MAHATHI INFRA (UGANDA) LIMITED

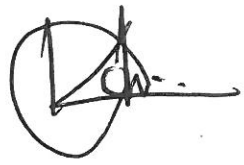
ENVIRONMENTAL IMPACT STATEMENT (EIS) FOR THE PROPOSED MAHATHI INFRA (U) LIMITED FUEL DEPOT TO BE LOCATED ON PLOTS 5 &185 BLOCK 429 BUSIRO IN BUGIRI-BUKASA VILLAGE, KATABI SUB-COUNTY, WAKISO DISTRICT

Prepared For	**Prepared By**
Mahathi Infra (U)Ltd **P.O Box 10101 Kampala** **Tel; 0312106660** Diamond Trust Building 11th Floor Kampala TIN: 1008260183	**Solutions for Environmental Challenges Consults Ltd** P.O Box 74698, Kampala +256 774755954

January 2016

AUTHORS OF THE EIS

Mahathi Infra (Uganda) Ltd contracted the Environmental Practitioners listed below from Solutions for Environmental Challenges Consults Ltd to undertake an Environmental Impact Assessment for the proposed fuel depot on plots 5 & 185 Block 429 Busiro in Bugiri-Bukasa Village, Katabi Sub-County, Wakiso District.

Name & Expertise	**Signature**
Kukundakwe Wilbroad;- Team Leader Waste Management and OHS Specialist	
Asiimwe B. Danson B.Sc. Environmental Science/ M.SC Water Engineering Certified Environmental Assessor	
Orishaba Patience Bachelor of Environmental Management Certified Environmental Assessor	

Contributing Specialists

Natumanya Ezrah; **PhD Student (Water Resources and Environmental Engineering Management)**

MSc. Integrated Water Resources Management

TABLE OF CONTENTS

Acknowledgements

The Assessment Team would like to thank all those who provided information that made it possible to prepare this report. In particular, the Assessment Team would like to thank Management of Mahathi Infra (Uganda) Ltd, neighbours to the proposed site, Wakiso District Environmental Officer and NEMA technical staff.

Abbreviations and Acronyms

EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
PB	Project Brief
MIUL	Mahathi Infra (Uganda) Ltd
LGDP	Local Government Development Programme
NEA	National Environment Act
NEMA	National Environment Management Authority
NWSC	National Water and Sewerage Corporation
UEDCL	Uganda Electricity Distribution Company Limited
UST	Underground Storage Tank
AST	Aboveground Storage Tank

EXECUTIVE SUMMARY

Mahathi Infra (U) Ltd is proposing to establish a fuel Depot on plots 5 & 185 block 429 Busiro in Bugiri-Bukasa village, Katabi Sub-county, Wakiso District. The proposed fuel depot will have all the major components required of a standard fuel depot. These will include; oil interceptors, paved loading & offloading bays, and discharge area, PMS tanks of about 18million litres, AGO tanks of approximately 18million litres, BIK tank of about 4million litres, JETA1 tanks of about 4million litres, 1Water tank, parking yards for the staff, visitors and loading trucks, sanitation system, spill containment facility, driveways, fire fighting and warning systems, generator house, administration offices, drainage system and perimeter fence as the major components amongst others. The fuel depot will be involved in bulk storage, bulk dispensing and transportation of petrol, diesel and paraffin and sale of lubricants.

The establishment of this Depot in the country aims to serve the ever growing number of private fuel dispensing stations and other private dealers in the same. The anticipated fuel will be transported via the port of Mwanza or Kisumu to the proposed depot using self propelled barges via L.Victoria. The proposed site has no such establishment and has no squatters on it. The proposed site is ideal for such establishment as it will be located in an area that is sparsely populated. The proposed site/plots (all combined) measure approximately 30acres and are big enough for the proposed establishment.

Mahathi Infra (U) Ltd identified an opportunity in the market to establish such a fuel depot in this area. This opportunity can be justified by the increasing number of retail fuel dispensing stations and mini depots and the ever increasing petroleum based products consumption in the country and the absence of such a big fuel storage facility in the country and in an area as big as the proposed site. Most of the petroleum products is transported via the road from Eldoret/Kisumu to Uganda and over 600,000MT of petroleum products is transported to South Sudan and DRC through Uganda all by road. This increase in traffic volumes over the past few years has generated additional consumers in the country, motivating for the establishment and development of the proposed fuel depot to supply the much needed fuel to retailers and other filling stations.

The project site is located on a relatively raised area and wholly covered by a rock that is part of L. Victoria catchment located in Bugiri-Bukasa village about 5km off Entebbe road. The site is geographically located in between the following coordinates: Lat. 0.12193^{o}N, Long. 32.56633^{0}E and at altitude of 1142m above sea level. It is bordered by a wetland leading to L. Victoria along the eastern and northern neighbourhood. The southern and western neighbourhood has scattered upcoming residential houses (some still under construction), China ship manufacturing company and large expense of open plots; some under subsistence agriculture and secondary vegetation.

Project components and activities during the construction and operation phases

Mahathi Infra (U) Ltd proposes to construct this depot with all the major and required infrastructure like oil interceptors, mini-canopies at offloading and on loading bays, paved forecourt and parking area, drainage system and washrooms among others.

The proposed development will involve the following:

- The installation of eight Aboveground Storage Tanks, ASTs (BIK and JETA1 of about 4million litres each, AGO & PMS with a capacity of about 18million litres each).
- Offloading and loading bays and associated piping;
- Construction of a jetty**; (a separate assessment is being carried for this component);**

Hose will be used to pump the fuel from the barge to the respective tanks. A barge will be berthed at the yet to be constructed jetty. Centrifugal pump units will be used to pump the product through a metering device into a transportation vehicle or to a portable container. Remote fuel filling points will be installed as close to the ASTs as possible, although the location of the filler points is dependent on delivery tanker access. The tank farm will, at a minimum, include the following:

- Installation of Petroplas piping for suctions, vents and remote fillers;
- Construction of a concreted/paved forecourt;
- Installation of an oil/water separators connected to the surface drainage from the concreted forecourt and filler containment areas, discharging into the area storm water system;

- Construction of a Store, ancillary offices, staff toilet facilities and a storage yard for flammable products (e.g. oils and greases); and

The administrative area of the proposed fuel depot will contain:

- Offices;
- Staff change rooms;
- Toilet facilities; and
- Storage areas;

Design of the project and materials to be used

Raw materials required during the construction phase include water, ordinary sand, hard core and stone aggregate, gravel, cement, earth bricks / cement and sand blocks, various types of iron bars, timber among others and will be accessed locally from private dealers/suppliers within and around the project area.

To implement this project successfully and without causing injury to the environment, Mahathi Infra (Uganda) Ltd commissioned this study so as to be provided with practical advice on the mitigation of any potentially adverse environmental impacts of the project and also to comply with the environmental regulatory requirements. This EIS has been prepared as part of the preliminary stages towards the establishment of the proposed fuel terminal facility.

PARTICULARS OF THE PROPOSED DEVELOPMENT PROJECT

Developer's Name	Mahathi Infra (Uganda) Ltd
Contact person	Sadat Muhinda
Developer's Address	P.O Box 10101 Kampala, Tel: +256 772118800
Project Name:	Fuel Depot
Project Location:	Plots 5 & 185 Block 429Busiro, Bugiri-Bukasa village, Katabi Sub-county, Wakiso District
GPS Coordinates:	Latitude **0.121939°N Longitude 32.56633°E Altitude1142.4Metres Above Sea Level**
Project Cost:	Uganda shillings Ten Billion (UGX **10,000,000,000/=)**only

Construction of the proposed fuel terminal/depot is likely to have negative environmental impacts associated with it both during the construction and operation phases. These include among others, eroding away of soil, oil spills from construction, transportation equipment and during

offloading and loading, risk of fires, noise, dust, likelihood of lightning strikes, interfering with the shoreline and area storm water flow among others.
In this EIS, a number of mitigation measures to minimize the negative impacts have been identified and recommendations made on their implementation.

Potential impacts of establishing the proposed project

- **Employment:** Net increase in employment opportunities during the construction / installation and operational phases with a resultant poverty alleviation and social upliftment.
- **Health & Safety: (construction phase**) Minor, serious or fatal injury to staff employed to construct the depot while undertaking Construction activities.
- **Reduction on road accidents:** Much of fuel used in Uganda is transported by road to the fuel depots, this will be minimized;
- **Reduction to road damage** and other environmental pollution related to fuel transportation by road;
- **Health & Safety (during the operation phase)**
    - On-site fires.
    - Transportation of dangerous goods both on water and land.
    - AST filling procedure–Spills from overfilling of tanks and improper connection between the tanker and filler points/horse pipe.
- **Fire & explosion:** On-site fires and explosions during construction and operation phase.
- **Traffic (Construction phase):**
    - Heavy vehicles entering and exiting the site during loading and offloading of construction equipment.
    - Increase in traffic volumes along the access road.
- **Traffic (during the Operation phase):**
    - Increase in traffic volumes and backlogs along the access road in this area.
- **Fuel Spillage or Leakage**
    - **Storage of fuel in Aboveground Storage Tanks:** Contamination of groundwater and subsequent contamination of the nearby water sources; and Possible tank pressure build-up leading to tank explosion and associated impacts

  - **AST piping:** Contamination of soil, air and groundwater and subsequent contamination of the nearby water sources;
  - **Refilling procedure:** Contamination of soils, surface water and groundwater;
  - People exposed to spilled / leaked fuel;
  - Catastrophic surface spillage leading to safety hazard to the immediate neighborhood especially the lake and its biomass.
- **Solid & Liquid Waste Generation & Management (during the Construction phase):**
  - Contamination of ground and surface water.
  - Illegal dumping of construction waste, attracts vagrants.
- **Solid & Liquid Waste Generation & Management (during the Operation phase):** Contamination of ground and surface water, and transportation of contaminants downstream.
- **Storm water Management (during the Construction phase):**
  - Contamination of soils and surface water and transportation of contaminants downstream.
  - Soil erosion and possible flooding of the shoreline and other vulnerable areas.
- **Storm water Management (during the Operation phase):**
  - Contamination of soils and surface water and transportation of contaminants downstream.
  - Increased hardened surfaces and run-off thereby creating soil erosion and eventual flooding in vulnerable areas.
- **Noise (Construction phase):** Disturbance of surrounding residents through noisy machinery and general construction noises.
- **Noise (the Operation phase):** Disturbance of surrounding residents.
- **Aesthetics & "Sense of Place" (during the Construction phase):** Visual intrusion by construction site activities.
- **Aesthetics & "Sense of Place" (during the Operation phase):**
  - Permanent sight illumination from on site lighting causing light pollution.
  - Temporary illumination from accessing barge and its light effect on the lakeshore community.
  - Disturbance to ones sense of place from infrastructure introduction.
- **Air Quality (during the Construction phase):** Dust generation.

- **Air Quality (during the Operation phase:** Release of vapours into the surrounding environment during the refuelling of the AST, fuel transportation trucks filling/loading, fuel spillage and motor vehicle exhausts.

Recommendations

The following recommendations are made as they relate to the primary environmental issues identified during the course of the EIA:

Tank and pipe work installation

The following measures should be undertaken in order to prevent ground and surface water contamination:

- All pipe work must be installed on non-cohesive drainage/bedding material to ensure that any lost product will migrate back to the Aboveground Storage Tanks (ASTs) or to the constructed containment around the tanks;
- Follow the well laid down procedure and best international practices while installing the ASTs;
- The tank farm/base must be lined with a heavy-duty HDPE liner or clay layer to prevent infiltration of product to the ground water should a leak/spill occur.
- All filler and observations points must be well demarcated and properly sealed and regularly cleaned out to prevent accumulation of hydrocarbon product on these contaminant structures; and
- All pipelines must be fuel-grade HDPE piping with thermo-weld fittings.

Storm water

- All surface spillages must be contained on site through channels and trenches, these must be diverted to an oil / water separator or sump of sufficient capacity; a well-constructed containment must be put in place at every storage tank;
- The forecourt will be concrete paved to prevent infiltration of fuel into the subsurface soils with surface runoff designed to flow towards a centralised collection point which is connected to an oil/water separator;
- The area around the filler points should be concreted and the drainage from the forecourt, tanks and jetty's canopy connected to the oil/water separator;

- The oil / water separators should be regularly checked and kept clean to prevent blockage and overflow. Any material collected must be disposed at an appropriately registered waste disposal site; and
- All accidental surface spills of oil or fuel must be contained on-site and diverted to the containment and oil/water separators.

