



**TERMS OF REFERENCE FOR
ENVIRONMENTAL IMPACT ASSESSMENT (EIA)
OF
TIBAR BAY PORT, TIMOR-LESTE**

TABLE OF CONTENTS

1.	Introduction	4
2.	Background.....	4
3.	Details of the Proponent.....	6
4.	Details of the Consultants	6
5.	Legal Requirements	6
6.	Environmental and Social Issues	10
7.	Scope of Work.....	13
8.	Statement of Flexibility	22
9.	References	22

List of Acronyms

AAPA	American Association of Port Authorities
ADB	Asian Development Bank
BP	Best Practice
CBD	Convention on Biological Diversity
CEDA	Central Dredging Association
CITES Flora	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CFS	Container Freight Station
CSIRO	Commonwealth Scientific and Industrial Research Organization (Australia)
EHS	Environment, Health and Safety
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
ESIA	Environment and Social Impact Assessment
ESPO	European Seaports Organization
FAD	Fish Aggregation Device
GHG	Greenhouse Gas
GoTL	Government of Timor-Leste
HPC	Hamburg Port Consulting GmbH
IAPH	International Association of Ports and Harbours
ICS	International Chamber of Shipping
IEE	Initial Environmental Evaluation
IFC	International Finance Corporation (of WBG)
IMarEST	Institute of Marine Engineering, Science and Technology
IMO	International Maritime Organization (UN)
LOA	Length Overall (of ships)
MARPOL	International Convention on the Prevention of Pollution from Ships
NAGD	National Assessment Guidelines for Dredging (Australia, 2009)
NB-SAP	National Biodiversity Strategy and Action Plan
NGO	Non-Government Organization
NOAA	National Oceanic and Atmospheric Administration (USA)
PD	Project Document (under Decree Law 5/2011)
PIANC	World Association for Waterborne Transport Infrastructure
PASS	Potential Acid Sulphate Soils
PS	Performance Standard (IFC)
REA	Rapid Environmental Assessment
SEC	Stakeholder Engagement and Consultation process

TEU	Twenty Foot Equivalent Unit (shipping container)
ToR	Terms of Reference
UN	United Nations
UNEP	United Nations Environment Programme
UNTAET	United Nations Transitional Authority in Timor-Leste
WBG	World Bank Group
WEDA	Western Dredging Association
WODA	World Dredging Association (WODA)

1. INTRODUCTION

The Purpose of the Terms of Reference for Environmental Impact Assessment (EIA) of Tibar Bay Port, Timor-Leste is to provide a detailed description of the work to be carried out by the concessionaire of the Tibar Bay Port in order to fulfill the requirements for Environmental Licensing of the Port.

2. BACKGROUND

The Government of Timor-Leste (GoTL) proposes to construct a new port facility in Tibar Bay, 10 km west of Dili, to replace the transportation of cargo traffic through Dili Port which is becoming increasingly congested. GoTL will go to tender for a private party to undertake the design, construction, financing and operation of the new port for a 30-year time period. The winning bidder will be required to prepare an environmental impact assessment (EIA) for the Project as one of its initial responsibilities.

GoTL is being assisted with the development of the Port by the International Finance Corporation (IFC). GoTL, with IFC's assistance, has identified a preferred site for the Port within Tibar Bay, prepared a conceptual Port design, prepared an environmental and social Scoping Study that identifies likely primary and secondary impacts of the Port, and prepared a range of other supporting studies for Port development.

Tibar Bay, running approximately 1.6 km east-west and 1 km north-south, was selected by GoTL as the most appropriate site for the new Port based on a range of considerations. Seven alternative port site layouts were then considered within the Bay based on operational, engineering, environmental, social and cost factors. A site on the western side of the Bay, (Figure 1), was selected as the preferred site based on its operational suitability, minimal environmental and social impacts, and cost effectiveness. Port facilities at this site are likely to consist of a 26.9 ha container terminal, 2.7 ha general cargo area and 11.6 ha for offices and workshops.

Port construction in Tibar Bay will require the creation of a 200 m wide approach channel through the western side of the reef across the mouth of the Bay, establishing a 600 m diameter turning circle within the Bay, construction of a wharf, land reclamation and some landside developments. The site will require the removal of around 30 ha of marine habitat, most notably consisting of approximately 18 ha of seagrass bed, up to 1 ha of live coral and between 1-3 ha of mangrove, depending upon the final design.

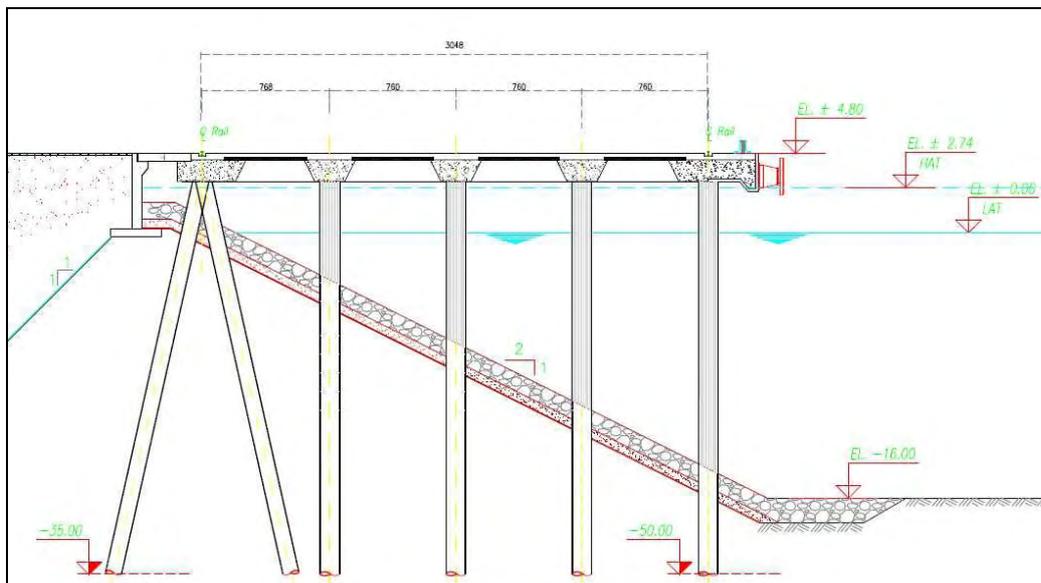
A concept design of the Port was developed by Hamburg Port Consulting (HPC), building on earlier work undertaken by Soros Associates (2012). A *Rapid Environmental Assessment* (REA) was conducted for the Port in September 2012 to provide a preliminary identification of environmental and social issues associated with the development. An environmental and social *Scoping Study* (2013)

was prepared by EcoStrategic Consultants to provide a more detailed identification of issues and assist GoTL in selecting the preferred site within Tibar Bay.

Figure 1: Preferred port site within Tibar Bay



Figure 2: Proposed Cross-section of Piled Quay Wall with Rock-Armoured Slope



3. DETAILS OF THE PROPONENT

Tibar Port is proposed to be developed by the Ministry of Public Works Transport and Communications (MoPTC), Government of Timor-Leste (GoTL), with design, construction and operation to be undertaken on behalf of MoPTC by a private company under a concession agreement. MoPTC's contact details for Port development are:

Contact: Inacio Morreira

Position: Vice Minister, Ministry of Public Works, Transport and Communications

Address: Rua Avenida Bispo de Medeiros, no 8, Mercado Lama, Dili

Phone: +670 3313755

The EIA will be undertaken by the concessionaire. These TOR will be included in the Concession Agreement between the GoTL and the private company.

