

NON TECHNICAL SUMMARY

INTRODUCTION

The Ministry of Transport and Communication (MTC) is planning to rehabilitate and expand the Nacala Port, located on Nampula Province in Mozambique (Figure 1), due to the expected increase in cargo volume and the urgent need to repair the aging facilities.

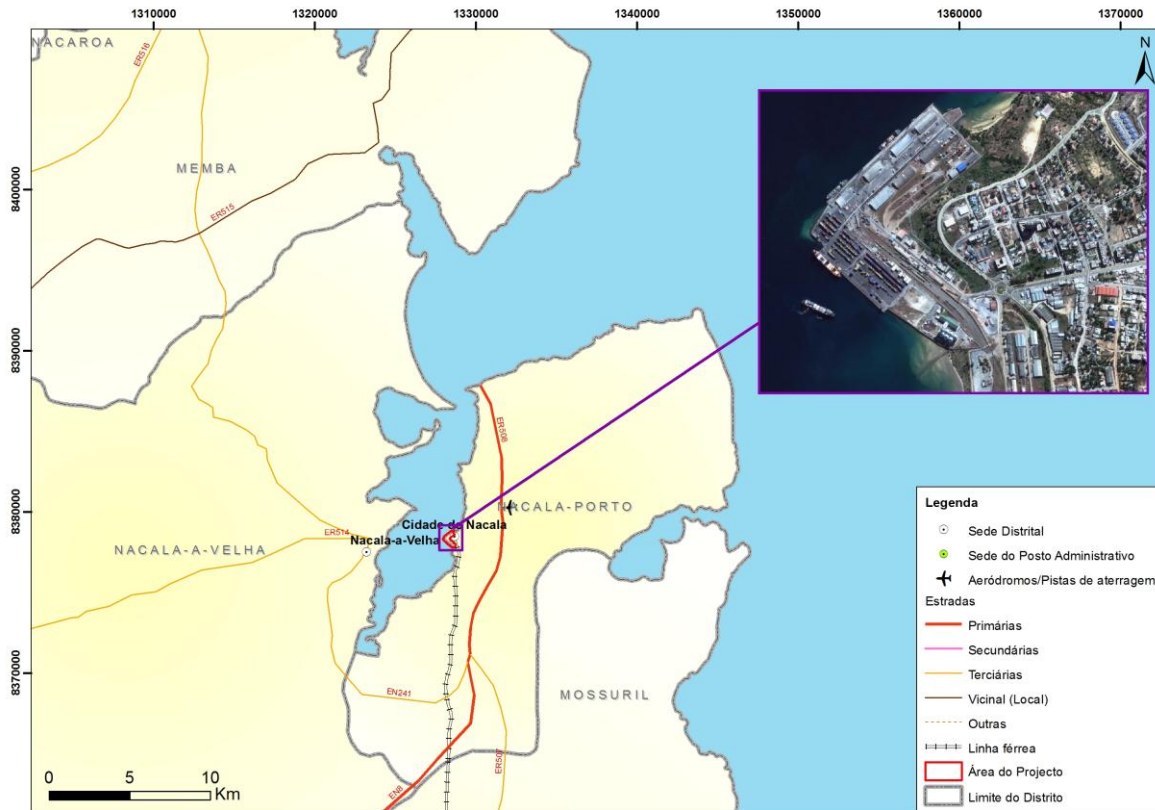


Figure 1: Localization of Nacala Port

The rehabilitation and expansion of Nacala Port was classified as a Category A project by the Ministry for Coordination of Environmental Affairs (MICOA). Therefore an EIA and Public Consultation are required according to Decree 45/2004 of 29th of September.

In accordance with EIA Regulations (Decree 45/2004 of 29th of September) the following steps in the Environmental Impact Assessment process are required:

- Pre-feasibility Study and Scoping (EPDA): and Terms of Reference (ToRs) for the EIS.
- Environmental Impact Study (EIS): corresponds to the current phase. The EIS is carried out based on the Terms of Reference for the EIA approved by MICOA. On approval of the EIA by MICOA an environmental license will be emitted.

The MTC has appointed Impacto, Projectos e Estudos Ambientais Lda (Impacto, Lda) in partnership with CPCS Transcom International Limited, as independent environmental consultant, to undertake the EIA in accordance with Mozambican legislation. The EIA was carried out by a multidisciplinary team covering several specialist areas.

OBJECTIVES AND SCOPE OF THE EIS

The main objectives of the present Environmental Impact Study Report (EISR) are to:

- Describe the main biophysical and socioeconomic features of the study area.
- Assess the potential impacts (positive and negative) of the Project and Project-related activities on the biophysical and socio-economic environments.
- Identify mitigation measures to avoid or minimize negative impacts and to enhance potential positive impacts.
- Prepare Environmental Management Plans to minimize the potential negative impacts during the rehabilitation and operational phases of the Project.

LEGAL FRAMEWORK

The Environmental Law No. 20 of 1997 requires that an EIA, including public consultation, is undertaken for all activities that can have an impact on the environment and society.

The Decree on Environmental Impact Assessment Process (Decree No. 45/2004 of 29th of September) establishes a set of procedures to be followed when carrying out an EIA and compiling an Environmental Impact Study (EIS).

In accordance with EIA Regulations (Decree 45/2004 of 29th of September) the following steps in the Environmental Impact Assessment process were carried out (as mentioned the project was classified as Category A by MICOA):

- Pre-feasibility Study and Scoping (EPDA) and preparation the Terms of Reference (ToRs) for the EIA.
- Environmental Impact Study (EIS) based on the Terms of Reference for the EIA approved by MICOA. On approval of the EIA by MICOA an environmental license will be emitted.

Besides EIA Legislation, the proponent will need to take into consideration several other requirements/legislation in the design, construction and operation phases of the proposed project. These legal considerations should consider current legislative framework in Mozambique, key international conventions to which Mozambique is a signatory and relevant environmental and social guidelines and standards such as JICA Guideline for Environmental and Social Consideration and International Finance Corporation (IFC) Performance Standards.

Key Mozambican legislation relevant to the project

- Environmental Law (Law nr. 20/97 of 1st October)
- Regulations for the Environmental Impact Assessment Process (Decree 45/2004 of 29th September and Decree 42/2008 of 4th November, which repeals some Articles of Decree 45/2004)
- Regulations on Environmental Inspection (Decree n.º 11/2006 of 15th of June)
- Environmental Audit Regulations (Decree n.º 25/2011 of 15th of June)
- Sea Law (Law n.º 4/1996 of 4th January)
- Regulations for the Prevention of Pollution and Protection of the Marine and Coastal Environment (Decree No. 45/2006 of 30th of November)
- Regulation for Environmental Quality Standards and Effluent Emissions (Decree No.18/2004 of 2nd of June and Decree 67/2010 of 31st of December)
- Water Law (Decree 16/91 of 3rd August 1991) and National Water Policy (Resolution n.º 46/2007)
- Waste Management Regulations (Decree n.º 13 of 2006 of 15th June)

Key International Conventions relevant to the project

Key international conventions to which Mozambique is a signatory include the International Convention for the Prevention of Pollution from Ships 73/78 (MARPOL), the International Convention on the Prevention of Marine Pollution by Dumping of Wastes and other Matter (London Convention), and the United Nations Convention on Law of the Sea 1982 (UNCLOS).

A description of legislation relevant to the Project is summarized in Chapter 3 of the EISR.

PROJECT DESCRIPTION

Nacala Port is located along the south-east coast of Nacala Bay, a wide and sheltered bay with a depth of 60 m and 800 m wide at the entrance of the bay. Nacala City is located in Nampula Province, northern Mozambique (40° 40' E and 14° 27' S) – (see Figure 1 above)

The project includes the main activities:

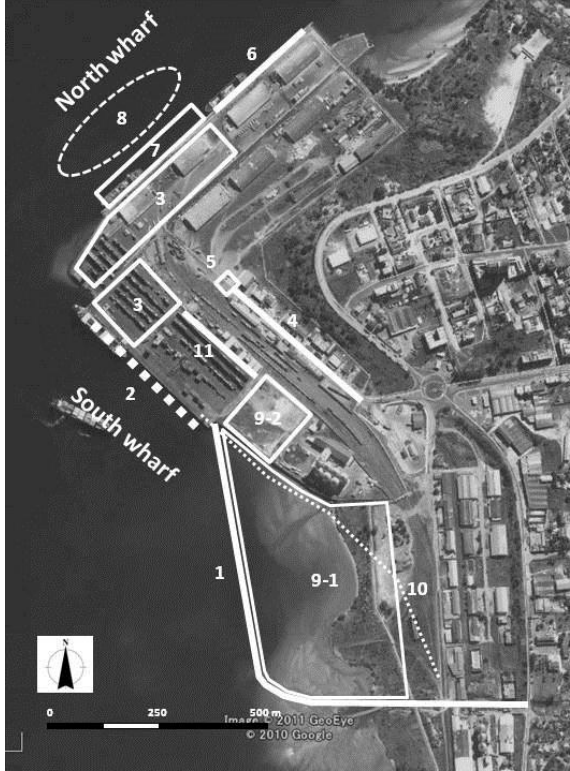
- Dredging on the north wharf (200 000 m³).
- Landfill and ground leveling on south wharf (67 000 m²).
- Rehabilitation and construction of infrastructures.

More detailed information regarding the main components of the Project and associated construction activities are indicated in Table 1.

In addition to the activities proposed for the Rehabilitation and Expansion of Nacala Port analyzed by JICA (2011) a coal terminal will be constructed to drain the coal coming from

Moatize mine in Tete. The area planned to construct the coal terminal is inside the port in the south wharf near the container yard. Currently this yard is not being used for port operations. It should be highlighted that the use of the yard as a coal terminal in the south wharf of Nacala Port is temporary (only during 2012 and 2013) until the plans of improvements for the yard in the JICA (2011) proposal are undertaken.

Table 1: Main Project components.