General

- All employees at the proposed depot must be aware of the HSE policy and implementation thereof, in addition to the Emergency Plan, Environmental Management Plan and The Petroleum Supply Act, 2003;
- The filler point and tank must be fitted with overfill protection. The critical level should be such that a space remains in the tank to accommodate the delivery hose volume (2%);
- It is suggested there should be a specially designed sealed containment tanks to collect spilled product from the filler point from which product can be removed;
- Monitoring of piping sump(s)/trench and other secondary containment low points by industry standard technology;
- The integrity of Aboveground Storage Tanks and pipelines must be tested through vacu-sonic and pressure testing at least once a year;
- Care must be taken while offloading the barge and loading on the transportation trucks as a lot of spillage is said to take place at this level;
- Regular product monitoring and reconciliation must be undertaken;
- During the monitoring event, the wet stock reconciliation records must be scrutinised to ensure that the records are maintained and any discrepancies in product volume must be flagged for further investigation immediately;
- All minor spills must be cleaned and a spill management procedure must be prepared to include procedures for spill cleanup, waste and waste water collection and disposal;
- Spill kits must be kept on site and staff must be trained to execute a spill management procedure;
- An emergency preparedness procedure should be developed for the site; and
- If a significant spillage event occurs that cannot be contained on site, it is recommended that an assessment be performed to determine if

remediation / rehabilitation may be required along the neighborhood/shoreline.

CONCLUSION

In view of the mitigation measures identified in this EIS, the consultancy team recommends that the project be approved for implementation on condition that the developer implements the identified mitigation measures and undertakes to monitor all the key areas identified in the EIS.

1.0 BACKGROUND INFORMATION

1.1 Introduction

Mahathi Infra (U) Ltd is proposing to establish a fuel terminal/depot on plots 5 & 185 in Bugiri-Bukasa along the shores of Lake Victoria, Wakiso District.

The establishment of this fuel terminal/depot in Uganda and at this particular site is aimed to serve the growing number of both private and commercial fuel filling stations in the country and to reduce on the road transportation of fuel from the ports of Eldoret or Kisumu. Fuel will be transported by a self-propelled barge to this proposed terminal. It is anticipated that one transit will eliminate over 200trucks on the road.

1.2 Project Objectives

The main objectives of constructing the proposed facility on this site are to: Improve service delivery for convenient fuel transport to Ugandan consumers;

The objective of this assessment is to describe the key components of the existing environment in the area of the project, describe the project and all the activities to be carried out during the life of the project, including design, construction, operation, maintenance or any other activities relating to the project and to describe how the project activities, materials or product can affect the environment either positively or negatively; and to recommend measures to avoid, minimize or mitigate the negative impacts including monitoring plans to implement the mitigation measures.

1.3 Purpose and Scope of this Assessment

This assessment complies with Ugandan Statutory requirements: the National Environment Act (CAP 153), and the Environmental Impact Assessment (EIA) Regulations (1998). These require a developer to submit to the National Environment Management Authority (NEMA) a project brief or an EIA depending on the level of effects of a project in question is likely to have on the environment. This assessment will provide Mahithi Infra (U) Ltd with practical advice on the mitigation of any potentially adverse environmental impacts of the project. The Assessment covered the Physical, Biological and Socio-cultural environment within the project area.

1.4 Methodology

Literature review, field visits, consultations and discussions with the relevant stakeholders (Wakiso District Local Government, Local leadership, Mahathi Infra (U) Ltd, Ministry of Energy and Mineral Development, neighbours to the proposed project site, and NEMA) were used to come up with this EIS. The consultants held extensive discussions relating to the project especially as regards to how it relates to the planning provisions of the area and the country at large and the Environment.

1.5 Structure of this EIS

This EIS is divided into the following principal sections:

- **Section 1** Gives the background and introduction to the assessment;
- **Section 2** deals with the legislation taken into consideration that has a bearing on this project;
- **Section 3** provides a general outline of the existing environment in the area of the proposed project;
- **Section 4** describes the proposed scheme and its main components during the construction and operation phases;
- **Section 5** presents a summary of the findings from public and stakeholder consultations;
- **Section 6** deals with each aspect of the environment in detail, providing an account of baseline conditions, prediction and evaluation of the impacts of the project and proposed mitigation measures;
- **Section 7** analyses the alternatives to the proposed development;
- **Section 8** comprises an Environmental Mitigation and Monitoring Plan identifying the measures to be adopted during the operational life of the project to ensure its environmental acceptability to minimize any adverse impacts and provide for appropriate environmental monitoring;
- **Section 9** puts across findings and recommendations.

2.0 POLICY, LEGISLATION AND REGULATORY CONSIDERATIONS

Environmental Impact Assessments are a legal requirement and should be carried out for all proposed developments that are likely to have significant Environmental Impacts so that any negative impacts can be minimised or eliminated. This EIS that addresses the proposed fuel terminal/depot in Bugiri-Bukasa along the shores of Lake Victoria falls under the third schedule of the National Environment Act (CAP 153) Section 11 **management of hydrocarbons including the storage of natural gas and combustible or explosive fuels** hence the need to call for carrying out an Environmental Impact Assessment to conform to the regulatory requirements. The regulations that were considered during this exercise include:

2.1 The Constitution of the Republic Of Uganda, 1995.

This is the supreme law of the country. As a result, all laws, including those pertaining to the proposed development, must conform to the Constitution. The Uganda Constitution of 1995, **Article 39** provides that everyone has a duty to maintain and enjoy a sound environment. Every person in Uganda has a right to a clean and healthy environment and as such can bring action against any pollution or disposal of wastes. It states that government will promote development, utilisation and public awareness of the need to manage land, air and water resources in a balanced and sustainable manner for present and future generations. The constitution vests all land in the country in the citizens of Uganda, and protects property and other individual rights. The government, or local government, may acquire land in the public interest, subject to provisions of **Article 26** of the Constitution. This gives every person in Uganda the right to own property, and stipulates that the land or property cannot be compulsorily acquired unless prompt, prior and adequate compensation has been paid to the owner of the land/property.

Relevance to the proposed development

- The proposed project involves generation of waste from the operations at the fuel terminal/depot in addition to accidental spillage/leakage of petroleum products and therefore as per the constitution, it is required that mitigation measures are in place to ensure that environment does not get polluted because it is the developer's obligation to ensure that the proposed development does not pollute and degrade the environment;

- Furthermore the developer has an obligation to ensure that the proposed development is environmentally sustainable.

2.2 The Environmental Impact Assessment Regulation 1998

These regulations apply to (a) all projects included in the Third Schedule to the Act (The National Environment Act CAP 153);

Relevance to the proposed development

Section 3 (2) provides that no developer shall implement a project for which environmental impact assessment is required under the Act (The National Environment Act CAP 153) and under these regulations unless the Environmental Impact Assessment has been concluded in accordance with these regulations.

Section 10 (1) states that an Environmental Impact Study shall be conducted in accordance with Terms Of Reference developed by the developer in consultation with the Authority and the lead agency.

Section 12 (1) states that the developer shall take all measures necessary to seek the views of the people in the communities which may be affected by the project during the process of conducting the study under these regulations.

In this regard, the developer submitted a Scoping Report and Terms of Reference for an EIA of the proposed project and these Terms of Reference were subsequently approved by NEMA and the approval letter is attached in appendix I of this report.

In the course of undertaking the EIA for this project, the people within the neighbourhood that are likely to be affected by the proposed project were consulted and their views are in section 5 of this report;

2.3 The National Environment Act CAP 153

An Act to provide for sustainable management of the environment; to establish an authority as a coordinating, monitoring and supervisory body for that purpose; and for other matters incidental to or connected with the foregoing.

Relevance to the proposed development

Section 9(1): This provides for a developer of a project described in the third schedule to this act to submit an EIA to the lead agency, in the prescribed form and giving the prescribed information.

Section 9(7) specifies that where the lead agency, in consultation with the authority, is satisfied, after considering the environmental impact review or the environmental impact evaluation, that the project will lead to significant impact on the environment, an impact study be conducted.
Section 2 (1) specifies that where a project has been determined under section 19(7) as requiring an environmental impact study, the developer shall, after completing the study, make an Environmental Impact Statement in the prescribed form and in the prescribed manner.

Section 19 The third schedule of the act lists projects to be considered for Environmental Impact Assessment. The proposed depot is listed in **category 11**; management of hydrocarbons including the storage of natural gas and combustible or explosive fuels;

2.4 The Land Act (1998)

The Act provides for the tenure, ownership and management of land; to amend and consolidate the law relating to tenure, ownership and management of land; and to provide for other related or incidental matters.

Relevance to the proposed development
Section 43 provides that whoever owns land or occupies land shall manage and utilise it in accordance with the Forest Act, the Mining Act, the National Environment Act (1995), the Water Act (1995), Uganda Wildlife Act (1996), and other laws.
Section 45 requires use of land to conform to the provisions of the law relating to Town and Country Planning Act (the Town and Country Planning Act was repealed by the Physical Planning Act of 2010) and any other law.

Mahathi Infra (U) Ltd has an MOU for the registered land owners and soon will assume full rights over this land. (Copies of the land titles for these plots are attached in appendix of this report.) The acquired land; plots 5 &185 measures approximately 30acres; all combined. About 20% of this land will be developed with rest reserved for future developments.

2.5 The National Environment (Waste Management) Regulations (1999)

These regulations apply to:
(a) All categories of hazardous and non-hazardous waste;
(b) The storage and disposal of hazardous waste and their movement into and out of Uganda; and
(c) All waste disposal facilities, landfills, sanitary fills and incinerators.

Relevance to the proposed development

Section 5 provides for a person who owns or controls a facility or premises, which generate waste, to minimise the waste generated by adopting cleaner production methods.
Subsection 1 (b) provides for monitoring the product cycle from beginning to end by **(i)** identifying and eliminating potential negative impacts of the product/waste.
(c) Incorporating environmental concerns in the design and disposal of a product.
Section 12 provides that an industry shall not discharge or dispose of waste of any state into the environment, unless the waste has been treated in a treatment facility and in a manner approved by the lead agency in consultation with the authority.

2.6 The Public Health Act (1964)

The Act consolidates the law in the respect of Public health and puts duties on the Urban and local authorities in matters pertaining to public health e.g. setting standards for housing. The Public Health Act seeks to protect health of all citizens including the health of the environment through stipulation about drainage and safety of buildings and activities.

Relevance to the proposed development
Section 54 states that no person shall cause a nuisance, or shall suffer to exist on any land or premises owned or occupied by him or her or of which he or she is in charge, any nuisance or other condition liable to be injurious or dangerous to health.

As per the requirement of this act, sanitary facilities will also be constructed at the fuel depot for management of human waste from the workforce. These sanitary facilities will be connected to a septic tank and a soak pit.

The developer is proposing a number of mitigation measures that would protect the communities including the following:

- Emergency response against fires;
- Solid waste management system to ensure that good sanitation and hygiene are maintained at the Depot.

2.7 The Occupational safety and Health Act, 2006

The Act replaces the Factories Act of 1964 and encourages technical measures to ensure safety of workers at the work place through a preventive approach. The Act provides for protection and prevention of all people at all workplaces from injuries, death, diseases and damage of property. Unlike the factories Act that emphasized workplaces mainly, this Act extends to all employment places to include both the workers and any other persons at that workplace at the time. Employers are supposed to ensure the safety of their workers, provide protective gears and a clean environment on top of all basic facilities like sanitary facilities.

Relevance to the proposed development

Section 13(1) declares that it is the employer's responsibility to take, as far as reasonably practicable, all measures for the protection of his or her workers and the general public from the dangerous aspects of the employers undertaking at his or her own cost;

Section 13(2) requires the employer to ensure, as far as reasonably practicable, that the working environment is kept free from any hazard due to pollution by

(i) Employing technical measures, applied to the new plant or processes in design or installation, or added to existing plant or processes; or

(ii) Employing supplementary organizational measures.

