/2009 with an area of 931,4 Ha. Administratively, it is located within the jurisdiction of two districts, namely Praya Barat District and Pujut Sub-District. In size, it is comparatively smaller than Gunung Tunak. Nonetheless, it is also of the few remaining dry evergreen forest areas of south Lombok.

Animals that are commonly found in these area are grey monkeys or long tailed monkeys (*Macaca fascicularis*), snakes (*Colobridae* spp.), Asian water monitors (*Varanus salvator*), Asian palm civets (*Paradoxurus hermaphroditus*), *Junglefowl* (Gallus sp), spotted doves (*Streptoplia chinensis*), and few rare birds such as kingfisher (*Halcyon laruti*), red backed sea eagly (*Haliastur indus*), helmeted friarbird (*Philemon buceroides*), and little Wgret (*Egretta garzetta*). The common plants are *Schleira oleosa*, *Leucaena glauca*, *Tamarindus indicus*, Beringin, *Hibiscus tiliaceus* dan *Centella asiatica* (BKSDA NTB 2018).

Similar to Gunung Tunak NRP, Tanjung Tampa is also classified as IUCN Protected Area Category V. Like Gunung Tunak, it also consists of small remnants of dry evergreen forest, which is important as a wildlife refuge to the landscape as a whole. In addition, the location of Tanjung Tampa is very

close to Kuta Beach, where the annual *Bau Nyale* tradition is conducted. Thus, it can be said that Tanjung Tampa area is open to traditional human practice. However, it is important to note that studies in Tanjung Tampa are very limited to conclude the ecosystem characteristics of the area.

4.6.1.3 Mangrove Forest, Seagrass and Coral Reef

Mangrove forest, seagrass and fringing reef can be found within the vicinity of the project location. The mangrove area is located mostly on the west coast of Gerupuk Bay, with small patches that can be found on the east coast of Gerupuk Bay and downstream area of Eat Ngolang. The seagrass area stretches from Kuta Bay to Kelili Bay. As for the reef, it can be found in almost all parts of the coastal area near the project location.

The presence of mangrove is often linked to seagrass and coral reef, which is true in the study's case. Mangrove trees, seagrass, if present, and corals are all foundation species that support entire ecosystems (Moberg and Folke 1999 in Gillis et al. 2014). Through a complex process of nutrient uptake and organic matter production, the organisms themselves develop and improve their own habitat as well as create habitat for other species (Bruno et al. 2003 in Gillis et al. 2014). The simplest example is how mangrove litter provides nutrients to the seabed, which helps the flourishing of seagrass. This cycle of nutrient exchange within the landscape help sustain mangrove, seagrass and coral reef as a whole.

The existence of this landscape is essential for many forms of life. Mangrove areas, or coastal wetland in general, are important refuges for migratory birds (Crossland and Sinambela 2005). Seagrass area often serves as a nursery ground for Cetacean mammals (Kawaroe et al. 2016). Coral reef, due its unique formation, has become home to a unique set of species (Maragos et al. 1996).

4.6.2 Sensitive Receptors

4.6.2.1 Wildlife and Aquatic Species

Migratory Birds

Christmas Frigatebird (Fregata andrewsi)

The Christmas Frigatebird (*Fregata andrewsi*) is endemic as a breeding species to Christmas Island, Australia. During nonbreeding season, which occurs biennially, it has been detected in several areas in the Indo-Malay Archipelago and Thailand. Its migratory range comprises of the southern islands of Indonesia, including Java, ranging to the Indochina region (Hames 2004, James 2006 in IUCN 2018).

The Christmas Frigatebird mainly inhabits tall forest trees of the coastal area. Species such as *Terminalia catappa* and *Celtis timorensis* make up most of its nest (Hill and Dunn 2005 in IUCN 2018). In foraging, it reportedly feeds on small marine creatures (e.g. squids) and is dependant of subsurface predators to drive prey to the surface (Hennicke et al. 2015). Therefore, the existence of shallow water fishes may also be important for the birds' presence. From this description, it can be said that the Christmas Frigatebird is usually found in coastal trees close to shallow waters with abundant fishes.

In terms of the project location, the Christmas Frigatebird was reported to occur in the adjacent mangrove remnants. The mangrove remnants near the project location are located within proximity to the fringing reef, which may be abundant with food source for the birds.

Rainbow Bee-eater (Merops ornatus)

The Rainbow Bee-eater (*Merops ornatus*) is a common species in southern Australia. It generally stays in southern Australia during summer, yet migrate in the winter to northern Australia, New Guinea, and southern Indonesia (Pizzey and Knight 1997).

The Rainbow Bee-eater can inhabit a wide range of habitats, such as open woodlands, beaches, mangroves, as well as parks (Smalley et al. 2016). In general, they are ground-nesting birds, in which they do not require tall trees for nesting. They nest by developing a burrow on the ground (Bolland 2004). They feed mostly on flying insects, especially bees.

In terms of the project location, the Rainbow Bee-eater was reportedly found in all locations around the project. This is consistent to its capacity to inhabit open and modified habitats.

Prone to Poaching: Java Sparrow (Lonchura oryzivora)

The Java Sparrow (*Lonchura oryzivora*) is endemic to the Java, Bali and Madura area. It usually occurs in lowland areas (below 500 m asl) and has been reported in both natural and modified habitats (IUCN 2018). They usually occur in large flocks.

The main threat for the Java Sparrow is its significant towards the domestic and international cage-bird trade (CITES 1995 in IUCN 2018). This bird has been in the market for centuries, which is the main cause for its declining population. Due to the large size of its flocks, it has become susceptible to mass trapping. Currently, the bird is enlisted to CITES Appendix II as a mitigation measure towards poaching.

Despite its endemicity in Java and Bali, the Java Sparrow was reported to be found in all survey locations within the project area. It can be concluded that this species is highly susceptible towards developed areas as poaching is generally promoted by increased human access. Therefore, this species is considered sensitive due to its increased likelihood for poaching due to the increasing human factors surrounding its habitat.

Marine Turtles

According to IBAT data, marine turtles reported in the coastal area near the project location are the Hawksbill turtle (*Eretmochelys imbricate*), Leatherback turtle (*Dermochelys coriacea*), Green turtle (*Chelonia mydas*), and Olive Ridley turtle (*Lepidochelys olivacea*). As of this study, there is still lack of information regarding the exact presence of marine turtles within the project vicinity. Available information from the MoEF and MoMAF suggested that the main hatchery in Lombok is at Gili Terawangan. However, it should be anticipated that many marine turtles would pass by the project coatal area, as it is part of the migration route.

Based on direct observation, there is proof that marine turtles pass through the project coastal area. According to a picture taken at Novotel Lombok Resort and Villas, a turtle nesting site is located just near from the resort. Novotel itself is located within the project boundary. Therefore, this is proof that marine turtles are present at the project location.

Figure 4-27 Signage of Turtle Nesting Habitat at Novotel Lombok Resort and Villas.

Nyale Worms (Eunice siciliensis)

Based on its use as well as available data, nyale worms are concluded as sensitive receptors. Nyale worms (*Eunice siciliensis*) are essential to the sustained practice of Bau Nyale tradition (subchapter **4.6.2.2**). Based on a study by Soemodinoto (2014), Nyale worms are considered stenothermic-thermophiles, which mean they favour warm waters yet are tolerant to a very limited temperature range. Therefore, an abrupt change in the coastal environment may significant affect their population size. In terms of habitat, Nyale worms live approximately at a depth of above 10 m below sea level in a variety of habitats, from sponges, coral reef, dead corals, and seagrass.

4.6.2.2 Human Activities

Claimed and Enclaved Land

Based on available information, there are claimed and enclaved lands within the project area. Claimed land is land owned by the Company yet is also claimed to be owned by other parties. Enclaved land is land owned by the local community and is currently in negotiation for land acquisition. Several of these land parcels are located inside the project area, in which it has become sensitive receptors of the project impacts.

These land parcels are filled with human settlements and small enterprises that occur due to the emerging tourism around Kuta Bay. The settlement in this area is either semi-permanent or permanent, which would be subject to resettlement after project commencement. Business enterprises would also have to be resettled.

Source: Baseline Study, 2018

Figure 4-28 Business Enterprises at Kuta Bay Area

Cultural Heritage: Bau Nyale

The Bau Nyale Tradition is an annual tradition conducted by the Sasak people in Central Lombok. This tradition consists of catching (*Bau*) sea worms (*Nyale*) at three different locations: Kuta Beach, Seger Beach and Belanak Beach. This traditional ceremony is based on the local folklore regarding the Princess The Mandalika. To this day, *Nyale* appear once a year on the shore of Lombok beaches and are considered as the reincarnation of Princess The Mandalika.

Kuta Beach, one of the beaches where the Bau Nyale is conducted, is part of the project location. The presence of sea worms must be sustained to enable the continuation of the Bau Nyale. Thus, Kuta Beach is identified as sensitive receptor for its culture significance.

The Nyale worms are also considered as sensitive receptors, as shown in subchapter **4.6.2.1**.

Fishery Grounds

Based on the satellite imagery, a large number of *keramba* or cage culture is found at Gerupuk Bay and Bumbang Bay. This is synonymous with the sustainable fishery zone in Gunung Tunak NRP, where the cage cultures are located. This indicates high fishery culture within the local community. Although cage cultures were not detected in the immediate coastline of the project area, project operation activities may affect the cage cultures located adjacent to the project.

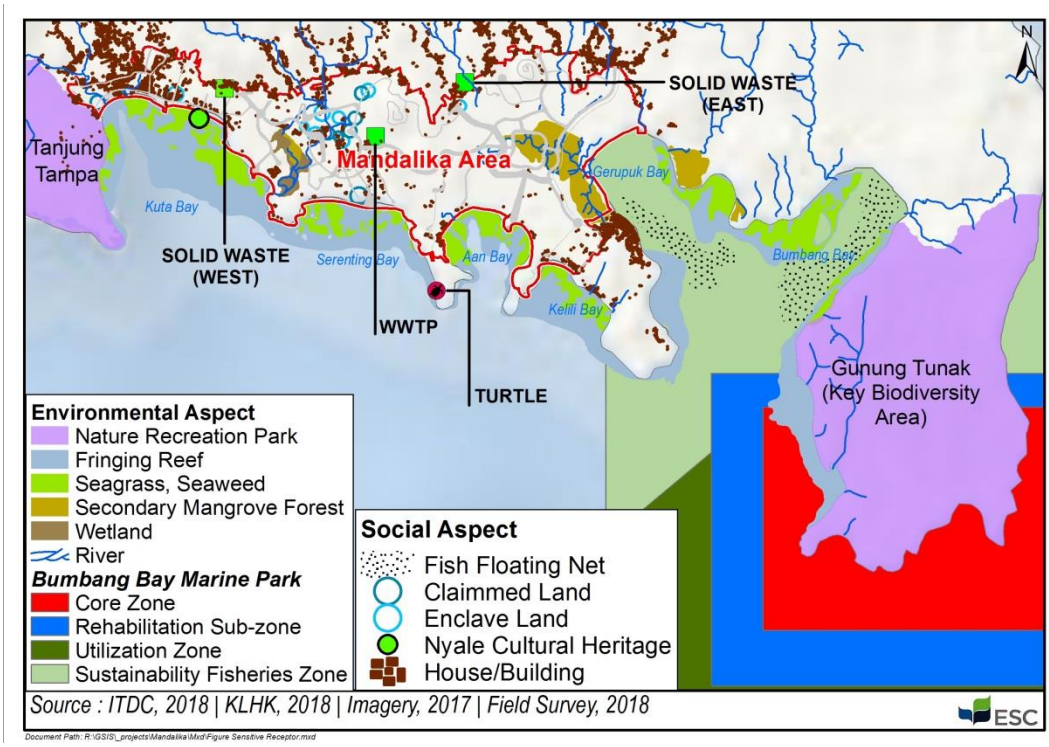


Figure 4-29 Sensitive Receptors

CHAPTER 5
ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT AND MITIGATION MEASURES

This Chapter outlines the key Project-related physical, biological, and socioeconomic and cultural impacts, and provides an assessment of anticipated residual effects and associated mitigation measures. Impacts were considered for the design, construction, and operations phases.

5.1 Impact Assessments 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, i.e., the remaining impacts after the implementation of all mitigation measures.

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. **Figure 5-1** provides a summary of this approach.

As such, throughout the life of the Project, avoidance of environmental and social risks and impacts will be the preferred option. In cases where compete avoidance of significant impacts is not possible or feasible, the following actions will apply in order of preference: minimization, restoration/ remediation, and as a last resort, compensation or offset (**Figure 5-1**).

Where identified significant risks and impacts cannot be avoided, thereby resulting in residual impacts, monitoring and management of potential impacts will be implemented for the life of the Project to ensure operation in compliance with applicable laws and regulations, and meeting all requirements of the AIIB Environmental and Social Standards 1 to 3, as contained in the Project ESMS.

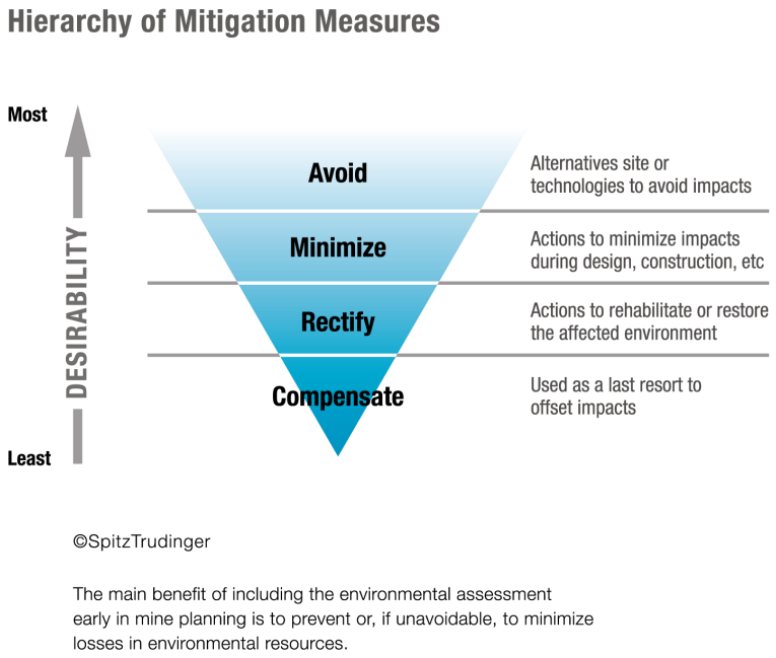


Figure 5-1 Hierarchy of Mitigation Measures

5.2 Scoping and Summary of Potential Impacts

This Project represents a broad infrastructure development within a relatively underdeveloped region of Indonesia. As an underdeveloped area, it currently suffers from a lack of environmental and social infrastructure, resulting in a somewhat degraded environmental condition with relatively few social institutions and safeguards in place. As such, this Project largely represents an opportunity to provide improvements to existing environmental and social circumstances within and around the Project Area.

However, the Project will involve environmental and social risks, typical of large infrastructure and construction projects. The majority of potentially negative impacts are expected to occur during the construction phase, largely due to elevated environmental and social risks typically associated with construction phases. 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, social institutions, and community infrastructure improvements, anticipated improvements include better ground water, surface water, and sea water quality, ultimately resulting in significantly improved environment conditions for local residents 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 access to health care, education, training, and support for vulnerable groups.

Table 5-1 provides a scoping and summary of the potential Project-related impacts assessed in this ESIA. Detailed component-specific assessments are provided in **Section 5.3** (Design Phase), **Section 5.4** (Construction Phase), and **Section 5.5** (Operations Phase).

Table 5-1 Scoping and Summary of Potential Project-Related Impacts

Component	Anticipated Impact Positive/Negative (+/-)	Significance 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

Component	Anticipated Impact	Significance
	Positive/Negative (+/-)	Significant (SIG) Not Significant (ns)
Ground Water Quality	+	SIG
Surface Water Quality	+	SIG
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

5.3 Design Phase

5.3.1 Potential Physical Impacts

Design of the Project involves the planning of physical Project layout and associated infrastructure, combined with design criteria for the various Project components. As such, most, if not all, Project components and planned layout will affect physical components of this Project throughout the life of Project by impacting the way the Project interacts with the environment over the long term. Specific physical impacts assessed in this ESIA are:

- Air Quality
- Noise
- Groundwater Quality
- Surface Water Quality
- Seawater Quality

In this way therefore, design criteria decided upon during the Design Phase can have long-term impacts on Project outcomes and subsequent physical impacts on the environment. Specifically,

design criteria are established with the goal of minimizing environmental impacts, while maximizing Project-related benefits. Important environmental design criteria of this nature on this Project include:

- Water Management System
- Drainage Control Structures
- Wastewater Treatment Plants (WWTP)
- Seawater Reverse Osmosis Facility (SWRO)
- SWRO Brine Discharge System
- Transportation Network

Through the use of modern, international-standard, state-of-the-art designs of these important Project components, it is anticipated that impacts on critically important environmental components will be avoided or minimized, or, in many cases improved or enhanced. **Table 5-2** outlines potential physical impacts and mitigation measures during the design phase.

Table 5-2 Potential Project-Related Physical Impacts and Mitigation Measures during Design Phase

Potential Impacts	**Mitigation** Measures
Sensitive Receptors: • **Air Quality** • **Noise** • **Water Quality (Ground Water, Surface Water, Seawater)**	
<u>Positive</u>: • Emphasis on avoidance and minimization of impacts on physical components through the use of state-of-art environmental design criteria, including the following important Project components: ○ Water Management System ○ Drainage Control Structures ○ Wastewater Treatment Plants (WWTP) ○ Seawater Reverse Osmosis Facility (SWRO) ○ Brine Discharge System ○ Transportation Network • Environmental design criteria for Project components are anticipated to provide major significant positive benefits to physical environmental components – in particular, water quality (ground, surface, sea) which is anticipated to be largely improved from baseline conditions over the life of the Project <u>Negative</u>: • Minor risks associated with design flaws and errors leading to inadequately designed and planned facilities and infrastructure	• Environmental design criteria of Project components and physical layout are based on the following: ○ Modern, state-of-art design concepts and engineering ○ Prepared by appropriately qualified and experience personnel – specifically including environmental professionals ○ Adequate preparation time and resources ○ Thorough peer-review and consultation • Overall objectives of design phase criteria are avoiding or minimizing environmental impacts while maximizing Project benefits • No design criteria shall be permitted that is anticipated to directly or indirectly result in significant negative environmental impacts

5.3.2 Potential Biological Impacts

Similar to potential physical impacts, design of the Project involves the planning of Project layout and associated infrastructure, combined with design criteria for the various Project components. As such, most, if not all, Project components and planned layout will affect biological components of this Project throughout the life of Project by impacting the way the Project interacts with the environment over the long term. As is often the case, physical Project-related impacts result in consequential indirect impacts on biological components. An important example of this relationship is physical impacts on seawater quality, and the resulting indirect impacts on marine ecosystems within the Project Area of Influence.

Specific biological impacts assessed in this ESIA are:

- Terrestrial Flora
- Terrestrial Fauna
- Marine Biota
- Marine Turtles
- Mangrove Ecosystems
- Coral Reef Ecosystems
- Seagrass Ecosystems

In this way therefore, environmental design criteria decided upon during the Design Phase can have long-term impacts on Project outcomes and subsequent physical impacts on the environment, consequently impacting biological components. Specifically, design criteria are established with the goal of minimizing environmental impacts, while maximizing Project-related benefits. Important environmental design criteria of this nature on this Project include:

- Landscape and Green-Space Design
- Mangrove Retention and Management
- Habitat Retention Areas
- Water Management System
- Drainage Control Structures
- Wastewater Treatment Plants (WWTP)
- Seawater Reverse Osmosis Facility (SWRO)
- SWRO Brine Discharge System
- Transportation Network

Through the use of modern, international-standard, state-of-the-art designs of these important Project components, it is anticipated that impacts on critically important environmental components will be avoided or minimized, or, in many cases improved or enhanced. **Table 5-3** outlines potential biological impacts and mitigation measures during the design phase.

Table 5-3 Potential Project-Related Biological Impacts and Mitigation Measures during Design Phase

Potential Impacts	Mitigation Measures
Sensitive Receptors: • **Terrestrial Flora** • **Terrestrial Fauna** • **Marine Biota (Plankton, Marine Benthos, Fish, Nyale Marine Worms)** • **Marine Turtles** • **Mangrove Ecosystems** • **Coral Reef Ecosystems** • **Seagrass Ecosystems**	
Positive: • Emphasis on avoidance and minimization of impacts on physical components through the use of state-of-art environmental design criteria, including the following important Project components: ○ Green Space Design and Layout ○ Mangrove Retention Area ○ Habitat Retention Areas ○ Water Management System ○ Drainage Control Structures ○ Wastewater Treatment Plants (WWTP) ○ SWRO ○ Brine Discharge System ○ Transportation Network • Environmental design criteria of Project components is anticipated to provide large significant positive benefits to physical environmental components – in particular, water quality (ground, surface, sea) which is anticipated to be largely improved from baseline conditions over the life of the Project • Mangrove retention area and its management are expected to result in overall improved functioning and succession of mangrove ecosystems Negative: • Minor risks associated with design flaws and errors leading to inadequately designed and planned facilities and infrastructure • Risk that green-space design may not be adequate to maintain baseline terrestrial flora and fauna conditions	• Environmental design criteria of Project components and physical layout are based on the following: ○ Modern, state-of-art design concepts and engineering ○ Prepared by appropriately qualified and experience personnel – specifically including environmental professionals ○ Adequate preparation time and resources ○ Thorough peer-review and consultation • Overall objectives of design phase criteria are avoiding or minimizing environmental impacts while maximizing Project benefits • No design criteria shall be permitted that is anticipated to directly or indirectly result in significant negative environmental impacts

5.3.3 Potential Socioeconomic and Cultural Impacts

Design of the Project, including preconstruction planning and public consultation, involves the development and communication of Project plans, designs, and specifications to local residents and the general public, in and around the proposed Project Area. As such, local residents were provided with information on initial Project design and planning, prior to any physical changes on the ground. If not managed well through an adequate public consultation process during this phase, initial public perceptions and attitudes could be highly negative if potential negative Project-related impacts are perceived to outweigh any potential benefits from the Project. Negative public perceptions and attitudes can be detrimental to the long term viability of the Project, and have negative socioeconomic impacts by sowing negative public attitudes toward the Project and ITDC.

Table 5-4 outlines potential socioeconomic and cultural impacts and mitigation measures during the design phase.

Table 5-4 Potential Project-Related Socioeconomic and Cultural Impacts and Mitigation Measures during Design Phase

Potential Impacts	**Mitigation** Measures
Sensitive Receptors: Residents of Kuta, Mertak, Sengkol, and Sukadana Villages, especially vulnerable groups including: • **Women** • **Indigenous People** • **Elderly** • **Youth** • **Disadvantaged (Economically, Mentally, and Physically)**	

<u>Positive</u>:
• Improved relations with local communities through preconstruction public consultation process.
• Planning process will address perceived community issues and problems prior to Project construction, including:
  ○ Physical impacts (air, noise, water quality)
  ○ Biological impacts and ecosystem services
  ○ Cultural Heritage.
• Potential benefits of Project are well communicated to local residents.
• Design phase communication allows for residents' adjustment period prior to construction phase.
• Resettlement Plan Framework and Indigenous Peoples Development Plan will provide focussed attention on and management of these specific Project-Affected People
	• As part of ITDC's design-phase public consultation process, public consultation was performed through a series of public meetings and announcements during the 2012 AMDAL process.
	• Social surveys of 223 people within five surrounding villages were conducted as part of AMDAL primary data collection, also contributing to the Project information disclosure and consultation process.
	• AMDAL Addendum has been compiled, requiring another public consultation event, followed by multiple site visits by Project teams, including an ESC field survey team preparing a 2018 Environmental and Social Due Diligence Assessment, documented as the Gap Analysis.
	• Ongoing public consultation activities and dialogue throughout the design phase.
	• Creation of focused Resettlement Plan Framework to comprehensively address Land Acquisition and Involuntary Resettlement issues and concerns.
	• Creation of focused Indigenous Peoples Development Plan to comprehensively address Indigenous Peoples issues and concerns.

Potential Impacts	Mitigation Measures
Negative: • Potential risk of negative public perceptions • Potential risk of public backlash against Project, prior to or early in Project construction • Potential risk of sowing negative attitudes toward Project.	

5.4 Construction Phase

5.4.1 Potential Physical Impacts

Project construction will involve mobilization, operation, and maintenance of materials, vehicles, machinery, and heavy equipment, in support of land clearing and earthworks and construction of buildings, roads, and other facilities. Project construction will inherently, therefore, involve vegetation clearing and management, site preparation and earthworks, road construction, and building and facility construction.

Ambient noise levels within the Project Area are expected to increase notably. Of particular concern during the construction phase is noise related to the operation of construction-related equipment such as generators, cranes, cement mixers, power tools, chain saws, dump trucks, bulldozers, and other large construction vehicles.

Potential emissions to air generated from the Project during construction are largely related to the transport and use of heavy equipment and building materials during earthworks and erection of buildings and infrastructure. As such, Project-related activities during construction are expected to increase local concentrations of air pollutants generated from the use of vehicles and machinery. Of particular concern during the construction phase are particles and gases released by the combustion of diesel fuel in the form of point sources (e.g., generators) and mobile construction vehicles (heavy machinery). These sources are characterized by the release of air pollutants typically associated with the combustion of fossil fuels, nitrogen oxides (NOx), sulfur dioxide (SO_2), carbon monoxide (CO), hydrocarbons, and particulate matter (dust, smoke, and soot).

Construction-phase activities will also inherently involve soil exposure, disturbance, movement, management, and compaction. As a result of these activities, risks of soil erosion leading to groundwater contamination will rise (as will risks of surface water and sea water contamination, as discussed below). If not managed properly, Project-related increases in soil erosion could lead to groundwater, surface water, and marine water contamination, and specifically large increases in dissolved solids (TDS), resulting in contamination of drinking water used by local residents. Due to the nature of the Project Site, eastern and southern portions of the Project Area are considered most at risk.

Table 5-5 outlines potential Project-related physical impacts and mitigation measures during the Construction Phase.

Table 5-5 Potential Project-Related Physical Impacts and Mitigation Measures during Construction Phase

Potential Impacts	Mitigation Measures
Component: AIR QUALITY **Sensitive Receptors: Residents of Kuta, Mertak, Sengkol, and Sukadana Villages**	
Positive: • Emphasis will be on avoidance and minimization of air quality impacts through the use of International Best Practices for construction. • All indicator parameters are expected to remain within acceptable GoI standards. Negative: • Air pollutant levels are expected to rise in the Project Area due to increased use of: o Light and heavy construction vehicles o Diesel generators o Heavy machinery o Power tools. • Dust levels are expected to rise due to increase soil exposure and vehicle use.	• Strict adherence to the Project-related use of vehicles and equipment that meet exhaust emission standards; • Strict 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. • Strict adherence to a dust suppression program involving regular and frequent road watering. • Quarterly air quality monitoring during the construction phase including the following parameters: SO_2, NO_2, CO, NH_3, and TSP (Total Suspended Particulates).
Component: NOISE **Sensitive Receptors: Residents of Kuta, Mertak, Sengkol, and Sukadana Villages**	
Positive: • Emphasis will be on avoidance and minimization of air quality impacts through the use of International Best Practices for construction. • All indicator parameters are expected to remain within acceptable GoI standards. Negative: • Noise levels are expected to rise in the Project Area due to increased use of: o Light and heavy construction vehicles o Diesel generators o Heavy machinery o Power tools. • Site-specific noise concentrations are expected in relation to: o SWRO construction o WWTP construction o Road construction o Land clearing o Solid waste facility construction.	• Strict adherence to the Project-related use of vehicles and equipment that meet exhaust emission standards • Strict 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 whenever possible as alternatives to the use of combustion engines; • Preferential use in particular of electric vehicles for Project-related activities; • Minimizing construction activities, to the greatest extent possible, between the hours of 6 pm and 6 am, and designated holidays; • Avoid known resident locations to the greatest extent possible; and • Quarterly noise monitoring during the construction phase to document compliance with ambient noise standards, or highlight need for management improvements.

Potential Impacts	Mitigation Measures
Component: GROUNDWATER, SURFACE WATER, SEAWATER QUALITY **Sensitive Receptors:** • **Drinking water (wells) for local residents within and around the Project Area** • **Rivers and freshwater aquatic biota within the Project Area** • **Seawater and marine ecosystems within the Project Area of Influence**	
Positive: • Emphasis will be on avoidance and minimization of air quality impacts through the use of International Best Practices for construction. • All indicator parameters are expected to remain within acceptable GoI standards, or not exceed existing baseline levels. Negative: • Risks to soil erosion will increase, resulting in potential increased run-off and suspended solids due to: o Vegetation clearing o Soil disturbance and exposure o Soil compaction and movement o Road construction o Utility corridor construction. • Risks to water contamination will increase due to: o Spills of fuel and lubricants o Improper disposal of construction waste o Improper management of human waste.	• 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; • 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; • Strict adherence to fuel, lubricants, and other hazard materials management protocols; • Strict adherence to solid waste management protocols and proper disposal procedures; and • Provision of, and strict adherence to, human waste facilities standards (e.g., toilet facilities for construction workers) and management of sewage.

5.4.2 Potential Biological Impacts

Project construction will involve vegetation clearing, site preparation and earthworks, road construction, and building and facility construction. These construction-related activities will inherently involve vegetation clearing and grubbing and site disturbance, grading/modification, and development. The results of these activities pose risks to terrestrial flora in the form of potential habitat loss, habitat fragmentation and degradation, and endangered species impacts. As well, clearing of vegetation and conversion of land for commercial use increases risks associated with invasive species establishment and proliferation.

In addition, construction-related activities such as increased vehicle use, use of cranes, and increased human presence and activity could potentially lead to direct mortality effects through animal collisions and illegal hunting. Noise, light, and increased human activity related to construction activities could also potentially result in disturbance effects on terrestrial fauna causing habitat exclusion (fauna avoiding or moving out of the Project Area because of human disturbance and activity).

Construction-related activities will inherently involve soil exposure, disturbance, movement, management, and compaction. As a result of these activities, risks of soil erosion leading to increased runoff and seawater contamination within the Project Area of Influence will rise. Potential changes to sea water quality from Project-related runoff during construction could ultimately impact marine biota such as plankton, marine benthos, and fish, by reducing quality of habitat conditions for marine biota within the Project Area of Influence. As well, increases in suspended sediments (TSS) could negatively affect mangrove, coral reef, and seagrass ecosystems by reducing sea water quality, and increasing sedimentation.

If not managed properly, Project-related increases in soil erosion could lead to increased runoff and sea water contamination, and specifically increases in suspended sediments (TSS). Due to the nature of the Project Site, the greatest risks are from runoff originating within the eastern and southern portions of the Project Area.

Mangroves, coral reefs, and seagrass are particularly sensitive to changes in sea water quality, and require good water quality to grow, remain healthy and viable, and provide ecosystem services. In this case, risks associated with Project-related increases in runoff during construction could specifically result in increased sediment deposition offshore of the Project Area – thereby blocking sunlight and inhibiting photosynthesis, directly smothering and abrading coral and seagrass, and triggering increases in macro algae.

While inland terrestrial sites within the Project Area will pose little risk to marine turtles, any construction activities on or near sand beaches could potentially impact marine turtles by affecting habitat conditions for breeding marine turtles. Marine turtles rely on sand beaches for nesting (egg laying), and subsequently hatching of eggs. Project-related alterations to sand beaches within the Project Area during construction would present potential negative impacts on marine turtle nesting habitat.

Due to the highly sensitive nature of nesting and egg laying by female marine turtles – particularly at night, when egg-laying occurs – any Project-related construction activities on or near sand beaches could represent potential disturbance effects, if sites of this nature are subjected to disturbance by Project-related human activity, noise, and light during the construction phase. As well, marine turtles, and particularly eggs, are highly prized as food by many people in the region. Increased human presence, access, and activity within the Project Area could potentially result in increased direct mortality in the form of hunting/killing of marine turtles, as well as egg gathering.

Table 5-6 outlines potential Project-related biological impacts and mitigation measures during the Construction Phase.

Table 5-6 Potential Project-Related Biological Impacts and Mitigation Measures during Construction Phase

Potential Impacts	**Mitigation** Measures
Component: TERRESTRIAL FLORA and FAUNA **Sensitive Receptors:** • **Remnant terrestrial habitat patches in Project Area** • **Protection Forests surrounding Project Area** • **Existing terrestrial fauna within Project Area** • **Wetlands within Project Area**	

Potential Impacts	Mitigation Measures
• **Potential endangered species** • **Invasive species.**	

Positive:
• Emphasis will be on avoidance and minimization of impacts on terrestrial flora and fauna through the use of International Best Practices for construction
• Project does not overlap any protected areas, or protection forests
• Project does not contain identified critical habitat
• No endangered plant species have been identified
• Due to relatively degraded terrestrial ecosystems, risks to terrestrial flora and fauna are low.
 	
Negative:
• Land clearing and conversion could pose risks of:
  ○ Habitat loss
  ○ Habitat fragmentation
  ○ Habitat degradation
• Increased risks of direct mortality impacts on existing wildlife and plants
• Increased risks of direct mortality impacts on endangered species
• Potential disturbance impacts to existing fauna
• Increased establishment and proliferation of invasive species.
	• Minimizing vegetation clearing and disturbance to the greatest extent possible – no unnecessary vegetation clearing will be permitted;
	• Any natural or critical habitat areas will be protected and conserved to the greatest extent possible;
	• Protection forests outside the Project (adjacent to the west boundary) will be entirely avoided;
	• Protection of vegetation and habitat specifically associated with river mouths;
	• Protection of natural wetlands and associated habitats;
	• Development in forest areas will be avoided or minimized to the greatest 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 greatest extent possible.
	• Vehicle speeds and driving practices will be strictly controlled and enforced within the Project Area of Influence;
	• Hunting or otherwise unauthorized killing of fauna by Project-related employees, contractors, and management will be strictly prohibited; and
	• Sources of disturbance such as noise and light will be controlled and minimized to the greatest extent possible, and focused on areas of remaining habitat value.

Component: MARINE BIOTA **Sensitive Receptors:** • **Regional Marine Protected Area of Central Lombok – Gerupuk Bay** • **Nyale Marine Worms** • **Plankton** • **Marine Benthos** • **Fish.**	
Positive: • Emphasis will be on avoidance and minimization of impacts on marine biota through the use of International Best	• Construction and use of sediment traps at construction areas to capture and precipitate suspended solids; • Construction, use, and management of drainage

Potential Impacts	Mitigation Measures

Practices for construction.
• Establishment of Regional Marine Protected Area in Gerupuk Bay supports tourism and conservation.
• Existing baseline conditions for marine biota are generally good, and expected to remain stable during construction phase.
• Seawater indicator parameters are expected to remain within acceptable GoI standards, or not exceed beyond existing baseline levels.
 	
Negative:
• Land clearing and soil disturbance will increase risks of runoff potentially resulting in impacts on marine biota via:
  ○ Seawater quality impacts
  ○ Increased marine sedimentation.
• Risks to seawater contamination, resulting in potential impacts on marine biota will increase due to:
  ○ Spills of fuel and lubricants
  ○ Improper disposal of construction waste
  ○ Improper management of human waste.
	systems within Project areas;
	• Construction and use of water retaining wells and 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.
	• Strict adherence to fuel, lubricants, and other hazard materials management and protocols;
	• Strict adherence to solid waste management protocols and proper disposal; and
	• Provision of, and strict adherence to, human waste facilities standards (e.g., toilet facilities for construction workers) and sewage management.
	• Strict adherence to Protection of marine biota values within Gerupuk Bay (Marine Protected Area)

Component: MANGROVE ECOSYSTEMS **Sensitive Receptors: Mangrove ecosystems of any size within Project Area of Influence, specific concern to:** • **Regional Marine Protected Area of Central Lombok – Gerupuk Bay**	
Positive: • Emphasis will be on avoidance and minimization of impacts on mangrove ecosystems through the use of International Best Practices for construction. • By Project design, mangrove ecosystems will be retained, and remain undisturbed by direct construction activities. • Seawater indicator parameters are expected to remain within acceptable GoI standards, or not exceed beyond existing baseline levels. • Establishment of Regional Marine Protected Area in Gerupuk Bay synergistic with adjacent large mangrove area to become ecopark. Negative: • Land clearing and soil disturbance will increase risks of runoff potentially resulting in impacts on mangroves through:	• Minimizing vegetation clearing and disturbance to the greatest extent possible – no unnecessary vegetation clearing will be permitted; • Any natural or critical habitat areas will be protected and conserved to the greatest extent possible; • Protection and retention of mangrove areas; • Protection of vegetation and habitat specifically associated with river mouths; • Development in forest areas will be avoided or minimized to the greatest extent possible; • 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 and basins; • Construction and use of artificial lakes or large ponds to store rainwater; • Construction and use of check dams;

Potential Impacts	**Mitigation** Measures
○ Seawater quality impacts ○ Increased marine sedimentation. • Risks to seawater contamination, resulting in potential impacts on mangroves will increase due to: ○ Spills of fuel and lubricants ○ Improper disposal of construction waste ○ Improper management of human waste.	• 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 strictly implemented according to schedule.
Component: CORAL REEF and SEAGRASS ECOSYSTEMS **Sensitive Receptors: Coral reef and seagrass ecosystems within Project Area of Influence, with specific concern to:** • **Regional Marine Protected Area of Central Lombok – Gerupuk Bay**	
Positive: • Emphasis will be on avoidance and minimization of impacts on coral reefs and seagrass through the use of International Best Practices for construction. • Seawater indicator parameters are expected to remain within acceptable GoI standards, or not exceed existing baseline levels. Negative: • Land clearing and soil disturbance will increase risks of runoff potentially resulting in impacts on coral reefs and seagrass through: ○ Seawater quality impacts ○ Increased marine sedimentation • Risks to seawater contamination, resulting in potential impacts on coral reefs and seagrass will increase due to: ○ Spills of fuel and lubricants ○ Improper disposal of construction waste ○ Improper management of human waste. • Improved markets for seafood increases risks of unsustainable fishing practices in area, which can damage coral.	• Construction and use of sediment traps in all 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; • Construction and use of artificial lakes or large ponds to store rainwater; • Construction and use of check dams where needed; • 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; and • Protection and retention of mangrove areas as major natural sediment traps. • Protection and management of coral reef and seagrass ecosystems along SEZ coastline and specifically within Gerupuk Bay (Marine Protected Area).
Component: MARINE TURTLES **Sensitive Receptors:** • **Potentially nesting marine turtles within Project Area** • **Marine turtles potentially feeding and breeding in coral reef and seagrass habitats.**	
Positive: • Emphasis will be on avoidance and minimization of impacts on marine turtles through the use of International Best	• Construction activities on or near sand beaches will be avoided and minimized to the greatest extent possible; • No unnecessary use of sand beaches or beach sand

Potential Impacts	Mitigation Measures

Practices for construction.
• Seawater indicator parameters are expected to remain within acceptable GoI standards, or not exceed beyond existing baseline levels.
 	
Negative:
• Any construction activities on or near sand beaches could potentially result in:
  ○ Direct loss (i.e., destruction) of nesting habitat
  ○ Disturbance of nesting habitat resulting in avoidance or abandonment.
• Disturbance – particularly at night – of nesting habitat could result from:
  ○ Noise and human activity within the vicinity of nesting beaches
  ○ Light disturbance within the vicinity of nesting beaches.
• Increased direct mortality impacts from illegal killing of adults, and egg collecting.
	for construction purposes will be permitted;
	• Beach vegetation zones will be protected and avoided to the greatest extent possible;
	• Noise and lighting near sand beach habitat will be minimized to the greatest extent possible;
	• Construction activities on or near sand beach habitat will be avoided during night hours (6 pm to 6 am) to the greatest extent possible;
	• Lighting, in particular, of construction sites near sand beach habitat will be avoided to the greatest extent possible.
	In the event marine turtle nesting is observed within the Project Area, construction within and around the site will be halted, human activity and disturbance will be avoided, and an ecological assessment of the situation will be conducted by a qualified professional. These measures may include restriction of operational activities in defined areas and defined times if turtle nesting is observed.
	
	Killing of marine turtles and collection of marine turtle eggs by any Project-related workers, contractors, management personnel and associated family members will be strictly prohibited, and sanctioned if known to occur.

5.4.3 Potential Socioeconomic and Cultural Impacts

Project construction will involve the physical implementation of construction activities associated with the Project, and the ensuing positive and negative impacts associated with the construction phase. Actual Project-related impacts – positive and negative – to air and water quality, noise, biological values, and socioeconomic components will unfold and be perceived by local residents during the construction phase. Through direct experiences and interactions with the Project and its effects, public perceptions and attitudes toward the Project will be shaped. Because of the stark and dramatic environmental and social changes that construction-phase activities typically represent, there is a large potential for construction to have a significant effect on public perceptions and attitudes toward The Mandalika Project.

The Project will directly involve the employment and use of large numbers of workers, contractors, and management personnel. In addition to direct employment on the Project, the Project will require and involve local support businesses in various forms including local suppliers of construction materials, food providers, accommodation, clothing providers, transportation providers, and other labor-force support businesses. Potential Project-related employment and livelihood impacts are therefore associated with the effects of increased local employment and income, increased local business opportunities, and increased livelihoods for local residents and communities.

During the construction phase, the Project will involve mobilization and stockpiling of construction materials, as well as mobilization, operation, and maintenance of vehicles, machinery, and heavy equipment, in support of land clearing and earthworks, and construction of roads, buildings, infrastructure, and support facilities. As a result of these construction activities, risks to soil erosion leading to groundwater, surface water, and sea water contamination will rise. If not managed properly, Project-related increases in soil erosion could lead to groundwater, surface water, and sea water contamination, and specifically large increases in Total Dissolved Solids (TDS), resulting in contamination of groundwater and surface water used by local residents in their daily lives. Potential changes to sea water quality from Project-related runoff during construction could ultimately impact marine biota such as plankton, marine benthos, fish, marine turtles, coral reefs, seagrass ecosystems, and mangroves by reducing habitat conditions for marine biota within the Project Area of Influence – thereby potentially impacting marine ecosystem services to local residents within the Project Area.

Construction activities will likely result in large social changes to local communities within and around the Project Area. Project-related health and safety effects on local communities will primarily be the result of two major factors: (1) an influx of new people, many of them single men, though some with families, to fill Project construction-related job vacancies, and (2) increases in local income levels and community wealth as Project-related employment begins for local residents and the general level of economic activity increases. Changes of this nature will have myriad effects – potentially positive and negative – on the socioeconomic fabric of local communities, which in turn will affect community health and safety during the construction phase.

Potential changes affecting Project-related community health and safety include, but are not limited to:

- Increases in local population and density as Project-related workers and their families from outside the area are brought into the area for the construction phase;
- Changes in local traffic patterns and increases in traffic volumes and accident rates as construction-related activities are implemented and overall economic activity increases;
- Increases in local income levels and spending as local people begin Project-related employment;
- Increases in social interactions and potential conflicts as migrant workers and their families are integrated into local communities;
- Increases in labor conflicts as numbers of Project-related workers increase;
- Increases in industrial accidents as Project-related accidents occur;
- Increases in crime levels as local populations increase and migrant workers arrive;
- Increases in disease transmission as more people enter the area; and specifically sexually transmitted infections related to young single migrant workers and the inevitable sex/entertainment service industry;
- Changes to local environmental health resulting in Project-related changes to human health among local residents;

- Risks that Project or contractor employees charged with maintaining security of personnel and property (security workers/guards/*satpam*), may threaten the safety of persons within and outside the Project site.