Location/layout of the main components	Component	Specifications	Main construction works	Dates	
	1	Construction of bypass access road (south wharf)	Road: ~1,0 m x 10 m Revetment: ~680 m <u>Revetment works</u> <ul style="list-style-type: none"> ▪ Rubble and armor stone deposition <u>Road works</u> <ul style="list-style-type: none"> ▪ Backfill and soil compaction ▪ Concrete pavement 	April 2014- April 2015	
	2	Installation of fenders (south wharf)	33 fenders	Installation of rubber fenders of cylinder type at intervals of 12 m	July to August 2014
	3	Construction of new container yard (north & south wharf)	Approx. 42 000 m ²	<ul style="list-style-type: none"> ▪ Demolition of existing structures ▪ Removal of existing pavement ▪ Excavation and backfill ▪ Pavement (of port road, RTG foundation, south container yard, etc) 	April to August 2014
	4	Widening of entrance road	Wide ~2 m (2 lane to 3 lane) Length ~ 365 m	<ul style="list-style-type: none"> ▪ Demolition of existing structures ▪ Excavation ▪ Pavement 	August to September 2014
	5	Widening of entrance gate	1 gate	<ul style="list-style-type: none"> ▪ Demolition of the existing gate ▪ Assemble of the new gate 	September - November 2014
	6	Repair of apron (north wharf)	310 m	<ul style="list-style-type: none"> ▪ Demolition of existing structures ▪ Removal of existing pavement ▪ Excavation ▪ Pavement 	May to August 2014
	7	Construction of new container wharf (north wharf)	Pier structure – 320 m x 40m Water depth -14 m Steel pipe piling (dia. 1200/800) - 615 nos	<ul style="list-style-type: none"> ▪ Demolition of existing structures (warehouses No. 0, 1 and 2; demolishing of the damage pier, etc) ▪ Pier structure: Pile driving (steel pipe & sheet) ▪ Installation of concrete blocks ▪ Backfill ▪ Pavement ▪ Installing fenders 	August 2014 to May 2016
	8	Dredging in front of new container wharf	Dredging from depth - 10 m to -14 m	<ul style="list-style-type: none"> ▪ Installation of silt curtains around the dredging site ▪ Dredging with grab dredger ▪ Transport of dredge material to the reclamation land ▪ Store the dredge material 	March to November 2015
	9-1	Construction of stockyard (behind bypass access road)	Approx. 67 000 m ²	<ul style="list-style-type: none"> ▪ Impermeabilization of the area reclaimed ▪ Landfill and ground leveling ▪ Pavement 	March to August 2015
	9-2	Construction of stockyard (south wharf)	Approx. 17 000 m ²	<ul style="list-style-type: none"> ▪ Ground leveling of bulk yard 	May to August 2015
	10	Installation of rail track (south wharf)	Construction of rail tracks on the reclaimed land and on the container yard	<ul style="list-style-type: none"> ▪ Removal of existing pavement ▪ Excavation and backfill ▪ Pavement ▪ Rails introduced on ballast tracks and on concrete slabs 	June to August 2015
	11	Construction of rail container terminal (south wharf)	Approx. 6 000 m ²	<ul style="list-style-type: none"> ▪ Removal of existing pavement ▪ Excavation and backfill/ Pavement 	August to November 2014
Temporary coal terminal (temporary location in the yard marked with 9-2 in the figure above)	12	Coal terminal construction (south wharf)	<ul style="list-style-type: none"> ▪ Earthmoving, excavation and backfill ▪ Impermeabilization ▪ Pavement ▪ Improvement of some “connections” and railways lines (partially) 	April to September 2012	

PROJECT JUSTIFICATION

In order to respond to the rapid increase in the traffic volume of the Nacala Corridor which is under improvement, the Port is expected to be the main gateway providing efficient services for the landlocked countries in its hinterland, as well as for the northern provinces of Mozambique. Furthermore, the Port has the potential to become a hub port which serves for the larger areas in south-eastern Africa, taking advantage of its deep water basin.

According to JICA (2011) predictions, by 2030 (considering the base case scenario) the annual cargo volume (bulk and cargo) handled will be approximately of 50 million tons (MT) and the number of moored ships (bulk carriers) will be 785. In 2008, the volume of cargo handling was 995 mil tons and 109 bulk carriers docked in Nacala port.

From the viewpoint of regional development of Northern Mozambique, the Port is also expected to play a crucial role as the driving force of the development (note that the development of this region so as to fully realize its high potential in agriculture, forestry and mining is one of the top priorities of the nation) - JICA, 2011.

To accomplish those purposes, that includes enhance its handling capacity, Nacala Port should be urgently rehabilitated, fully furnished, and properly operated due to (JICA, 2011):

- Significantly degraded existing terminals and infrastructures (due to insufficient maintenance).
- Insufficient understanding of terminal operation as well as lack of modernized cargo-handling machinery and high indirect costs is hindering the productive operation of the Port.
- Not suitable present dimensions of the container terminal for modern container handling.
- Inadequate depth of the basin alongside the conventional terminal for bulk cargo handling.

The rehabilitation of the Port will be also important in terms of occupational health and safety.

The proposed Project is necessary mainly for the following reasons:

- The future cargo volume, in particular container and bulk cargoes, is forecasted to increase significantly, which is partly due to the various government initiatives that are planned or implemented in the region such as:
 - Establishment of the Nacala Special Economic Zone (SEZ)
 - Promotion of agriculture/forestry projects in the northern region of Mozambique
 - Development of Nacala Corridor
- Volume of export/import container cargo is forecasted to increase from the present volume of around 50,000 TEU to 210,000 TEU by 2020. Without the proposed

Project, the Port will face in the near future major restrictions in container cargo handling as the present container cargo handling capacity is limited to around 100,000 TEU.

- Volume of export/import bulk cargoes (e.g. clinker, fertilizer, wheat, rice, wood chip) is forecasted to increase from the present volume of 0.6 million tons to 2.5 million tons by 2020. The proposed Project will enhance the efficiency of the bulk cargo handling operation since the South Wharf will be reserved exclusively for bulk cargo handling once the new container wharf becomes operational.
- The existing port facilities are aging and could hinder future cargo handling operations without rehabilitation.

In conclusion, the proposed Project is vital as the Port is expected to play a key role in the future development of the northern region and hinterland countries, which consequently will lead to an increase in employment opportunities and improvement in living standards of the region.

In addition to the port infrastructure, there are various factors that prevent the port from achieving efficient operation. Some of those are:

- Congestion at the port entrance road
- Mixed use of the South Wharf by containers and dry bulk
- The facility layout of the Port was designed as the railway terminal and it is not suitable for transport by trucks.
- The number of units of container handling equipment

BASELINE DESCRIPTION

Biophysical Environment

Climate

On average, Nacala receives 999 mm of rainfall annually, with 735 mm falling between in December and mid-March. September is the driest month. The annual average temperature is 25.5 °C, with average daily temperatures above 27 °C from November to February. Nacala is generally hot and humid throughout the year with humidity consistently above 75%,

The study area is classified as area of medium risk for tropical cyclones. The main cyclone season is between November and April. In the last 40 years Nacala coastline has been struck by four following cyclones: Berthe in 1968, Gladys in 1976, Nadia in 1994 and Jokwe in 2008.

Coastal and Marine Physical Features

The Nampula Province coastline is characterized by a sequence of rock dominated shores and sandy beaches. The continental shelf is very narrow and deeply scarred with submarine canyons. The sea plunges to over 2500 m in depth within 30 km of the shore. Behind the shoreline the land rises to over 500 m within 20 to 30 km.

Nacala is the biggest bay along this stretch of coast and comprises three small sub-bays, Fernão Veloso (at the entrance of the bay), Namelala, Muananculo and Bengo Bays. The Fernão Veloso Peninsula, at the eastern entrance of the Bay, protects the Bay from the ocean thereby reducing the influence of waves at Nacala Port.

Water depth in front of the container terminal is more than 15 m at the north side and about 11 to 14 m at the south side. The water depth in front of the general cargo terminal is about 10 m and it is about 8 to 10 m at the south west side.

Nacala Bay has a north-south orientation approximately 18 km in length and 4 km wide with an average depth of 20m. The average volume of the bay is about 1.5 km³, with a total surface area of 70 km². About 80% of the bay has water depths greater than 20 m. Water depths at of the channel entering the bay exceed 60 m. The distance between the port and the high seas is about 13 km.

The tidal range varies from 0.5 m to 3 m in neap and spring tides, respectively. The tidal prism in Nacala's Bay is about 0.06 km³ (during neap tides) and 0.2 km³ (during spring tides). It is during the spring tides that most of the water of the bay is renewed (in general, in two days). This is important because the time of residence of possible pollutants in the bay is short and, in general, water quality in the bay is good. The turbidity of marine waters of bay is low as no permanent watercourses draining into the bay.

The coastline of Nacala bay is asymmetric. The shoreline of the eastern margin of the bay is only slightly indented whilst the western margin of Nacala Bay is characterized by a number of secondary bays separated by elongated "pontas". These bays communicate with numerous "languas"¹ and wetlands inundated by the tides.

Soils and Erosion Potential

The eastern margin of Nacala Bay comprises a mosaic of lithic soils and medium textured brown soils associated with the calcareous sandstones of the Pemba formation. Both types are soils prone to erosion in the rainy season.

Erosion on steep slopes within Nacala City is a problem affecting urban areas including the Nacala Port area.

Conservation Areas

No conservation areas occur within, or near to, the Port area. The two closest protected areas are Baixo Pinda Forest Reserve (located on the western headland that forms the entrance to Nacala Bay) and the Matibane Forest Reserve (located in Mossuril district, approximately 30 km south of Nacala along the coast).

¹ "languas" is local name for small lagoons with clay-mud bottoms

Marine Habitats

Sensitive marine habitats, such as coral reefs, mangroves, seagrass beds, sandy beaches and intertidal zones occur within Nacala Bay.

Small and disperse patches of coral colonies occur inside Nacala Bay (URSS, Defense Ministry, 1986). However, the most well developed coral are at the entrance of Nacala Bay: Fernão Veloso Reef, Mulala Reef and Naeli Reef (40°39'597"E; 14°27'542"S).

In the coastal area extending from Nacala to Mozambique Island, Massingue and Bandeira (2005) recorded 12 species of seagrass, 10 of which were recorded in Fernão Veloso Bay at the entrance for Nacala Bay. The Fernão Veloso seagrass communities are considered to be one of the most important seagrass beds along the Mozambican coast covering an area of 75 km² (MICOA, 2009)

Mangrove formations are largely absent from the eastern shore of Nacala Bay (i.e. the shore along which Nacala Port is located). Small patches of mangrove forest occur along the shoreline in sheltered areas in Namelala, Muananculo and Bengo Bays. The mangroves at the head of Nacala Bay (i.e., Bengo Bay) have been affected by the construction of "salinas" (salt pans).

The intertidal flats of Nacala Bay comprise mainly sandy and muddy sediments, which supports a variety of invertebrates, mainly molluscs and crustaceans.

Although sandy beaches are not extensive within Nacala Bay, extensive sandy beaches occur along the headlands at the entrance to the Bay (Fernão Veloso in the east and Baixa Pinto in the west).

Marine Fauna

According to MICOA (2009) 18 species of marine mammals (dolphins, whales and dugongs) have been recorded along the Mozambican coast of which 8 have been reported for the littoral waters of Nampula Province (Humpback dolphin; Spinner dolphin; Bottle nose dolphin; Risso's dolphin; Melon headed dolphin; Short finned pilot whale; Sperm whale and Humpback whale). The humpback dolphin, the bottlenose dolphin and humpback whale have been recorded in Nacala Bay.