In line with the requirements of this act, the developer is in the process of developing an OHS policy. This policy will protect the lives of its workers and ensures that:

- Workers have the appropriate personal protective equipment;
- Training on health and safety;
- Measures to reduce traffic hazards including zero tolerance to substance abuse on site;
- Traffic management;

- In line with national standards of storage of hazardous materials to minimize spills;

2.8 The Petroleum Supply Act, 2003

This Act to provides for the supervision and monitoring, the importation, exportation, transportation, processing, supply, storage, distribution and marketing of petroleum products; to provide for the establishment of the Minister responsible for the petroleum sector as the regulatory authority, to provide for the licensing and control of activities and installations, for the safety and protection of public health and the environment in petroleum supply operations and installations; to encourage and protect fair competition in the petroleum supply market; to repeal certain related laws; and to provide for connected matters.

Relevance to the proposed development

Section 33 (4) states that where Environmental Impact Assessments or audits are performed or required or other conditions are to be met by the holder of a permit or licence in accordance with the laws applicable to public health, public safety and the environment, the Commissioner shall co-ordinate with the National Environment Management Authority and other appropriate authorities under the relevant laws and assist the holder in the fulfilment of those requirements.

2.9 The Investment Code Act

An Act to establish a code to make provision in the law relating to local and foreign investments in Uganda by providing more favorable conditions for investment, to establish the Uganda Investment Authority and to provide for other related matters.

Relevance to the proposed development

Section 18(2) (d) of the investment code makes it an implied condition of every investor to take necessary steps to ensure that the operation of his business enterprise do not cause injury to the ecology or environment'.

2.10 The National Environment (Noise Standards and Control) Regulations (2002)

The purpose of these Regulations is to ensure the maintenance of a healthy environment for all people in Uganda, the tranquility of their surroundings

and their psychological well-being by regulating noise levels, and generally, to elevate the standard of living of the people by -
(a) Prescribing the maximum permissible noise levels from a facility or activity to which a person may be exposed;
(b) Providing for the control of noise and for mitigating measures for the reduction of noise; and
(c) Generally for giving effect to the provisions of section 28 of the National Environment Act.

Relevance to the proposed development

Section 7(1): No person shall emit or engage in any activity that emits or likely to emit noise above a maximum permissible level specified in regulation 5 of these Regulations, unless permitted to do so by these Regulations.
(2) Any person who emits or engages in any activity that emits or is likely to emit noise above a maximum permissible level specified in this sub regulation (1) commits an offence.
Section 8(1) - It shall be the duty of the owner or occupier of a facility or premise or machinery to use the best practicable means of ensuring that the emission of noise from those premises does not exceed the standards and limitations set in these regulations.
Sub-section (3): A person or occupier of a premise or facility or machinery or plant generating noise who fails to comply with this regulation commits an offence.

Section 9 (1) states no person shall emit or cause to be emitted, or permit the emission of noise resulting from any act specified in sub-regulation (2) if that noise is clearly audible at a point of reception or in the neighbourhood for more than two minutes or is within the prohibited time in a residential area or Noise Control Zone as determined by the local council under regulation 5.

The following mitigation measures have been proposed for mitigating noise generation during the construction & operation phases.

- Construction activities should be limited to weekdays 07h00-17h00 and Sundays and public holidays 08h00-14h00;
- No machinery /equipment which may lend itself to creating a noise nuisance, to be utilised on Sundays and public holidays; and

- Construction workers should be made aware that they are not to make excessive noise (e.g. shouting, hooting).
- A noise control policy must be compiled and enforced to control the level of noise at the facility, paying particular reference to the immediate neighbours.

2.11 The Physical Planning Act Of 2010

This is an Act that provides for the establishment of a National Physical Planning Board; to provide for the composition, functions and procedure of the Board; to establish district and urban physical planning committees; to provide for the making and approval of physical development plans and for the applications for development permission; and for related matters.

Section 33 (1) provides that a person shall not carry out a development within a planning area without obtaining development permission from a physical planning committee.

Section 37 states that where a development application relates to matters that require an Environmental Impact Assessment to be carried out, the approving authority or physical planning committee may grant preliminary approval of the application subject to the applicant obtaining an Environmental Impact Assessment Certificate in accordance with the National Environment Act

Section 40 (1) also states that an application for development permission in an area where there is no approved physical development plan shall be submitted to the local physical planning committee for consideration.

2.12 The National Environment (Waste Management) Regulations, 1999

The regulations apply to all categories of hazardous and non hazardous wastes; to the storage and disposal of hazardous waste and their movement into and out of Uganda and to all waste disposal facilities, landfills, sanitary fills and incinerators

Relevance to the proposed development

Sub Regulation 4 (4) requires that a person who generates domestic waste shall sort the waste by separating hazardous waste from non hazardous waste in accordance with the methods prescribed under sub regulation 3

Section 5 of sub regulation 4 requires that a generator of domestic waste may, without a license issued under these regulations dispose of non hazardous waste in an environmentally sound manner in accordance with by-laws made by a competent local authority;

Regulation 5 requires that a person who owns or controls a facility or premises which generate waste shall minimise waste generated by adopting the following cleaner production methods: improvement of production processes through conserving raw materials and energy; eliminating the use of toxic raw materials and reducing toxic emissions and wastes;

Sub Regulation 12 (1) requires that an industry shall not discharge or dispose of waste in any state into the environment, unless the waste has been treated in a treatment facility and in a manner approved by the lead agency in consultation with the authority.

Sub regulation 12 (2) requires that a person operating a factory, who discharges or disposes of any waste whether treated or not, into a disposal site or plant which is not approved or licensed in accordance with these regulations commits an offence;

2.13 The National Environment (Minimum Standards for Management of Soil Quality) Regulations, 2001.

The purpose of these Regulations is - (a) to establish and prescribe minimum soil quality standards to maintain, restore and enhance the inherent productivity of the soil in the long term; (b) to establish minimum standards for the management of the quality of soil for specified agricultural practices; (c) to establish criteria and procedures for the measurement and determination of soil quality; and (d) to issue measures and guidelines for soil management.

Relevance to the proposed development

Sub regulation 12 (1) requires that every responsible person shall comply with the measures and guidelines for soil conservation for the particular topography, drainage and farming systems prescribed in the Fourth Schedule.

Part (2) of sub regulation 12 states that A person who contravenes sub-regulation (1) commits an offence and is liable, on conviction, to a fine of

not less than one hundred and eighty thousand shillings and not more than eighteen million shillings or to imprisonment not exceeding eighteen months, or both.

2.14 The Water Act, CAP 152

According to Section 6 of the Act, no person acquires any rights to use water or to construct or operate any works unless authorized under Part II of this Act. Thus, unless a person is an occupier of land on which surface water exists, water may not be used for any purpose without the approval of an authority. The general rights to use surface water are limited to domestic use and firefighting once again indicating the importance attached to water supply for domestic purposes. Section 18 makes it clear that a person is not allowed to construct or operate any works unless he has a permit granted for that purpose by the Director, Directorate of Water Development (DWD). Construction is defined to include alteration, improvement, maintenance and repair.

Section 31 (1) of the Water Act stipulates that it is an offence for a person to pollute water through discharge of waste into watercourses. In conformity with this law, the spillage of petroleum products, disposal of overburden, litter or construction waste should be avoided during construction and operation activities.

2.15 The National Environment (Wetlands, River Banks and Lake Shores Management) Regulations (2000)

Section 12 requires a person not to carry out any activity in a wetland, riverbank or a lake shore without a permit.

Section 23 requires a person who intends to erect, use, reconstruct, place, alter, extend, remove or demolish any structure in, under or over the river banks or lake shore; or even excavate, drill, tunnel or otherwise disturb the river banks or lake shore and as well intends to introduce or plant any plant whether alien or indigenous shall make an application seeking permission to undertake the activity.

Section 28 provides for a landowner or user in whose land a river bank or lake shore is situated to prevent and repair degraded river banks and lake shores, and commits and offence if he fails or refuses to carry out measures provided in sub-regulations (I).

Section 31 requires that where a lakeshore or riverbank is developed in accordance with regulation 24 for the purposes of promoting tourism or for aesthetic uses, the developer shall ensure that:-

a) Pre-treatment or full treatment of effluent or waste from the facility is carried out to prevent contamination of the water;

b) Litter is cleared and disposed of in a manner in conformity with best environmental practices; and

c) The riverbanks, lake shores or beaches are not degraded.

Section 34(1): A developer desiring to conduct a project, which may have a significant impact on a wetland, riverbank or Lakeshore, shall be required to carry out an Environment Impact Assessment in accordance with sections 19, 20 and 21 of the Act.

Mahathi Infra (U) Ltd is will also be applying for such a permit in order to construct a jetty on the shores of Lake Victoria.

2.16 The Water Resources Regulations (1998)

Regulation 3(1): A person who occupies, wishes to construct, own or control any works on or adjacent to the land referred to in regulation 10; may apply for a water permit.

2.17 The Water (Waste Discharge) Regulations (1998)

Regulation 4(1): No person shall discharge effluent or waste on land or into the aquatic environment contrary to the standards established under regulation 3 unless he or she has a permit in the format specified in the First Schedule issued by the Director.

2.18 Draft Lake Victoria Transport (Maritime Safety) Regulations, 2010

(1) These Regulations shall apply to vessels of 4 metres or more in length.

(2) Notwithstanding sub regulation (1), these Regulations shall not apply to -

- floating equipment and floating installations, to the extent Council considers that application of the Regulations is not appropriate;

- pleasure craft, except for pleasure craft operated for hire or reward or for any other kind of monetary consideration;
- naval vessels unless otherwise specified
- canoes; and
- Barges, unless otherwise specified.

Section 10. Construction

(1) A vessel shall be constructed in accordance with good shipbuilding practice.

(2) The hull of a vessel shall be sufficiently strong to withstand all stresses to which it is subjected in service under normal conditions.

(3) An owner or a master of a vessel shall submit to the surveyor for approval plans showing the construction materials and scantlings of the hull.

(4) In the case of new structures fitted to existing vessels or major conversions of existing vessels which affect the strength of the vessel, adequate strength shall be demonstrated by the presentation of proof in the form of design calculations

2.19 MARPOL 73/78; the International Convention for the Prevention of Pollution from Ships, 1973 as modified by the Protocol of 1978.

"MARPOL" stands for marine pollution and 73/78 stands for the years 1973 and 1978.)

MARPOL 73/78 is one of the most important international marine environmental conventions. It was developed by the International Maritime Organization in an effort to minimize pollution of the oceans and seas, including dumping, oil and air pollution. The objective of this convention is to preserve the marine environment in an attempt to completely eliminate pollution by oil and other harmful substances and to minimize accidental spillage of such substances.

2.20 Convention on the International Regulations for Preventing Collisions at Sea 1972 (Colregs)

These are published by the International Maritime Organization (IMO) and set out, among other things, the "rules of the road" or navigation rules to be followed by ships and other vessels at sea to prevent collisions between two or more vessels. COLREGs can also refer to the specific political line that divides inland waterways, which are subject to their own navigation rules, and coastal waterways, which are subject to international

navigation rules. Although rules for navigating vessels inland may differ, the international rules specify that they should be as closely in line with the international rules as possible.

2.21 ISGOTT (International Safety Guide for Oil Tankers and Terminals)

The Guide provides operational advice to directly assist personnel involved in tanker and terminal operations, including guidance on, and examples of, certain aspects of tanker and terminal operations and how they may be managed. However, it is **NOT** a definitive description of how tanker and terminal operations are conducted.

It is a general industry recommendation that a copy of ISGOTT is kept and used on board every tanker and in every terminal so that there is a consistent approach to operational procedures and shared responsibilities for operations at the ship/shore interface.

2.22 Oil Companies International Marine Forum

The Oil Companies International Marine Forum (OCIMF) is a voluntary association of oil companies with an interest in the shipment and terminalling of crude oil, oil products, petrochemicals and gas. OCIMF's mission is to be the foremost authority on the safe and environmentally responsible operation of oil tankers and terminals, promoting continuous improvement in standards of design and operation.

In the execution of this project, the above regulations will be put under consideration and observed for the smooth implementation of the development.