Project construction will involve mobilization of large numbers of people making up the Project-construction work force and related support businesses. As well, it will involve the mobilization of all required construction-related vehicles, equipment, tools, and building materials involved in site preparation and earthworks and road and infrastructure and building and support facility construction. Mobilization of people and building materials will be performed using large numbers of light and heavy vehicles, construction vehicles, dump trucks, flatbed trucks, excavators, and other vehicles commonly associated with standard construction practices. As such, vehicle traffic on local roads will increase significantly beyond current baseline levels during the construction phase. If not managed properly, potential negative impacts on local residents could occur through increased traffic congestion and exceed local infrastructure capacities.

Construction-related activities will inherently involve vegetation clearing and grubbing, followed by soil disturbance, excavation, earthmoving, and filling, site modification, and runoff management. Construction-activities of this nature pose risks to cultural heritage if unknown cultural heritage sites and artifacts exist within the Project Area. Of particular concern, are unknown sites and artifacts that may exist below ground level, and are therefore at risk of being accidentally damaged or destroyed by Project-related activities such as digging and spoil removal.

Table 5-7 outlines potential Project-related socioeconomic and cultural Impacts and mitigation measures during the Construction Phase.

Table 5-7 Potential Project-Related Socioeconomic and Cultural Impacts and Mitigation Measures during Construction Phase

Potential Impacts	Mitigation Measures
Component: PUBLIC PERCEPTIONS AND ATTITUDES **Sensitive Receptors: Residents of Kuta, Mertak, Sengkol, and Sukadana Villages**	

Positive:
• Potentially high local public support for the Project, through overall perceived expectations that the Project will:
  ○ Provide jobs
  ○ Provide business opportunities
  ○ Facilitate regional development.
• Opportunity to establish good working relationships with affected villages.
• Shape good attitudes towards Project by local residents, resulting in long-term gains over the life of the Project.
 	
Negative:
• Potential for local residents to perceive negative impacts, including:
  ○ Risk of losing current livelihood (e.g., loss of farm land)
  ○ Potential for increased crime and
	• As part of ITDC's design-phase public consultation process, public consultation was performed through a series of public meetings and announcements during the 2012 AMDAL process.
	• Social surveys of 223 people within five surrounding villages were conducted as part of AMDAL primary data collection, also contributing to the Project information disclosure and consultation process.
	• AMDAL addendum was compiled, requiring another public consultation event, followed by multiple site visits by Project teams, including an ESC field survey team preparing a 2018 Environmental and Social Due Diligence assessment.
	• Ongoing public consultation activities and dialogue were carried out.
	• During the construction phase, monitoring of public concerns, issues, complaints, and attitudes will be performed on a quarterly basis, consistent with the RKL-RPL process – a legal requirement of the GoI

Potential Impacts	Mitigation Measures
security-related issues ○ Risk of losing cultural heritage.	AMDAL process.
Component: EMPLOYMENT, INCOME, AND LIVELIHOOD **Sensitive Receptors: Residents of Kuta, Mertak, Sengkol, and Sukadana Villages, especially vulnerable groups including:** • **Women** • **Indigenous People** • **Elderly** • **Youth** • **Disadvantaged (Economically, Mentally, and Physically).**	
Positive: • Construction phase will provide 2,000 jobs. • Local residents will be preferentially employed. • Large gains to local businesses such as: ○ Materials suppliers ○ Food providers ○ Clothing providers ○ Accommodation providers ○ Equipment providers. • Training opportunities will be provided to local residents. • Increases to local workforce capacity will occur. • Increases in local wealth and spending capacity will ultimately result in the reduction of local poverty. Negative: • Risk of exploitation of local workers • Risk of child labor • Risk of social and gender inequality. • While tourism tends to create many employment opportunities for women, there will almost inevitably be challenges in wage equity. • Disabled individuals reside in all local villages, and finding employment for these persons and elderly persons will present challenges. • Low levels of educational attainment will make it difficult for many to take advantage of training opportunities that will be provided.	• 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. • All 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: ○ 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 ○ An accessible, understandable, and transparent grievance mechanism made available at the time of hiring. • Social development and inclusion will be promoted by the following measures: ○ Promoting equality of opportunity and nondiscrimination by improving employment opportunities for 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: ○ Identifying potential gender-specific employment

Potential Impacts	Mitigation Measures
	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 completely avoided by the following measures: ○ Children under the age of 18 will not be employed in any capacity by the Project or associated contractors or tenants, except under strict 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: ENVIRONMENTAL HEALTH AND ECOSYSTEM SERVICES **Sensitive Receptors: Residents of Kuta, Mertak, Sengkol, and Sukadana Villages**	
Positive: • Emphasis will be on avoidance and minimization of impacts on environmental health through the use of International Best Practices for construction. • Indicator parameters for air, noise, and water quality are expected to remain within acceptable GoI standards, or not exceed beyond existing baseline levels. Negative: • Potential environmental impacts on air and water quality due to: ○ Increased air emissions ○ Increased risk of soil erosion leading to runoff ○ Increase noise disturbance effects. • Environmental impacts could result in decreased ecosystem services in the form of: ○ Decreased marine resources (fish and other marine food items) ○ Decreased water quality for local residents ○ Decrease in populations of	Mitigation of air quality, noise, water quality, and biological component impacts are comprehensively discussed in **Sections 5.3.1 and 5.3.2**

Potential Impacts	Mitigation Measures
terrestrial flora and fauna used by local residents.	
Component: COMMUNITY HEALTH, SAFETY, AND SECURITY **Sensitive Receptors: Residents of Kuta, Mertak, Sengkol, and Sukadana Villages**	

Positive:
• Overall improvement in public health due to increased health facilities and availability;
• Improved traffic safety due to improved road network and road conditions;
• Overall improvement in quality of life for local residents due to:
  ○ Improved health care
  ○ Improved work safety provisions
  ○ Improved environmental health
  ○ Improved security situation.
 	
Negative:
• Risk of decrease in air and water quality resulting in health effects;
• Risks to public health due to improper waste treatment;
• Risks to public security with increases in crime;
• Risks to safety associated with increased traffic volumes.
	• Apply community health and safety measures:
	  ○ 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. Project-related public consultation is comprehensively described in **Chapter 7**;
	  ○ Maintain a functioning Grievance Resolution Mechanism (GRM) to deal with complaints and concerns about community health and safety, as described in **Chapter 9.**
	• Address thoroughly road and traffic safety concerns of local communities as described in Subsection 5.4.5, 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 zone;
	  ○ 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 detailed below in this subsection.
	
	Because many local residents will be employed by the Project during construction, there is interaction between workers' health and safety and community health and safety. This will be addressed by:
	• 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.

Potential Impacts	**Mitigation** Measures
	• 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 has developed 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. Specific items addressed include: • Ensure employees' fitness for work (physical and mental); • Assess labor and working conditions of Project; • Implement measures designed to ensure workers have safe and healthy working conditions; • Put in place measures to prevent accidents, injuries and disease caused by the Project; • Apply relevant occupational health and safety provisions such as IFC's EHS Guidelines; • Document and report on accidents, diseases and incidents among workers. In verifying the application of the same provisions to the employees of all tenants, contractors, and other formal sector businesses operating within The Mandalika Project Area, the Project management will ensure uniform application of Indonesian labor law and regulations in its area of responsibility. This will in turn assist in improving conditions for local residents employed within the tourism zone. The Project will also maintain its 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. These will be developed to address reasonably possible emergency risks, including: • Natural disasters—earthquake, tsunami, river and coastal flooding, major storms, wildfire; • Fuel, chemical, and hazardous material spills or releases; • Major and sustained civil unrest. The Project will also maintain and develop its Emergency Action Plan as a preventive and emergency preparedness and response plan to avoid or minimize adverse risks and impacts on the health and safety of Project workers, tourists/guests, and local communities. The Plan will be

Potential Impacts	Mitigation Measures
	adapted to address all reasonably possible emergency risks, including: • Natural disasters—earthquake, tsunami, river and coastal flooding, major storms, wildfire; • Fuel, chemical, and hazardous material spills or releases; • Major and sustained civil unrest. This plan will be developed in cooperation with all contractors and subcontractors, with such cooperation mandated in their contracts, including their responsibility for extending emergency response planning to their subcontractors. Local community leaders and regional government agencies and appropriate civil society groups will also be included in emergency planning, with appropriate budgets for periodic consultation and coordination. Emergency planning will include formal, documented plans for emergency notification and mobilization as well as evacuation planning. It will also include realistic periodic training and drills.
Component: ROAD INFRASTRUCTURE AND TRAFFIC DISRUPTION **Sensitive Receptors: Residents of Kuta, Mertak, Sengkol, and Sukadana Villages, with specific focus on:** • **Subvillages adjacent to or near roads**	
Positive: • Overall improvements to road infrastructure and conditions within and around the Project Area: ○ Improved road conditions will lead to increased road safety; ○ Improved road conditions will lead to faster travel and commuting times; ○ Paving unsurfaced roads and hardening unimproved roads may reduce airborne dust problems in the long dry season; ○ Some subvillages may experience greatly improved access and connectivity. Negative: • Risk of increased traffic volumes beyond road capacities, resulting in traffic congestion; • Risk of higher speeds and more traffic leading to increased traffic accidents and injuries.	• Maintain existing roads adequately and regularly to ensure existing roads are in good condition throughout the construction phase. • Perform any required road upgrades to address and accommodate any Project-related road access requirements. • Design, construct, and develop new roads that will result in an overall adequate road network (i.e., all existing, upgraded, and new roads combined) to address all foreseeable traffic volumes within and around the Project Area. • Constructed and maintain all Project-related roads (i.e., newly constructed, upgraded, or used by the Project in any capacity) to National and international 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 all necessary personal protective equipment. • All Project-related roads will be equipped with proper traffic signage, particularly at intersections. • Three main alternative routes will be developed

Potential Impacts	**Mitigation** Measures
	leading into the Project Area (Awang Line, Selong Belanak line, and Sengkol line). • Subvillages adjacent to, or near, existing roads will be specifically targeted for traffic mitigation and management.
Component: CULTURAL HERITAGE **Sensitive Receptors: Residents of Kuta, Mertak, Sengkol, and Sukadana Villages, with specific focus on:** • **Buried culture sites and artifacts** • **Nyale Marine Worm Festival**	
Positive: • Overall improvement in addressing and managing cultural heritage within and around the Project area; • Improved site-specific management of identified cultural heritage sites; • Installation of cultural heritage protocols is improvement over existing ad-hoc approach. • Enhanced and focused management of Nyale (edible marine worm) Festival Negative: • Risk of unearthing and potentially damaging culturally sensitive sites exists during construction phase. • Some local residents believe participation of outsiders in Nyale Festival changes its cultural meaning.	• Minimizing vegetation clearing and soil disturbance to the greatest extent possible – no unnecessary vegetation clearing or soil disturbance will be permitted. • Ongoing and comprehensive public consultation will occur prior to any construction-related activities. Doing so will reveal any known culturally significant sites or artifacts prior to ground disturbance. • Any 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**, provided in **Appendix C**. • Specific and focused attention will be provided to the annual Nyale Marine Worm Festival, to ensure this critically important local cultural tradition remains intact and vibrant.
Component: INVOLUNTARY RESETTLEMENT **Sensitive Receptors: Residents of Kuta, Mertak, Sengkol, and Sukadana Villages, especially vulnerable groups including:** • **Women** • **Indigenous People** • **Elderly** • **Youth** • **Disadvantaged (Economically, Mentally, and Physically)**	
Positive: • Vast majority of Project land is owned by ITDC • 92.5% of land is currently clear of any valid dispute • Litigated land areas will have no impact on proposed infrastructure subprojects • ITDC will prepare a comprehensive and	Mitigation and Management pertaining to Involuntary resettlement is comprehensively described in the **Resettlement Planning 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.

Potential Impacts	Mitigation Measures

detailed Resettlement Plan (RP) prior to construction
• The RP will be in full compliance with GoI laws and regulations, and AIIB ESS 2
• The RP will not impose severe economic or social hardships on Project-Affected People (PAP).
 	
<u>Negative:</u>
• 8.9% of Project land is currently being litigated in court.
• 2.0% of Project land is currently in dispute or being negotiated.
• Some claimed land areas could have impacts on road subprojects.
• Some enclave lands could have impacts on proposed infrastructure subprojects.
• 1 ha of enclave land, representing 15 houses and 6 owners, must be acquired due to intersections with road subprojects.
• On large areas of SEZ land that are clear of any valid claims, some 49 houses and 3 homestays occupy and otherwise utilize an unknown area of ITDC land.
  ○ Also unknown are the extent of such areas and number of households that will affect Project infrastructure sites.
  ○ While squatter households will be managed according to the same humanistic policies as valid claimants, this will represent a draw on Project resources.
	• 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.
	• All land acquisition will comply with National laws and regulations, notably Law No / of 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 of 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 AIIB policies from ESS 2 will be strictly 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.
	• While illegally occupied land will not be compensated, squatters will be provided with resettlement aid in accordance with ESS 2.
	• Socioeconomic census/investigation coordinated and combined with establishing a “cut-off date” will enable planning resettlement for squatter households while preventing opportunistic squatters from moving in to exploit the policy.

Component: INDIGENOUS PEOPLES **Sensitive Receptors: Residents of Kuta, Mertak, Sengkol, and Sukadana Villages, with specific focus on**	

Potential Impacts	Mitigation Measures
Indigenous Peoples (Sasak) and their culture	
Positive: • Vast majority (97%) of local residents and associated Indigenous Peoples (IP) support the Project. • Overall Project effects on IPs are expected to be significantly positive, primarily due to expectations of an overall decrease in local poverty and improved quality of life from: ○ Increased employment and associated income and wealth generation; ○ Increased business opportunities and associated wealth generation; ○ Improved infrastructure (e.g., roads, lighting, water, telecommunications); ○ Improved public services (e.g., health, education, training). Negative: • Concerns over possible impacts on local culture and customs, including: ○ Barriers to conducting cultural rituals; ○ Negative impacts on youth (e.g., change of culture, dress, lifestyle)l ○ Emergence of illegal activities such as prostitution; ○ Increased use of illegal drugs; • Concerns over low rates of ITDC compensation for land; • Fears of not hiring locally; • Concerns over loss of land and fishing areas; • Concerns over local land price increases.	Mitigation and Management pertaining specifically to Indigenous Peoples affected by the Project is comprehensively 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; • Educational 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;

Potential Impacts	**Mitigation** Measures
	• Educational scholarship programs. Intensive ongoing public consultation and information disclosure – including Pre, Prior, and Informed Consent – 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.

5.5 Operations Phase

5.5.1 Potential Physical Impacts

Project operations will involve routine operation and maintenance of vehicles, machinery, and equipment, in support of daily operations of hotels, restaurants, residential buildings, and support facilities associated with the Project, such as the WWTP and SWRO. Potential emissions to air generated from the Project during operations will largely shift, from the use of construction-related heavy machinery and diesel generators, to the use and maintenance of light vehicles, such as cars, vans, and light trucks, and ongoing facility operations such as hotels, restaurants, residential units, WWTPs, SWRO, and solid waste management operations.

Project-related activities during operations are expected to increase local concentrations of air pollutants generated from the use of light vehicles and other support machinery, and facility operations, though less than during construction operations. These sources are similarly characterized by the release of air pollutants typically associated with the combustion of fossil fuels, such as nitrogen oxides (NOx), sulfur dioxide (SO_2), carbon monoxide (CO), hydrocarbons, and particulate matter (dust). As well, ambient noise levels within the Project Area are expected to increase to some degree within the Project Area during operations.

Project operations will involve routine daily use and maintenance of restaurants, hotels, residential buildings, support facilities, and landscape maintenance. These operation-phase activities will result in the consumption and use of water, potentially leading to water contamination as water is released back into the environment. If not managed properly, Project-related release of water into the environment could result in increased runoff, soil erosion, with surface flows entering the ocean, and direct groundwater, surface water, and sea water contamination through the use of hazardous materials such as fuel, lubricants, cleaning solutions, fertilizers, and pesticides.

As well, the operations phase will involve the continuous operation of the Sea Water Reverse Osmosis (SWRO) facilities – the primary sources of drinking water during Project operations, anticipated to reach 22,500 m^3/day. As 60% of water intake will be discharged to the environment

as high-salinity brine, operation of this facility will involve large discharges of brine to the ocean. If not managed properly, discharges of this nature could increase long-term sea water salinity levels beyond GoI thresholds as long as SWRO facilities are in use.

Table 5-8 outlines potential Project-related socioeconomic and cultural Impacts and mitigation measures during the Construction Phase.

Table 5-8 Potential Project-Related Physical Impacts and Mitigation Measures during Operations Phase

Potential Impacts	Mitigation Measures
Component: AIR QUALITY **Sensitive Receptors:** • **Residents of Kuta, Mertak, Sengkol, and Sukadana Villages** • **Project-related employees and workers** • **Tourists within and around Project Area**	
Positive: • Emphasis will be on avoidance and minimization of air quality impacts through the use of International Best Practices. • Air pollutants resulting from activities such as uncontrolled waste burning will be reduced due to strict control and management of solid waste. • Dust levels are expected to decrease due to rigorous landscape management. • All indicator parameters are expected to remain within GoI ambient standards. Negative: • Air emissions are expected to rise slightly in the Project Area due to increased use of fossil fuels during routine operations	• Strict adherence to the Project-related use of vehicles and equipment that meet exhaust emission standards; • Strict 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; • Preferential use in particular of electric vehicles for Project-related activities; • Quarterly air quality monitoring during the operations phase of the parameters: SO_2, NO_2, CO, NH_3, and TSP (Total Suspended Particulates) to document compliance with ambient standards.
Component: NOISE **Sensitive Receptors:** • **Residents of Kuta, Mertak, Sengkol, and Sukadana Villages** • **Project-related employees and workers** • **Tourists within and around Project Area**	
Positive: • Emphasis will be on avoidance and minimization of noise impacts through the use of International Best Practices. • While noise levels are expected to rise somewhat during operations, they are not expected to be exceed GoI noise standards. Negative: • Overall noise levels within and around the Project area could rise in relation to:	• Strict adherence to the requirement that Project vehicles and equipment meet exhaust emission standards; • Strict 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 whenever possible as alternatives to the use of combustion engines;

Potential Impacts	Mitigation Measures
○ Increased traffic volumes ○ SWRO operations ○ WWTP operations ○ Solid waste facility operations ○ Increased use of generators ○ Increased tourist-related noise (e.g., loud music). • Specific concerns related to the Moto Grand Prix and noise levels associated with that event.	• Preferential use in particular of electric vehicles for Project-related activities; • Minimizing operational activities associated with noise (e.g., operation of large vehicles), to the greatest extent possible, between the hours of 6 pm and 6 am, and on designated holidays; • Avoid known resident locations to the greatest extent possible; • Moto Grand Prix will require extensive noise mitigation and planning, and consultation with local residents; and • Quarterly noise monitoring throughout the life of the Project.
Component: GROUNDWATER, SURFACE WATER, SEA WATER QUALITY **Sensitive Receptors:** • **Drinking water (wells) for local residents within and around Project Area** • **Rivers and freshwater aquatic biota within Project Area** • **Sea water and marine ecosystems within Project Area of Influence**	
Positive: • Emphasis will be on avoidance and minimization of water quality impacts through the use of International Best Practices. • ITDC will implement a zero-runoff requirement to leaseholders. • Overall water (ground, surface, and sea) quality within and around the Project Area is expected to rise significantly over the life of the Project due to: ○ State-of-art water management ○ Drainage control ○ Wastewater Treatment Plants ○ Solid Waste Management. Negative: • Risks to water contamination may occur due to: ○ Incidental spills of fuel and lubricants ○ Improper or illegal waste disposal within the Project Area ○ Uncontrolled waste disposal upstream of the Project.	A central component of water quality mitigation efforts will be the construction and operation of two Project-specific Wastewater Treatment Facilities (WWTP). These state-of-the-art WWTPs will have a capacity of 9,000 and 10,000 m^3/day, ensuring all water consumed daily by the Project is directed to, and processed by, the WWTPs before release into the environment. Water released into the environment from the WWTPs will meet all GoI water quality standards. Processed water from the WWTPs will be re-used onsite for landscaping purposes such as watering lawns, trees, and gardens within the Project Area. As well, a key mitigation effort will be focused on discharges of brine from the SWRO. Design, construction, and operation of the brine discharge system will be performed to avoid concentrations of salinity within the Project Area of Influence that exceed GoI threshold limit standards. In addition to installation and operation of the WWTPs and brine discharge systems, ITDC will implement the following international-standard mitigation measures during the operational phase, the same measures as are applied to control ground and surface water quality effects: • Landscape/vegetation management of all green spaces within the Project Area; • Use and management of drainage systems within Project areas; • Use and management of water retaining wells and

Potential Impacts	Mitigation Measures
	basins; • Use and management of artificial lakes or large ponds to store rainwater; • Protection and management of river mouths; • Conservation and management of mangrove areas; • Vegetation rehabilitation of river banks and other potentially disturbed areas; • Strict use, consistent with national and international standards, of any potentially hazardous substances such as pesticides and fertilizers. • Leaseholders will be required to maintain compliance with a zero-runoff policy.

5.5.2 Potential Biological Impacts

Project operations will involve routine daily use and maintenance of restaurants, hotels, residential buildings, and support facilities. As well, the Project will maintain 60% of the Project Area as managed green space. Areas of this nature will be preferentially planted to native plant species, including trees and shrubs. However, large numbers of ornamental and landscaping species will be planted; not all will be native, though few or none will be considered invasive species. Green spaces will be managed through the use of watering, weeding, and tending.

Operation-phase activities could lead to a landscape dominated by non-native species, and increased risks associated with invasive plant establishment and proliferation will exist, considering each property will have its own management and landscaping policies. Other potential impacts on terrestrial flora could result from the use of pesticides, herbicides, and fertilizers. Managed vegetation complexes, and particularly the golf courses in the Eastern Zone, will require large quantities of irrigation water, and recycled treated wastewater may be insufficient for irrigation during long or severe drought periods.

Routine maintenance and numerous other activities associated with Project operations will result in increased human presence and activity, potentially resulting in increased disturbance and potential habitat exclusion effects to terrestrial fauna. As well, increased human presence within the Project Area could potentially result in increased direct mortality to terrestrial fauna through vehicle collisions and illegal capture/hunting/killing.

Operation-phase activities will result in the consumption and use of water, potentially leading to water contamination as water is released back into the environment. If not managed properly, Project-related release of water into the environment could result in increased runoff, soil erosion, and direct sea water contamination through the use of hazardous materials such as cleaning solutions, fertilizers, herbicides, and pesticides, resulting in negative impacts on aquatic and marine ecosystems.

As well, the operations phase will involve the continuous operation of the Sea Water Reverse Osmosis (SWRO) facilities – the primary source of drinking water during Project operations,

anticipated to be 22,500 m^3/day. As 60% of water intake will be discharged to the environment as high-salinity brine, operation of this facility will involve both massive sea water intake (up to near 34,000 m^3/day) as well as a large discharge of brine (more than 20,000 m^3/day) near the coast. If not managed properly, discharges of this nature could increase long-term sea water salinity levels, potentially resulting in negative impacts on marine biota and intertidal biota within the Project Area.

Coral reef, seagrass, and mangrove ecosystems are particularly sensitive to changes in sea water quality, and require good water quality to grow, remain healthy and viable, and provide ecosystem services. In this case, risks associated with Project-related increases in runoff during the operations period could specifically result in increased sedimentation and deposition on coral reefs and seagrass, as well as other pollutants, within the Project Area of Influence – thereby blocking sunlight and inhibiting photosynthesis, directly smothering and abrading coral and seagrass, and triggering increases in macro algae. As well, potential changes in sea water salinity and water temperature related to brine discharge could result in negative impacts on coral reef and seagrass survival by increasing salinity and temperature of ambient seawater beyond critical thresholds.

While activities associated with inland terrestrial sites within the Project Area will pose little risk to marine turtles, any operations activities on or near sand beaches could potentially impact marine turtles by affecting habitat conditions, and causing disturbance to breeding. Marine turtles rely on sand beaches for nesting (egg laying), and subsequently hatching of eggs and offspring production.

Due to the highly sensitive nature of nesting and egg laying by female marine turtles – particularly at night, when egg-laying occurs – any Project-related operations activities on or near sand beaches could represent potential disturbance effects, if sites of this nature are subjected to disturbance by Project-related human activity, noise, and light during operations.

As well, marine turtles, and particularly eggs, are highly prized as food by many people in the region. Increased human presence, access, and activity within the Project Area could potentially result in increased direct mortality in the form of hunting/killing of marine turtles, as well as egg gathering.

Table 5-9 outlines potential Project-related biological impacts and mitigation measures during the Operations Phase.

Table 5-9 Potential Project-Related Biological Impacts and Mitigation Measures during Operations Phase

Potential Impacts	**Mitigation** Measures
Component: TERRESTRIAL FLORA and FAUNA **Sensitive Receptors:** • **Remnant terrestrial habitat patches in Project Area** • **Existing terrestrial fauna within Project Area** • **Protection Forest adjacent to Project Area** • **Wetlands within Project Area** • **Potential endangered species** • **Invasive species.**	

Potential Impacts	Mitigation Measures

Positive:
• Emphasis will be on avoidance and minimization of impacts on terrestrial flora and fauna through the use of International Best Practices.
• Project does not overlap any protected areas or protection forests.
• Project does not contain identified critical habitat.
• No endangered plant species have been identified.
• Due to relatively degraded terrestrial ecosystems, risks to terrestrial flora and fauna are low.
 	
Negative:
• Increased human presence and activity pose increased risks to:
  ○ Direct mortality impacts on existing wildlife and plants
  ○ Direct mortality impacts on endangered species
  ○ Disturbance impacts to existing fauna
  ○ Establishment and proliferation of invasive species.
	• Minimizing vegetation clearing and disturbance to the greatest extent possible – no unnecessary vegetation clearing will be permitted during the life of Project.
	• Any natural or critical habitat areas will be protected and conserved to the greatest extent possible.
	• Protection forest outside the Project (adjacent to the west boundary) will be entirely avoided.
	• Protection and management of vegetation and habitat specifically associated with river mouths will be part of Project design.
	• Retention and management of remnant forest areas will be performed to the greatest extent possible.
	• Protection and management of natural wetlands and associated habitats will be part of operation.
	• Mangrove areas will be protected and managed as Project policy.
	• Disturbed areas with exposed soil that are not built upon will be revegetated, with preferential use of native plant species, and managed for the life of the Project.
	• Landscaping and revegetation of managed green spaces will be performed with preferential use of native plant species.
	• Use of invasive plant species for revegetation and landscaping purposes will be prohibited.
	• Invasive plant species will be controlled, removed, and managed to greatest extent possible during the life of the Project.
	• Use of pesticides, herbicides, and fertilizers will be strictly controlled and consistent with National laws and international guidelines.
	• Vehicle speeds and driving practices will be strictly controlled and enforced within the Project area.
	• Hunting or otherwise unauthorized killing of fauna by Project-related employees, contractors, and management will be strictly prohibited.
	• Sources of disturbance such as noise and light will be controlled and minimized to the greatest extent possible, and focused on areas of remaining habitat value.

Component: MARINE BIOTA **Sensitive Receptors:** • **Regional Marine Protected Area of Central Lombok – Gerupuk Bay** • **Nyale marine worms** • **Plankton** • **Coral and other marine benthos**	

Potential Impacts	Mitigation Measures
• **Sea turtles** • **Fish.**	
Positive: • Emphasis will be on avoidance and minimization of impacts on marine biota through the use of International Best Practices, and particularly state-of-the-art water management. • Designation of Regional Marine Protected Area in Gerupuk Bay was coordinated with SEZ establishment. • Due to significant investments in water management, seawater quality is expected to improve significantly, resulting in overall positive benefits to all marine biota in the Project Area of Influence. Negative: • Risks to seawater contamination, resulting in potential impacts on marine biota could include: ○ Spills of fuel and lubricants ○ Improper or illegal disposal of solid waste ○ Improper or illegal management of human waste.	A central component of water quality mitigation efforts will be the construction and operation of two Project-specific Waste Water Treatment Facilities (WWTPs). These state-of-the-art WWTPs will have a capacity of 9,000 and 10,000 m^3/day, ensuring all water consumed daily by the Project is directed to, and processed by, the WWTPs before release into the environment. Water released into the environment from the WWTPs will meet all GoI water quality standards. Processed water from the WWTPs will be re-used onsite for landscaping purposes such as watering lawns, trees, and gardens within the Project Area. As well, a key mitigation effort will be focused on discharges of brine from the SWRO. Design, construction, and implementation of the brine discharge system will be carried out to avoid concentrations of salinity within the Project Area of Influence that exceed GoI thresholds. Initial bathymetry data from within the Project Area of Influence indicates ocean conditions characterized by steep and deep sea bottom profiles, combined with large wave and swell action. Ocean conditions of this nature will lend themselves to regular and constant flushing and mixing of water, and thereby minimize any Project-related concentrations of brine discharge. In addition to installation and operation of the WWTPs and brine discharge systems, ITDC will implement the following international-standard mitigation measures during the operational phase: • Landscape/vegetation management of all green spaces within the Project Area; • Use and management of drainage systems within Project areas; • Use and management of water retaining wells and basins; • Use and management of artificial lakes or large ponds to store rainwater; • Protection and management of river mouths; • Conservation and management of mangrove areas; • Vegetation rehabilitation of riverbanks and other potentially disturbed areas; and • Strict use, consistent with national and international standards, of any potentially hazardous substances such as pesticides and fertilizers. • Strict adherence to Protection of marine biota values will focus on Gerupuk Bay (Marine Protected Area), which is outside but immediately adjacent to

Potential Impacts	Mitigation Measures
	the SEZ.

Potential Impacts	Mitigation Measures
Component: MANGROVE ECOSYSTEMS **Sensitive Receptors: Mangrove ecosystems within Project Area of Influence, specific concern focused on:** • **Regional Marine Protected Area of Central Lombok – Gerupuk Bay**	
Positive: • Emphasis will be on avoidance and minimization of impacts on mangrove ecosystems through the use of International Best Practices. • By Project design, mangrove ecosystems will be retained, and remain undisturbed during the life of the Project. • Due to significant investments in water management, seawater quality is expected to improve significantly, resulting in overall positive benefits to mangroves in the Project Area of Influence. • Designation of Regional Marine Protected Area in Gerupuk Bay was coordinated with establishment of SEZ. Negative: • Risks to seawater contamination, resulting in potential impacts on mangroves could include: ○ Spills of fuel and lubricants ○ Improper or illegal disposal of solid waste ○ Improper or illegal management of human waste.	In addition to installation and operation of the WWTPs and brine discharge systems, ITDC will as stated implement conservation and management of mangrove areas, including suitable buffer zones, as well as the following international-standard mitigation measures during the operational phase: • Landscape/vegetation management of all green spaces within the Project Area; • Use and management of drainage systems within Project areas; • Use and management of water retaining wells and basins; • Use and management of artificial lakes or large ponds to store rainwater; • Protection and management of river mouths; • Vegetation rehabilitation of riverbanks and other potentially disturbed areas; and • Strict use, consistent with national and international standards, of any potentially hazardous substances such as pesticides and fertilizers.
Component: CORAL REEF and SEAGRASS ECOSYSTEMS **Sensitive Receptors: Coral reef and seagrass ecosystems within Project Area of Influence, with specific concern focused on:** • **Regional Marine Protected Area of Central Lombok – Gerupuk Bay**	
Positive: • Emphasis will be on avoidance and minimization of impacts on coral reef and seagrass ecosystems through the use of International Best Practices, in particular state-of-art water management. • Due to significant investments in water management, seawater quality is expected to improve significantly, resulting in overall positive benefits to coral reefs and seagrass in the Project Area of Influence. • Designation of Regional Marine Protected Area in Gerupuk Bay was coordinated with establishment of SEZ.	In addition to installation and operation of the WWTPs and brine discharge systems, ITDC will implement the following international-standard mitigation measures during the operational phase; these will be implemented during construction, and will continue to be used during operations. Many are aimed at protecting surface water flows that will quickly enter the coastal waters and could affect corals, while some could apply to direct coastal runoff flows: • Landscape/vegetation management of all green spaces within the Project Area; • Use and management of drainage systems within Project areas; • Use and management of water retaining wells and basins;

Potential Impacts	**Mitigation** Measures

Negative:
• Risks to seawater contamination, resulting in potential impacts on mangroves could include:
  ○ Spills of fuel and lubricants
  ○ Improper disposal of construction waste
  ○ Improper management of human waste.
	• Use and management of artificial lakes or large ponds to store rainwater;
	• Protection and management of river mouths;
	• Conservation and management of mangrove areas;
	• Vegetation rehabilitation of river banks and other potentially disturbed areas; and
	• Strict use, consistent with national and international standards, of any potentially hazardous substances such as pesticides and fertilizers.
	• Protection and management of coral reef and seagrass ecosystems specifically will focus on Gerupuk Bay (Marine Protected Area), which is outside but immediately adjacent to SEZ.

Component: MARINE TURTLES **Sensitive Receptors: Potentially nesting marine turtles within Project Area**	

Positive:
• Emphasis will be on avoidance and minimization of impacts on marine turtles through the use of International Best Practices, particularly endangered species management.
• Project will initiate a marine turtle management plan, thereby resulting in improved active management of marine turtles in the Project Area.
• Project is expected to provide overall positive impacts on marine turtles through active management and monitoring.
 	
Negative:
• Any operations activities on or near sand beaches could potentially result in:
  ○ Direct loss of nesting habitat
  ○ Disturbance of nesting habitat resulting in avoidance or abandonment.
• Disturbance – particularly at night – of nesting habitat could result from:
  ○ Noise and human activity within the vicinity of nesting beaches
  ○ Light disturbance within the vicinity of nesting beaches.
• Risk of increased direct mortality impacts from illegal killing of adults, and egg collecting due to increased human presence and activity.
	• Operational activities on or near sand beaches will be avoided and minimized to the greatest extent possible.
	• No unnecessary use of sand beaches for operations purposes will be permitted.
	• Beach vegetation zones will be protected and managed to the greatest extent possible.
	• Noise and lighting near sand beach habitat will be minimized to the greatest extent possible.
	• Operational activities on or near sand beach habitat will be avoided during night hours (6 pm to 6 am) to the greatest extent possible.
	• Lighting, in particular, of sites and activities near sand beach habitat will be avoided to the greatest extent possible.
	
	In the event marine turtle nesting is observed within the Project Area, operations within and around the site will be halted; human activity and disturbance will be avoided until an ecological assessment of the situation and future activity management will be conducted by a qualified professional. These measures may include restriction of operational activities in defined areas and defined times around where turtle nesting is observed.
	
	Killing of marine turtles and collection of marine turtle eggs by any Project-related workers, contractors, management personnel, and associated family members will be strictly prohibited, and sanctioned if they are known to occur.

5.5.3 Potential Socioeconomic and Cultural Impacts

Project operations will involve the physical implementation of operational activities associated with the Project, and the ensuing positive and negative impacts associated with the operations phase. Actual Project-related impacts – positive and negative – to air and water quality, noise, biological values, and socioeconomic components will unfold and be perceived by local residents during the operations phase. Through direct experiences and interactions with the Project and its effects, public perceptions and attitudes towards the Project will be shaped. Because of the long-term environmental and social changes operations-phase activities typically represent, there is a large potential for operations-phase activities to have a significant effect on public perceptions and attitudes toward the Project, over the life of the Project.

The Project will directly involve the employment and use of large numbers of workers, contractors, and management personnel. In addition to direct employment on the Project, the Project will require and involve local support businesses in various forms including local food providers, accommodation, clothing providers, transportation providers, tourist outfitters, and other labor-force support businesses. Potential Project-related employment and livelihood impacts during operations are therefore associated with the effects of increased local employment and income, increased local business opportunities, and increased livelihoods for local residents and communities throughout the life of the Project.

The combined effect of potential Project-related impacts on air and water quality during the operations phase, and the associated potential biological impacts to terrestrial and marine ecosystems, represents a potential risk of negative impacts to overall environmental health and ecosystems services to local residents through the life of the Project.

Operations-phase activities will likely result in large social changes to local communities within and around the Project Area. Project-related health and safety effects on local communities will primarily be the result of two major factors: (1) an influx of new people and their families to maintain the Project work force, along with increasing numbers of tourists as greater numbers of hotels begin operating; and (2) increases in local income levels and community wealth as Project-related employment and income levels rise for local residents and general levels of local economic activity rise. Changes of this nature will have myriad effects – potentially positive and negative – on the socioeconomic fabric of local communities, which in turn will affect community health and safety during the operations phase.

Other potential indirect impacts from the Project are related to induced development – regional development in the form of urban expansion along the periphery of a large development such as The Mandalika SEZ. Impacts of this nature can, if uncontrolled and unmanaged, can have adverse socio-economic and environmental impacts, and therefore must be mitigated and managed carefully. If managed properly however – typically through effective regional planning – induced development can have significant positive socioeconomic benefits through increasing overall levels of economic activity.

Potential changes affecting Project-related community health and safety include, but are not limited to:

- Increases in local population and residential density as Project-related workers and their families from outside the area are brought into the area for the operations phase;

- Increases in local traffic volumes, patterns, and accident rates as operations-related activities are implemented and tourists use local roads in greater numbers;
- Increases in local income levels and spending as local people begin Project-related employment;
- Increases in social interactions and potential conflicts as migrant workers and their families are integrated into local communities and tourists pass through local villages;
- Increases in labor conflicts as numbers of Project-related workers increase;
- Increases in road accidents as Project-related traffic densities increase;
- Increases in crime levels as local populations increase and migrant workers and large numbers of tourists pass through the area;
- Increases in disease transmission as more people enter the area; and specifically sexual transmitted diseases as related to migrant workers and tourists;
- Changes to local environmental health resulting in Project-related changes to human health among local residents.

While the operations phase will not typically involve new construction requiring land and soil disturbance, the possibility exists that new sites or portions of sites will be disturbed during the operations phase. This may occur as expansion of an existing facility, or modifications to an existing one. As a result, similar to construction-phase activities, there is a risk to cultural heritage if cultural heritage sites and artifacts occur within the Project Area. Of particular concern are unknown sites and artifacts that may exist below ground level, and are therefore at risk of being accidentally damaged or destroyed by Project-related activities such as digging and soil removal during the operations phase.

Table 5-10 outlines potential Project-related socioeconomic and cultural Impacts and mitigation measures during the Operations Phase.

Table 5-10 Potential Project-Related Socioeconomic and Cultural Impacts and Mitigation Measures during Operations Phase

Potential Impacts	**Mitigation** Measures
Component: PUBLIC PERCEPTIONS AND ATTITUDES **Sensitive Receptors: Residents of Kuta, Mertak, Sengkol, and Sukadana Villages**	

Positive:
• Potentially high local public support for the Project, through overall perceived expectations that the Project will:
  ○ Provide jobs
  ○ Provide business opportunities
  ○ Facilitate regional development;
• Opportunity to establish good working relationships with affected villages;
• Shape good attitudes towards Project by local residents, resulting in long-term gains over the life of the Project.
	• As part of ITDC's design-phase public consultation process, public consultation was performed through a series of public meetings and announcements during the 2012 AMDAL process.
	• Social surveys of 223 people within five surrounding villages were conducted as part of AMDAL primary data collection, also contributing to the Project information disclosure and consultation process.
	• AMDAL Addendum was compiled, requiring another public consultation event, followed by multiple site visits by Project teams, including an ESC field survey team preparing a 2018

Potential Impacts	Mitigation Measures
Negative: • Potential for local residents to perceive negative impacts, including: ○ Risk of losing current livelihood (e.g., loss of farm land); ○ Potential for increased crime and security-related issues; ○ Risk of losing cultural heritage.	Environmental and Social Due Diligence assessment. • Ongoing public consultation activities and dialogue will continue throughout the life of Project, as outlined in **Chapter 7** of this ESIA. • During operations phase, monitoring of public concerns, issues, complaints, and attitudes will be performed on a quarterly basis, consistent with the RKL-RPL process – a legal requirement of the GoI AMDAL process.
Component: EMPLOYMENT, INCOME, AND LIVELIHOOD **Sensitive Receptors: Residents of Kuta, Mertak, Sengkol, and Sukadana Villages, especially vulnerable groups including:** • **Women** • **Indigenous People** • **Elderly** • **Youth** • **Disadvantaged (Economically, Mentally, and Physically).**	
Positive: • At full development, Project is expected to provide 10,200 jobs; • Local residents will be preferentially employed; • Large gains to local businesses such as: ○ Materials suppliers ○ Food providers ○ Clothing providers ○ Accommodation providers ○ Equipment providers; • Training opportunities for local residents; • Increases to local long-term workforce capacity; • Increases in local wealth and spending capacity will ultimately result in the reduction of local poverty for future generations; • Increased employment opportunities for women, elderly, disabled, and disadvantaged local residents; • Overall large significant positive benefits to employment, income, and livelihood for local residents are anticipated. Negative: • Risk of exploitation of local workers; • Risk of child labor; • Difficulties employing disabled, elderly, and illiterate residents who wish to work;	• 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. • All 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: ○ 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 non-discrimination; ○ Compliance with all Indonesian laws relating to worker organizations and collective bargaining; ○ Accessible, understandable, and transparent grievance mechanism made available at the time of hiring. • Social development and inclusion will be promoted by the following measures:

Potential Impacts	**Mitigation** Measures
• Risk of social and gender inequality leading to increased community disputes.	○ 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: ○ 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 completely avoided by the following measures: ○ Children under the age of 18 will not be employed in any capacity by the Project or associated contractors or tenants, except under strict 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: ENVIRONMENTAL HEALTH AND ECOSYSTEM SERVICES **Sensitive Receptors: Residents of Kuta, Mertak, Sengkol, and Sukadana Villages**	
<u>Positive</u>: • Emphasis will be on avoidance and minimization of impacts on environmental health through the use of International Best Practices, in particular state-of-art water management and solid waste management. • Overall environmental quality within the Project Area and the associated ecosystem services are expected to improve significantly during the life of the Project, including: ○ Improved ground water quality ○ Improved surface water quality ○ Improved seawater quality ○ Improved waste management.	Mitigation of air quality, noise, water quality, and biological component impacts are comprehensively discussed in **Sections 5.4.1 and 5.4.2** Overall, environmental design criteria and mitigation incorporated into the Project are expected to provide local residents with: • Improved environmental quality • Improved ecosystem services • Improved quality of life • Public beach access will be strictly maintained.

Potential Impacts	Mitigation Measures

Negative:
• Potential environmental risks to air and water quality are due to:
  ○ Increased air emissions
  ○ Increased risk of soil erosion leading to run-off
  ○ Increase noise disturbance effects.
• Environmental impacts could result in risks to ecosystem services in the form of:
  ○ Decreased marine resources (fish and other marine food items)
  ○ Decreased water quality for local residents
  ○ Decrease in terrestrial flora and fauna used by local residents
• Potential risks to public beach access.	