Five species of marine turtles: Green turtle (*Chelonia mydas*), Hawksbill (*Eretmochelys imbricata*), Olive ridley (*Iepidochelys olivacea*), Loggerhead (*Caretta caretta*) and Leather back (*Dermochelys coriacea*) occur along the Mozambican coast. The sandy beaches occurring along the headlands at the entrance to the Bay (Fernão Veloso in the east and Baixa Pinto in the west) provide suitable habitats for nesting turtles. At last two species are known to nest on the beaches of northern Nampula Province: the green turtle and the hawksbill turtle.

Terrestrial Habitats

Os habitats terrestres que ocorrem nas vizinhanças do porto encontram-se visivelmente modificados pela actividade humana, caracterizada principalmente pela construção de infra-estruturas habitacionais, corte de vegetação para lenha e cultivo de pequenas hortas em áreas altamente susceptíveis à erosão. O remanescente de mata e floresta brenha das

dunas, quer na forma de pequenas manchas, quer como árvores e arbustos isolados, podem ser observados em ravinas dunares existentes na área norte do porto.

Tendo grande parte da vegetação sido removida, a diversidade de fauna é também baixa, dominada por espécies de roedores, aves, répteis pequenos (principalmente lagartos/lagartixas) e insectos.

Socioeconomic Environment

Location

O porto de Nacala é o terceiro maior com águas profundas na costa oriental de África o que possibilita condições excepcionais de navegabilidade e a entrada/saída de navios sem limitação durante todo o dia sem necessitar de dragagem.

Nacala-Porto é uma cidade portuária localizada a 180 km a Nordeste da Cidade de Nampula e um dos municípios da província de Nampula e ocupa uma extensão de cerca de 400 km², e possui uma densidade populacional de 636 habitantes/km².

A área do projecto localiza-se mais precisamente no bairro de Maiaia, no Posto Administrativo (PA) de Mutiva. Neste PA reside a maioria da população do município, 198,364 habitantes, o que corresponde a 96% da população do município de Nacala.

Socio-economic activities

De um modo geral, no Município de Nacala a população dedica-se a várias actividades económicas destacando-se a pesca, o comércio formal e informal, a agricultura e emprego no sector formal, sobretudo no porto e caminhos-de-ferro de Nacala. A agricultura e a pesca são actividades desenvolvidas particularmente nas zonas peri-urbanas. A pecuária é uma actividade de pouca expressão na região sendo o cabrito, aves e gado bovino as espécies criadas.

Pesca

Na província de Nampula a pesca artesanal constitui uma importante actividade socioeconómica. Esta é uma das províncias com maior produção pesqueira artesanal reportada em águas marítimas com apreciáveis capturas de peixe, camarão, cefalópodes, caranguejo, lagosta e tubarão (Chaúca e Álvaro, 2010). Nampula é também a província com o maior número de pescadores, embarcações e artes de pesca artesanal (IDPPE, 2009^a e IDPPE, 2009^b). Para além da pesca artesanal, pescarias industriais e semi-industriais são igualmente registadas nas águas marítimas ao largo da província de Nampula.

Em Nacala Porto, um dos 8 distritos costeiros de Nampula, a pesca artesanal é importante embora este não seja dos distritos com maior expressividade pesqueira nesta província (IDPPE, 2009^a e IDPPE, 2009^b). Estas pescarias artesanais marítimas têm um carácter local e costeiro relativamente à zona onde são exercidas e, na sua maioria, são comerciais. Também ocorre a colecta de recursos pesqueiros, essencialmente invertebrados, em áreas entre-marés, uma actividade essencialmente de subsistência. Dominam as capturas espécies de pequenos pelágicos e invertebrados (Chaúca e Álvaro, 2010).

Em Nacala Porto a pesca artesanal envolve um universo considerável de pescadores e outros intervenientes, embarcações e artes de pesca, distribuídos por 12 centros de pesca. Os métodos de pesca predominantes são, por ordem de importância, a pesca à linha de mão, o emalhe de superfície e de fundo, o arrasto para a praia, o cerco, gaiolas e palangre.

Os centros de pesca mais próximos do Porto de Nacala são os de Madalena e Mucuaiba, em Nacala Porto, e os centros de pesca de Nacala-a-Velha e Xiropa, em Nacala-a-Velha (a uma distância de cerca de 4 e 5 km, respectivamente). Madalena localiza-se a Sul do porto a cerca de 1 km de distância deste. Trata-se de um centro de desembarque aonde afluem também os revendedores de pescado e aonde se desembarcam as capturas do arrasto, emalhe e linha de mão. Mucuaiba dista também cerca de 1 km do porto, a Norte deste. Para além do desembarque do pescado neste centro verificam-se actividades de processamento, concerto de embarcações e de artes de pesca assim como venda de pescado. Após Mucuaiba, para Norte, localiza-se o centro Muzuane a cerca de 4 km do porto.

A composição das capturas da pesca artesanal varia de acordo com o método e área de pesca. O emalhe de superfície, o cerco e o arrasto capturam essencialmente pequenos pelágicos enquanto as capturas do emalhe de fundo, da linha de mão, da caça submarina e das gaiolas são maioritariamente de demersais.

A Baía de Nacala, constitui no seu todo a principal área de pesca das unidades ali localizadas enquanto que os centros de pesca localizados na parte Este de Nacala Porto têm como áreas de pesca o mar aberto ou a Baía de Quissimajulo. Na Baía de Nacala a zona de pesca dispersa-se por toda a baía incluindo zonas adjacentes ao porto.

Refira-se que há indícios dos recursos acessíveis à pesca artesanal estarem a sofrer uma pressão de pesca considerável conducente a um desequilíbrio entre a exploração e a reposição dos "stocks", daí indicadores, como a captura por unidade de pesca, não mostrarem melhorias ou mostrarem um decréscimo.

Embora a pesca artesanal seja o tipo de pesca mais expressivo na Baía de Nacala, a pesca recreativa também é praticada mas de forma mais irregular não sendo, actualmente, feita nenhuma monitorização da mesma. A região apresenta potencial para a aquacultura mas, com excepção de uma empresa que cultiva camarão (até à fase juvenil) proveniente da Beira, nenhum outro empreendimento se encontra estabelecido. Para além da pesca artesanal, as pescarias semi-industrial e industrial à linha de peixe em zonas costeiras e bancos oceânicos de fundos rochosos, também decorrem na região de Nampula, fora da Baía de Nacala, embora esta não seja das zonas de maior intensidade destas pescarias. Estas estendem-se entre as batimétricas dos 20 – 150 m e 25 – 200 m, respectivamente, tendo como principais alvos peixes demersais de fundos rochosos nomeadamente o marreco, robalo, vermelhão, cachuco, serra, pargos e xaréus diversos.

Turismo

O potencial turístico da cidade de Nacala é constituído por praias com destaque para a praia Fernão Veloso e infra-estruturas turísticas construídas ao longo das praias. Com a criação da Zona Económica Especial (ZEE) em Nacala, tem aumentado o número de investidores na cidade. Existem actualmente vários complexos turísticos sediados em Nacala, nomeadamente o Complexo Turístico Napala, Complexo Turístico Bay Divining e o Complexo Turístico Libélula dive, entre outros.

Outras actividades económicas

A cidade de Nacala dispõe ainda de diversas indústrias com destaque para a indústria de produção de cimento, indústrias de corte e processamento de madeira e indústrias de pequena escala de processamento de caju. Existe ainda uma forte exploração de salinas na Baía de Nacala.

IMPACT ASSESSMENT

Impact assessment methodology

The assessment of impacts proceeds through an iterative process considering four key elements:

- Prediction of the magnitude of impacts on the natural and social environment.
- Evaluation of the importance (or significance) of impacts taking into account the sensitivity of the natural and social environment.
- Development of mitigation measures to avoid, reduce or manage the impacts.
- Assessment of residual significant impacts after the application of mitigation measures.

The criteria used to assess the impacts are specified in Table 2.

Table 2: Criteria adopted for potential environment impact assessment

CRITERIA	DESCRIPTION
State	Type of impact
Positive	Beneficial environmental change
Negative	Detrimental environmental change
Probability	Like hood of occurrence
Unlikely	Small likelihood of occurrence, either due to project's nature or due to a careful project designs.
Probable	There is a distinct probability of occurrence
Highly Probable	Occurrence is almost certain
Definitive	The impact will occur regardless of any preventive measures taken
Extension	Area affected by the impact
On-Site	Impacts which are limited to the project site.
Local	Impacts which are limited to the project site and adjacent areas.
Regional	Impacts that are experienced at a regional scale e.g. Nampula Province.
National	Impacts that are experienced at a national scale.
Transboundary/ International	Impacts that are experienced at an international scale i.e. affecting another country.
Duration	Time-frame of impact occurrence
Short-term	Less than 6 (six) months
Mid-term	Between 6 (six) months and 5 (five) years
Long-term	Throughout the life time of the project
Permanent	Permanent change in the affected receptor or resource that endures substantially beyond the project lifetime
Magnitude	Impact's intensity considering its effect over environmental and social processes. Considers probability, extension, duration
Low	Non-relevant or small effects on the natural, cultural or social processes
Moderate	Relevant or significant effects on the natural, cultural or social processes
High	Highly significant or permanent effects on the natural, cultural or social
Significance	Impact's relevance, considering magnitude and sensitivity of resources and receptors
Not significant	Impacts that are slight or transitory, often indistinguishable from the background/natural level of environmental and social change
Low	No further investigation, mitigation or management is required
Moderate	Requires mitigation and management, in order to reduce the impact (if negative), or to enhance it (if positive)
High	Requires extraordinary mitigation strategy or management. It should influence decisions concerning specific aspects of the project, such as design, location and/or methods/procedures for specific activities.

Potential Impacts of the Rehabilitation and Expansion of Nacala Port

The Project involves the rehabilitation and expansion of an existing port (Nacala Port) and not the construction of a new port. The assessment made during the present study (EIA), found no “fatal flaws” that would prevent the project of proceeding.

Impacts were assessed for the construction and operational phases of the Project. The majority of the impacts of the proposed activities are assessed to be of Low Significance provided that the mitigation measures are followed.

Na fase de construção a grande maioria dos impactos nos **recursos pesqueiros** são negativos e de significância moderada, ou seja, requerem medidas de mitigação de forma a reduzir os seus efeitos que são considerados significantes ou permanentes no meio/recurso receptor.

Since the project is located in an existing port area, occupied mainly by infrastructure and highly disturbed areas there are no significant impacts on the terrestrial **flora and fauna**.