3.0 ENVIRONMENTAL SETTING OF THE PROJECT AREA

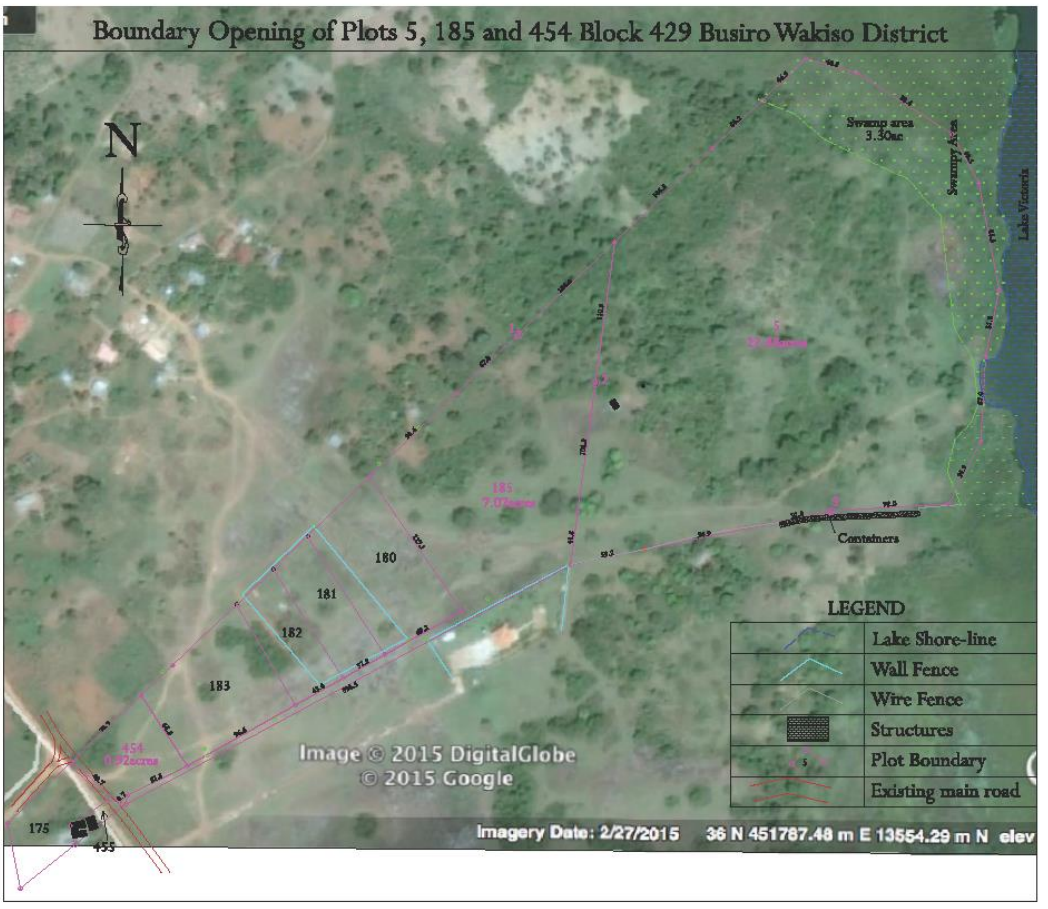
3.1 The Project Area

The project site is located on a relatively raised area and wholly covered by a rock that is part of L. Victoria catchment located in Bugiri-Bukasa village about 5km off Entebbe road. The site is geographically located in between the following coordinates: Lat. 0.12193^{o}N, Long. 32.56633^{0}E and at altitude of 1142m above sea level. It is bordered by a wetland leading to L. Victoria along the eastern and northern neighbourhood. The southern and western neighbourhood has scattered upcoming residential houses (some still under construction), China ship manufacturing company and large expense of open plots; some under subsistence agriculture and secondary vegetation.

Below are photographs of the proposed site and the immediate neighborhood.

Part of the site and the immediate southern neighbourhood

Part of the site and the immediate eastern neighbourhood showing a Chinese shipping manufacturing	
	
Part of the access road in the southern neighbourhood	Part of L.Victoria in the northern and eastern neighbourhood



Satellite images showing the location of the project site and the immediate neighborhood and site boundary: by Google Earth.

3.2 Geology

Wakiso district is underlain by both old and recent rock systems, which include Precambrian, Cainozoic and Laterites. All the three major divisions of rocks i.e. sedimentary, igneous and metamorphic are represented. The Cainozoic rocks extend southwards to the Lake Victoria shores and river valleys of the district. They include mainly swamps deposits, alluvium and lacustrine deposits. The laterite rocks are widespread on Wakiso summits in the central and northern parts of Wakiso district. It is well developed below the summit levels where it forms protective pavements on many slopes.

3.3 Drainage

The area storm water is directed to the adjacent wetland that leads to Lake Victoria which borders the proposed site in the immediate neighbourhood.

3.4 Vegetative Cover

The vegetation cover of Wakiso district is very varied. It ranges from medium altitude evergreen forest, through medium altitude moist semi-deciduous forests, savannas, and swamps. Wakiso has over nineteen (19) government forest reserves with a total area of 6,773 ha. The Forest mosaic is found in medium altitude. The most important and abundant element of this mosaic is a savannah like community, which consists of a mixture of forest remnant and incoming savannah trees with a grass layer dominated by *Pennisetum pupureum* (elephant grass). It occupies the largest area found in Kyadondo and Busiro. In addition, (90%) of vegetation of Wakiso district is savannah woodland.

The project site has more or less savannah vegetation, however, much of the vegetation in the neighbourhood are secondary ones. Part of the site extending to L.Victoria has vegetation type characteristic of a wetland with some identifiable wetland species. This part of the site extending to the wetland leading to the lake will not be developed as it falls within the 200m buffer zone of a major water body.

3.5 Climate

Climate in Wakiso is warm and wet with relatively high humidity. These conditions favour rapid plant growth and also encourage disease out breaks. Proximity to Lake Victoria has a bearing on production activities.

3.5.1 Rainfall:

The rainfall in Wakiso is bi-modal. There are two wet seasons running from April to May and October to November. The dry months are January to February and July to August. The annual rainfall mean is 1320mm though in many areas of the lake zone is between 1750 and 2000mm. Lake Victoria, a mass of warm water of approximately 63,000 square km at an attitude of 1134metre above sea level is a major orographic factor of rainfall. It causes a major distortion on the general pressure pattern, leading to the so-called Lake Victoria trough. The site falls within this trough.

3.5.2 Temperature:

The minimum surface air temperature of the district is 11.0 degrees centigrade while the maximum is 33.3^{0}C. There is little variation in temperature throughout the year. There are two temperature peaks, one from the months of January- May and the other from July to September.

The highest temperatures are experienced in the month of February whereas the lowest temperatures are experienced in the month of July.

3.6 Soils

The soils are generally of high productivity and are mainly sandy clay soils. The dominant soils types are red gravely loams with occasional murram reddish brown sandy loam on red clay loam and yellowish sands with quartz grave. The soils in the wetlands include grey sands whose parent material is alluvium and hill wash, grey coarse sand from lake deposits, black and grey clays from river alluvium and peat sands and clay formed from papyrus residue and river alluvium. Wakiso soils are generally of high productivity.

3.7 Socio-economic Environment

3.7.1 Land Tenure, Social Services, and Existing Infrastructure

The predominant land tenure in Wakiso district is mailo/freehold and leasehold. Plots 5, 185&424 to which the proposed depot is to be established is under the freehold/private mailo. It is connected to electricity and NWSC is in close neighbouring trading centre. Communication services like the Airtel Uganda, Mobile Telephone Network (MTN Uganda), Africel and Uganda Telecom Limited already exist in the area. Access road will be off Bugiri-Bukasa murram road just in the immediate western neighbourhood of the site.

3.7.2 Population Characteristics

According to the 2014 national census figures, Wakiso District had a population of approximately 2,007,700, making it the most populated district in the country. At that time, 53% of the population was children below the age of 18 years and 17% of the total population were orphans. The district is rapidly becoming urbanized, with the main economic activities turning away from agriculture to trade and industry.

Wakiso District Population Trends

Year	Census
1991	562,887
2002	907,988
2014	2,007,700

The district is ethnically rich with the dominant tribe being Baganda. However, all the tribes of Uganda and a reasonable number of foreigners are well represented. Luganda, English and Swahili are the main languages used.

3.7.3 Economic Activity

Being near Kampala City and Entebbe Municipality, the major source of livelihood is employment income and trading. Other economic activities in the immediate neighbourhood are associated with educational institutions, leisure facilities, subsistence agriculture among others. The major source of livelihood in the district is employment income, trading and property income.

4.0 PROJECT CHARACTERISTICS

4.1 The project components

The proposed development will involve the following:

- The installation of eight Aboveground Storage Tanks, ASTs (BIK and JETA1 of about 4million litres each, AGO & PMS with a capacity of about 18million litres each).
- Offloading and loading bays and associated piping;

Offloading of fuel from the barge will be a hose into the ASTs. Centrifugal pump units will be used to pump the product through a metering device into a fuel transportation vehicle/truck or to a portable container. The tank farm will, at a minimum, include the following:

- Installation of Petroplas piping for suctions, vents and remote fillers;
- Construction of a concreted forecourt on the loading and offloading bays;
- Installation of oil/water separators connected to the surface drainage from the concreted forecourt and filler containment areas, discharging into the municipal storm water system;
- Construction and establishment of a containment along the ASTs;
- Erection of suspended forecourts roof above the jetty/offloading and loading areas;
- Construction of an office including ancillary offices, staff ablution facilities and a storage yard for flammable products (e.g. oils and greases); and
- Construction and paving of the customer-parking bays.

The administrative area of the proposed depot will contain:

- Offices/monitoring area;
- Staff change rooms;
- Ablutions;
- Storage areas;

4.2 Design and Operation

The design and operation of the proposed depot will follow international best practices for installation and operating of petroleum depot and will also require compliance with local legislation.

4.2.1 Tank Farm

The tank farm is the area of the depot where the tanks that contain the relevant fuels are stored. These tanks will be erected aboveground and are therefore referred to as Aboveground Storage Tanks (ASTs). These will be fabricated out of stainless steel on site following the best national and international practices. The developer will utilize the latest technology, both in the manufacturing and installation process of these tanks. The ASTs are normally manufactured from mild steel and are coated with GRP on the exterior. The shape of the bottom should be able to meet seismic requirement. These tanks will likely be double walled both bottom and shell. The vertical tanks will also be fabricated as fire-resistant flame shield or fire protected fireguard. The interior of these tanks will be compatible with the product to be stored. These tanks will conform to the British Standards or API standards. The vertical aboveground tanks will also be fabricated with OSHA caged ladders with required platforms, catwalks and probably headrail.

4.2.2 Forecourt Areas and Spillage Drainage

All surface areas on the forecourt/jetty area as well as transportation trucks filling/loading area, will be constructed from concrete to form an impervious surface. This will prevent the contamination of any soil and/or water resources within the immediate area. The surfaces will be further sloped in such a manner that if any spillage of fuel occurs in these areas, the spillage will drain into a spillage containment system situated onsite. The spill material will then be able to be removed without entering the storm water system, thus preventing further contamination of surrounding soil and/or water resources.

4.2.3 Surface Drainage

Surface water from the tarred driveway area of the facility will be directed through the internal stormwater drainage system at the depot, which will be connected to the existing natural storm water drainage system.

The forecourt will be designed to ensure that surface water runoff from this area and the fuel filling points/offloading and loading points will be directed through an oil/water separator which will be installed on-site. The oil/sludge collected from the separator will be disposed of at a permitted waste disposal facility, while wastewater from the separator will be discharged to the environment.

4.2.4 Site Access

Access to the site will be from Bugiri-Bukasa murram road. The site layout makes provision for the adequate movement of fuel tankers, so that no untoward/reversing manoeuvres would be required when entering and exiting the site. Access road will need to be worked/improved during the construction phase

4.3 The Operation Phase

During the operation phase, regular maintenance activities at the depot will be ensured to improve efficiency and minimise adverse effects to the environment. Specific areas of concern will include but not limited to:

- **Emergency/safety support systems (fire fighting equipment and first aid kits)**

The depot structures like the office block and tank farm will be fitted with emergency/safety support systems like smoke detectors, fire extinguishers, buckets of fresh sand, fire alarms and the exterior of these structures will be painted with flameproof paint. This will periodically be upgraded to maintain its functionality.