4. DETAILS OF THE CONSULTANTS

The proponent – in this case the selected Concessionaire - will appoint the consultants, who will prepare the EIA and the Environmental Management Plan (EMP), and provide the details upon the commencement of the EIA.

5. LEGAL REQUIREMENTS

5.1 EIA Requirement and Preparation

Government licensing (or approval) of the Port is required under Timor-Leste *Decree-Law 5/2011 Environmental Licensing* prior to the commencement of construction. In accordance with Decree-Law 5/2011, Tibar Bay Port is classified as a Category A project as it may have significant environmental impacts, and as such it is subject to the preparation of an EIA and an EMP.

The EIA required under national law is equivalent to an Environmental and Social Impact Assessment (ESIA) required for IFC Category A projects. This ToR has been prepared to meet the GoTL requirements and IFC *Performance Standards*, to guide the preparation of the EIA in accordance with the project approval conditions. The EIA will be prepared by the Port Concessionaire, deemed to be the Project "Proponent".

The EIA shall identify and assess the environmental and social risks and impacts of the Port, and design and incorporate appropriate impact avoidance and mitigation measures into Project design, construction and operation. This shall be done in accordance with:

- national legislation and regulations;
- IFC Performance Standards (PS);
- WBG Environmental, Health and Safety (EHS) Guidelines (WBG Guidelines); and
- other relevant best practices (BPs).

The EIA shall be prepared using suitably qualified and experienced environmental and social specialists. The level of detail provided in the EIA shall be commensurate with the Project's environmental and social risks and impacts. The EIA shall assess the likely impacts of Port construction and operation, and plan appropriate impact avoidance and mitigation measures. The EIA

will be prepared at the same time as the detailed design of the Port is prepared, with close collaboration occurring between the EIA team and port design team to optimize the design.

5.2 Environmental Assessment and Approval Process

Regulatory approval of development projects is undertaken by the National Directorate for Environment (NDE) under *Decree-Law 5/2011 Environmental Licencing* that defines the environmental licensing system for public and private projects that are likely to produce environmental and social impacts. The licensing system sets out the process, procedures, roles and responsibilities of the Project Proponent. The Project ‘proponent’ is defined as “*a person, including a legal person, both public and private, who requires a licence to carry out a project*” in the Decree. The port proponent will be the private sector entity awarded the concession by GoTL to design, build and operate the Port (the ‘Concessionaire’).

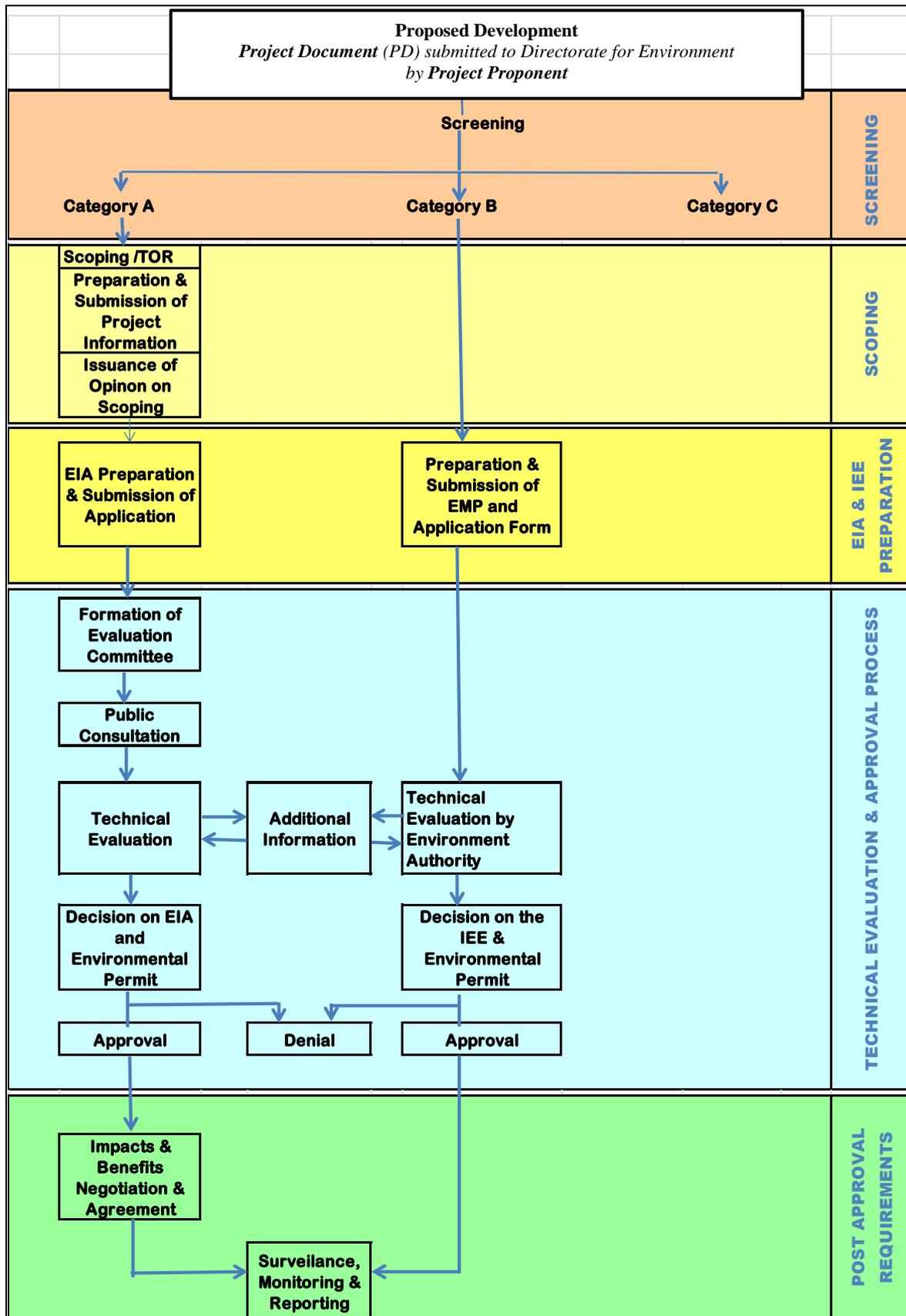
The EIA process commences when the project proponent prepares a Project Document (PD) and submits this to NDE. The PD identifies the proponent, describes the project, outlines the major likely impacts, provides layout drawings and site maps, and provides copies of any permits or government support already obtained. This has been completed by the Ministry of Transport and Communications as of May 2014.

In accordance with *Decree-Law 5/2011*, Tibar Bay Port is classified as a Category A development as it has “*the potential to cause significant adverse impacts*”, and therefore requires a detailed EIA. For Category A projects the proponent must prepare a Scoping Report and Draft ToR for the EIA for review by GoTL. GoTL has a maximum of 10 Business Days to review the ToR and provide comments to the proponent. The *Scoping Study* was completed in October 2013, and this document is the draft ToR.

