

SCOPING ENVIRONMENTAL IMPACT ASSESSMENT REPORT FOR PROPOSED TRUCKPORT DEVELOPEMNT IN LISELO COMMUNAL AREA OF ZAMBEZI REGION



Assessed by:

NYEPEZ CONSULTANCY CC



Assessed for:

Trans-Zambezi Truckport & Investment cc
Drylansd Truck Port

December 2021

CLIENT NAME: Trans-Zambezi Truck port & Investment cc, PO Box 2572- 0000 Namibia

ASSIGNMENT: Conduct an Environmental Impact Assessment Study and Prepare an EIA Study Report for the proposed Truck port at Liselo Communal Area in Zambezi Region, Namibia

REPORT TITLE: Environmental Impact Assessment study report for the proposed Dryland Truck Port at Liselo Communal Area in Zambezi Region, Namibia

EXPERT CERTIFICATION

Nyepez consultancy cc a registered EIA Lead firm of expert experienced EIA/EA expert, has prepared this EIA project report. The project report was prepared in accordance with Environmental Management Act, 2007 and the Environmental (Impact Assessment and Audit) Regulations, 2012 for submission to Ministry of Environment, Tourism & Forestry, through the directorate of Environmental Affairs.

I certify that the report contains fair disclosure from the proponent, views of neighbours and recommendations to be undertaken by the proponent.

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Signature

Date

PROPONENT CERTIFICATION

I, on behalf of Trans-Zambezi truckport & Investment cc submit this Environmental impact study report for, Liselo Truck port. To my knowledge all information contained in this report is accurate and truthful representation of all findings as relating to the project.

Signature

Date

Designation

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SITE ASSESSEMENT
DRYLAND TRUCKPORT BUSINESS DEVELOPMENT AT LISELO COMMUNAL AREA

Proposed Land Use: Guest House

Total Site Area: 9.8 Hectares, Liselo Communal Area

Brief project Description

The Project site is located in the Katima Rural Constituency, about 12 Kilometers South west of the Town of Katima Mulilo, trans-caprivi highway. The site is located on the outskirts of the town of Katima Mulilo of Liselo the communal land. The project is on a 9.8 Hectares of Land and is non existence and not operational. The project site is vacant and an application for leasehold was applied to the Ministry of Land reform for registration of a leasehold or business land right.

The project locality site is situated in the Liselo communal area, where the Liselo traditional authority sub-khuta previously used such land for grazing purposes but was left unutilized for impacts of climate change and due to population growth, socio-economic development , physical changes , infrastructural business development within the surrounding areas in Liselo. The site is situated or located about 100 Meters from the other business and residential settlement development and it has a total size of 9.8 hectares and will consist of semi-permanent and permanent structures once the land is cleared.

**LOCALITY PLAN: PROPOSED TRUCKPORT PROJECT
DEVELOPMENT ON 9.8 HECTARES, LISELO COMMUNAL
AREA_TRANS ZAMBEZI TRUCKPORT & INVESTMENT CC**

Proposed Truckport project development area

Truckport Fuel service station

Legend

- Feature 1
- TRANS ZAMBEZI TRUCKS & INVESTMENT CC_TRUCKPORT
- TRUCKPORT FUEL STATION FOR TRUCKS

Google Earth

Image © 2021 Maxar Technologies



400 m

1. INTRODUCTION

1.1 Background

Trans Zambezi Truck port & Investment cc is the proponent and developer that has proposed to establish and develop the dryland truck port project. The project is on a 9.8 Hectares of Land and is non-existence and not operational. The project site area is situated at Liselo Communal area, situated about +- 12 kilometres west of the town of Katima Mulilo. The project site is vacant and partly cleared and an application for leasehold was applied to the Ministry of Land reform for registration of a leasehold or business land right.

Its proposed business activities include long distance truck parking spaces, Convenient shop, fuel station (diesel pumps), overnighting or self-catered accommodation rooms, ablution facilities and a reception stamp duty clearance office. Other basic services such as water are available onsite, electricity will be provided and established by NORED on the facility once the clearance is acquired. Other safety and truck port compliance measures like consent from relevant stakeholder such as Katima Town Council and Roads Authority shall be acquired as required. The site is associated with savannah woodland and shrubs, with no surface watercourse and no wildlife conservation area.

The proposed dryland truckport is aimed at providing parking station for the truckers that will be more secure and conducive that in turn will help to decongest the border area and the town square that is currently congested with trucks that park almost at undesignated and unauthorized spots along the streets in Katima Mulilo. The project will also provide vehicle clearing certification and parking for trucks in transit to either Zambia or Botswana, to relieve the pressure of parking spaces on roadside reserves for trucks in town of Katima Mulilo.

Trans Zambezi Truck & Investment cc saw an urgent need to undertake this project having observed the high influx of trucks transporting goods and materials in the trans-caprivi highway which forms part of the SADC transportation corridor and have positive impact on the national, regional and local communities thereby contributing to the economic welfare of the town and the nation at large. The proposed project will also have positive impact on local communities through employment creation and service delivery.

This site falls under the jurisdiction of the Zambezi Communal Land Board (ZCLB) and an application for right of Leasehold was lodged with the ZCLB who verified and measured the piece of land. A joint venture agreement shall be signed upon approval of the Leasehold between the proponent of the Truck

dry port and (Liselo sub-khuta) and other benefits that will be directed to the community. The project has already received endorsement from the land owners, the Chief of Mafwe Traditional Authority, Honourable Induna of Liselo Communal Area.

According to the Zambezi Integrated Environmental Management plan, the site falls within the settlement and forest in which the following activities are permitted: Business, grazing and residential activity and there is no conservancy that exists in the area

The developer also the owner Trans-Zambezi Truckport & Investment cc of the proposed truck port development project appointed NYEPEZ Consultancy cc to conduct the Environmental Assessments and develop an Environmental and social Management Plan (ESMP) and accompanying report for the proposed truck Port on a small hectares of land. An Environmental Scoping Study was undertaken to identify key biophysical and social concerns related to the project. During October 2021, the consultant conducted site visit and communicated with a range of stakeholders to determine these issues or concerns and this report contains such findings.

1.2 Terms and reference

The terms of reference for this Environmental Assessment is to determine the potential bio-physical and social impact emanating from the construction and operation of the proposed truck port project. The aims and objectives of the assessment are:

- To establish and describe the known ecological baseline conditions for environmental, health and social conditions existing in the project area from secondary information and a reconnaissance site visit
- To conduct an environmental impact identification and assessment and to provide a description of the likely environmental impacts of the proposed project during the construction and operation phases
- To also demonstrate that the Environmental Assessment complies with the current and/or expected Namibian legislation requirements for environmental, social performance and health.
- To identify and draft actions for environmental and social management plan of the proposed farming project
- To identify and document mitigation measures to minimise identified adverse environmental impacts

Based on the above the ESMP lists those management actions that are needed to ensure that undue or reasonably avoidable adverse impacts of the planning, construction and operations of the project are prevented and that the positive benefits of the project are enhanced or

increased. It also gives responsibilities and will be used as a checklist to monitor compliance at the site.

2. CURRENT LAND USE

In terms of the communal land reform Act, Act No. 5 of 2002, the proposed site is under the jurisdiction of the Mafwe traditional authority and permission to occupy was recommended by the traditional authority (see annexure). The applicant is currently awaiting recognition and approval for the leasehold certificate by the Ministry of Land Reform through Zambezi Communal Land board. The area of Liselo have a population of close to 2500 people, with a very high economic potential due to its locality and the surrounding economic activities in the area.

3. ACCESSIBILITY TO SERVICES & COMMUNITY FACILITIES

The site is accessible and is accessed through the Namibian corridor tarred road trans-caprivi highway going the Zambia and Botswana, which is the road connecting Windhoek and the rest of Namibia to the Katima Winella Boarder to Zambia and goes to Ngoma-Botswana through Kasane boarder post situated about 75 Kilometres from the town of katima mulilo. There is no existing land use activity on the site. However there are numerous businesses economic establishment (such as guest houses, residential properties, General business retailers) situated close by the proposed site.



Figure 1: Trans-Caprivi highway



Figure 2: Developed and existing nearby businesses to the truckport project area

OWNERSHIP

In terms of the Communal Land Reform Act 5 of 2002, the proposed site is under the jurisdiction of the Mafwe Traditional Authority and Permission to occupy was recommended by the Mafwe Traditional Authority

- The application for Leasehold was made to the Ministry of Land Reform (Zambezi Communal Land Board)
- The site is not developed but the site area is already cleared due to growing demand and influence of neighbouring business developments in the liselo area
- The site has the Total size of about 9.8 hectares

4. PROPOSED LAND USE ON THE PROJECT

During the construction and operation phase, the proposed development will consist building infrastructures and operational activities on-the site.

- A front office or reception office (stamp duties clearance office)
- 20 long distance trucks parking bays

- 20 self-catered accommodation rooms with common ablution facilities
- Security guard room
- Convenient truckshop
- Fuel service station (2 diesel pumps, foyer and overhang)
- Small convenience shop
- Fenced area, entrance and exist gates

5. POLICY AND LEGAL FRAMEWORK

Table 1: describes the environmental framework of the project.

LEGISLATION/GUIDELINE/POLICY	APPLICABLE CLAUSE/POLICY	COMMENTS
Namibia 's Environmental Assessment policy (1995)	List of activities that require EA.	Tourism facilities need to be assessed in terms of the impact on the natural and social environmental and resources.
Communal Land Reform Act	List of activities that may not be undertaken without a clearance certificate: 6. tourism development activities	Conduct a EA in terms of the tourism development and submit to MET in order for a clearance certificate to be issued.
1994 White paper on tourism (MET 1994)	Tourism must provide direct benefits to local people and aid conservation.	Emphasis should be on local benefits from tourism.
1995 policy on wildlife, management, utilisation and tourism in communal area (MET 1995a)	To allow rural communities on state land to undertake tourism ventures and to enter into cooperative agreements with commercial tourism organisations to develop tourism activities on state land.	JV agreements with benefits to local communities should be negotiated between developers and local conservancies.
Inland fisheries resources act,2003 and regulations	Promotion, sustainable utilisation and protection of inland fisheries resources. Restrictions by limiting number of nets, mesh, sizes, net length and damaging fishing methods.	A fishing licence need to be obtained from the regional office to engage in recreational fishing in any inland waters by means of any regulated fishing gear.
Communal land reform act (act no 5 of 2002)	Allocation of rights in respect of communal land –part 2-right of leasehold. A right to leasehold	Application for the right of leasehold in respect of communal land must be made in the prescribed manner to the CCLB. Right of leasehold granted for
Namibia transport Act 22 of 1999	Guides and control the use of road by heavy and light vehicles on Namibian public roads	

Once Operational – the proponent would source permits from the relevant authorities for the following items includes;

- a) The premises will be operated under the bylaws of the Ministry of works and Transport, Liselo Traditional Authority, and Mafwe Traditional Authority and permits will be sourced in this regard.
- b) The Local Authority Act no. 23 of 1992

Table 2: Other relevant legal frameworks related to waste management in Namibia

Framework	Emphasis
Atmospheric Pollution Prevention Act No. 45 of 1965	<i>Prevention of pollution of the atmosphere.</i>
Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and their Disposal, 1992	<i>Environmental sound management of hazardous waste and other wastes through the reduction of their movements, for the purpose of reducing their impacts on human health and environment</i>
Hazardous Substances Ordinance No. 14 of 1974	<i>Control of toxic substances (including manufacture, use, disposal, import and export).</i>
Pollution Control and Waste Management Bill of 1999	<i>Prevention and regulation of air, water and land pollutants; establishment of an appropriate framework for integrated pollution prevention and control, regulation of noise, dust and odour, as well as an establishment of a system of waste planning and management.</i>
Pollution Prevention Ordinance No. 11 of 1976	<i>Prevention of air pollution.</i>
Prevention and Combating of Pollution of Sea by Oil Act No. 6 of 1981	<i>Prohibits the discharge of oil from ships, tanker or off-shore installation and gives the state certain powers to prevent such pollution and deal with removal of oil spills.</i>
Prevention and combating of pollution of the sea by oil Act 24 of 1991	<i>Prevention of sea pollution by oil.</i>
UN Convention on the Law of the sea, 1982	<i>Protection and preservation of the marine environment including the seabed, ocean floor, subsoil and the resources in the environment.</i>
Water Resources Management Act No. 24 of 2004	<i>Prevention of water pollution.</i>

6.1 Environmental Assessment Practitioner (EAP)

Nyeppez Consultancy cc is the EAP that conducted this Environmental Assessment (**see attached CV**). The following sectional details of the project which need to be considered as the input to the EIA process in the subsequent sections of the report.

6. DESCRIPTION OF THE PROPOSED PROJECT

7.1 Locality

The proposed development of a truck dryland port is located ± 12 kilometres Southwest part of the town of Katima Mulilo, located on the periphery of the town in the Liselo communal area alongside the Tared road of trans-caprivi highway which links and connects Namibia, Katima Mulilo to Zambia, Botswana and Zimbabwe. The site falls within the Liselo Communal area. The main Zambezi River is situated about ± 12 km from the proposed development site.