Component: COMMUNITY HEALTH, SAFETY, AND SECURITY **Sensitive Receptors: Residents of Kuta, Mertak, Sengkol, and Sukadana Villages**	

Positive:
• Overall improvement in public health due to increased health facilities and availability;
• Improved traffic safety due to improved road network and road conditions;
• Overall improvement in quality of life for local residents due to:
  ○ Improved health care
  ○ Improved work safety provisions
  ○ Improved environmental health
  ○ Improved security situation
  ○ Improved emergency preparedness.
 	
Negative:
• Risk of decrease in air and water quality resulting in health effects;
• Risks to public health due to improper waste treatment;
• Risks to public security with increases in crime;
• Risks to safety associated with increased traffic volumes.
	• Apply community health and safety measures:
	  ○ 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. Project-related public consultation is comprehensively described in **CHAPTER 7**.
	  ○ Maintain a functioning Grievance Resolution Mechanism (GRM) to deal with complaints and concerns about community health and safety, as described in **CHAPTER 9.**
	• Address thoroughly road and traffic safety concerns of local communities as described in the following Subsection 5.4.5, 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 zone;
	  ○ Cultivate positive relationships with surrounding communities and local

Potential Impacts	**Mitigation** Measures
	government and law enforcement; ○ Prevent private security personnel from increasing risks to community safety by applying the actions and principles for security workers detailed in the Environmental and Social Management Plan. Because many local residents will be employed by the Project during construction, there is interaction between workers' health and safety and community health and safety. This will be addressed by: • 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 has developed 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. Specific items addressed include: • Ensure employees' fitness for work (physical and mental); • Assess labor and working conditions of Project; • Implement measures designed to ensure workers have safe and healthy working conditions; • Put in place measures to prevent accidents, injuries and disease caused by the Project; • Apply relevant occupational health and safety provisions such as IFC's EHS Guidelines; • Document and report on accidents, diseases and incidents among workers. In verifying the application of the same provisions to the employees of all tenants, contractors, and other formal sector businesses operating within The Mandalika Project Area, the Project management will ensure uniform application of Indonesian labor law and regulations in its area of responsibility. This will in turn assist in improving conditions for local residents employed within the tourism zone.

Potential Impacts	**Mitigation** Measures
	The Project will also maintain its 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. These will be developed to address reasonably possible emergency risks, including: • Natural disasters—earthquake, tsunami, river and coastal flooding, major storms, wildfire; • Fuel, chemical, and hazardous material spills or releases; • Major and sustained civil unrest. The Project will also maintain and develop its Emergency Action Plan as a preventive and emergency preparedness and response plan to avoid or minimize adverse risks and impacts on the health and safety of Project workers, tourists/guests, and local communities. The Plan will be adapted to address all reasonably possible emergency risks, including: • Natural disasters—earthquake, tsunami, river and coastal flooding, major storms, wildfire; • Fuel, chemical, and hazardous material spills or releases; • Major and sustained civil unrest. The plan will include emergency facilities to be constructed by the Project, and include the following that will be available to tourists and local residents: • Early Warning Systems • Temporary Evacuation Shelters • Evacuation facilities at individual hotels. This plan will be developed in cooperation with all contractors and subcontractors, with such cooperation mandated in their contracts, including their responsibility for extending emergency response planning to their subcontractors. Local community leaders and regional government agencies and appropriate civil society groups will also be included in emergency planning, with appropriate budgets for periodic consultation and coordination. Emergency planning will include formal, documented plans for emergency notification and mobilization as well as evacuation planning. It will also include realistic periodic training and drills.

Potential Impacts	**Mitigation** Measures
Component: ROAD INFRASTRUCTURE AND TRAFFIC DISRUPTION **Sensitive Receptors: Residents of Kuta, Mertak, Sengkol, and Sukadana Villages, with specific focus on:** • **Subvillages adjacent to, or near roads**	
Positive: • Overall improvements to road infrastructure and conditions within and around the Project Area; • Improved road conditions will lead to increased road safety; • Improved road conditions will lead to faster travel and commuting times. Negative: • Risk of increased traffic volumes beyond road capacities, resulting in traffic congestion; • Risk of higher speeds and more traffic leading to increased traffic accidents and injuries.	• Maintain existing roads adequately and regularly to ensure existing roads are in good condition throughout the construction phase. • Perform any required road upgrades to address and accommodate any Project-related road access requirements. • Design, construct, and develop new roads that will result in an overall adequate road network (i.e., all existing, upgraded, and new roads combined) to address all foreseeable traffic volumes within and around the Project Area. • Construct and maintain all Project-related roads (i.e., newly constructed, upgraded, or used by the Project in any capacity) to National and international 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 all necessary personal protective equipment. • All 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). • Subvillages adjacent to, or near, existing roads will be specifically targeted for traffic mitigation and management.
Component: CULTURAL HERITAGE **Sensitive Receptors: Residents of Kuta, Mertak, Sengkol, and Sukadana Villages, with specific focus on:** • **Buried culture sites and artifacts** • **Nyale (edible marine worm) Festival**	
Positive: • Overall improvement in addressing and managing cultural heritage within and around the Project area; • Improved site-specific management of identified cultural heritage sites; • Installation of cultural heritage protocols is improvement over existing ad-hoc approach. • Enhanced and focussed management of Nyale Marine Worm Festival.	• Minimizing vegetation clearing and soil disturbance to the greatest extent possible – no unnecessary vegetation clearing or soil disturbance will be permitted. • Ongoing and comprehensive public consultation will occur prior to any construction-related activities. Doing so will reveal any known culturally significant sites or artifacts prior to ground disturbance. • Any culturally significant sites or artifacts identified by local residents prior to the

Potential Impacts	Mitigation Measures
Negative: • Risk of unearthing and potentially damaging culturally sensitive sites or objects during operations phase. • Some local residents believe participation of outsiders in Nyale Festival changes its cultural meaning.	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**, provided in **Appendix C**. • Specific and focussed attention will be provided to the annual Nyale Marine Worm Festival, to ensure this critically important local cultural tradition remains intact and vibrant. • Tourists will be educated on the cultural significance of the Nyale Festival to local inhabitants and the need to respect its overall position in their lives.
Component: INVOLUNTARY RESETTLEMENT **Sensitive Receptors: Residents of Kuta, Mertak, Sengkol, and Sukadana Villages, especially vulnerable groups including:** • **Women** • **Indigenous People** • **Elderly** • **Youth** • **Disadvantaged (Economically, Mentally, and Physically)**	
Positive: • All required land acquisitions will be successfully cleared before initiation of site-specific Operations phase. • ITDC will have in place a comprehensive and detailed Resettlement Plan (RP) during the Operations phase. • The RP will be in full compliance with GoI laws and regulations, and AIIB ESS 2. • The RP will not impose severe economic or social hardships on Project-Affected People (PAP). Negative: • 8.9% of Project land is currently being litigated in court, • 2.0% of Project land is currently in dispute or being negotiated. • Some claimed land areas could have impacts on road subprojects.	Mitigation and Management pertaining to Involuntary resettlement is comprehensively described in the **Resettlement Planning 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 • All land acquisition will comply with national laws and regulations, including Law No 2/2012

Potential Impacts	Mitigation Measures
• Some enclave lands could have impacts on proposed infrastructure subprojects. • 1 ha of enclave land, representing 15 houses and 6 owners, must be acquired prior to Construction and Operations phase due to intersections with road subprojects.	• 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 non-physical components, including: disposal rights, transaction costs, waiting period compensation, loss of value of remaining land, and physical damages The following AIIB policies will be strictly enforced. Project-Affected People (PAPs) 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 **Sensitive Receptors: Residents of Kuta, Mertak, Sengkol, and Sukadana Villages, with specific focus on Indigenous Peoples (Sasak) and culture**	
<u>Positive</u>: • Vast majority (97%) of local residents and associated Indigenous Peoples (IP) support the Project. • Overall Project effects on IPs are expected to be significantly positive, primarily due to expectations of an overall decrease in local poverty and improved quality of life from: ○ Increased employment and associated income and wealth generation; ○ Increased business opportunities and associated wealth generation; ○ Improved infrastructure (e.g., roads, lighting, water, telecommunications); ○ Improved public services (e.g., health, education, training).	Mitigation and Management pertaining specifically to Indigenous Peoples affected by the Project is comprehensively 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 includes: • 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;

Potential Impacts	Mitigation Measures

Negative:
• Concerns over possible impacts on local culture and customs, including:
  ○ Barriers to conducting cultural rituals;
  ○ Negative impacts on youth (e.g., change of culture, dress, lifestyle; tattoos and body piercing);
  ○ Emergence of illegal activities such as prostitution;
  ○ Increased use of illegal drugs;
• Concerns over low rates of ITDC compensation for land;
• Fears of not hiring locally;
• Concerns over loss of land and fishing areas;
Concerns over local price increases.
	• 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 Pre, Prior, and Informed Consent – 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.

Potential Impacts	Mitigation Measures
Component: INDUCED DEVELOPMENT **Sensitive Receptors: Residents of Kuta, Mertak, Sengkol, and Sukadana Villages, particularly those along the periphery of the Project boundary**	
Positive: • Regional development and urban expansion attracted to the area as a result of the Project, can have large socioeconomic benefits by increasing employment and business opportunities beyond the Project Area. • Expansion of Project-related socio-economic spin-offs far beyond the boundaries of the Project Area. • Potential overall increase in economic benefits within the region. Negative: • Concerns over uncontrolled and unmanaged development outside the Project Area, could result in: ○ Unsustainable economic growth and social imbalances; ○ Risk of increase crime rates; ○ Risks of lack of sufficient infrastructure; ○ Risk of environmental impacts, and related ecosystem service impacts, related to lack of proper water management, sewage, sanitation, and waste management.	Induced development impacts can be negative if regional development and expansion outside the Project Area occurs within an uncontrolled, unmanaged, and therefore unsustainable manner. To ensure Project-related induced development results in primarily positive socioeconomic benefits, regional planning in the context of the Project is essential. Effective inclusion and integration of The Mandalika Project within regional planning, will ensure effective and sustainable planning outside the Project area of: • Land use • Infrastructure • Transportation networks • Telecommunications networks • Protected areas • Waste management • Water management. Implementation of effective integration of the Project into regional planning outside the Project boundaries will require effective lines of communication with regional authorities. ITDC will support and participate in all regional development activities as a primary stakeholder in the process.

CHAPTER 6
ALTERNATIVES ANALYSIS

This Chapter addresses various Project alternatives, specifically including:

- No-Project scenario
- Solid-Waste Management (SWM) Alternatives
- Waste Water Treatment Alternatives
- Drainage System Alternatives
- Utility Network Alternatives

Alternative siting options for the Project are not considered. The Mandalika KEK/SEZ already exists, and it was and remains the logical area for developing a tourism destination in eastern Lombok. Tourism logically would develop from the Kuta area eastward in any case. AIIB's financing of tourism infrastructure logically focuses on The Mandalika, partly because this complements the World Bank efforts to develop a Master Plan for tourism covering the entire Island.

6.1 No-Project Scenario

The Government of Indonesia (GoI) has identified tourism as an important part of its economic development strategy, and is currently investing 9% of its development budget into the tourism sector. The Mandalika Project is among one of ten national the top-ten priority tourism developments destinations identified at the National levelby National Tourism Development Priority Program (PPNPPI). As such, the GoI has spent considerable time and laid the groundwork for achieving investment on the the objectives of this Project in the past decade, and by establishing the regulatory and institutional framework under which the destination would operate and by making considerable investments into core infrastructure and other public facilities have already been constructedwithin the SEZ, which included the following:

- Designated The Mandalika as a Special Economic Zone (SEZ) and a National Strategic Project (Presidential Regulation No. 3 of 2016);
- Renamed the previous Bali Tourism Development Corporation (BTDC) as the Indonesia Tourism Development Corporation (ITDC), while expanding its mandate to also cover the planning and development of The Mandalika;
- Prepared an integrated The Mandalika Master Plan that guides future tourism development to concentrate at The Mandalika, and Environmental and Social Impact Assessment (ESIA);
- Acquired almost all of the required land in The Mandalika SEZ;
- Planned and realized regional infrastructure investments such as a bypass road connecting the airport and The Mandalika site, expansion of the Lombok international airport, and others.

Because The Mandalika resort area Master Plan already existed prior to The Mandalika Project Plan, considerable infrastructure and facilities have already been constructed as part of the overall Project, including:

- Numerous hotels (privately funded), with Novotel in operation
- One Sea Water Reverse Osmosis plant (currently built, but not yet operating)
- Project-specific landfill site, built in 2016
- 4.5 kilometers of paved access road using *Penyertaan Modal Negara (PMN)* funding
- 10 kilometers of concrete fencing along northern Project boundary
- Two main entrance gates at main access points.

CHAPTER 2 provides a detailed Project Description outlining past investments and existing Project-related infrastructure.

Most importantly, the Project represents significant future socioeconomic benefits at the local, regional, and National levels. Development of a major tourism destination in the Project Area will clearly generate levels of income and associated benefits previously unknown to local residents in the region – and thereby represents a Nationally significant economic development within an underdeveloped region of Indonesia (West Nusa Tenggara Province ranks 31st in GDP per capita of the 34 provinces of Indonesia).

The Project is within a sector that is inherently labor intensive, has low entry barriers, and employs a high proportion of women. As well, based on experience gathered from the Nusa Dua Project, Projects of this nature disproportionately create employment for local residents by resulting in approximately two local employment opportunities per hotel room.

As well, due to a current regional land base characterized as a degraded landscape mosaic of mixed subsistence agriculture, degraded forest remnants, and settlements of poor rural residents, the Project represents an opportunity for large environmental benefits for local residents in the region.

Indeed, due to large planned Project-related investments in flood and erosion control and water retention structures (many outside the Project Area), wastewater treatment and management, and solid waste management, water quality (ground, surface, and marine) 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. The combination of all these major improvements will have a cascading effect by not only bettering the lives of local residents through a cleaner and healthier environment, but also in that improved sea water quality is expected to improve marine ecosystems and associated ecosystem services as well as fisheries in the waters surrounding the Project. The combination of the Mangrove Ecopark and the Teluk Bumbang Marine Tourism Park (*Taman Wisata Perairan*) will clearly benefit marine life and nearby fisheries. **CHAPTER 5** provides comprehensive discussions of Project-related social and environmental benefits, in addition to its risks.

The Project therefore represents the following:

- Local, regional, and National priority;

- Significant investments that have already been made toward tourism destination development;
- Major socioeconomic benefits for people in the region; and,
- Significant environmental benefits and associated maintenance of ecosystem services for local people.

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. Not providing the benefits to be financed by the AIIB investment would not stop tourism development in the area, but it would severely cripple the development of adequate infrastructure in the area, reduce the incentives for major private sector investments, and significantly delay the diffusion of development benefits to ordinary local residents.

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

6.2 Solid-Waste Management Alternatives

Current solid waste management generation within the Project Area has been estimated at approximately 1 m^3/day. This amount of Project-generated solid waste will increase dramatically as The Mandalika area develops and the Project is implemented. At full operating capacity, the Project Area is expected to generate up to 600.5 m^3/day of solid waste by 2040.

Currently, domestic solid waste within the Project Area is collected by ITDC and transported by truck to a sanitary landfill, located outside the Project Area at Pengengat (**CHAPTER 2** is the Project Description and discusses the landfill as an Associated Facility). The landfill is an engineered, lined facility built to international standards, and is therefore equipped to collect and handle leachate, and serve other modern landfill functions, notable management of methane off-gas.

The landfill is currently 2 hectares in size, but if The Mandalika's solid waste production is factored into the capacity, it has been calculated as needing to expand to 6 hectares by 2030. Central Lombok Regency has allocated 10 hectares for the facility, sufficient for some time to come. During full Project operations, Pengengat landfill is calculated as needing to expand to nearly 12 hectares by 2040, at which point The Mandalika will contribute nearly half of the waste delivered there. More details are provided in **CHAPTER 2**; without such an expansion, an alternative landfill would be needed. It is also important that waste volume generated at The Mandalika be reduced considerably prior to transport, or even greater public landfill capacity will be required.

To address this and other issues of Project-related solid waste generation during the operations phase, ITDC plans to construct a 5,000-m^2 solid waste management (SWM) facility within the Project Area. Solid waste will be collected within the Project Area, and brought to a SWM facility located in the eastern portion of the Project. The waste will either be presorted at the source (e.g., hotel, restaurant) or sorted at the facility by a third party. Material will be sorted into organic (putrescible) and inorganic (inert) waste. Organic waste will be composted and

subsequently reused within the Project Area for landscaping purposes. Reusable and recyclable inorganic material will be reused and recycled to the greatest extent possible. Non-reusable/recyclable inorganic waste will be transported to the Pengengat landfill for proper disposal.

Current Project Descriptions (**CHAPTER 2**, this document) call for the onsite SWM facility and waste processing, as described above. 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.

6.2.1 Onsite SWM Facility Alternative

The onsite alternative would centralize Solid Waste Management (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. Advantages and disadvantages of an onsite SWM facility are presented in **Table 6-1.**

Table 6-1 Advantages and Disadvantages of On-Site SWM Facility

Advantages	Disadvantages
• Centralized onsite control over Project-related SWM – potentially resulting in more efficient and effective management of solid waste. • Composting of organic waste onsite facilitates use of compost for Project-related landscaping purposes. • Reduced travel time for waste collection by centralizing depot, and streamlining transportation of waste to Pengengat Landfill by reducing volumes. • Some permanent low-skill and semiskilled employment in composting and recycling-recovery. • ITDC can impose and manage strict environmental standards, including emissions to air and water. • Potential for future expansion and development of onsite waste-to-energy Project.	• Potentially more handling of solid waste, by requiring initial deposition and sorting of material at onsite facility, followed by loading and transport to landfill. • Requires facility site, followed by study and design to construct facility. • Requires environmental and design criteria to avoid or eliminate onsite environmental impacts such as odor and other air emissions and possible leachate affecting groundwater and surface water. • Costs associated with specialized onsite facilities. • Potential risks of adverse impacts on local residents and tourists in the form of odors, air emissions, and visual and aesthetic effects.

6.2.2 No Onsite SWM Facility Alternative

Without an onsite SWM facility within the boundaries of The Mandalika Project, all solid waste would require collection and direct transport to the Pengengat Landfill. In this scenario, no sorting of waste would occur within the Project Area, hereby requiring sorting and processing at the landfill site (if sorting were considered desirable or feasible in this case). While this scenario would require less handling of solid waste and export SWM issues off-site – including potential environmental and social impacts – this alternative also comes with several disadvantages, as summarized in **Table 6-2.**

Table 6-2 Advantages and Disadvantages of No Onsite SWM Facility

Advantages	Disadvantages
• Potentially less handling of solid waste by collecting and transporting solid waste directly to the Pengengat Landfill. • Exports most SWM issues and concerns off-site, particularly odors and visual impacts of SWM facility • Likely less costly in the short-term.	• Loss of ITDC control and management over SWM, potentially resulting in increased downstream environmental and social impacts. • Lack of onsite composting facility will reduce ease and feasibility of compost use for Project-related landscaping. • Reduced employment within SEZ. • Potentially less waste diverted from Pengengat landfill, thereby requiring more landfill capacity over the long term. • May require larger trucks. • Higher transportation volumes, costs, and travel times due to all unsorted material going directly to landfill.

6.2.3 Facility Siting: West versus East Location

As discussed above, there are currently two siting options for the location of an onsite SWM facility: (1) site in the western portion of the Project Area, and (2) site in the eastern portion. The specific locations of these alternative sites are provided in **CHAPTER 2**. Both sites provide numerous advantages and disadvantages, as summarized in **Table 6-3**.

Table 6-3 Advantages and Disadvantages of Two Alternative SWM Facility Locations

West Site Location	East Site Location
Advantages	**Advantages**
• Close to Kuta, and therefore closer to support infrastructure and potential local workers	• More discreet location with few, if any, nearby residents, potentially resulting in: • Significantly fewer social issues, complaints, and conflicts • Significantly fewer tourists viewing or interacting with the site • Closer to Pengengat Landfill, resulting in: • Lower transportation costs • Decreased risks from spills and accidents • Farther from ocean (approx. 1,800 m), presenting less risks to seawater
Disadvantages	**Disadvantages**
• Very close to local residents with several houses and shops in immediate vicinity, potentially resulting in high level of community complaints, conflict, and grievances; • In a highly visible location within the entrance	• Farther away from Kuta, and related support infrastructure and local work force; • Farther away from bulk of development and thus longer internal transport distances for waste.

West Site Location	East Site Location
area to the Project, resulting in higher visibility to tourists and local residents; • Close to ocean (approximately. 400 m) resulting in higher risks associated with seawater and beach contamination • Farther from Pengengat Landfill – and must pass by East SWM facility on route to landfill – resulting in: • Higher transportation costs for waste • Higher risks from spills and accidents	

6.2.4 Incineration

Incineration of undiverted waste (i.e., non-compostable, non-reusable, and non-recyclable waste) at the on-site SWM facility presents a series of advantages and disadvantages, as summarized in **Table 6-4**.

Table 6-4 Advantages and Disadvantages of Waste Incineration at Onsite SWM Facility

Advantages	Disadvantages
• Major advantage is volume reduction. Solid waste mass can be reduced up to 85%; volume up to 95% -- thereby drastically reducing required landfill space at the Pengengat Landfill. • Reduction or elimination of groundwater contamination due to reduction or avoidance of landfill leachate from raw waste contacting rain water. • Energy generation is a current or future option (i.e., burning of waste to produce electricity via steam generation). • Overall lower carbon footprint (i.e., release of CO_2 in efficient burning process) when compared to methane release if waste is put in a landfill with poor gas management.	• Major disadvantage is emissions to air of potentially toxic or otherwise hazardous pollutants – thereby increasing risks to local residents, Project-related workers, and tourists using The Mandalika Project. • Modern environmental design criteria minimize toxic pollutants; but no concentrations of emitted substances such as dioxin and mercury are completely safe. And even efficient incineration generates considerable CO_2. • Expense – initial costs of studies, designs, permits, construction, labor, and infrastructure support are high, but could be cost-effective over the long term by reducing landfill requirements.

6.3 Wastewater Treatment Alternatives

Wastewater within the Project 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. Wastewater Treatment options in this case include: Sequencing Batch Reactors (SBR) and Anaerobic Baffled Reactors (ABR).

An SBR is a fill-and-draw activated sludge system for the treatment of wastewater. SBR reactors treat wastewater in batches by bubbling oxygen through the mixture and use activated sludge to reduce volume of organic matter. Treated effluent is usually suitable for discharge into the environment.

An ABR system is an improved septic tank system or "suspended growth" treatment process that uses a series of baffles that wastewater is forced to flow under and over, and thereby allows contact between wastewater and biomass. As septic tanks, ABRs are based on a process of physically treating wastewater (i.e., settling) combined with a biological treatment (anaerobic digestion). ABRs can treat a wide range of wastewater, but remaining sludge and effluents typically require additional treatment before being reused or discharged into the environment. ABR is considered a relatively cheap technology because it requires little electricity, and is effective in removing organic content.

As currently planned (**CHAPTER 2** provides a detailed Project Description), the two WWTPs will adopt either SBR or combined ABR-SBR technology as the central treatment process, with a maximum operational capacity of 20,000 m^3/day. Effluent will be compliant with National regulations (Minister of Environment Decree No 68/2016 on Domestic Sewage Quality Standard) and reused for irrigation of green spaces throughout the site. The produced sludge will be composted and used at ITDC's plant nursery.

However, given the two technologies, two major alternatives exist:

- Alternative I – treatment technology that utilizes only aerobic biological treatment through the use of Sequencing Batch Reactors (SBR).
- Alternative 2 – treatment technology that considers the recommended quality of both influent and effluent. It combines anaerobic and aerobic treatment, by using Anaerobic Baffle Reactors (ABR) and Sequencing Batch Reactors (SBR), respectively.

6.3.1 SBR-Only Water Treatment Alternative

Based on anticipated design specifications of The Mandalika Project, SBR-only technology would be successful in removing or reducing the majority of water quality parameters to below GoI national standards. However, for physical parameters, such as TDS and TSS, the SBR-only treatment process is less effective than the ABR/SBR system. In addition, given the same waste volume, SBR-only systems produce substantially more sludge than ABR/SBR systems, despite requiring slightly smaller land area.

Financially, despite having lower capital costs than an ABR/SBR system, the energy cost per year of a SBR-only system is significantly higher. Therefore, in the long term, an SBR-only system is predicted to be more costly over the life of the Project.

6.3.2 ABR/SBR Water Treatment Alternative

The efficiency of ABR technology has been tested on numerous studies, many of which show that it is capable of removing a wide variety of wastewater parameters, regardless of the type of liquid waste. For example, it has been shown to remove up to 65% of COD (Chemical Oxygen Demand) and 88% of oil content from oily waste containing high salinity and low nutrients. ABR systems are similarly effective at treating other types of liquid waste, including soluble wastewater, urban wastewater, diluted wastewater, and food waste. Overall, ABR technology is very effective in reducing parameters like BOD (Biochemical Oxygen Demand) and COD, as well as sulfate and total organic carbon (TOC).

Based on anticipated design specifications of The Mandalika Project, the ABR/SBR process would maximize the removal of a wider variety of parameters, particularly due to the preliminary use of ABR technology, to within the national standards. The combined technology would be very effective in removing/reducing all parameters to within the 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.

6.3.3 Water Discharge and Sludge Alternatives

Under the current Project design plans (**CHAPTER 2**), water outputs from the WWTPs will be reused as grey water within the Project Area for landscape and other industrial uses. However, other options exist in the form of discharging water directly into the environment via groundwater, rivers, or the ocean. Doing so involves numerous serious environmental disadvantages, while foregoing numerous advantages of reusing grey water for Project-related landscaping purposes (**Table 6-5**).

The current plan for WWTP sludge is to reuse it as fertilizer for 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 (**Table 6-6**). However, it is highly unlikely the sludge would be classified B3.

Table 6-5 Advantages and Disadvantages of WWTP Effluent Discharge Options

Grey Water Used For Landscaping	Grey Water Discharged Into Watercourses
Advantages	**Advantages**
• Significantly lowers risk of direct contamination of ground, surface, and sea water, by dispersing water outputs widely across the terrestrial landscape. • Significantly reduces Project-related water consumption by reusing wastewater.	• Less costly alternative by not requiring infrastructure to disperse outflow grey water to Project-related facilities and users. • If discharge is directly to ocean, would export all wastewater off-site. • Water quality standards need only comply with Class II ambient water quality standards in GoI Regulation 82/2001 (e.g., <1000 fecal coliform per 100 mL)
Disadvantages	**Disadvantages**
• Malfunction of WWTP would then require alternative water supply system for landscaping and green-space management. • Water used for irrigation must comply with stricter WHO water quality standards (e.g., <200 fecal coliform per 100 mL)	• Significantly increases environmental risks of water contamination by discharging directly into water systems. • Significantly increases Project water consumption by requiring alternative water source for landscaping and green-space management.

Table 6-6 Advantages and Disadvantages of WWTP Sludge Disposal Alternatives

Use Composted Sludge for Onsite Landscaping	Transport Sludge to B3 Landfill
Advantages	**Advantages**
• Environmentally friendly alternative using sludge for onsite landscaping purposes (fertilizer, compost, organic material); • Cost-effective due to avoidance of transportation costs associated with B3 transport to Jakarta; • Provides more local employment by requiring onsite management of sludge.	• Exports issues surrounding potentially contaminated waste offsite; • Eliminates risk of onsite contamination by onsite dispersal of potentially contaminated sludge.
Disadvantages	**Disadvantages**
• Requires B3 waste reuse permit; • Potential risk of onsite contamination if sludge is contaminated; • Requires safe and efficient organization and management of constant stream of sludge production.	• Very expensive option due to transportation costs and landfill disposal costs; • Risk of accidental spills during transportation; • Higher carbon footprint and burning of fossil fuels in transport of sludge to Jakarta

6.3.4 WWTP Siting Alternatives

Wastewater within the Project will be collected through a closed-pipe network, constructed as a combined system of gravity- and pumping-based transmission, to WWTPs in each of the western and eastern zones. As such, locations for the WWTP were specifically chosen in naturally occurring depressions within the topography of the Project Area (West WWTP = paddy fields; East WWTP = secondary mangrove area).

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 would not provide the gravity-feed benefits of these low-elevation sites, and were therefore considered as less desirable alternatives.

6.4 Drainage System Alternatives

Conventional urban drainage systems typically treat stormwater runoff as a liability and annoyance that endangers human health and property. As such, urban drainage systems have historically focused on rapidly conveying stormwater runoff directly to streams and other watercourses with little or no considerations for potential ecosystem impacts. This management approach typically involves heavy rainfall flows running off impervious conduit surfaces (e.g., concrete channels, asphalt and concrete pavements and parking areas) carrying pollutants, nutrients, and suspended solids – resulting in streams carrying elevated concentrations of these

pollutants downstream. Increased peak flows of this nature also result in alteration of channel morphology and stability, and thus further proliferate the effects of erosion and sedimentation on aquatic and marine ecosystems.

In contrast, The Mandalika Project plan involves the design and construction of an integrated drainage system consisting of a variety of environmental design criteria, including:

- Bio-retention – rainfall will be diverted into grids of swales, made up of underground modular tanks and porous fill materials, thus allowing rainfall to collect and subsequently infiltrate to the soil.
- River normalization – deepening and widening river channels in the Project Area will significantly increase the capacity of surrounding rivers, thus reducing the risk of flash flooding resulting from channel overflow.
- Off-site retention ponds – a series of seven upstream retention ponds will regulate maximum river discharge, and thereby significantly reduce flood risks and improve water quality by capturing upstream pollutants.
- Project area elevation – shoreline areas exposed to flood risk (including sites anticipated to experience higher risk due to climate change effects on rising sea levels) will be targeted for earthworks to elevate above flood risk levels.

Drainage management systems of this nature view stormwater runoff as a resource with positive benefits if managed properly. All streams of water, including stormwater runoff, are considered resources with a variety of benefits to biodiversity, recreation, and aesthetic enjoyment of waterways.

Table 6-7 summarizes the advantages and disadvantages of conventional and integrated landscape drainage systems.

Table 6-7 Advantages and Disadvantages of Conventional and Integrated Landscape Drainage Systems

Conventional Drainage System	Integrated Landscape Drainage System
Advantages	**Advantages**
• Lower short-term costs • Simplifies design criteria and construction • Simplifies maintenance.	• Reduced flood risk • Reduced pollution, erosion, and sedimentation risks • Reduced risks to channel morphology • Reduced impacts on aquatic and marine ecosystems • Improved water quality, recreation, and aesthetic values • Increased groundwater recharge through bioretention and infiltration.
Disadvantages	**Disadvantages**
• Increased peak storm flows • Increased flood risks • Increased pollution, erosion, and sedimentation risks	• Higher initial construction and implementation costs – although long-term environmental benefits and ecosystem services could result in lower indirect costs over the life of the Project.

Conventional Drainage System	Integrated Landscape Drainage System
• Increased changes and impacts on channel morphology • Increased risks to aquatic and marine ecosystems. • Reduced environmental, recreational, and aesthetic benefits	• More complicated design and construction • More complex maintenance.

6.5 Utility Network Alternatives

Conventional utilities networks are often, and historically, constructed as a series of single-purpose trenches or lines – otherwise known as "direct burial" – where each utility (e.g., electricity, fiber optic, gas, water, sewerage) network is constructed and managed separately. This management approach, while somewhat less complicated at the scale of individual utilities, creates serious disadvantages when all utilities on a Project such as The Mandalika SEZ are considered in amalgamation. Single-purpose trenches and lines encourage utilities to follow single-minded routes that result in spatial chaos, and also result in much more space – and the associated environmental impacts – used by utilities than if all utilities are combined into corridors and managed in unison.

In contrast to conventional single-purpose utility lines, 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 (water, sewerage, irrigation, power, telecommunications, gas) will be housed in buried utility ducts within designated right-of-ways. 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.

Table 6-8 summarizes the advantages and disadvantages of conventional single-use utility lines and combined utility corridors.

Table 6-8 Advantages and Disadvantages of Conventional Single-Use Utility Lines and Combined Utility Corridors

Conventional Single-Use Utility Line	Combined Utility Corridors
Advantages	**Advantages**
• Lower short-term costs • Simplify design criteria and construction at the scale of individual utilities • Conventional maintenance and repair.	• Long-term emphasis on coordinated utilities management results in accurate record keeping and location data. • Highly synchronized routing reduces overall encumbrances on surrounding development. • Uses less space, thereby minimizing associated environmental impacts of trenching. • Typically includes designed easy-access points, resulting in little, if any, retrenching and greatly lower maintenance costs and subsequent environmental impacts. • Designed access points result in little to no road

Conventional Single-Use Utility Line	Combined Utility Corridors
	surface disturbance, and no road or traffic disruption. • Typically designed to accommodate anticipated expansions and future new infrastructure. • Overall far superior management and delivery of utilities to leaseholders.
Disadvantages	**Disadvantages**
• Lack of collaboration among utilities results in lack of record-keeping and location data. Over time, older utility locations can become unknown. • Creates spatial chaos through uncoordinated approach. • Uses much more space, thus results in increased environmental impacts. • Typically requires cutting and subsequent recutting of trenches, often requiring breaking of existing concrete and asphalt. • Maintenance is difficult and often requires relocating and redigging trenches. • New users are often denied access due to the cost of new trench deployment. • New utilities, or expansions of existing ones, require new trenching and possible reconfiguration of existing trenches. • Overall much lower efficiency and effectiveness of utilities management and delivery.	• Higher initial construction and implementation costs – although long-term cost savings and environmental benefits make for lower cost structure over the life of the Project • Sometimes more complex maintenance and repair procedures necessary • More complicated design and construction criteria.

CHAPTER 7
PUBLIC CONSULTATION AND INFORMATION DISCLOSURE

This Chapter presents ITDC's public consultation and information disclosure activities with stakeholders including meetings with Project-Affected People (PAP) to listen to their concerns and expectations. Whenever data is available, this Chapter provides disaggregated responses taking into consideration factors such as age, gender, and socioeconomic status. For disclosures, the information related to locations, timing, means, and tools is provided. For public consultation, information regarding who conducted the event, with whom, where, and when are included, when available.

7.1 Requirements of Public Consultation and Information Disclosure

7.1.1 Regulatory Requirements

Law No 32 of 2009 on Environmental Protection and Management stipulates that communities are:

(1) entitled to a good and healthy environment;

(2) entitled to information about potential environmental impacts; and

(3) entitled to play a role in the framework of environmental management, including decision making and ongoing discussions.

Article 9 of Government Regulation No 27 of 2012 regarding Environment Permits states that interested members of the community have the right to express opinions and provide inputs regarding proposed activities within ten working days of the date of the announcement of the activities. Minister of Environment Regulation No 17 of 2012 on Community Involvement and Information Availability in the Process of Environmental Impact Assessment requires ITDC to announce the Project in the media and to provide opportunities for the public to give feedbacks and inputs.

7.1.2 The Bank's Requirements

The Bank's Environmental and Social Standard (ESS) requires that environmental and social information of the Project be made available to the public in an accessible and understandable form. Information disclosures and feedbacks received can provide opportunities to identify and address environmental and social risks and impacts of concern to the community, including community health and safety issues. The Bank requires that ITDC continue with regular consultations to disclose plans and progress and to gather expectations and concerns from stakeholders, following the guidelines below.

- Begin early in the preparation stage of the Project and carry out on an ongoing basis throughout the implementation and life cycle of the Project;
- Ensure that all parties have a voice in consultation, including national and subnational government, private sector, NGOs, and affected people;

- Provide additional support to ensure participation of women, elderly, young, disabled, minorities, and other vulnerable groups;
- Provide timely disclosure of information that is understandable and readily accessible to the stakeholders;
- Be undertaken in an atmosphere free of intimidation or coercion;
- Be gender inclusive, accessible, responsive, and tailored to the needs of vulnerable groups;
- Enable the consideration of relevant views of affected people and other stakeholders in decision making.

7.2 Public Consultation and Information Disclosure

ITDC conducted public consultation and information disclosure as part of the Environmental Impact Assessment (AMDAL) process on 12 January 2012 at Tatsura Hotel, Kuta Beachwalk area. The meeting was attended by representatives of local villages and the Head of Pujut Sub-District, and staff of the Environment Agency of Central Lombok Regency. Public consultations were also held at Kuta, Mertak, Sengkol, Sukadana, and Teruwai villages. The objective of this consultation was to disclose information about The Mandalika Project and to gain feedback and input from communities and local institutions to be accommodated in the KA ANDAL (ToR) and AMDAL documents. In conjunction with the public consultations, ITDC made an announcement about the Project through a local newspaper, Lombok Post, as part of the information disclosure.

Due to changes and expansion of The Mandalika Project plan, an AMDAL Addendum was required to assess the impacts of additional activities that had not been addressed in the 2012 AMDAL. Even though the regulation does not require additional public consultation for an AMDAL Addendum, ITDC organized one in April 24, 2018, to disclose information about The Mandalika Project changes and expansion and to obtain feedback and inputs from the stakeholders. Once the Addendum approved and new Environmental Permit issued, the Project is required to implement environmental and social management and monitoring plans (RKL-RPL). Implementation results are to be reported once every six months to the relevant branch and agencies of the Government. Such reports belong to the public domain and can be accessed by anyone who wishes to read them.

Table 7-1 summarizes the public consultations and information disclosures organized by ITDC regarding The Mandalika Project.

Table 7-1 Summary of Public Consultations and Information Disclosure

Date	Participants	Location	Key Issues
January 12, 2012	Reps of local villages, Head of Pujut Sub-District, Environmental Agency of Central Lombok.	Tatsura Hotel, Kuta Beach. Also held at Mertak, Sengkol, Sukadana, and Teruwai villages.	1) Preservation of the existing fishing village; 2) Expectation of positive impacts to local economy; 3) Construction of public facilities in the area; 4) Protection of culture and traditional customs from impacts of tourism;

Date	Participants	Location	Key Issues
			5) Access to roads, beaches, cemeteries, and other public places stay open to local communities.
December 7, 2016	"Acceleration Team" to resolve The Mandalika land issues formed under West Nusa Tenggara Governor Decree No 032-841 of 2016 On 24 October 2016.	ITDC Office	1) ITDC began preliminary engagement with stakeholders regarding acquiring lands. The Acceleration Team is to carry out the process to obtain HPL Certificates with respect to State-owned land that had been designated by the State as part of The Mandalika Project in the total area of 1,095,900 m^2. 2) The Acceleration Team was assigned to verify documents, including statements of rights to the lands claimed by people, carry out site visits to the claimed lands, and coordinate with relevant parties on the basis of documents, legal facts, findings, and reviews. 3) Meetings of the Acceleration Team were conducted on December 7, 2016 and meeting with the coordinator ministry of economic affairs was conducted on 17 March 2017.
February 22, 2017	Heads of Kuta, Rembitan, Sengkol, Sukadana, and Mertak villages, heads of subvillage of Kuta and Rembitan, village officials, heads of village youth, leaders of tradition groups, and of tourism groups in Kuta Village. Some government officials including Director of Vital Objects of West Nusa Tenggara, Head of the Investment Services and One Stop Permitting Services of Central Lombok as Administrator of The Mandalika Special Economic Zone (SEZ), Head of Pujut Sub-District, Reps of Central Lombok Culture and Tourism Office, and also the heads of Kuta and Pujut police	Tatsura Hotel, Kuta Beach (organized together with PT Wjaya Karya, as contractor of Kuta Beach structuring)	• Mr. Hari Wibisono, The Mandalika Project Director, gave an overview of the Master Plan of The Mandalika Tourism SEZ, with main focus on mosque development and beach structuring for about 1.5 km and this may cause inconvenience to the community during the construction phase. • Community is expected to participate in managing and maintaining facilities provided by ITDC as well as to give priority for current local small businesses to have space for trading on Kuta Beach. The management of Kuta Beach will be returned to the community, based on agreements between ITDC and the community. • The community asked the developer to consider cultural aspects in the design and layout. There are some traditions of the community practiced on Kuta beach, from the Hotel Tatsura vicinity to Bukit Benjon such as *Mare Mradik/Madak, Ngapung, Bau Nyale*, and *Nazzar*. The community expects that these traditions can still be practiced after the development of the area is completed.