The proponent – in this case the selected Concessionaire – then prepares the *Draft EIA* in compliance with the approved ToR, incorporating an Environmental Management Plan (EMP), and submits this to NDE for assessment. NDE establishes an Evaluation Committee consisting of representatives of relevant agencies and institutions to review the *Draft EIA*, and the report is made available for public review. The maximum *Draft EIA* review period, including technical review and consultation, is 50 days.

The *Final EIA* is prepared by the proponent taking into account the comments received from the Evaluation Committee’s technical review and public consultation, then submitted to NDE for approval. If the project is approved, an Environmental Permit is issued and may contain conditions of consent, including the requirement to implement the mitigation and monitoring measures set out in the EIA, EMP and other Project management plans.

Figure 3: Timor-Leste Environmental Impact Assessment and Licensing Process



Source: ADB, 2011.

5.3 Standards, Guidelines and Good industry Practice

In addition to Timor-Leste legal requirements and guidelines, the EIA shall comply with the following standards, guidelines and good international industry practice (GIIP).

5.3.1 World Bank / IFC Guidelines and Performance Standards

The EIA shall take into account World Bank Group (WBG) and IFC guidelines and performance standards, including, but not limited to:

- *IFC Performance Standards on Environmental and Social Sustainability*¹ (IFC, 2012);
- *Environmental Health and Safety (EHS) General Guidelines* (WBG, 2007);
- *EHS Guidelines for Ports, Harbors, and Terminals* (WBG, 2007); and
- *Stakeholder Engagement: A Good Practice Handbook for Companies Doing Business in Emerging Markets* (IFC, 2007).

The EIA shall also be prepared in accordance with all applicable IFC Performance Standards (PS). Specific PSs that are known to apply to this development regardless of the site selected within Tibar Bay are:

- PS1: Assessment and Management of Environmental and Social Risks and Impacts.
- PS2: Labor and Working Conditions
- PS3: Resource Efficiency and Pollution Prevention
- PS4: Community Health, Safety, and Security
- PS5: Land Acquisition and Involuntary Resettlement
- PS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources

Depending upon the site selected, PS8: Cultural Heritage may also apply.

Where WBG EHS Guidelines and IFC PSs differ from Timor-Leste regulations, the Project shall achieve whichever requirement, standard or guideline is more stringent.

5.3.2 Good International Industry Practice

The design, construction and operation of the Port shall comply with good international industry practice (GIIP) through the incorporation of impact avoidance and management measures into the design, construction and operation of the Project. The EIA shall identify and specify relevant GIIP to avoid and manage environmental and social risks and impacts associated with port design, construction and operation. GIIP that requires consideration is provided by the following organisations:

- International Maritime Organisation (IMO) - regime for shipping;

¹ IFC Performance Standards and World Bank Group EHS Guidelines - http://www.ifc.org/wps/wcm/connect/Topics_Ext_Content/IFC_External_Corporate_Site/IFC+Sustainability/Sustainability+Framework/Sustainability+Framework+2012/#PerformanceStandards.

- International Association of Ports and Harbours (IAPH);
- International Chamber of Shipping (ICS);
- World Association for Waterborne Transport Infrastructure (PIANC);
- World Dredging Association (WODA);
- Central Dredging Association (CEDA);
- Western Dredging Association (WEDA);
- Institute of Marine Engineering, Science and Technology (IMarEST);
- United Nations Environment Programme (UNEP);
- Organization for Economic Cooperation and Development (OECD);
- American Association of Port Authorities (AAPA) - Environmental Management Handbook; and
- European Seaports Organization (ESPO) - Green Guide.

While Timor-Leste has yet to ratify the main IMO Conventions, or implement them nationally through domestic law, the Port will be planned, built and operated to fully comply with all relevant IMO conventions, standards and guidelines, consistent with GIIP and IFC's PSs and guidelines.

6. ENVIRONMENTAL AND SOCIAL ISSUES

The environmental and social *Scoping Study* (2013) for the Project identified the potential risk and impact issues associated with the proposed development. These issues, depending upon the final site utilized in Tibar Bay, include:

Table 1: Potential Environmental and Social Impacts

	Potential Impacts	Feature Affected or Cause
Environmental	Biodiversity destruction/degradation	Coral, mangroves, seagrass beds, tidal flats, deeper water, indirect impact on key biodiversity areas, ship strike of larger marine creatures
	Changes to Bay and coastal hydrodynamics	Broad channel opened to the sea Wharf Land reclamation
	Bay foreshore erosion	Broad channel opened to the sea Wave refraction off the wharf Ship movement within the Bay
	Seawater quality deterioration	Dredging Spills – ships and cargo Releases from ships Seabed disturbance from ship movement within the Bay
	Sea/land degradation	Dredge material disposal Land reclamation Land-based cut and fill

		Induced landside development
	Drainage and sedimentation	Altered catchment drainage into the Bay
	Solid waste	Construction waste Ship waste Port waste
	Wastewater	Ship wastewater Port sewage Port stormwater runoff
	Noise	Construction activities Port operation Road traffic
Socio-economic	Resettlement	Households (between 2-20+)
	Loss or reduction in livelihoods	Effects on fishing, aquaculture, salt production, tidal flat resource collection, etc
	Business relocation	Oil terminal Ship maintenance facility
	Employment	APORTIL staff reduced New Port positions
	Loss of cultural heritage sites	Canoe launching site Freshwater springs Possible rock jetty*
	Damage to or loss of domestic water supply	Natural springs
	Restrictions to local access	Port structures blocking Bay access
	Safety	Construction Ship approach and docking Port operation
	Traffic	To/from the Port
	Reduced visual amenity	Tourist lodge, local houses, etc

* - feature unlikely to be affected by the use of proposed site.