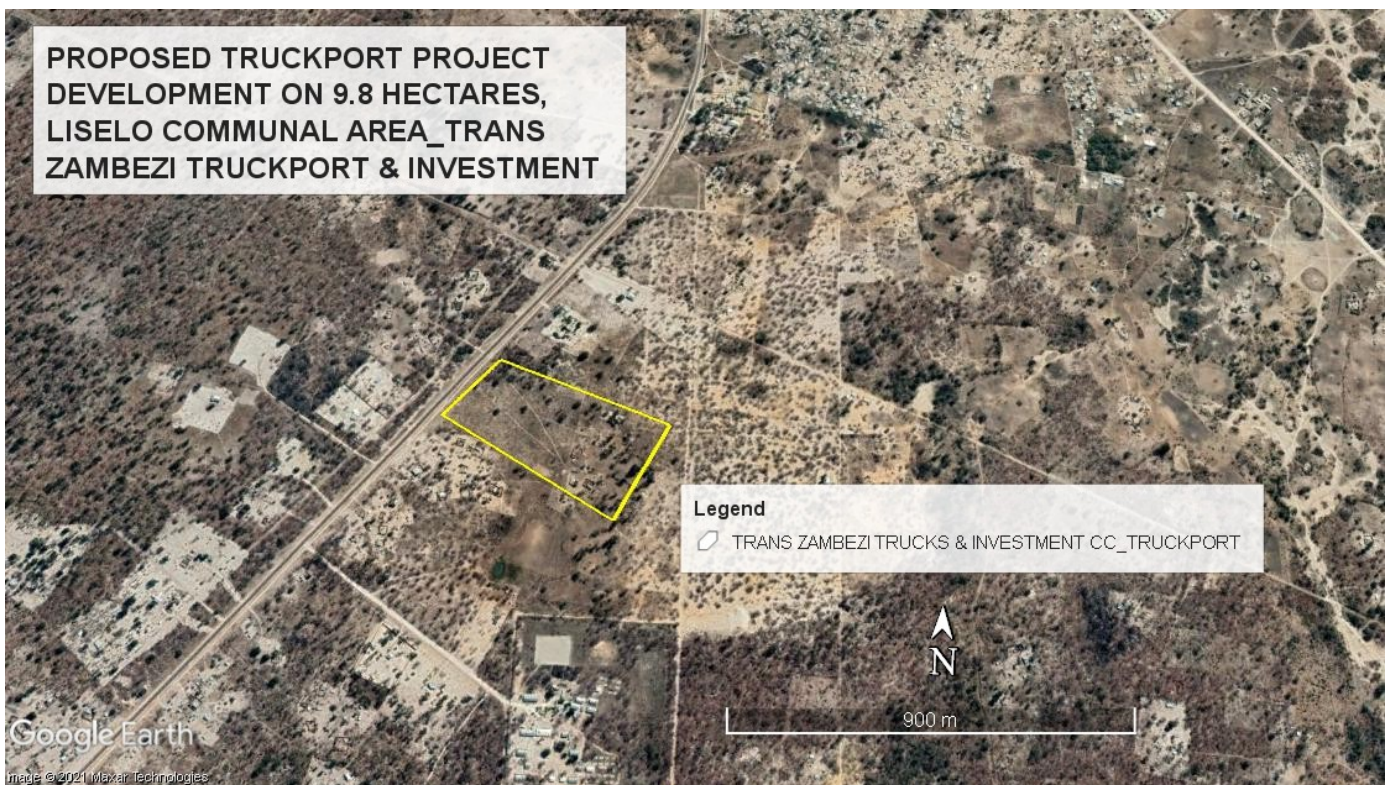


Figure 3: Locality plan, project site area

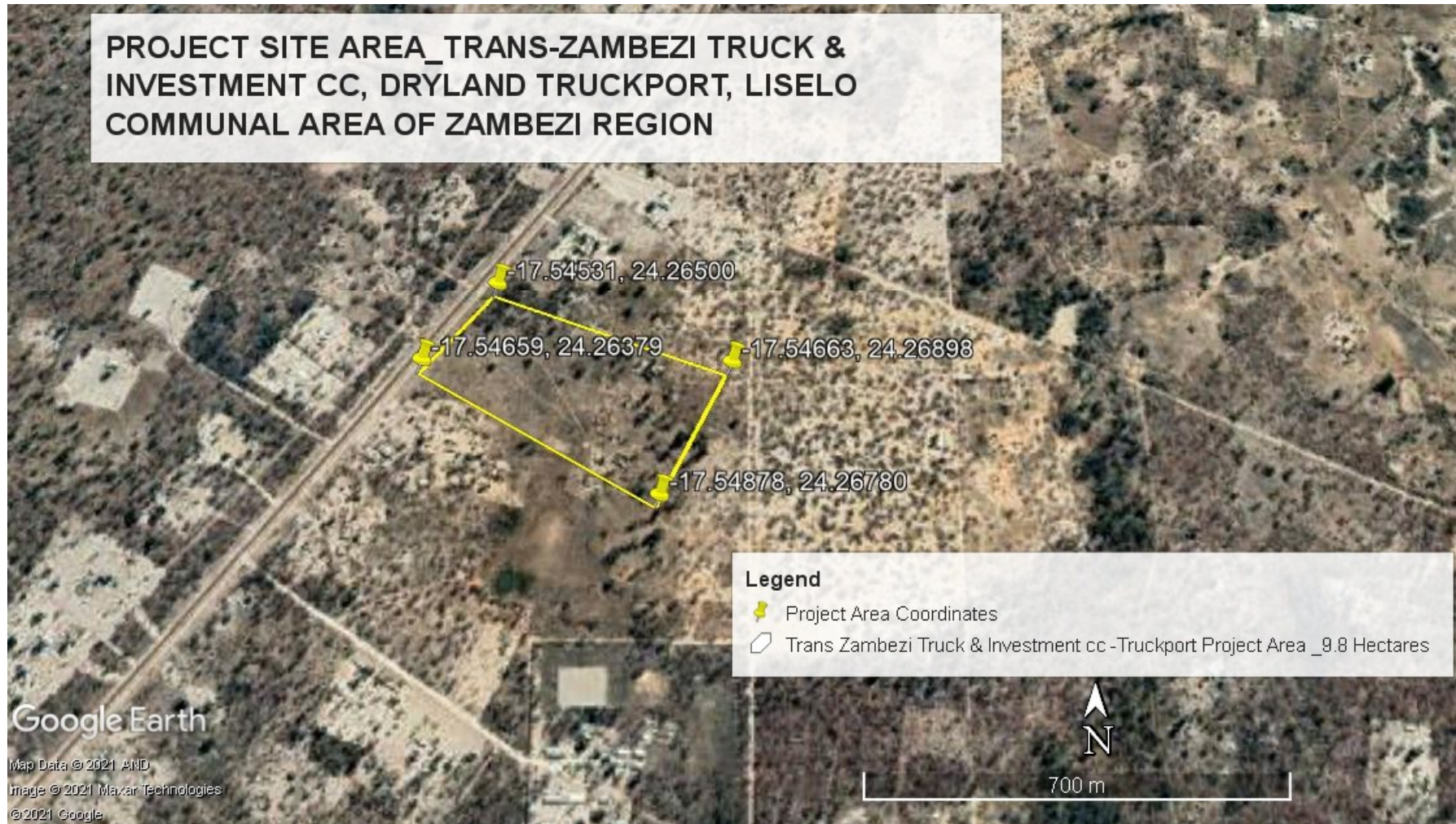


Figure 4: Coordinates for project area

6.2 Project Rationale

The proposed dryland truckport and associated infrastructures are aimed at providing parking station for the truckers that will be more secure and conducive that in turn will help to decongest the border area and the town square that is currently congested with trucks that park almost at undesignated and unauthorized spots along the streets in Katima Mulilo. The project will also provide vehicle clearing certification and parking for trucks in transit to either Zambia or Botswana, to relieve the pressure of parking spaces on roadside reserves for trucks in town of Katima Mulilo.

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According to the Zambezi Integrated Environmental Management plan, the site falls within the settlement and forest in which the following activities are permitted: Business, grazing and residential activity and there is no conservancy that exists in the area

The intention for applying for the clearance certificate is therefore to ensure the continuous operation and existence of the project to run it in a profitable, eco-friendly and sustainable way. The aim is to follow the Principles of Eco-development and offer clients the attraction that conserves the environment and improves the well-being of local people. Eco-project development is about uniting conservation, communities, and sustainable environmentally friendly project by minimizing impact on the environment. A dryland truck port is an inland intermodal terminal directly connected to boarder, river and/or seaport(s) by road or rail where customers can leave/pick up their units as if directly at a boarder. It is a very crucial part of the definition, because it implies a certain level of integration with boarder as well as availability of services that may be found at a port, such as storage, maintenance of containers, customs clearance, etc.

Therefore, dryland truckports are used much more consciously than conventional inland terminals, with the aim of improving the situation resulting from increased container flows, and a focus on security and control by the use of information and communication systems. Scheduled and reliable high-capacity transportation to and from the river boarder is essential and determines the truck port's performance and its environmental role. Based on their function and their location, truckports may be categorised as distant, mid-range and close.

INLAND TRUCK PORT BENEFITS

The report shows that an inland dryland truck port terminal in the entire region of Namibia, Zambezi region in particular, could achieve traffic, economic, social, and environmental benefits.

1. Traffic Benefits

Focus on cargo flow, modelling assumptions, and traffic impacts to help determine the traffic benefits of an inland port like the Liselo proposed truckport. This will reduce and decrease illegal stop overs of trucks in transit to other countries in southern Africa

a. Controlled safe parking for trucks

- The implementation of this project in Zambezi region will guarantee and assist in ensuring security for long distance truckdrivers and the trucks. The project plans to offer different services at one stop area where all paper work will be completed before departing to different territorial boarders.

b. Effective and Efficient service delivery

The proposed truckport ensures fast service delivery such as the clearing of consignments or good transported to other countries. This will reduce the workload of migration officers and will reduce the long hours and queues taken by drivers in conducting this activity at the boarders.

c employment creation and contribution to GDP

the establishment of the truckport will creation employment opportunities to residents of Liselo community and to residents of Zambezi region at large. It shall also add value to the country's GDP as truck drivers are required to pay service some of money for using this services through VAT charge. This will contribute to the regional revenues collected through transport services. – the development of the inland port would attract investment to the area and generate much-needed jobs and economic development opportunities for the region.

D. Adherence to transportation Standard

The establishment of dryland truckport will certainly meet the transport standards as the Zambezi region is considered the gate way to most southern African countries in Namibia. Having two

internationally recognised borders linking other African countries make is necessary for Zambezi region as a central and connecting region or have a truck port which shall serve and meet the demands of long-distance trucks in transit to neighbouring countries.

e. Improved Service to Shippers at a Potentially Reduced Cost

Shippers would benefit from being able to drop off export cargo closer to their location, and terminal operators would benefit from the ability to schedule loads of this export cargo for arrival at the truckport during non-peak terminal hours. The truckport operator could also plan for the cargo load list associated with the transportation.

c. Reduced Carbon Emissions

The reduction in truck trips and mileage driven means lower fuel consumption and reduced carbon emissions of approximately 10,000 tonnes a year with the conservative scenario. The primary environmental benefit is from a reduction in greenhouse gas emissions.

Secondary benefits include reduced vehicle idling from less traffic congestion and lower air pollution. The fewer truck kilometres driven in the trucks and the elimination of truck trips in the Lower Mainland results in significantly less diesel fuel consumed and, therefore, a sizeable reduction in carbon emissions.

1 Facility Overview

The proposed inland facility would have the following capabilities:

- a) "Hook and haul" service to mainline truck drivers. This means that the facility will not delay the trucks, and therefore will be able to exchange car strings from full-length intermodal trucks in less than one hour. The facility's design, equipment, and staffing must enable this level of service.
- b) Supporting design - the facility will be secured with fencing and have on-site security enabling storage of international cargo. The facility will have a cargo transfer warehouse that allows trans-loading from trucks, and shipping containers.