Date	Participants	Location	Key Issues
			• Comunity also expects job and business opportunities, for example as material suppliers to the Kuta Beach structuring project. • A small group from the community (head of cultural organization Rambitan) rejected the Kuta Beach layout, due to concerns on impact on the local culture and traditions, as well as blocking community access to the Beach. • As a government representative, the Head of Pujut Sub-Districts asked the heads of village and subvillage to support the Kuta Beach layout project • Overall, the results of public consultations indicated that stakeholders gave consent to the planned Project.
March 8, 2017	Business owners around Kuta Beach and reps of business organizations on Kuta Beach, Village officials of Kuta and Rembitan, Deputy Director of The Mandalika Tourism SEZ Project, Head of Pujut Sub-District	Segara Anak Hotel, Kuta	1) Discuss development progress in The Mandalika area, and community understanding of The Mandalika development 2) Discuss the Kuta Beach structuring in accordance with regulations, and community's rules, who may conduct business activities around Kuta Beach, followed by a question and answer session as well as feedback from community members. 3) As the output of socialization, the Kuta Beach structuring layout was better understood by the community, including the local knowledge/culture component of the layout, formation of community groups (policy makers, business owners, small and medium enterprises), training and certification of tourism workers, water sports management, and information disclusure on Tour De The Mandalika. Participants suggest stakeholders engagement through coordination and socialization.
September 6, 2017	Central Lombok Community	Kuta Beach	1) Consultations on Coastal Hygiene Safeguards for Implementing Communities *Madak Mare*. This tradition is an annual event of the Central Lombok Community in which participants stay in tents set up by residents for 3 days and 3 nights to fish. This tradition is considered as a heritage from their ancestors that is

Date	Participants	Location	Key Issues
			carried out three times a year. 2) Brief socialization and distribution of polybags and buckets to the people who carried out this tradition so that the community does not throw garbage in the sea and maintains the cleanliness of the beach.
October 31, 2017	Local stakeholders	The Mandalika area	"Preparation of Regency Spatial Strategic Plan around The Mandalika Special Economic Zone."
April 24, 2018	Government officials and Project affected people	The Mandalika area	1) Public consultation and information disclosure concerning changes/ expansion of The Mandalika Project plan and potential impacts to the affected villages. 2) During the consultation, participants were given opportunities to express their concerns and expectation on the Project. 3) The event was organized as part of the voluntary preparation of AMDAL addendum (not required by the regulation).
June 20-21, 2018	Bungalow owners of Sekar Kuning, Anda, Segara Anak, and Jerra Home Stay.	Direct visits to the bungalows of Kuta Beach area	This is a follow up to the previous public consultations on Kuta Beach structuring layout. Informal consultation and socialization for bungalow owners. An initial public consultation with these stakeholders
July 2-4 and July 25-28, 2018	Affected community (village Elders and leaders)	Villages of affected area	Soemadipradja and Taher (Land Legal Due Diligent consultant to ITDC) interviewed 18 individuals related to past land purchase process in Project Area.
July 16, 2018	Reps of village officials and communities including women and youth, teachers, street vendor association, local SoE such as PLN (electricity),PDAM (water), public health center (Puskesmas). Meeting was witnessed by AIIB.	ITDC Office	1) Discuss The Mandalika Project area, wastewater treatment plan, government regulation, and infrastructure construction as well as increasing human capital through community development training 2) Community expectations include clean water, education, job opportunities, market place, roads, street lighting, solid waste management, social jealousy between local vendors and those who come from outside The Mandalika areas, coordination between ITDC and village government, economic multiplier effect from ITDC
August 6, 2018	Amang Nuril and Tamat (head of management of Sasak Ende tourist	Sasak village Ende, Sengkol village,	1) Sasak Ende tourist village has received several educational and development programs from government and

Date	Participants	Location	Key Issues
	village)		private sectors, including ITDC 2) The Sasak community at Sasak Ende tourist village is supportive and positive toward the development of SEZ The Mandalika 3) Community proposed program is to make deep wells
August 6, 2018	ESC (environmental consultant to ITDC) and Wildlife Conservation Society (WCS).	Jakarta	1) WCS along with local government, has designed "Management Plan and Zoning of Water Park of Bumbang Bay". 2) Aquatic biotas such as coral-reef, seagrass and lobsters at the Bumbang Bay need to have attention for protection and conservation. 3) The Marine Park is divided into 3 zones, i.e. Core zone, Sustainable Fisheries Zone and Utilization Zone. 4) WCS has not identified species that need to be protected, especially marine mammals and sea turtles. 5) WCS highlighted social economic and cultural issue such as • loss of access to the beach, especially related to Bau Nyale festival; • education; • clean water supply; • crime;
August 7, 2018	Muhammad Nurdin and H. Muridon (head of village and staff government affair Sukadana village)	Sukadana village	1) Landholding mostly belong to community with right of ownership 2) Expectations of the Village Head are clear—delineate the boundary between ITDC and village, no policy changes as a result of structural changes, regular meetings between ITDC and affected villagers every 2-3 month, more engagement to improve relation through informal meetings and visits, recruitment with priority of local labor, and availability of grievance redress mechanism.
August 7, 2018	Kamil (Vllage Secretary of Mertak Village)	Mertak Village, Lombok	1) Majority of landholding is owned by community with right of ownership land. 2) Secretary of Village is supportive for the development of SEZ The Mandalika 3) Expect community empowerment in agricultural and tourism sector, introducing eco-tourism, and seafood produced by the community can be

Date	Participants	Location	Key Issues
			purchased by companies within the Project area. 4) Related to land acquisition, community agree to sell the land following market prices.
August 7, 2018	Lalu Badarrudin (Head of Kuta Village)	Kuta Village	1) The land mainly belongs to community with right-of-ownership status 2) Sources of livelihood for Kuta villagers are diverse. Before Kuta village was transformed to tourism, most of villagers worked as farmers and fishermen, 3) Head of Village and community of Kuta are supportive toward development of SEZ The Mandalika 4) Concern about cultural change and land use change from agriculture to tourism, drug abuse, and decrease well water level due to excessive use. 5) Expect priority is given to local community for employment and business opportunity 6) Exchange of information with Kuta Village leaders so the village can deliver information to community. 7) Land owners are willing to sell the land to ITDC as long as the prices follow market rate. Community prefers to have land swaps
August 8, 2018	Lalu Tanauri (Head of Sengkol Village)	Sengkol Village	1) Sengkol community is 70% involve in agricultural, 30% in trading, fishing, tourism, and other sectors. For Gerupuk (a subvillage of Sengkol), 90% are fishermen. 2) Changes in profession for Gerupuk community from fishermen to tourism such as tour guides, waiters/waitress, and other tourism jobs-related 3) Expect more economic benefits to community, employing more local staffs and appoint local people to fill up management level, rebranding ITDC's image, clarify land and building tax (PBB).
August 30 2018	Oki (a Kuta villager who works as receptionist at Kuta Cove Hotel	Kuta Cove Hotel Kuta, Lombok	1) Infrastructure has much developed in Kuta area 2) High level of job opportunities 3) Capacity buildings needed are English and cooking courses, especially for youth
August 30,	Rahmat Tanye (Head of	Ebunot	1) There have been positive changes on

Date	Participants	Location	Key Issues
2018	Ebunot Subvillage, Kuta)	Subvillage, Kuta	infrastructure, business (small traders) and job opportunities. Negative impact is the arise of illegal 'red light district' near Kuta 2) Some villagers have difficulty getting jobs in SEZ The Mandalika, cannot fulfill requirements, even though have attended construction and certification training 3) Mostly people in Ebunot work as farmers, fishermen, and private employees. Youth community needs soft skills related to tourism industry such as English and cooking skills, Entrepreneurship for everyone, weaving skills for women, integrated farming and field assistantship (extensions) for farmers. Vocational school on tourism in The Mandalika area. 4) Related to land issue, many villagers still claimed the land, some due to mis-measurement; price offered for enclave areas is too low. As long as the price is suitable, the land owners will agree to sell. 5) Expect ITDC to accommodate more local people for job and business opportunities; early engagement and socialization for land clearing. ITDC has purchased most of the land in Ebunot, however about 898 people from 140 households still live in the area. 6) Current government programs include provision of rice for poor households, access to public health services, trash collection. Village fund from the Central Government cannot be allocated for infrastructure development since their area is located within The Mandalika SEZ.
August 30, 2018	Mr and Mrs Bai Ayuni (head of PKK) and Yusuf (head of LPM)	Kuta Village	1) There are improvements in infrastructure. Many visitors and vendors in Kuta village especially the Kuta beach. More employment and business opportunities, increase of income and decrease of crime rate. The negative side, is the emergence of illegal 'red light district' which lead to domestic violence, dress code not in accordance with local culture (wearing bikini/ short pants on the street). 2) Concerns about potential social

Date	Participants	Location	Key Issues
			conflict and increase social jealousy due to influx of vendors at the beach from outside of Kuta Village. ITDC is to socialize and enforce the use of trash bins especially at the beach area. 3) Expect ITDC to provide more jobs to locals, not only as low skill labors, but also as skilled labors) 4) The PKK members request ITDC or relevant government institution to establish job training center in Kuta to improve much needed skills such as weaving, crafts, entrepreneurship to start and improve small businesses, marketing, and programs related to tourism such as English and cooking skills, art and cultural programs for youth, as well as financial support and field assistance. The PKK group currently produces sea grass -based confection, pastry, and needs a venue to market their products. 5) Programs that have been implemented by government are driving training, anti-drug campaign, and environmental program through planting. Other programs are sewing, cosmetology, cooking, fish processing, and weaving. 6) PKK members are supportive of the development of The Mandalika SEZ
August 30 2018	Awaluddin (Head of Subvillage Kuta II)	Kuta, Lombok	1) Among the problems in Kuta II subvillage are littering and low skill levels of community. Positive impacts of infrastructure development including boat dock and pavement in Kuta II, job and business opportunities (home stay). The negative side is social jealousy when there is no assistance given to farmers group. 2) Community needs in Kuta II are to improve English and cooking skills; fish processing facilities and new fishing equipment, programs such as house keeping awareness and trash collection. 3) Community's expectations are to be given priority for jobs in The Mandalika area and to lower qualification requirements for recruitment process. 4) Related to land, ITDC has purchased land in Kuta area, however community still uses the land for

Date	Participants	Location	Key Issues
			settlement. In the case of relocation, community requested to be relocated near to Kuta. Due to land issues, government program targeting infrastructure development cannot be implemented.
August 30, 2018	H. Bagi (Village Secretary – farmers) and H. Khaidir (Head of Subvillage Petiuw)	Sukadana Village	1) Need water supply during drought season, low agricultural yields, and low educational attainment. 2) Positive changes include more job opportunities, less unemployment improvement of infrastructure, social assistantship and donation from ITDC, capacity building such as training and certification in construction and gardening skills. Negative change is cultural aspect, especially the change of local people who like to imitate the way western tourists dress. 3) Need help to construct deep wells and dams, training on sustainable agriculture, agroforestry and integrated farming, improve agriculture tools, animal husbandry supports such as provision of calves, as well as field mentorships; soft skill enhancement programs--entrepreneurship, pastry training, English and cooking classes, carpentry for youth, and weaving activities for women. For education sector, community needs building, and toys for preschool and kindergarten. Health facilities currently damaged due to earthquake, community requested ITDC to facilitate birthing facilities. 4) Expectation is to give priority to local community to be recruited as employees. 5) Secretary of Village and Head of Subvillage support the development of The Mandalika SEZ 6) Expect ITDC to quickly settle land issues and then focus on development of The Mandalika SEZ
August 30, 2018	Idakna (traditional woven fabric seller at Kuta Beach area)		1) Most of woven fabric sellers in Kuta beach are from Sade Subvillage, Rembitan village. 2) Infrastructure has much been improved and developed 3) Currently there is no rule to limit their selling activities

Date	Participants	Location	Key Issues
			4) Sellers have language barriers to communicate with foreign tourists and expect to learn English through training
August 30, 2018	Marjasih and Minarsih (Coconut seller and small shop owner at Kuta Junction)	Kuta	1) Positive changes include infrastructure improvement, more visitors, and more job and business opportunities inside and outside The Mandalika. Negative side is cultural and lifestyle change especially for youth (dressing like western tourists), emergence of 'red light district'. Marjasih and Minarsih see The Mandalika SEZ creatyes much positive impacts. 2) Community need to improve livelihood. For youth training in English, cooking and hospitality jobs. For women, weaving, and traditional pastry training, and for business owner is start and improve business (entrepreneurship, bookkeeping, marketing). All those programs need field mentors. 3) Most people agree with land purchase by ITDC as long as following market price. Actually they prefer land swaps.
August 31, 2018	Villagers of Kuta (including group of village apparatus, village leaders, traditional leaders, women, elderly, disabled, and youth	ITDC office, Kuta, Lombok	FGD related to problems faced at village level, community proposed programs, concerns and expectations as well as community consent 1) No deep well regulation causes community to dig deeper and deeper wells, house keeping and sanitation, drug abuses, low skills and low educational attainment, low income, public health, fewer community development programs for women, poor housing conditions, few job opportunities for disabled, economic problems emerging for those in eviction plans. 2) Some changes perceived by community are infrastructure (roads, street lights, etc.) improvements, more visitors and homestay development, beach and other areas are neat and well organized, land price increases, reduced unemployment, emergence of "red light district" and drug abuses, economic condition is improved. 3) Benefits from The Mandalika SEZ are improved infrastructure (roads, street

Date	Participants	Location	Key Issues
			lights, etc.), more jobs and business opportunities, decline in number of people unemployed, number of tourists increases, beach is neater. However, the disabled group perceived economic and job opportunity declines. 4) Community proposed development programs: a). Education and skill improvements: English and cooking classes, hospitality training, cosmetology, pastry, tailoring for women, driving course, security training, computer training, mechanic training b) Agriculture and cattle raising: provision of calves and lambs, chicken raising, and provision of agricultural tools c). Economic and business development: entrepreneurship, home industry products processing, souvenirs from coconut shells for women, marketing, capital loans, d). Education: scholarship e). Culture: *Kepembayanan* training; provision of traditional music equipment and traditional clothing, establish cultural hall and cultural activities. f). Health: clinics of integrated health services (posyandu), g). empowerment of fishermen: provision of fishing equipment, boats, etc., strengthening fishermen group through cooperative, and field mentoring h). Development program for disabled i). provision of sport facilities 5) Community concerns are about the cultural changes and employment opportunity taken by outsiders due to locals unable to compete and meet requirements. 6) Expect priority is given to local community for employment and business opportunities, mentors for SMEs, participation in religious activities, new area is to be opened to public, more activity to make beach more beautiful, ITDC is expected to grant community development programs, and those resettled in new location are given houses, and provision of special programs for disabled. 7) All FGD participants from Kuta Village give consent and support to the

Date	Participants	Location	Key Issues
			development of The Mandalika SEZ, except one who rejected it due to resettlement issues.
August 31 2018	Villagers of Sengkol (including group of village apparatus, village leaders, traditional leaders, women, elderly, disabled, and youth)	ITDC office, Kuta	FGD related to problems faced at village level, community proposed programs, concerns and expectation, as well as community consent 1) Problems faced by community include infrastructure, clean water, public health facilities, employment opportunities, low community awareness on house keeping and sanitation, low education attainment, drug abuses, cultural change (especially among the youth with concerns on sexual promiscuity), safety and security issue. 2) Some positive changes perceived by community are the new mosque, decrease of unemployment, more safety (less crime), traders at the beach cause negative views and inconvenience for visitors, more employment and business opportunities, improved economic conditions, more visitors, health services, increase in educational attainment. 3) Lombok tourism has become known domestically and abroad, more investments, more job opportunities, religious facilities in the area (Nurul Bilad mosque), tourism and recreational activities, special changes especially for beach walk area, better beach views. 4) Community proposed development programs a). Education and skill based improvement: English, cooking classes, and hospitality training for youth, tailoring for women, driving course b) Fishery: aquaculture training and provision of fishing equipment. cross visits, strengthen fishery groups and formalize the groups through cooperative formation c). Business development: entrepreneurship (SIYB), home industry products processing (sea grass and agricultural products), capital loan e): Culture: provision of traditional music instrument and weaving tools. 5) Local community cannot take part in

Date	Participants	Location	Key Issues
			The Mandalika SEZ development due to low educational attainment and skills; impacts on youth related to lifestyle and sexual life, tradition changes. 6) Expect priority is given to local labors in providing job and business opportunities, settling land issues. 7) All participants from Sengkol Village gave consent and support to the development of The Mandalika SEZ.
September 1, 2018	Villagers of Sukadana (including groups of village apparatus, village leaders, traditional leaders, women, elderly, disabled and youth)	ITDC office, Kuta	FGD related to problems faced at village level, community proposed programs, concerns and expectations, as well as community consent 1) Problems facing by community are low awareness of housekeeping and sanitation, no toilets in some households, electricity connection, road interconnection, religious and traditional practices are fading out, public health, gender, low income and employment, low level of human resources, and lack of infrastructure (including sport facilities) 2) Some positive changes are infrastructure improvement, more tourist visitors, more social and religious activities, more jobs and business opportunities, increase in community income, more people participate in Bau Nyale event, and beach is more beautiful. 3) Benefits from The Mandalika SEZ are more visitors, job and business opportunities, less unemployment, more street lights installed, positive image of tourism and becoming known worldwide, tree planting, land price increase, regional economic growth and increase of locally generated revenue. 4) Community proposed development programs are a) animal husbandry: training on production of cattle feeds, provision of cattle feed processing equipment, calves and lambs, mentors for cattle and chicken raising groups. b) agriculture: integrated farming (including training on compost production, papaya cultivation), agriculture field mentors (extension services) for farmers group c) Craft and culture: weaving of

Date	Participants	Location	Key Issues
			traditional fabrics, tailoring, cosmetics, snacks (including cassava cracker) for women. d) Customary school e) Education and skill development: entrepreneurship for traders, English, cooking, and mechanics classes (including electronic reparation training) for youth. f). Health: sex education g). Infrastructure: road development (asphalt) 5) Community concern that locals cannot be part of The Mandalika SEZ development due to low educational attainment and skills, impacts on youth (especially related to youth lifestyle and sexual life), traditional practice changes, land use changes – land for agriculture is shrinking. 6) Expect priority is given to local labors during recruitment, The Mandalika SEZ development is synchronized with local culture, assistance in road construction, and sport events to unite the youth in affected villages. 7) All participants from Sukadana Village gave consent and support development of The Mandalika SEZ
September 1, 2018	Villagers of Mertak (including group of village apparatus, village leaders, customary representative, women, elderly, disabled, and youth)	ITDC office, Kuta	FGD related to problems at village level, positive and negative impacts perceived, community proposed programs 1) Problems at village level include low human development index due to low educational attainment, inadequate infrastructure and public facilities such as damage roads, lack of street lights, no high schools, no public health facilities, lack of water supply, lack of sport facilities and religious facilities, limited job opportunities, and low economic status including for elderly and disabled, security issues, lack of empowerment and social programs for needy persons, orphans, and disabled. 2) Some changes perceived by community in Mertak Village are in infrastructure, i.e. more road constructions at village level but not at subvillage level, agricultural land shrinking, more tourist visitors, cultural changes and lifestyle issues (piercing and tattoos among youth), village is neat and clean, crime rate

Date	Participants	Location	Key Issues
			decrease, land price increase. 3) Benefits from SEZ The Mandalika are more job opportunities and decrease in unemployment, deep well and social program assistance, cattle donations during Eid celebration, land price increase, cultural change, new recreational spots. 4) Community proposed for development programs a). Agricultural: provision of inputs such as seedlings, fertilizer, and tools. Training in compost poduction, and agribusiness b).Fisheries: renewal of fishing equipment c). Business development: entrepreneurship training, traditional market facilities, sea grass processing, and fish processing d). Craft and culture: traditional cloth weaving and craft tools, and traditional music equipment (Gamelan) e). Education: training on English, cooking, cosmetics and fashion (tailoring), eco-tourism, partnership/ collaboration for cultural programs, library f). Health: public clinic/ hospital g). Infrastructure: road development and clean water supply (deep wells), cultural hall h). Sport facilities: football. 8) Community concern about local people cannot compete in The Mandalika SEZ development due to low educational attainment and skills, impact on youth especially related to youth lifestyles and sex, jobs for farmers decline as result of agricultural land shrinking, cultural and religious value changes, emerge of illegal 'red light district', drug trafficking, 5) Expect priority is given to local labor, local economic growth and improvement, increase in local community income, feeling secure with security conditions, provision of traditional music instruments, and support from government for cultural preservation, and ITDC can borrow the land for sports used by youth prior to its development in the Mertak area 6) Most of participants agree with th The Mandalika SEZ development. Only

Date	Participants	Location	Key Issues
			two rejected the SEZ due to the loss of agricultural land and negative impacts on youth. Other reason for rejecting the SEZ: if labor is sourced from outside the area.
September 2, 2018	Mariane and Sudarman (owners of enclave land 18)	Kuta, Lombok	1) There are some positive changes in the area such as infrastructure development (roads, mosques, beach walk area), economic improvements as a result of more jobs being available, crime rate decrease. On the negative side, increased drug used especially among youth, emergence of 'red light district.' 2) Related to enclave land, in enclave land #18 there are about 4 households with 10 members of family mostly work as farmers, construction workers, fishermen, cattle raisers, as well as ITDC staff). 3) Basically the enclave land owners agree to sell their land to ITDC; however the price offered by ITDC Rp 525,000/m^2 is much lower than the market price (Rp 1.50 – 2.0 million per m^2). According to Mariane, if the land is sold to ITDC at the offered price, they will not be able to purchase new land outside the SEZ. 4) Community prefers land swaps with other lands outside SEZ with condition of 1:2 or 1:3 (1 meter community land in exchange with 2 or 3 meters of ITDC land outside area). ITDC is also requested to provide livelihoods for the enclave owners and other households who live on the enclave lands. 5) Community needs entrepreneurship program to start, manage and improve business, and skill improvement programs such as English, cooking, and pastry classes. 6) Community concerns about the influence of foreign culture on the tradition, religion, and lifestyle of young people (hair coloring, tattoos, body piercing, scantly dressing); and local community being left behind from SEZ development. 7) Expect to be given for job and business opportunities, soft skills enhancement, lower job qualification requirements for locals.

Date	Participants	Location	Key Issues
			8) Both Mariane and Sudarman are supportive toward the development of The Mandalika SEZ.
September 2, 2018	Muhadi (Enclave land owner in Ebunut Subvillage)	Kuta	1) Positive changes in infrastructure (roads, bridges), more job and business opportunities, and decrease in crime rate. No negative changes are observed by Muhadi. 2) Muhadi supports the development of The Mandalika SEZ 3) Propose soft skills development programs in the area of English, entrepreneurship, cooking, and pastry 4) Expect more job and business opportunities for local communities 5) Land price should be in accordance with the market. Alternatively, a land swap with condition of 1:3. Currently, there are 8 households (24 people) living on his enclave land who work as hotel security, kiosk vendor, farmer, and cattle raiser.
September 2, 2018	Tarzan, Kardi Murjani, Bung Hadi, Tangkok (Head of Subvillage and community Batu Guling, Mertak)	Mertak	1) Some positive changes in Mertak Village (including Batu Guling Subvillage) are infrastructure (roads, electricity), establishment of Mount Tunak ecotourism, and better community housing conditions. Negative changes are dcrease of fishermen income due to moratorium of lobster catch from Ministry of Marine and Fisheries. Negative impacts from SEZ are effects on local culture such as hair coloring, tattoos, body piercing, alcohol) 2) Problems in Village are lack of employment, low educational levels, land use changes (agricultural land shrinking). 3) Propose training programs on English, cooking, hospitality, crafts, souvenirs, construction, integrated farming, cattle raising. revitalization of fishing tools and nets. 4) Concern about cultural changes (including changes in the way young people dress), community not getting employment opportunities. Expect community empowerment programs and employment. 5) Support the development of The Mandalika SEZ

7.3 Conclusion of Public Consultation and Information Disclosures

Project disclosure is necessary and important at every stage. Through socializations and discussions, it is expected that the affected people will learn about the objectives of the Project, form positive perceptions and support the Project activities. To anticipate negative views and mitigate concerns, the Project is required to develop a stakeholder engagement plan and implement it by conducting public consultations and disseminate Project information to stakeholders, particularly potentially affected persons.

Public consultation and information disclosure events described in **Table 7-1** were considered understandable to the stakeholders as indicated by meaningful discussions, expression of concerns and support (for example: "The sooner the better ..." during July 16, 2018 public consultation). Members of vulnerable groups such as women, youth, disabled are included in the FGDs and interviews. Overall, the consultations went well, in free of intimidation or coercion atmosphere, and relevant views of stakeholders especially Project affected people are considered in the decision-making process.

Table 7-2 attempts to capture the important message collected during public consultation and information disclosure events organized by ITDC regarding the Project.

Table 7-2 Community's concerns and expectations

No	Issue	Concerns and Expectations
1	Land	• Owners agree to sell to ITDC as long as the price is in accordance with the market. • Current price offered by ITDC (around Rp 500,000/m^2) is considered much lower than market price (Rp 1.5 – 2 million/m^2) • Actually land owners prefer land swaps. Land inside The Mandalika is replaced with land outside The Mandalika but 2 to 3 times larger • Expect regular meetings between ITDC and affected villagers every 2-3 month. Also improve relation through informal meetings and visits.
2	Resettlement	• Inhabitants (legal and illegal) expect ITDC to provide dwelling places in a resttlement area outside but still nearby The Mandalika area • The sooner the resetllement the better (perhaps to remove uncertainty) • Expect ITDC to assist livelihood restoration
3	Job Opportunities	• Expect priority for employment opportunity is given to locals • Expect treshold of qualification requirement is lowered for locals • Expect trainings for skills needed in the development of The Mandalika
4	Business Opportunities	• Expect priority for business opportunity is given to locals • Expect provision of calves, lambs, equipment for husbandry and fishery • Expect seafood produced by the locals are purchased by ITDC and other companies in The Mandalika area • Expect trainings for skills needed to start, manage and improve business
5	Training	• Expect training in English, cooking, pastry, hospitality business, entepreneurship • Expect assistance in animal husbandry specifically provision of calves, lambs, equipment for cattle feed production, chicken raising • Expect field mentoring in agriculture. Special interest in setting up integrated farming, i.e. self sustained agriculture-animal husbandry-

No	Issue	Concerns and Expectations
		aquaculture combination • Expect assistance in fishery especially provision of fishing equipment and boats
6	Education	• Expect ITDC or government to setup a tourism vocational school in The Mandalika area
7	Tradition	• Expect to continue practicing traditions such as with *Mare Mradik/Madak, Ngapung, Bau Nyale*, and *Nazzar*. • Concern about negative changes in tradition and religious practices specifically about scanty way of dressing, tattoo, body piercing, hair coloring • Concern about the emergence of prostitution area in The Mandalika • Corncern about drugs and alcohol abuses
8	Perception about the Project	• Overwhelmingly positive and supportive of The Mandalika development Project • Pleased with positive changes in terms of improvement of infrastructure, more tourist visitors, more job and business opportunities • One rejection to the Kuta Beach layout due to concerns on impact on the local culture and traditions, as well as blocking community access to the Beach

7.4 Stakeholder Engagement Methodology

7.4.1 Key Stakeholder Identification

Key stakeholders are persons or groups who are directly or indirectly affected by a project, as well as those who may have interests in a project and/or the ability to influence its outcome, either positively or negatively. Stakeholders may include locally affected communities or individuals and their formal and informal representatives, national or local government authorities, politicians, religious leaders, civil society organizations, and groups with special interests, the academic community, and businesses.

Stakeholders have been broadly identified based on potential areas of concern as follows:

- Environmental (e.g., deterioration in environmental quality, increased noise/disturbance levels, damage to ecological systems, generation and disposal of wastes, reduction in aesthetic value of the environment);
- Social (e.g., employment of temporary/non-local workforce, traffic and transportation, impact on recreation, communicable diseases);
- Economic (e.g., local versus non-local procurement of labor, utility requirements income and economic development opportunities, infrastructure requirements, etc.); and
- Technical (e.g., recruitment issues, security, materials supply and feasibility, road and sea traffic safety, etc).

Based on the primary and secondary data collected, the stakeholders that have been broadly identified based on potential/likely areas of concern are shown in **Table 7-3**.

The stakeholders are separated in accordance with their categories, which are:

a) Government: Local governments may have big influence as they are interconnected with the Central Government such as on environmental issues.

b) Non-Government Organizations (NGOs): include contact persons of NGOs, blogs developed by NGOs are identified as tools in developing networks with them.

c) Community: village representative groups of the four villages, and community representative (BPD)

d) Business community

e) Media: some of them have established important relationships with ITDC.

Table 7-3 Stakeholder Lists and Key Issues

Stakeholder	Category	Background	Key Issues			
			Environmental	Social	Economic	Technical
GOVERNMENT KEY STAKEHOLDERS						
Ministry of Environment and Forestry (KLHK)	Central Government	Controls national environmental regulations and enforcements				
West Nusa Tenggara Regional Environmental and Forestry Agency (DLHK)	Provincial Government	Controls provincial environmental regulations and enforcement .				
Environment Office of Central Lombok Regency (DLHK)	Local Government	Controls local environmental regulations and enforcement				
Labor Agency of West Nusa Tenggara	Provincial Government	Provides advice on matters pertaining to industrial relations.				
Labor Agency of Central Lombok Regency	Local Government	Provides advice on matters pertaining to industrial relations.				
National Land Agency (BPN) of Central Lombok Regency	Local Government	Regulate and oversee local land issues.				
Department of Agriculture of Central Lombok Regency	Local Government	Provides advice on matters on farmer relocation				
Department of Fisheries of Central Lombok Regency	Local Government	Responsible for managing the Regency's fisheries				
West Nusa Tenggara Transportation Agency	Provincial Government	Provide and maintain road infrastructure				

Stakeholder	Category	Background	Key Issues			
			Environmental	Social	Economic	Technical
		throughout the Province.				
Transportation Agency of Central Lombok Regency	Local Government	Provide and maintain road infrastructure throughout the Regency				
Regional Legislative Council of Central Lombok Regency (DPRD)	Political	Concerning local policies such as development acceleration				
Regional Legislative Council of West Nusa Tenggara Province (DPRD NTB)	Political	People Representative				
Public Works Agency of Central Lombok Regency	Local Government	Public infrastructure construction and maintenance				
Department of Education of Central Lombok Regency	Local Government	Schools and training				
Department of Health of Central Lombok Regency	Local Government	Public Health				
Local Revenue Office of Central Lombok Regency	Local Government	Taxes & Retribution to Regency				
Regent of Central Lombok	Local Government	Executive authority				
Political Parties	Local and provincial government	Popular representatives				
NGO Key Stakeholders	Civil society	Grass roots organizations, interest groups				
Indonesian Forum for Environment (WALHI)	National NGO	Indonesia's most recognized environmental NGO				
WWF	International NGO	Sea turtle conservation				
The Conservation International	International NGO	Sea turtle conservation				
The Nature Conservancy	International NGO	Sea turtle conservation				
Local NGOs	Local NGO	Environmental and Community				
COMMUNITY STAKEHOLDERS						
Village Representative Group – Kuta Village	Community	Requires priority since located closest to ITDC				

Stakeholder	Category	Background	Key Issues			
			Environmental	Social	Economic	Technical
		activities				
Village Representative Group – Mertak Village	Community	Requires priority since located closest to ITDC activities				
Village Representative Group – Sukadana Village	Community	Requires priority since located closest to ITDC activities				
Village Representative Group – Sengkol Village	Community	Requires priority since located closest to ITDC activities				
Traditional Community Leaders	Individual	Community interest				
Religious Leader	Individual	Community special interest				
Youth Leader	Individual	Community special interest				
INTERNATIONAL ENVIRONMENTAL ORGANIZATION						
Bird Life International	NGO	Concern with preservation of bird species. Has bird data				
Indonesian Research Institute (LIPI)	Government	Indonesia Scientific Research Leadership				
University of Mataram	University	Capacity Building				
BUSINESS KEY STAKEHOLDERS						
Indonesian Chamber of Commerce and Industry (KADIN)	Business	Association for National and regional private commercial and industrial business				
Indonesian Tourism Association - ASPPI (Asosiasi Pelaku Wisata Indonesia)	Business	Association for National tourism business				
GAHAWISRI (Gabungan Pengusaha Wisata Bahari / Indonesia Marine Tourism Association)	Business	Association for national sea-based tourism business				
National Construction Business Association (GAPEKNAS)	Business	Association for national and regional contractors				
MEDIA						
Kompas (National), Lombok Times (English)	Newspaper	Mass Media				
Lombok Post	City Newspaper	Mass Media				

Stakeholder	Category	Background	Key Issues			
			Environmental	Social	Economic	Technical
Local Television	Lombok TV, TV9 (UHF channel 60)	Mass Media				
Local Radio	RRI Mataram, Radio The Mandalika FM, Praya	Mass Media				

7.4.2 Stakeholder Mapping Results

Now that the stakeholders have been identified based on potential areas of concern, a matrix that shows the stakeholders' interest can be identified. **Figure 7-1** represents a matrix onto which identified stakeholders have been mapped. The X-axis represents the degree to which the stakeholder can influence the direction and implementation of Project activities. The Y-axis presents the interest a particular stakeholder may have in the environmental, social and health aspects of the Project. This qualitative analysis can then be used to derive the level of engagement recommended, as follows:

- **Low Interest and Low Influence → Inform** : Stakeholders falling into this category should be provided information on key Project activities through press releases, company briefings, and other means as necessary during project planning, prior to and during physical works;
- **Low Interest and High Influence → Leverage** : Stakeholders in this category may not have great concerns regarding environmental, social and health aspects, however they are critical in ensuring project success. It is recommended that stakeholders listed in this category are engaged in active communication on key Project activities throughout concept development, detailed planning and throughout project physical works. The approval of these stakeholders will be critical for the Project;
- **High Interest and Low Influence → Monitor** : These stakeholders are those with limited ability to directly influence the project, but have a keen interest in one or more aspects of the project. The recommendation is that the sentiments and positions of these stakeholders be tracked and monitored through informal dialogue and communications; and
- **High Interest and High Influence → Engage** : These stakeholders should be informed and engaged in dialogue sessions on environmental, social and health aspects of the project. Should concerns be raised, they should be actively involved in identifying mitigation options. The aim of engagement is to obtain their buy-in to proposed Project activities and any subsequent mitigation and management plans. They should be engaged as part of EIA studies and at key decision points in project planning and implementation.

Figure below provides a preliminary map of stakeholders that fall into each of these categories.

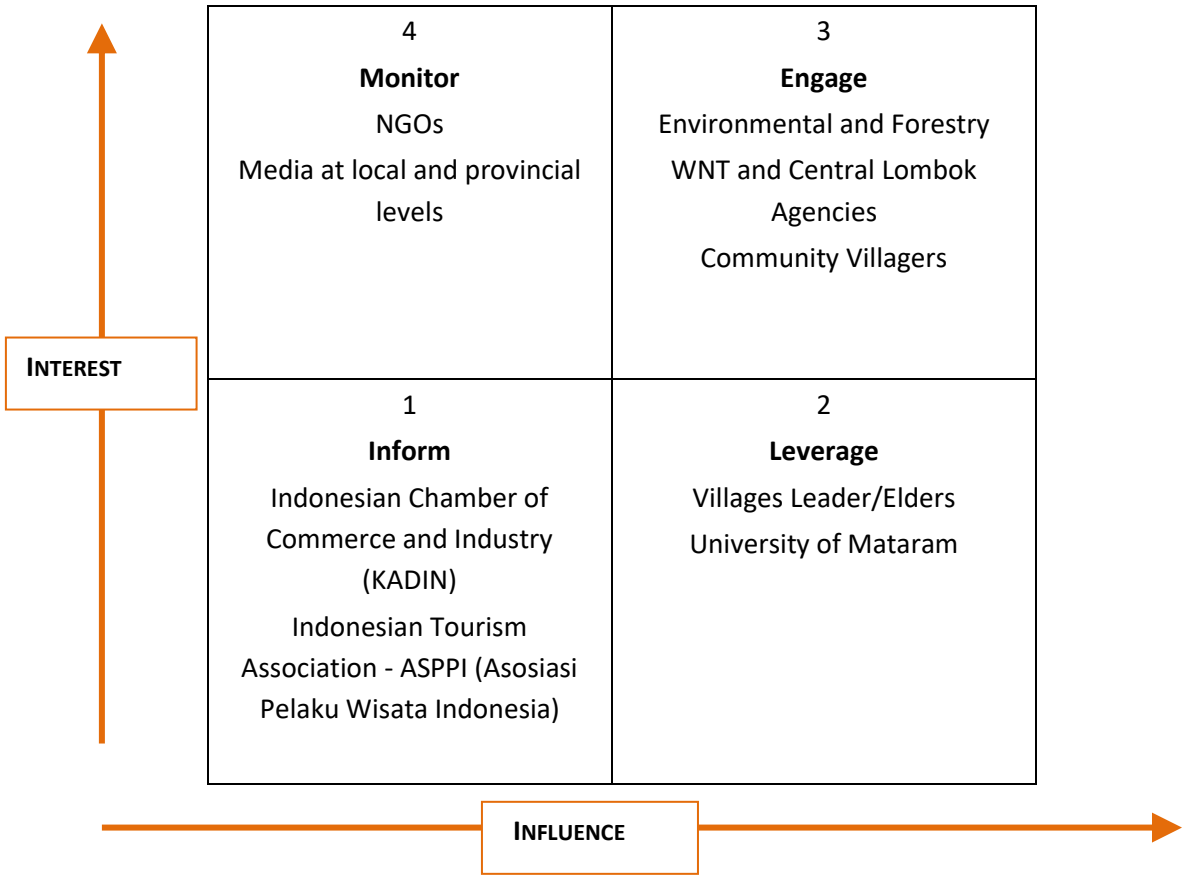


Figure 7-1 Interest – Influence Stakeholder Matrix

7.4.3 Stakeholder Issue Identification

The issues are categorized in three major areas, which are:

Employment and Business

Work force/employment has always been the major concern of the local community. Community is hoping to be able to improve their welfare and livelihood by working for ITDC or contractors or tourism businesses. Work opportunities for the local community have been a concern. Based on available data, the unemployed working-age population is around 17% or about 6,000 people from >35 thousand residents in the Project area. The need for labor in the construction phase is about 2,000 people. If the assumption of the ratio of local labor to labor from outside the area is 90:10 then the number of local people who can be absorbed is around 1,800 people. This means that the number of unemployed in the area during construction activity could be reduced to 4,200 people, or a reduction in unemployment rate of 30%. The need for labor at the operation phase is around 10,200. With such a need, the number of unemployed in the local area could be mostly absorbed (at least those who meet job qualifications). More labor will need to be brought in from outside, both to meet the required numbers and also to meet the needs for certain qualifications. Major issues regarding work force always reduce to local versus nonlocal. Several government

regions regulate the percentages hired of local and nonlocal labor, but the need to meet minimum job qualifications always complicates and can nullify this.

Traditional Values

Due to influx of people into The Mandalika, there will be intrusion of outsiders in the area that may disturb the local culture and create unrest. The local people have raised concerns that their young ones copy the lifestyles of foreign tourists and the result could be loss of customs and traditions. Some people may engage in criminal activities to get easy money from construction workers or tourists, which leads to increase crime and antisocial activities and loss of moral and religious values.

Regional Economy

Tourism is expected to contribute to the economic growth of a region, particularly in the area surrounding The Mandalika through factors that include community development programs, improvements in infrastructure, and job /business opportunities. The economic bases in this area are fisheries and farming, which limit the sources of income. The tourism sector is expected to increase the livelihood opportunities for the villagers.

7.5 Stakeholder Engagement Plan

The objectives of the stakeholder engagement plan are to:

- Build on the consultation process already undertaken;
- Continue the stakeholder identification process and ensure that 'high' priority stakeholders are accommodated;
- Adjust methods of engagement based on a review of previous activities;
- Identify the need for additional strategies for specific stakeholder groups;
- Clarify resources and responsibilities required to implement the engagement plan;
- Propose a monitoring and evaluation schedule.

The details of ITDC's key stakeholder engagement and a draft comprehensive list of stakeholders are listed in **Table 7-4** the proposed approach to an effective stakeholder engagement strategy is summarized in the Table as the types and frequencies of engagement actions that should be taken. This table/matrix requires intensive review and discussion by appropriate ITDC management and staff prior adoption as the stakeholder engagement strategy and plan.

Table 7-4 Stakeholder Engagement Strategy

Legend:

A	Annually	Q	Quarterly	W	Weekly	AN	As needed
B	Bi-annually	M	Monthly				

Stakeholder List	Priority: (H)igh (M)edium (L)ow	Level of Engagement	Type of Engagement									
			Face-to-face Individual briefing	Face-to-face group meetings	Community Reference Group	Workshops	Focus Groups	Public Displays	Phone and Website Feedback	Correspondence (phone, letter, email)	Newsletters	Media Campaign
GOVERNMENT STAKEHOLDERS												
Ministry of Environment and Forestry	Medium - High Influence, Low Interest											
West Nusa Tenggara Regional Environment and Forestry Agency (DLHK)	Medium - High Influence, Low Interest											
Environment Office of Central Lombok Regency	Medium - Low Influence, High Interest	Monitor								AN, Q		
Labor Agency of West Nusa Tenggara	High - Low Influence, High Interest	Leverage	AN							AN, Q		
Labor Agency of Central Lombok Regency	Medium - High Influence, Low Interest	Leverage;	AN							AN, Q		

Stakeholder List	Priority: (H)igh (M)edium (L)ow	Level of Engagement	Type of Engagement									
			Face-to-face Individual briefing	Face-to-face group meetings	Community Reference Group	Workshops	Focus Groups	Public Displays	Phone and Website Feedback	Correspondence (phone, letter, email)	Newsletters	Media Campaign
National Land Agency (BPN) of Central Lombok Regency	High - Low Influence, High Interest	Engaged								**AN, Q**		
Ministry of Trade and Industry	Medium - High Influence, Low Interest	Leverage								**AN**		
Trade and Industry Agency of Central Lombok Regency	Medium - High Influence, Low Interest	Leverage								**AN**		
Ministry of Environment and Forestry, Directorate General for Conservation, Natural Resources, and Ecosystems	High - Low Influence, High Interest	Engaged	**AN,Q**	**AN**						**AN, Q**		
Department of Agriculture of Central Lombok Regency	High - High Influence, High Interest	Leverage								**AN**		
Department of Fisheries of Central Lombok Regency	High - High Influence, High Interest	Engaged	**AN,Q**	**AN**						**AN, Q**		
West Nusa Tenggara Transportation Agency (Dinas Perhubungan Lombok Tengah)	High - High Influence, High Interest	Engaged								**AN, Q**		
Transportation Agency of Central Lombok Regency	High - High Influence, High	Engaged								**AN, Q**		

Stakeholder List	Priority: (H)igh (M)edium (L)ow	Level of Engagement	Type of Engagement									
			Face-to-face Individual briefing	Face-to-face group meetings	Community Reference Group	Workshops	Focus Groups	Public Displays	Phone and Website Feedback	Correspondence (phone, letter, email)	Newsletters	Media Campaign
	Interest											
Local Legislative Agency (DPRD)	Medium - High Influence, Low Interest	Leverage								**AN**		
Regional Legislature of West Nusa Tenggara Province (DPRD NTB)	Medium - High Influence, Low Interest	Leverage								**AN, Q**		
Public Works Agency of Central Lombok Regency	High - High Influence, High Interest	Engaged	**AN,Q**							**AN, Q**		
Department of Education of Central Lombok Regency	Medium - Low Influence, High Interest	Monitor		**AN**								
Department of Health of Central Lombok Regency	Medium - High Influence, Low Interest	Leverage		**AN**								
Local Revenue Office of Central Lombok Regency	High - High Influence, High Interest	Engaged	**AN,Q**							**AN, Q**		
Regent of Central Lombok	Medium - Low Influence, Low Interest	Inform		**AN**								
Political Parties	Medium - High Influence, Low Interest	Leverage								**AN**		

Stakeholder List	Priority: (H)igh (M)edium (L)ow	Level of Engagement	Type of Engagement									
			Face-to-face Individual briefing	Face-to-face group meetings	Community Reference Group	Workshops	Focus Groups	Public Displays	Phone and Website Feedback	Correspondence (phone, letter, email)	Newsletters	Media Campaign
NGO KEY STAKEHOLDERS												
Indonesian Forum for Environment (WALHI)	Medium - Low Influence, Low Interest	Inform										**AN**
World Wildlife for Nature (WWF)	Medium - Low Influence, Low Interest	Inform										**AN**
Conservation International	Medium- High Influence, Low Interest	Leverage	**Q**							Q		
The Nature Conservancy	High- High Influence, High Interest	Engage	Q							Q		
COMMUNITY STAKEHOLDERS												
Village Representative Group – Kuta Village	High - High Influence, High Interest	Engage	**AN**							**Q**	**AN**	
Village Representative Group – Merta Village	High - High Influence, High Interest	Engage	**AN**							**Q**	**AN**	
Village Representative Group – Sukadana Village	High - High Influence, High Interest	Engage	**AN**							**Q**	**AN**	
Village Representative Group – Sengkol Village	High - High Influence, High	Engage	**AN**							**Q**	**AN**	

Stakeholder List	Priority: (H)igh (M)edium (L)ow	Level of Engagement	Type of Engagement									
			Face-to-face Individual briefing	Face-to-face group meetings	Community Reference Group	Workshops	Focus Groups	Public Displays	Phone and Website Feedback	Correspondence (phone, letter, email)	Newsletters	Media Campaign
	Interest											
Community Leaders	High - High Influence, High Interest	Engage	**AN**							**Q**	**AN**	
Religious Leaders	High - High Influence, High Interest	Engage	**AN**							**Q**	**AN**	
Youth Leaders	High - High Influence, High Interest	Engage	**AN**							**Q**	**AN**	
SCIENTIFIC ORGANIZATIONS												
Bird Life International	Medium) - High Influence, Low Interest	Leverage			**AN**							
Indonesian Research Institute (LIPI)	Medium - High Influence, Low Interest	Leverage			**AN**							
University of Mataram	Medium - High Influence, Low Interest	Leverage			**AN**							
BUSINESS KEY STAKEHOLDERS												
Indonesian Chamber of Commerce and Industry (KADIN)	Low- Low Influence, Low Interest	Inform			**AN**							

Stakeholder List	Priority: (H)igh (M)edium (L)ow	Level of Engagement	Type of Engagement									
			Face-to-face Individual briefing	Face-to-face group meetings	Community Reference Group	Workshops	Focus Groups	Public Displays	Phone and Website Feedback	Correspondence (phone, letter, email)	Newsletters	Media Campaign
Indonesian Tourism Association - ASPPI (*Asosiasi Pelaku Wisata Indonesia*)	High - High Influence, High Interest	Engage		**Bi,Q**	**Bi,Q**	**Bi,Q**	**Bi,Q**					
GAHAWISRI Indonesia Marine Tourism Association(*Gabungan Pengusaha Wisata Bahari*)	Low- Low Influence, Low Interest	Inform			**AN**							
National Construction Business Association (GAPEKNAS)	High - High Influence, High Interest	Engage		**Bi,Q**	**Bi,Q**	**Bi,Q**	**Bi,Q**					
MEDIA KEY STAKEHOLDERS												
National media	Low- Low Influence, Low Interest	Inform						**AN**			**AN**	**AN**
Local Newspapers	Low- Low Influence, Low Interest	Inform							**AN**		**AN**	
Local Television and Radio	Low- Low Influence, Low Interest	Inform							**AN**			**AN**

CHAPTER 8
ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

This Chapter provides a description of the proposed Environmental and Social Management Plan (ESMP) for the Project, consistent with International Best Practices and the AIIB Environmental and Social Framework. It specifically describes the following components:

- Environmental and Social Management System (ESMS)
- Institutional Setting, Stakeholders, and Responsibilities
- Capacity Development and Training Measures
- Mitigation Measures
- Monitoring, Evaluation, and Reporting
- Provisions for Disclosure and Consultation
- ESMP Implementation and Costs.