Os resultados obtidos através da simulação da corrente, do transporte de sedimentos e da dispersão de partículas na baía de Nacala, indicam que os principais impactos resultantes de obras de reabilitação, expansão (em particular, aterro), dragagem e operação do porto de Nacala na oceanografia são: i) turbidez de água, ii) erosão/sedimentação, iii) alteração do regime de circulação e; iv) alteração do prisma de marés, estes dois últimos com implicações no tempo de residência da baía. No entanto, a totalidade dos impactos identificados apresentam magnitude e significância baixa. Relativamente a eventuais poluentes passivos descarregados na baía estes são transportados para a zona oceânica adjacente, onde são consideravelmente diluídos e dispersos faz com que os impactos da re-suspensão ou descarga de um poluente sejam de significância baixa.

The significance of the impacts on **marine ecosystems** is, in general, low if the appropriate mitigation measures are followed. The exception is the destruction of benthic organisms and bottom habitats by removal and relocation of sediment during dredging activities and due to the landfill planned to construct the new stockyard (behind bypass access road).

The impacts on **air quality** resulting from the individual components of construction in the Nacala Port rehabilitation and expansion project are expected to be limited to the immediate area of the construction activity and will be of limited duration, i.e. for the period of construction only. The predicted ambient concentrations of TSP, PM₁₀, NO_x, SO₂ and VOC are significantly below the Mozambique ambient air quality standards and the WHO ambient air quality guidelines at Nacala Port and off the site. The significance of the impacts from the individual construction components is therefore expected to be low or very low. The impacts on air quality from port operations is expected to endure for the life of Nacala are expected to be well below ambient air quality standards and guidelines at Nacala Port and, therefore the impact significance is expected to be low (unless a number of ships are docked simultaneously, when the significance may be moderate).

The daytime noise impact is generally rated as low at the nearest dwellings or sensitive receptors, e.g. the Mosque overlooking the port, (moderate, for possible night-time operations). However, for the short period when percussive piling (in the temporary coal terminal) is carried out on the harbor side the impact on the nearest Sensitive Receptors at a

distance of 400m is likely to be high, and complaints can be expected. During operation, the noise significance resulting of combined operation activity is also expected to be low (for distance superior to 25 m).

In terms of traffic generation during both, construction and operations the overall impact is not going to be very significant as there is not going to be any significant material difference in the quantum of traffic associated with the rehabilitated port.

The main positive socioeconomic impacts are: i) Criação de oportunidades de emprego; ii) Criação de oportunidade de negócio informal na área envolvente do projecto; iii) Aumento da capacidade de atracagem de navios e da carga manuseada no Porto. These impacts were considered to have moderate significance. The following negative impacts were also considered to have moderate significance, if mitigation measures are not implemented: i) criação de expectativas elevadas em relação ao emprego nas obras de construção; ii) Potencial aumento da população devido a emigração; iii) Conflitos entre trabalhadores do projecto e os residentes da área envolvente, iv) Ocorrência/Aumento da prostituição de doenças como o ITS e HIV/SIDA e malária; v) Interferência com o transporte de passageiros.

The potential biophysical and socio-economic environmental impacts of the project, for the construction and operation phase, are presented in Table 3 and Table 4, respectively.

Mitigation measures were developed to avoid or reduce for any negative impacts and to create or enhance positive impacts such as environmental and social benefits (see Chapter 8, Volume 2). The Environmental Impact Study (EIS) includes also an Environmental Management Plan (EMP), which define the responsibilities and obligations in implementation of mitigation measures and monitoring of this implementation (Volume 3). The subsidiary plans incorporated in the EMP are the following: i) Environmental Education Program; ii) Port Emergency Management Plan, and iii) Waste Management Plan (WMP).

Table 3: Assessment of the Potential Environmental Impacts: Construction Phase

#	Nature of Impact	Activity	Impact assessment							Mitigation measures
			Status	Probability	Extent	Duration	Magnitude	Significance		
								Without Mitigation	With Mitigation	
FISHERIES										
1C	Perda de habitat dos recursos marinhos pesqueiros	1, 9-1	Negativo	Definitivo	Local	Permanente	Moderada	Moderada	Moderada	<ul style="list-style-type: none"> ▪ Estabelecer um Plano de Comunicação e Monitoramento dos Assuntos das Pescas ▪ Estabelecer e divulgar os Procedimentos de Apresentação de Queixas e Reclamações; ▪ Informar antecipadamente os pescadores e outros envolvidos sobre o início da obra, actividades previstas etc
2C	Alteração comportamental e da composição específica dos recursos pesqueiros (devido a alteração da qualidade e turbidez da água pela deposição de poeiras e/ou re-suspensão de sedimentos revolvidos do fundo marinho)	1, 9-1	Negativo	Pouco Provável	Local	Médio prazo	Baixa	Baixa	Baixa	<ul style="list-style-type: none"> ▪ Aplicam-se as medidas sugeridas para o impacto 1C; ▪ Aplicam-se as medidas recomendadas no estudo da qualidade do ar (Impacto 24C); ▪ Apresentar relatórios periódicos dos resultados dos programas de monitoria e das respectivas medidas tomadas ▪ Limitar as áreas onde ocorrerão trabalhos que impliquem interferências com o substrato marinho; ▪ Definir e aplicar um Programa de Monitoria e Controle da Qualidade das Águas ▪ Definir e implementar um Programa de Monitoria dos Recursos Pesqueiros.
3C	Alteração na dinâmica larval e das populações de recursos pesqueiros (devido a alteração da hidrodinâmica)	1, 9-1	Negativo	Provável	Local	Permanente	Moderada	Moderada	Moderada	<ul style="list-style-type: none"> ▪ Aplicam-se as medidas de sugeridas para o impacto 1C ▪ Avaliar a adopção de um desenho da estrada de acesso respeitando (mantendo) a morfologia da secção costeira onde será construída; ▪ Definir e implementar um Programa de Monitoria dos Recursos Pesqueiros.

Table 3: Assessment of the Potential Environmental Impacts: Construction Phase (Cont.)

#	Nature of Impact	Activity	Impact assessment						Significance		Mitigation measures
			Status	Probability	Extent	Duration	Magnitude	Without Mitigation	With Mitigation		
FISHERIES											
4C	Mortalidade ou contaminação de recursos pesqueiros (devido à escavação e revolvimento dos fundos, e libertação de contaminantes dos sedimentos)	1,7, 8, 9-1	Negativo	Provável	Local	Médio-prazo	Moderada	Moderada	Baixa	<ul style="list-style-type: none"> ▪ Aplicam-se as medidas de sugeridas para o impacto 1C; ▪ Notificar os pescadores para evitarem a pesca ou a lavagem de produtos da pesca nas águas adjacentes ao local da dragagem e de deposição dos sedimentos ▪ Definir e implementar um Programa de Fiscalização da Dragagem ▪ Definir e aplicar um Programa de Monitoria e Controle da Qualidade das Águas ▪ Definir e aplicar um Programa de Controle Químico e Microbiológico dos Produtos da Pesca ▪ Uso de barreiras de turbidez nas áreas e períodos mais críticos dos trabalhos (para além da zona de dragagem onde isto é previsto, há a zona de construção da estrada de acesso) ▪ As cortinas de sedimentos e as barreiras de turbidez devem apresentar características que permitam a sua máxima eficiência de acordo com as condições locais (ondas, correntes, velocidade do vento, profundidades, etc); 	
5C	Alteração comportamental das espécies pesqueiras nas imediações da obra (devido à geração de ruídos pela maquinaria, veículos, draga, barcos)	1, 3, 4, 5, 6, 7, 8, 9-1, 9-2, 10, 11, 12	Negativo	Muito Provável	Local	Médio-prazo	Moderada	Moderada	Baixa	<ul style="list-style-type: none"> ▪ Aplicam-se as medidas sugeridas para o impacto 1C; ▪ Minimizar a geração de ruídos através do uso de máquinas, equipamentos, motores, etc, (ver Impacto 26C) ▪ Programa de Monitoria dos Recursos Pesqueiros 	

Table 3: Assessment of the Potential Environmental Impacts: Construction Phase (Cont.)

#	Nature of Impact	Activity	Impact assessment							Mitigation measures
			Status	Probability	Extent	Duration	Magnitude	Significance		
								Without Mitigation	With Mitigation	
FISHERIES										
6C	Alteração na distribuição e composição dos recursos (devido à alteração do substrato para "tipo rochoso")	1	Negativo	Definitivo	Local	Permanente	Alta	Moderada	Moderada	<ul style="list-style-type: none"> ▪ Aplicam-se as medidas sugeridas para o impacto 1C; ▪ Juntamente com as instituições do sector das pescas responsáveis pela implementação do projecto ProPesca identificar os pescadores que faziam a pesca de forma regular nesta área de forma a beneficiarem de apoio do mesmo
7C	Perda permanente de área de pesca (devido à ocupação pela estrada e pátio de armazenamento)	1, 9-1	Negativo	Definitivo	Local	Permanente	Alta	Moderada	Moderada	<ul style="list-style-type: none"> ▪ Aplicam-se as medidas de sugeridas para o impacto 1C;
8C	Perda temporária de área de pesca (devido a actividades e operações nas imediações durante a duração da obra)	1,2,8	Negativo	Definitivo	Local	Médio-prazo	Baixa	Moderada	Baixa	<ul style="list-style-type: none"> ▪ Aplicam-se as medidas de sugeridas para o impacto 1C;
9C	Operações das artes de pesca afectadas (devido ao aumento da turbidez da água)	1,8	Positivo	Pouco Provável	Local	Médio-prazo	Baixa	Baixa	Sem significância	<ul style="list-style-type: none"> ▪ Não há medidas específicas a recomendar mas aplicam-se as mesmas medidas informativas e de controlo (através de programas de monitoria) sugeridas no impacto 1C
10C	Interferência com assentamentos pesqueiros próximos (devido a emissão de poeiras, ruído, operação de maquinaria, equipamento e barcos)	1, 3, 8, 9-1, 12	Negativo	Provável	Local	Médio-prazo	Moderada	Baixa	Baixa	<ul style="list-style-type: none"> ▪ Medidas do impacto 1C; ▪ Divulgar, juntos dos pescadores, possíveis procedimentos a adoptar para proteger o pescado durante o seu processamento e venda (divulgação nos centros de pesca e nos fóruns); ▪ Minimizar a geração de ruídos através do uso de equipamentos, etc (Impacto 26C) ▪ Implementar Programa de Controle de Poluição, incluindo o tratamento e destino adequados de resíduos

Table 3: Assessment of the Potential Environmental Impacts: Construction Phase (Cont.)