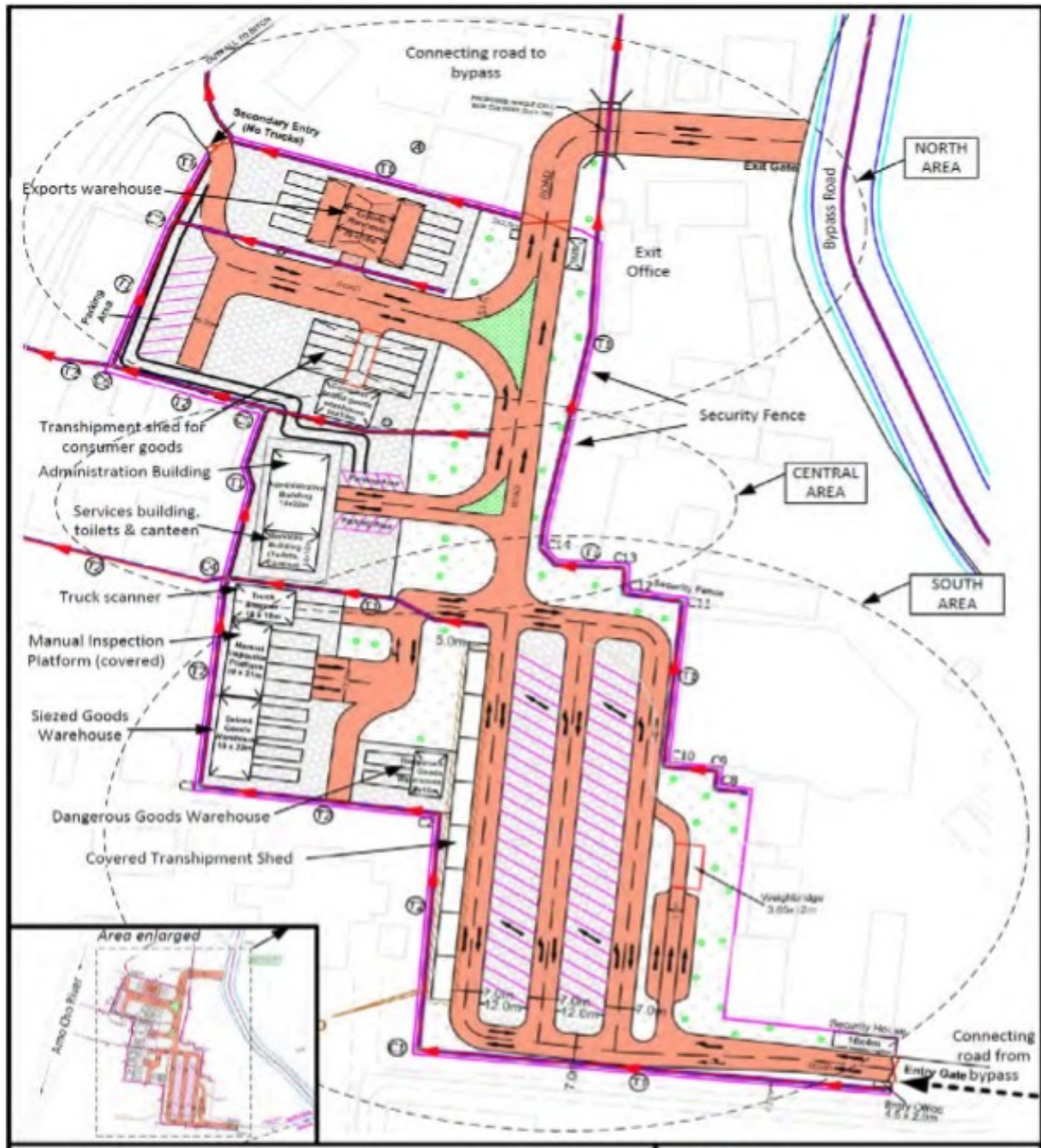


Figure 4: Example concept of layout plan of the truck port

c) Inventory - the facility must and will effectively manage a range of empty containers and operate in close coordination with the customers, terminals, and the rest of the supply chain. This implies investment in technology, management staff, and nearly 24-7 operations.

d. Construction Approach

The proposed Liselo truckport construction will be carried out in an environment friendly manner following the principles of balance cut and fill. Excess excavated materials will be disposed of in the preidentified approved disposal sites. Climate change adaptation (CCA) measures of improved adequate drainage constructions will be carried out.

e. Project Cost and Implementation Schedule

The estimated cost for Truckport is N\$ 2 Million including design and supervision costs and the construction of Dryland truck port is scheduled to start by March 2022 and expected to be completed by December 2022 within 1 year. The construction will be done in phases.

7. ENVIRONMENTAL AND SOCIAL OVERVIEW OF THE AFFECTED ENVIRONMENT

7.1 Introduction

In the following sections the current biological, physical and socio-economic conditions of the study area are discussed and their sensitivities to change are considered

7.2 Climate

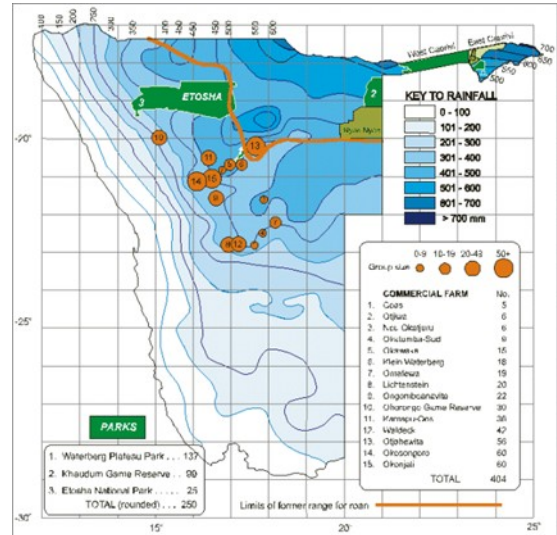
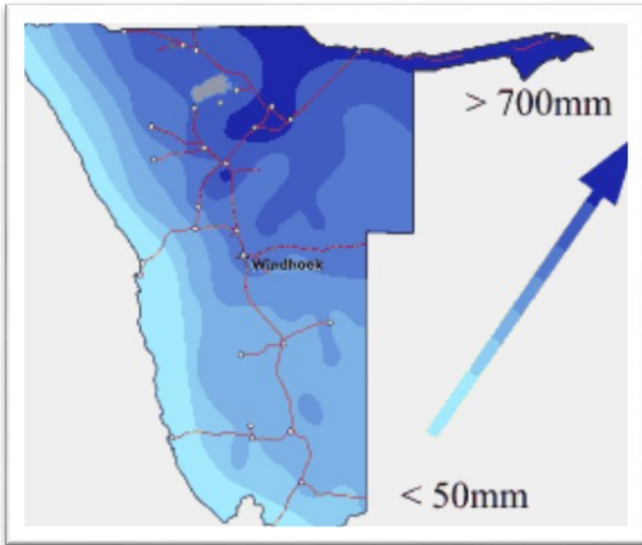
The climate of the area is fundamental; in determining the availability of water and also reveals much about its ecological sensitivity and resilience to change.

The climate of the area is fundamental; in determining the availability of water and also reveals much about its ecological sensitivity and resilience to change. The climate data below (table 3 below) is typical for north western Zambezi and is expected to occur at the truckport site.

According to the National Agriculture Policy (1995), scarce productive land and fragile soils, coupled with limited water resources and an erratic rainfall regime are the principal features of Namibia's agriculture. The country can be divided into four ecological zones:

- The desert region, comprising 22 per cent of the land area, where mean annual rainfall is less than 100 mm;
- The arid region, comprising 33 per cent of the land is, where mean annual rainfall varies between 100 and 300mm;
- The semi-arid region, comprising 37 per cent of the land area, where mean annual rainfall lies between 301 and 500 mm; and
- The semi-humid and sub-tropical region, comprising 8per cent of the land area, where mean annual rainfall is between 501 and 700mm

Table 3: sensitivities and potential impact related to climate



Environmental feature	Description	Sensitivities	Potential impact of the project
Rainfall	<ul style="list-style-type: none"> Highly variable thunderstorms Two distinct seasons – a dry season April to November and shorter wet season from end of November to April –Rain peak in January & February 550-600 mm per year Tropical climate with less evaporation Evaporation highest in September and October (Mendelsohn <i>et al</i> 1997) 	<ul style="list-style-type: none"> Flooding (April – July) Risk of flooding very high 	<ul style="list-style-type: none"> The lodge will cause an increase in water demand
Temperature	<ul style="list-style-type: none"> Average daily temperature vary between 20 in summer and 5°C in winter Highest temp between Sept and Nov, with maximums between 32 and 40 °C Frost is unusual Coldest temperatures .measured in July with an average daily maximum of 6°C (Mendelsohn <i>et al</i> 2009) 	<ul style="list-style-type: none"> High temperatures in summer Contributes to high evaporation rate 	Health and safety of the workforce
Wind direction	Prevailing wind direction is South easterly but north easterly winds are also experienced	<ul style="list-style-type: none"> Dust generation during dry seasons due to soil texture 	<ul style="list-style-type: none"> Increased dust

7.3 Topography and soils

The major feature of the Zambezi landscape is extensive forest, savannah sands with associated flood plains, channels and deposits which have resulted in producing six major landscapes. The truckport site area represents two of these landscapes:

- Savannah forest associated with dry grass
- Sandy soil

7.4 Surface and Ground Water Hydrology

The site is dominated by sandy, dry savannah grassland and trees, there is no availability of surface water in the area. Further, the site is not prone to flood, hence the underground water levels is uncertain and could only be predicted and/or estimated by the hydrological expertise for water sources.

The sensitivities associated with surface and groundwater features as well as the potential impacts the project may have on these features are contained in Table 4.

Table 4: Sensitivities and potential impacts related to surface and underground water

Environmental features	Description	Sensitivities	Potential Impacts of Project on feature
Zambezi river system	<ul style="list-style-type: none"> • Relatively large river that holds water permanently 	<ul style="list-style-type: none"> • The Zambezi River has real catchment area and is fed from outflows from the Angola river which drains a large area of Zambia. • Slow flowing river • Can change direction east or west depending on inflow from Kwando – Linyanti • Shared water resource 	<ul style="list-style-type: none"> • No Surface water pollution • No water abstraction from Zambezi • No Pollution as their river is situated kilometres away • No Impact on wet land system
Groundwater hydrology	<ul style="list-style-type: none"> • Underground water fairly abundant and flows in a south-easterly direction in a productive porous aquifer 	<ul style="list-style-type: none"> • Pollution 	<ul style="list-style-type: none"> • Any affluent resulting from the development is likely to affect the resources in the long term • No pressure on

	<ul style="list-style-type: none"> • Water reserves fairly close to surface, between 25-65 m • Water quality excellent (Mendelsohn et al 2002) 		sustainability of water resources
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7.5 Landscape characteristics

7.5.1 Vegetation

The Zambezi region is considered a semi-arid tropical savannah ecosystem with very distinct wet and dry seasons. Vegetation types in the Zambezi region is characterised by soils, flooding and fire. The site lies in the savanna and woodland vegetation (Kalahari woodland) Mendelsohn *et al.* (2002), where vegetation is dominated by tall tree species. The site has distinct communities of *Burkea-Terminalia* woodland (Hines, 1997). However, according to Lushetile (2009) this vegetation class has reduced species richness in comparison to other vegetation classes. Figure 5: captures the site structure and vegetation on the project site surrounding.



Figure 5: *Terminalia sericea* vegetation at the project area and the truckport construction worker

The site comprised of a cleared vegetation site and therefore vegetation is in a disturbed state. The site does not have a fully functional ecosystem due to the disturbance by the surrounding business development activities and road which has fragmented the landscape. Therefore, destruction of vegetation will be not on a pristine landscape. The landscape can be enhanced with re-forestation with desired species after construction to create micro-habitats.

A nested plot design was used to capture species occurring at the site. The results are captured below:

Table 5: Vegetation species prevalent in the project area surrounding

Tree species	Protection status
Tree layer	
3 <i>Burkea africana</i> Hook.	Protected
11 <i>Terminalia sericea</i> Burch. ex DC.	None
1 <i>Strychnos spinosa</i> Lam.	Protected
1 <i>Philenoptera violacea</i> (Schinz) Schrire Rhus	Protected
1 <i>Piliostigma thonningii</i> (Schumach.) Milne	Protected
1 <i>Vachellia erioloba</i>	Protected
Shrub layer	
<i>Ochna pulchra</i> Hook.	Namibian Near-endemic
<i>Vachellia erioloba</i> E.Mey.	Protected
<i>Bauhinia petersiana</i>	Protected
<i>Ximenia caffra</i> Sond. var. <i>caffra</i> Zehneria <i>marlothii</i> (Cogn.) R.& A.Fern	None
<i>Terminalia sericea</i> Burch. ex DC.	None
<i>Opuntia ficus-indica</i>	None - Invasive species
Herbs	
<i>Annona stenophylla</i> Engl. & Diels ssp.	N/A
<i>Acrotome inflata</i> Benth.	
<i>Bauhinia petersiana</i> Bolle ssp. <i>petersiana</i>	
<i>Combretum collinum</i> Fresen. ssp. <i>collinum</i>	
Grass	
<i>Aristida adscensionis</i> L.	N/A
<i>Aristida stipitata</i> Hack. ssp. <i>Stipitata</i> ssp. <i>minuta</i>	
<i>Aristida meridionalis</i> Henrard	
<i>Cenchrus ciliaris</i> L.	
<i>Digitaria seriata</i> Stapf	
<i>Eragrostis rotifer</i> Rendle	
<i>Eragrostis porosa</i> Nees	
<i>Grewia flavescens</i> Juss. var. <i>flavescens</i>	
<i>Hermannia eenii</i> Baker f.	
<i>Heteropogon contortus</i> (L.) Roem. & Schult.	
<i>Hermestaedia fleckii</i> (Schinz) Baker & C.B. Clarke	

Indigofera flavicans Baker

Kyllinga alba Nees

Lonchocarpus nelsii (Schinz) Heering

Piliostigma thonningii (Schumach.) Milne-Redh

Urochloa brachyura (Hack.) Stapf

Terminalia sericea was observed to be the dominant species at site. *T. sericea* can be invasive and its distribution is widespread. There is no protection for this species under current legislations. Wood from this species may be used as firewood after destructive activities on site. *Strychnos spinose* bears edible fruit and *Ochna Pulchra* makes beautiful ornamental trees. These can be uprooted and transplanted to a desirable position. *Opuntia species* is a threat native vegetation and therefore should be destroyed immediately to avoid infestation of this alien species. The *Burkea africana* is a timber species. Trees of this species observed on the plot were all of less than 45cm in diameter, should a need arise for such trees to be removed the Directorate of Forestry should be informed. *B. africana* wood can be used for household items such as stool and pestles.