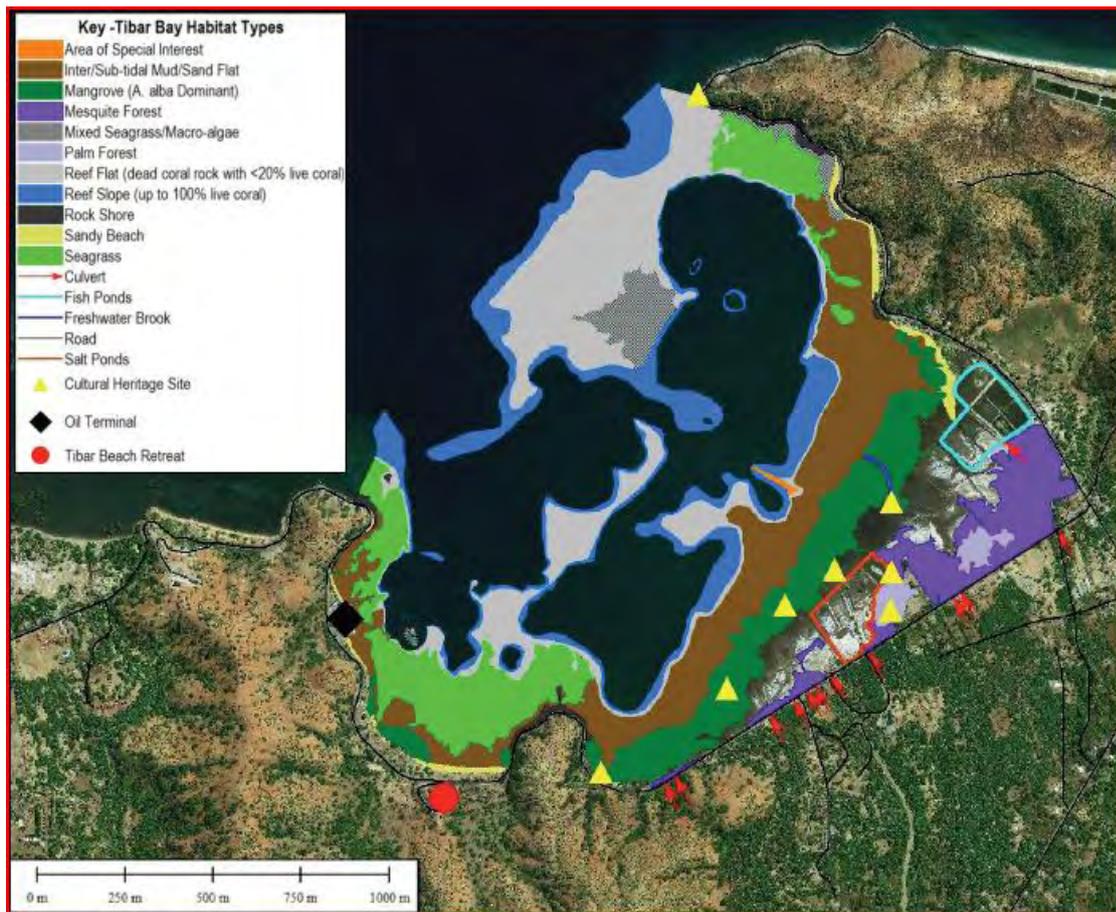
The above issues will be assessed in the EIA at site, watershed, regional, national and cross-border levels as appropriate. Cross-border issues are likely to include potential impacts on marine ecosystems/biodiversity and seawater quality.

6.1 Study Area

The proposed study area includes the Suco Tibar and Suco Ulmera in the Sub-district of Bazarte, the marine area of Tibar Bay and the lower Tibar watershed. Nearby areas will also be considered where a potential influence on the Port or direct or indirect impact from the port may occur.

The main biophysical features in the Bay, consisting of coral, mangroves, intertidal areas, seagrass beds, foreshore and surrounding hills, are shown in Figure 4. Tibar Bay is located 10 km west of Dili and extends approximately 1.6 km east-west and 1 km north-south (160 ha). The Bay is bounded by low hills to the east and west, with Tibar catchment running approximately 6 km south up to an elevation of around 750 m asl. This medium sized catchment (around 30 km²) drains into the southern side of the Bay via a few defined watercourses and across a broad sediment delta (deposited behind the main road) in large storm events.

Figure 4: Environmental and Social Features Within Tibar Bay



6.2 Timeline for EIA

The EIA process is envisaged to take about 11 months, of which 4 months will be intensive data collection in the field as per Task 6 Collection of Baseline Data described below. The Stakeholder Engagement and Public Consultations will start prior to the field work and will last until the end of the EIA process. A detailed time line will be provided by the consultant appointed by the concessionaire. Table 2 provides an estimate of the time use.

Table 2: EIA Program

EIA Tasks / Milestones	Month												
	1	2	3	4	5	6	7	8	9	10	11	12	
1. Submit EIA ToR													
2. ToR approval and commencement of the EIA													
3. Background research / literature review													
4. Stakeholder engagement within the EIA													
5. Field surveys and impact assessment ¹ Collection of Baseline Data including Marine, Terrestrial and Social Data													
6. Preparation of the Draft EIA													
Milestone 1: Draft EIA													
7. NDE technical review													
8. Preparation of the Final EIA													
Milestone 2: Final EIA													

9. Submit EIA for approval														
Milestone 3: Environmental Permit														
10. Apply for other project permits (as required)														
Milestone 4: Other Permits (as required)														

1 - timed to account for seasonality (e.g. marine water quality sampling during (i) the monsoon season, and (ii) the dry southeast trade winds season; turtle surveys during the nesting season.

7. SCOPE OF WORK

EIA preparation shall involve the following minimum scope of work (but not necessarily be limited to these tasks), with many tasks to be undertaken concurrently. The structure of the EIA shall generally comply with the outline presented in Annex 1, but subject to change as required for the Project.

Task 1 – Review of Previous Studies and Information

Review Port planning and related environmental and social studies to identify and understand likely environmental and social risks and impacts likely to be associated with the development, and baseline conditions, including:

- *Due Diligence Draft Report IIA Technical and Operational Analysis* (HPC, 2013);
- *Environmental and Social Scoping Study* (EcoStrategic Consultants, 2013);
- *Rapid Environmental Assessment* (Millette, 2012);
- *Port Alternatives* (IFC, 2013);
- public consultation information; and
- other relevant information.

The *Scoping Study*, this *EIA ToR* and recent public consultation feedback are the main guides for initially identifying relevant environmental and social issues and risks associated with Port construction and operation, although the EIA team shall identify any other relevant issues during EIA preparation. The *Port Alternatives* summary discusses the operational, engineering, environmental and social rationale applied to select the preferred Port site. Other relevant environmental and social information on Tibar Bay, the district, region and nationally shall also be reviewed.

Task 2 – Collaboration on Port Design / Alternatives Analysis

The EIA team shall collaborate with the port design engineers during the preparation of the detailed design to ensure that appropriate impact avoidance and mitigation measures are built into the design. This process will commence early and involve on-going input during the design process, including: (i) joint site inspections by EIA team members and the design engineers to identify and discuss key issues and opportunities, and assigning responsibility for investigation/design/review; (ii) the presentation of recommended impact avoidance and mitigation measures and options to the engineering team early during detailed design; (iii) on-going input into the design process; and (iv) review of the detailed design prior to finalisation.

Based on this work, the EIA team shall: (i) draft the alternatives section of the EIA (incorporating the *Port Alternatives* (IFC, 2013) discussion), describing the alternatives that were examined and the rationale for the selected of each chosen alternative. This section will also assess the ‘do nothing’ port development scenario; and (ii) report on the agreed impact avoidance and mitigation measures for Port design, construction and operation in the impact assessment and EMP sections of the EIA.

Task 3 – Project Description

A detailed project description shall be prepared based on the selected port design, illustrated with layout plans and area maps. This description shall include a summary of the design and port operation. The general specifications for the port are presented in Table 3.