#	Nature of Impact	Activity	Impact assessment							Mitigation measures
			Status	Probability	Extent	Duration	Magnitude	Significance		
								Without Mitigation	With Mitigation	
FISHERIES										
11C	Alterações nas capturas de pescado em termos de composição e quantidades (como consequência de impactos sobre o habitat, zona de pesca, recursos pesqueiros e actividade de pesca)	1, 8, 9-1	Negativo	Provável	Local	Médio-prazo	Moderada	Moderada	Moderada	<ul style="list-style-type: none"> ▪ Aplicam-se todas as medidas sugeridas anteriormente
12C	Mortalidade ou contaminação de recursos pesqueiros (devido ao derramamento de óleos no mar)	Todas as actividades de construção civil que manuseiem combustíveis e óleos, e em particular dragagem em frente do novo terminal de contentores no Cais Norte (8)	Negativo	Provável	Local	Médio-prazo	Moderada	Moderada	Baixa	<ul style="list-style-type: none"> ▪ Aplicam-se as medidas de sugeridas para o impacto 1C; ▪ Notificar os pescadores para evitarem a pesca ou a lavagem de produtos da pesca nas águas adjacentes ao local da obra; ▪ Definir e aplicar um Programa de Monitoria e Controle da Qualidade das Águas ▪ Definir e aplicar um Programa de Controle Químico e Microbiológico dos Produtos da Pesca ▪ Procedimentos de descartes segundo as normas nacionais e internacionais vigentes; ▪ Implementar um Programa de Controle de Poluição ▪ Implementar um Programa de Formação e Treino dos Trabalhadores e Utilizadores do Porto sobre os riscos de poluição e os procedimentos a adoptar para minimizá-la

Table 3: Assessment of the Potential Environmental Impacts: Construction Phase (Cont.)

#	Nature of Impact	Activity	Impact assessment							Mitigation measures
			Status	Probability	Extent	Duration	Magnitude	Significance		
								Without Mitigation	With Mitigation	
MARINE ECOLOGY										
13C	Destruction of benthic organisms and habitats by removal and relocation of sediment during dredging activities	8	Negative	Probable	Local	Mid-term	Moderate	Moderate	Low	<ul style="list-style-type: none"> ▪ Adopt good dredging practices by selecting the right equipment and the right dredging, loading, and placement methods ▪ The dredging controlled and limited to the area in front of new Terminal ▪ No offshore disposal of dredged materials (These will be used for the land field and contained within the reclamation)
14C	Destruction of benthic organisms and habitats by landfill for the construction of the new wharf	9-1	Negative	Definite	Local	Long term	Moderate	Moderate	Moderate	<ul style="list-style-type: none"> ▪ No mitigation measures available
15C	Potential impacts on marine organisms due to degraded water quality	All construction works including dredging in front of new container wharf (8)	Negative	Highly Probable	Local	Mid-term	Low	Low	Low	<ul style="list-style-type: none"> ▪ Careful site selection. ▪ Adopt good dredging practices by selecting the right equipments and the right dredging, loading, and placement methods. Strengthen the measures to avoid slides (ver Impacto 20C), ▪ Programme to monitor water quality ▪ Programme to control pollution, in particular Waste Management Plan
16C	Potential contamination of bottom substrates and biota	8	Negative	Highly Probable	Local	Mid-term	Low	Low	Low	<ul style="list-style-type: none"> ▪ Dumping of dredged materials should be treated in accordance with the provisions of the local and international regulation instruments.
17C	Potential impacts on marine/coastal habitats (coral reefs, seagrass) due to dredging	8	Negative	Highly Probable	Local	Mid-term	Low	Low	Low	<ul style="list-style-type: none"> ▪ Good practice for dredging should be used to minimize loss of habitat and benthic species the dredging area (appropriate use of dredges and dredging to restrict limits established and operating mode).

Table 3: Assessment of the Potential Environmental Impacts: Construction Phase (Cont.)

#	Nature of Impact	Activity	Impact assessment							Mitigation measures
			Status	Probability	Extent	Duration	Magnitude	Significance		
								Without Mitigation	With Mitigation	
MARINE ECOLOGY										
18C	Potential impacts on marine mammals (due to noise generation by machinery, vehicles, boats, etc)	All construction activities (1 to 12)	Negative	Probable	Local	Mid-term	Low	Low	Low	<ul style="list-style-type: none"> ▪ Reduce noise levels (see Impact 26C) ▪ Monitoring marine mammals specially dolphins during the construction phase.
TERRESTRIAL FLORA AND FAUNA										
No impact in this component to consider (implementation of the project is in an active port area, occupied mainly by infrastructure and open space without vegetation).										-
OCEANOGRAPHY										
19C	Impacto da turbidez de água pela deposição de poeiras durante as obras de engenharia	Actividades de construção civil (1 to 12)	Negativo	Pouco provável	Local	Mid-term	Baixa	Baixa	Baixa	<ul style="list-style-type: none"> ▪ Molhar os trócos de passagem dos veículos (uma ou duas vezes por dia), para evitar o levantamento de poeiras. ▪ Vedar com chapas de zinco ou outro material opaco, os locais de descarga de materiais de construção como areia, cimento e pedra. As vedações devem ter uma altura de pelo menos 1.5 m e uma largura não superior a 25 m. ▪ Vedar com chapas de zinco ou outro material opaco os locais onde se preparará o betão. As vedações devem ter uma altura de pelo menos 1.5m e uma largura não superior a 25m. ▪ See Impact 24C
20C	Erosão e sedimentação durante a dragagem	8	Negativo	Provável	Local	Médio_prazo (durante a dragagem e deposição)	Baixa	Baixa	Baixa	<ul style="list-style-type: none"> ▪ A área a dragar deve ser reduzida, isto é, limitada apenas aos canais de navegação ▪ Os locais de descarga de sedimentos devem ser longe dos ecossistemas de ervas marinhas e de corais. Os sedimentos devem ser depositados preferencialmente perto dos bancos de areia. ▪ No offshore disposal of dredged

#	Nature of Impact	Activity	Impact assessment							Mitigation measures
			Status	Probability	Extent	Duration	Magnitude	Significance		
								Without Mitigation	With Mitigation	
										<p>materials. These will be used for the land field and contained within the reclamation. Dredging material will be transported piled up at the dump site.</p> <ul style="list-style-type: none"> ▪ Proposed dredging equipment (Grab dredger) cause low turbidity. ▪ Uso de barreiras de turbidez nas áreas e períodos mais críticos dos trabalhos. As cortinas de sedimentos e as barreiras de turbidez devem apresentar características que permitam a sua máxima eficiência de acordo com as condições locais (ondas, correntes, velocidade do vento, profundidades, etc); ▪ See also Waste Management Plan
<i>GEOLOGY/HYDROGEOLOGY/SOILS</i>										
21C	Xxxx		xxxx							
22C	Xxxx		xxxx							
23C	Xxxx		xxxx							
xxx	Xxxx		xxxx							

Table 3: Assessment of the Potential Environmental Impacts: Construction Phase (Cont.)

#	Nature of Impact	Activity	Impact assessment							Mitigation measures
			Status	Probability	Extent	Duration	Magnitude	Significance		
								Without Mitigation	With Mitigation	
AIR QUALITY										
24C	Air quality	Construction of bypass access road	Negative	Unlikely	On-Site	Mid-term	Low	Not significant	Not significant	<ul style="list-style-type: none"> ▪ Loads on vehicles carrying dusty construction materials should be covered ▪ Loading and unloading bulk construction should be in areas protected from the wind on in calm conditions ▪ Vehicles carrying dusty materials should be washed before leaving the site (washing facilities should be available). ▪ Limit access to construction site to construction vehicles only ▪ Impose vehicle speed restrictions on the construction site ▪ Maintain high moisture content on exposed surface and roads by spraying with water ▪ Maintenance programme for construction vehicles to ensure optimum performance reduced emissions
		Construction of new container yard	Negative	Unlikely	On-Site	Short-term	Low	Minor	Not significant	
		Widening of entrance road	Negative	Unlikely	On-Site	Short-term	Low	Not significant	Not significant	
		Widening of entrance gate	Negative	Unlikely	On-Site	Short-term	Low	Not significant	Not significant	
		Repair of apron at the north wharf	Negative	Unlikely	On-Site	Short-term	Low	Not significant	Not significant	
		Construction of new container wharf	Negative	Unlikely	On-Site	Mid-term	Low	Not significant	Not significant	
		Dredging in front of new container wharf	Negative	Unlikely	On-Site	Mid-term	Low	Not significant	Not significant	
		Construction of stockyard behind bypass access	Negative	Unlikely	On-Site	Short-term	Low	Low	Not significant	
		Construction of stockyard at south wharf	Negative	Unlikely	On-Site	Short-term	Low	Low	Not significant	
		Installation of rail track	Negative	Unlikely	On-Site	Short-term	Low	Not significant	Not significant	
Construction of rail container terminal	Negative	Unlikely	On-Site	Short-term	Low	Not significant	Not significant			

Table 3: Assessment of the Potential Environmental Impacts: Construction Phase (Cont.)

#	Nature of Impact	Activity	Impact assessment							Mitigation measures
			Status	Probability	Extent	Duration	Magnitude	Significance		
								Without Mitigation	With Mitigation	
AIR QUALITY										
25C	Air quality	Construction /rehabilitation of the temporary coal terminal	Negative	Unlikely	On-Site	Short-term	Low	Not significant	Not significant	<ul style="list-style-type: none"> See measures above
NOISE										
26C	Noise levels	Percussive Piling (Construction/rehabilitation of the temporary coal terminal -12)	Negative	Probable	Local to on-site	Short term	High (≤400m)	High (daytime)	Moderate (daytime)	<ul style="list-style-type: none"> Change process to quieter method Minimise time of operation Use daytime only Attenuate pile impact zone
		Dredging (8)	Negative	Probable	Local to on-site	Mid-term	Moderate (≤400m)	Moderate (daytime)	Low (daytime)	<ul style="list-style-type: none"> Choice of quiet dredging method and equipment. maintenance of equipment
		Combined Construction Activity (all construction activities)	Negative	Probable	Local to on-site	Short to Mid-term	Low (>100m)	Low (daytime)	Low (daytime)	<ul style="list-style-type: none"> Internal roads and loading and unloading should be kept clear of the western site boundary. Vehicle maintenance to include noise checks Use vehicles with lower noise emissions
TRAFFIC										
27C	Increased traffic Generation and congestion	1,4,7,9-1,9-2,10,11,12	Negative	Highly Probably	Local	Mid-term	Low	Moderate	Low	<ul style="list-style-type: none"> New access road links are being designed to cater for people walking and cycling to work. Enhanced road signage will be put into place to channel traffic onto the correct access routes and gates as well as signage for pedestrians and cyclists.

Table 3: Assessment of the Potential Environmental Impacts: Construction Phase (Cont.)