7.5.2 Birds

As a result of the unavailability of surface water on the site, the area or the proposed site does not have abundance of bird species and wildlife. Birds are mostly confined by the river side of the mighty Zambezi River located some 15kilometer from the site area.

7.5.3 Wildlife

The project area is situated meters from the main road of trans-caprivi highway, a busy and high level developing node area which is situated about +-12 km from the town of Katima Mulilo, because of high number of prevailing socio-economic development, the area does not have any wildlife species and /or no conservation areas of interest.

There is only availability of small livestock's that grazes in other undisturbed parts of the liselo area. These small livestock engage in grazing near settlements during the wet seasons when the grazing land or pasture is good. Domestic livestock animals such as chickens, dogs and goats are some of the animals that could be observed in the area. Wild animals are mostly found in the wetlands of the East Zambezi region, areas which possess great value to the wetland grazing pastures and waterbodies, which also forms part of Tourism attraction in such wetlands areas.

Furthermore, due to the fact that the Liselo area is situated close to a highly populated town, the area where the proposed project is to be established is a developable area due to high

socio-economic activities, which does not possess any status of wildlife conservancy as there are nor bird or wildlife corridors in the area.

7.5.4 Agriculture

There is nor existing and/or any commercial and or subsistence agriculture taking place on the project site and/or the surrounding sites to the proposed project area. This is because the Liselo communal area is slowly being transformed into a high business node area for commercial general business and other infrastructure economic activities

7.6 Socio Economic Profile

7.6.1 Benefits and project economic activities at Liselo area

In the nutshell and on the national level, the overall objectives for entrepreneurial businesses in the country, in line with the National NDP and vision 2030 objectives, among other are to help attain the national objectives, the overall goal of the National Economic growth & empowerment is to increase economic growth, reduction & eradication of poverty and sustain and increase food security, within the context of Namibia's fragile ecosystem. The proposed Dryland TruckPort on the other hand have the following

- ✓ Gives opportunities for a faster and more effective container handling at the port.
- ✓ Reduces capacity problems on access roads to and from the port.
- ✓ Clusters companies and bodies dealing with goods transportation.
- ✓ Supports the truck port users with added value services, job creation, etc.
- ✓ Gives extra space for development of other activities in urban harbour areas such as residential and commercial areas, etc.
- ✓ Increases the catchment area of the port.
- ✓ Contributes to a modal shift from road to combined rail and sea.
- ✓ Reduces environmental conflicts by segregating different functions.

A monthly payment of N\$ 4800.00 will be paid by the developer (Trans-Zambezi Truckport & Investment cc) to the Liselo sub-khuta and the Mafwe Traditional Authority as a monthly rent per the agreement to be put in place after the completion of the development project. This will be a separate agreement between the traditional authority and the investor. The developer and/or investor have

agreed to pay a monthly amount of N\$ 5,000.00 to the Liselo sub-khuta community as part of the social responsibility to the Liselo community. Furthermore, a leasehold rental fee will also be paid to the Zambezi Communal Land Board as per the communal Land Reform Act No.5 of 2002. The amount to the land board will be paid in the account opened by the GRN through the Ministry of Land Reform.

A long-term mutual relationship between the truck port developers (Trans-Zambezi Truckport & Investment cc) and Liselo community will be developed. Significant community empowerment such as employment creation and assistance for social donations will also be offered to the community.

8. DESCRIPTION OF THE PROJECT

8.1 Site Layout

The project site is located some ± 3 kilometres from the boundary of the Katima Town Council and situated about 15 kilometres away from the Winella-Zambezi border, 15 kilometre from the mighty Zambezi River and 85 kilometres from the Namibia-Ngoma Botswana border post. The land for the site is associated with sandy and scattered Silver terminalia trees, acacia with the dominance of an open land savannah grassland, not suitable for wildlife.

8.2 Construction and Operational Phases

The 9.8 hectares of land allocated for this envisaged truck port project is at the moment partly cleared due to ongoing socio-economic developments being established in the area and because there are no large plant species on the site. It is an open forest savannah area characterised by few trees. Based on the proposal, the investor plans on starting with the construction as soon as the Zambezi Land Board approves his Leasehold business application which will be accompanied by an Environmental Clearance Certificate from the Ministry of Environment, Forestry & Tourism.

Trans-Zambezi Truckport & Investment cc plans on developing an environmentally friendly business which will comprise of an administrative office, truckers sleeping rooms with ablutions, small workshop, a convenient shop, and diesel fuel tanks as well a boarding and offloading area for distance trucks from and to Zambia and Botswana.

NB: Priority will be made that some local materials such as the poles, local made bricks and local made corrugated iron sheets, which will be used to build the truck port (the poles will be obtained from the surrounding timber traders in local shops in the town of Katima Mulilo).

8.3 Construction Phase Activities

- ✓ Upon completion of the preparation of the site, plans to connect a water pipeline connecting from existing Nam-water line (Katima to Sibbinda waterline) will be installed. The Nam-water pipeline runs alongside the road from Katima Mulilo going to the Sibbinda settlement (see pictures on page 30).
- ✓ In addition to that a power supply will also be installed during the construction phase, where power will be installed through connection to the existing rural electrification transformer from NORED. Trans-Zambezi Truckport & Investment cc is expected to spend close to N\$ 40 000.00 for connecting from the existing transformer to the project area.
- ✓ The construction of the proposed truckport development and/or the construction of the building will have other associated infrastructures that are essential for operation of the truckport. These will include 20 self-catered sleeping rooms for truck drivers or clients and a total of 25 workers (skilled and unskilled) will be employed during the construction and operation phase of the project.
- ✓ One (1) 100 000 Litre septic tank will be installed to absorb the liquid waste produced from the project activity building

8.4 Operational activities

- ✓ During the operation phase of the truck port development project a total of 25 skilled and semi-skilled workers will be employed at the project.
- ✓ The liquid wastes generated from the operations of the project will be channelled to 1x 100 000 Litre water tank, where applied chemicals will be installed to reduce the increase in the level of the wastes in the container.

(x1) 100 000 Litre septic tank to be installed



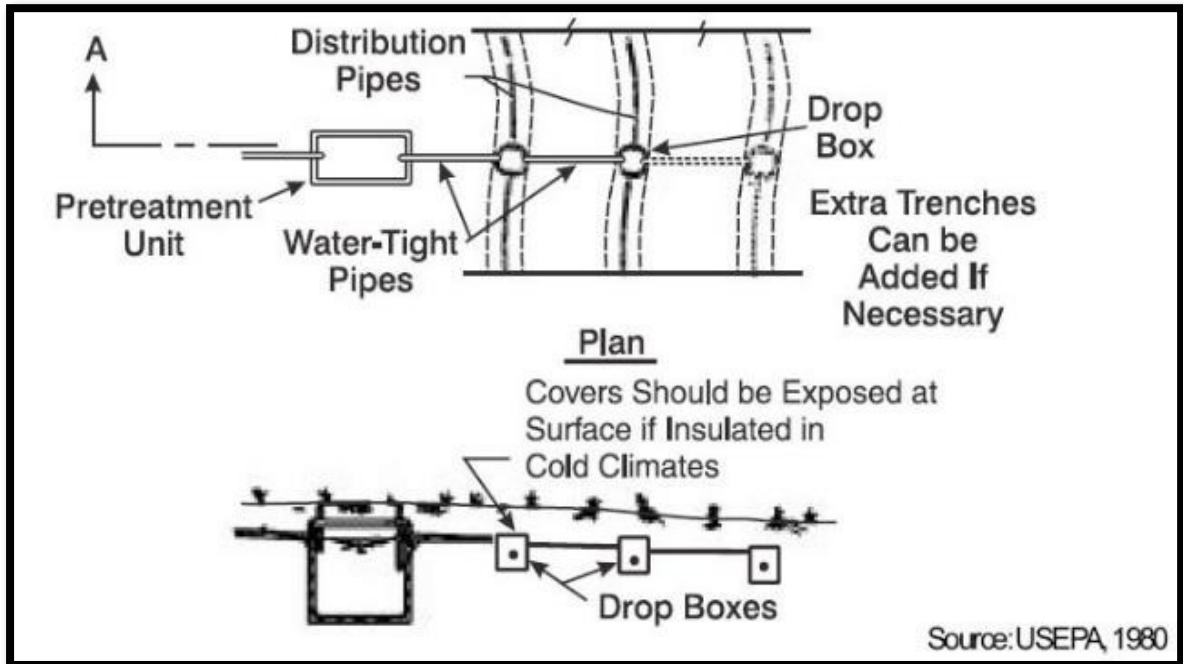


Figure 6: Layout connection design

- ✓ The solid wastes that will be generated from the operations of the truckport will be drained, transported and disposed to the nearest and designated dumping site of Katima Mulilo designated dumping site, which is situated in Liselo Communal Area some +-10 kilometres from the project site. The investor (Trans-Zambezi Truckport & Investment cc) will take responsibility to transport the solid wastes to the dumping site as the dumping site to serve costs.
- ✓ Continuous socio-economic services and assistance will be offered by the investor to the community of Liselo, the sub-khuta and the Mafwe traditional Authority depending on the necessity that arise.

9. ASSOCIATED INFRASTRUCTURE

9.1 Water

Water supply will be connected through Nam-water sibbinda pipeline which is already functional and is under the auspices of the Ministry for Agriculture, water and Land Reform. The pipeline runs alongside the trans-caprivi highway, whereas the pipe is located about +-20 meters from the envisaged proposed project area. The water is suitable for human consumption. This existing water pipeline supplies clean water to the communities of Liselo area.



Figure 7: installed and existing rural water supply pipeline katima sibbinda along the project area

9.2 Electrical Services

Since the proposed development is located close to other existing business infrastructure developments such as General businesses, Guesthouses, residential properties community and health facility, power supply will be connected through the same power line which is under the ownership of Nampower and Nored, hence the investor plans to obtain his power supply by connecting an extension to existing power supply which is situated about 80 meters to the proposed site area . The source of this power connection is connected from the main town of Katima Mulilo.

9.3 Sewage Treatment and Disposal

The Truckport development building will contain a large (x1) 100 000 Litre septic tank which will be installed about 4 meters underground, it is estimated that the capacity of the septic tank can last for many years and can take about to 30 years for it to reach its fullest capacity. A liquid chemical reduction medicine will be constantly stored poured inside the septic tank to help compress the wastes by preventing the overflow of the septic tank.

9.4 Solid Waste Disposal

The solid wastes will be transported and disposed to the Katima Mulilo designated dumping site (*see page 40-43 for mitigations*). The investor Trans-Zambezi Truckport & Investment cc will take the full responsibility to ensure the management & maintenance of transporting all solid wastes to the nearby located Katima Mulilo dumping site. The dumping site is located some 10 kilometres from the project site area.



Figure 8:
Designated Katima
Mulilo dumping site

Within the dryland truckport or premises there will be sufficient portable 240 Litre wheel bins that will be placed within the premises where waste material such as plastics and cane will be disposed. Once the wheel bins are full, the truckport operate will ensure the disposition of the waste material to the katima dumping site. There will be two (2) skip containers on the premises where heavy building rubbles will be disposed. It will be the truckport operator's responsibility to ensure that when the skip container is full such material are disposed at the dumping site.

240 L, Wheel bins to be placed on the premises



Figure 9: Skip container for refuse rubbles

10. STAKEHOLDER AND COMMUNITY CONSULTATIONS

Public participation forms an important component of the environmental Assessment process. It is defined by the Environmental Management Act (2007), as a '*process in which potential interested and affected parties are given an opportunity to comment on, or raise issues relevant to specific matters*'.

The objectives of the stakeholder consultation process was to disseminate information on the project and its expected impact, long-term as well as short-term, among primary and secondary stakeholders and to gather information on relevant issues so that the feedback received could be used to address these issues at early stages of project design. Another important objective was to determine the extent of the concerns amongst the community, to address these in the project implementation and to suggest appropriate mitigation measures. The feedback received has been used to address these issues at early stages of project design

Identification of Stakeholders

The stakeholders consulted for the Project included local affected persons, local authorities, educational institutions, local community and other groups with an interest in the area around the subject Project Truck port improvements will be implemented. Government agencies were also consulted. Individuals representing persons from the local community and around the Liselo area and representatives of the local municipality were informed about the Project and invited to comment on their environmental concerns. These stakeholders were considered to be representative of the community living in the area, the road users, the business associated with the roads near Truck port development area and the locally elected representatives. Consultations took place between 01 to 03rd November 2021.