Table 3: General Specifications for Tibar Bay Port

Port Component	General Description
Port purpose	A terminal primarily designed for container handling and vehicle and machinery imports, with the capacity for occasional general cargo operations.
Design vessels	3,500 TEU container vessel with 245 m LOA (base case); and 7,000 TEU container vessel with 280 m LOA (long-term prediction).
Berths	Parallel berthing for both design vessels, requiring an ultimate quay length of 630 m, with development of one berth (for 245 LOA vessel) prior to 2028 , followed by the second berth (for 280 m LOA vessel).
Dredging	Capital dredging of approximately 3.9 million m ³ of material, including through sections of coral reef, to provide a 200 m wide access channel, a 600 m diameter turning circle in the Bay and berth pockets, all dredged to -15 m below Chart Datum.
Dredge material disposal	Use of approximately 2 million m ³ as fill in land reclamation and dumping of the remainder (approx. 1.9 million m ³) at an offshore sea dumping site (to be selected in accordance with the London Dumping Protocol)
Quay wall	Piling to create a quay wall (630 m long) in front of the reclaimed land, and armouring of the slope under the deck to guarantee stability against sea erosion and turbulence generated by ships.
Land reclamation	Reclamation of around 25-30 ha of the Bay and adjacent inter-tidal flats, mangroves and low coastal land with 2~ million m ³ of fill, to be sourced from dredged material to create land for shoreside infrastructure, including: <ul style="list-style-type: none"> • container and imported vehicle handling and storage yard, • container wash-down and quarantine facility (possible), • customs area, • Container Freight Station (CFS), • maintenance workshops, • administration and other support buildings; and • parking, main gate and road access.
Breakwater	Possible construction of a small breakwater on the western to shelter berths from swell and waves.
Boat berths	Development of dedicated berths for tugs, line boat and/or pilot boat.
Supporting infrastructure	Provision of other supporting infrastructure, including: <ul style="list-style-type: none"> • vehicle and machinery fueling station, • electrical supply system and lighting, • potable water supply system, • fire-fighting system, • rainwater / stormwater drainage system, • sewerage system, • solid waste management system, and • marine navigation aids to mark the port entrance and access channel, in accordance with IALA Region A standards.

Estimated environmental cost and positive impacts

Environmental /Social Costs to be incurred during Construction Phase	Compensation payments to local residents : Resettlement of 10 households (USD 50,000 each)
	Loss of livelihood (fishing, grazing, salt production) up to 15 households (USD 50,000 each)
	Estimate for financial loss of holiday resort: USD 1,000,000
	Provisional, rough upper bound for environmental costs: USD 5,000,000 <input type="checkbox"/> Pollution, noise, etc. <input type="checkbox"/> Mangroves (large), corals (moderate), mudflat development (minor to moderate)
Benefits expected during Operation Phase	Additional investments in the context of the partial reurbanisation of Dili Port, including respective direct/indirect income effects etc.
	Avoided overland traffic congestion and pollution as well as road accidents that otherwise arise from diversion of containers and break bulk through Kupang.

Task 4 – Review of Policy, Legal and Administrative Framework

Review and describe national and local (District, Sub-district and Suco) environmental and social laws/decrees, regulations, policies and strategies that relate to Project siting, design, approval and operation, and the Project’s obligations under these laws and policies, including:

- environmental laws, natural resources laws, social laws, planning laws, transport laws, maritime laws and fisheries laws;
- traditional customary laws (Tarah Bandu) and how the project will comply with these.
- all relevant national policies, strategies and action plans, including but not limited to the SDP (GoTL, 2011a), the National Infrastructure Plan (GoTL 2009), the National Biodiversity Strategy and Action Plan (NB-SAP) (GoTL 2011b) and National Adaptation Program on Climate Change (NAP-CC) (GoTL, 2010) and how the project will comply with these.
- international treaties and conventions that Timor-Leste is a signatory to or is in the process of considering (e.g. Convention on Biological Diversity (CBD), Convention on Combating Desertification (CCD), UN Framework Convention on Climate Change (UNFCCC), relevant maritime conventions and instruments of the International Maritime Organization (IMO)). Describe how the Project will comply obligations under these laws/decrees, regulations, etc.

Identify and describe applicable WBG EHS Guidelines, IFC PSs and guidelines, and the guidelines of any co-financiers. Explain the requirements, standards and guidelines relating to Project siting and design, approval, mitigation measures and treatment standards, public consultation, and monitoring

and reporting².

Task 5 – Stakeholder Engagement / Public Consultation

Comprehensive stakeholder engagement shall be undertaken by the Concessionaire/EIA team during the preparation of the EIA in accordance with *Decree Law 5/2011*, relevant IFC Performance Standards and the *IFC Stakeholder Engagement Handbook (2007)*, commensurate with Project risks and impacts. This will form a significant component of the Concessionaire's early stakeholder engagement, which will continue over the life of the Concession.

This engagement process will build upon GoTL's initial engagement, learning lessons from the effectiveness of this with different stakeholder groups, to focus on the detailed project design and EIA preparation phases of the project. As such, the Concessionaire shall coordinate its activities with those of GoTL to ensure that the process continues in a structured manner, with both parties contributing to the activities as required.

Key elements of stakeholder engagement during EIA preparation shall include:

- Systematic identification of project stakeholders and their interests;
- Review of regulatory requirements for stakeholder engagement on projects;
- Seeking input from stakeholders on how they wish to be consulted;
- Preparation of a stakeholder engagement plan commensurate with project impacts;
- Provision of information ahead of consultations on environmental and social impacts;
- Using consultation to enhance mitigation and agree compensation and benefits;
- Maintaining involvement with government-led consultation;
- Reporting changes in the evolving project design to stakeholders on a regular basis;
- Documenting the process and results of consultation;
- Integrating stakeholder information across the project planning functions.

(taken from IFC, 2007)

The Concessionaire shall prepare a Stakeholder Engagement Plan that covers the above elements and how stakeholder engagement activities will be integrated into the Concessionaire's environmental and social management system.

Engagement will primarily be with the affected people to: (i) gather baseline information and discuss mitigation, compensation and benefits (livelihood restoration, land use planning and other project mitigation measures); (ii) keep people informed about Project developments; and (iii) respond to issues as they arise. Engagement will also involve the broader community, Government agencies and NGOs.

Task 6 – Collection of Baseline Data

Baseline environmental and socioeconomic conditions relevant to Project impacts and risks shall be

² The World Bank EHS Guidelines - <http://www.ifc.org/ifcext/sustainability.nsf/Content/EHSGuidelines>.

described for the Project's area of influence, including covering any associated facilities and potential indirect impacts. Baseline information shall be relevant to likely significant and secondary Project risks and impacts, with the level of detail commensurate with the significance of the associated risks and impacts (type, scale and location). It shall cover the range of physical, biological, socioeconomic and physical cultural features that are likely to be affected. Baseline information shall be presented for different spatial levels (e.g. site, adjoining area, Sucos (Tibar and Ulmera), Sub-district (Bazartete), District (Liquica) and nationally).

Secondary data shall be used where relevant (e.g. statistical records, census records, government reports, NGO publications, academic studies and texts, topographic maps, aerial photos, satellite imagery). Where secondary information is inadequate or unreliable, primary data shall be collected by specialists applying industry-recognized survey and analysis methods. All field sampling shall be designed to provide a statistically rigorous baseline for future monitoring, establishing reference or control sites as required. Field sampling shall take account of seasonal factors. Features will be mapped in a GIS where appropriate.

Baseline conditions will form the benchmark against which Project effects are predicted and measured. The baseline description shall include, but not be limited to:

Marine: bathymetry; oceanography, hydrodynamics and coastal processes; seawater quality; marine sediment characterization (including potential acid sulphate soils - PASS), including potential contamination; marine habitats and biodiversity; studies to support dredge material disposal.

Terrestrial: topography; geology; hydrology and drainage; climate; watershed condition; land use/cover; air quality; water availability and quality; noise; habitats and biodiversity, including nearby protected areas; infrastructure.