8.1 Environmental and Social Management System

Indonesia Tourism Development Corporation (ITDC) is a Republic of Indonesia State-owned company known for developing and operating Nusa Dua – a world-class, international-standard tourism development located in southern Bali, Indonesia. ITDC, then with the name PT Pengembangan Pariwisata Indonesia (Persero) (Indonesia Tourism Development Private Limited (Shareholding)), was established in 1973 after the Government of Indonesia and the World Bank sought to create a sustainable and integrated model for tourism development in Indonesia. It is ITDC's stated mission to be a world-class tourism destination developer.

ITDC will build upon experience gained through the design, construction, and long-term implementation of the Nusa Dua development. As such, ITDC is committed to establishing, implementing, and maintaining the highest environmental and social standards, consistent with National laws and regulations and international standards such as the Asian Infrastructure Investment Bank (AIIB) Environmental and Social Framework.

Consistent with ITDC's Environmental and Social Policies, Project-related environmental and social risks and impacts are identified and evaluated, and systems and plans are developed containing specific mitigation measures and monitoring actions to avoid or mitigate adverse impacts, maximize Project-related benefits, and improve performance (**Chapters 5 and 10**, this document, as well as this Chapter). At the core of the Project's ESMS, this mitigation and monitoring program complements and builds upon the Indonesian regulatory AMDAL and UKL/UPL 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 investments engineered into overall Project design. Examples of such engineering design criteria include:

- Wastewater Treatment Plants (WWTP)
- Flood and Erosion Control Reservoirs
- Solid Waste Management (SWM) Facilities
- Drainage control and water management infrastructure
- Road Design and Construction
- Landscaping and Vegetation Management.

Additional environmental and social management measures and actions are incorporated into the overall Project management system (operational procedures and practices). The ESMP will enable the implementation of mitigation measures, followed by monitoring and tracking to assure optimal performance and results. As part of the ESMP, specific responsibilities will be assigned to key personnel to ensure efficient and effective delivery of environmental and social measures.

ITDC's Environmental and Social Management program is planned to be adaptable and responsive to changes in circumstances, unforeseen events, and most importantly, the results of monitoring and review (**CHAPTER 10**, this document). Accordingly, the ESMP is subject to continual improvement and will apply the principles of Adaptive Management over the life of the Project. Particular care will be taken to assure formal handover of all appropriate elements of the ESMP from the construction phase to operations over the life of the Project.

Major elements of the ITDC Environmental and Social Management System are provided in **Table 8-1**.

Table 8-1 Elements of ITDC Environmental and Social Management System

ESMS Element	Description
Leadership	Top-down commitment and ITDC culture.
Policy and strategic objectives	Corporate policies, objectives, and procedures with respect to environmental and social policies and ethics, and commitment to international best practices.
Organization, resources, and documentation	Organization of people, resources, and documentation to maximize environmental and social performance.
Evaluation and risk management	Identification and evaluation of environmental and social risks and development of risk avoidance and reduction measures.
Planning and design	Planning and design of work activities to minimize risks and impacts.
Implementation and monitoring	Monitoring of activities and performance, and making corrective actions when necessary, in the spirit of adaptive management and continual improvement.
Auditing and reviewing	Periodic assessment of performance and effectiveness.

8.1.1 Emergency Preparedness and Response

The ITDC will develop and maintain an emergency preparedness and response system so that the Project is prepared to respond to accidental and emergency situations associated with or affecting

the Project Area, in a manner appropriate to prevent and mitigate any harm to people or the environment. The system will include at a minimum the following.

- Identification of natural disasters and civil emergencies to which the Project Area is susceptible;
- Delineation of specific areas where accidents and emergency situations may occur or where risks are particularly high;
- Stakeholders that may be impacted;
- Response procedures;
- Provision of equipment and resources;
- Designation of responsibilities;
- Communication and Emergency Warning System, to reach all potentially affected stakeholders; and
- Periodic training to ensure effective response.

The emergency preparedness and response system will be periodically reviewed, revised, and enhanced, as necessary, to reflect changing conditions.

The Project through the PMU will assist and collaborate with affected stakeholders, local government agencies, and other relevant parties on emergency preparedness and response, planning, and implementation because their participation and collaboration are essential to effectively responding to an emergency. The Project will also work with the local and regional government agencies to enhance local capacity through joint training and workshops. Appropriate information about emergency preparedness and response will be disclosed through external communications and stakeholder engagement with affected stakeholders, including government agencies.

The emergency preparedness and response procedures, including requirements, resources, and responsibilities, will be contained in an Emergency Response Plan document to be developed in pragmatic terms early in the construction phase, and formalized during implementation of the operations phase.

8.2 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 (**Table 8-2** provides a tentative organization structure). 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.

Identification of environmental risks and impacts has been carried out in an appropriate, accurate, and objective manner, based on GoI requirements and International Best Practices. For potentially significant adverse impacts and technically complex issues, the Project will involve

qualified external experts to assist in the risk and impact identification process, as required or desirable.

Project personnel with direct responsibility for environmental and social performance will have the knowledge, skills, and experience necessary to perform their work, including current knowledge of GoI regulatory requirements, and International Best Practices consistent with the AIIB Environmental and Social Framework. Personnel will also possess the knowledge, skills, and experience to implement the specific measures and actions required under the ESMS and know the methods required to perform the actions in a competent and efficient manner. **Table 8-2** describes the roles and responsibilities for implementing the ESMS, focusing on the functional leaders. In each function, responsibilities are cascaded through the entire organization.

Table 8-2 Environmental and Social Management System (ESMS) Roles and Responsibilities

Role	Responsibilities	Competencies
Construction/ Operations Manager	- Manage day-to-day compliance with the ESMS and related permits and licenses, including taking necessary corrective actions. - Ensure Project ESMS is understood and adequately resourced by Supply Chain, Human Resources, EHS, External Relations, Legal, Security, and other relevant functions. - Monitor and report ESMS compliance. - Integrate ESMS actions into relevant management systems. - Ensure elements of the supply chain and any third parties understand the commitments of the policy and their specific responsibilities related to it. - Confirm that Stakeholder Engagement, including the Grievance Mechanism, is implemented per the Plan.	- Understanding the ESMS and related requirements and procedures. - Facilitative leadership skills.
Environmental, Heath, and Safety (EHS) Manager	- Assure compliance with ESMS, including leading, resourcing, and serving as advocate for the overall ESMS. - Ensure ESMS progress is tracked and documented and action items are closed out using a comprehensive register that contains specific item, person responsible, required resources, performance measures, and timing. In some cases the responsible party might be a contractor or third-party. - Drive ESMS continual improvement, including integrating the ESMS into the Project's relevant management systems. - Implement Emergency Preparedness and Response procedures. - Provide subject matter expertise and resources. - Conduct audit and performance reporting activities for the ESMS. - Control ESMS documentation and records.	- Understand the ESMS and how to build cross-functional support for the ESMS, especially with construction and operations staff, and integrate ESMS requirements into overall management system. - Experienced as an EHS professional, including impact assessments, social performance and human rights issues, and management plans. - Understanding of local ESMS-related GoI regulations and policy issues, such as AMDAL. - Leadership, project management, analytical, and planning skills. - Understand and undertake continual improvement steps. - Leverage lessons learned from inside and outside the Project and apply best practices
Security Manager	- Assure compliance with the ESMS, particularly to ensure security practices meet commitments of the ESMS and add value.	- Understand the ESMS and how to build cross-functional support for the ESMS and integrate

Role	Responsibilities	Competencies
	- Lead the implementation, measurement, audit, and continual improvement (in effectiveness and efficiency) of security commitments of the ESMS. - Benchmark Project against competitors and top performers in the region. - Maintain and deliver training.	supply chain requirements into overall management system. - Understand key stakeholders and their issues relating to security. - Leadership, analytical, planning, and project management skills. - Understand and undertake continual improvement steps. - Leverage lessons learned from inside and outside Project and apply best practices - Have completed related training.
External Relations Manager	- Assure compliance with the ESMS, including leading, resourcing, and serving as advocate for the Stakeholder Engagement Procedure, the Stakeholder Engagement Plan, and the Grievance Mechanism, to ensure that these are understood, meet commitments of the ESMS, and are consistent with the AIIB Environmental and Social Framework, National laws, and Good International Practice. - Lead the implementation, measurement, audit, and continual improvement (of effectiveness and efficiency) of the procedures, plans, and Grievance Mechanism. - Benchmark Project against competitors and top performers in the region. - Maintain and deliver appropriate Stakeholder Engagement training - Maintain a data base of approved external stakeholder engagement consultants. - Integrate and align relevant stakeholder information into business planning and decision making. - Develop and maintain a Stakeholder Engagement Plan to document engagement and communications plans and activities. - Carry out regular review of regulatory and other issues that may affect the Project and ensure related stakeholders are engaged. - Ensure stakeholder issues are satisfactorily closed out (addressed) in timely manner. - Develop, maintain, and implement the Project Community Development Plan as contained in Indigenous Peoples Development Plan..	- Understand the ESMS and how to build cross-functional support for the ESMS and integrate supply chain requirements into overall management system. Includes Stakeholder Engagement Procedure, Stakeholder Engagement Plan, and Grievance Mechanism. - Understanding key stakeholders and their issues. - Leadership, analytical, planning, and project management skills. - Understand and undertake continual improvement steps. - Leverage lessons learned from inside and outside the Project and apply best practices - Have completed related training. - Understand community development principles and planning processes. - Proficient in engaging stakeholders, per the Stakeholder Engagement Plan.

Role	Responsibilities	Competencies
Human Resources Manager	- Assure compliance with personnel management aspects of the ESMS, particularly relating to Public Consultation and Grievance Mechanism, to ensure these are understood, meet commitments of the ESMS, and add value to the Project. - Lead the implementation, measurement, audit, and continual improvement (in effectiveness and efficiency) for labor and working conditions commitments of the ESMS. - Benchmark Project against competitors and top performers in the region. - Maintain and administer training programs and assure quality of training delivery.	- Understand the ESMS and how to build cross-functional support for the ESMS and integrate human resources requirements into overall management systems. - Understand key stakeholders and their issues relating to human resources. - Leadership, analytical, planning, and project management skills. - Understand and undertake continual improvement steps. - Leverage lessons learned from inside and outside the Project and apply best practices - Have completed related training.
Supply Chain Manager	- Assure compliance with the ESMS, particularly relating to supply chain aspects, to ensure that these are understood, meet commitments of the ESMS, and add value. - Lead the implementation, measurement, audit, and continual improvement (of effectiveness and efficiency) of supply chain commitments of the ESMS. - Benchmark Project against competitors and top performers in the region. - Maintain and deliver training.	- Understand the ESMS and how to build cross-functional support for the ESMS and integrate supply chain requirements into overall management systems. - Understand key stakeholders and their issues relating to supply chain. - Leadership, analytical, planning, and project management skills. - Understand and undertake continual improvement steps. - Leverage lessons learned from inside and outside the Project and apply best practices - Have completed related training.

8.3 Capacity Development and Training Measures

ITDC is committed to helping local communities build capacity through the provision and delivery of training opportunities. Indeed, one of the largest anticipated Project-related socioeconomic benefits – and as expected by local residents – is the provision of capacity development and skills-training opportunities to local residents. As such, ITDC will develop and deliver a Capacity Development and Training Plan (CDTP), complete with associated support requirements, as outlined in **Table 8-3**.

Table 8-3 Capacity Development and Training Measures

Key Training Initiatives
• ITDC will develop and deliver a detailed and comprehensive Project-specific Capacity Development and Training Plan (CDTP). • Assign a dedicated full-time human resource officer specifically responsible for the implementation of the Project CDTP. **Table 8-2** provides a description of key management personnel including a Human Resources Officer, including annual review and revision of Project and Community training requirements. • Provide dedicated 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.

The CDTP will incorporate international-standard principles, consistent with the AIIB Environmental and Social Framework, as provided in **Table 8-4**.

Table 8-4 International-Standard Principles of CDTP

International-Standard Principles of CDTP

• Facilitate local employment by providing targeted job skills training and education opportunities to local residents who are existing and potential workers.
• Specific and focused attention will be devoted to nondiscrimination and gender equality, by encouraging and facilitating participation of the following vulnerable groups in training and subsequent employment opportunities:
  ○ Women
  ○ Indigenous Peoples
  ○ Elderly
  ○ Youth
  ○ Economically and Socially Disadvantaged.
• Local authority and community involvement will be encouraged and facilitated to the greatest extent possible by the inclusion of knowledgeable local residents in training courses, and involving local authorities and community members to participate in training courses and drills (e.g., emergency response drills).
• Joint training initiatives with local and regional government agencies and institutions (e.g., universities and other educational facilities) will be encouraged and facilitated to the greatest extent possible.
• As part of an overall Community Development Plan, enhancement of local employment through targeted job training will be identified as a strategic objective.
• Under no circumstances shall a Project worker be permitted to perform a Project-related work function if she or he is not adequately skilled, knowledgeable, and trained to effectively and safely perform the task.

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 8-5.**

Table 8-5 Specific ITDC Planned Training Initiatives

Planned ITDC Training Initiatives
• Vocational training for local residents, specifically targeted toward enhancing Project-related employment opportunities; • Induction training for all new employees, including training in ITDC corporate social and Health, Safety, and Environment (HSE) commitments and policies; • Occupational health and safety training at levels appropriate to specific job descriptions and risks for all Project-related workers; • Environmental training for all 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 all Project-associated workers, with specifically appropriate targeted 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 where applicable, firearms training) and appropriate conduct toward workers and other stakeholders; • Management training for key Project management personnel (e.g., **Table 8-2**) 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 handing, 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 all Project workers, including managers, contractors, and subcontractors, including provisions for the Chance Find Procedure (**Appendix C**); • Emergency response training for all employees, including regular and frequent safety drills; and, • Grievance Mechanism training for all Project workers and representatives of local affected residents.

8.4 Mitigation Measures

CHAPTER 5 provides detailed component-based descriptions of planned mitigation activities for anticipated environmental and social impacts during each Project phase, and should be consulted for impact-specific mitigation measures. This subsection provides an overview of planned mitigation measures by Project phase as they relate to Project activities.

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. **Figure 8-1** provides a summary of this approach.

As such, throughout the life of the Project, avoidance of environmental and social risks and impacts will be the preferred option. In cases where compete avoidance of significant impacts is not possible or feasible, the following actions will apply in order of preference: minimization, restoration/ remediation, and as a last resort, compensation or offset (**Figure 8-1**).

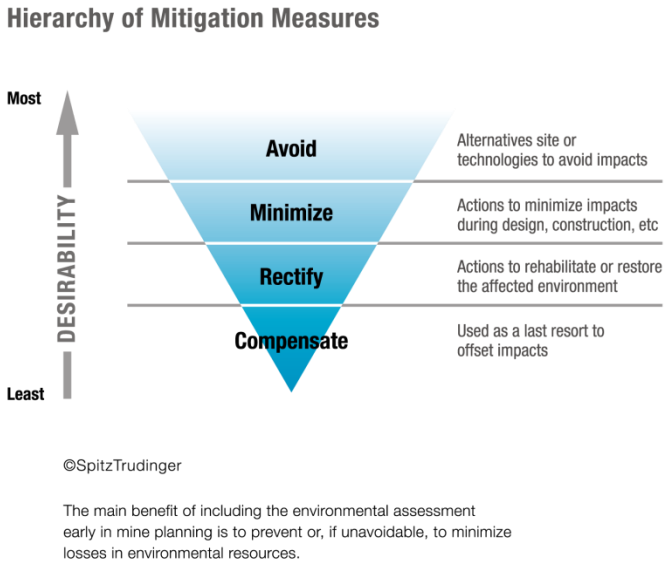


Figure 8-1 Hierarchy of Mitigation Measures

Where identified significant risks and impacts cannot be avoided, thereby resulting in residual impacts, monitoring and management of potential impacts will be implemented for the life of the Project to ensure operation in compliance with applicable laws and regulations, and meeting all requirements of the AIIB Environmental and Social Standards 1 to 3, as contained in the Project ESMS.

8.4.1 Design Phase

8.4.1.1 Physical and Biological Impacts Mitigation Measures

The Project will employ major environmental design criteria, specifically intended to improve and maintain environmental quality within and around the Project, over the life of the Project. A key focus of these environmental design criteria is on the improvement and management of water quality within and around the Project Area. As a direct result of these design criteria, environmental conditions – specifically ground, surface, and sea water quality – are anticipated to improve significantly over the life of the Project. Key environmental design components of this nature are listed in **Table 8-6**.

Table 8-6 Key Environmental Design-Phase Components Intended to Improve and Maintain Environmental Quality Within Project Area.

Design Component	Target Environmental Effect
Wastewater Treatment Plants (WWTP)	Improved water quality; Provision of appropriate quality water for landscape irrigation
Flood and Erosion Control Reservoirs / Detention Basins	Improved surface water quality; Reduced peak flood flows and avoidance of flash floods; Improved management of scarce water resources; Enhanced recharge of surface aquifers

Design Component	Target Environmental Effect
Solid Waste Management (SWM) Facility	Improved ground, surfaces, and sea water quality; Improved air quality; Improved odor control; Reduced volumes sent to landfill
Engineered drainage system, river normalization / channelization, and stormwater runoff management	Improved ground, surface, and sea water quality; Control of sediment transport; Enhanced recharge of surface aquifers
Road Design, Construction, and Management	Improved surface water quality; Improved traffic flows; Improved road safety for local residents and Project users
Landscape and Vegetation Management	Improved surface, ground, and sea water quality; Improved erosion and sedimentation control; Aesthetic enhancements; Possible provision of bird habitat

8.4.1.2 Socioeconomic and Cultural Impacts Mitigation Measures

During the design phase, key social mitigation activities have focused on public consultation and information disclosure, primarily as consistent with regulatory requirements of the AMDAL process. **Chapters 4 and 7** provide a comprehensive review of Project-related public consultation activities and plans. **Table 8-7** provides key socioeconomic design-phase components.

Table 8-7 Key Socioeconomic Design-Phase Components Intended to Improve and Maintain Socioeconomic and Cultural Values Within Project Area.

Design Component	Target Socioeconomic Effect
Project information disclosure through local media	Improved public perception; Improved community relations
Direct consultation with local government representatives	Maximize regional benefits; Reduced regional disputes
Direct consultation with community representatives (Village Heads);	Improved community relations; Reduced social conflicts; Provide rapid feedback from community
Social baseline surveys	Improved community relations; Provide feedback from PAP; Increased awareness and avoidance of negative socioeconomic impacts; Adjust strategies to maximize economic benefits
Public consultation meetings (e.g., AMDAL process)	Improved community relations; Provide feedback from PAP; Increased awareness and avoidance of negative socioeconomic impacts; Adjust strategies to maximize economic benefits
Resettlement Plan Framework	Smooth land acquisition and land resettlement process, with no significant adverse impacts on affected people
Indigenous Peoples Development Plan	Effective management of Indigenous Peoples (IP) and traditional values, with no significant adverse impacts on IPs; Vehicle for effective community development plans

8.4.2 Construction Phase

8.4.2.1 Physical Impacts Mitigation Measures

Mitigation measures during the construction phase will focus on avoiding and minimizing direct and indirect impacts associated with the construction of buildings, roads, facilities, and related infrastructure, as well as the mobilization of workers and building materials required for Project construction. As such, mitigation measures will focus on avoiding or minimizing impacts on air quality, noise, and water quality. Specific construction-phase mitigation measures associated with physical components are provided in **Table 8-8.**

Table 8-8 Construction-Phase Mitigation Measures Associated with Physical Components

Construction-Phase Mitigation Measures
Component: AIR QUALITY **Sensitive Receptors: Residents of Kuta, Mertak, Sengkol, and Sukadana Villages**
• Strict adherence to the Project-related use of vehicles and equipment that meet exhaust emission standards; • Strict 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; • Strict adherence to a dust suppression program involving regular and frequent road watering; and • Quarterly air quality monitoring during the construction phase to document compliance with ambient quality standards, or determine need for management improvements; monitoring will address the following parameters: SO_2, NO_2, CO, NH_3, and TSP (Total Suspended Particulates).
Component: NOISE **Sensitive Receptors: Residents of Kuta, Mertak, Sengkol, and Sukadana Villages**
• Strict adherence to Project-related use of vehicles and equipment that meet exhaust emission standards; • Strict 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 whenever possible as alternatives to the use of combustion engines; • Preferential use in particular of electric vehicles for Project-related activities, 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 to known residential locations to the greatest extent possible; and • Quarterly 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 **Sensitive Receptors:** ○ **Drinking water (wells) for local residents within and around the Project Area** ○ **Rivers and freshwater aquatic biota within the Project Area** ○ **Sea water quality and marine ecosystems within the Project Area of Influence**
• 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-Phase Mitigation Measures
• Construction and use of water retaining wells/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; and • Protection and retention of mangrove areas is part of Project design.

8.4.2.2 Biological Impacts Mitigation Measures

Mitigation measures during the construction phase will focus on avoiding and minimizing direct and indirect impacts associated with the construction of buildings, roads, facilities, and related infrastructure, as well as the mobilization of workers and building materials required for Project construction. As such, mitigation measures will focus on avoiding or minimizing impacts on terrestrial flora and fauna, and marine ecosystems. Specific construction-phase mitigation measures associated with biological components are provided in **Table 8-9.**

Table 8-9 Construction-Phase Mitigation Measures Associated with Biological Components

Construction-Phase Mitigation Measures
Component: TERRESTRIAL FLORA and FAUNA **Sensitive Receptors:** ○ **Remnant terrestrial habitat patches in Project Area** ○ **Protected Forests surrounding Project Area** ○ **Existing terrestrial fauna within Project Area** ○ **Existing wetlands within Project Area** ○ **Potential endangered species (e.g., Christmas Frigatebird, Rainbow Bee-Eater)** ○ **Invasive species**
• Vegetation clearing and disturbance will be minimized to the greatest extent possible and no unnecessary vegetation clearing will be permitted. • Any natural or critical habitat areas will be protected and conserved to the greatest extent possible. • Vegetation and habitat specifically associated with river mouths will be protected. • Development in forest areas will be avoided or minimized to the greatest 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 greatest extent possible. • Vehicle speeds and driving practices will be strictly 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 strictly prohibited. • Sources of disturbance such as noise and light will be controlled and minimized to the greatest extent possible, and focused on areas of remaining habitat value.

Construction-Phase Mitigation Measures
• 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 **Sensitive Receptors:** ○ **Regional Marine Protected Area of Central Lombok – Gerupuk Bay** ○ **Nyale Marine Worms** ○ **Marine Biota (Plankton, Benthos, and Fish)** ○ **Marine Turtles** ○ **Marine Ecosystems (Coral Reefs, Mangroves, and Seagrass)**
• All 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 through a passage below the road structure; construction activities immediately adjacent to mangrove areas will be avoided as much as possible; construction in mangrove areas will be strictly monitored and controlled as deemed necessary. • Construction activities on or near sand beaches will be avoided and minimized to the greatest extent possible. • No unnecessary use of sand beaches or beach sand for construction purposes will be permitted. • Beach vegetation zones will be protected and avoided to the greatest extent possible. • Noise and lighting near sand beach habitat will be minimized to the greatest extent possible. • Construction activities on or near sand beach habitat will be avoided during night hours (6 pm to 6 am) to the greatest extent possible. • Lighting, in particular, of construction sites near sand beach habitat will be avoided to the greatest extent possible. • In the event marine turtle nesting is observed within the Project Area, construction within and around the site will be halted, human activity and disturbance will be avoided, and an ecological assessment of the situation will be conducted by a qualified professional. • Killing of marine turtles and collection of marine turtle eggs by any Project-related workers, contractors, management personnel, and associated family members will be strictly prohibited, and sanctioned if known to occur. • Strict adherence to Protection of marine biota values within Gerupuk Bay (Marine Protected Area).

8.4.2.3 Socioeconomic and Cultural Impacts Mitigation Measures

Mitigation measures during the construction phase will focus on potential socioeconomic impacts resulting from broad changes to the social fabric of local communities brought on by the onset of the construction phase, including potential impacts to public attitudes, community health and safety, ecosystem services, infrastructure and traffic-related issues, and cultural heritage. Specific construction-phase social mitigation measures are provided in **Table 8-10**.

Table 8-10 Construction-Phase Mitigation Measures Associated with Socioeconomic and Cultural Components

Construction-Phase Mitigation Measures
Component: PUBLIC PERCEPTIONS AND ATTITUDES **Sensitive Receptors: Residents of Kuta, Mertak, Sengkol, and Sukadana Villages**
• Project information disclosure in a timely and effective manner; • Direct consultation with local government representatives; • Direct consultation with community representatives (Village Heads); and • Public consultation meetings.
Component: EMPLOYMENT, INCOME, AND LIVELIHOOD **Sensitive Receptors: Residents of Kuta, Mertak, Sengkol, and Sukadana Villages, especially vulnerable groups including:** ○ **Women** ○ **Indigenous People** ○ **Elderly** ○ **Youth** ○ **Disadvantaged (Economically, Mentally, and Physically)**
• 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. • All 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: ○ 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 non-discrimination; ○ Compliance with all Indonesian laws relating to worker organizations and collective bargaining; and ○ An accessible, understandable, and transparent grievance mechanism made available at the time of hiring (**CHAPTER 9** comprehensively addresses the issues of Grievance Mechanisms). • Social development and inclusion will be promoted by the following measures: ○ Promoting equality of opportunity and non-discrimination 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: ○ 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 completely avoided by the following measures: ○ Children under the age of 18 will not be employed in any capacity by the Project or associated contractors, except under strict 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

Construction-Phase Mitigation Measures
of forced or compulsory labor, such as indentured labor, bonded labor, or similar contracting arrangement, or labor by trafficked persons.
Component: ENVIRONMENTAL HEALTH AND ECOSYSTEM SERVICES **Sensitive Receptors: Residents of Kuta, Mertak, Sengkol, and Sukadana Villages**
• Mitigation of air quality, noise, water quality, and biological component impacts are comprehensively discussed in those associated sections, anticipated to result in overall improved environmental health and ecosystem services to local residents.
Component: COMMUNITY HEALTH, SAFETY, AND SECURITY **Sensitive Receptors: Residents of Kuta, Mertak, Sengkol, and Sukadana Villages**

• 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. Project-related public consultation is comprehensively described in **CHAPTER 7.**
• Maintain a functioning Grievance Resolution Mechanism (GRM) to deal with complaints and concerns about community health and safety, as described in **CHAPTER 9.**
• Address thoroughly road and traffic safety concerns of local communities as described in Subsection 5.4.5, 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 detailed in **Chapter 5.**
• 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 **Sensitive Receptors: Residents of Kuta, Mertak, Sengkol, and Sukadana Villages, and specifically:** ○ **Subvillages adjacent to, or near roads**
• Maintain existing roads adequately and regularly to ensure existing roads are in good condition throughout the construction phase. • Perform any required road upgrades to address and accommodate any Project-related road access

Construction-Phase Mitigation Measures
requirements. • Design, construct, and develop new roads that will result in an overall adequate road network (i.e., all existing, upgraded, and new roads combined) to address all foreseeable traffic volumes within and around the Project Area. • Construct and maintain all Project-related roads (i.e., newly constructed, upgraded, or used by the Project in any capacity) to National and international 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 all necessary personal protective equipment. • All 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 **Sensitive Receptors: Residents of Kuta, Mertak, Sengkol, and Sukadana Villages, specifically on:** ○ **Buried culture sites and artifacts** ○ **Nyale Marine Worm Festival**
• 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 any construction-related activities. Doing so will reveal any known culturally significant sites or artifacts prior to ground disturbance. • Any 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**, provided in **Appendix C**. • Specific and focussed attention will be provided to the annual Nyale Festival, to ensure this critically important local cultural tradition remains intact and vibrant.
Component: INVOLUNTARY RESETTLEMENT **Sensitive Receptors: Residents of Kuta, Mertak, Sengkol, and Sukadana Villages, especially vulnerable groups including:** ○ **Women** ○ **Indigenous People** ○ **Elderly** ○ **Youth** ○ **Disadvantaged (Economically, Mentally, and Physically).**
Mitigation and Management pertaining to Involuntary resettlement are comprehensively described in the **Resettlement Planning 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 will be enhanced, or at a minimum, restored to pre-displacement level; • Sufficient resources will be provided to enable displaced people to share in Project benefits; • All 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;

Construction-Phase Mitigation Measures
• 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 AIIB policies will be strictly enforced. Project-Affected People (PAPs) 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 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 **Sensitive Receptors: Residents of Kuta, Mertak, Sengkol, and Sukadana Villages, with specific focus on Indigenous Peoples (Sasak) and culture**
Mitigation and Management pertaining specifically to Indigenous Peoples affected by the Project is comprehensively 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 may include;: • Road development and improvement; • Deep well development • Cash crop and agroforestry development and training; • Nursery development and management; • Agricultural mentoring and coaching; • Marketing links assistance; • Fishing development and training; • Fish/shrimp program development and training; • Fishing gear improvement and enhancement program; • Education scholarship program; • 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 education; • Mentoring and assistance for market revitalization; • Business start-up extension and assistance; • Micro-loan and business assistance program; • Cultural enhancement programs (e.g., handicrafts, traditional dance, music, weaving); Training activities targeting IPs may consist of: • Tourism awareness training; • Cultural and art exhibitions program; • Language training (e.g., English, Chinese); • Hospitality industry training; • Marketing and business training; • Vocational training; • Construction worker training; Intensive ongoing public consultation and information disclosure – including Frere, Prior, and Informed Consultation (FPIC) – has formed the foundation of the IPDP, and will continue to guide management and

Construction-Phase Mitigation Measures
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.

8.4.3 Operations Phase

8.4.3.1 Physical Impacts Mitigation Measures

Mitigation measures during the operations phase will focus on avoiding and minimizing direct and indirect impacts associated with the long-term Project-related operations activities associated with daily operations of hotels, restaurants, supporting businesses and facilities, and associated infrastructure, as well as the daily mobilization of Project-related workers and users of the Project, including tourists. As such, mitigation measures will focus on avoiding or minimizing impacts on air quality, noise, and water quality. Specific mitigation measures are described in **Table 8-11**.

Table 8-11 Operations Phase Mitigation Measures Associated with Physical Components

Operations-Phase Mitigation Measures
Component: AIR QUALITY **Sensitive Receptors:** • **Residents of Kuta, Mertak, Sengkol, and Sukadana Villages** • **The Mandalika SEZ workers** • **Visitors/tourists.**
• Strict adherence to the Project-related use of vehicles and equipment that meet exhaust emission standards; • Strict 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; • Preferential use in particular of electric vehicles for Project-related activities; and • Quarterly air quality monitoring during the operations phase of the parameters: SO_2, NO_2, CO, NH_3, and TSP (Total Suspended Particulates) to document compliance with ambient standards.
Component: NOISE **Sensitive Receptors:** • **Residents of Kuta, Mertak, Sengkol, and Sukadana Villages** • **The Mandalika SEZ workers** • **Visitors/tourists.**
• Strict adherence to the Project-related use of vehicles and equipment that meet exhaust emission standards; • Strict 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 whenever possible as alternatives to the use of combustion engines; • Preferential use in particular of electric vehicles for Project-related activities;

Operations-Phase Mitigation Measures
• Minimizing operational activities associated with noise (e.g., operation of large vehicles), to the greatest extent possible, between the hours of 6 pm and 6 am, and during designated holidays; and, • Avoiding noise in proximity to known residential locations to the greatest extent possible.
Component: GROUNDWATER, SURFACE WATER, SEA WATER QUALITY **Sensitive Receptors:** ○ **Drinking water (wells) for local residents within and around the Project Area** ○ **Rivers and freshwater aquatic biota within the Project Area** ○ **Seawater and marine ecosystems within the Project Area of Influence**
• 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; • Use and management of drainage systems within Project areas; • Use and management of water retaining wells and recharge basins; • Use and management of artificial lakes or large ponds to store rainwater; • Protection and management of river mouths; • Conservation and management of mangrove areas; • Vegetation rehabilitation of riverbanks and other potentially disturbed areas; and • Strict use, consistent with National and international standards, of any potentially hazardous substances such as pesticides and fertilizers.

8.4.3.2 Biological Impacts Mitigation Measures

Mitigation measures during the operations phase will focus on avoiding and minimizing direct and indirect impacts associated with the long-term Project-related operations activities associated with daily operations of hotels, restaurants, supporting businesses and facilities, and associated infrastructure, as well as the daily mobilization of Project-related workers and users of the Project, including tourists. As such, mitigation measures will focus on avoiding or minimizing impacts on terrestrial flora and fauna, and marine biota and ecosystems. Specific mitigation measures are described in **Table 8-12**.

Table 8-12 Operations-Phase Mitigation Measures Associated with Biological Components

Operations-Phase Mitigation Measures
Component: TERRESTRIAL FLORA and FAUNA **Sensitive Receptors:** ○ **Remnant terrestrial habitat patches in Project Area** ○ **Existing terrestrial fauna within the Project Area** ○ **Protection Forests near Project Area** ○ **Existing wetlands within Project Area** ○ **Potential endangered species (e.g., Christmas Frigatebird, Rainbow Bee-Eater)** ○ **Invasive species**
• Vegetation clearing and disturbance will be minimized to the greatest extent possible and no unnecessary vegetation clearing will be permitted during the life of Project. • Any natural or critical habitat areas will be protected and conserved to the greatest extent possible. • Protection and management of vegetation and habitat specifically associated with river mouths will be part of Project design. • Retention and management of remnant forest areas will be performed to the greatest extent possible. • Mangrove areas will be protected and managed as Project policy. • Disturbed areas with exposed soil that, are not built upon will be revegetated, with preferential use of native plant species, and managed for the life of the Project. • Landscaping and revegetation of managed green spaces will be performed with preferential use of native plant species. • Use of invasive plant species for revegetation and landscaping purposes will be prohibited. • Invasive plant species will be controlled, removed, and managed to greatest extent possible during the life of the Project. • Use of pesticides, herbicides, and fertilizers will be strictly controlled and consistent with National laws and international guidelines. • Vehicle speeds and driving practices will be strictly controlled and enforced within the Project area. • Hunting or otherwise unauthorized killing as well as capture and disturbance of fauna by Project-related employees, contractors, management, and guests/tourists will be strictly prohibited and sanctioned if known to occur. • Sources of disturbance to wildlife such as noise and light will be controlled and minimized to the greatest extent possible, and focused on areas of remaining habitat value. • Protected forests outside the Project (adjacent to the west boundary) will be entirely avoided. • Protection and management of natural wetlands and associated habitats.
Component: MARINE BIOTA, MARINE TURTLES, and MARINE ECOSYSTEMS **Sensitive Receptors:** ○ **Regional Marine Protected Area of Central Lombok – Gerupuk Bay** ○ **Nyale Marine Worms** ○ **Marine Biota (Plankton, Benthos, and Fish)** ○ **Marine Turtles** ○ **Marine Ecosystems (Coral Reefs, Mangroves, and Seagrass).**
• All 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. • Operational activities on or near sand beaches will be avoided and minimized to the greatest extent possible. • No unnecessary use of sand beaches for operations purposes will be permitted.

Operations-Phase Mitigation Measures
• Beach vegetation zones will be protected and managed to the greatest extent possible. • Noise and lighting near sand beach habitat will be minimized to the greatest extent possible. • Operational activities on or near sand beach habitat will be avoided during night hours (6 pm to 6 am) to the greatest extent possible. • Lighting, in particular, of sites and activities near sand beach habitat will be avoided to the greatest extent possible. • In the event marine turtle nesting is observed within the Project Area, construction within and around the site will be halted, human activity and disturbance will be avoided, and an ecological assessment of the situation will be conducted by a qualified professional. • Killing of marine turtles and collection of marine turtle eggs by any Project-related workers, contractors, management personnel and associated family members will be strictly prohibited, and sanctioned if known to occur. • Visitors/tourists will be informed of all precautions and prohibitions involving marine biota and ecosystems. • Dive boat activities in coral reef and seagrass areas off the SEZ will be strictly regulated, including no-anchor rules. • In connection with the SEZ's sustainable tourism certification, the need for sustainably produced seafood will be used in cooperation with regional authorities to promote sustainable fishing practices. • Strict adherence to Protection of marine biota and ecosystem values within Gerupuk Bay (Marine Protected Area).

8.4.3.3 Socioeconomic and Cultural Impacts Mitigation Measures

Mitigation measures during the operations phase will focus on potential socioeconomic impacts resulting from broad changes to the social fabric of local communities brought on by long-term operations of the Project, including potential impacts to public attitudes, community health and safety, ecosystem services, infrastructure and traffic-related issues, and cultural heritage. Specific operations phase social mitigation measures are listed in **Table 8-13**.

Table 8-13 Operation-Phase Mitigation Measures Associated with Socioeconomic and Cultural Components

Operation-Phase Mitigation Measures
Component: PUBLIC PERCEPTIONS AND ATTITUDES **Sensitive Receptors: Residents of Kuta, Mertak, Sengkol, and Sukadana Villages**

• Public consultation will continue throughout Project Operation, as generally described in **CHAPTER 7**.
• Project's Stakeholder Engagement Plan (**SEP—Section 7.4**) will be applied by the Project Management Unit (PMU) to guide information disclosure, consultation, and feedback throughout the Project lifetime. The SEP encompasses government at all levels, local and international NGOs, the business community, and the media.
• Core mitigation approaches will include:
  ○ Project information disclosure in a timely and effective manner;
  ○ Direct consultation with local government representatives;
  ○ Direct consultation with community representatives (Village Heads) at regularly scheduled meetings; and
  ○ Public consultation meetings at appropriate times, at least annually.

Component: EMPLOYMENT, INCOME, AND LIVELIHOOD

Operation-Phase Mitigation Measures
Sensitive Receptors: Residents of Kuta, Mertak, Sengkol, and Sukadana Villages, especially vulnerable groups including: ○ **Women** ○ **Indigenous People** ○ **Elderly** ○ **Youth** ○ **Disadvantaged (Economically, Mentally, and Physically)**
• 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 descriptions. • All Project-related and other SEZ employment agreements and situations will be consistent with the Indonesian Labor Code, and the ITDC Company Regulation/Collective Labor Agreement. • Project/SEZ workers will be provided with the following: ○ 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 non-discrimination; ○ Compliance with all Indonesian laws relating to worker organizations and collective bargaining; and ○ An accessible, understandable, and transparent grievance mechanism made available at the time of hiring (**CHAPTER 9** comprehensively addresses the issues of Grievance Mechanisms). • Social development and inclusion will be promoted by the following measures: ○ Promoting equality of opportunity and non-discrimination 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: ○ 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 and operation of the SEZ to promote equality of employment opportunities for, and empowerment of, women. • Child and forced labor will be completely avoided by the following measures: ○ Children under the age of 18 will not be employed in any capacity by the Project and associated contractors and tenants, except under strict 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: ENVIRONMENTAL HEALTH AND ECOSYSTEM SERVICES **Sensitive Receptors: Residents of Kuta, Mertak, Sengkol, and Sukadana Villages**
• Mitigation of air quality, noise, water quality, and biological component impacts are comprehensively discussed in those associated sections, anticipated to result in overall improved environmental health and ecosystem services to local residents. • SEZ workers and visitors/tourists will also benefit.