Consultation with Stakeholders

Due to the extent of size of the proposed development, Public participation notices were advertised in local notice board around Liselo area, Mafwe Traditional Authority and in the newspapers circulating nation wide. The advert was in the Confidente & New Era newspaper on 12th and 26th November 2021 respectively. Also, the list Interested & affected parties stakeholder community meeting is hereby

attached as *appendix*.

Communication with stakeholders about the proposed truck port development was facilitated through the stated means above: The stakeholders were identified in terms of relevance to the project and who could serve as a source of information

The summaries of results of the public consultations are recorded in minutes attached. Many local people were pleased to respond but requested anonymity. The main environmental and other concerns can be summarized as follows.

- Most of the respondents in the general public around the truck port area indicated they did not have comments to make on the Project. None said the Project would affect their working and home lives.
- *Support for Project:* All respondents were in favour of the project and none identified anything that they could think of that was likely or would cause them not to support the Project
- *Overall environmental impact:* When questioned on the overall environmental impact of the project almost all respondents had some ideas to share. However, did not know enough to express an opinion or saw no potential effects. Several respondents identified in terms of temporary increased noise pollution, increases in accidents and that although impacts were moderate the implementing agency should be more environmentally aware.
- *Controlling environmental impacts:* When questioned on ideas on how to control the overall environmental impact of the project, respondents did not have any answers
- Most people were not very concerned about social issues as there were government employees and did not want to comment further

The first public consultative meeting was scheduled to take place on the 16 December 2021 where different vital entities such as the Land owners, Roads Authority, stakeholders, the Traditional Authority, investor and members of the Liselo community at (Liselo sub-khuta) were invited to discuss issues and concerns regarding the proposed truck port development and as well as raised concerns and proposals to mitigate the problems. Sadly, the meeting took place but there was a very low attendance of the invited entities. A public consultative meeting was therefore held on 16 December 2021. A total of 12 stakeholders or invited members

attended this meeting (see attached attendance list). The following key stakeholders were also invited to the public consultation meeting (see Letters for invitation to I & APs):

- Local Authority (Katima Town Council)
- Mafwe Traditional Authority
- Liselo Sub-khuta, Liselo community members & Residents of Liselo
- Ministry of land reform
- Ministry of environment & tourism
- Ministry of trade & industry
- Zambezi regional council
- Roads Authority Katima Office



Figure 10: Participatory consultative meeting the Liselo community at (Liselo Sub-khuta): Date: 16. 12.21

A summary of the issues and concerns that were raised by the interested and affected parties is listed below. The purpose of presenting the issues raised by participants in this section is simply to:

- Ensure transparency regarding the concerns that have been expressed;
- Ensure that all issues raised are properly addressed in the EIA, ESMP and mitigation measures proposed.

Issues dominated the discussions range from:

- Employment Creation
- Noise pollution
- Grazing

11. MAJOR IMPACTS IDENTIFIED

11.1 Deforestation and ecosystem impacts

Due to the close proximity of the Liselo communal area to the Katima Mulilo town (12 km), the area does not have dense forest, as it is a developing area associated with dry savannah forest. Forested areas are therefore limited in this part of the area. Limited information about Namibian forests are available, but according to a World Bank report of 2012, the area of forested land in Namibia in January 2010 was 72,900 km². This roughly translates into a 1% rate of deforestation per year

11.2 Grazing for Livestock

Having the Dry truck port development project in the Liselo area is believed not to affect any grazing land for livestock, as most of the land is not vegetated and have no good pasture for animal grazing. Most land situated close to the site is already utilized by other land uses such as the general businesses and residential land uses. As a result, no grazing land is available in the area. The area is dominated by dry grassland not suitable for grazing purpose.

According to the community of Liselo, through consultative meeting conducted, communities usually take their livestock to distant places such as the Katima quarantine where productive grassland is available for their cattle grazing. The proposed development therefore will have No negative impact on the Liselo community grazing land "the area is varsity". Through or with the application made to the Zambezi Communal Land Board, the application will allow the investor

Trans-Zambezi Truckport & Investment cc to enclose his business in fence, which will prevent animals and for security reasons for the project.

11.3 Groundwater Surface Water and Soil contamination

In terms of vulnerability of the soil and groundwater there are two main features of importance. The Liselo Communal area have (1) the heavy sandy soils and is a semi- dry area, and the area is not prone to flooding or leaching and (2) a very low water level in the area. Observing the activities of the proposed development, there are no factors that may impact on underground water and soil.

11.4 Noise pollution

The development of a Dry Truck Port will have a slight possibility of noise pollution emanating from the transportation trucks that will be arriving and boarding from this service project. The slight noise pollution will not have any detrimental effect to any land use around the area as the closest land use is the General Businesses and light industrial operational projects. The proposed truck port development is intended to provide potential clients with quality, viable and best clearing and accommodation services, where potential hindering nuisance activities such as noise pollution will be minimised. The Dry truckport will operate in line with the truck port development Policies and regulation of Namibia.

Table 7: Sustainability / Potential Appraisal

11.5 Sustainability / Potential Appraisal			
Impact on Ecological & Socio Economic	Level of Impact		Comments
	Positive	Negative	
Creation of Employment	High	None	20 unskilled local workers during the construction phase of the project and an estimate of ± 25 skilled & semi-skilled local workers during the operational phase of the project
Grazing& cattle corridors	N/A	None	An alternative nearby commonage suitable for grazing which is located few kilometres from the project site.
Abstraction of water	High	None	The water will be extracted from the Nam water pipeline situated about 10 meters from the

			proposed site.
Water Pollution	N/A	None	There will be no chemical and/or hazardous substances that will be produced from the proposed Dry truck port development that will contaminate or pollute surface and underground water. The area does not have sufficient surface water and it has sandy and is a dry savannah land. Based on this the level of underground water is presumed to be very low and far from the surface.
Tenure insecurity & land use disputes	Limited	N/A	Area is to be registered under a leasehold for a period of time for leasing to the investors, there are currently no land use activities in the proposed project area

Key Consideration Area

- Contribute to local economy & National economy
- Employment Creation
- Local level economic empowerment

12. IMPACT ASSESSMENT AND MITIGATION

12.1 Environmental Impact Associated with the Project

This section discusses the potential environmental impacts of the proposed Project and identifies mitigation measures to minimize the impacts in the design, construction and operational phases. Environmental analysis covered potential direct, indirect, cumulative, and induced impacts but primarily focusing on the physical impacts within and around the truck port operational areas.

Physical Impacts. The main physical issues relate to impacts such as new construction within the Truckport area, reconstruction of the drains and associated earthworks to upgrade the drainage and access, construction of new access to the truck port area roadways, obtaining rock based construction materials, supply and installation of pavement surfacing, casting of concrete components for septic tanks and drains, noise, dust, clearing waste and sediment from drains, disposal of residual hazardous

goods, disposal of other general waste, and water quality. The construction for the civil works will create some unavoidable dust and noise and all the above require to be addressed. There are also about removal of a large proportion of some old mature trees on site but some of these can be retained at the perimeter for aesthetic purposes and to provide visual mitigation by shielding the site.

Management Issues. The main management issues relate to impacts such as waste management and waste disposal, prevention of flooding, repair and re-provisioning drainage, materials supply, planning temporary traffic management measures, controlling noise and dust and managing workers and public safety.

Biological Impacts. The only biological issues relate to probable removal of the trees in the north section of the truck port Project area. The trees to be removed are natural grown trees in the 1970s, however some of these trees can be easily avoided. There is no issue of interference with sites protected for their biodiversity as the Project is very far from the nearest protected area. There will be no interference with protected forests as the works will be in the urban area

Social Impacts. In the short-term the proposed project will potentially have positive impacts on local employment in Zambezi by creating a demand for unskilled construction workers for the development of infrastructure in the project site area. This will result in improvement of the operational environment in the transshipment yards, which potentially would contribute to improve the working environment and facilitate better health and safety provisions if other management practices are introduced.

The proposed capacity building for increased efficiency and modernization of transshipment should result in safer and healthier working practices overall but introduction of less labour intensive transshipment practices in the future may result in a reduction of the requirements for day labourers and temporary increase unemployment. However, there may be other opportunities to reemploy day labouring staff such as in waste management and support of sanitary provisions and non-skilled health and safety activities

The social and human impacts are minimal as the improvements will be mostly within the Liselo truckport area. Adverse impacts outside are difficult to identify at this time but may be to adjacent employer's businesses adjacent that may be affected by drainage works.

Design / Pre-Construction Phase

1. Detailed Design

Dry TruckPort development will follow design and built modality. The contractor hired will be responsible for detailed design and subsequent construction of the DryPort (DP) facilities. Detail design will refer and comply with Namibian Transport Rules for structural analysis and design of DP.

Further, the contractor will hire Environmental Specialist (ES) who will carry out the review and update the existing EMP during detail design. The project design will incorporate the IEE study recommendations. EMP will be made integral part of the bidding and contract document. Environmental Mitigation measures will be itemized and put in the Bill of Quantities (BOQ).

2. Tree Felling

Part of the Dry Truck Port (DTP) development site falls on the forest vegetated area. Approximately about 5 trees will need to be removed to make way for DTP development. Tree felling will be done with approval from Department of Forest. The application for tree felling process will be initiated upon approval of the Clearance certificate. Upon approval from the department of Forestry (DoF), Trans-Zambezi Truckport & Investments cc will carry out tree felling in accordance with procedure set forth in Forest and Nature Conservation Rules. Only the necessary trees that marked by the DoF will be felled. The economically valuable trees will be handed to the Natural Resource Development STrans-Zambezi Truckport & Investments cc in consultation with DoF will carry out compensatory plantation. Depending on the availability vacant or barren government land, compensatory ratio of minimum of 1:1 will be followed if area designated is small and for large area a ration 1:4 to be applied.

3. Environmental capacity development

Environment Division under Regional council is involved in management and operation of region's solid waste collection and disposal; sewerage treatment; water treatment and supply; and maintenance of drainage and footpaths. However, it is not involved in monitoring and supervision of any new projects; since it is the responsibility of the Engineering Division. Both the Divisions lack expertise and experiences in carrying out the environmental compliance monitoring of the projects.

Moreover, as part of the overall capacity development, The Zambezi regional Council will provide environmental baseline (air and noise) monitoring equipment and the required training on data collection and assessment. During the construction period, equipment will be placed with the respective PCU/CSC; and after the completion of project it will be handed over to the Engineering Division.

C. Construction Phase

The source of the construction impacts from the Dry truck port will include (i) excavation of building foundations; (ii) construction dry truck port buildings, (iii) construction of the internal roads and parking areas; (iv) construction of perimeter walls and security fencing (v) construction of internal road side drainage (viii) installing landscaping road signage and accessories (viii) construction of the buildings and security apparatus throughout the site. The waste disposal issues for the works should be manageable as there will be no major excavation necessary.

1. Occupational Health and Safety

Worker occupational health and safety is generally governed Employment and Labour Act. Construction works will generally result in accidents and injuries or even demise of the workers if no health and safety measures are followed. General Rules and Regulations on Occupational Health and Safety will be applied for occupation safety.

Mitigation measures to be implemented by contractors to ensure health and safety of workers are as follows:

- a) The contractor will conduct of training (assisted by PIU) for all workers on safety and environmental hygiene at no cost to the employees. The contractor will instruct workers in health and safety matters as required by law and by good engineering practice and provide first aid facilities.
- b) The contractors will instruct and induct all workers in health and safety matters (induction course) including construction camp rules and site agents/foremen will follow up with toolbox talks on a weekly basis. Workforce training for all workers starting on site will include safety and environmental hygiene.
- c) Fencing on all areas of excavation greater than 1m deep and sides of temporary works shall be observed.
- d) Workers shall be provided with appropriate personnel safety equipment such as safety boots, helmets, gloves, protective clothes, dust mask, goggles, and ear protection at no cost to the workers.
- e) Reversing signals (visual and audible) shall be installed on all construction vehicles and plant.
- f) Contractor will at all-time keep the first aid kit at the construction sites.
- g) Contractor will be responsible for evacuation injured person to the nearest medical center and bear all the medical expenses

2. Community Health and Safety

Public safety, particularly of pedestrians and children can be threatened by the excavation of the trenches for side drain construction. Since construction site is alongside the trans-caprivi highway, it will be guarded on all sides by security personnel. Construction activities will be timed and provision for safe passage of school children and elderlies will be made. excavated trenches/ditches and freshly cut steep side slopes will be clearly marked and fenced for the safety of passers-by and workers alike. Project or construction vehicles will be briefed on speed limit within sensitive areas such as schools, commercial and residential areas. In event of accidents, the contractor will be responsible for immediate evacuation of injured person to the nearest medical centre. The contractor shall bear medical and other expenses of the injured person.