#	Nature of Impact	Activity	Impact assessment							Mitigation measures
			Status	Probability	Extent	Duration	Magnitude	Significance		
								Without Mitigation	With Mitigation	
TRAFFIC										
28C	Planned highway Improvements and potential interference on the local highway network	1,4,10	Negative	Highly probably	Local	Mid-term	Low	Low	Low	<ul style="list-style-type: none"> ▪ The traffic flows would be separated by having different access links and gates to the port site. In addition the new rail link would improve accessibility to the port.
29C	Increase in accidents arising from an increase in traffic	1,4,7,9	Negative	Low probability	Local	Mid-term	Low	Low	Low	<ul style="list-style-type: none"> ▪ Mitigation measures will be incorporated into the master plan by proposing the following: <ul style="list-style-type: none"> ✓ Speed limits. ✓ Adequate road signage ✓ Strict vehicle checks for road worthiness
30C	Improved public transport for workers	1,4,7,9	Positive	Highly Probably	Local	Mid-term	High	Low	Low	<ul style="list-style-type: none"> ▪ Provide buses for the journey to work trips
31C	Driver Delay	1,4,7,9	Negative	Highly Probably	Local	Mid-term	Low	Low	Low	<ul style="list-style-type: none"> ▪ Mitigation measures will be incorporated into the master plan by proposing the following: <ul style="list-style-type: none"> ✓ Adequate road signage
32C	Road degradation	1,4,7,9	Negative	Highly Probably	Local	Mid-term	Low	Low	Low	<ul style="list-style-type: none"> ▪ Construction related vehicles restricted to the port access road network only with appropriate signing to avoid using the city approaches road network.
33C	Pedestrians and Cyclists Movement Disruption	1,4,7,9	Negative	Highly Probably	Local	Mid-term	Low	Moderate	Low	<ul style="list-style-type: none"> ▪ Provide adequate walking and cycling facilities. ▪ Facilities to be well sign posted. ▪ Warning signs for HGV drivers
34C	Increased pedestrian severance arising from an increase in traffic	1,4,7,9	Negative	Highly Probably	Local	Mid-term	Low	Low	Low	<ul style="list-style-type: none"> ▪ Provide adequate Pedestrian Crossing facilities
35C	Increased pedestrian delay arising from an increase in traffic	1,4,7,9	Negative	Highly Probably	Local	Mid-term	Low	Low	Low	<ul style="list-style-type: none"> ▪ Provide adequate Pedestrian Crossing facilities
36C	Restrictions to pedestrian crossings and access to other areas	1,4,7,9	Negative	Highly Probably	Local	Mid-term	Low	Low	Low	<ul style="list-style-type: none"> ▪ Provide adequate Pedestrian Crossing facilities

Table 3: Assessment of the Potential Environmental Impacts: Construction Phase (Cont.)

#	Nature of Impact	Activity	Impact assessment						Significance		Mitigation measures
			Status	Probability	Extent	Duration	Magnitude	Without Mitigation	With Mitigation		
SOCIOECONOMICS											
38C	Criação de oportunidades de emprego	Actividades de construção (em especial trabalho não qualificado)	Positivo	Altamente provável	Local	Curto prazo a Médio-prazo	Moderada	Moderada	Moderada a alta	<ul style="list-style-type: none"> ▪ O Proponente deverá assegurar a contratação de a mão-de-obra local, particularmente a residente no bairro Maiaia e outros bairros vizinhos da área do projecto, ▪ O processo de selecção e os critérios de elegibilidade devem ser divulgados, ▪ O processo de selecção deve ser realizado de forma transparente, ▪ As autoridades municipais devem ser envolvidas no processo de recrutamento. 	
39C	Criação de expectativas elevadas em relação ao emprego nas obras de construção	Todas as actividades de construção (em especial trabalho não qualificado)	Negativo	Provável	Local	Curto prazo a Médio-prazo	Moderada	Moderada	Moderada a Baixa	<ul style="list-style-type: none"> ▪ As oportunidades de emprego devem ser explicadas às comunidades de uma maneira realista de forma a não levantar falsas expectativas. ▪ Todo o trabalho não qualificado deve ser atribuído a comunidades locais directamente afectadas pelo projecto. ▪ Trabalhadores imigrantes para a área do projecto devem somente ser contratados caso essa habilidade específica requerida não esteja disponível localmente ou que não possa ser efectuada a formação de uma pessoa local. 	
40C	Criação de oportunidade de negócio informal na área envolvente do projecto	Durante a construção	Positivo	Provável	Local	Curto-prazo a Longo-prazo	Moderada	Moderada	Moderada a alta	<ul style="list-style-type: none"> ▪ O proponente deve assegurar que a compra de produtos alimentares para os trabalhadores seja efectuada localmente, de modo a favorecer economicamente as populações directamente afectadas pelo projecto. ▪ Devem ser promovidas iniciativas para melhorar as oportunidades para o comércio local. 	

Table 3: Assessment of the Potential Environmental Impacts: Construction Phase (Cont.)

#	Nature of Impact	Activity	Impact assessment						Significance		Mitigation measures
			Status	Probability	Extent	Duration	Magnitude	Without Mitigation	With Mitigation		
SOCIOECONOMICS											
41C	Potencial aumento da população devido a emigração	Durante a construção	Negativo	Provável	Local	Curto-prazo a médio-prazo	Moderada	Moderada	Moderada a baixo	<ul style="list-style-type: none"> ▪ Deve ser dada preferência de emprego às comunidades residentes no bairro Maiaia e arredores, ▪ Implementar sistema de monitorização do nível de imigração de trabalhadores para a área do projecto. ▪ Trabalhadores imigrantes para a área do projecto devem somente ser contratados caso essa habilidade específica não seja disponível localmente ou que a formação de pessoal local não possa ser efectuada. ▪ As oportunidades de emprego devem ser explicadas de forma realista para que não sejam criadas falsas expectativas. 	
42C	Conflitos entre trabalhadores do projecto e os residentes da área envolvente	Durante a construção	Negativo	Provável	Local/On-site	Curto-prazo a médio-prazo	Moderada	Moderada	Baixa	<ul style="list-style-type: none"> ▪ Estabelecer e implementar acções de consciencialização dos trabalhadores, viradas para a promoção de um bom relacionamento com as comunidades locais. ▪ O Empreiteiro deve elaborar e implementar códigos de conduta social, de acordo com as características culturais da comunidade local. ▪ Deverá haver uma pessoa encarregue de estabelecer a comunicação entre o pessoal do projecto e os residentes da área envolvente de modo a garantir os mecanismos de comunicação. 	

Table 3: Assessment of the Potential Environmental Impacts: Construction Phase (Cont.)

#	Nature of Impact	Activity	Impact assessment						Significance		Mitigation measures
			Status	Probability	Extent	Duration	Magnitude	Without Mitigation	With Mitigation		
<i>SOCIOECONOMICS</i>											
43C	Ocorrência/ Aumento da prostituição	Durante a construção	Negativo	Provável	Local	Curto-prazo a longo-prazo	Moderada	Moderada	Moderada a baixo	<ul style="list-style-type: none"> ▪ O proponente, em estreita coordenação com as autoridades apropriadas e ONGs locais, deve conceber estratégias de consciencialização e aconselhamento para mulheres e raparigas locais, com relação à prostituição. ▪ As actividades de aconselhamento e orientação devem incluir a componente das ITSs e HIV/SIDA. ▪ As autoridades policiais locais devem ser envolvidas na fiscalização, de forma a prevenir e combater a prostituição. ▪ Estabelecimento de restrições quanto à entrada de pessoas estranhas nos acampamentos de trabalhadores. ▪ Implementação de medidas para desencorajar o afluxo de pessoas estranhas às comunidades na área do projecto. 	

Table 3: Assessment of the Potential Environmental Impacts: Construction Phase (Cont.)

#	Nature of Impact	Activity	Impact assessment						Significance		Mitigation measures
			Status	Probability	Extent	Duration	Magnitude	Without Mitigation	With Mitigation		
<i>SOCIOECONOMICS</i>											
44C	Potencial aumento de ITS e HIV/SIDA	Durante a construção	Negativo	Provável	Local	Curto a médio prazo	Alta	Alta	Moderada	<ul style="list-style-type: none"> ▪ Realização de campanhas de sensibilização sobre o HIV/SIDA e ITS no seio das comunidades e dos trabalhadores. ▪ Encorajamentos dos trabalhadores a submeterem-se a testes de HIV/SIDA ▪ Encaminhamento dos trabalhadores para tratamento e monitoramento precoce de infecções secundárias oportunistas ▪ Criação de centros de aconselhamentos e controle das doenças. ▪ O pessoal do projecto deve receber uma formação periódica de saúde. ▪ Devem ser distribuídos preservativos em locais públicos e de fácil acesso e no acampamento dos trabalhadores. ▪ Estabelecer códigos de conduta para o local de trabalho. As Normas deverão incluir entre outros aspectos, a proibição de entrada de pessoas estranhas ao serviço e proibição de prostituição. ▪ As acções de sensibilização sobre HIV/SIDA devem ser implementadas por pessoas/instituições habilitadas e devidamente credenciadas para o efeito. 	

Table 3: Assessment of the Potential Environmental Impacts: Construction Phase (Cont.)

#	Nature of Impact	Activity	Impact assessment						Significance		Mitigation measures
			Status	Probability	Extent	Duration	Magnitude	Without Mitigation	With Mitigation		
<i>SOCIOECONOMICS</i>											
45C	Proliferação de malária	Durante a construção	Negativo	Provável	Local	Curto a médio-prazo	Moderada	Moderado	Moderada a baixa	<ul style="list-style-type: none"> ▪ Controlo da proliferação de mosquitos nos acampamentos (não permitir o desenvolvimento de charcos, foco de mosquitos), medidas de prevenção individual (uso de repelentes), medidas de redução da quantidade de mosquitos. ▪ Implementar um programa para minimizar a incidência da malária no seio dos trabalhadores. ▪ O proponente deve assegurar os cuidados médicos ao nível local, para o caso de trabalhadores, quer expatriados que nacionais, virem a ser infectados por doenças transmitidas por insectos. 	

Table 3: Assessment of the Potential Environmental Impacts: Construction Phase (Cont.)

#	Nature of Impact	Activity	Impact assessment						Significance		Mitigation measures
			Status	Probability	Extent	Duration	Magnitude	Without Mitigation	With Mitigation		
<i>OCCUPATIONAL HEALTH AND SAFETY</i>											
46C	Contractor safety: falling hazard	Work in elevated positions.	Negative	Highly probable	On-site	Mid-term	High	Moderate	Moderada	<p>A fall protection plan must be put in place, which addresses the following:</p> <ul style="list-style-type: none"> ▪ A process for evaluating the employee's physical and psychological fitness to work at elevated heights. ▪ The fall protection plan must include a program of training in respect to elevated height work. ▪ The fall protection plan must include a procedure addressing the inspection and maintenance of all the fall protection equipment. ▪ Ensures that all openings in floors, edges, slabs, hatchways and stairways are adequately protected. ▪ Ensures that all elevated height work is performed from a position as if working from a ladder or scaffold. ▪ Posting notices in a conspicuous place at openings through which a person could fall. ▪ Ensures that all fall prevention and fall arresting equipment is serviceable and secured properly. ▪ Where roof work is being performed on a construction site the contractor must ensure that additional requirements be indicated in the fall protection plan 	

Table 3: Assessment of the Potential Environmental Impacts: Construction Phase (Cont.)