Operation-Phase Mitigation Measures
Component: COMMUNITY HEALTH, SAFETY, AND SECURITY **Sensitive Receptors: Residents of Kuta, Mertak, Sengkol, and Sukadana Villages, as well as SEZ workers and visitors/tourists.**

• 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. Project-related public consultation is comprehensively described in **CHAPTER 7**.
• Maintain a functioning Grievance Resolution Mechanism (GRM) to deal with complaints and concerns about community health and safety, as described in **CHAPTER 9.**
• Address thoroughly road and traffic safety concerns of local communities as described in Subsection 5.4.5, 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 zone;
  ○ 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 detailed in **CHAPTER 5**.
• 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 **Sensitive Receptors: Residents of Kuta, Mertak, Sengkol, and Sukadana Villages, with focus on:** ○ **Residents of subvillages adjacent to, or near roads** ○ **SEZ workers and visitors/tourists.**
• Maintain existing roads adequately and regularly to ensure these roads remain in good condition throughout the construction phase. • Perform any required road upgrades to address and accommodate any Project-related road access requirements. • Design, construct, and develop new roads that will result in an overall adequate road network (i.e., all existing, upgraded, and new roads combined) to address all foreseeable traffic volumes within and around the Project Area. • All Project-related roads (i.e., constructed, upgraded, or used by the Project in any capacity) will be maintained to National and international standards to provide the width, surface, and shoulder

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specifications and pavement quality required to accommodate predicted traffic volumes. • In the event of operation-phase congestion, traffic will be directed at locations that are prone to traffic congestion, by policemen or task-trained security personnel, equipped with all needed personal protective equipment. • All Project-related roads will be equipped with proper traffic signage, particularly at intersections. • The three main alternative routes being developed into the Project Area (Awang Line, Selong Belanak line and Sengkol line) will be monitored by CCTV cameras so that operations center management will be aware of traffic, security, maintenance, and other issues as they arise. Periods of major congestion (such as the Nyale Festival) will prove this to be useful. • Subvillages adjacent to, or near, existing roads will be specifically targeted for traffic mitigation and management.
Component: CULTURAL HERITAGE **Sensitive Receptors: Residents of Kuta, Mertak, Sengkol, and Sukadana Villages, with focus on:** ○ **Buried culture sites and artifacts** ○ **Nyale Festival**
• Vegetation clearing and soil disturbance will be minimized to the greatest extent possible and no unnecessary vegetation clearing or soil disturbance will be permitted. • Comprehensive public consultation will occur on an ongoing basis during the life of the Project. Doing so will reveal any known culturally significant sites or artefacts prior to ground disturbance. • Any culturally significant sites or artefacts identified by local residents prior to new land disturbance 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 artefact 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 artefact discovery, during the operations phase (i.e., incidental discovery), ITDC will implement the **Chance Find Procedure**, provided in **Appendix C**. • Specific and focussed attention will be provided to the annual Nyale Festival, to ensure this critically important local cultural tradition remains intact and vibrant.
Component: INVOLUNTARY RESETTLEMENT **Sensitive Receptors: Residents of Kuta, Mertak, Sengkol, and Sukadana Villages, especially vulnerable groups including:** ○ **Women** ○ **Indigenous People** ○ **Elderly** ○ **Youth** ○ **Disadvantaged (Economically, Mentally, and Physically)**
Mitigation and Management pertaining to Involuntary resettlement is comprehensively described in the **Resettlement Planning Framework** report. It is assumed that if implementation of the operations phase begins and some resettlement of PAP remains necessary, all or most aspects of the RPF will still be applied. The following specific mitigation actions will continue to 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 • All 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

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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 AIIB policies will be strictly enforced. Project-Affected People (PAPs) 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 periodProvided with development assistance in addition to compensation
Component: INDIGENOUS PEOPLES **Sensitive Receptors: Residents of Kuta, Mertak, Sengkol, and Sukadana Villages, with specific focus on Indigenous Peoples (Sasak) and culture – including women, youth, and disadvantaged groups**
Mitigation and Management pertaining specifically to Indigenous Peoples affected by the Project are comprehensively 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;

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• 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 throughout the operation phase.. 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.
Component: INDUCED DEVELOPMENT **Sensitive Receptors: Residents of Kuta, Mertak, Sengkol, and Sukadana Villages, particularly those along the periphery of the Project boundary**
Induced development impacts can be negative if regional development and expansion outside the Project Area occurs within an uncontrolled, unmanaged, and therefore unsustainable manner. To ensure Project-related induced development results in primarily positive socioeconomic benefits, regional planning in the context of the Project is essential. Effective inclusion and integration of The Mandalika Project within regional planning will ensure effective and sustainable planning outside the Project area of: • Land use • Infrastructure • Transportation networks • Telecommunications networks • Protected areas • Waste management • Water management. Implementation of effective integration of the Project into regional planning outside the Project boundaries will require effective lines of communication with regional authorities. ITDC will support and participate in all regional development activities as a primary stakeholder in the process.

8.5 Implementation of Resettlement Plan Framework

This subsection provides a summary of the key implementation elements contained within the **Resettlement Planning Framework** (RPF) document – prepared as a separate stand-alone document in support of this ESIA – and should be consulted for the complete description of all Project-related land acquisition and resettlement issues. Impact mitigation measures for involuntary resettlement are summarized in **Table 8-13** the preceding subsection.

8.5.1 Acquisition, Compensation, Resettlement, and Dispute Resolution

As highlighted previously in **CHAPTER 5**, Project-related land acquisition issues are relatively limited, and can be summarized as the following.

Most land in The Mandalika SEZ belongs to ITDC, with a total area of 1,164 ha, divided into 125 HPL Certificates (Right-to-Manage Land Titles). Of this, approximately:

- 27.2 ha or 2.33% is in potential dispute or being negotiated.
- 57.7 ha or 4.95% is being litigated in court.
- 1,079 ha or 92.70% is considered "clean and clear."

The Urban and Tourism Infrastructure Project will require a total area of 119.8 ha. Of this,

- 106 ha (88.5%) are clean and clear.
- 10.4 ha (8.9%) are in litigation.
- 2.4 ha (2.0%) are claimed by individuals lacking title or ownership.
- 1 ha (0.8%) belongs to individuals and must be purchased or otherwise acquired by ITDC--referred to as the "enclave" lands.

Project Affected People (PAP) – people who currently inhabit or use land that directly intersects with land allocated for the Project – can be classified into four groups:

- Enclave land. There are 6 individuals who legally own land required for the project. 1 ha of land is needed for development of infrastructure for The Mandalika project; within the 1-ha land, there are 16 dwellings and one coconut plantation. Five of the enclave land plots are located in Kuta Village, while the remainder is in Mertak Village.
- Litigated land . There are currently litigation cases by two individuals over the project land, for which ITDC possesses the HPL. The Project requires 10.4 ha of litigated land, occupied by one dwelling. The land, located in Sengkol and Mertak Village, is either empty or in agricultural use.
- Claimed land. Eight individuals are claiming portions of land required for the project, totaling an estimated 2.4 ha. ITDC posseses the HPLs for this land. They generally claim that they have not received any or some of the compensation promised, while others are requesting additional compensation. Claimed land is either empty or occupied by four dwellings, farms, plantations. Claimed land is located in Ujung, Pelemong, Tobelo and Serenting Sub-villages.
- Occupied land or land otherwise utilized. The 106 ha which are considered "clean and clear" are occupied by 49 dwellings and 3 homestays, in addition to non-permanent buildings, farms and plantations. In developing the Resettlement Plan, there must be a census to further detail who these project-affected people are and what their socio-economic conditions are.

Based on these figures, the Project will involve resettlement of numerous households. To meet requirements of GoI laws and regulations, as well as AIIB requirements, a Resettlement Planning Framework (RPF) has been prepared to guide in land procurement, compensation, resettlement, and livelihood restoration.

ESS 2 applies if the Project's screening process reveals that the Project would involve Involuntary Resettlement, including Involuntary Resettlement of the recent past or foreseeable future that is directly linked to the Project. Involuntary Resettlement covers:

- Physical displacement (relocation, loss of residential land or loss of shelter) and economic displacement (loss of land or access to land and natural resources);
- Loss of assets or access to assets, income sources or means of livelihood as a result of: (a) involuntary acquisition of land; or (b) involuntary restrictions on land use. It covers such displacement whether such losses and restrictions are full or partial, permanent or temporary.

The AIIB requires involuntary resettlement to be in compliance with Environmental and Social Standard 2 (ESS 2) with the following objectives:

- Avoid involuntary resettlement whenever possible.
- Minimize involuntary resettlement by exploring Project alternatives.
- Enhance or at least restore the livelihoods of displaced persons in real terms relative to pre-project levels.
- Improve the overall socioeconomic status of the displaced poor and other vulnerable groups.
- Provide sufficient resources to enable the persons displaced by the Project to share in Project benefits.
- Conceive and implement resettlement activities as sustainable development programs.

The four stages for land procurement consist of: planning, preparation, implementation, and delivery.

- Planning--ITDC shall present the plan for land procurement in the public interest as a dossier containing
  - Development plan
  - Statement of compliance with regional spatial plan
  - Description of lands to be acquired
  - Acquisition time line
  - Estimated land value
  - Budget plan.
- Preparation--Based on the planning documents, ITDC and West Nusa Tenggara Provincial Governments shall do the following:
  - Announce development plans to the community
  - Conduct initial data collection on PAP (Eligible Parties) who control or hold title to land to be acquired
  - Conduct public consultation
  - Announce the construction locations.
- Implementation and Delivery; ITDC will work with BPN (National Land Agency) to:
  - Inventory and identify land ownership, use, and utilization, including measurements and mapping each plot and data collection on PAP.
  - Announce results determining PAP entitled to compensation.

- Assess compensation--BPN selects independent appraiser.
- Deliberate (BPN with PAP), with outcomes documented in minutes of agreement; or PAP choose to appeal to Court system; when legal process is completed, Court decision is final and binding and becomes basis for compensation.
- Compensation is given directly to Eligible Parties
- Owner/occupiers relinquish rights and surrender proof of ownership to ITDC through BPN.
- Land is transferred.

The general approaches to managing social impact issues arising for the various land categories involve the following:

- **Enclave Land:** since this land is legally owned by third parties, it must be acquired by following the process in accordance with Law No 2 of 2012 and its implementing regulations. In addition, ITDC shall follow the ESS2 principles and requirements.
- **Litigated Land:** ITDC shall await the final and binding court decision in each case or negotiate with the litigators for out of court solution guided by the ESS2 principles and requirements
- **Claimed Land:** ITDC shall negotiate a mutually acceptable solution with the claimants guided by the ESS2 principles and requirements
- **"Clean and clear" land:** ITDC shall negotiate a mutually acceptable solution with the settlers guided by the ESS2 principles and requirements.

ITDC shall prepare a draft Resettlement Plan (RP), which will be prepared based on information provided by the Land Acquisition Plan and Inventory and the Identification Report of National Land Agency (BPN). The final RP will be signed off by the Regent of Central Lombok (or Governor of West Nusa Tenggara) and the President Director of ITDC. The land acquisition process should be completed prior to the start of construction.

8.5.2 Project Land Requirements

The Project will require the development of a total land area of 1,209,330 m^2 (120.9 ha). Breakdown of the area needed for the Project, organized by work packages, is provided in **Table 8-14**. There are nine packages but Package VI (Construction Management Support) does not require land, and Package VII is for a subproject that is not financed by the AIIB.

Table 8-14 Project Land Requirements and Land Status

Project Component		Total Required Land (m^2)	Clean & Clear Land (m^2)	Litigated Land (m^2)	Claimed Land (m^2)	Enclave Land (m^2)
Package I (West and Middle Zone)	-					
road, drainage, utility corridor, street lighting, crossing drain, landscape, and pipelines for clean water, sewage and irrigation water	ROW	282,477	251,353	Nil	24,487	7,670
Package II (East Zone)	-					
road, drainage, utility corridor, street lighting, crossing drain, landscape, and pipelines for clean water, sewage and irrigation water	ROW	780,089	673,914	103,681	Nil	2,146
Package III (West)	-					
WWTP West		10,070	10,070	Nil -	Nil -	Nil -
Package IV (West)	-					
MPC West - Electricity and supporting facilities		76,593	76,593	Nil	Nil	Nil
Package V (East)	-					
Solid waste management facility		49,443	49,443	Nil	Nil	Nil
Total (m^2)		**1,198,672**	**1,061,373**	**103,681**	**24,487**	**9,816**
Total (ha)		**119.8**	**106.1**	**10.4**	**2.4**	**1**

8.5.3 Project-Affected People (PAP)

Four types of PAP occur, as related to this Project, and are described as follows.

8.5.3.1 Enclave Land Owners

The 6 plots of enclave lands are presented in **Table 8-15**.

Table 8-15 Enclave Land Owners Within Project Plan

No of Enclaved Land	Enclaved Lands that intersects with road construction plan		Intersection between enclaved lands and road construction plan		Location
	Area (m^2)	No. of Dwellings	Area (m^2)	No. of Dwellings	
#1	867	4	867	4	Desa Kuta
#5	14,688	29	495	2	Desa Kuta
#6	2,012	5	1,076	3	Desa Kuta
#9	12,571	14	2,104	0	Desa Kuta
#14	9,385	12	3,332	5	Desa Kuta
#19	3,469	1	2,146	1	Desa Mertak
Total (m^2)	**42,992**	**65 houses**	**10,020**	**15 houses**	
Total (ha)	**4.3**	**65 houses**	**1.0**	**15 houses**	

8.5.3.2 Claimed Landas

Claimed land are plots of land in The Mandalika to which ITDC possesses land management rights (HPL) but which are claimed by individuals without land title or other ownership evidence and therefore the claims are not brought to court. The claimants are presented in **Table 8-16**.

Table 8-16 Claimants of ITDC Land and their Claims

No	Claimant	HPL	Claimed Land		Intersection with Project		Location (Sub-village)	Note
			Area	No. of Dwellings	Area	No. of Dwellings		
1	Anyip		6,140	8	3,614	4		
2	Jinalim	HPL 88	6,040	0	4,224	0	Ujung	Has yet to receive his part of the payment that was previously handed to his relative.
3	Lazuardi	HPL 88	10,992	0	6,574	0	Ujung	N/A
4	Ridwan	HPL 88	7,350	4	180	0	Ujung	N/A
5	Gesok	HPL 76	42,470	0	8.310	0	Petewong	Request for proof of transaction.
6	Sulame	HPL 88	2,900	6	112	0	Ujung	Have yet to be paid.
7	Samsir	HPL 118	15,520	2	664	0	Serenting	Lands have never been sold.
8	Awan	HPL 107	5,012	0	807	0	Kuta	N/A
Total (m^2)			**96,424**	**20 houses**	**24,485**	**4 houses**		
Total (ha)			**9.6**	**20 houses**	**2.4**	**4 houses**		

8.5.3.3 Litigated Land

Litigated land are plots of land in The Mandalika to which ITDC has land management rights (HPL) but which are disputed or claimed in the courts by other parties who also hold some evidence of land ownership. The current cases are described in **Table 8-17**.

Table 8-17 Litigators of ITDC Land and their Claims

No	Litigator Name	Court Case	HPL	Claimed Area (m^2)	Intersection Area (m^2)
1	Ranggalawe	Civil Court Case no 39/PDT.G/2016/PN.Pya.	HPL 49/Sengkol	351,770	103,681
			HPL 80/Sengkol	100,500	
2	Saye alias Maye	State Administration Court case No 03/G/2018/PTUN/MTR	HPL 40/Mertak	9,705	564
Total (m^2)				461,975	104,245
Total (ha)				46.2	10.4

8.5.3.4 Occupied Land or Land Otherwise Occupied

"Clean and clear" land are plots of land in the Mandalika area to which ITDC has land management rights (HPL) without disputes or claims made by third parties. The total land area of this category is 1,077 ha. However, there are still some individuals who occupy or make use some of this land. Some of them are recipients of the "handshake money" but did not yet relocate. Instead, they signed a paper which states that, should ITDC require to clear the land, then they will voluntarily relocate. There may be persons occupying or farming some portions of the land managed by ITDC without permits or any other basis. The following table presents the most current data on the number of dwelling units that are present on "clean and clear" land. For a more detailed and accurate representation of the squatters, a census will be conducted for the purpose of the Resettlement Plan.

Table 8-18 Number of houses in clean-and-clear land

Package	Description of Location	Number of Dwellings
I	Road Intersection I-J	11
	Road Intersection J-M	8
	Road Intersection K-K1-L	4
	Road Intersection K-Q1	3
II	N/A	0
III	WWTP in West Zone	1
IV	MPC in West Zone	20 dwellings and 3 homestays
V	Solid Waste Management Facility in East Zone	2
	Total	49 dwellings + 3 homestays

8.5.4 Development of Resettlement Plan

8.5.4.1 Screening of Land Acquisition Requirements

The first step in the process of preparing a Resettlement Plan (RP) will be to conduct surveys to identify the lands to be acquired that may result in resettlement, identify the people to be affected, and assess the types and degree of impacts of resettlement. This screening will identify the types and nature of potential impacts related to the activities proposed under this Project, and will provide a basis for designing adequate measures to address these impacts. It will also ensure that the avoidance or minimization of resettlement is a key criterion when designing Project activities.

8.5.4.2 Socioeconomic Profiling and Inventory Losses

Should the screening process indicate that resettlement will be required, the next step shall be the socioeconomic identification and profiling of Project Affected People (PAP) including age, asset dependence, income level, and family status. This step will take place at the same time as the inventory and valuation of assets affected for each individual PAP. At the time this investigation begins, a “cut-off date” will be designated and announced, putting the public on notice that no further squatters moving onto the site will have any claims on compensation of any type.

Once these tasks are completed, a Resettlement Plan (RP) will be developed on the basis of the data collected. The screening process involves direct consultation with representatives of PAP and local government, carried out onsite, to verify the affected assets and discuss their socioeconomic situation. This will include sharing the grievance redress mechanism and the “entitlement matrix,” the list of benefits available to households being resettled.

8.5.4.3 Development of RP

Following the socioeconomic census and identification of affected parties, an RP will be developed. This will be coordinated by the Land Acquisition Committee (LAC) to be formed by the Central Lombok Regency government. The West Nusa Tenggara Provincial Government may also be represented. The RP will be prepared in consultation with affected parties, particularly in relation to the cut-off date for eligibility, disturbances to livelihoods and income-earning activities, methods of valuation, compensation payments, potential assistance, and time frames.

8.5.4.4 Disclosure and Approval of RP

Following RP preparation, a number of steps must be completed:

1. LAC submits the RP to the ITDC Project Director for approval. The latter is to ensure compliance with the RPF, and consistency in approach between different activities.
2. LAC discloses the RP by disseminating and sharing the RP with PAP and local authorities, and allows 30 days for comment.
3. Following incorporation of comments from disclosures, and Project Director approval, the RP is sent to AIIB for review to ensure compliance to policies and procedures.

8.5.5 Addressing Issues of Squatters and Illegally Occupied Land

According to AIIB requirements, criteria for eligibility for compensation may include:

- "those who do not have formal legal rights to land at the time the census begins, but have a claim to such land or assets--provided that such claims are recognized under the laws of the country or become recognized through a process identified in the Resettlement Plan;" and
- "those who have no recognizable legal right or claim to the land they are occupying."

Therefore, the absence of legal title to land or other assets is not, in itself, a bar to compensation for lost assets or to other resettlement assistance. Persons belonging to the former group above may correspond to those described as claimants. Those in the latter group above are best described as squatters. If claimants in the former group have claims that do not "become recognized," they are essentially the same.

A socioeconomic survey of households occupying land required for the Project will reveal the household situations to arrive at a solution that maintains good community relations while avoiding any compensation for land illegally occupied, and that is guided by ESS 2 principles. The various entitlements that may be provided to squatters (other than payment for lands they do not own) are detailed in the RPF. As noted above, the socioeconomic survey is coordinated with establishment of a "Cut-Off Date" that prevents further squatter influx, as later arrivals will not be compensated.

8.5.6 Determination of Cut-Off Date

The entitlement cut-off date refers to the time when the assessment of persons and their property in the Project area is carried out, i.e., the time when the Project area has been delineated, when squatter and claimant households have been quickly photographed and initially documented, and when the site-specific socioeconomic study is taking place. Thereafter, no new cases of affected people will be considered – this applies in particular to persons informally/illegally occupying land in hopes of obtaining compensation. The establishment of a cut-off date is required to prevent opportunistic invasions or rush migration into the chosen land areas, thereby posing a major risk to the Project. Therefore, establishment of a cut-off date is of critical importance. The LAC will play a crucial role in identifying users of land. The user(s) will be informed through both formal notification in writing and by verbal notification delivered in the presence of the community leaders or their representatives.

8.6 Implementation of Indigenous Peoples Development Plan (IPDP)

This subsection provides a summary of the key implementation elements contained within the **Indigenous Peoples Development Plan (IPDP)** document – prepared as a separate stand-alone document in support of this ESIA – and should be consulted for the complete description of all Project-related Indigenous Peoples issues and management. Mitigation measures for impacts on Indigenous Peoples are summarized in **Table 8-13** in **Subsection 8.4.3.3** above.

8.6.1 The Mandalika Project and AIIB Social Policy on Indigenous Peoples (IP)

ESS 3 applies if Indigenous Peoples are present in, or have a collective attachment to, the proposed area of the Project, and are likely to be affected by the Project. The term Indigenous Peoples is used in a generic sense to refer to a distinct, vulnerable, social and cultural group possessing the following characteristics in varying degrees: (a) self-identification as members of a distinct indigenous cultural group and recognition of this identity by others; (b) collective attachment to geographically distinct habitats or ancestral territories in the Project area and to the natural resources in these habitats and territories; (c) customary cultural, economic, social or political institutions that are separate from those of the dominant society and culture; and (d) a distinct language, often different from the official language of the country or region. In considering these characteristics, national legislation, customary law, and any international conventions to which the country is a party may be taken into account.

This Standard aims to design and implement Projects in a way that fosters respect for Indigenous Peoples' (IP's) identity, dignity, human rights, economy, and culture, as defined by the Indigenous Peoples themselves, so that they: (a) receive culturally appropriate social and economic benefits, (b) do not suffer adverse impacts as results of projects, and (c) can participate actively in projects that affect them.

This standard is applicable to The Mandalika Project because the Sasak ethnic group has been identified as IP. Local majority-Sasak communities affected by the Project have therefore been classified as IP – specifically including the inhabitants of Kuta, Sukadana, Mertak, and Sengkot Villages.

The Sasak ethnic group qualifies as 'indigenous' according to the following rationale, consistent with ESS 3.

(a) **Self-identification as members of a distinct indigenous cultural group and recognition of this identity by others.** While 'Sasak' and 'non-Sasak' are real distinctions in the minds of these peoples, this is not a distinction that neatly fits an 'indigenous versus non-indigenous' dichotomy. In fact, the Sasak district in the Project area openly acknowledges their ancestry, which is an anomaly for Muslims in Lombok.

(b) **Collective attachment to geographically distinct habitats or ancestral territories in the Project area and to the natural resources in these habitats and territories .** Sasak derive land ownership rights primarily through belonging to an *adat* group that has residual rights to *Tanah Adat* or 'customary land'.

(c) **Customary cultural, economic, social or political institutions that are separate from those of the dominant society and culture.** Sasak ethnic groups have their own customary social and political institutions (as embodied in *adat* –'customary law'). An investigation of this *adat* will reveal certain fundamental similarities with *adat* communities throughout Indonesia, a case in point being the institution of community decision making through discussion to achieve consensus, known as *Musyawarah*. However, Sasak *adat* institutions are in many ways highly distinct from those of the numerous other *adat* groups that together constitute the dominant society and culture.

(d) **A distinct language, often different from the official language of the country or region.** Sasak ethnic groups all speak closely related dialects of the Sasak language.

(e) **Primarily subsistence-oriented production.** This is the main economic activity of the vast majority of people in the project area, virtually all of whom are Sasak.

(f) **Vulnerability to being disadvantaged as social groups in the development process.** Members of Sasak communities have had or will have their lands acquired. The households to be compensated will lose their agricultural land, and will be equally vulnerable to being disadvantaged if adequate community development programs in matters pertaining to land use and income generation are not implemented

ITDC acknowledges that for this IPDP, if neighboring villages were excluded from development programs on the basis of the application of the above-mentioned ethnic distinction, this would likely create jealousies that would disrupt the ethnic and religious harmony that now characterizes the Pujut Sub-District.

Due to the above considerations, ITDC has combined its Indigenous Peoples Development Plan with its Community Development Plan.

8.6.2 Project Benefits and Potential Impacts on IP

Local Sasak residents within the communities affected by the Project – specifically Kuta, Sukadana, Mertak, and Sengkol Villages – are believed to be overwhelmingly supportive of the Project. This assertion is based on regular, frequent, and on-going public consultation, including a recent series of Focus Group Discussions performed by PT ESC in August and September of 2018. A complete summary of Public Consultation is provided in **CHAPTER 7** of this ESIA document.

However, support for the Project is directly linked to the numerous Project-related benefits expected by local residents, including:

- Improved infrastructure (e.g., roads, street lighting, pavement)
- Increased employment opportunities
- Increased business opportunities
- Decreased unemployment rates
- Increased tourism
- Increased local investment
- Increased multiplier effect (e.g., local homestays, restaurants)
- Increased economic growth
- Increased local wealth generation
- Improved beach facilities
- Increased property values
- Decreased crime rates
- Improved safety and security
- Increased availability of religious facilities
- Increased availability of social facilities and events
- Increased access to social assistance programs (e.g., health care, education, deep wells)

- Increased tree planting and vegetation management
- Improved and expanded Bau Nyale Festival
- Improved positive image of Southern Lombok to tourists.

Despite overall positive perceptions and attitudes toward the Project, negative impressions in the form of fears and potential Project-related impacts have also been document by the local Sasak population, including:

- Potential impacts on local customs and culture
- Potential barriers to performing cultural practices
- Impacts on young people (e.g., lifestyle, clothing, hairstyle, promiscuous behavior)
- Risk of customary leaders losing community role
- Tourists disrespecting local dress standards (e.g., bikinis)
- Potential increase in prostitution
- Potential increase in illegal drug use and trafficking
- Low land prices (compensation) offered by ITDC
- Fear of inequitable distribution of employment
- Fear of influx of workers from outside the region
- Challenges faced by disabled workers finding employment
- Shrinking agricultural land base
- People losing their homes
- Loss of herding land
- Loss of fishing areas
- Increased gap between rich and poor
- Increased local prices for goods and services
- Damaged road surfaces
- Increased dust levels
- Increased environmental effects and trash
- Fear of losing access to beach, cultural sites, and other public places.

8.6.3 Key Mitigation Measures

Following identification of potential benefits and impacts of the Project, a range of activities and programs were proposed from participatory consultations and group discussions in order to address their basic needs, enhance benefits and mitigate potential impacts. The proposed activities and programs will cover wide range of areas, such as infrastructure, farming, livestock, fisheries, education, health, economic and business development, and cultural activities. These activities aim at empowering local population, reducing poverty, improving skills of local community, and improving income of locals. They will be included into the component 1.2 and component 2.3 during project implementation through annual implementation plan, which will be

developed by selected consultant through close cooperation between ITDC and affected village. **Table 8-19** presents a list of activities or programs which will be considered and implemented for IPDP and Community Development Plan during the project implementation.

Table 8-19 List of Activities/Programs for Community Improvement and Livelihood & Skill Development for IPDP

Programs	Activities	Village				Target Beneficiaries	Partner
		Kuta	Suka dane	Sengkol	Mertak		
Public facilities	Road development (Road access Kuta-Gerupuk, road asphalt in Mertak, and new road access in Sukadana) and Street lighting	√	√	√	√	Community Sengkol (Gerupuk subvillage, Mertak, and Sukadana) as well as Kuta	Public Works and Spatial Agency Central Lombok.
Basic need	Deep well		√		√	Community in the area severely affected by drought	Public Works and Spatial Agency, Rural Community Empowerment Agency Central Lombok.
Cash crop, Agroforestry development and Integrated farming (Paddy, vegetables, papaya, corn, , home garden, estate crops, fruit trees, trees, etc.)	Forming farmer groups/ Integrated with existing farmer group	√	√	√	√	Farmer groups	Agricultural and agency, Food Security Agency, Rural Community Empowerment Agency, Cooperative and Small Medium Enterprise Agency Central Lombok, local or national experienced NGOs
	Establishing and operating nursery						
	Technical training and Good Agricultural Practices (Including application in the farm) and agricultural tools assistance						
	Cross visit						
	Technical field support/ coaching/ field assistance						
	Marketing and enterprise development						

Programs	Activities	Village				Target	Partner
Fish/shrimp Farming and fishing activities	Forming farmer group/ Integrated with existing fishermen group	√		√	√	Fishermen, fish pond owners, households with low per-capita income, unemployed heads of households	Marine and Fishery Agency, local or national experienced NGOs
	Technical Training						
	Input assistance						
	Technical field support/ coaching/ field assistance						
Vocational education - Skill based enhancement	English course	√	√	√	√	Youth who are interested in improving skills	Education Agency, Rural Community Empowerment Agency, local or national experienced NGOs
	Cooking and pastry course	√	√	√	√		
	Tourism & Hospitality Training	√	√	√	√		
	computer training	√					
	Driving course	√					
	security training	√					
	Mechanical Training	√	√				
	Carpenter training	√	√	√	√	Youth, house hold interested in carpentry, gardening, and construction	
	Gardening Training	√	√	√	√		
	Construction Workers Training & Certification	√	√	√	√		
	cosmetology	√	√	√	√	Women group	Women Empowerment and Family Planning Agency, Rural Community Empowerment Agency, Social Agency, Cooperative and SMEs Agency, local or national experienced NGOs
	Tailoring	√	√	√	√	Women group	
Health Facilities	Village Maternal & Child Health Cenetr (*Posyandu*)		√			Maternal & Child	Health Agency, District health center

Programs	Activities	Village				Target	Partner
Waste Management	Providing rubbish bins (household-level collection equipment small garbage collection vehicles and other collection equipment; small-scale biogas and composting equipment; temporary disposal sites.	√	√	√	√	Community as a whole	Environment Agency, Health Agency, Housing and Settlement Area Agency Central Lombok, District health center
Health Education	Waste management training	√	√	√	√	Community as a whole	Health Agency Central Lombok, District Health Center
	Seminar or socialization about health & sanitation awareness	√	√	√	√	Community as a whole	
	sex education	√	√	√	√	Youth	
	Healthy school campaign	√	√	√	√	Students from Affected area	
Market facilities	Market revitalization	√	√	√	√	SMEs owner	ITDC
Small Medium Enterprise development	Start and improve your business (SIYB) and Entrepreneurship Training	√		√		Combination of on the job training, learning from best practices, coaching	Rural Community Empowerment Agency, Women Empowerment and Family Planning Agency, Industry and Trade Agency, Cooperative and SMEs Agency Lombok Tengah, local or national experienced NGOs
	Home industry & traditional craft/ fabric development	√		√		PKK group, women groups, SMEs	
	Revolving fund/ Micro credit	√	√	√		SMEs owner	
Handicraft and art development	Souvenir making training	√	√	√		Craft group or women who are interested in craft	
Cultural facilities, material support,	Multifunction building (cultural	√			√	Village/ community as	Cultural and Tourism Agency

Programs	Activities	Village				Target	Partner
and social program support	hall) for culture activities					a whole/ cultural group	Central Lombok, local or national experienced NGOs
	Art material	√		√		Cultural group	
	Traditional uniform	√					
	Weaving tools	√	√	√			
	Customary school		√			Sukadana Customary School	
	Group Formation	√	√	√	√	Youth	
	Culture & Religion Program	√	√	√	√	Elderly, Women, Youth	

8.6.4 Social Management System

Community development programs of ITDC, both for Nusa Dua and The Mandalika SEZ, are carried out through the program *Kemitraan dan Bina Lingkungan* (PKBL) especially for nearby communities in the Special Economic Zone areas. Numerous Community Development activities were held in 2016 in various sectors including education and nature conservation.

Targeted distributions of Community Development program are classified into eight donor sectors according to the policy on CSR directions: (1) victims of natural disasters, (2) education and training, (3) health, (4) development of public infrastructure and facilities, (5) religious facilities, (6) nature conservation, (7) social-community and (8) foster partner development.

The PKBL carried out in The Mandalika area consists of CSR assistance in the fields of environment, education, human resource empowerment, social (art and culture), and infrastructure.

8.6.5 Institutional Setting and Respective Responsibilities

Successful implementation of ITDC's Community and Indigenous Peoples Plan (IPDP) will require the coordination of diverse areas of expertise. PMU will lead the overall IPDP preparation and implementation. The Communication & Relations (C&R) Department supports these activities in terms of liaising with local communities and seeking permits and approvals as required. Key personnel will also be assigned to ensure efficient and effective delivery of social measures. As required, the staff will be trained to fulfill the requirements of their positions, for example to assist with stakeholders in grievances procedures, compensation negotiations, conflict resolution, and effective means on consultation. They will also be responsible to recruit additional requisite in-house staff, as required, as well as involve outside consultants to commence data collection, consultation with affected villages, development of annual implementation plans of IPDP, and program implementation.

The Project will establish, maintain, and strengthen, as necessary, an organizational structure that defines roles, responsibilities, and authority to implement the SMS. Personnel will also possess the knowledge, skills, and experience to implement the specific measures and actions required under the SMS and know the methods required to perform the actions in a competent and efficient manner. The key roles and responsibilities are as follow:

Table 8-20 Social Management System (SMS) Roles and Responsibilities

Roles	Responsibilities
Project Management Unit (PMU) for IPDP	• Responsible for overall project preparation and implementation, ensuring overall quality, timeliness of investments, as well as fiduciary, and safeguard aspects of the project, for monitoring compliance with the environmental and social safeguards, and overall project Monitoring and Evaluation. • PMU will be supported by a PMC and CMC in design and implementation of the IPDP. • PMU will have an Environmental and Social Safeguards (ESS) and Design, Engineering and Implementation Component (DEIC) 1.2 and 2.3 Unit • Consultancy Support: Project Management Consultant (PMC) to assist PMU;
Project Management Consultant (PMC)	• Provide steps of implementation of IPDP. • Set criteria and eligibility of beneficiaries of IPDP. • Provide timeline, quality control methodology and budget estimation for each IPDP's activities. • Prepare and establish a system to monitor for IPDP; including the functioning of the grievance redress mechanism, and prepare indicators for monitoring important parameters of IPDP • Provide training programs to PMU staff and contractors involved in the project implementation for strengthening their capacity in managing and monitoring IPDP
Construction Management Consultant (CMC)	• Final review of DEDs • Construction oversight and supervision works, including the inspection and testing of materials, plant and equipment • Handover of works from contractors to ITDC, to ensure compliance of works with contractual specifications, environmental and social safeguards requirement and budget.
Environmental and Social Safeguards/ Project Implementation Unit.	• Coordinate public consultation and information disclosure; • Liaise with local offices of regulatory agencies in obtaining clearances /approvals; assist PMU for clearances obtained at state level • Oversee day-to-day implementation of IPDP by contractors, including compliance with all government rules and regulations; • Evaluate performance and outcome achievement • Take necessary action for obtaining rights of way • Ensure continuous public consultation and awareness • Coordinate grievance redress process and ensure timely actions by all

	parties Review monthly, quartelly, and yearly IPDP implementation and monitoring reports by contractor Review and prepare quarterly and yearly monitoring reports to PMU.
Design, Engineering and Implementation Component (DEIC) 1.2 and 2.3	• Screen and categorize subproject components • Carry out baseline surveys • Ensure the contractors comply with the agreed social safeguards frameworks, resettlement plans, and due diligence reports on social safeguards for the project • Prepare any additional draft resettlement plans, due diligence reports and prepare any new safeguard documents as and when required • Prepare periodic safeguard monitoring reports
Government Agencies	• ITDC is suggested to collaborate with government agencies in the implementation of IPDP. • Public Work Agency and Spacial • Agriculture, and Forestry and Estate Crops Agencies • Marine And Fisheries Agency • Cooperative, Small Medium Enterprise Agency • Education Agency • Rural Community Empowerment Agency • Health Agency and Public Health Center • Women Empowerment and Family Planning Agency • Rural Community Empowerment Agency **ITDC should:** • Establish collaboration and partnership with the government Agencies • Provide capacity building and skill development related to agricultural and estate crops commodities, marine and fisheries, SMEs development, vocasional education, public health • ITDC to access and support government program, for example, quality seeds for agriculture, basic assistance for fishermen, establishing SMEs, etc.
Local/ National NGOs/ Contractors	• Implement partly or overal IPDP activities, depending on assigned scope of work • Work closely and in coordination with the PIU, design engineers and social safeguards personnel for project design and implementation • As approved in the project design, provide and administer capacity building and skill development activities as well as maintain and assure quality of training delivery along with relevant government agencies and other institution. • Develop business plan for SMEs and provide service of provision of credit/ revolving fund • Provide field assistance post training activities • Ensure IPDP is performance and outcomes of IPDP are achieved • Update the draft IPDP report and submit to PMU

	• Ensure adherence to ITDC, AIIB and government policy on social safeguards during implementation; • Assist PMU in disclosing relevant information on safeguards (eligibility, entitlements, compensation, cut-off date, processes, timelines, GRM etc.) to beneficiaries and affected persons including the vulnerable; and • Submit monthly implementation and monitoring reports to PMU

8.6.6 Implementation Arrangements for IPDP

The proposed activities and programs of IPDP listed above will be incorpoerated into project components (1.2 and 2.3) to be implemented by ITDC in conjunction with local communities. During project implementation, a qualified consulting team will be selected by ITDC to further plan and implement Component 1.2 and Component 2.3. Based on the proposed programs and activities identified through extensive consultations among all four affected villages, an annual investment program will be developed, covering both physical improvement of local communities, and various training and capacity building activities as identified under IPDP. Such annual investment program will be implemented by ITDC with close cooperation of local villages

ITDC is the executing and implementing agency for the Project, responsible for management, coordination and implementation of the design and activities funded under the AIIB loan. Project Management Unit (PMU), who is headed by a Project Director, will be responsible for overall project preparation and implementation, ensuring overall quality, timeliness of investments, as well as fiduciary, and safeguard aspects of the project, for monitoring compliance with the environmental and social safeguards, and overall project Monitoring and Evaluation.

PMU will involve, as and when necessary, Project Management Consultant (PMC) and Construction Management Consultant (CMC) to complement the staff of ITDC and PMU and provide technical advisory services in overall project delivery and and construction management, particularly related to policies, procedures, and requirements to AIIB's procurement, social and environmental safeguards, and financial management systems as well as Indonesian government's investments and expenditure policies.

Additionally, since ITDC has no mandate for infrastructure delivery outside of the Mandalika SEZ, it also requires a close coordination and consultation with government agencies, including MoPWH, NTB provincial government, Central Lombok Regency and village representatives for infrastructure development as well as government development programs implemented to adjacent communities outside the SEZ Mandalika. At village level, PMU also needs to coordinate the implementation of PDP with the Village Heads which normally be assisted by village community institutions such as *Badan Perwakilan Desa* (BPD) or Village Representative Council.

For implementation of the IPDP, specifically related to sub-component 2.3, PMU will appoint experience local/national NGO to facilitate action plan and implement partly or overal IPDP activities, depending on assigned scope of work. The NGOs may also provide assistance in surveys (including affected indigenous peoples) and consultations for IPDP preparation as well as reporting.

8.6.7 Training Activities

The following are specific education and training activities that will be carried out by ITDC for the Project. These training programs are based on experience gained from ITDC's Nusa Dua Project in Bali. Some of them could be included in the IPDP to be implemented during the Project.

1. **Tourism Awareness Training for Public**

   - Educational Travel Program. An educational workshop on the tourism industry for teachers of selected elementary schools and madrasah (religious schools) from the areas currently undergoing development. Within The Mandalika Tourism SEZ, teachers will be invited to stay at hotels in the Nusa Dua tourism area. Aside from attending brief classes on tourism, they will be invited to shop in the art market and visit the Bali Safari Marine Park.
   - Regular training on cultural art and exhibitions in the surrounding villages and routine art exhibitions in the SEZ.

2. **Tourism Awareness Training for Tourism Industry Participants and Workers**

   - Chinese and English language and hospitality training for SMEs, street vendors, and souvenir sellers.
   - English language, hospitality, and comfort and safety driving training as well as certifications for transportation business participants. As a future plan, the Company will develop an application based taxi fleet for use in the Project Area whose members will be ITDC-certified drivers.
   - After the tourism industry "players" are able to apply their education and skills, the Company will assist their marketing activity properly, through media and website of which the link is connected to the portal of Tourism SOE Synergy.

3. **Community Empowerment and Poverty Alleviation**

   - Gardening training for people from surrounding villages who have not attended formal education. After participating in the training, they will potentially be offered landscaping maintenance work in The Mandalika Tourism SEZ.
   - Architecture Engineering Construction (AEC) training and certification for construction workers. With AEC certification, workers will be able to become the backbone of infrastructure and facility development activities in The Mandalika tourism SEZ.
   - Provision of scholarships to attend Tourism Polytechnic schools.

8.7 Supporting Environmental and Social Management Plan Frameworks

As identified within the 2018 ESC Environmental and Social Due Diligence 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 full compliance with the AIIB Environmental and Social Framework. As such, potential future assessments and associated Supporting ESMP Frameworks potentially include:

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

8.7.1 Critical Terrestrial Habitat Assessment

As identified within the 2018 ESC Environmental and Social Due Diligence report, work to date – primarily the 2012 AMDAL and 2018 Addendum – does not adequately identify or evaluate critical terrestrial habitat within or around The Mandalika Project Area. An assessment of this nature is therefore required. This ESMPF provides an outline for this required supporting framework.

8.7.1.1 Applicable Policies and Procedures

Environmental and Social Standard 1 (ESS1) within the AIIB Environmental and Social Framework defines critical habitat as:

> *areas with high importance for biodiversity, including: (a) highly threatened or unique ecosystems; (b) habitat important to Critically Endangered or Endangered species, as listed on the International Union for the Conservation of Nature (IUCN) Red List of threatened species or under national law; (c) habitat important to endemic or restricted-ranges species; (d) habitat supporting globally or nationally significant concentrations of migratory or congregatory species; or (e) ecological functions or characteristics that are needed to maintaining the viability of the biodiversity features described above in (a) to (d).*

Consistent with ESS1, Project activities in areas of critical habitats are prohibited, unless:

- There are no predicted measurable adverse impacts on the critical habitat that could impair its ability to function;
- There is no predicted reduction in the population of any recognized endangered or critically endangered species; and
- Any impacts are mitigated.

As well, if the Project is located within a legally protected area, additional programs will be implemented to promote and enhance the conservation objectives of the protected area. The Project must also comply with any applicable national laws and regulations.

8.7.1.2 Anticipated Risks and Impacts

The Mandalika Project represents a large infrastructure construction Project. As such, it inherently involves a construction phase characterized by vegetation clearing, soil disturbance and removal,

mobilization of workers and materials, and subsequent construction of buildings, facilities, and related infrastructure. The ensuing operations phase will involve the day-to-day operations of the various facilities, buildings, hotels, and restaurants within the Project, and associated mobilization of workers and goods.

Potential Project-related impacts on critical habitat are primarily related to risks associated with clearing of critical habitat, and the subsequent conversion of the habitat to commercial and industrial use. Impacts in this case are directly related to the loss, fragmentation, and degradation of critical terrestrial habitats. As well, indirect impacts could result from ensuing disturbance effects from construction and operation activities, resulting in habitat exclusion (disturbance resulting in otherwise suitable critical habitats that are avoided or not used by organisms).

8.7.1.3 Screening and Assessment Activities

Initial screening activities would include the following:

- GIS-satellite imagery analyses to identify any potential critical habitats within or around the Project Area. Specifically targeted habitats would focus on natural habitats and include: forests, wetlands, mangroves, and unique habitats such as cliffs and rock outcrops within and around the Project Area;
- Screening of IUCN Red List for all potentially occurring species of conservation concern within or around the Project Area;
- Screening of national and international biodiversity priorities for potential occurrence within or around the Project Area.

Post-screening assessments would include the following:

- Field verification surveys of targeted potential critical habitat identified in the initial screening phase;
- Mapping of all habitat within and around (e.g., 5-km buffer) the Project Area. Map classification system will include, as a minimum: natural, modified, and critical habitat – as defined by ESS1; and
- Final identification and quantification of any critical habitat areas within and around (e.g., 5-km buffer) The Mandalika Project Area.

8.7.1.4 Provisions for Disclosure and Consultation

Disclosure and consultation of these activities would be consistent with the Provisions for Disclosure and Consultation comprehensively described in **CHAPTER 7** of this ESIA document. As such, they would form part of the overall and ongoing public consultation process for the Project.

Specifically in this case, local residents would be consulted during the screening process for any local knowledge pertaining to known critical terrestrial habitats within or near the Project Area. Information of this nature could be in the form of known wildlife hotspots and remnant patches of natural habitat.

8.7.1.5 Implementation and Monitoring Requirements

Implementation and monitoring requirements for this framework would include, but not limited to, the following.