- **Ensuring that energy and water supply systems are periodically upgraded**

To ensure that the depot remains attractive and effectively functioning, there will be proper maintenance of the water and electricity systems and immediate repairs will be undertaken to put right any damage that is inflicted on these systems.

- **Proper maintenance of the physical structures especially toilets, shower rooms, and office block, etc.**

The toilet/urinal system will have to be periodically upgraded to enhance its effective performance. The same is true for the structures that house the office block, store and generator/compressor rooms.

- **Proper maintenance of waste water and storm water drainage system**

The drainage channel system will periodically be desilted to allow smooth flow of storm water from the facility. The oil interceptors will periodically be cleaned of the waste oil for effective performance. This will be undertaken by qualified personnel.

5.0 STAKEHOLDER CONSULTATION PROCESS

5.1 Introduction

As a requirement by the National Environment Act, Cap 153, the EIA Regulations 1998, Conduct of Environmental Practitioners Regulations, 2001 and Guidelines for EIA in Uganda, stakeholder consultations were carried out during the stakeholder consultation phase. The stakeholders were selected purposively and interacted with through key informant and informal conversational interviews. The qualitative approach facilitated deep insights into the views and feelings of each stakeholder.

5.2 Objective of stakeholder and community consultations

The main objective of the stakeholder and community consultations was to gather their views and concerns regarding the project, discuss challenges and mitigation measures. Their views were incorporated with expert opinion for decision making. Stakeholder concerns and feedback were a valuable source of information that can improve project design to ensure project acceptance in the area and avoid conflict. It can also form the basis for future collaboration and partnerships.

5.3 Community consultations findings

The community and area local leadership expressed a number of opinions and views regarding the project (verbatim expression in the table below) and below is a summary of the views;

Name	**Designation / Institution**	**Comment/response**
Margaret Anyu	NEMA, EIA Coordinator	Ensure a detailed assessment is carried out covering all the project's phases. Carry out thorough consultations; Carry out a separate study for the jetty; Ensure a permit is got from the Ministry of Works and Transport pertaining transportation of fuel by barges on L.Victoria.

Makana Edward (0701871737/ 0776871737	Petroleum Officer/Environment (Ministry of Energy & Mineral Development)	The major concern with regard to establishing a fuel depot on this site is the safety of the lake and general environment. Follow the required standard and the law governing such establishments
Mpoza Esau	Senior Environment Officer Wakiso	Awaiting for the report
Muhinda Sadat 0772118800	Contact person	Willing to be guided and to implement the project while observing all the required legal and environmental standards
Samuel Mukasa 0774434653	Sec. General LC1	Supports the fuel establishment as it will create jobs and develop the area Ensure that it gets all the required approvals from concerned authorities Give a first priority to non-technical jobs to our youths Hope that the local people won't be denied access to the lake as it's a source of livelihood
Bweranga 0782471117	Chairperson LC1	Supports the project and hopes it will come fruition very soon
Chris Mutebi	Neighbour/area resident	It will develop the area and has no reason to object to the construction but ensure it employs the youths in the area
Kagooma John 0773585034	Neighbouring area	Supports the project and inquired if he could use the wetland to grow some crops;
Katongole Godfrey	Kisubi Youth chairperson	Wonders how the youths will benefit from this project He also requested developers to ensure they ring-fence some non-skilled jobs to the area youths

BUGIRI - BUKASA LOCAL COUNCIL 1

P.O box 96 Kisubi Wakiso district

TEL: 0774-434653/0782471117

ssabaddu katabi sub county

ssabagabo Kisubi parish

RE: MAHATHI INFRA (U) LTD

The above headed LC 1 (Bugiri- bukasa) has received notification and therefore thorough discussion with the above referenced company about their interest to establish a fuel depot at blocks 185 and 426, Bugiri bukasa village katabi Sub County, Busiro County, Wakiso district.

In their consultative meetings with the local council committee representing the community, they informed the committee to have fulfilled all the necessary and relevant conditions as stipulated by law to be fulfilled by the company of assort when they presented a copy of the certificate of approval of the environment impact assessment from the national environment management authority (NEMA) and the petroleum facility construction permit by the ministry of energy and mineral development.

Therefore upon fulfillment of the conditions stated by other authorities on such establishment (oil depot): as the local community we therefore recommend the company to start executing its duties BUT with fulfillment of the following conditions and obligations as agreed between the community and the company as part of their cooperate social responsibility:

- 1. Giving the local residents the first priority to employment in accordance to professionalism needed by the company.
- 2. Establishment of an appropriate health facility that shall provide services to the residents plus involvement in health protection, prevention and promotion programs as shall arise in the community.
- 3. Establishment of a safe water source
- 4. Construction of a vocational training center that shall offer training to the locals through welding and other skills that shall be taught by the center.

➢ 5. Finally all the issues, comments and fears (as safety precautions, road safety construction and maintenance, proper waste disposal, pollution management and others) shall be observed as an obligation to the company as well raised and indicated by the residents in the minutes of the consultative meetings. Minutes of the meeting shall be attached to this letter.

➢

We wish the company a good stay and relationship with the community.

Signed by:

....

....

Chairperson local council 1.

*Chairman [illegible] FRED

SSERUBULO PETER vice chairman

General Secretary local council 1.

Mukasa Samuel General Secretary [signature]

Nazziwa Jane Mobiki sec for Information

Secretary for treasury.

1. Letisha Kaala sec for finance

....

2. NAMUTAMBA ROBINAH [signature]

....

Other members present.

CHAIRMAN L.C.1
BUKASA (A)
SABAGABO
KISUBI PARISH
DATE 4/01/2017

MINUTES OF THE SENSITIZATION AND CONSULTATIVE MEETINGS FOR THE ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED FUEL STORAGE TERMINAL, JETTY AND WORKER'S CAMP FOR LAKE VICTORIA FUEL TRANSPORTATION PROJECT AT BUGIRI-BUKASA VILLAGE, KATABI SUB-COUNTY, WAKISO DISTRICT

Purpose of meeting:	Environmental and Social Impact Assessment for The Proposed Fuel Storage Terminal, Jetty and Worker's Camp For Lake Victoria Fuel Transportation Project At Bugiri - Uganda
Present	1. 2. 3. See List of participants attached.
Date held & place:	4th January 2017 At: ..... Trading Center Time: 9:00AM
ISSUES RAISED, COMMENTS AND FEARS	**RESPONSES BY CONSULTANT TO ISSUES RAISED**
Water quality in Lake Victoria should not be allowed to deteriorate due to oil or chemical pollution.	All safety precaution shall be undertaken to ensure that there no spillage of oil into water during construction / operation. Water quality will be checked every month to ensure that this type of pollution can be avoided totally.
Water quality in Lake Victoria should not be allowed to deteriorate due to oil or chemical pollution.	All safety precaution shall be undertaken to ensure that there no spillage of oil into water during construction / operation. Water quality will be checked every month to ensure that this type of pollution can be avoided totally.
Approach road to the proposed fuel depot is narrow. Road should be widened and asphalted so that trucks can commute conveniently.	Approach road will be widened & asphalted by the Government or the promoters to ensure smooth flow of traffic.
There should be prescribed speed limit for the trucks while they are travelling between project site and Entebbe Road.	Speed limit will be prescribed for trucks travelling on the approach road upto Entebbe main road. Speed Limit signs shall be put up on all the stretches of

	approach road. Mahathi will employ persons in two shifts during operation of the fuel depot to ensure compliance by truck drivers.
Trucks in good condition only should be allowed to transport fuels to minimize noise & vibration levels. Company should be strict on transporters to test the trucks periodically for compliance to all pollution requirements like noise & exhaust smoke.	Mahathi will set norms to ensure good condition trucks only get to transport the fuels. Mahathi will coordinate with NEMA approved truck testing companies & get the trucks tested periodically. Trucks should carry Valid certificates & if they don't have, these trucks won't be loaded.
Company should manage its own waste professionally. They should not throw waste on the approach road or in the lake water or in open areas.	Mahathi will engage NEMA approved agency for handling hazardous waste. Other wastes shall be handled as per NEMA approved methods. No waste shall be thrown into water or roads or open areas.
Company should put road safety signs along the approach road. There should be speed breakers before all busy areas. There should be designated Pedestrain crossings for road crossing.	Mahathi will have designated Pedestrian crossings clearly demarcated. Speed Breakers shall be provided before all the busy areas. Also, mahathi will put up safety signs all along the road.
If the Company wants to employ persons from other places in Uganda, the Company should refer their details to the Chairman, Local Council, Bugiri. The village has a system of verifying the antecedents of the persons with Local Councils of their origin and give clearance. This will also help the village in Influx Management as the employed persons will be staying at the Village.	Mahathi will seek clearance from Chairman, Local Council before employing non-local persons from Uganda.
Company should have good fire fighting capabilities as they are storing inflammable products and they should not endanger the nearby village people.	Mahathi will have full fire fighting capabilities as per International standards including trained personnel to take care of fire fighting, if needed.
Company should take care so that there is no oil spill in the Lake. In case there is oil spill, Company should take mitigating action quickly to limit the damage.	Mahathi will take all precautions in design, construction and operations to ensure that there is no oil spill. In case of a spill, we will take immediate necessary action to limit the damage. Our ship will be carrying all the necessary equipment to fight oil spills as per the requirements laid out in International Maritime Organization (IMO).
Company should give preference to local persons for employment.	Mahathi will preference to the local persons for employment as per the job requirements & skill levels available.
Company should take up building an overhead water tank for the village water	Mahathi has agreed for the same.

supply.	
Company should make publicity materials for HIV / AIDS awareness and distribute to the local people for helping them.	Mahathi has agreed for the same.
Company should train local persons in welding & other skills and employ them in their Company.	Mahathi has agreed for the same.
Company should pay to the local workers at least Minimum Wages decided by the Government and other statutory benefits.	Mahathi has agreed for the same.
Company should use local shops their purchases and give business to local suppliers of sand, gravel etc. for their civil works.	Mahathi will use local shops as far as feasible and will give business to local suppliers of sand, gravel etc. for their civil works.
Company should do some welfare activities to the local communities.	Mahathi will definitely take up welfare activities like health camps, primary school facilities, health care activity etc. after starting project operations. Mahathi will consult Local Council on the activities proposed and shall act based on the advice of Local Council.
Company should help the local communities in sanitation & hygiene awareness.	Mahathi has agreed for the same.
Company should paint their telephone numbers on all the trucks & vehicles so that anybody can contact them in case of Emergency.	Mahathi will prominently display 24 hour active Telephone Numbers on all the trucks & vehicles. Mahathi will also act quickly in case of Emergency and shall have designated persons for attending any Emergency.
Company should keep good security personnel to avoid entry of unauthorized persons & prevent stealing. Increase in stealing & other illegal activities cause problem in local communities.	Mahathi shall keep trained Security persons in adequate number to control stealing or any other illegal activities.
Company should participate in local community development programmes for welfare of the people.	Mahathi has agreed for the same.
Company should also make LPG available at reasonable price so that people can use LPG instead of fire wood.	Present plan of Mahathi doesn't include LPG storage & distribution. Mahathi will consider LPG storage & distribution in future depending on the supply & market dynamics.

ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED FUEL STORAGE TERMINAL, JETTY AND WORKER'S CAMP FOR LAKE VICTORIA FUEL TRANSPORTATION PROJECT AT BUGIRI-BUKASA VILLAGE, KATABI SUB-COUNTY, WAKISO DISTRICT

Time:

Villages:

Venue:

Date:

LIST OF CONTACTED PERSONS

No	Names:	Sex	Village	Designation	Contact Address	Signature
1	MWIKASA SAMUEL	M	BUGIRI-BUKASA	GENERAL SECRETARY LC1	0774434653	
2	SSERUBIRGO PETER	M	BUGIRI BUKASA	VICE CHAIRMAN LC1	0772562953	
3	Lusoata Francis	M	Bugiri-Bukasa	Member	0774077088	
4	Letisha kaala	F	Bugiri	sec for finance	0782-654732	
5	Kaweesa FRED		Bugiri Bukasa		0782417117	
6	KUKUNDAKWE WILBROAD	M	—	CONSULTANT	0772842416	
7	Rajesh Bam	M	"	Engineer.	0756132530	
8	MUTHUMA SADATI SSENTONGO	M			0792116800	
9	NAMAKULA AMINAH	F	BUGIRI BUKASA	RESIDENT	0788190500	
10	NAMUTAMBA ROBINAH	F	BUGIRI	RESIDENT	0788742493	
11	MWESIGE IMELDAM	F	BUGIRI	RESIDENT	0753596613	
12	Nakitilla Suzan	F	BUGIRI	resident	0775680811	
13	Kato Jaliya	F	BUGIRI	RESIDENT	0785205545	Jaria
14	NAMAGANDA-ANNET	F	Bugiri-Bukasa	resident	0758911294	
15	Nibaguire Martha	F	Bugiri Bukasa	Resident	0759276969	
16	Nazziwa Jane MUKiibi	F	Bugiri Bukasa	sector int	0754868681	

CHAIRMAN L.C.I
BUGIRI BUKASA (A)
SSEMBABO
KISUBI PARISH
DATE.....

6.0 EVALUATION OF SIGNIFICANT ENVIRONMENTAL IMPACTS

This section provides a detailed evaluation of the significant potential positive and negative environmental impacts relating to the proposed development. Once a potential issue and/or potential impact has been identified, it is necessary to identify which activity or aspect of the development would result in the impact. By considering the cause of the issue, the probability of the activity resulting in an impact can be determined. The associated impact can then be assessed to determine the significance and to define mitigation or management measures to address the impact.

The impacts associated with activities during construction are usually short lived and mitigated in the EMP. The EMP will be implemented on-site and enforced by regular monitoring with submission of audit reports to NEMA annually.

6.1 Socio-Economic Impacts

Socio-economic impacts take into consideration the relationship between economic activities and social life. This relationship is interlinked by the dependence of social activities on economic activities and economic activities on social activities. In most instances the focus is on the social impacts due to economic changes. A change could be the closing down of a facility or new regulations being implemented, which could trigger a change in an entire society or small changes within the community.

Impact Identification

Construction of the proposed depot in this area may have a positive socio-economic impact in the area by creating new employment opportunities, potentially resulting in positive socio-economic impacts on the surrounding community.

During the construction phase of the project, short term employment will be created which will have a **medium** positive impact on the environment.

The proposed depot will however create over 100 employment opportunities directly during the operation phase thereby creating an increase of over 100 employment opportunities. The assessment was based on the net increase in opportunities. The significance, with mitigation, is a positive **Medium-high** impact.

6.2 Occupational, Health and Safety Impacts

Health and safety impacts can affect not only those working on the proposed site (depot) but they can affect those residing in close proximity of the site, as well as those passing by the site. A clear interpretation of the Occupational Safety and Health Act 2006 can help to prevent potentially dangerous and fatal incidents from occurring.

Impact Identification

The hazardous nature of the operations that occur at a fuel facility being a depot (i.e. transfer of flammable liquids) have the potential to impact on the safety of those employed at the facility and those on-site or immediately surrounding the site, should there be an accident, spillage or fire.

Mitigation Measures

- All construction contractors and sub-contractors on-site must be trained in the implementation of effective Health and Safety policies;
- A First Aid Team must be trained and equipped with adequate equipment should a health and safety incident occur;
- Appropriate signage and a demarcated construction area must be established around the construction site creating awareness of employees on-site of the potential Occupational, Health and Safety risks;
- The storage of oils, materials, chemicals, fuels, etc. to be used during the construction phase must not pose a risk to the surrounding environment;
- Temporary bunds must be constructed around chemical or fuel storage areas to contain possible spillages; and
- Relevant traffic signage such as “caution” or “children crossing” signs will be placed at the entrance and exit of the depot to warn motorists and pedestrians of potential risks.

Overall impact evaluation:

The significance of the health and safety impacts associated with the installation of the AST and the running of the depot assuming mitigation measures are effectively implemented in both the construction and operational phases, are rated as being **Low**.

6.3 Traffic Impacts

Several issues may result from an increase in traffic in an area. Public safety may be jeopardised, noise pollution may increase and congestion within the selected area may rise.

Mitigation Measures

- The movement of heavy vehicles to and from the site should be conducted during periods of the day when peak flow is minimal. Better still, this area has not experienced such heavy traffic;
- Drivers of these vehicles should be licensed and proficient in driving these vehicles;
- Drivers under the influence of narcotics and alcohol should not be allowed to operate these vehicles and must be removed from the site;
- The proposed development must provide adequate onsite parking, loading facilities and manoeuvring space for the fuel tankers.
- The advantage with this depot is that fuel will be brought in from Kisumu or Mwanza by a self-propelled barge on L.Victoria; this alone will eliminate over 200trucks that would have otherwise transported this fuel by road to this depot.
- Use of fuel tanker/barge will also eliminate road accidents

Impact evaluation:

The traffic impacts during the construction phase without mitigation are considering that this area has not experienced such heavy traffic jam **Medium-Low** with a rating of **Low** with the implementation of the proposed mitigation measures. The significance of traffic impacts during the operational phase has been calculated as **Medium-low** provided that the mitigation measures are adhered to. Should the mitigation not be implemented then the potential impact of the traffic will be **high** and heavy traffic congestion will be experienced.

6.4 Impact of Fuel Spillage or Leakage

Spillage of fuel may occur during the refilling of ASTs or fuel trucks/vehicles on-site, this may be a result of human error or negligence. Potential significant leakages at depot however, are associated with the AST itself where-by the leakage may filter into the ground water via a leak-hole in the AST potentially contaminating the surrounding environment.

Impact Identification

Potential impacts related to the operation of the depot are leakages or overflows/overfills directly from the ASTs and subsurface piping, as well as from surface spillage during the refilling of the ASTs and the dispensing of fuel to vehicles. Such leakage and spillage may potentially contaminate the surface and ground water resources, as well as the soil, as a result of runoff, or direct seepage or discharge into the surrounding natural drainage points or storm water system or the lake.

Mitigation measures

Tank and Pipe work Installation

- All pipe work must be installed on non-cohesive drainage/bedding material in reverse graded trenches, to ensure that any lost product will migrate back to the containment to be constructed at the tank farm;
- The tank farm and a forecourt must be lined with a heavy-duty HDPE liner or clay layer to prevent infiltration of product to the ground water should a leak/spill occur;
- The void around the AST must be back filled with free-draining granular material to ensure that any product loss through the AST or ancillary pipe work will flow towards the low point;
- All filler and observation chambers must be properly sealed and regularly cleaned out to prevent accumulation of hydrocarbon product; and
- All pipelines must be fuel-grade HDPE piping with thermo-weld fittings.
- Follow the latest technology and best practices will installing the tanks and related pipe works.

Leak Detection

- The filler point must be fitted with overfill protection. The critical level of this protection should allow for the delivery hose (2%);
- There should be a specially designed sealed containment tank to collect spilled product from the filler point from which it can be removed;
- The integrity of the ASTs and pipelines must be tested through vacu-sonic and pressure testing methods at least once a year; and
- Any monitoring of the piping sumps / trenches must be done with industry standard technology.

Monitoring

- Proper and accurate records of fuel sales and deliveries must be kept, take regular ASTs reading at the change of each shift, and do regular fuel reconciliations to guard against subsoil product loss;
- Ensure that during the tank installation ant leakage and spillage detection devices is also installed on the tanks;
- During monitoring, wet stock reconciliation records must be checked to ensure discrepancies can be identified and investigated; and
- If product loss is suspected, the AST and pipe work must be tested to identify potential problem areas.

General

- The pump island area must be concrete paved and dish shaped to prevent infiltration of spilt fuel into the subsurface soils, with surface runoff designed to flow towards a centralised collection point (spill catchment drains) and contaminated wash water is collected by grid-drain linked to the separator system;
- The area around the filler point must be contained using concrete or other material appropriate for this application;
- The area around the AST‟s filling points must be concrete paved and designed for all run-off to collect at a central grid-drain collection point (spill catchment drains), linked to a sealed separator system to be installed on site;
- This system must be serviced regularly and the outlet must be linked to the nearby storm water management system;
- Any material collected from the spill catchment drains must be disposed of appropriately at a registered waste disposal site;
- The oil separator/interceptor system must be monitored and cleared regularly to prevent free-phase hydrocarbon liquids from discharging into the wastewater system or into the water body;
- All surface spills must be contained on-site;
- All minor spills must be cleaned and a spill management procedure must be prepared to include procedures for spill clean up, waste water collection and disposal;
- No product must be allowed to be discharged into public storm-water and/or sewer system or within the nearby wetland;
- A Spill Contingency or Emergency Response Plan must be drawn up and should include the following actions that need to be taken into account in the event of a spill:
    - Stop the source of the spill;

  - Contain the spill;
  - Remove the spilled product for treatment or to authorised disposal;
  - Determine if there is any soil, surface water or groundwater or other environmental impact;
  - Incident must be documented.
- Staff must be trained to execute the spill management procedure;
- Spillages occurring at the filler point and dispensing must be contained and cleaned up according to the environmental management plan;
- An emergency preparedness procedure must be developed and kept on site; and
- Spill kits must be kept on site and staff must be trained in the correct use of these kits.

Overall impact evaluation:
The significance of the hydro-geological impacts associated with the AST installation, assuming mitigation measures are effectively implemented, is rated as **Very-low since no major excavations are to take place**. During the operational phase there is the potential for hydro-geological impacts as a result of fuel leakage or spillage from the AST, resulting in a **High impact** rating should no mitigation measures be implemented. However, with the implementation of the suggested mitigation measures above, the impact rating during operation is rated as **Very-low**.

6.5 Fire and explosion Impacts

Due to the flammable nature of products handled and stored on-site the opportunity exists for a fire/explosion to occur. This is mainly due to the fuel vapours and/or liquid that could ignite due to human negligence.

Impact Identification
Fuels and oils are flammable and present a risk of fire and explosions, therefore measures have to be taken to ensure the safe handling of these flammable liquids on-site, as well as in the transportation of the products by barges on water up to site.

Mitigation Measures during the construction phase

- All contractors and sub-contractors must be aware of the relevant OHSE policy and implementation thereof, in addition to an Emergency Plan and the Environmental Management Plan;
- Ensure all staff are trained in what to do in the case of an emergency such as an on-site fire or explosion;
- The Fire Team must be properly trained and their duties understood;
- Ensure all fire-fighting equipment is readily available, accessible and functioning;
- Ensure that relevant signage e.g. no smoking, is displayed in potentially dangerous areas and is abided by;

Mitigation Measures during the operation phase

- All employees at the depot must be aware of the OHSE policy and implementation thereof, in addition to the Emergency Plan, Environmental Management Plan;
- In addition to ensuring that all staff are trained in what to do in the case of an emergency such as an on-site fire or explosion;
- The Fire Team must be properly trained and their duties understood;
- Ensure all fire-fighting equipment is readily available, accessible and functioning at all times;

Impact evaluation:

During the construction phase the potential for on-site fires and explosions is rated as **Very-Low** after mitigation as there will be no fuels stored on site or in the ASTs due to the fact that they would not yet be installed. However, during the operational phase the potential impact associated with on-site fires and explosion is rated as **high** with no mitigation in the form of implementation of the depot's Health and Safety Policy, Emergency Plan or Environmental Management Plan. With the implementation of these mitigation measures Fire and Explosion impacts are rated as **Low. During transportation of fuel to the site, a self-propelled barge will be double hulled to guard any leakage on water**

6.6 Solid and Liquid Waste Generation and Management Impacts

Solid waste and liquid waste has the potential of contaminating the surrounding soil and water resources on site. Solid waste may ruin the aesthetics of the area and portray an environmentally unfriendly area therefore negatively impacting on the neighbourhood ambiance. Liquid waste may be associated with the generation of foul odours and may even

pose a health hazard. Pests, such as flies and rodents, may also be attracted to the area via the odour and collection of waste, in order to scavenge on the solid or liquid waste if it is not disposed of in the correct manner.