#	Nature of Impact	Activity	Impact assessment						Significance		Mitigation measures
			Status	Probability	Extent	Duration	Magnitude	Without Mitigation	With Mitigation		
<i>OCCUPATIONAL HEALTH AND SAFETY</i>											
47C	Contractor safety: Structures collapsing	Working on or near structures	Negative	Probable	On-site	Mid-term	Moderate	Moderate	Low	<ul style="list-style-type: none"> ▪ The contractor must ensure that all reasonable steps have been taken to prevent an uncontrolled collapse of any new structures or part thereof. ▪ The contractor must ensure that no structure is so overloaded that it may become unsafe. ▪ The designer must inform the contractor in writing of any known or anticipated hazards relating to the construction work. ▪ The designer must ensure that the contractor receives detailed drawings. ▪ The contractor must carry out regular inspections on site to ensure compliance with the design requirements. ▪ The designer must take into consideration ergonomics during the life cycle of the construction. 	

Table 3: Assessment of the Potential Environmental Impacts: Construction Phase (Cont.)

#	Nature of Impact	Activity	Impact assessment						Significance		Mitigation measures
			Status	Probability	Extent	Duration	Magnitude	Without Mitigation	With Mitigation		
<i>OCCUPATIONAL HEALTH AND SAFETY</i>											
48C	Contractor safety: formwork and support work	Formwork and support work during construction	Negative	Probable	On-site	Mid-term	Moderate	Moderate	Low	<ul style="list-style-type: none"> ▪ The contractor must ensure that all formwork and support work operations are carried out under the supervision competent person. ▪ The contractor must ensure that all formwork and support work structures are adequately erected, supported, braced and maintained so that they will be able to support all anticipated loads, bearing in mind that the structure will be built on a wetland. ▪ The contractor must ensure that all framework and support work structures are inspected by a competent person before, during and after placement of concrete or any other imposed load and thereafter on a daily basis until the structure is removed. ▪ The contractor must ensure that should weakened formwork or support structure be detected that they are immediately reinforced. ▪ The contractor must ensure that adequate steps are taken to: <ul style="list-style-type: none"> ▪ Secure deck panels against displacement; and ▪ Prevent any person from slipping on support work. ▪ The contractor must upon pouring concrete ensure that it gains sufficient strength before the support work is removed. 	

Table 3: Assessment of the Potential Environmental Impacts: Construction Phase (Cont.)

#	Nature of Impact	Activity	Impact assessment							Mitigation measures
			Status	Probability	Extent	Duration	Magnitude	Significance		
								Without Mitigation	With Mitigation	
<i>OCCUPATIONAL HEALTH AND SAFETY</i>										
49C	Contractor safety, risk of excavations collapsing	Excavation work	Negative	Probable	On-site	Mid-term	Moderate	Moderate	Low	<ul style="list-style-type: none"> ▪ The contractor must ensure that all excavation work is carried out under the supervision of a person that is competent. ▪ The contractor must evaluate the stability of the ground before excavation work begins ▪ The contractor must ensure that suitable and sufficient steps are taken to prevent persons from being trapped due to a collapse. ▪ The contractor must ensure that all bracing and shoring is inspected
50C	Public safety	General construction work	Negative	Probable	Local	Mid-term	Moderate	Moderate	Low	<ul style="list-style-type: none"> ▪ The contractor must ensure that the site is fenced and that warning signage is displayed at the entrance of the construction site. ▪ The contractor must ensure that when any excavation is made and it is accessible to the public or is adjacent to public roads or thoroughfares or by which persons can be endangered, it is adequately fenced at least 1m high as close to the excavation as practicable. ▪ The contractor must ensure that when any excavation has been done and it is accessible to the public or is adjacent to public roads or thoroughfares or by which persons can be endangered, clearly visible boundary indicators (danger tape) are provided at night and where the visibility is poor.

Table 3: Assessment of the Potential Environmental Impacts: Construction Phase (Cont.)

#	Nature of Impact	Activity	Impact assessment							Mitigation measures
			Status	Probability	Extent	Duration	Magnitude	Significance		
								Without Mitigation	With Mitigation	
<i>OCCUPATIONAL HEALTH AND SAFETY</i>										
51C	Contractor safety due to the use of vehicles and mobile plant	Construction works that use vehicles and mobile plant	Negative	Probable	On-site	Mid-term	Moderate	Moderate	Low	<ul style="list-style-type: none"> ▪ The contractor must ensure that all construction vehicles and mobile plant are of an acceptable design & construction and are used according to their design. ▪ All construction and mobile equipment must be operated by workers who have been trained and certified as competent. ▪ All construction vehicles and mobile plant must be properly organized and there must be a method of signals in place. ▪ Excavations must be adequately demarcated to warn construction vehicles and mobile plant of the inherent danger of falling into an excavation. ▪ The operators of construction vehicles and mobile plant must be protected from falling material (hard hat) or from being crushed in the case of the vehicle rolling. ▪ All bulldozers, scrapers, loaders and other similar mobile plants, when being repaired or when not in use, must be fully lowered or blocked with controls in a neutral position, motors stopped and brakes set.
52C	Contractor safety risk of electrocution	Use of electricity – electrical installation.	Negative	Probable	On-site	Mid-term	Moderate	Moderate	Low	<ul style="list-style-type: none"> ▪ All temporary electrical installation must be installed using the same safety specifications as fixed installations and must be inspected at least once a week by a competent person and such inspection recorded. ▪ The control of a temporary electrical installation on a construction site must be designated to an appointed competent person.

Table 3: Assessment of the Potential Environmental Impacts: Construction Phase (Cont.)

#	Nature of Impact	Activity	Impact assessment							Mitigation measures
			Status	Probability	Extent	Duration	Magnitude	Significance		
								Without Mitigation	With Mitigation	
<i>OCCUPATIONAL HEALTH AND SAFETY</i>										
53C	Contractor safety due to the lack of protective equipment	General construction work.	Negative	Probable	On-site	Mid-term	Moderate	Moderate	Low	<ul style="list-style-type: none"> ▪ All construction workers must be issued with the necessary protective equipment to protect them from the hazards present e.g. hard hat and safety shoes.
54C	Contractor safety due to use and storage of flammable liquids	Use and storage of flammable liquids	Negative	Probable	On-site	Mid-term	Moderate	Moderate	Low	<ul style="list-style-type: none"> ▪ All flammable liquids used on a construction site must be stored in such a manner that they would not cause any fire or explosion and are adequately ventilated. ▪ All employees working with flammable liquids must be provided with and use the appropriate PPE. ▪ Those instances where flammable liquids are used people are prohibited from smoking and signage accordingly posted. ▪ Adequate firefighting equipment must be provided with adequate and appropriate signage. ▪ Steps must be taken to ensure that no flammable (combustible) material such as cotton waste, paper, cleaning rags etc are stored with flammable liquids – prevents spontaneous ignition hazard.
55C	Contractor safety: lack of safety requirements	Enforce safety requirements.	Negative	Highly Probable	On-site	Mid-term	Moderate	Moderate	Low	<ul style="list-style-type: none"> ▪ The designer and contractor must provide such information, instructions, training and supervision as may be necessary to ensure the health and safety at work of his employees (Includes Induction Training). ▪ The designer and contractor must enforce such measures as may be necessary in the interest of health and safety. ▪ Follow the safety requirements adopted by the Port ▪ Implement dredging Safety Management Plan

Table 3: Assessment of the Potential Environmental Impacts: Construction Phase (Cont.)

#	Nature of Impact	Activity	Impact assessment							Mitigation measures
			Status	Probability	Extent	Duration	Magnitude	Significance		
								Without Mitigation	With Mitigation	
<i>OCCUPATIONAL HEALTH AND SAFETY</i>										
56C	Contractor risk of fire safety:	Fire precautions on construction sites (attention to works near the fuel terminal)	Negative	Highly Probable	On-site	Mid-term	Moderate	Moderate	Low	<p>The contractor shall ensure that:</p> <ul style="list-style-type: none"> ▪ All appropriate measures are taken to avoid the risk of fire. ▪ Sufficient and suitable storage is provided for flammable liquids, solids and gasses. ▪ Smoking is prohibited and notices in this regard are prominently displayed in all places containing readily combustible or flammable materials. ▪ Combustible materials do not accumulate on the construction site. ▪ Appropriate precautionary measures must be taken when welding flame cutting and other hot work tasks are carried out. ▪ Suitable and sufficient fire-extinguishing equipment is placed at strategic locations on site and that such equipment is maintained in a good working order. ▪ A sufficient number of workers are trained in the use of fire-extinguishing equipment. ▪ The means of escape are kept clear at all times. ▪ There is an effective evacuation plan in place and is communicated to all concerned. ▪ A siren is installed and sounded in the event of a fire or emergency.

Table 4: Assessment of the Potential Environmental Impacts: Operation Phase

#	Nature of Impact	Activity	Impact assessment						Significance		Mitigation measures
			Status	Probability	Extent	Duration	Magnitude	Without Mitigation	With Mitigation		
<i>FISHERIES</i>											
10	Aumento da pressão de pesca (devido ao aumento da demanda por pescado)	Operação do Porto	Negativo	Altamente provável	Local	Longo-prazo	Moderada	Moderada	Baixa	<ul style="list-style-type: none"> ▪ Estabelecer um Plano de Comunicação e Monitoramento dos Assuntos das Pescas e estabelecer fóruns para apresentação e discussão dos assuntos relacionados composto pelos Conselhos Comunitários de Pesca (CCPs), instituições do sector das pescas (IIP, IDPPE e INIP), associações de pescadores e comerciantes de pescado; ▪ Estabelecer e divulgar os Procedimentos de Apresentação de Queixas e Reclamações; ▪ Definir e implementar um Programa de Monitoria dos Recursos Pesqueiros ▪ Envolvimento do IDPPE e do IIP no monitoramento da pesca 	
20	Impulsionamento ao desenvolvimento da aquacultura (devido ao aumento da demanda por pescado e outros produtos marinhos)	Operação do Porto	Negativo	Provável	Local/Regional	Longo-prazo	Alta	Moderada	Alta	<ul style="list-style-type: none"> ▪ Projectos e empreendimentos a desenvolverem-se segundo as potencialidades e áreas identificadas pelo INAQUA (Instituto Nacional de Aquacultura) e ainda segundo a política de desenvolvimento prevista para o sector da aquacultura. 	