Socioeconomic: region/district/Suco context (governance, administration, population, indigenous people, education and literacy, settlement pattern, land tenure, public health and amenities, vulnerable groups, etc); socioeconomic conditions of directly and indirectly affected local households, including livelihoods (marine and land use, other), income, assets, living conditions; vulnerable groups; local businesses; cultural heritage and archaeology; views of local people.

Field surveys and/or modeling required to determine baseline conditions at Project sites and surrounding features that are likely to be affected by the Project include:

Marine

- Hydrodynamics and coastal processes – Bay and coastline (based on oceanographic data and modeling);
- Marine sediment quality and PASS – on proposed excavation/dredging sites. Describe the parameters set out in the Australian National Assessment guidelines for Dredging (NAGD, 2009) and guidelines under the London Protocol (e.g. IMO 2009 and IMO 2005). The geological survey is testing 15 samples tested for PASS, which may be sufficient;
- Marine habitat and biodiversity – within and immediately adjacent to the Bay, including mangroves, seagrasses, coral reefs and fisheries, building upon previous studies. The presence of any IUCN Red List species or *UNTAET Regulation No. 2000/19 Protected Areas* listed species. A survey of marine mega-fauna (cetaceans, whale sharks and manta rays) will also be undertaken between Tibar and Atauro;
- Benthic communities - Project footprint;
- Fish Aggregation Devices (FADs) (rompongs) – offshore;

- Seawater quality;
- Underwater noise survey;
- Dredge material dump site studies (in accordance with London Protocol and Aus NAGD 2009);
- Survey and mapping of FADs (rompongs).

Terrestrial

- Habitat/vegetation survey - project footprint and adjoining areas;
- Wildlife survey - project footprint and adjoining areas, Tasitolu wetland;
- Land use survey – directly affected land and adjacent areas;
- Sedimentation study – assessment of Tibar catchment sediment loads entering the Bay;
- Water quality sampling – surface and groundwater.

Social

- Socioeconomic survey, census and asset register of directly affected households – Port footprint, adjacent areas and households reliant on Bay natural resources for their livelihoods – to identify the persons who will be displaced by the project, determine who will be eligible for compensation and assistance;
- Socioeconomic survey of indirectly affected households living in proximity to the Bay;
- Cultural heritage and archaeology survey – Port footprint (including potential historical “rock jetty” if it may be affected);
- Any field surveys required for Economic Valuation of Ecosystem Services.

The EIA team will identify the need for any additional baseline surveys and conduct these during EIA preparation as required.

Task 7 – Assessment of Risks and Impacts

Project risks and impacts shall be assessed in accordance with the requirements and standards set out in *Decree Law 5/2011*, IFC Performance Standards, WBG guidelines and other relevant guidelines. The assessment will cover all risks and impacts using recognized methods as applicable, but shall focus on the potentially significant impacts. Impacts shall be identified in the context of the Project’s area of influence, covering: the Project footprint (Port facilities, dredge material disposal sites, borrow areas, etc) and other areas likely to be directly affected by Project activities; indirect impacts from unplanned but predictable developments; associated facilities³; and cumulative impacts⁴. Impact

³ Associated facilities - facilities that are not funded as part of the project and that would not have been constructed or expanded if the project did not exist and without which the project would not be viable (IFC, 2012).

⁴ Cumulative impacts – result from the incremental impact on areas or resources used or directly impacted by the project, from other existing, planned or reasonably defined developments at the time the risks and impacts

avoidance and mitigation measures shall be designed for the Project to enable the Port to achieve compliance with national legislation, IFC PSs and WBG EHS Guidelines, whichever is more stringent. These measures shall be incorporated into Project design, construction and operation.

Impact assessment shall take into account the views and concerns of key stakeholders, including affected people, representatives of affected communities, relevant authorities and NGOs. Impacts shall be described in terms of: being adverse or beneficial, direct / indirect, cumulative, localised / regional / cross-border / global, duration, and permanent / temporary / reversible. Wherever possible impacts shall be objectively described (quantified) rather than simply subjectively described.

Impact assessment will address, but not be limited to, the following impact issues:

Environmental

- **Alteration of Bay/coast hydrodynamics** – changes to tides, surge levels, circulation patterns, coastal and Bay erosion and accretion, from land reclamation, dredging, the wharf and possible breakwater;
- **Sea/land degradation** – dredge material disposal (type and volume of material, site options, disposal methods), Bay foreshore erosion, etc;
- **Seawater quality deterioration** – Port stormwater runoff, potential spills, ship movements in the Bay, etc;
- **Catchment drainage and Bay sedimentation** – processes, volumes, etc;
- **Land use change** – conversion of public and private land uses into port facilities, areas, current land use and cover;
- **Habitat destruction/degradation and biodiversity loss** - loss of benthic and pelagic habitat from dredging and land reclamation; clearing of mangroves; loss of tidal flats; impact on Bay fisheries and nursery values; offshore dredge material dumping; degradation from increased turbidity / sedimentation from dredging and dumping, oil and chemical spills; effects of changes to hydrodynamics and coastal processes on marine habitats; impacts on marine turtles, dugong, crocodiles, cetaceans, whale sharks and manta rays (e.g. vessel strikes, underwater noise, port and ship lighting).
- **Ecosystem services** - loss of Bay/offshore fisheries, seagrass beds, coral, mangroves, tidal flat resources, by area and type; etc;
- **Pests and invasive species** – potentially introduced from construction machinery, ship ballast, hull fouling and cargo;
- **Water use** - Port domestic water supply, container wash-down, supply to ships – volume, quality and source/s;
- **Solid waste** - solid waste management, including MARPOL-compliant ships-waste reception facilities – types, volumes, disposal methods;
- **Wastewater and stormwater** – sewage treatment and discharge; process water (container wash-down, vehicle and machinery cleaning bays, workshops); hazardous material spills;

identification process is conducted (IFC, 2012). Limited to adverse impacts on key valuable environmental and social components.

ship discharges (bilge water, ballast water, sewage, garbage and anti-fouling) and MARPOL compliance; and stormwater runoff treatment;

- **Dredging and dredge material disposal** – impacts from construction and maintenance dredging on seawater quality, marine habitats and resources within the Bay, at dredge material disposal sites and along the coast; type and volume of material, site options, disposal methods, including PASS management;
- **Air quality** – construction and operation, including dust and vehicle emissions;
- **Underwater noise** - construction phase (e.g. pile driving) and operational phase (e.g. ships engines), with special consideration of impacts on cetaceans, whale sharks and manta rays using the straits between Tibar Bay and Atauro Island;
- **Noise** - Port activities, increased traffic along the main road – predicted noise levels compared to existing background levels;
- **Greenhouse gas emissions, climate change impacts and adaptation** – estimate of Port GHG emissions during construction and annual emissions during operation (black, green and blue carbon emission estimates); measures to reduce emissions; predicted climate change impact on the Port; adaptation measures to address impacts.