Impact Identification

Solid and liquid waste will be generated by the depot and ablution facilities on-site. The most common waste being produced by the offices is that of domestic waste and garden refuse from the site. Wastewater will be generated by the office and the staff ablution facilities. The staff ablution facilities will also generate sewage. Solid general waste will also be produced which will typically include domestic waste and garden refuse from the landscaped areas. In turn, used oil containers, radiator coolant bottles and brake fluid bottles will also be generated from the depot and would therefore be required to be disposed of at a suitable landfill site by a registered contractor.

Mitigation Measures

- Waste must be categorised by the contractor and disposed of in a suitable manner into different waste streams (including general and hazardous waste);
- General waste is to be collected either by the licensed solid waste collector;
- The contractor should provide an adequate number of waste receptacles for general waste at points around the construction site, and a single collection point for hazardous waste;
- Particular care shall be taken with the disposal of materials that could be wind-borne or waterborne to ensure that the release of these materials is minimised (the latter is considered advisable for hazardous waste). The use of netting covers or sealed containers may be considered. Areas should be demarcated for specific activities including food consumption, with suitable waste receptacles provided;
- The contractor shall ensure that any wastewater generated during construction activities feeds to a suitable containment area such as a container or sedimentation pond prior to disposal;
- No wastewater shall be disposed to soil or to the lake or nearby wetland/shoreline;
- Litter and waste that is generated to be adequately stored and disposed of in an approved manner;

- No burning of waste should be allowed;

Impact evaluation:
Provided that all aspects of waste generation at the proposed depot are managed according to the Environmental Management Programme (EMP) the impact significance related to waste is considered to be **Very-Low** during the construction and operation phases.

6.7 Stormwater Management Impacts

Stormwater drainage impacts are not likely to be of a major concern since the site does not have any storm water drainage channels but drains naturally to the existing wetland that leads to the lake.

Impact Identification
The construction of; forecourt, access roads, parking areas and roofing structures will increase the impermeable surface area on the site leading to reduced ground absorption of storm-water and increased surface water runoff. This will result in an increase in the quantity and velocity of storm-water leaving the site, which, in turn, has the potential to transport contaminants away from the site into natural environments and create soil erosion and siltation in vulnerable areas. It is therefore essential to ensure that storm-water is controlled on the site by compiling and implementing a storm-water management plan.

Mitigation Measures

<u>During the construction phase</u>

- All water flow must be directed through controlled management into the existing natural drainage system;
- During site establishment, stormwater culverts and drains are to be located and covered with metal grids to prevent blockages;
- Temporary cut off drains and berms may be required to capture stormwater and promote infiltration;
- During construction, un channeled flow must be controlled to avoid soil erosion;
- The discharge of any pollutants such as cement, concrete, chemicals and fuels into any water sources and the stormwater system must be prevented; and

- Spills of oils, grease etc. must be contained, cleaned and stored in separate lined waste bins and disposed of at the closest classified landfill site. The hazardous waste bins must be clearly marked as hazardous and as flammable.

During the operational phase

- All surface spillages must be contained on site through channels and trenches, these must be diverted to an oil / water separator or sump of sufficient capacity;
- The forecourt will be concrete paved to prevent infiltration of fuel into the subsurface soils with surface runoff designed to flow towards a centralized collection point which is connected to an oil/water separator;
- The area around the filler points will be concreted and the drainage connected to the oil/water separator;
- The oil / water separator should be regularly checked and kept clean to prevent blockage and overflow. Any material collected must be disposed of at an appropriately registered waste disposal site;
- All accidental surface spills of oil or fuel must be contained on-site and diverted to the oil/water separator;

Impact evaluation:
Provided that all areas that generate potentially contaminated stormwater discharge via the oil/water separator and into the immediate environment and that the appropriate mitigation measures are implemented, the impact significance related to stormwater management is considered to have a **Very-low** significance.

6.8 Noise Impacts

Noise may be generated by vehicles entering and exiting the site, personnel and customers at the depot, car sound systems and hooters, ventilation equipment, for example air conditioning units, and air compressors.

Impact Identification
Noise pollution can have a negative impact on neighbours, especially in residential areas. It must also be noted that noise travels further during the night, resulting in the potential impact being more severe. Noise is often attributed to the employees, vehicles and customers of the depot.

Mitigation measures

During the construction phase

- Construction activities should be limited to weekdays 07h00-17h00 and Sundays and public holidays 08h00-14h00;
- No machinery /equipment which may lend itself to creating a noise nuisance, to be utilised on Sundays and public holidays;
- Construction workers should be made aware that they are not allowed to make excessive noise (e.g. shouting, hooting); and
- Better still, this is an area that is sparely populated; the proposed site does not have close neighbourhood/homes that would be disturbed by noise emissions.

During the operation phase

- A noise control policy must be compiled and enforced to control the level of noise at the facility, paying particular reference to the immediate neighbours;
- The backup generator should be fitted with a noise reduction facility (a silencer) at its exhaust pipe or a super silent generator should be used.

Impact evaluation:
The construction and operation noise impact, with the mitigation implemented, will impact the surrounding residents during normal working hours and the impact significance is rated **Low**. Provided that a comprehensive noise control policy is compiled and implemented by the developer the aspects of noise generation significance is considered to be **Low** in the operation phase.

6.9 Aesthetics & "Sense of Place" Impacts

Sense of place is the feeling that an area may awaken in a person. Some people might find a sense of place to being a feeling or perception held by a person and not by the place itself. Sense of place is often used in conjunction with those characteristics that make a place special or unique.

Impact Identification
The proposed depot will have an effect on the sense of place and aesthetics in this area especially in relation to the shoreline and the lake itself. Currently the site has no infrastructure established on it. The site is now

proposed to be constructed into a fuel depot and related components like a jetty.
The site will also be illuminated during the evenings (resulting in light pollution), thus creating a change to the neighbouring properties as currently the site is not illuminated. Vehicles accessing the site could also temporarily illuminate adjacent properties when they enter or exit the site during the evenings.

Mitigation measures

- Where possible blocking off areas visible to the public should be done in order to minimise the visual impact caused by construction activities; and
- The areas that will not be developed must be landscaped using indigenous species.

Impact evaluation:
Provided that all aspects of aesthetics at the proposed depot are managed according to the Environmental Management Plan (EMP) during the construction phase the impact significance related to aesthetic impact is considered to be of **Low** significance. In terms of the visual impact during the operational phase, the design of the proposed depot should be such that lights are projected inward and downwards thereby reducing the potential negative impact of light pollution for surrounding landowners and residents.

6.10 Air Quality Impacts

For fuel depot developments, community members likely to be affected by the depot are often concerned that product vapours will be released to the surrounding environment during the refueling of ASTs/offloading and that it would present a risk to the health of surrounding communities.

Impact Identification
Potential gas emissions may be released from tank vents during refilling, transportation trucks refilling, fuel spillage and motor vehicle exhausts. Odours may arise from the waste generated on-site if not disposed of accordingly.

Mitigation measures

<u>During the construction phase</u>

- Dust suppression measures such as dampening must be implemented to reduce dust on site during construction;
- Where a dust nuisance is unavoidable, screening is to be provided; and
- No fires should be allowed on-site.

During the operation phase

- All AST ventilation points must be positioned away from any building ventilation inlet at the proposed depot and pointed away from possible contact with residential or business areas;
- All sample points must be enclosed and routed to drip tanks thus eliminating vapour within the facility: and
- Ensure that the depot is enclosed in a perimeter wall fence.

Impact evaluation:
During the process of constructing the depot with the associated components, dust could be generated however, with mitigatory measures this potential impact is reduced from **Medium-low** to **Low**. During the operational phase the air quality in the immediate area could deteriorate due to potential vapour release from the refilling of the AST, transportation trucks refilling, fuel spillage and motor vehicle exhausts. Assuming mitigation measures are effectively implemented during the operational phase, the significance is rated as **Low**.

6.11 Cumulative Impacts

Cumulative impacts takes cognisance of surrounding factors and impacts in order to determine the potential impact of a multitude of factors acting together, and the potential result thereof.

The potential for ground and surface water impacts associated with the proposed depot is the potential contamination of ground and surface water as a result of the operation of the facility, and spillages from tanks. Contamination could arise as a result of accidental spills when ASTs are being refuelled and also as a result of leakage from ASTs or over spillage. The potential impact can be effectively mitigated through industry standard compliance methods such as effective bunding, strategically placed spillage recovery systems and the implementation of a spillage management plan.

In terms of surface water movement, any significant uncontrolled surface spillage within the forecourt area or at the filler points that is not contained

on site will flow into the immediate environment. In the event of a significant spill and if this event is not contained on site, there is potential for the environments below the project site in the neighborhood to be contaminated. No risk to human health is perceived via the surface water pathway.

There is the potential therefore for human health to be indirectly affected by the contamination of groundwater and surface water through the use of this water. However, if the corrective measures listed in the previous sections are followed, the possibility of spillage and thus water contamination is greatly reduced.

In summary, potential cumulative impacts created from the establishment of the depot could be reduced should mitigation measures be implemented.

7.0 ANALYSIS OF PROJECT ALTERNATIVES

7.1 No Project Option

An evaluation of the "no project option" alternative is an important component of the EIA. It provides an environmental baseline against which impacts of the proposed action can be compared. This being a new development within the project area, the "no project option" alternative here means that the proposed depot would not be constructed, but the proposed site would continue with the present course of actions.

If the sites were not developed, the site would remain as it is at present. As such, the site would not provide any services to the community, nor would it assist in improving the value of the area. The vacant site would remain in its current state thus offering no immediate or direct benefits to society or the owners. Furthermore, investment in the area by Mahathi Infra (U) Ltd and other potential investors, which could uplift and be of benefit to the area, would not occur. In its current state, the site provides nothing or very little benefit to the owners or to the community.

7.2 Alternative Land Use

The site could be used for a range of activities, including those which would pose a lesser risk to the environment than the proposed installation of ASTs and associated pumps and pipes. Alternative land uses could include commercial facilities, residential homes or community open spaces (sports field) and recreational facilities like beaches. However, given that the proposed site is located along the shoreline and covered by a rock is considered good for ship anchoring/berthing; and the initial environmental impacts identified are low and that if the correct mitigation measures are implemented no significant impacts should occur; no immediate justification was identified during the Scoping Phase that should prevent the construction of a depot on the proposed site.

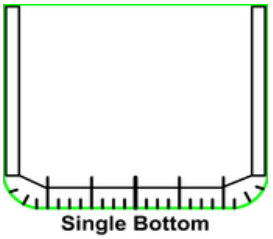
7.3 Alternative sites for the proposed development

Mahathi Infra (U) Ltd had earlier proposed a site near Port Bell on L. Victoria however, during the site screening it was found out not to be a viable as the whole area is swampy and does not have any rock to which a jetty would be constructed; meaning a jetty was to be constructed on port bell then a lot of dredging and high investment cost would have to take place and incurred respectively. Also a depot at Luzira would not have

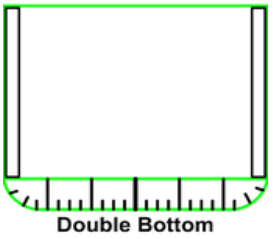
made any difference as those around town. This left the developer with very site under study as it was presented as the best option for a fuel depot of this magnitude. The proposed site presents or has the required bedrock extending to the lake which a good component for constructing a jetty and barge berthing thereafter. In addition, the requirements for constructing a standard and modern depot that meets the international standards is that; it should be situated in none congested area; that is not inhabited with people and has enough space for future expansion which Port Bell site did not have. The proposed site meets all of these requirements. Furthermore, in this construction of a depot in this area will eliminate the traffic and other related congestions normally in the surrounding depots in the city and its suburbs.

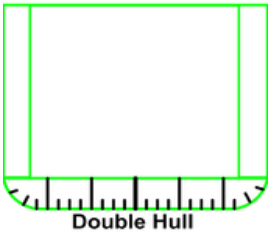
7.4 Site Layout and design of the barge

In terms of the alternative layout designs for the proposed development, the design of the facility and its associated infrastructure is specific to the size and shape of the site. However, consideration must be given while procuring or constructing a barge; this should be double hulled as opposed to single hulled. Given below are barge hull designs;



Single hull, Double bottom, and Double hull ship cross sections. Green lines are watertight; black structure is not watertight





Also consideration should be on the drive in and drive out, both to and from the site and ensure they are demarcated. Safe, quick and easy access

to the trucks/tank farm by fuel tankers must be established. This is considered to be of high importance.