- GIS-satellite imagery analyses, and subsequent digital habitat mapping capabilities and equipment;
- Access to high-resolution satellite imagery of Southern Lombok;
- Knowledge of, and familiarity with, the terrestrial ecology of Southern Lombok;
- Ability and capability to safely and effectively mobilize ecological field crews to remote areas of Indonesia; and
- Workforce capabilities including:
    - Experienced field crews (≥ 2 personnel) knowledgeable in terrestrial habitat inventory, survey, and evaluation techniques; and
    - Qualified professional terrestrial ecologist familiar with terrestrial habitat mapping, evaluation, assessment, and reporting.

8.7.1.6 Roles and Responsibilities

ITDC would ultimately be responsible for the funding and implementation of this ESMPF, and would ensure final deliverables meet AIIB Environmental and Social Framework guidelines and quality.

However, due to the highly technical nature of requirements described above, execution and completion of final deliverables of this ESMPF would likely require the assistance of a suitably qualified and equipped consultant. The consultant in this case would report directly to the ITDC Project Management Team, or the designated Project Manager for ESMPFs of this nature.

8.7.2 Marine Turtle Abundance and Nesting Assessment

As identified within the 2018 ESC Environmental and Social Due Diligence report, work to date – primarily the 2012 AMDAL and 2018 Addendum – does not adequately identify or evaluate marine turtle values (nesting, abundance, and disturbance impacts) within or around The Mandalika Project Area. An assessment of this nature is therefore required. This ESMPF provides an outline for this required supporting framework.

Specifically in this case, field work performed during the AMDAL process identified the possibility of marine turtles occurring, and possibly nesting within the Project Area. While no marine turtles were directly observed during AMDAL field work, the basis for this assertion was information obtained from interviews with local residents, and observations of turtle eggs in local markets. Two species potentially occurring within the Project Area were identified:

- Green Sea Turtle (*Chelonia mydas*) – IUCN Red List = Endangered; and
- Leatherback (*Dermochelys coriacea*) – IUCN Red List = Vulnerable.

8.7.2.1 Applicable Policies and Procedures

Environmental and Social Standard 1 (ESS1) within the AIIB Environmental and Social Framework addresses species at risk indirectly in two ways: (1) association with critical habitat, and (2) conservation of biodiversity and the avoidance of biodiversity impacts.

Consistent with ESS1 therefore, critical habitat can be defined as: “habitat important to Critically Endangered or Endangered species, as listed on the International Union for the Conservation of Nature (IUCN) Red List of threatened species or under national law”.

As an IUCN-listed endangered species, habitat used by the Green Sea Turtle constitutes a candidate for the designation of critical habitat, and a key biodiversity conservation value, potentially occurring within the Project Area. If Green Sea Turtles nest within the Project Area, the nesting site would represent a significant critical habitat area requiring very focused management and monitoring, within the Project Area.

Consistent with ESS1, Project activities in areas of critical habitats are prohibited, unless:

- There are no predicted measurable adverse impacts on the critical habitat that could impair its ability to function;
- There is no predicted reduction in the population of any recognized endangered or critically endangered species; and
- Any impacts are mitigated.

8.7.2.2 Anticipated Risks and Impacts

The Mandalika Project represents a large infrastructure construction Project. As such, it inherently involves a construction phase characterized by vegetation clearing, soil disturbance and removal, mobilization of workers and materials, and subsequent construction of buildings, facilities, and related infrastructure. The ensuing operations phase will involve the day-to-day operations of the various facilities, buildings, hotels, and restaurants within the Project, and associated mobilization of workers and goods.

Potential Project-related impacts on marine turtles are primarily related to sand beach habitat used for egg laying (nesting), in two ways: (1) destruction or degradation of potential sand beach habitat, and (2) disturbance of nesting turtles during egg laying. Disturbance of nesting marine turtles is most associated with night-time human activities (between 6 pm and 6 am), since marine turtles lay eggs on sand beaches at night.

8.7.2.3 Screening and Assessment Activities

Initial screening activities would include the following:

- GIS-satellite imagery analyses to identify potential critical beach habitats within or around the Project Area. Specifically targeted habitats would focus on fine sand beaches, relatively isolated from night-time human activities;
- Consultation with local residents to gain as much local knowledge about potential marine turtle occurrence as possible, including potential nesting sites;

Post-screening assessments would include the following:

- Field verification surveys of targeted potential critical habitat identified in the initial screening phase – focus would be on potential nesting habitat;
- Field verification would likely be performed in conjunction with local residents who would be assigned to contact the Project in the event of observing nesting marine turtle;
- In the event that marine turtle nesting was observed, field crews would respond in a timely manner to observe, document, and quantify the event;
- Confirmed nesting beaches used by the Green Sea Turtle would be designated as critical habitat; and
- Final deliverables would include:
    - Documentation and mapping of marine turtle observations; and
    - Comprehensive management and monitoring plan for designated critical habitat areas, and associated marine turtle species.

8.7.2.4 Provisions for Disclosure and Consultation

Disclosure and consultation of these activities would be consistent with the Provisions for Disclosure and Consultation comprehensively described in **CHAPTER 7** of this ESIA document. As such, they would form part of the overall and ongoing public consultation process for the Project.

Specifically in this case, local residents would be consulted during the screening process for any local knowledge pertaining to known marine turtle observations within or near the Project Area – particular focus would be made on potential nesting sites.

8.7.2.5 Implementation and Monitoring Requirements

Implementation and monitoring requirements for this framework would include, but not limited to, the following.

- GIS-satellite imagery analyses, and subsequent digital habitat mapping capabilities and equipment;
- Access to high-resolution satellite imagery of Southern Lombok;
- Knowledge of, and familiarity with, the ecology of Southern Lombok;
- Ability and capability to safely and effectively mobilize ecological field crews to remote areas of Indonesia; and
- Workforce capabilities including:
    - Experienced field crews ($\geq$ 2 personnel) knowledgeable in marine turtle ecology and habitat inventory, survey, and evaluation techniques; and
    - Qualified professional ecologist familiar with wildlife management, habitat mapping, evaluation, assessment, and reporting.

8.7.2.6 Roles and Responsibilities

ITDC would ultimately be responsible for the funding and implementation of this ESMPF, and would ensure final deliverables meet AIIB Environmental and Social Framework guidelines and quality.

However, due to the highly technical nature of requirements described above, execution and completion of final deliverables of this ESMPF would likely require the assistance of a suitably qualified and equipped consultant. The consultant in this case would report directly to the ITDC Project Management Team, or the designated Project Manager for ESMPFs of this nature.

8.7.3 Biodiversity Impact Assessment

As identified within the 2018 ESC Environmental and Social Due Diligence report, work to date – primarily the 2012 AMDAL and 2018 Addendum – does not adequately assess impacts to biodiversity, including: habitat loss, degradation, and fragmentation; invasive species; overexploitation; hydrological changes; nutrient loading pollution; incidental take; and climate change. An assessment of this nature is therefore required. This ESMPF provides an outline for this required supporting framework.

8.7.3.1 Applicable Policies and Procedures

The AIIB Environmental and Social Framework defines biodiversity as:

> *the variability among living organisms from all sources including, among others, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are a part; this includes diversity within species, between species, and of ecosystems.*

Environmental and Social Standard 1 (ESS1) within the AIIB Environmental and Social Framework addresses biodiversity considerations as:

> *Consider direct and indirect Project-related impacts on biodiversity, for example habitat loss, degradation and fragmentation, invasive species, overexploitation, hydrological changes, nutrient loading, pollution and incidental take, as well as projected climate change impacts. Also take into account the differing values attached to biodiversity by affected communities and other stakeholders.*

Further, consistent with ESS1, biodiversity adverse impacts are to be avoided. When avoidance is not possible, measures to minimize and/or restore biodiversity are to be implemented, and include, as a last resort, biodiversity offsets.

8.7.3.2 Anticipated Risks and Impacts

The Mandalika Project represents a large infrastructure construction Project. As such, it inherently involves a construction phase characterized by vegetation clearing, soil disturbance and removal, mobilization of workers and materials, and subsequent construction of buildings, facilities, and related infrastructure. The ensuing operations phase will involve the day-to-day operations of the various facilities, buildings, hotels, and restaurants within the Project, and associated mobilization of workers and goods.

Potential Project-related impacts on biodiversity, as defined by ESS1, include, but are not limited to the following:

Habitat loss, degradation, and fragmentation: Impacts are primarily related to land clearing and conversion to commercial and industrial use, during the construction phase. In this case, habitat is directly destroyed or altered. As well, habitat exclusion impacts could occur in the form of disturbance effects resulting in habitat exclusion (otherwise suitable habitat that is avoided or not used due to disturbance impacts).

Invasive Species: Impacts are primarily related to establishment and propagation of invasive plant species, typically associated with human settlements and spread by soil exposure and new construction. Other potential impacts could result from ingress of invasive mammals such as rats and feral cats, which can potentially prey on, or outcompete, native species.

Overexploitation: Impacts are primarily related to increased human pressure on biodiversity values and the associated ecosystem services they provide, including: overfishing, illegal hunting, egg collecting, and illegal tree harvesting.

Hydrological Changes: Impacts are primarily related to increased human pressure on ground water resources. As human population within the Project Area increases within Project implementation, water demand will increase significantly. If not managed properly, changes to ground water resources could result in adverse hydrological changes within and around the Project Area.

Nutrient Loading: Impacts are primarily related to potential nutrient loading (eutrophication) resulting from the anticipated significant increases in human population within the Project Area. Specific risks are associated with increased run-off of fertilizers, detergents, and sewage into aquatic and marine systems within and around the Project Area.

Pollution: Impacts are primarily related to the anticipated significant increases in human population within and around the Project Area. Specific potential impacts are: increased emissions to air from increased burning of fossil fuels; increased emissions to water in the form of contaminated run-off, sewage, grey water, and brine; increased use of hazardous materials such as pesticides, gasoline, diesel fuel, and cleaners; and increased solid waste generation and associated impacts.

Incidental Take: Similar to overexploitation, impacts are primarily related to increased human pressure on biodiversity values and the associated ecosystem services they provide. In this case, incidental take would be associated with activities such as fishing, tree harvesting, and hunting, where non-target individuals and species are inadvertently killed, but not retrieved.

Climate Change: Impacts are related to the overall anticipated increases in human population and associated activities within the Project Area, resulting in increases in air emissions, and specifically Greenhouse Gases resulting from the burning of fossil fuels.

8.7.3.3 Screening and Assessment Activities

Initial screening activities would include the following:

- GIS-satellite imagery analyses to identify potentially high biodiversity values, including:
  - Critical or natural habitat
  - Biodiversity/ecological hotspots
  - Potential sources of invasive species ingress
  - Mapping of ground water sources and hydrologic conditions
  - Potential sources and flows involving nutrient loading and pollution
- Consultation with local residents to gain as much local knowledge about potential high-value biodiversity/ecological sites, within and around the Project Area;

Post-screening assessments would include the following:

- Field verification surveys of targeted potential high-value biodiversity sites identified in the initial screening phase;
- Field verification surveys of potential sources and flows of invasive species – focus would be on invasive plant flows from surrounding communities;
- Field verification of potential sources of nutrient loading and pollution, and subsequent flows into waterways;
- Field verification in the form of social surveys of local residents specifically targeting quantitative data on take (harvest) associated with exploited resources: fishing, hunting, forestry;
- Final deliverables would be in the form of a comprehensive Biodiversity Impact Assessment and Management Plan, including:
    - Documentation and mapping of all biodiversity values described above;
    - Habitat loss, degradation, and fragmentation assessment;
    - Invasive species assessment and management plan;
    - Overexploitation and Incidental Take assessment;
    - Hydrology assessment;
    - Nutrient loading and pollution control assessment and management plan; and
    - Greenhouse Gas and Climate Change assessment.

8.7.3.4 Provisions for Disclosure and Consultation

Disclosure and consultation of these activities would be consistent with the Provisions for Disclosure and Consultation comprehensively described in **CHAPTER 7** of this ESIA document. As such, they would form part of the overall and ongoing public consultation process for the Project.

Specifically in this case, local residents would be consulted during the screening process for any local knowledge pertaining to known biodiversity values or concerns within or near the Project Area.

8.7.3.5 Implementation and Monitoring Requirements

Implementation and monitoring requirements for this framework would include, but not limited to, the following.

- GIS-satellite imagery analyses, and subsequent digital habitat mapping capabilities and equipment;
- Access to high-resolution satellite imagery of Southern Lombok;
- Knowledge of, and familiarity with, the ecology and hydrology of Southern Lombok;
- Ability and capability to safely and effectively mobilize ecological field crews to remote areas of Indonesia; and
- Workforce capabilities including:
    - Experienced field crews ($\geq$ 2 personnel) knowledgeable in biodiversity, ecology, and habitat inventory, survey, and evaluation techniques;

- Qualified professional ecologist familiar with biodiversity, habitat mapping, evaluation, assessment, and reporting;
- Qualified professional hydrologist familiar with hydrological assessments involving groundwater resources; and
- Qualified professional familiar with Greenhouse Gas and Climate Change Assessments.

8.7.3.6 Roles and Responsibilities

ITDC would ultimately be responsible for the funding and implementation of this ESMPF, and would ensure final deliverables meet AIIB Environmental and Social Framework guidelines and quality.

However, due to the highly technical nature of requirements described above, execution and completion of final deliverables of this ESMPF would likely require the assistance of a suitably qualified and equipped consultant. The consultant in this case would report directly to the ITDC Project Management Team, or the designated Project Manager for ESMPFs of this nature.

8.7.4 Nyale Marine Worm Life Cycle and Population Assessment

Available baseline work to date – 2012 AMDAL and 2018 Addendum – does not characterize or evaluate values for the Nyale or Palolo worm (*Eunice siciliensis*) in terms of critical life cycle and population dynamics, abundance, and susceptibility to disturbance) within or around The Mandalika Project Area. An assessment of this nature is highly desirable. This ESMPF provides an outline for this required supporting framework.

Importance of *E. siciliensis* in the local Sasak culture, and in the tourism industry, is well known locally, given the increasingly popular February Nyale Festival. This celebration is a harvest action, corresponding to the annual reproductive event ("population explosion") of the edible worms that has been a major feature in the local culture for many centuries. During its main breeding season, which occurs locally on the second or third day after the third quarter of the moon in February, the worms produce segments that are engorged with sperm or eggs. These segments break off at sunrise, rise to the surface, and release their gametes into the sea. The local villagers and fishermen collect these segments in large quantities as it is a popular delicacy (IUCN).

8.7.4.1 Applicable Policies and Procedures

Environmental and Social Standard 1 (ESS1) within the AIIB Environmental and Social Framework addresses species at risk indirectly in two ways: (1) association with critical habitat, and (2) conservation of biodiversity and the avoidance of biodiversity impacts.

Consistent with ESS1 therefore, critical habitat can be defined as: "habitat important to Critically Endangered or Endangered species, as listed on the International Union for the Conservation of Nature (IUCN) Red List of threatened species or under national law."

E. siciliensis is listed by IUCN as Data Deficient. It is not a listed endangered species; given its circumtropical distribution, it is unlikely to be endangered. According to IUCN, it is likely to be Least Concern, but there is simply too little data on the species. Its abundance and population dynamics on the south coast of Central Lombok are rather a mystery. Yet it is clearly of critical

importance locally; the name The Mandalika itself is associated with the legendary background of the Nyale Festival.

Without more reliable data, any predictions of whether development of the SEZ poses a threat to the species are speculative. A presumption of no impact would be imprudent, given the local importance, both culturally and economically.

8.7.4.2 Anticipated Risks and Impacts

The Mandalika Project represents a large infrastructure construction Project. As such, it inherently involves a construction phase characterized by vegetation clearing, soil disturbance and removal, mobilization of workers and materials, and subsequent construction of buildings, facilities, and related infrastructure. The ensuing operations phase will involve the day-to-day operations of the various facilities, buildings, hotels, and restaurants within the Project, and associated mobilization of workers and goods.

Potential Project-related impacts on marine worms that live within the shallow coral reef water are primarily related to either water quality deterioration or direct disturbance of reef benthos.

8.7.4.3 Investigation Activities

Initial screening activities are straightforward:

- Specifically targeted sites are Kuta Beaches and Seger Beach, well known to local residents for the annual breeding events (particularly the former).
- Further consultation with local residents to gain as much local knowledge as can be learned about the annual breeding cycle, and possibly engage local assistants.

This investigation would require a major investment in a field study over the first two lunar cycles of the calendar year—January and February.

So far, there is no clear understanding of the population or of the population epicenter of Nyale on the Kuta coast, and especially off Seger Beach. Neither is it understood what environmental factors influence it. In general, reproductive timing of marine organisms is influenced directly or indirectly by environmental cycles-- dark-light, tidal, semi-lunar, lunar, and seasonal. For each cycle there are related environmental factors, such as temperature, food supply and nutrients, that work together to affect the reproductive cycle..

To study the temporal dynamics of the Nyale, systematic observations on the presence of Nyale worms off Kuta and Seger Beaches need to be carried out, with intensive observations over the two months prior to the Bau Nyale festival. Samples must be collected of juvenile and adult Nyale worms, while measurements are made of several environmental parameters. These include tidal cycles; light and dark conditions related to the periodicity of the moon; water base temperature; coral mucous appearance; and rainfall in the upper reaches of the rivers flowing to the Kuta coast. In addition, frequent sampling and analysis of a complete parameter schedule of sea water quality is highly recommended.

A seagoing small craft (with locally experienced operator) that can operate from the beach to the reef slope will need to be engaged for the entire two months. Standard methods exist for sampling coral mucous and examining the associated microbiome of bacteria and archaea; the

equipment list and investigation protocols for this work will need to be researched. Other equipment needed will likely include:

- Coral zooplankton samples will require that light traps be used
- Sampling of juvenile and adult Nyale, requiring plankton net trawls or retractable bases as necessary
- Tide gauge
- Water temperature, using CTD (conductivity-temperature-depth) casts out to the reef slope.
- Other direct-reading water quality instruments
- Equipment for marine water quality sampling at depth
- Portable meteorological station.

Observations and direct recordings must be carried out on the periodicity of the moon and light and darkness conditions related the two lunar cycles. It is as yet unknown if rain gauges exist in the upper watersheds of the rivers entering the sea at Kuta and Seger. Vehicles will be needed to coordinate with those stations. It may be desirable to establish two temporary rain gauges in the upper watersheds, possibly as early as November.

Establishing the staffing, logistics, and day-by-day schedule for this investigation will require a formal proposal. A formal technical paper would be a logical outcome of this research program, and by crediting ITDC's support serve to provide international exposure of The Mandalika development.

Other deliverables would include:

- Documentation and mapping of Nyale observations and all environmental data collected during the study;
- Comprehensive management and monitoring plan suggestions for beaches and fringing reefs at the two sites.

8.7.4.4 Provisions for Disclosure and Consultation

Disclosure and consultation of these activities would be consistent with the Provisions for Disclosure and Consultation comprehensively described in **CHAPTER 7** of this ESIA document. As such, they would form part of the overall and ongoing public consultation process for the Project.

Specifically in this case, local residents would be consulted during the screening process for local knowledge pertaining to the locally well-known reproductive behavior of the worm.

8.7.4.5 Implementation and Monitoring Requirements

Implementation and monitoring requirements for this framework would include, but not limited to, the following.

- Knowledge of, and familiarity with, the marine ecology of Southern Lombok;
- Execution, if at all possible, of an agreement to work with biologist Arisetiarso Soemodinoto and his team, the only scientists known to have studied the species in the Kuta region. His

study included a survey of the literature and initial field sampling to develop an overview of the life cycle and the ecology of the Nyale population.

- Arisetiarso's paper included the basis for the investigation proposal outlined above.
- Ability and capability to safely and effectively mobilize ecological field crews to remote areas of Indonesia; and
- Workforce capabilities including:
  - Experienced field crews (≥ 2 personnel) knowledgeable in marine ecology and habitat inventory, survey, and evaluation techniques; and
  - Qualified professional ecologist familiar with wildlife management, habitat mapping, evaluation, assessment, and reporting.

8.7.4.6 Roles and Responsibilities

ITDC would ultimately be responsible for the funding and implementation of this ESMPF, and would ensure final deliverables meet AIIB Environmental and Social Framework guidelines and quality.

However, due to the highly technical nature of requirements described above, execution and completion of final deliverables of this ESMPF would likely require the assistance of a suitably qualified and equipped consultant. The consultant in this case would report directly to the ITDC Project Management Team, or the designated Project Manager for ESMPFs of this nature.

8.8 ESMP Implementation and Costs

Implementation of the ESMP will involve the following anticipated components, as provided in **Table 8-21**.

Table 8-21 Environmental and Social Management Plan (ESMP) Implementation and Indicative Annual Costs

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**

CHAPTER 9
GRIEVANCE REDRESS MECHANISM (GRM)

This Chapter describes the Grievance Redress Mechanism (GRM) for The Mandalika Project. The GRM is required to ensure an effective mechanism or system to receive and address complaints and concerns from the affected community. At present there is no formal GRM in place to collect and respond grievances from the community at the Project area in timely manner. Such GRM is in this Chapter.

A grievance is defined as a concern or complaint raised by an individual or a group of people affected by a project. Grievances can be in the forms of general concerns about the project or particular incidents and impacts or even perceived impacts. The grievance redress mechanism or procedure addresses 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 in timely manner. When a grievance is filed, it should 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.

9.1 AIIB Requirements on Grievance Redress Mechanisms

The Project is required to establish a suitable grievance mechanism to receive and facilitate resolution of the concerns or complaints of people who believe they have been adversely affected by the Project's environmental or social impacts, and to inform Project-affected people of its availability. The grievance mechanism is scaled to the risks and impacts of the Project. The grievance mechanism may utilize existing formal or informal grievance mechanisms, provided that they are properly designed and implemented, and deemed by the Bank to be suitable for the Project; these may be supplemented, as needed, with Project-specific arrangements.

The mechanism is designed to address affected people's concerns and complaints promptly, using an understandable and transparent process that is gender-sensitive, culturally appropriate, and readily accessible to all affected people. The grievance mechanism includes provisions to protect complainants from retaliation and to remain anonymous, if requested. The mechanism provides for maintenance of a publicly accessible case register, and reports on grievance redress and outcomes, which are disclosed in accordance with the applicable ESS. If the Project is a private-sector Project, the Bank also requires the Client to establish a grievance mechanism for workers to address workplace concerns.

9.2 Community Grievances

Grievances from the communities are reactions toward actual or perceived impacts of the Project activities. Community grievances can include the following:

- Issues related to transportation and traffic;
- Increase in environmental pollution;

- Impact on community health;
- Disturbances to locals due to influx of migrant workers in the area;
- Issues arising out of sharing of employment and business opportunities; and
- Concerns over the impact on local cultures and customs.

9.2.1 Current Practice in Dealing with Grievance

The Project does not have a formal grievance redress mechanism for affected people and communities as yet. As explained to ESC by village officials, the people usually contact the head of village and verbally express their grievances concerning certain aspects of Project activities. The village head will then communicate the grievances to the Project representative, who will internally discuss the position and/or resolution that can be offered by the Project. The Project representative conveys the response to the head of village. Once response received from the Project, the village head communicates it back to the people.

During a visit in March 2018, ESC was informed that grievances from local people or communities are not particularly numerous. There were a few grievances concerning lands, employment, and business opportunities, and noise from a karaoke place. For example, in the past year or so, the ITDC hired a group of new security guards. The number of local people who would like to be hired was more than the number of security guards needed. The people who were not hired expressed grievances to the Company and to the Head of Kuta Village. After a series of communications, the grievances were resolved.

On other matters, the people of the older generations have concerns on the potential impacts of Western culture to the younger generations. However, so far they have kept these concerns to themselves and have not expressed such grievances. Similarly, there are some concerns about construction workers from nearby islands to Lombok for the present construction of a large hotel, but no grievances were expressed regarding the matter. While the existing GRM seems to have worked in the Project area, it is informal and verbal in nature and no written records exist (as far as ESC knows).

9.4.1 GRM Overview

The following is best practice regarding grievance redress mechanism, which can be adopted by ITDC as appropriate.

Grievance Mechanism Guiding Principle

The Company shall establish and maintain good relations with local communities. This requires efforts to minimize adverse impacts, respect to human rights, and provide sustainable benefits to the host communities, especially the Kuta, Sukadana, Mertak, and Sengkol villages. To understand the concerns and expectations of the communities, the Company shall establish regular dialogue in order to avoid or to minimize adverse impacts and to ensure equitable benefits for local people. The Company shall anticipate risks or adverse impacts that could affect the communities.

The Company is to establish an appropriate 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. The development of the mechanism

should be both independent and localized so that it will be trusted by communities. Ideally, grievance handling procedures should be in place from the beginning of the environmental and social assessment process and exist throughout the life cycle of the Project.

As with the broader process of stakeholder engagement, it is important that the Company's management stays informed and involved so that decisive actions can be taken when needed to avoid escalation of grievances. A good grievance mechanism would help the Company understand the community perceptions of the Project risks and impacts, so as to adjust its measures and actions to address the community concerns. The Company should be aware of judicial and administrative mechanisms available in Indonesia for resolution of disputes and should not impede access to these mechanisms. Below are various principles and best practice measures that are used when developing grievance redress mechanisms:

- Establish a procedure for receiving, recording, and addressing grievances that is readily accessible, culturally appropriate, and understandable to the affected communities.
- Inform the affected communities about the availability of such procedure or mechnism during the Company-community engagement process.
- Consider when and how to seek solutions to grievances in a collaborative manner with involvement of affected community.
- Scale the grievance mechanism to potential risks and adverse impacts of the Project.
- Address concerns and grievances promptly, using an understandable and transparent process that is readily accessible to all segments of the affected communities.
- Ensure participation of both genders and vulnerable groups.
- Consider customary and traditional methods for dispute resolution when designing the system.
- Assign experienced and qualified personnel to receiving and responding to grievances.
- Establish a redress mechanism so those who feel their grievances have not been adequately addressed have recourse to an external body for reconsideration of their case.
- Document grievances received and responses provided, and report back to the community periodically.
- Share such reporting with senior management and shareholders as appropriate.

Grievance Resolution Hierarchy and Management Dynamics

While the Project aims to resolve the majority of individual, group, and community grievances by direct resolution at individual or group levels, a hierarchical grievance resolution mechanism should be developed as follows:

1. Direct resolution at the individual or group level;
2. Community-level resolution through public meetings;
3. Resolution through a stakeholder group comprising Project representatives, government representatives, religious and village leaders, and the complainants; and finally
4. Recourse to legal counsel if the grievance cannot be resolved.

The Project should establish a centralized grievance log and tracking system. This should be accessible as a data base that can be utilized to allow all registered grievances to be tracked and retrieved as and when necessary. The Project's performance in managing and closing out grievances will be reviewed as part of internal and external monitoring.

Grievances concerning activities in construction and operation phases may arise from many different sources, and their resolution may require varying amounts of time and input. Depending on the time of resolution, grievances may be forwarded for resolution to any of a number of levels within the Project organization structure. Effective and timely application of the grievance procedure may convince aggrieved persons to settle claims through the grievance mechanisms rather than bringing a formal complaints to the police or the courts, or to political or adat leaders.

Although grievances cannot be generalized, some typical community grievances frequently arise, as tabulated below.

Table 9-1 Grievances Typically Encountered

Type of Grievances	Complainant(s)	Examples
Relatively minor and one-time problems related to company operations	An individual or a family	A company truck damaging a community member's fence; a one-time disrespectful encounter between a company employee and a community member
Relatively minor but repetitive problems related to company operations	An individual or a family or small group of people	Livestock getting loose because company employees fail to close gates or damage fencing
Relatively minor but repetitive and widespread problems	Multiple individuals, families, or larger groups	Company-related road traffic raising dust that settles on clothes, floors, furniture, laundry, etc
Significant and larger repetitive problems	Community groups, nongovernmental or community-based organizations, or local governments	Major construction of Company facilities allegedly causing structural and/or aesthetic damage to people's housing or crops
Major claims that company activities have resulted in significant adverse impacts on larger populations of people	Community groups, nongovernmental or community-based organizations, or local governments	Company operations adversely impacting a community's water supply, making it unsafe for drinking, livestock, and/or irrigation
Major claims over policy or procedural issues	Nongovernmental organizations, community groups or community-based organizations, or local governments	A company's noncompliance with its own policies; failure to follow best practice guidelines for adequate consultation to achieve prior and informed consent; inadequate land compensation

Grievance Logging

The Grievance Log contains a record of the person responsible for an individual complaint, and records dates for the following events:

- Date grievance was reported;
- Date Grievance Log updated;
- Date proposed corrective action sent to complainant;
- Date grievance was fololowed up and closed out;
- Date close-out information was sent to complainant.

An example of a Grievance Management Form (Log and Action Form) is presented below. This also could also be created by modifying the form established by ITDC for the costomers/tenants.

GRIEVANCE LOG AND ACTION FORM

Step 1 Grievance Received

Grievance No :_____

Date Received :_____

Grievance expressed by :_____

Grievance received by :_____

Forwarded to Grievance Contact (GC):

_____Name _____Date Forwarded

Step 2 Grievance Documented

Nature of Grievance:

_____

_____

_____

_____

_____

_____

_____

Response, Corrective Action, and Resolution/Content of Verbal Response

_____

_____

_____

_____

_____

_____

_____

Verbal Response Delivered Date

By whom?

Grievance Resolved?

☐ Yes, Acknowledgement by Complainant

☐ No, Complainant's Further Statement if any

_____

_____

_____

_____

Step 3 Grievance Forwarded to EHS Management Team

Grievance Forwarded Date By whom?

Grievance Reviewed Date By whom?

Further Appropriate Actions:

_____

_____

_____

_____

_____

Investigation Report Prepared? Date By whom?

Document Number: _____

Step 4 Written Response Prepared by Grievance Contact

Grievance Response No: Date

Grievance Reviewed Date By Whom

Response and Resolution Summary

_____

_____

_____

_____

_____

_____

_____

_____

Response Delivered Date By GC

Grievance Resolved?

☐ Yes, Acknowledgement by Complainant

If Complaint Not Resolved:

Step 5 Grievance Forwarded to Resolution Committee

Summary of Actions by GRC:

_____

_____

_____

_____

Grievance Resolved?

☐ Yes, Acknowledgement by Complainant

If Complaint Not Resolved:

Step 6 Forwarded to Legal Department **Date**

_____ Received by Whom

Additional documents list

Date of issue	Title of Document	Remarks

9.4.2 Grievance Procedure

The primary objective of the community grievance mechanism is to ensure that people affected by the Project can present their grievances to the Project management for consideration and correction if appropriate. The people in the affected communities are to be informed of the intention to implement the grievance mechanism, and the procedure will be communicated and disclosed. The grievance mechanism will be applicable to all parties affected by the project. The Grievance Resolution Steps are outlined below and illustrated in **Figure 9-1**.

Step 1: Complaints may be expressed verbally or in writing to the Project field representative or Grievance Contact (GC), or Community Development/Relation Officer (CDO/CRO). Complaints received by project personnel will be forwarded to the Grievance Resolution Committee. Within one day of the original receipt of the grievance, the GC gives written notice to the complainant.

Step 2: Grievance Contact will be responsible for documenting verbal and written complaints. Complaints will be written onto a complaints log and action form (see attached). The complaints log and action form records (a) who reports the complaint; (b) who received the complaint (field representative or employee); (c) situation of the reception and answer of the responder; (d) the date the complaint was received and recorded; (e) the nature of the complaint; (f) information of proposed corrective action; (g) date of response (verbal and written) provided to the complainant; (h) corrective actions taken, by whom, and when, and (i) the date the complaint was closed out.

Step 3: Copies of all complaints log and action forms are forwarded to the Community Relations team. Appropriate actions to close out the complaint will be determined and written onto the

form. Where necessary the Community Relations team will investigate complaints from the community and an investigation report will be developed.

Step 4: Written response for every grievance will be prepared within 14 days by the Grievance Resolution Committee.

The response will be delivered verbally before the written copy is provided to the Complainant. The complainant will be asked to sign and date the complaints log and action form to confirm receipt of the Project response.

The Project recognizes that actual time lines for possible actions will be determined by the nature of the grievance. If more time is required to implement appropriate actions, the Community Relations team will inform the complainant. The team will assume responsibility for ensuring all actions are implemented to adequately address the complaint. In most cases, the written response and agreed actions will be sufficient to resolve complaints.

If a complaint is unresolved,

Step 5: Complainant will be referred to the GRC. The GRC comprises, as an example, the Project Site Manager, Community Relations Manager, Health, Safety, and Environment Manager, and General Affairs & Human Capital Manager (substitute equivalent ITDC position titles as appropriate). The GRC aims to resolve complaints within 30 days. Again, depending on the nature of the complaint, a longer timeline may be agreed upon with the complainant. If an agreeable solution is reached, the complainant will be asked to sign and date the complaints log and agreed actions to confirm receipt of and agreement with the Project response.

If complaint is still unresolved,

Step 6: Final resolution is sought by legal counsel; Indonesian and West Nusa Tenggara jurisdictions shall apply.

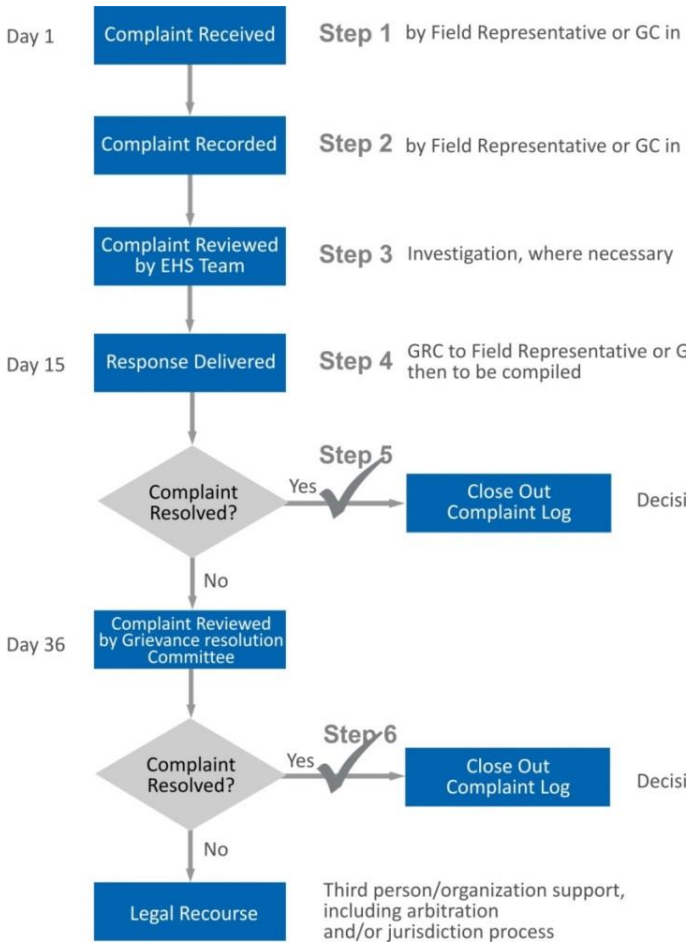

Figure 9-1 Resolution Step-by-Step

9.4.3 Community Level Grievance Resolution

Above procedures and forms are oriented toward grievances by individuals and groups. More broadly based grievances may be handled by these procedures, but will require more attention, with recognition and awareness that cognizance of and participation in the process by senior management are essential.

Major community concerns and complaints will be addressed during community meetings and actions will be communicated during these meetings to ensure transparency of the procedure. Community meetings are usually conducted monthly by Community Relations in each village. If community concerns and complaints cannot be addressed during community meetings, grievance redress **Steps 5** and **6** will apply. Complaints may be directly delivered to the Project and the process will flow in the steps explained in the previous chapter.

The Grievance Contact (GC) will be responsible for:

- Providing the Project Team with a weekly report detailing the number and status of community-level complaints and any outstanding issues to be addressed; and
- Monthly reports, including analysis of the type of complaints, levels of complaints, and actions to reduce complaints.

CHAPTER 10
MONITORING AND EVALUATION

In this Chapter, preliminary aspects of a monitoring and evaluation program and its implementation are outlined. Subjects addressed are key parameters to be monitored, locations and frequency of monitoring, personnel/institutions conducting, and general indications of cost, as well as overall reporting arrangements.

10.1 Environmental Monitoring Plan (RPL)

Under the Republic of Indonesia Environmental Impact Analysis System (AMDAL) for environmental permitting, major projects with significant environmental and social impacts, such as The Mandalika Tourism SEZ, are studied in terms of their impacts and of the appropriate management and mitigation actions that must be applied to achieve permit approval. In parallel with the Environmental Management Plan (abbreviated RKL) the project proponent must implement an Environmental Monitoring Plan (RPL). The RPL provides feedback for corrective actions to ensure effectiveness of the RKL, and also structures how the proponent reports on the application of management and mitigation actions.

Permitting of The Mandalika was first achieved with approval of the 2012 AMDAL documents. The implementation of the RKL-RPL was documented every semester in what are referred to as RKL-RPL Implementation Reports. With the 2018 AMDAL Addendum, the RKL-RPL Environmental Management and Monitoring Plans are being revised to match the current scale and nature of proposed development within the Project area. At the end of this Chapter, a brief table summarizing indicative costs for monitoring and evaluation actions is presented, followed by a longer table that is a matrix of the monitoring program required under the RPL Monitoring Plan being developed with the 2018 Addendum. This matrix addresses data collection and analysis methods, monitoring locations and frequency, implementer of the monitoring action, and the supervising agency to which the data and information are reported.

The RPL addresses monitoring of physical impacts of construction and operation efforts, as well as the socioeconomic effects of Project activities. Since the AIIB-financed Tourism and Urban Infrastructure Project will be carried out as part of The Mandalika SEZ development, it will be covered by the RKL and RPL being developed with the Addendum.

Characteristics of the RPL system include:

- Orientation of the system is toward semester implementation reports, with limited ability to react to sudden changes in conditions.
- Reliance is often heavy on consulting and laboratory personnel, who come to site once a quarter, have limited knowledge of day-to-day conditions onsite, are frequently changed so they develop limited cumulative experience onsite, and submit reporting from a distance a month or so after data collection.
- Personnel within ITDC responsible for environmental management and monitoring are normally, and logically, separated institutionally from social and community monitoring and

relations personnel. Importantly, they often have little professional interaction or mutual understanding. They are often given responsibility for occupational health and safety as well as environmental quality.

- Implementation Reports are compiled from consultant and laboratory reports by office personnel, often in a government relations or external relations department or equivalent, and often with limited understanding of the data collection and analysis processes—particularly on the environmental side. Also, they are often less interested in providing feedback to senior management than in serving their "clients"—government agencies to which the reports are submitted.
- Often no one tries to, or is in a position to, look for meaningful trends or changes in the data, either within the proponent organization or the receiving government agencies.
- If senior management is not interested in environmental and social monitoring, there may be very little understanding of what is actually being reported—until something negative transpires.

Receiving agencies are often more interested in having the reports submitted on time, and in verifying that contents satisfy the requirements checklist, than in understanding and interpreting the information actually provided. Exceedances of standard threshold limits attract attention, but subtle changes or trends do not.

The remainder of this Chapter is oriented toward suggesting how the RPL monitoring program can be integrated with a recommended monitoring and evaluation program for the Project, with the emphasis on monitoring, given evaluation is largely a senior management function, with considerable consultant input likely to be required in the context of implementing The Mandalika Tourism and Urban Infrastructure Project.

10.2 AIIB Monitoring and Evaluation (M&E)

The Asian Infrastructure Investment Bank policy statement (Paragraph 62) addresses Client-to-Bank and Bank internal monitoring, evaluation, and reporting. Only the former is considered here, of course. The Bank requires Clients to implement their projects in compliance with the ESMP, and any resettlement plan or RPF and any Indigenous Peoples plan or IPPF. Clients are also required to furnish the Bank with periodic monitoring reports on the Project and Client performance with respect to environmental and social risks and impacts. This normally includes information on workplace and community health and safety issues as well as public consultations.

The following specific monitoring actions are required for Projects.

- Establish and maintain appropriate procedures to monitor progress in implementing environmental and social measures agreed with the Bank.
- Verify compliance with each specific measure and indicators of progress toward their intended outcomes.
- Document and disclose monitoring results and identify necessary corrective actions in the periodic monitoring reports, at a frequency proportional to the issues, but not less than annually.

- Follow up on these actions to ensure progress toward the intended outcomes.
- Furnish the Bank with periodic monitoring reports on environmental and social measures agreed with the Bank.

The monitoring policy outlined above applies to monitoring required by documents covered by the Bank's Disclosure Policy--draft and final environmental and social assessment reports, ESMPs, ESMPFs, RPFs, IPDPs, and "other approved forms of documentation." All such types of documents produced during Project implementation must also be disclosed

The Monitoring and Evaluation policy also requires Clients to do the following.

- Retain suitably qualified and experienced experts to verify monitoring information on a routine basis if the Project has significant risks and impacts;
- Use suitably qualified and experienced specialist individual experts or independent advisory panels, not affiliated with the Project, to monitor implementation if the Project is very complex or sensitive.

With the assumption that The Mandalika SEZ Project is very complex and sensitive, has significant risks and impacts, and is of a significant duration, a reasonable interpretation of the above two requirements would be that the Project should:

- Hire permanent, full-time qualified and experienced professionals to conduct environmental and social monitoring activities on a routine basis throughout construction and operation of the Project.
- Engage consultant firms with appropriate professional expertise to monitor the implementation of the Project.
- Consider engaging an independent, expert advisory panel to assist in implementation monitoring.

10.3 Project Scope--RPL Plus M&E

The previous section makes it clear that a system for monitoring, evaluation, and reporting on Project activities will be developed to meet ITDC's requirements to continually inform the Bank on implementation. A key part of this system will be English versions of the RKL/RPL Implementation Reports, prepared and delivered quarterly or by semester. The general conceptual make up of such a system, by Project subcomponents, is identified in this section.

10.3.1 Component 1: Provision of Basic Services and Infrastructure

Component 1 contains the physical works to be carried out under the Project. It will require extensive, regular reporting systems.

Subcomponent 1.1. Construction of Basic Infrastructure in The Mandalika

The scope of works for basic Infrastructure in The Mandalika SEZ involves construction of high quality urban infrastructure including roads, utility corridors, and open spaces; water supply networks and wastewater treatment facilities; solid waste management handling (and possibly sorting, recycling, and composting) systems; power and ICT networks; landscaping; and

community facilities. This excludes third-party investments for construction of SWRO plants and solar PV power plant, which are Associated Facilities and likely to some extent be included in the M&E system.

The monitoring program and its implementation for this construction will be complex and will change with the changing mixture of contractors working onsite. The ***RPL monitoring program*** will serve as the basic backbone of the formal monitoring system to be reported to government agencies. It normally involves a consultant crew onsite for a period of about a week each quarter, conducting ambient air sampling and ambient water sampling (and sometimes emission, effluent, and waste sampling) for laboratory analysis; noise measurements; and often some plot measurements in natural vegetation as well as studies of plankton, benthos, and fish in fresh water and marine ecosystems, Social surveys and interviews are normally carried out by a different crew, possibly a different consultant, possibly on a different schedule.

These activities are necessary to fulfill the requirements of the AMDAL and associated Environmental Permit, and are documented in quarterly (sometimes semester) Environmental Management and Monitoring Implementation Reports, which it is assumed here will be submitted in English versions to the Bank. The key to an effective Environmental and Social Management Plan/Program (ESMP) is to make sure that these quarterly investigations do not indicate violations of environmental quality threshold limit standards, if at all possible.