Social

- Land acquisition and physical displacement – number of households and people affected, land types and areas acquired, etc;
- Economic displacement / loss of livelihoods – loss of subsistence livelihoods (fisheries, mangroves, akadiru palm, mesquite forest, grazing areas, salt ponds, fish ponds, other marine and terrestrial resources); local businesses and employment (including the impact on workers at the existing Dili port); compensation and alternative livelihoods.
- Population change – resettlement, in-migration;
- Loss of facilities and amenities – loss/replacement of water supply, sanitation, Bay access, etc;
- Loss of cultural heritage sites – types and significance of sites;
- Safety – worker and community safety during Port construction and operation;
- Traffic – during construction and operation, primarily between Dili and the Port; and
- Reduced visual amenity – particularly from locations close to the Port (western side) and from businesses or activities that utilise the views (e.g. Tibar Bay Resort).

Task 8 – Preparation of Management Plans

Environmental and social management plans / operational procedures shall be prepared detailing the measures to be implemented during the pre-construction, construction and operation phases of the Project to mitigate impacts and improve Project performance. Measures shall be developed based on the mitigation hierarchy, commencing with avoiding risks/impacts, followed by minimizing them, and finally compensating/offsetting residual impacts.

Each plan shall generally include: a summary of the significant adverse environmental and social

impacts and risks that the measures are designed to avoid/mitigate/offset/compensate; aims of the actions/measures contained in the plan; associated project approvals, permits, conditions, and the standards against which they are assessed; the proposed measures/actions; implementation responsibilities; monitoring program (monitoring, audits, corrective actions, reporting); implementation schedule; and cost estimates and funding sources.

At a minimum, the following management plans shall be prepared:

Environmental

- **Environmental Management Plan (EMP)** – setting out impact mitigation measures to be implemented during the pre-construction, construction and operation phases of the Project. The EMP shall describe the main likely impacts of the Project, describe specific feasible and cost-effective mitigation measures that will be implemented to avoid or reduce adverse impacts, and set out implementation responsibilities and the monitoring regime.
- **Dredging Management Plan** – construction and maintenance dredging and dredge material management:
 - dredging minimization: e.g. alignment and positioning of channels, swing basins(s) and berths to optimize existing depth and natural scouring; use of real-time Under Keel Clearance (UKC) modeling and tidal windows to optimize ship-loadings
 - characterization of dredged material (based on Aus NAGD 09 and IMO sampling guidelines);
 - productive use of dredge material (e.g. land reclamation);
 - offshore dump site selection - in accordance with the London Protocol, all related IMO guidelines and Aus NAGD 2009; considering impacts on Atauro and neighbouring islands, fisheries and rompongs;
 - impact mitigation: turbidity containment, sediment minimization, real time monitoring of dredge plume dispersal with pre-set environmental trigger values at receptor sites (e.g. light over seagrasses or sedimentation on reefs) to enable real time, reactive management;
 - management, mitigation and monitoring of dredging – monitoring of dump-plume dispersal; real time monitoring during dumping with pre-set environmental trigger values at receptor sites to enable real time, reactive management.
- **Port Marine Spill Contingency Plan** - consistent with IMO, ITOPF and IPIECA planning guidelines.
- **Biodiversity Action Plan** – Bay management to maintain/improve ecosystem health, and proposed biodiversity offsets (e.g. *Avicinea marina* mangrove rehabilitation in the Bay, establishment of community-based Marine Protected Areas (MPAs) in Tibar Bay, on the coast immediately west of Tibar Bay, at other significant coastal sites such as Hera, Metinaro and Manatuto.

Social

- **Livelihood Restoration Plan** (to be prepared by Grantor) – if the Project only involves economic displacement (no physical displacement), a Livelihood Restoration Plan will be

developed setting out compensation for affected persons (including workers at the existing Dili port) and/or communities and other assistance measures. The Plan will establish the entitlements of affected persons and/or communities and will ensure that these are provided in a transparent, consistent, and equitable manner. Note: if physical displacement is required then livelihood restoration measures shall be incorporated into the Resettlement Action Plan rather than producing a separate plan. The **Livelihood Restoration Plan** and the Resettlement Action Plan will be developed and implemented the Grantor based on the data provided by the concessionaire in the EIA.

Task 9 – Coordination, Reporting, Approvals and Transaction Support

The EIA team shall manage the entire EIA process, including related stakeholder engagement. The team shall closely coordinate and collaborate with the Port design team and other technical consultants engaged by the Concessionaire, and with GoTL, to ensure that:

- the timing of the EIA process is aligned with the Port design process and required regulatory approval;
- recommendations to minimize adverse environment and social impacts of the Port are incorporated into the engineering design, construction and operation activities; and
- any reasonable concerns and issues identified during stakeholder engagement are addressed in the planning of design, construction and operation of the Port.

The Concessionaire shall convene joint team meetings with the EIA team and design team to identify issues and opportunities relating to Port design and the avoidance and mitigation of environmental and social impacts.

The Concessionaire, with the assistance of the EIA team, shall provide support to GoTL regarding environmental and social matters relating to the Government’s public engagement program as the need arises.

The Concessionaire, as the Project ‘Proponent’, shall submit the Draft EIA and Final EIA to GoTL and shall apply for any other regulatory approvals required for the Port.

The EIA team/Concessionaire shall prepare monthly progress reports for GoTL and IFC.

8. STATEMENT OF FLEXIBILITY

The EIA study area, project alternatives and impact issues being assessed may be subject to change as the EIA process proceeds and new information is obtained. Where this occurs the TOR of the EIA and the EMP will be expanded to ensure that these new issues are adequately covered, without any compensation being due to the Concessionaire (unless otherwise expressly provided for in this Agreement).

9. REFERENCES

Geotechnik Ltd., 2012. *Geotechnical Investigation Report, Tibar Bay, Dili, Timor-Leste. Report to RDTL Ministry of Infrastructure, Republica Democratica de Timor-Leste.* Report No. GET11-8020.

GoTL, 2011. *The National Biodiversity Strategy and Action Plan of Timor-Leste (2011-2020).* Democratic Republic of Timor-Leste, Convention on Biological Diversity, UNDP and GEF.

GoTL, 2011. *Timor-Leste Strategic Development Plan (SDP) 2011-2030.* Government of Timor-Leste.

HPC, 2013a. *Technical Consulting Services in Support of Transaction Advisory Services for Private Sector Participation in the Greenfield Tibar Bay PPP (Phase 1). Due Diligence Draft Report I: Strategic, Commercial and Economic Analysis*. Report to the International Finance Corporation.

HPC, 2013b. *Technical Consulting Services in Support of Transaction Advisory Services for Private Sector Participation in the Greenfield Tibar Bay PPP (Phase 1). Due Diligence Draft Report II: Technical and Operational Analysis*. Report to the International Finance Corporation.

HPC, 2013c. *Technical Consulting Services in Support of Transaction Advisory Services for Private Sector Participation in the Greenfield Tibar Bay PPP (Phase 1). Due Diligence Draft Report IIb: Concession Options and Scenarios*. Report to the International Finance Corporation.

HPC and PRDW Aldunate Vasquez, 2013a. *Tibar Bay Port - Study of Wave Conditions by Means of Numerical Models - Task I: Wave Climate Study*. Report to the International Finance Corporation.

HPC and PRDW Aldunate Vasquez, 2013b. *Tibar Bay Port - Study of Wave Conditions by Means of Numerical Models - Task II: Wave Agitation*. Report to the International Finance Corporation.