3. General Construction Waste Management

Uncontrolled waste disposal will contaminate soil and water bodies, thereby harming the environment. Mitigation measures will seek to reduce, recycle and reuse waste as far as practicable. The contractors will ensure implementation of following measures.

- a) In principle, the waste generation will be minimized at source.
- b) Waste products will be segregated, recycled and reused whenever possible.
- c) Recyclable waste will be sold to the scrap dealers.
- d) Organic waste such as plant materials will be composted
- e) Residual non-hazardous waste will be disposed off in the municipal landfill.
- f) Construction/workers' camps will be provided with sufficient refuse bins.
- g) Burning of construction and domestic wastes will be prohibited
- h) Disposal of solid wastes into flood ways, wetland, rivers, other watercourses, farmland, forest and associated places of worship or other culturally sensitive areas or areas where a livelihood is derived canals, agricultural fields and public areas will be prohibited.

4. Hazardous materials and hazardous waste disposal

Use of hazardous substances including oils and lubricants can cause significant impacts if uncontrolled or if waste is not disposed correctly. Hazardous waste disposed directly into drainage system can poison water body and affect downstream aquatic life. Mitigation measures will seek to control access to and the use of hazardous substances including chemicals, oils and lubricants and control waste disposal. Contractor will carry out following measures to minimize the impacts:

- i) Hazardous chemicals, oil and lubricants waste will be safely stored. Secondary containment around fuel storage area will be ensured.
- ii) Hydrocarbon, toxic material and explosives (if required) will be stored in adequately protected sites as per the Explosive and Hazardous Rules of RGOB to prevent soil and water contamination.
- iii) Equipment/vehicle maintenance and refuelling areas will be confined to areas in construction sites designed to contain spilled lubricants and fuels. Such areas will be provided with drainage leading to an oil-water separator that will be regularly skimmed of oil and maintained to ensure efficiency.

- iv) Fuel and other hazardous substances will be stored in areas provided with roof, impervious flooring and bund/containment wall to protect these from the elements and to readily contain spilled fuel/lubricant.
- v) Hazardous wastes (oil, used batteries, fuel drums) will be segregated, labelled and safely stored. The spent oil and batteries will be sold to recycling dealers.
- vi) Hazardous materials will be stored away from water bodies and above flood level.
- vii) Cleanup operation using readily available absorbent such as sawdust will be carried out immediately during accidental spillage of hazardous waste
- viii) All areas intended for storage of hazardous materials will be quarantined and provided with adequate facilities to combat emergency situations complying with all the applicable statutory stipulation.

5. Drainage and hydrology

There are no river streams in the project area thus no rivers will not be directly affected by proposed dry truckport construction activities. However, there will be an induced impact on the aquatic life, since the storm water carrying silt and other waste will ultimately join the ground. During construction, the contractor will ensure the proper disposal of spoil and other waste. Hazardous waste such as oil and lubricants will be properly stored and sent for recycling. Solid municipal waste will be disposed off in a municipal landfill.

6. Traffic Management

Construction activities are likely to cause hindrance in local traffic flow if not properly planned and executed. Contractor in consultation with PIU; local authorities (such as the regional council and local communities will come up with traffic management during construction. Work hours and traffic windows will be decided and implemented accordingly. Traffic flow during the rush hours (school and office opening and closing time) will be kept open.

7. Sanitation and Disease Vectors

Potential sanitation and impacts from disease need to be controlled by maintaining hygienic conditions in the Truckport area throughout the operational phase as well during construction by implementing appropriate social and health programs for the Project. Truck Port will ensure that improvements are made to site sanitation and will implement the mitigation measure below for all operational activities and also that the contractor ensures that:

- a) Measures to prevent malaria shall be implemented by installation of proper drainage to avoid formation of stagnant water, etc.

- b) Standing water will not be allowed to accumulate in the drainage facilities or along the warehouse sides to prevent proliferation of mosquitoes.
- c) Temporary and permanent drainage facilities will be designed to facilitate the rapid removal of surface water from all areas and prevent the accumulation of surface water ponds.
- d) Malaria controls will be implemented in line with social plans for the Project.

8. Noise and Dust

Earthworks and rock crushing activities will be the main sources of dust and noise. There will be significant dust and noise impacts on surrounding environment if no proper mitigation measures are followed. Therefore, to minimize the dust pollution impacts, contractor will implement following measures:

- a) Water sprinkling or spraying using tanker will be done twice a day to reduce dust generation. Water can be sourced from the nearby boreholes
- b) Construction work will be carried out only during day time (from 8.00am to 6 pm).
- c) If works have given rise to complaints over dust, the contractor shall investigate the cause, report it in the monthly progress reports and review and propose alternative mitigation measures before works recommence.
- d) Suitable construction noise barrier will be designed and constructed
- e) Fuel-efficient and well-maintained haulage trucks will be employed to minimize exhaust emissions. Regular maintenance will be carried out.
- f) Vehicles transporting soil, sand and other construction materials will be covered with tarpaulin sheets to reduce the release of dust and avoid impacts from dust. Speed limits of such vehicles within the works site and on unpaved edge areas of the Project road will be established and agreed.

11. Water Resource and Water Quality

During construction, the contractor will ensure the proper disposal of spoil and other waste. Hazardous waste such as oil and lubricants will be properly stored and sent for recycling. Solid municipal waste will be disposed off in a municipal landfill.

13. Impact Flora and Fauna

The project area is located in a semi-forested area a distance of approximately 8 kilometre from the Liselo clinic and the school. Except for removal of five (5)trees (from the project area), there will be no other impact on flora and fauna. For removed trees, project will carry out compensatory plantation with locally available native tree species. Depending on the availability of space, compensatory ration would be either 1:1 (in small area) or 1:4 (if larger vacant area is available).

14. Archaeological and cultural artifacts

There are no known archaeological and cultural sites within Project area. And hence no impact is expected.

15. Compensatory Plantation

Project in consultation with local government; Divisional Forest Office and community will locate the government or even community barren for compensatory plantation. Compensatory plant using local or native tree species will be carried out to replace the trees felled during the construction. Ratio for compensation will be 1:1 if the area of plantation is small. However, the project can go up to 1:4 if the larger areas available.

D. Operational Phase

During the operational phase of the Project, Department of Trade will operate and maintain the Mini Dry truck Port. The investor will be responsible for occupational health and safety of the workers and other occupants of the project. It will also take fully responsibility of handling and management of all hazardous materials shipped through the truckport. No hazardous waste will be discharge directly into the local drainage system. All hazardous waste will be collected and stored in a safe place until it is disposed of or recycled.

1. Noise and Dust

Noise standard permissible for industrial or commercial establishment are Daytime of and Night-time. And this applies for truck port operational area. However, immediately outside (within 10m), there are mixed used area and the permissible noise standard of daytime. So the operational noise reaching will be limited to mixed used standard. Noise will be monitored within truck port compound and as well as for sensitive areas (residential places) during construction and operational stages. Based on noise quality assessment, detailed design will design noise barrier of high concrete compound wall and constructed it all around truck port compound to limit direct noise impact. Further during detailed and pre-construction stage, the hired contractor will ensure that tree felling strictly limited to required level. Design will consider wherever possible leaving those trees that are immediately in and outside the proposed concrete boundary wall (noise barrier) to further act as noise barriers.

Dust pollution will be of problem particularly during dry winter season, it will be reduced by having concrete/asphalt surfacing of parking and trucks plying area. Further, if required, the water will be sprayed at least twice daily to dampen the dust. With regard to toxic fumes emissions, the trucks entering the truck port compound will be checked of emission standards as per the current practice of Road Safety standards. Routine checking and penalizing the defaulters is expected to bring level of toxic fume emission to acceptable limits.

2. Dangerous Goods and Hazardous Waste

During operations, truck port may handle dangerous and hazardous goods which will pose risk to safety of workers and the surrounding inhabitants. Import and handling of hazardous chemicals and explosives may result in accidents and injuries or even death to people working and living in and around the truck port. If the hazardous substances are disposed of in an open area it will affect surrounding vegetation and even pose health and safety risk to local population. Therefore, Truck port operator, will implement following measures to avoid accidents or poisoning local environment involving hazardous substances:

- i) Hazardous chemicals, oil and lubricants waste will be safely stored. Secondary containment around fuel storage area will be ensured.
- ii) Explosive material or substances will be prohibited into truck port area
- iii) Equipment/vehicle maintenance and refuelling areas will be confined to designated areas. And it will be provided with drainage leading to an oil-water separator that will be regularly skimmed of oil and maintained to ensure efficiency.
- iv) Fuel and other hazardous substances will be stored in areas provided with roof, impervious flooring and bund/containment wall to protect these from the elements and to readily contain spilled fuel/lubricant.
- v) Hazardous wastes (oil, used batteries, fuel drums) will be segregated, labelled and safely stored. The spent oil and batteries will be sold to recycling dealers.
- vi) Hazardous materials will be stored away from water bodies and above flood level. vii) Cleanup operation using readily available absorbent such as sawdust will be carried out immediately during accidental spillage of hazardous waste
- vii) All areas intended for storage of hazardous materials will be quarantined and provided with adequate facilities to combat emergency situations complying with all the applicable statutory stipulation

3. Sewerage and Wastewater Management

Truck port operation will generate sewage and wastewater. If untreated sewage and wastewater from port is released directly surrounding into environment or into the local drainage system, it will lead to pollution of land and water bodies. In order to avoid impacts of sewage and wastewater, DOT will implement following measures:

- i) Truck port sewage system will be connected septic tank system and Sewage Treatment Plan through sewage network in the area.

- ii) Based on the resulting wastewater from the truck port operation, Trans-Zambezi Truckport & Investments cc will install wastewater treatment plant. Treated wastewater could be used for spraying to dampen dust during operation.

E. Cumulative Environmental Impact

More than adverse cumulative impacts, the cumulative beneficial impacts would be higher for the entire region as well as for Liselo communal area, if truck port development along with the internal Access Road is carried out. Currently, all heavy transport carriers pass through the narrow Liselo area going straight to the town of Katima Mulilo and the Ngoma or Winnella border and customs and transshipment activities are carried out at various locations without centralized processes. This results in huge delays which increases the vehicle operating cost and causes congestion within the town. Therefore, development of dry truck port would have following cumulative beneficial impacts:

- i) Easing of traffic congestion inside Katima Mulilo town (currently all vehicles to and from Walvis Bay passes through only border crossing at Winnella and Ngoma);
- ii) Reduction of travel distance for heavy trucks (traveling through Trans-Caprivi highway)
- iii) Reduction of overall transportation cost
- iv) Reduction of fuel consumption and thereby lower greenhouse gas emissions
- v) Reduction of vehicular noise and exhaust pollution within Katima Mulilo town
- vi) Allowing of smooth and faster trading between Bhutan and regional countries; leading to better economic output of the country.

F. Trans-boundary Issues and Impacts

The proposed dry truckport project is located a far distance from the Mapacha airport about 10 kilometers from the project area. The southern boundary of port is particularly close to some residential units, who also consented to the project. At some point distance between project boundary and border is only around 5 km. The noise and dust pollution would be the minor issues. Noise and dust during construction and operation might impact neighbouring settlement. However, impact will not be severe as there will be 2 metre high border separation wall which will act as noise and dust barrier. Further the mitigation measures such as Port's temporary noise barrier and the permanent concrete noise barrier will further reduce and dust from reaching Indian neighbourhoods.

13. ENVIRONMENTAL MANAGEMENT PLAN

13.1 Objectives of the Environmental Management Plan(EMP)

An Environmental Management Plan (EMP) is a tool used to take pro-active action by addressing potential problems before they occur. This should limit the corrective measure needed. The Environmental Management Plan (EMP) provides management options to ensure impacts of the proposed Truck Port development project and operations are minimised.

The EMP acts as a stand-alone document, which can be used during the various phases (operational and decommissioning) of the DryTruck Port project. All personnel taking part in the operation of the truck Port project should be made aware of the contents of the EMP, so as to plan the relevant activities accordingly in an environmental suitable way.

As a result, the objectives of an Environmental Management Plan are to ensure the following:

- To include all components of the Dry Port project operations
- To prescribe the best and practicable control methods to lessen the environmental impacts associated with the operations of the Truckport
- To monitor and audit the performance and of operational personnel to supply such control
- Lastly is to ensure that appropriate environmental training is provided to all operational personnel.

The investor (Trans-Zambezi Truckport & Investments cc) implements an Environmental Management System (EMS) similar to the ISO 14001 system. An environmental Management System is an internationally recognised and certified management system that will ensure ongoing incorporation of environmental constraints. At the heart of an ISO 14001 EMS is the concept of continual improvement of environmental performance with resulting increases in operational efficiency, financial savings and reduction in environmental, health and safety risks. An effective EMS would need to include the following factors:

- A stated environmental policy which sets the desired level of environmental performance
- An environmental legal register

- An institutional structure which sets out the responsibility, authority, line of communications and the resources needed to implement the EMS
- Identification of environmental, safety and health training needs
- An environmental program, stipulating environmental objectives and target to be met and work instructions and control to be applied in order to achieve compliance with the environmental policy
- Periodic internal and external audits and reviews of environmental performance and the effectiveness of the EMS.