Table 4: Assessment of the Potential Environmental Impacts: Operation Phase

#	Nature of Impact	Activity	Impact assessment						Significance		Mitigation measures
			Status	Probability	Extent	Duration	Magnitude	Without Mitigation	With Mitigation		
FISHERIES											
30	Actividades de pesca limitadas (devido ao aumento do tráfego de navios)	Operação do Porto	Negativo	Altamente provável	Local	Longo-prazo	Moderada	Moderada	Baixa	<ul style="list-style-type: none"> ▪ Seguimento adequado das normas de navegação e da Marinha; ▪ Estabelecer Plano de Comunicação e Monitoramento dos Assuntos das Pescas e estabelecer fóruns para apresentação e discussão dos assuntos relacionados ▪ Estabelecer e divulgar os Procedimentos de Apresentação de Queixas e Reclamações; ▪ Adopção de regulamentos e normas sobre o tráfego de navios e de um plano de emergência para atender casos de acidentes; ▪ Avaliar e reservar rotas seguras para a navegação de embarcações de pesca; ▪ Mapear os principais pesqueiros e analisar a sua sobreposição a rotas de navegação dos navios utilizadores do porto, avaliando alternativas. 	
40	Risco aumentado de contaminação/mortalidade e outros efeitos não letais nos recursos pesqueiros (devido aos poluentes gerados pela operação dos navios e porto)	Operação do Porto	Negativo	Altamente provável	Local	Longo-prazo	Alta	Moderada	Baixa	<ul style="list-style-type: none"> ▪ Procedimentos de descartes segundo as normas nacionais e internacionais vigentes; ▪ Navios devem proceder ao tratamento das águas de lastro a bordo ou à sua troca em mar alto ▪ Implementar um Programa de Controle de Poluição, incluindo o tratamento e destino adequados (Plano de gestão de resíduos); ▪ Implementar Programa de Formação e Treino dos Trabalhadores e Utilizadores do Porto sobre os riscos de poluição e os procedimentos a adoptar para minimizá-la. 	

Table 4: Assessment of the Potential Environmental Impacts: Operation Phase

#	Nature of Impact	Activity	Impact assessment							Mitigation measures
			Status	Probability	Extent	Duration	Magnitude	Significance		
								Without Mitigation	With Mitigation	
MARINE ECOLOGY										
50	Potential impacts on marine/coastal ecology due to increased ships traffic in the area	Operation	Negative	Highly probable	Local	Long-term	Moderate	Moderate	Low	<ul style="list-style-type: none"> ▪ Monitoring marine mammals specially dolphins during the construction and operation phases. Assess the distribution and abundance of this group in the Bay. ▪ Enforce measures to avoid disposal or leakage/spill of pollutants from ships entering or in the harbor, which may affect water quality and consequently aquatic organisms
FLORA AND FAUNA										
There will be no significant direct residual impacts on the flora and fauna environment arising from the Nacala Port development site.										
OCEANOGRAPHY										
60	Impacto no regime de correntes pela dragagem e aterro	Dragagem e aterro	Negativo	Pouco provável	Local	Longo-prazo	Baixa	Baixa	Baixa	No applicable mitigation measure
70	Impacto na qualidade da água (turbidez) pela dragagem e manuseamento de minerais	Dragagem e manuseamento de minerais	Negativo	Pouco provável	Local	Longo-prazo (embora as dragagens sejam feitas pontualmente)	Baixa	Baixa	Baixa	<ul style="list-style-type: none"> ▪ No applicable mitigation measure for current patterns ▪ To reduce the escape of dust during handling of minerals etc: <ul style="list-style-type: none"> ✓ armazenamento de minerais em recintos protegidos de ventos e de escoamentos de águas pluviais, ✓ estabelecimento de condutas de minerais vedadas desde o local de armazenamento até aos porões dos navios e vice-versa, e ✓ Molhar ou vedar com lona os minerais em carruagens, durante o transporte. ✓ Colocar vedações no terminal temporário de carvão ▪ See also Impact 11^o, 20C and WMP

Table 4: Assessment of the Potential Environmental Impacts: Operation Phase

#	Nature of Impact	Activity	Impact assessment							Mitigation measures
			Status	Probability	Extent	Duration	Magnitude	Significance		
								Without Mitigation	With Mitigation	
<i>OCEANOGRAPHY</i>										
80	Impacto da alteração do tempo de residência	Dragagem e aterro	Negativo	Pouco provável	Local	Longo-prazo	Baixa	Baixa	Baixa	No applicable mitigation measure
<i>GEOLOGY/HYDROGEOLOGY/SOILS</i>										
90	xxxx	xxxx								
100	xxxx	xxxx								
110	xxxx	xxxx								
xxx	xxxx	xxxx								
<i>AIR QUALITY</i>										
120	Air quality	Ships at berth	Negative	Probable	Local	Long-term	Low	Moderate	Low	<ul style="list-style-type: none"> ▪ Limit the time that ships are at berth ▪ Provide alternative power for berthed ships to eliminate their dependence on auxiliary engines ▪ Same as Impact 24C ▪ In the temporary coal terminal consider: <ul style="list-style-type: none"> ▪ sprinkling of dust through water pumping (with a vehicle) on the tracks of the yard and in the coal piles (rate 2.5 mm / day)
		Port side equipment	Negative	Probable	On-site	Long-term	Low	Not significant	Not significant	
		Dry bulk handling	Negative	Probable	On-site	Long-term	Low	Low	Not significant	
		Truck traffic	Negative	Probable	Local	Long-term	Low	Low	Not significant	
		Coal handling	Negative	Probable	On-site	Mid-term	Moderate	Low	Low	

Table 4: Assessment of the Potential Environmental Impacts: Operation Phase

#	Nature of Impact	Activity	Impact assessment							Mitigation measures
			Status	Probability	Extent	Duration	Magnitude	Significance		
								Without Mitigation	With Mitigation	
NOISE										
130	Noise levels	Combined operation activity	Negative	Probable	Local to on-site	Long-term	Low (>25 m)	Low (>25 m)	Low (>25 m)	<ul style="list-style-type: none"> ▪ Locate noisy activities, e.g. panel beating, hammering, etc. far from boundaries and/or indoors ▪ Locate buildings near boundaries as natural noise barriers for the rest of the site ▪ Locate internal roads far from boundaries ▪ Locate stockpiles, eg coal on boundaries to act as temporary noise barriers ▪ Fit fans and fixed plant with attenuators ▪ Maintain plant and equipment attenuators
TRAFFIC										
140	Increased traffic generation and congestion	Operation (traffic)	Negative	Highly Probable	Local	Long-term	Low	High	Low	<ul style="list-style-type: none"> ▪ New access road links are being designed to cater for people walking and cycling to work. ▪ Enhanced road signage will be put into place to channel traffic onto the correct access routes and gates as well as signage for pedestrians and cyclists.
150	Increase in accidents arising from an increase in traffic	Operation (traffic)	Negative	Probable	Local and Regional	Long-term	Low	Moderate	Low	<ul style="list-style-type: none"> ▪ Mitigation measures will be incorporated into the master plan by proposing the following: <ul style="list-style-type: none"> ✓ Speed limits. ✓ Adequate road signage ✓ Strict vehicle checks for road worthiness
160	Improved public transport for workers	Operation (increase in workers etc)	Negative	Probable	Local	Long-term	Low	Low	Low	<ul style="list-style-type: none"> ▪ Increase use of buses, minibus taxis

Table 4: Assessment of the Potential Environmental Impacts: Operation Phase

#	Nature of Impact	Activity	Impact assessment							Mitigation measures
			Status	Probability	Extent	Duration	Magnitude	Significance		
								Without Mitigation	With Mitigation	
TRAFFIC										
170	Driver Delay	Operation (traffic)	Negative	Probable	Local/regional	Long-term	Low	Low	Low	<ul style="list-style-type: none"> The traffic flows would be separated by having different access links and gates to the port site. the new rail link would improve overall accessibility to the port. by reducing the road based traffic volumes.
180	Pedestrians and Cyclists Movement Disruption	Operation (increase in workers etc)	Negative	Highly probable	Local	Long-term	Low	Moderate	Low	<ul style="list-style-type: none"> Provide adequate walking and cycling facilities. Facilities to be well sign posted. Warning signs for HGV drivers
190	Increased pedestrian severance arising from an increase in traffic	Operation (traffic)	Negative	Probable	Local	Long-term	Low	Low	Low	<ul style="list-style-type: none"> Provide adequate Pedestrian Crossing facilities
200	Increased pedestrian delay arising from an increase in traffic	Operation (traffic)	Negative	Highly probable	Local	Long-term	Low	Low	Low	
210	Restrictions to pedestrian crossings and access to other areas	Operation (traffic)	Negative	Highly probable	Local	Long-term	Low	Low	Low	
220	Road degradation	Operation (traffic)	Negative	Probable	Local/regional	Long-term	Moderate	Moderate	Low	<ul style="list-style-type: none"> Provide separate access links to redistribute traffic
SOCIOECONOMICS										
230	Aumento da capacidade de atracagem de navios e da carga manuseada no Porto	Operação do porto	Positivo	Altamente Provável	Local	Longo-prazo	Moderada	Alta	Alta	<ul style="list-style-type: none"> Ampliação do porto acompanhada por um reforço do equipamento disponível para as operações. Recursos humanos especializados reforçados de modo a permitir gerir com eficiência o previsível acréscimo do volume de trabalho.
240	Crescimento económico local, nacional e regional	Operação do porto entre outros	Positivo	Altamente Provável	Local a Nacional	Médio a Longo-prazo	Moderada	Alta	Alta	<ul style="list-style-type: none"> Não há medidas incrementadoras de impacto a recomendar dado que este impacto depende do rumo da economia.

Table 4: Assessment of the Potential Environmental Impacts: Operation Phase

#	Nature of Impact	Activity	Impact assessment							Mitigation measures
			Status	Probability	Extent	Duration	Magnitude	Significance		
								Without Mitigation	With Mitigation	
<i>SOCIOECONOMICS</i>										
250	Criação de postos de trabalho permanentes	Operação do porto entre outros	Positivo	Altamente Provável	Local a Nacional	Médio a Longo-prazo	Moderada	Alta	Alta	<ul style="list-style-type: none"> ▪ Na medida do possível o Proponente deverá assegurar a contratação de a mão-de-obra local (particularmente a do bairro Maiaia e outros bairros vizinhos) ▪ Processo de selecção e critérios de elegibilidade divulgados, ▪ Processo de selecção realizado de forma transparente, ▪ Autoridades municipais envolvidas no processo de recrutamento.
<i>OCCUPATIONAL HEALTH AND SAFETY</i>										
<ul style="list-style-type: none"> ▪ Follow the procedures included in Nacala Port Occupational Health And Safety Plan integrated in the Ports' Environmental Management Plan (according to ISO14001) 										