HPC and PRDW Aldunate Vasquez, 2013c. *Tibar Bay Port - Study of Wave Conditions by Means of Numerical Models - Task III: Long Wave Resonance*. Report to the International Finance Corporation.

HPC and PRDW Aldunate Vasquez, 2013d. *Tibar Bay Port - Study of Wave Conditions by Means of Numerical Models - Change Order No. 1: Vessel Motion Study*. Report to the International Finance Corporation.

IMO, 2009a. *Guidance Document for Minimizing the Risk of Ship Strikes with Cetaceans*. IMO MEPC Circular MEPC.1/Circ.674 - 31 July 2009.

IMO, 2009b. *Guidance for the development of action lists and action levels for dredged material*. IMO Publication 1537E.

IMO, 2005. *Guidelines for sampling and analysis of dredged material intended for disposal at sea*. IMO Publication 1538M.

Millette, C., 2012. *Rapid Environmental Assessment - Proposed Tibar Bay Port. Draft Report to Major Projects Secretariat, Ministry of Finance, Government of Timor-Leste*.

Payze, M., 2011. *Public Private Partnership (PPP) Approaches to Port Development in Timor-Leste. Report to the International Finance Corporation (World Bank Group)*.

Raaymakers, S., dos Santos, C., Griffay, D., Leal-Neto, A., Quintas, J., Rickert, A., and Sofonia, J. 2013a. *Proposed Tibar Bay Port - Environment and Social Scoping Study: Inception Report*. Report to International Finance Corporation and Government of Timor-Leste. EcoStrategic Consultants, Cairns.

Raaymakers, S., dos Santos, C., Griffay, D., Leal-Neto, A., Quintas, J., Rickert, A., and Sofonia, J. 2013b. *Proposed Tibar Bay Port - Environment and Social Scoping Study*. Report to International Finance Corporation and Government of Timor-Leste. EcoStrategic Consultants, Cairns.

Soros Associates, 2012. *Hydrographic, Geophysical, Topographic and Geotechnical Surveys, Concept Master Plan, Economic and Financial Analysis, Next Stage Recommendations of Proposed Tibar Bay Port, Timor-Leste. Draft Report at Close of Milestones*.

10. ANNEX 1: EXAMPLE OF EIA STRUCTURE

The following Table of Contents is provided for general guidance only, as an example of the minimum content required in the EIA. This is expected to be developed during the preparation of the EIA.

1. INTRODUCTION

2. PROJECT DESCRIPTION

3. EIA METHODOLOGY

4. ASSESSMENT OF ALTERNATIVES

- 4.1 No development
- 4.2 Coastline locations
- 4.3 Tibar Bay sites
- 4.4 Port design

5. RELEVANT LAWS, REGULATIONS, POLICIES AND GUIDELINES

- 5.1 National
- 5.2 Local
- 5.3 International

6. BIO-PHYSICAL ENVIRONMENT

- 6.1 Topography and bathymetry
- 6.2 Geology, soils and marine sediments
- 6.3 Climate
- 6.4 Hydrodynamics, hydrology and water quality
- 6.5 Land use/cover
- 6.6 Ecosystems and biodiversity
- 6.7 Oceanography and coastal processes
- 6.8 Air quality
- 6.9 Water sources and quality
- 6.10 Transport and infrastructure
- 6.11 Climate change and sea level rise

7. SOCIOECONOMIC AND CULTURAL ENVIRONMENT

- 7.1 Administration
- 7.2 Demographics
- 7.3 Land tenure
- 7.4 Livelihoods and employment
- 7.5 Public health
- 7.6 Cultural heritage

8. IMPACTS AND MITIGATION MEASURES - CONSTRUCTION PHASE

- 8.1 Land-based construction activities
 - 8.1.1 Impacts on terrestrial biodiversity - clearing of site vegetation
 - 8.1.2 Demolition of existing buildings & infrastructure
 - 8.1.3 Construction of new facilities
 - 8.1.4 Sourcing or construction & fill material
 - 8.1.5 Changes to land-form, erosion, drainage & runoff
 - 8.1.6 Traffic
 - 8.1.7 Impacts on air quality - noise, dust & fumes
 - 8.1.8 Impacts on soil quality
 - 8.1.9 Impacts on freshwater quality, including groundwater

- 8.1.10 Terrestrial socioeconomic & cultural impacts
- 8.2 Marine-based construction activities
 - 8.2.1 Impacts of dredging
 - 8.2.2 Impacts of dredge spoil disposal
 - 8.2.3 Impacts of land reclamation
 - 8.2.4 Impacts of wharf construction, pile driving & sheet pile driving
 - 8.2.5 Installation of mooring dolphins and aids to navigation
 - 8.2.6 Potential introduction of marine pests
 - 8.2.7 Potential marine spills (oil and chemicals)
 - 8.2.8 Marine waste management
 - 8.2.9 Marine socioeconomic & cultural impacts
- 8.3 Potential construction phase impacts on Key Biodiversity Sites

9. IMPACTS AND MITIGATION MEASURES - OPERATIONAL PHASE

- 9.1 Land-based operations
 - 9.1.1 Traffic
 - 9.1.2 Impacts on air quality - noise, dust & fumes
 - 9.1.3 Impacts on soil quality
 - 9.1.4 Impacts on freshwater quality, including groundwater
 - 9.1.5 Container wash-down and effluent discharge
 - 9.1.6 Stormwater drainage and discharge
 - 9.1.7 Hazardous cargoes and dangerous goods handling
 - 9.1.8 Terrestrial socioeconomic & cultural impacts
- 9.2 Marine-based operations
 - 9.2.1 Impacts of maintenance dredging and dredge spoil disposal
 - 9.2.2 Impacts on hydrodynamics and coastal processes
 - 9.2.3 Potential marine spills
 - 9.2.4 Potential introduction of marine pests (bio-fouling & ballast water)
 - 9.2.4 Ships' anti-fouling
 - 9.2.5 Ships waste management
 - 9.2.6 Marine socioeconomic & cultural impacts
- 9.3 Potential operational phase impacts on Key Biodiversity Sites

10. ENVIRONMENTAL MANAGEMENT PLAN

- 10.1 Management responsibilities
 - 10.1.1 Traffic
 - 10.1.2 Impacts on air quality - noise, dust & fumes
- 10.2 Impact mitigation measures
- 10.3 Monitoring program
 - 10.3.1 Environmental monitoring
 - 10.3.2 Resettlement monitoring
- 10.4 Auditing program
 - 10.4.1 Environmental compliance audits
 - 10.4.2 Resettlement compliance audits
- 10.5 Staff requirements
- 10.6 Implementation cost estimates
- 10.7 Institutional support

11. ENVIRONMENTAL OFFSETS

12. ECONOMIC ANALYSIS

- 12.1 Project cost
- 12.2 Marine-based operations
 - 12.2.1 Direct economic benefits

- 12.2.2 Indirect economic benefits
- 12.3 Cost of impact mitigation measures

13. STAKEHOLDER ENGAGEMENT & COMMUNITY CONSULTATION

- 13.1 Information dissemination
- 13.2 Interviews
- 13.3 Group meetings
- 13.4 Public Hearings
- 13.5 Recommendations of affected people

14. CONCLUSIONS & RECOMMENDATIONS

REFERENCES

APPENDICES