Accordingly, commitment of the Developer to effective environmental management provides the channel whereby strategies are transformed from the documented form and implemented. For the truckport project, the developer is committed to implementing a comprehensive environmental management programme. The project manager/developer and Operations Manager have ultimate responsibility for the achievement of environmental targets during the construction and operational phases, respectively. The environmental programme commits the Owner to allocation of sufficient resources, continuous improvement of environmental management practices in order to fulfil social and ethical responsibility and compliance with national and international standards.

The developer is responsible for the:

- Allocation of Resources
- Risk Assessment
- ensuring that the environmental policy is in place and communicated to all workers
- Designating role of staff members in EMP
- Appointment and monitoring of environmental management team

14. THE IMPLEMENTATION OF THE ENVIRONMENTAL MANAGEMENT PLAN (EMP)

A. Implementation Arrangements

The environmental regulations in Namibia are derived from the Environmental Assessment Act (2007). The environmental assessment rules are set out in the Regulation for Environmental Clearance of Projects (2012). For this project the requirement for statutory environmental assessment will be determined by Ministry of Environment and Tourism.

Liselo Truck port development will follow the principle of design and built modality. Trans-Zambezi Truckport & Investments cc will hire construction contractor who will be responsible for design as well as carry out the subsequent construction. Trans-Zambezi Truckport & Investments cc will also assist in capacity building in environmental monitoring and reporting.

Environmental Clearance will be issued by the Ministry of Environment, Forestry and Tourism (Directorate of Environmental Affairs) upon submission of the report and related comments with no objection certificates from the affected persons/community and other stakeholder.

The table 6: Defines the responsibilities for EMP implementation.

Agency	Responsibilities
Project Coordination Unit (Trans-Zambezi Truckport & Investments cc)	<ul style="list-style-type: none"> • Executing agency with overall responsibility for project construction and operation • Ensure that sufficient funds are available to properly implement the EMP • Provide sufficient funding and human resources for proper and timely implementation of required mitigation measures in the EMP • Ensure that Construction Supervision Consultant is recruited. • Ensure that Project implementation complies with Namibia's environmental policies and regulations
	<ul style="list-style-type: none"> • Ensure that environmental protection and mitigation measures in the EMP are incorporated in the detailed designs • Establish and implement an environmental grievance redress mechanism, as described in the Act, to receive and facilitate resolution of affected peoples' concerns, complaints, and grievances about the Project's environmental performance • Confirm that bidding and contract documents include the EMP. Submit semi-annual monitoring reports on EMP implementation to DEA (Directorate of Environmental Affairs) and identify environmental corrective actions and prepare a corrective action plan, as necessary, for submission. • Consult or hire an Environmental Specialist to ensure proper implementation of EMP provisions. Through this specialist shall: (i) ensure proper and timely implementation of tasks specified in the EMP, (ii) conduct environmental training as specified in the EMP, (iii) conduct contractors workers' orientation on EMP provisions, (iv) undertake regular monitoring of the contractor's environmental performance, as scheduled in the EMP (v) conduct field measurements for dust and noise as if complaints arise, and (v) prepare environmental baseline report

	<p>and semi-annual environmental monitoring reports, as specified in the EMP, for submission to DEA.</p>
Project implementation Unit	<ul style="list-style-type: none"> • Liaise with the Environmental Officer in Zambezi region or Katima Mulilo to ensure that Project implementation complies with environmental standards, principles and requirements; • Ensure that bidding and contract documents include the EMP; • Ensure that the Contractor provide sufficient funding and human resources for proper and timely implementation of required mitigation measures in the EMP and the contractor(s) identify these sums separately in the bidding documents; • Submit quarterly reports on EMP implementation DEA and Trans-Zambezi Truckport & Investments cc directors; • Ensure that EMP provisions are strictly implemented during various project phases (design/pre-construction, construction and operation) to mitigate environmental impacts to acceptable levels; • Check that environmental protection and mitigation measures in the EMP are incorporated in the detailed designs; • Check that necessary environmental clearances and approval(s) from DEA prior to award of civil works contracts; • Participate in an environmental grievance redress mechanism, as described in the Act, to receive and facilitate resolution of affected peoples' concerns, complaints, and grievances about the Project's environmental performance; • Ensure monitoring of the implementation of the EMP (mitigation and monitoring measures); • Prior to bidding ensure that the contractors agree to implement environmental and safety requirements as required in draft contracts to ensure compliance with environmental statutory and contractual obligations and proper implementation of the EMP; • Conduct environmental management awareness training sessions for Contractor as described in the EMP
Construction Supervision Consultant	<ul style="list-style-type: none"> • Attend environmental management and capacity building training sessions on the EMP; • Ensure implementation of mitigation and monitoring measures for various project phases in the EMP by contractors; • Undertake day to day environmental management and make observations and keep written record of environmental management activities for Truck port as described in the EMP. • Participate in an environmental grievance redress mechanism, to receive and facilitate resolution of affected peoples' concerns, complaints, and grievances

	about the Project's environmental performance
Contractor	<ul style="list-style-type: none"> • Prior to start of bidding agree in writing to implement (if selected) environmental and safety requirements to ensure compliance with environmental statutory and contractual obligations and proper implementation of the EMP. • Provide sufficient funding and human resources for proper and timely implementation of required mitigation measures in the EMP and identify these sums separately in the bidding documents. • Implement environmental and safety requirements to ensure compliance with environmental statutory and contractual obligations and proper implementation of the EMP • Attend environmental management awareness training sessions for Contractor as described in the EMP. • Implement additional environmental mitigation measures for unexpected impacts, as necessary • Participate in an environmental grievance redress mechanism, as described in the EMP, to receive and facilitate resolution of affected peoples' concerns, complaints, and grievances about the Project's environmental performance.
Trans-Zambezi Truckport & Investments cc (Investors for truck port)	<ul style="list-style-type: none"> • Responsible for operation and maintenance of Project. • Implement EMP monitoring during operations
DEA (Environmental Commission)	<ul style="list-style-type: none"> • Review and approve environmental assessment reports required by the Government. • Undertake monitoring of the project's environmental performance based on their mandate

To facilitate effective EMP implementation during construction, the contractors will be oriented on the environmental terms and conditions of the project. The contractor's compliance with the environmental conditions is directly linked with the work progress payments. Clearances for payments will include certification from the Project Manager as to the effective implementation of the EMP and all other mitigation measures specified in the EMP. The completion of implementation of mitigation measures will therefore be linked to payment milestones.

B. Environmental Mitigation

The anticipated environmental impacts and mitigation measures discussed in the previous section is presented in Table below. The table also shows responsibilities and timeframe/schedule for implementation of mitigation measures and monitoring.

Table below shows that most mitigation activities during pre-construction are to be implemented by the Project coordinator, (assisted by Construction Supervision Consultant). During construction mitigation measures shall be primarily implemented by the contractor and monitored by Construction Supervision Consultant on behalf of Trans-Zambezi Truckport & Investments cc . During operation stage, Trans-Zambezi Truckport & Investments cc and DEA will undertake environmental mitigation and monitoring requirements specified in the EMP. To ensure implementation of mitigation measures during construction, the EMP will be included in the bidding and contract documents for civil works. Contractors' conformity with environmental contract procedures and specifications will be regularly monitored by Project Coordination Unit and results shall be reported semi-annually to Directorate of Environmental Affairs

14.1 Mitigation Measures during Constructions Phase & Operation Phases of the Dry Truck Port Development (table 7)

Table 7: Environmental Mitigation and Environmental Performance Monitoring Plan for Dry Truck Port at Liselo Communal area.

Environmental Concern	Objective	Impact mitigation		Performance and Impact monitoring
		Proposed mitigation measures	Responsible for Implementation	Responsible to monitor
DESIGN & PRE-CONSTRUCTION				
1. Detailed Design	Incorporate design measures in the project design to minimize environmental impacts	<ol style="list-style-type: none"> 1. The Dry Truck Port development will follow design and built modality. The contractor hired will be responsible for detailed design and subsequent construction of the MDP facilities. 2. The contractor will hire Environmental Specialist (ES) who will carry out the review and update the existing EMP during detail design and the project design will incorporate the environmental study recommendations. 3. EMP will be made integral part of the bidding and contract document. Environmental Mitigation measures will be itemized and put in the Bill of Quantities (BOQ). 4. Grievance Redress Committee will be formed prior to the start of civil works 	Contractor	Project Coordination Unit
2. Environmental capacity development	Develop environmental management capacity	<ol style="list-style-type: none"> 1. Trans-Zambezi Truckport & Investments cc will provide environmental baseline (air and noise) 	Project implementation Unit	Regional Environment officer, Project implementation Unit& Construction

		<p>monitoring equipment and the required training on data collection and assessment.</p> <p>2. Project Management Unit shall conduct awareness training for the contractors and the site agents and workers on implementation of construction mitigation measures in the Project EMP and any additional mitigation measures that may be required during construction phase</p>	& Construction Supervision Consultant	Supervision Consultant
3 Tree Felling or Site Clearance	Tree felling by contractor	<p>1. Tree felling will be done with approval from Department of Forest (DoF). The application for tree felling process has been initiated and approval will soon be accorded</p> <p>2. Upon approval from the DoF, Trans-Zambezi Truckport & Investments cc will carry out tree felling in accordance with procedure set forth in Forest and Nature Conservation policies. Only the necessary trees that marked by the DoF will be felled.</p> <p>3. The economically valuable timbers will be handed to the sold by the developer inline with Forestry laws and regulation.</p> <p>4. Trans-Zambezi Truckport & Investments cc in consultation with DoF will carry out compensatory</p>	Contractor	Construction Supervision Consultant budget & Directorate of Forestry (DoF) Budget

		plantation. Depending on the availability vacant or barren government land, compensatory ratio of minimum of 1:1 will be followed if area designated is small and for large area a ration 1:4 to be applied.		
4 Baseline Environment data (Air and Noise)	Establishment of baseline data on air and noise	<ol style="list-style-type: none"> 1. As part of institutionalization and capacity building for environmental compliance monitoring and reporting, financial institutions together with Trans-Zambezi Truckport & Investments cc will finance the procurement environmental monitoring equipment and provide the necessary training. Baseline data on air quality and noise levels of all sensitive area (commercial, residential and institutional) will be assessed before commencement of civil works. These data will help in assessing project impacts during implementation. 2. Based on noise quality assessment, detailed design will design noise barrier of high concrete compound wall around Truck port compound to limit direct noise impact during operation. Further during detailed and preconstruction stage, the hired contractor will ensure that tree felling strictly limited to required level. Design will consider wherever possible leaving those trees that are immediately in and outside the proposed concrete 	Construction Supervision Consultant & Contractor	Project implementation Unit & Construction Supervision Consultant

		boundary wall (noise barrier) to further act as noise barriers.		
CONSTRUCTION STAGE				
1. Safety Precautions for the Workers	Ensure worker's safety	<p>1. Worker's occupational health and safety will be generally governed Labour and Employment Act of Namibia 11of 2007. Construction works will generally result in accidents and injuries or even demise of the workers if no health and safety measures are followed.</p> <p>General Rules and Regulations on Occupational Health and Safety (OHS) in Construction, Manufacturing, Mining and Service Industries will be applied for occupation safety. Mitigation measures to be implemented by contractors to ensure health and safety of workers are as follows:</p> <ol style="list-style-type: none"> 1. The contractor will conduct of training (assisted by Project implementation Unit) for all workers on safety and environmental hygiene at no cost to the employees. The contractor will instruct workers in health and safety matters as required by law and by good engineering practice and provide first aid facilities. 2. The contractors will instruct and induct all workers in health and safety matters (induction course) including construction camp rules and site agents/foremen will 	Contractor	Construction Supervision Consultant budget & Directorate of Forestry (DoF) Budget

		<p>follow up with toolbox talks on a weekly basis. Workforce training for all workers starting on site will include safety and environmental hygiene.</p> <ol style="list-style-type: none"> 3. Fencing on all areas of excavation greater than 1m deep and sides of temporary works shall be observed. 4. Workers shall be provided with appropriate personnel safety equipment such as safety boots, helmets, gloves, protective clothes, dust mask, goggles, and ear protection at no cost to the workers. 5. Reversing signals (visual and audible) shall be installed on all construction vehicles and plant. 6. Contractor will at all-time keep the first aid kit at the construction sites. 7. Contractor will be responsible for evacuation injured person to the nearest medical center and bear all the medical expenses 		
3. Public safety	Prevent accident with public in local community	<ol style="list-style-type: none"> 1. Install barriers (e.g., temporary fence) at construction areas to deter pedestrian access to the roadway except at designated crossing points. 2. The general public/local residents shall not be allowed in 	Contractor	Construction Supervision Consultant budget & Directorate of Forestry (DoF) Budget