The ***M&E program*** will of necessity be carried out by onsite staff, educated and trained in their duties and thoroughly familiar with the site. They will likely wear uniforms, at least while working on the main SEZ site, for visibility and authority, and will have dedicated vehicles to assure adequate mobility. Cell phones can provide communications, but radios have numerous advantages, including broadcasting to multiple personnel by voice simultaneously, and backing up the cell system.

The key responsibility of the M&E program personnel will be immediate, practical feedback to the Environmental and Social Management System (ESMS). They will ensure that any exceedances of environmental quality standards or disruptions of social harmony or peace and order are stopped and reversed to the extent possible. They will work on a continuous and daily basis with personnel and organizations charged with security, health and safety and emergency response, contractor management, utility operations and engineering, community relations, community development, and public information and external relations.

Parameters to be Monitored and Monitoring Devices

Lists of ambient and other parameters to be measured for the RPL are in the table at the end of this Chapter, in accordance with the regulations establishing ambient environmental quality standards and emission/effluent/waste standards.

M&E monitoring will emphasize hand-held, direct-reading instruments for real-time measurements on ad hoc, high frequency bases. Parameters that can be read in the field and immediately reported for feedback and decision making will be selected on the basis of the types of information that are most useful.

In water and aqueous wastes, parameters that can be measured by hand-held instruments are numerous--conductivity/ total dissolved solids/salinity, total suspended solids, pH, dissolved

oxygen, turbidity, redox, some dissolved metals, chlorides, nitrate, hydrocarbons, and ammonia are some. The first half dozen or so are the most useful.

In air, particulates (including PM10 and PM2.5), aerosols, and a wide variety of gases can be measured with direct-reading instrument. In NTB's long dry season, dust will always be a major issue. Personal monitors can collect samples passively. Drager tube type instruments can measure hundreds of gases and suspended contaminants. Noise measuring instruments are widely available. Instruments for a small number of parameters, based on risk, can provide considerable volumes of useful information in real time.

Qualitative parameters, biological phenomena, social and nuisance information, field informant interviews—are all parameters suitable for video recording that can be done with almost any modern cell phone. More professional instruments have their advantages. At the same time, smartphones are already set up to deliver photographs and sound video by email, message software, or the phone system. They also complicate the problem of controlling information distribution, of course. Existing technology in vehicle- and personnel-mounted video recordings, with communications linking to offices for rapid transmittal and circulation to senior management, are recommended in this Chapter.

Windshield-mounted video recorders, as are already common among police agencies worldwide, and are a highly practical means for providing patrol and work vehicles with quality video and sound recording instruments requiring essentially zero operation by the personnel. The question of course with continuous recording of the driver view is how much is stored for later retrieval. The obvious solution (with currently available cloud storage resources) is to store the entire shift (with recording automatically stopped when the vehicle is not being operated, unless activated by the operator). The data may be deleted automatically according to department policy over subsequent days unless specifically required for storage and retrieval, based on events that transpire during the shift. These policies are actually much more challenging to develop than simply incorporating the technology.

Of course, vehicle-mounted video is limited to where the vehicle can operate or be parked. The back-up units will be "body cameras," as are also coming into use by police forces worldwide. These require somewhat more operator intervention in their operation, but provide clear information on whatever the monitoring person sees and hears while they are in operation (turned on). Again, the keys are when they are set to record, and how (and for how long) the recorded sound video data are stored.

As with their adoption by police forces, there are cost factors to consider in automatic video recording, with data storage actually representing the largest cost. These are ameliorated by the fact that the environmental and social monitoring program will not need to equip all vehicles and personnel at all times. Recording units can be transferred among vehicles and personnel as needed. Data linking to allow rapid circulation of video data will be essential to enhance the effectiveness of the rapid, real-time-adaptable program recommended here.

There is the additional, real-world consideration that waterborne and airborne sensors will be necessary to cover adequately all the SEZ locations that will need to be monitored (and in fact where EHS and social management resources may need to be placed). EHS (and social) management and monitoring will require access to at least one watercraft and at least one unmanned aerial vehicle (UAV or "drone"). In both cases, for adequate program development,

equipment redundancy, and life-cycle maintenance considerations, two seagoing launches and two medium sized rotary wing UAVs are probably the minimum investment package to consider.

Locations Monitored

RPL monitoring is generally done from set locations for ambient monitoring, plus at sensitive receptors, outfall and emission points, and waste management locations.

M&E monitoring in real time can encompass all of the above, plus anywhere else work is going on, and information is needed. Patrols can cover set indicator points, or simply develop a capability to learn what is going on where. Construction sites will require EHS monitoring in real time, and many of the resources can be provided by contractors within their scopes. Vehicle- and body-mounted video recording with communication uplink capabilities extend the reach of real time information collection to wherever patrol vehicles and monitoring personnel move or work.

The environmental, health, safety, and social monitoring function will also need to be carried out on the near-shore waters, a capability that should be developed early on. The long reach of shoreline in the SEZ as well as the small estuarine river mouths, will stretch the capacity of even two fairly fast seagoing launches to cover all locations in a reasonable time. A pair of medium rotary wing UAVs will greatly enhance the ability to monitor all onshore and offshore locations within realistic response times. The large mangrove area, it should be noted, is accessible by neither vehicles nor boats.

Frequency

The monthly or quarterly format for RPL monitoring is suitable for providing replicable, periodic data for reporting purposes.

M&E monitoring, oriented toward real time, flexible data and information collection, can and effectively must be an essentially continuous resource for feedback to management information and decision making.

By Whom

RPL monitoring normally involves a consultant and laboratory personnel crew onsite for a period of about a week each quarter. Social surveys and interviews are normally carried out by a different crew, possibly a different consultant, and sometimes on a different schedule.

Environmental personnel may also act as, or include, safety officers. This traditional EHS (Environmental Health Safety) approach is standard in many industries. It is possible, with well trained and selected personnel, to carry out both safety and environmental management and monitoring functions. But each person must learn a large number of skills. The advantage is that all four functions (EHS and social monitoring and management) can be carried out at once. But the personnel must be selected and trained to be able to interact on a daily basis with contractor management, safety, security, external/community relations, and other specialized personnel, as well as community residents and even tourists. Any effective EHS and social M&E program, again, will of necessity require full-time, onsite professional monitoring staff, educated and trained in their duties and thoroughly familiar with the site. As infrastructure construction winds down, many will still be required to work with hotel and resort construction sites. Moving into long-term

operations, most will remain valuable onsite resources due to their familiarity with the locations and terrain, regulations, monitoring and control technologies, and local residents.

It should be noted that, in practical and realistic terms, the security staff will de facto serve necessary and important social monitoring and management functions, covering SEZ workers and local residents as well as visitors/tourists. Given the various other overlaps in responsibilities and possible advantages of sharing or using in common some technical resources (monitoring video technology, watercraft, UAVs), designing close cooperation and even some functional integration with security would appear to be important.

Costs

Most RPL programs are fairly modest in cost, as they involve intensive work only about a week every three months. In terms of providing government stakeholders with standardized information, based on permit requirements, from independent outside consultants, they provide reasonable value for their costs.

The M&E monitoring program as described here will be costly. No reasonable estimate of costs can be made without considerably more information than is presently available, particularly on the final set of environmental and social commitments that will be written into the loan agreement. Numerous decisions on structuring the program will require considerable management time, and likely consultant resources.

The costs for planning, procurement, personnel training, and deployment of certain key equipment systems and their supporting information technology could and probably should be coordinated and shared between the environmental health/safety and social functions and the other departments that can benefit from these capabilities—most likely utility engineering and (as noted above) security departments. The equipment technologies referred to include:

- Fixed, vehicle-mounted, and body-mounted video cameras, with supporting communications linking and data storage and processing technical support.
- Watercraft able to operate effectively in the coastal area of The Mandalika, with adequate safety, navigation, communications, lighting, and voice-casting equipment.
- Unmanned aerial vehicles (UAVs) to carry video and possibly other sensors throughout the land, water, and wetland areas of the SEZ.

Initiating these capabilities during the intensive period of infrastructure construction will greatly upgrade ITDC's monitoring program at an early date, allowing for integrating a greatly enhanced information collection program into the permanent operational management of The Mandalika SEZ. It is recommended that even modest, partial acquisition of these resources should be initiated as early as possible. All current, developed-nation concepts of operation in EHS and social management and monitoring (as well as security and utility engineering) are adopting these capabilities. Over time, this will be true of ITDC in The Mandalika; it makes sense to initiate them early.

Reporting Arrangements

RKL-RPL implementation reports are already submitted to regional and national government offices by ITDC, starting around 5 years ago. Changes to these reports caused by approval of the

AMDAL Addendum are likely to be relatively minor. It is expected that translations of these reports will be submitted to the Bank during Project implementation as part of its monitoring and reporting responsibilities.

ITDC and onsite contractors are required to operate safety programs. These include periodic submittal of reports to Department of Labor offices. It is expected that a translation of the ITDC submittals will also go to the Bank. Rather than translate all the contractor reports, it might be more efficient to produce a summary of them, incorporating the key accident, injury, illness, and training data.

M&E reporting arrangement to the Bank beyond the above will be negotiated and designed as Project implementation proceeds. But it can be stated that the most important outcome of M&E is useful, effective feedback to senior management—the ITDC PMU--on a real time basis. If an M&E program for environmental and social information does not keep management adequately informed—in a Project and development that at its core is completely dependent on environmental quality and social harmony—then it represents a waste of resources. Just as the RPL information submitted to the government is limited to the information required by the permitting, the information submitted to AIIB will be limited to fulfilling the commitments agreed upon. But the scope of reporting to management is only limited by what the management needs to know at any given time. If the system is effective internally, then providing the needed information to the Bank should be fairly straightforward.

These are probably the key principles to keep in mind during design of the Monitoring and Evaluation Systems. Essentially all will need to be in place before the ramp-up of infrastructure construction.

Subcomponent 1.2. Infrastructure Improvements for Neighboring Communities

Infrastructure improvements will be carried out in Kuta, Sukadana, Sengkol, and Mertak Villages. This construction work will need to be performed to meet the same environmental, social, health, and safety standards as the onsite activities, many of which will be similar in nature. In all likelihood, many of the same contractors will carry out these works. Thus, essentially all of the previous discussion for Subcomponent 1.1 is relevant, and is not duplicated here.

However, there are numerous important considerations that need to be clear. Probably the most basic is that these activities will be carried out off the ITDC property, and thus outside its security perimeter. Basic site security will be different in nature, and security problems are likely to be different and quite likely more numerous. Local residents will largely be excluded from within the SEZ site, but will be all around the village infrastructure improvement sites.

There will be land and right-of-way issues in the villages, even given that local government will be charged with clearing these factors. Automatically, potential for conflict will increase. Safety and environmental management and monitoring staff will not have the same freedom of movement they have within the SEZ. The Mandalika security will almost certainly not be able to operate at these sites, except possibly under severe restrictions. The local police resort will be responsible for site security—and may have no personnel stationed anywhere nearby, and may only patrol when needed. Pilfering of tools and materials are possibilities, as are vandalism against sites or equipment. Contractor management will be greatly complicated, at the same time sites are being established more distant from ITDC's offices.

Community relations and government relations staff and management will not only see a great increase in workload and challenges, but also in the nature of their responsibilities. Increased management challenges overall will obviously require a more flexible and dynamic M&E system to provide information to management. Clearly, the external relations staffs, including community development/CSR, will be essential in this system. Prior relationships and good will within the villages will be crucial resources. Component 2 and particularly Subcomponent 2.4 are designed to ensure resources will be available for the needed outreach and monitoring in the directly affected communities. Early planning for providing these resources will be important.

10.3.2 Component 2: Technical Assistance and Capacity Building

This Component will provide Technical Assistance (TA) to strengthen ITDC in carrying out Project activities to a high standard, to ensure that Project implementation is consistent with all objectives and in compliance with the loan agreement and long-term sustainable destination management. Various provisions in the four subcomponents address monitoring and evaluation.

Descriptions of the subcomponents below provide clear indications that resources will be available through this Project to ensure that ITDC's PMU will be able to obtain necessary resources to develop the capacity to conduct fully the level of monitoring described above under Component 1. Further, this capacity will continue to develop and maintain, after the main construction period, The Mandalika SEZ's M&E capabilities.

Subcomponent 2.1 Project Management Support

To ensure effective implementation of the Project, ITDC will strengthen its PMU's project management capacity by hiring individual consultants, separate from, and in addition to, a supervision consultant. These will assist ITDC in, among other functions, monitoring and evaluation, compliance with environmental and social safeguards, and coordination among stakeholders as well as stakeholder engagement and communications. All additional experts to be engaged will have training as part of their duties.

This effort will provide resources for Project-related professional training, workshops, and public information tools for ITDC staff and relevant stakeholders in topics related to the tasks listed above.

A key task is ensuring Project implementation provides maximum benefits to local communities, including vulnerable groups. Consultant services will be funded to carry out environmental and social impact assessments, each with appropriate monitoring and evaluation implementation included.

ITDC will engage a consultant to engage with surrounding communities and analyze their environmental, social, demographic, and infrastructure context, so as to prepare area development plans. The Consultant will identify key infrastructure improvements, carry out feasibility studies, and prepare detailed designs for priority investments in infrastructure improvements.

Overall, the implementation of Subcomponent 2.1 will increase ITDC's level of knowledge and understanding of conditions in the directly affected communities, thus increasing its effective ability to monitor those conditions.

Subcomponent 2.2 Construction Management

This Subcomponent is focused on strengthening ITDC's capacity for construction management and supervision. This will include developing professional resources to supervise contractor safety and environmental compliance performance. Planning in detail for developing the resources and action capabilities described above for M&E of Subcomponent 1.1 will be a major task within Subcomponent 2.2. These capabilities will also need to be designed to function effectively at and around construction sites outside the SEZ, as described above for Subcomponent 1.2.

While the main keys to effective construction management are enforcing contractors' performance in meeting quality and schedule requirements, the M&E program as described in this Chapter focuses on EHS and social impacts of construction. Contractor operations at infrastructure sites within the SEZ under Subcomponent 1.1 will need to meet the GoI and AIIB standards for health, safety, and environmental performance. As noted, construction sites under Subcomponent 1.2 will need to operate within village residential and agricultural areas. Road access disruptions, noise generation, release of sediment-laden runoff, and any misbehavior of site workers will all take place with sensitive receptors in close or immediate proximity. As noted, monitoring will need to be carried out at a greater distance from ITDC offices in areas where Project employees do not necessarily have freedom of movement or clear jurisdiction.

Subcomponent 2.3 Establishing Economic Linkages

This Subcomponent builds on ITDC's existing CSR activities to target direct interventions that serve to strengthen the economic linkages of The Mandalika SEZ with the local economy so as to maximize benefits from tourism. Its multiple training and business capacity development actions will depend on, and leverage upon, the effectiveness of Subcomponent 2.1 in raising ITDC's level of knowledge and understanding of conditions in the directly affected communities, and its ability to monitor those conditions effectively. Without detailing the characteristics of each linkage to be established, it is sufficient to note here that it will be necessary to implant a monitoring-evaluation-feedback loop to assure the durability and effectiveness of that linkage.

Subcomponent 2.4 Destination Management and Monitoring

This subcomponent focuses on establishing a destination management office in The Mandalika for "inclusive and sustainable" operations, plus obtaining certification through a recognized standard for sustainable tourism destinations. Certification will entail a requirement for continued monitoring. This Subcomponent also includes developing "tools" for periodic monitoring of Project impacts on the coastal environment from construction, modular expansion, and operation of two SWRO plants in The Mandalika area, as well as the wastewater treatment facilities and upstream retention ponds.

Developing an SEZ-wide real-time monitoring capability for air and water quality, noise levels, and social and traffic disruptions, which can operate in village residential areas both within and outside the SEZ boundary, will be easiest to implement during the period of intensive infrastructure construction. The level of resources needed to monitor construction operations more or less simultaneously at eight site complexes will roughly correspond to that needed to monitor the operation of the overall tourism SEZ as it approaches build-out.

Key construction sites (including some associated facilities) will need to be monitored not only during the erection periods. Fixed sensor installations will need to be established and begin operation during the start-up and commissioning of these facilities. Real-time operational monitoring will require water-level and flow sensors as well as water quality meters (direct reading of conductivity, salinity, pH, TSS and TDS) at the WWTPs, SWRO discharges, and upstream and onsite retention ponds.

Of particular priority will be obtaining monitoring capabilities to both support, and subsequently permanently follow up on, the following essential studies:

- Marine critical habitat assessments for fringing and offshore coral reefs and seagrass beds;
- Ecological assessment of SEZ's mangrove areas and particularly proposed Mangrove Ecopark;
- Assessment of sustainability and economic importance of coastal marine fisheries;
- Assessment of marine turtle feeding and breeding/nesting in SEZ beaches and adjacent coastal waters;
- Brine discharge options and resource assessment of lagoon adjacent to existing SWRO.

Experience with large tourism resort zones indicates these developments often induce significant, sometimes uncontrolled, urban expansion on the periphery. This Subcomponent includes developing the Project's monitoring tools by establishing a baseline of the urban expansion around The Mandalika. Established methodologies for analysis of satellite imagery and Geographic Information System (GIS) spatial data management will ensure utility of results after Project completion. This will facilitate ITDC's ability to influence informed government decisions on improving the existing sectoral and spatial plans and future development priorities.

Ensuring the permanent establishment of world-class destination management at The Mandalika will require state-of-art monitoring-evaluation-feedback systems. It would be logical to establish an **SEZ monitoring and control center**, possibly co-located with the EWS. This could be shared by EHS, security, and utility engineering functions.

Note that 11 elevated Temporary Evacuation Shelters (TESs) will be established as permanent structures within the SEZ; these will undoubtedly be designed to include rooftop helipads for medical and personnel evacuation. Two of these, in the eastern and western areas, could logically be designated as **UAV operational bases**—a function that could be of enhanced importance during emergency conditions. It would as well be logical that in one of them a basic, backup control center be established, for use if the main center goes down, and during emergency conditions.

10.4 AMDAL Addendum Environmental Monitoring Programs

Based on AMDAL Addendum (2018), **Table 10-2** at the end of this Chapter lists the potential impacts that may arise from The Mandalika Project activities, from preconstruction to operational phases, as well as the respective monitoring actions, per the official Environmental Monitoring Plan (RPL) prepared with the Addendum. (The corresponding Table in the RPL also includes the responsible institutions, frequency of monitoring, locations and data collection, and analysis

methods.) The potential impacts may be either positive (e.g., increasing employment) or negative (e.g., deterioration in air quality).

Some approximate cost information for various monitoring actions is provided in **Table 10-1**, combining the RPL monitoring program and the conceptual real-time monitoring program described in the preceding sections of this Chapter.

Table 10-1 Cost Factors for RPL and General Monitoring Actions

Potential Impact	Cost Factors	Notes
Socioeconomic		
Increased Public Concern	Internal cost	ITDC external relations
Change of Land Use	Internal cost	ITDC GIS (Subcomponent 2.4)
Labor Recruitment and Training	Quarterly surveys; ~USD 5,000	Through major construction period; later internalized by ITDC PMU
Increased Government Revenue	Obtained from government statistics	Government/external relations to monitor
Disturbance to Local Security	Obtained from government statistics	Security will need to monitor. Body cameras USD 800 – 1,000
Support for Bau Nyale Event	CSR responsibility	Major market support event
Traffic Disruption	Internal (Security) costs Dashboard cameras USD 1,000 Professional UAVs suitable for surveillance USD 1,000 – 6,000	Traffic engineering and security will need to monitor in real time and respond.
Trends in Public Health	Obtained from government statistics, interviews with medical facilities	Monitored by EHS
Increasing Cases of Prostitution and Alcohol and Drug Abuse	Obtained from police statistics, interviews with medical facilities	Onsite cases monitored by security
Environment (Physical and Biological)		
Air Quality Degradation	USD 2,500 per monitoring period for 7 locations. in quarterly sampling Direct reading instruments about USD 600 – 1,200	Use of direct reading instruments for key parameters, particularly particulates, desirable on daily basis.
Increased Noise Level	USD 800 per monitoring period for 7 locations in quarterly monitoring	Hand held sound meters can be used by site personnel as needed on daily basis. Costs USD 40 – 200.
Decreased Flora and Fauna Diversity and Abundance	USD 2,000 per monitoring period for 7 study locations in quarterly monitoring	Pro forma study plots normal used better replaced by specific studies of succession processes in the degraded upland and mangrove forests and other remnant vegetation in the SEZ.
Soil Erosion	TSS content and turbidity of runoff–receiving surface water	Quarterly monitoring of soil erosion based on measuring TSS

Potential Impact	Cost Factors	Notes
	can be directly read from handheld instruments; grade stakes can be used to measure soil loss. Depending on desired accuracy, meters can vary from USD 12 – 1,000	and turbidity of surface water (below); real time studies by site personnel more useful than quarterly efforts.
Degradation in Surface Water Quality	USD 3,000 per monitoring period for 8 locations in quarterly sampling. See above on direct reading instruments.	Use of direct reading instruments by site personnel in real time more useful.
Disposal of Liquid Waste	USD 800 per waste outlet per monitoring period (permits likely to require monthly). See above on direct reading instruments and below on flow meters.	Continuous monitoring installations on outfalls a superior approach, though quarterly sampling necessary in any case.
Disposal of Solid Waste	Real time monitoring by site personnel of waste management sites, transport contractors, and landfill operations; use of photos and video.	Needs to be an internal monitoring capability.
Disposal of Hazardous Waste	Real time monitoring by site personnel, use of photos, monitoring of transport/ disposal contractors	Needs to be an internal monitoring capability.
Water Deficit	Soil moisture instruments, hand-held or *in situ*. Surface flow measurements, irrigation quantity monitoring. Groundwater monitoring wells.	Needs to be an internal monitoring capability. Permanent continuous reading sensors helpful. Water level and flow meters vary from USD 600 – 1,000

**Quarterly costs exclude logistics (e.g., consultants travel, local transport, accommodation and sample shipping) and consultants' fees for report preparation.*

Table 10-2 lists components of the RPL Monitoring programs expected to be approved with the AMDAL Addendum. This translated table is fairly typical of approved monitoring programs that must be reported to government agencies in Indonesia. Information presented here is relevant to the ESIA, but is not actually part of its compilation.

This matrix as presented here is a translation of the RPL summary table. However, numerous errors and omissions have been corrected here, based on knowledge of the regulations and of the reasonably assumed intent of the RKL compilers. It should be noted that the regional Government offices receiving monitoring reports are identified as "departments." In fact, the provincial and regency offices of central government ministries in Indonesia are actually part of the staffs of respectively the governor and regency head (*bupatih*). The actual term is *dinas*, which is best translated service, or office. For ease of understanding, Department is used here.

Table 10-2 Matrix of Monitoring and Evaluation Actions

No	Potential Environmental/Social Impact			Monitoring			Monitoring Institution		
	Potential Impact	Indicators/ Parameters	Source of Impact	Data Collection and Analysis Methods	Monitoring Locations	Time and Frequency	Implementing Body	Supervisor	Recipient of Report
A	**DESIGN/PRECONSTRUCTION PHASE**								
1	Increased Public Concern	Number of local workers recruited for Project.	Socialization program	Data collection: Survey through questionnaire distribution. Data analysis: Descriptive analysis.	Monitoring will take place at the affected villages around the Project area.	Will be conducted before the construction phase, and frequency will be adjusted based on the public needs (once every week or month).	Operational management of The Mandalika Tourism SEZ and PMU.	1. Department of Environment and Sanitation of Central Lombok Regency. 2. Department of Environment and Forestry of West Nusa Tenggara Province.	1. Department of Environment and Sanitation of Central Lombok Regency. 2. Department of Environment and Forestry of West Nusa Tenggara Province.
B	**CONSTRUCTION PHASE**								
1	Increased Employment Opportunities	1. Number of construction workers recruited locally and overall; and 2. Reported conflicts due to issues related to limited employment of local residents.	Work force recruitment process.	Data collection: Survey through questionnaire interviews. Project Contract Management data. Data analysis: Descriptive analysis.	Monitoring will take place at the affected villages around the Project area.	1. During any construction activity. 2. During work force recruitment process.	Operational management of The Mandalika Tourism SEZ and PMU.	1. Department of Social Affairs, Labor, and Transmigration of Central Lombok Regency. 2. Department of Environment and Sanitation of Central Lombok Regency.	1. Department of Environment and Sanitation of Central Lombok Regency. 2. Department of Environment and Forestry of West Nusa Tenggara Province.
2	Air Quality Degradation	Air quality parameters should comply with Government Regulation 41/1999, especially for dust/ particulates (PM10, PM2.5), SO_2, NO_2, CO, NH_3.	1. Land clearing, preparation, and earthworks. 2. Construction of roads, infrastructure, hotels, and residences. 3. Management of topsoil.	Data collection: Direct sampling of environmental parameters. Data analysis: Air samples will be analyzed in an accredited laboratory.	All Project sites at selected locations, particularly near sensitive receptors.	1. During any construction activity. 2. During activities with potential disturbance to neighboring residences and other sensitive receptors.	Operational management of The Mandalika Tourism SEZ and PMU.	1. Department of Environment and Sanitation of Central Lombok Regency. 2. Department of Environment and Forestry of West Nusa Tenggara Province.	1. Department of Environment and Sanitation of Central Lombok Regency. 2. Department of Environment and Forestry of West Nusa Tenggara Province.
3	Increased Noise Level	Noise levels should comply with MoEF Decree KEP-48/ MENLH/11/1996.	1. Mobilization of equipment and materials. 2. Land clearing, preparation, and earthworks. 3. Construction of roads, infrastructure, hotels, and residences. 4. Clearing of overburden.	Data collection: Direct sound overpressure in decibels. Data analysis: Measurements will be averaged for daytime and nighttime hours anc compared to National and international (IFC) standards.	Selected sites in and around Project construction near sensitive receptor locations.	1. During any construction activity. 2. During activities with potential disturbance.	Operational management of The Mandalika Tourism SEZ and PMU	1. Department of Environment and Sanitation of Central Lombok Regency. 2. Department of Environment and Forestry of West Nusa Tenggara Province.	1. Department of Environment and Sanitation of Central Lombok Regency. 2. Department of Environment and Forestry of West Nusa Tenggara Province.
4	Degradation of Surface Water Quality	Monitoring will evaluate changes in surface water quality based on the following National regulations:	1. Land clearing, preparation, and earthworks. 2. Construction of roads,	Data collection: Direct sampling of water quality parameters. Data analysis: Data samples will be analyzed	Monitoring will be conducted at and downstream of constructions sites, in drains and retention	Every three (3) months during the construction phase.	Operational management of The Mandalika Tourism SEZ and PMU	1. Department of Environment and Sanitation of Central Lombok Regency. 2. Department of	1. Department of Environment and Sanitation of Central Lombok Regency. 2. Department of

No	Potential Environmental/Social Impact			Monitoring			Monitoring Institution		
	Potential Impact	Indicators/ Parameters	Source of Impact	Data Collection and Analysis Methods	Monitoring Locations	Time and Frequency	Implementing Body	Supervisor	Recipient of Report
		1. MoE Decree 51/2004 (Sea Water Quality) 2. GoI Regulation 82/2011 (Surface Water Quality) 3. MoH Regulation 492/2010 (Drinking Water Quality)	infrastructure, hotels, and residences. 3. Management of topsoil.	in an accredited laboratory. Data will be presented in tabular form and compared to standards listed..	basins, and other sites deemed relevant.			Environment and Forestry of West Nusa Tenggara Province.	Environment and Forestry of West Nusa Tenggara Province.
5	Changes in Land Use and Ownership	Number and severity of land claims and conflicts.	1. Land clearing, site, and earthworks. 2. Construction of roads, infrastructure, hotels, and residences. 3. Construction of supporting facilities.	Data collection: Direct observation and ITDC local government records Data analysis will be presented through a descriptive analysis with graphic representation as appropriate.	Monitoring will take place at all enclave lands and lands subject to conflicts and persisting claims.	Every three (3) months during the construction phase.	Operational management of The Mandalika Tourism SEZ and PMU	1. Department of Environment and Sanitation of Central Lombok Regency. 2. Department of Environment and Forestry of West Nusa Tenggara Province.	1. Department of Environment and Sanitation of Central Lombok Regency. 2. Department of Environment and Forestry of West Nusa Tenggara Province.
6	Disturbance of Mangrove Areas	Species composition and succession.	1. Land clearing, site preparation, and earthworks. 2. Construction of roads, infrastructure, hotels, and residences. 3. Construction of supporting facilities.	Data collection: Direct observation, plot measurements, photographs. Data analysis will be presented through statistical and descriptive analysis, with graphic representations as appropriate.	Mangrove areas and riverine wetland areas.	Every three (3) months during the construction phase.	Operational management of The Mandalika Tourism SEZ and PMU	1. Department of Environment and Sanitation of Central Lombok Regency. 2. Department of Environment and Forestry of West Nusa Tenggara Province.	1. Department of Environment and Sanitation of Central Lombok Regency. 2. Department of Environment and Forestry of West Nusa Tenggara Province.
7	Disturbance of Aquatic Biota	Species composition and abundance.	1. Land clearing, site preparation, and earthworks. 2. Construction of roads, infrastructure, hotels, and residences. 3. Construction of supporting facilities.	Data collection: Direct observation, benthic and plankton sampling, fishing, and interviews of fisher community and observations in fish markets. Data analysis will be presented through a statistical analysis of laboratory results and field observations, including graphic and photographic representations.	All water bodies around the Project location.	Every three (3) months during the construction phase.	Operational management of The Mandalika Tourism SEZ and PMU	1. Department of Environment and Sanitation of Central Lombok Regency. 2. Department of Environment and Forestry of West Nusa Tenggara Province.	1. Department of Environment and Sanitation of Central Lombok Regency. 2. Department of Environment and Forestry of West Nusa Tenggara Province.
8	Degradation of Environmental Sanitation	Disease vectors (e.g. flies, mosquitoes, cockroach, rats,	Operation of constructions camps and workers housing.	Data collection: Direct observation, field sampling.	All locations where potential disease vectors may occur and develop.	Every three (3) months during the construction phase.	Operational management of The Mandalika Tourism	1. Department of Environment and Sanitation of Central	1. Department of Environment and Sanitation of Central

No	Potential Environmental/Social Impact			Monitoring			Monitoring Institution		
	Potential Impact	Indicators/ Parameters	Source of Impact	Data Collection and Analysis Methods	Monitoring Locations	Time and Frequency	Implementing Body	Supervisor	Recipient of Report
		snakes) in open and populated areas.		Data will be presented through statistical analysis as appropriate, with descriptive analysis and graphic and photographic representations as appropriate.			SEZ and PMU	Lombok Regency. 2. Department of Environment and Forestry of West Nusa Tenggara Province.	Lombok Regency. 2. Department of Environment and Forestry of West Nusa Tenggara Province.
9	Traffic Disturbance	1. Numbers, density, and concentration periods of traffic in the Project vicinity. 2. Traffic accidents in the Project area.	1. Mobilization of equipment, materials, and workers. 2. Demobilization of equipment.	Data collection: Direct observations and counting of traffic flows and patterns. Data analysis will be presented through statistical and descriptive analysis, with graphic and photographic representation as appropriate.	Road networks surrounding and accessing the Project location and particularly construction sites.	Every three (3) months during the construction phase.	Operational management of The Mandalika Tourism SEZ and PMU	1. Department of Environment and Sanitation of Central Lombok Regency. 2. Department of Environment and Forestry of West Nusa Tenggara Province.	1. Department of Environment and Sanitation of Central Lombok Regency. 2. Department of Environment and Forestry of West Nusa Tenggara Province.
10	Disturbance of Occupational Health and Safety	Numbers and characteristics of reported workplace accidents, incidents, and near-misses.	1. Mobilization of equipment, materials, and workers. 2. Daily construction operations 3. Demobilization of equipment.	Data collection: Direct observation, contractor safety and lost time reporting. Data analysis will be presented through statistical analysis with descriptive tabulation.	Locations of Project construction.	Every three (3) months during the construction phase.	Operational management of The Mandalika Tourism SEZ and PMU	1. Department of Environment and Sanitation of Central Lombok Regency. 2. Department of Environment and Forestry of West Nusa Tenggara Province.	1. Department of Environment and Sanitation of Central Lombok Regency. 2. Department of Environment and Forestry of West Nusa Tenggara Province.
C	**OPERATIONAL PHASE**								
1	Increased Employment Business Opportunities	Number of operational workers; and establishment of enterprises to support operations and service tourists.	Work force recruitment process during the operational phase. Establishment of businesses to support tourism industry, and their labor force absorption.	Data collection: Surveys through questionnaire distribution. Leaseholder reporting of labor force. Local government and SEZ management licensing of businesses and vendors. Data analysis: Descriptive analysis, supported by graphic and photographic representations as appropriate.	Monitoring will take place at the affected villages in and around the Project area and at small and medium enterprise (SME) operational areas being established within the SEZ.	3. Continuously monitoring labor recruitment and business licensing and establishment. 4. Every six (6) months during the operation phase.	Operational management of The Mandalika Tourism SEZ and PMU	1. Department of Environment and Sanitation of Central Lombok Regency. 2. Land National Agency of Central Lombok Regency.	1. Department of Environment and Sanitation of Central Lombok Regency. 2. Department of Environment and Forestry of West Nusa Tenggara Province.
2	Increased Public Concern	Public complaints or protests regarding the Project operation.	1. Labor recruitment process and business and vendor licensing during the operational	Data collection: Survey through questionnaire distribution. Record keeping of PMU Grievance Redress Mechanism. Information from village	Monitoring will take place at the affected villages in and around the Project area and among SMEs operating in the SEZ.	During operational labor recruitment and business and vendor licensing.. 5. Every six (6) months during the operation phase.	Operational management of The Mandalika Tourism SEZ and PMU	1. Department of Environment and Sanitation of Central Lombok Regency. 2. Department of Environment and Forestry of West Nusa	1. Department of Environment and Sanitation of Central Lombok Regency. 2. Department of Environment and Forestry of West Nusa

No	Potential Environmental/Social Impact			Monitoring			Monitoring Institution		
	Potential Impact	Indicators/ Parameters	Source of Impact	Data Collection and Analysis Methods	Monitoring Locations	Time and Frequency	Implementing Body	Supervisor	Recipient of Report
			phase. 2. Operation of The Mandalika Tourism SEZ.	and District government. Data analysis: Descriptive analysis, tabulation and graphic representation as appropriate.				Tenggara Province.	Tenggara Province.
3	Air Quality Degradation	Ambient air quality parameters should comply with Government Regulation 41/ 1999, especially for dust/particles (PM10, PM2.5), SO_2, NO_2, CO, and Pb.	Operation of The Mandalika Tourism SEZ.	Data collection: Direct sampling of ambient air quality parameters. Data analysis: Air samples will be analyzed in an accredited laboratory.	Locations of wastewater treatment plants, solid waste management sites, and key traffic concentration intersections.	1. During activities with potential for increases in air pollutant emissions (e.g., Moto Gran Prix). 2. Periodically during the operation phase.	Operational management of The Mandalika Tourism SEZ and PMU	1. Department of Environment and Sanitation of Central Lombok Regency. 2. Department of Environment and Forestry of West Nusa Tenggara Province.	1. Department of Environment and Sanitation of Central Lombok Regency. 2. Department of Environment and Forestry of West Nusa Tenggara Province.
4	Increased Noise Level	Noise levels should comply with MoEF Decree KEP-48/ MENLH/11/1996 and IFC standards.	1. Operation of The MandalikaTourism SEZ . 2. Operation of infrastructure and support operations.	Data collection: Direct measurement of sound overpressure. Data analysis: Measurements will be averaged for daytime and nighttime periods and compared to National and IFC standards.	Locations of traffic concentrations, infrastructure and support facilities, hotels and residences as needed, and at sensitive nearby receptors.	1. Every three (3) months during the operation phase. 2. During unusual noise-producing events (e.g., Nyale Festival, Moto Gran Prix).	Operational management of The Mandalika Tourism SEZ and PMU	1. Department of Environment and Sanitation of Central Lombok Regency. 2. Department of Environment and Forestry of West Nusa Tenggara Province. 3. District/Sub-district/Village Government.	1. Department of Environment and Sanitation of Central Lombok Regency. 2. Department of Environment and Forestry of West Nusa Tenggara Province.
5	Degradation of Surface Water Quality	Monitoring will evaluate changes in surface water and sea water quality based on the following National regulations: 1. MoE Decree No 51/2004 (Sea Water Quality) 2. GoI Regulation No 82/2011 (Surface Water Quality) 3. MoH Regulation No 492/2010 (Clean/Drinking Water Quality) 4. Applicable International standards (IFC)	Operation of The Mandalika Tourism SEZ.	Data collection: Direct sampling of water quality parameters. Data analysis: Water samples will be analyzed in an accredited laboratory. Data will be presented in tabular representations and compared to the reference standards .	Monitoring will be conducted at selected monitoring locations that are deemed relevant in representing surface water and sea water quality as well as water supply quality.	Conducted every six (6) months during the operation phase.	Operational management of The Mandalika Tourism SEZ and PMU	1. Department of Environment and Sanitation of Central Lombok Regency. 2. Department of Environment and Forestry of West Nusa Tenggara Province.	1. Department of Environment and Sanitation of Central Lombok Regency. 2. Department of Environment and Forestry of West Nusa Tenggara Province.
6	Increase in Solid Waste Volume	Principles regulated in Law No 18/2008 requiring a modern National waste management system:. • Responsibility	Operation of The Mandalika Tourism SEZ.	Data collection: Records of waste generation, sorting, recycling, transport, and disposal. Data analysis: Data will be presented in tabular,	Waste collection centers in the Project area and public landfill where waste is disposed.	Conducted every six (6) months during the operation phase.	Operational management of The Mandalika Tourism SEZ and PMU	1. Department of Environment and Sanitation of Central Lombok Regency. 2. Department of Environment and	1. Department of Environment and Sanitation of Central Lombok Regency. 2. Department of Environment and

No	Potential Environmental/Social Impact			Monitoring			Monitoring Institution		
	Potential Impact	Indicators/ Parameters	Source of Impact	Data Collection and Analysis Methods	Monitoring Locations	Time and Frequency	Implementing Body	Supervisor	Recipient of Report
		• Sustainability • Benefits • Justice • Awareness • Social Cohesion • Safety • Security • Economic Value. Government Regulation No 81 of 2012		graphic, and narrative formats to clarify situation and trends.				Forestry of West Nusa Tenggara Province.	Forestry of West Nusa Tenggara Province.
7	Increase of Liquid Waste Volumes	Parameters of MoEF Regulation No P.68/Menlhk-Setjen/2016, Appendix I: pH, BOD, COD, TSS, Oil & Grease, Ammonia, Total Coliforms, Flow (L/person/day) No odos detected.	Operation of The Mandalika Tourism SEZ.	Data collection: Direct sampling of wastewater parameters. Data analysis: Wastewater samples will be analyzed in an accredited laboratory.	Inflow to wastewater treatment plants, effluent reused as irrigation water.	Conducted every six (6) months during the operation phase. Abnormal conditions in domestic wastewater treatment need to be reported to Regency Head, Governor, and Minister within 24 hours.	Operational management of The Mandalika Tourism SEZ and PMU	1. Department of Environment and Sanitation of Central Lombok Regency. 2. Department of Environment and Forestry of West Nusa Tenggara Province.	1. Department of Environment and Sanitation of Central Lombok Regency. 2. Department of Environment and Forestry of West Nusa Tenggara Province. 3. Abnormal conditions in wastewater treatment reported directly to Bupatih/Regency Head, Central Lombok Regency, with copies to Governor of West Nusa Tenggara Province and Minister of Environment and Forestry.
8	Hazardous Waste Volumes and Composition (B3 Waste)	No hazardous waste leakages or releases, other provisions of Government Regulation No 101 of 2014	Operation of The Mandalika Tourism SEZ	Data collectionAll records kept by all B3 Waste Generators on waste generation, storage, and transport for treatment, as well as all waste analyses, characteristics tests, and toxicology tests. Data analysis: Data will be tabulated and summarized in reports.	Hazardous waste collection centers in SEZ.	Conducted every six (6) months during the operation phase.	Operational management of The Mandalika Tourism SEZ and PMU	1. Department of Environment and Sanitation of Central Lombok Regency. 2. Department of Environment and Forestry of West Nusa Tenggara Province. 3. Minister of Environment and Forestry	1. Department of Environment and Sanitation of Central Lombok Regency. 2. Department of Environment and Forestry of West Nusa Tenggara Province. 3. Minister of Environment and Forestry
9	Degradation of Environmental Sanitation	Disease vectors (e.g., flies, mosquitoes, cockroaches, rats) in open areas, key operations, and within Leaseholder businesses.	Operation of The Mandalika Tourism SEZ	Data collection: Direct observations reports of pest control contractors. Data will be tabulated for presentation.	Public areas, hazardous waste collection centers, wastewater treatment plants, and waste management areas.	Conducted every six (6) months during the operation phase.	Operational management of The Mandalika Tourism SEZ and PMU	1. Department of Environment and Sanitation of Central Lombok Regency. 2. Department of Environment and Forestry of West Nusa Tenggara Province.	1. Department of Environment and Sanitation of Central Lombok Regency. 2. Department of Environment and Forestry of West Nusa Tenggara Province.

No	Potential Environmental/Social Impact			Monitoring			Monitoring Institution		
	Potential Impact	Indicators/ Parameters	Source of Impact	Data Collection and Analysis Methods	Monitoring Locations	Time and Frequency	Implementing Body	Supervisor	Recipient of Report
10	Disturbance of Occupational Health and Safety	Reported workplace accidents, incidents, near-misses, and lost work time.	SEZ operational departments, management of hotels and residential complexes	Data collection: Record keeping for Labor Department Data analysis will be tabulated for presentation.	Locations of work places throughout Project and Leaseholder operations.	Conducted continuouslylthroughout the operation phase, reported monthly, quarterly, and annually.	Operational management of The Mandalika Tourism SEZ and PMU Leasholder management	1. Department of Labor and Transmigration of Central Lombok Regency. 2. Department of Environment and Forestry of West Nusa Tenggara Province.	1. Department of Labor and Transmigration of Central Lombok Regency. 2. Department of Environment and Forestry of West Nusa Tenggara Province.
D	**POST-OPERATION PHASE**								
1	Increased Public Concern	Conflicts occurring due to work force problems.	1. Operational termination of The Mandalika Tourism SEZ and Leaseholder businesses 2. Work force termination.	Data collection: Survey through questionnaire interviews. Data analysis: Descriptive analysis.	Monitoring will take place at the management office of The Mandalika Resort and Leaseholders as well as government offices of affected villages/ district.	Conducted at end of the operation phase.	Operational management of The Mandalika Tourism SEZ and PMU	1. Department of Labor and Transmigration of Central Lombok Regency. 2. Department of Environment and Forestry of West Nusa Tenggara Province.	1. Department of Labor and Transmigration of Central Lombok Regency. 2. Department of Environment and Forestry of West Nusa Tenggara Province.

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Appendix A Environmental Quality Standard

Appendix B
Satellite Imagery of Project-Affected Area

Appendix C

Chance Find Procedure