		<p>high-risk areas, e.g., excavation sites and areas where heavy equipment is in operation and such sites have a watchman to keep public out.</p> <ol style="list-style-type: none"> 3. Speed restrictions shall be imposed on Project vehicles and equipment when traveling within 50 m of sensitive receptors 4. Upon completion of construction works, borrow areas will be backfilled (if suitable materials are available, e.g., excavation spoils) or fenced. 		
4a. General Construction Waste Management	Reduce, reuse and recycle waste and contamination due to poor waste disposal practices	<p>Uncontrolled waste disposal operations can cause significant impacts. Mitigation measures will seek to reduce, recycle and reuse waste as far as practicable. The contractors will ensure implementation of following measures.</p> <ol style="list-style-type: none"> 1. In principle, the waste generation will be minimized at source. 2. Waste products will be segregated, placed into wheel bins and skip container where possible. 3. Recyclable waste will be sold to the scrap dealers. 4. Organic waste such as plant materials will be composted 5. Residual non-hazardous waste will be disposed off in the municipal landfill. 6. Construction/workers' camps will be provided with 	Contractor	Construction Supervision Consultant budget & Directorate of Forestry (DoF) Budget

		<p>sufficient refuse bins.</p> <ol style="list-style-type: none"> 7. Burning of construction and domestic wastes will be prohibited. 8. Disposal of solid wastes into flood ways, wetland, rivers, other watercourses, farmland, forest and associated places of worship or other culturally sensitive areas or areas where a livelihood is derived canals, agricultural fields and public areas will be prohibited. 		
4b. Use of hazardous substances and hazardous waste disposal	Minimize contamination due to use and storage of hazardous substances	<p>Use of hazardous substances including oils and lubricants can cause significant impacts if uncontrolled or if waste is not disposed correctly. Hazardous substance disposed of into open area and drainage system will directly harm surrounding environment and downstream water body. Mitigation measures will seek to control access to and the use of hazardous substances such as oils and lubricants and control waste disposal. Contractor will carry out following measures to minimize the impacts:</p> <ol style="list-style-type: none"> 1. Oil and lubricants will be safely stored. Secondary containment around fuel storage area will be ensured. 2. Hydrocarbon, toxic material and explosives (if required) will be stored in adequately protected sites as per the Explosive and Hazardous Rules of government to prevent soil and water contamination. 3. Equipment/vehicle maintenance and refuelling areas will 	Contractor	Construction Supervision Consultant budget & Directorate of Forestry (DoF) Budget

		<p>be confined to areas in construction sites designed to contain spilled lubricants and fuels. Such areas will be provided with drainage leading to an oil-water separator that will be regularly skimmed of oil and maintained to ensure efficiency.</p> <ol style="list-style-type: none">4. Fuel and other hazardous substances will be stored in areas provided with roof, impervious flooring and bund/containment wall to protect these from the elements and to readily contain spilled fuel/lubricant.5. Hazardous wastes (oil, used batteries, fuel drums) will be segregated, labelled and safely stored. The spent oil and batteries will be sold to recycling dealers6. Hazardous materials will be stored away from water bodies and above flood level. Clean-up operation using readily available absorbent such as sawdust will be carried out immediately during accidental spillage of hazardous waste.7. All areas intended for storage of hazardous materials will be quarantined and provided with adequate facilities to combat emergency situations complying with all the applicable statutory stipulation.		
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5. Drainage and Hydrological Impacts	To minimize hydrological impacts flooding and runoff of river banks. be	<p>Since there is no river close by the project area, no direct adverse effects will be caused by the Truck Port construction activities. However, there will be an induced impact on the underground water quality and its aquatic life, since the storm water carrying silt and other waste might ultimately join the under. Contractor will implement following measures to minimize the impacts:</p> <ol style="list-style-type: none"> 1. During construction, the contractor will ensure the proper disposal of spoil and other waste. 2. Hazardous waste such as oil and lubricants will be properly stored and sent for recycling. 3. Solid municipal waste will be disposed of in a municipal landfill 	Contractor	Construction Supervision Consultant budget & Directorate of Forestry (DoF) Budget
6. Traffic Management	Minimize disturbance of traffic and traffic congestion	<ol style="list-style-type: none"> 1. Communicate to the public through local officials regarding the scope and schedule of construction, as well as certain construction activities causing disruptions or access restrictions. 2. In coordination with local traffic authorities, implement appropriate traffic diversion schemes to avoid inconvenience due to project operations to road users, ensure smooth traffic flow and avoid or minimize accidents, traffic hold ups and congestion 3. In coordination with local traffic officials, schedule transport of materials to avoid congestion, set up clear 	Contractor & Project implementation Unit	Project implementation Unit budget, Construction Supervision Consultant budget & Directorate of Forestry (DoF) Budget

		<p>traffic signal boards and traffic advisory signs at the roads going in and out the road and bridge construction sites to minimize traffic build-up.</p> <ol style="list-style-type: none"> 4. Provide safe vehicle and pedestrian access around construction areas. 5. Install bold diversion signs that would be clearly visible even at night and provide flag persons to warn of dangerous conditions (24 hours, as necessary) 6. Provide sufficient lighting at night within and in the vicinity of construction sites. 		
7. Sanitation and Diseases	Control of infectious diseases	<ol style="list-style-type: none"> 1. Standing water will not be allowed to accumulate in the temporary drainage facilities or along the roadside to prevent proliferation of mosquitoes. 2. Temporary and permanent drainage facilities will be designed to facilitate the rapid removal of surface water from all areas and prevent the accumulation of surface water ponds. 3. Malaria controls ((e.g., provision of insecticide treated mosquito nets to workers, installation of proper drainage to avoid formation of stagnant water, etc.) and HIVAIDS education will be implemented in line with social plans for the project. 	Contractor	Project implementation Unit budget, Construction Supervision Consultant budget & Directorate of Forestry (DoF) Budget
9. Noise and dust nuisances	To minimize air impacts effectively and avoid complaints due to the	Although temporary in nature, construction activities generate noise and dust pollution affecting local communities as well as other establishments. Noise and dust may affect the communities	Contractor & Construction Supervision	Project implementation Unit budget, Construction Supervision Consultant budget & Directorate of Forestry (DoF) Budget

	airborne dust.	<p>living across the Liselo area or trans-caprivi highway. Following mitigation measure will be applied to reduce nuisances:</p> <ol style="list-style-type: none"> 1. Water sprinkling or spraying using tanker will be done twice a day to reduce dust generation. 2. No work will be carried out within 500m of any settlement during the night (2100 hrs to 0700 hrs). 3. Fuel-efficient and well-maintained haulage trucks will be employed to minimize exhaust emissions. Regular maintenance will be carried out. 4. Noise and dust monitoring will be required carried out during the construction. 5. Temporary Noise barrier made of thick ply board or MS sheet will be erected during construction. 6. High concrete wall (as prescribed by design) will be constructed all around the Truck port area to noise travel and impact on communities living nearby. 	Consultant	
10. Compensatory Plantation	Provide environmental enhancement of the project	Project Investors in consultation with local government; Divisional of Forest Office and community will locate the government or even community barren for compensatory plantation. Compensatory plant using local or native tree species will be carried out to replace the trees felled during the construction. Ratio for compensation will be 1:1 if the area of plantation is small. However, the project can go up to 1:4 if the larger areas available.	Contractor	Project implementation Unit budget, Construction Supervision Consultant budget & Directorate of Forestry (DoF) Budget
OPERATIONAL STAGE				
1. Noise and Dust	Minimize noise and dust	1. Noise will be monitored within Truck port project area	Truck Port	Trans-Zambezi Truckport & Investments

	pollution	<p>and as well as for sensitive areas (residential places) during construction and operational stages. Based on noise quality assessment, detailed design will design noise barrier of high concrete project area wall and constructed it all around Truck port area to limit direct noise impact. Further during detailed and pre-construction stage, the hired contractor will ensure that tree felling strictly limited to required level. Design will consider wherever possible leaving those trees that are immediately in and outside the proposed concrete boundary wall (noise barrier) to further act as noise barriers.</p> <ol style="list-style-type: none"> 2. Truck port operation will give rise to dust and toxic fumes pollution both within and outside Truck port area. Dust pollution will be of problem particularly during dry winter season, it will be reduced by having concrete/asphalt surfacing of parking and trucks plying area. Further, if required, the water will be sprayed at least twice daily to dampen the dust. 3. Toxic fumes emissions, the trucks entering the project area will be checked of emission standards. Routine checking and penalizing the defaulters is expected to bring level of toxic fume emission to acceptable limits. 	Operator (Trans-Zambezi Truckport & Investments cc)	cc budget
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<p>2.Dangerous goods and Hazardous waste</p>	<p>Minimize noise and dust pollution impacts</p>	<p>During operations, Truck Port may handle dangerous and hazardous goods which will pose risk to safety of workers and the surrounding inhabitants. Import and handling of hazardous chemicals and explosives may result in accidents and injuries or even death to people working and living in and around the port. Hazardous chemicals if discharged into drainage system will affect the downstream water quality. If the hazardous substances are disposed of in an open area it will affect surrounding vegetation and even pose health and safety risk to local population. Therefore, Truck Port operator, the Department of Health will implement following measures to avoid accidents or poisoning local environment:</p> <ol style="list-style-type: none"> 1. Hazardous chemicals, oil and lubricants waste will be safely stored. Secondary containment around fuel storage area will be ensured. 2. Explosive material or substances will be prohibited into Project truck port area 3. Equipment/vehicle maintenance and refuelling areas will be confined to designated areas. And it will be provided with drainage leading to an oil-water separator that will be regularly skimmed of oil and maintained to ensure efficiency. 4. Fuel and other hazardous substances will be stored in areas provided with roof, impervious flooring and 	<p>Truck Port Operator (Trans-Zambezi Truckport & Investments cc)</p>	<p>Trans-Zambezi Truckport & Investments cc budget</p>
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		bund/containment wall to protect these from the elements and to readily contain spilled fuel/lubricant.		
2.Waste Water management	Management Prevent waste water from entering into local water bodies	Truck Port operation will generate sewage and wastewater. If untreated sewage and wastewater from truck port is released directly surrounding into environment or into the local drainage system, it will lead to pollution of land and water bodies. In order to avoid impacts of sewage and wastewater, Trans-Zambezi Truckport & Investments cc will implement following measures: <ol style="list-style-type: none"> 1. Truck port sewage system will be connected large septic tank to be constructed through sewage network in the area and Investors will frequently apply a sewerage reduction chemical reduction so that sewerage does not saturate. Also treated wastewater could be used for spraying to dampen dust during operation. 	Truck Port Operator (Trans-Zambezi Truckport & Investments cc)	Trans-Zambezi Truckport & Investments cc budget

The EMP will have specific targets for each year that will be evaluated by the annual Environmental audit. The audit can make recommendations which will necessitate Changes in the EMP. The EMP will be reviewed on an ongoing basis as new environmental challenges arise or targets/objectives are achieved. The Operations Manager will ensure that this review occurs in a timely manner.

15. DECOMMISSIONING PHASE

Once the development for Dry Truck Port Leasehold years have lapsed, the project will be subject for decommissioning. Although the lease is often subject for renewal and/or extension of the years for leasing, the building as a permanent structure will be donated to the Liselo community for use to any use of their choice. However other harmful items such absolute metal construction equipment's which have been used for years, will be destroyed and will be disposed at a designated Katima Mulilo dumping site where community members have no access due to restriction of the site and can only be accessed with permission from the Katima Town Council. The permanent structures (administration building) as per the agreement with the investors (Trans-Zambezi Truckport & Investments cc) will become the property of the Liselo community. All management actions as provided for in the operational phase are therefore valid up to the decommissioning. At the time of the Truckport closure, the investor (Trans-Zambezi Truckport & Investments cc) must ensure that the area has been successfully rehabilitated and all waste, including polluted soil or water, has been removed and disposed of at an approved dumping site. No form of waste may be buried.

16. CONCLUSIONS AND RECOMMENDATIONS

This study reveals that the impacts from Liselo truck port construction and development are predictable and manageable; impacts can be either avoid, minimized or compensated. The Environmental Management Plan (EMP) covers all aspects Truck port construction and development. The contractor engaged for Truck port development, will be responsible for carrying out the detailed design and subsequent construction of truck port's facilities. The current EMP will be further reviewed and updated by Project implementation Unit and Construction Supervision Consultant of the Truck Port prior to the construction and even during the construction. Institutionalization of environmental compliance monitoring and capacity building of project and related staffs will be carried out.

The proposed Truck Port will enable grouping of Migration clearance services; immigration; and other facilities in one single area thus enabling faster processing of goods and services. In addition, by providing appropriate transportation and parking areas for the trucks in the truck port area, the current illegal parking of trucks on the highway and congestion in the town of Katima Mulilo will be avoided. The major benefits of the project are following:

- i) Truck and cargo idle time savings resulting from reduced dwell time in the Zambezi region.
- ii) Reduction of losses of perishable goods resulting from the construction of a covered area.

- iii) Share of the benefits (Vehicle operating cost and travel time savings) resulting from avoided distance to drive to the current weighbridge before going down into town or to Customs office.

Over all, the environmental benefits result from lower emission due to lesser requirement of truck movements due to faster customs clearance and efficient transportation. Benefit also result from lesser waste generation due to minimum spoilage of perishable goods. Therefore, this project is recommended for implementation as its implementation will benefit both natural and man-made environment in the long run.

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