7.5 Change in transportation mode; by road vs by self-propelled barge

Tank barge – also called liquid cargo barges, these are deck barges that transport chemicals and fuels inside the barge. They transport anything from diesel fuel and gasoline to liquid fertilizer and liquid asphalt. Barges are more efficient while transporting fuel on water as compared to road transport by trucks. One trip of barge would require over 200(two hundred) trucks transport the same fuel on the road.

Advantages of barges over trucks

- It is anticipated there will a total reduction of fuel transport from Kisumu by road to about 50% when a barge is used
- Reduction in road traffic congestions
- Reduction in road repairs
- Enhancement of road safety
- Control of adulteration and pilferage of petroleum products that normally happen during road transportation
- Avoidance of uncertain supplies of petroleum products
- Reduction in environmental pollution normally caused by fuel trucks on the road.

With these benefits of a barge over the road transport, this would be the efficient mode of transportation of fuel from Mwanza or Kisumu.

7.5 Proposed development

The EIA study team made a comprehensive environmental assessment of this option. Details of the study are the subject of this Environmental Impact Statement.

The local institutions and other stakeholders have greatly welcomed the development. The EIA study has found no significant reasons (economic or environmental) to stop the implementation of the project, if the socio-cultural concerns raised in this EIS are fully addressed by the developer. The developer needs to ascertain the safety and availability of the routes to use during transportation on water; guidance should be sought from Ministry of Works and Transport and Uganda Police-Marine Department.

Thus the project as described in this EIS is recommended for approval by NEMA and other relevant agencies, for implementation.

8.0 ENVIRONMENTAL MONITORING PLAN

A monitoring process will be instituted to check the progress and the resulting effects on the environment by the planned project. The monitoring process will begin at the start of the construction stage and continue throughout the operation phase. It will include regular reviews of the impacts that cannot be adequately assessed before the beginning of the project, or which arise unexpectedly. In such cases, new mitigation measures for any adverse effects will be undertaken.

8.1 The Monitoring Team

A core team of people headed by the Wakiso District Environment Officer and composed of other officials from district health and physical planning departments, NEMA, Ministry of Energy and Mineral Development (MoEMD), the project proponent, respective Local Environment Committee's and department of Occupational Health and Safety should carry out the monitoring process. The monitoring team should start its work during the construction process and continue throughout the operation phase and should ensure that the proposed mitigation measures are implemented.

The major issue associated with this development facility is the management of storm water & domestic wastes, oil spills, general sanitation, and fire and workforce welfare. The monitoring group should ensure that the following is effectively managed and maintained through constant monitoring:

- Disposal of generated waste at an appropriate waste facility;
- Ensure that there is a budget for management and implementation of the mitigation measures and monitoring plan of the proposed development;
- Ensure that an efficient and functional water and sanitation system is in place;
- Ensure that high levels of cleanliness and good housekeeping in and around the facility are maintained;
- The workforce should be given the due protective gears;
- Constant acquisition of appropriate permits and/or licenses from respective institutions and compliance to the regulatory framework;
- Regular inspection of critical areas with high risks of fire accidents should be undertaken and any fire risk behaviour should not be

allowed. The performance of the installed fire warning/fighting system should be regularly checked to ensure that it is functioning properly;

- Regular inspection of the facility by the Department Of Occupational Safety and Health, Wakiso District Environment Office, MoEMD and NEMA authorities must be ensured to ascertain that the facilities are fit for use;
- Periodic environmental audits must be carried out at the facility during the construction phase and at least once every year after completion and reports be submitted to the National Environment Management Authority for review to ascertain compliance with the environmental requirements and the suggested mitigation measures.

8.2 The Environmental Mitigation Plan

Table 8.1 has the proposed mitigation plan for the facility to ensure effective implementation of the proposed project in an environmentally sound manner. Regular inspections will be conducted by the developer to ensure that the contractor adheres to the proposed mitigation measures. NEMA and other stakeholders associated with this project are highly encouraged to continue monitoring the project activities to ensure that they are implemented in an environmentally sound manner and where it is to the contrary should advise accordingly;

Impact to be Monitored	Mitigation Measures	Environmental Aspect	Responsibility	Time Frame
Health and Safety Impacts	• All construction contractors and sub-contractors on-site must be trained in the implementation of effective Health and Safety policies; • A First Aid Team must be trained and equipped with adequate equipment should a health and safety incident occur; • Appropriate signage and a demarcated construction area must be established around the construction site creating awareness of employees on-site of the potential Health and Safety risks; • The storage of oils, materials, chemicals, fuels, etc. to be used during the construction phase must not pose a risk to the surrounding environment. • Temporary bunds must be constructed around chemical or fuel storage areas to contain possible spillages; • Relevant traffic signage such as “caution” and other warning	• Construction activities (e.g. use of heavy machinery, installation of USTs, vehicular movement etc.) • Storage and transfer of fuel by either delivery vehicles to UST or by attendants to customer vehicles	• Contractors; • Workforce • The developer • Occupational Health & Safety	During construction

	signs will be placed at the entrance and exit of the facility.			
Fire and explosion Impacts	• All contractors and sub-contractors must be aware of the relevant EHS policy and implementation thereof, in addition to an Emergency Plan and the Environmental Management Plan; • Ensure all staff are trained in what to do in the case of an emergency such as an on-site fire or explosion; • The Fire Team must be properly trained and their duties understood; • Ensure all fire-fighting equipment is readily available, accessible and functioning; • Ensure that relevant signage e.g. no smoking, is displayed in potentially dangerous areas and is abided by;	Storage and transfer of fuel	• Contractors • Sub contractors • Staff • The developer • Fire team	During construction and operation phases
Traffic Impacts	• The movement of heavy vehicles to and from the site should be conducted during periods of the day when peak flow is minimal. The area has not experienced huge traffic volumes yet; • Drivers of these vehicles should be licensed and proficient in driving these vehicles; and	• Heavy vehicles entering and exiting the site during loading and off-loading of construction equipment; • Increase in traffic volumes and backlogs along the community Road	• Drivers of heavy trucks; • The developer;	During the construction & operation phases

	• Drivers under the influence of narcotics and alcohol should not be allowed to operate these vehicles and must be removed from the site. • The proposed development must provide adequate onsite parking, loading facilities and manoeuvring space for the fuel tanker.			
Impact of Fuel Spillage or Leakage	• All pipe work must be installed on non-cohesive drainage/bedding material in reverse graded trenches, to ensure that any lost product will migrate the containment; • The tank farm must be lined with a heavy-duty HDPE liner or clay layer to prevent infiltration of product to the ground water should a leak/spill occur; • The void around the AST must be back filled with free-draining granular material to ensure that any product loss through the ASTs or ancillary pipe work will flow towards the low point; • All filler and dip-point manholes must be properly sealed and regularly cleaned out to prevent accumulation of	• Contamination of ground and surface water and sub-sequent contamination of nearby water sources. • Contamination of soil and groundwater and sub-sequent contamination of the nearby water sources. • Refilling procedure Contamination of soils, surface water and groundwater. • People exposed to spilled / leaked fuel. • Catastrophic surface spillage leading to safety hazard in the northern neighborhood to the project site.	• The developer; • Staff • Site manager • District Environment officer • DWRD	Construction & Operation phases.

	hydrocarbon product on these contaminant structures; • All pipelines must be fuel-grade HDPE piping with thermo-weld fittings; • The vertical storage tanks must be fitted with overfill protection. The critical level of this protection should allow for the delivery hose (2%); • There should be a specially designed sealed containment tank to collect spilled product from the filler point from which it can be removed; • The integrity of the ASTs and pipelines must be tested through vacu-sonic and pressure testing methods at least once a year; • Care must also be taken while offloading of barge into the storage tanks; • Any monitoring of the piping sumps / trenches must be done with industry standard technology; • Proper and accurate records of fuel sales and deliveries must be kept, observe the ASTs at the change of each shift, and do regular fuel reconciliations to			

	guard against subsoil product loss; • Have clear observation chamber that should be regularly cleaned • Also install an ant leak and spill device to alert the site manager should spill or leak occur; • During monitoring, wet stock reconciliation records must be checked to ensure discrepancies can be identified and investigated; • If product loss is suspected, the AST and pipe work must be tested to identify potential problem areas. • The loading area/island area must be concrete paved and dish shaped to prevent infiltration of spilt fuel into the subsurface soils, with surface runoff designed to flow towards a centralised collection point (spill catchment drains) and contaminated wash water is collected by grid-drain linked to the separator system; • The area around the filler point must be contained using concrete or other material appropriate for this application;			

	• The area around the AST"s filling points must be concrete paved and designed for all run-off to collect at a central grid-drain collection point (spill catchment drains), linked to a sealed separator system to be installed on site; • This system must be serviced regularly and the outlet must be linked to the adjacent storm water system; • Any material collected from the spill catchment drains must be disposed of appropriately at a registered waste disposal site; • The separator system must be monitored to prevent free-phase hydrocarbon liquids from discharging into the wastewater drainage system; • All surface spills must be contained on-site; • All minor spills must be cleaned and a spill management procedure must be prepared to include procedures for spill clean up, waste water collection and disposal; • No product must be allowed to be discharged into adjacent			

	wetland or shoreline and/or sewer system • A Spill Contingency or Emergency Response Plan must be drawn up and should include the actions that need to be taken into account in the event of a spill.			
Solid and Liquid Waste Generation and Management Impacts	• Waste must be categorised by the contractor and disposed of in a suitable manner into different waste streams (including general and hazardous waste); • General waste is to be collected either by the licensed waste disposal contractor; • The contractor should provide an adequate number of waste receptacles for general waste at points around the construction site, and a single collection point for hazardous waste; • Particular care shall be taken with the disposal of materials that could be wind-borne or waterborne to ensure that the release of these materials is minimised (the latter is considered advisable for hazardous waste). The use of netting covers or sealed containers may be considered.	• Contamination of ground and surface water; • Illegal dumping of construction waste, attracts vagrants; • Contamination of ground and surface water, and transportation of contaminants downstream; • Air, soil, ground water and surface water contamination from system leakage; • Vector infestation; • Air, soil, ground water and surface water contamination from system leakage.	• Licensed solid waste collector; • The developer; • Wakiso District Environment officer	During the construction and operation phases.

	Areas should be demarcated for specific activities including food consumption, with suitable waste receptacles provided; • The contractor shall ensure that any wastewater generated during construction activities feeds to a suitable containment area such as a container or sedimentation pond prior to disposal; • No wastewater shall be disposed to soil; • Litter and waste that is generated to be adequately stored and disposed of in an approved manner; • No burning of waste is allowed;			
Stormwater Management Impacts	• All water flow must be directed through controlled management into the existing natural drainage line along the road; • During site establishment, stormwater culverts and drains are to be located and covered with metal grids to prevent blockages; • Temporary cut off drains and berms may be required to	• Contamination of soils and surface water and transportation of contaminants downstream. • Create soil erosion in vulnerable areas. • Flooding the northern neighborhood during storm events	• The developer; • Contractor; • Environment Officer	Construction and operation phases

	capture stormwater and promote infiltration; • During construction, un channeled flow must be controlled to avoid soil erosion. • All hazardous substances are to be stored within secondary containment in a suitable storage facility which has adequate bunding; • The discharge of any pollutants such as cement, concrete, chemicals and fuels into any water sources and the stormwater system must be prevented; and • Spills of oils, grease etc. must be contained, cleaned and stored in separate lined waste bins and disposed of at the closest classified landfill site. The hazardous waste bins must be clearly marked as hazardous and as flammable; • All surface spillages must be contained on site through channels and trenches, these must be diverted to an oil / water separator or sump of sufficient capacity; • The forecourt will be concrete paved to prevent infiltration of fuel into the subsurface soils			

	with surface runoff designed to flow towards a centralized collection point which is connected to an oil/water separator; • The area around the filler points should be concreted and the drainage connected to the oil/water separator; • The oil / water separator should be regularly checked and kept clean to prevent blockage and overflow. Any material collected must be disposed at an appropriately registered waste disposal site; • All accidental surface spills of oil or fuel must be contained on-site and diverted to the oil/water separator;			
Noise Impacts	• Construction activities should be limited to weekdays 07h00-17h00 and Sundays and public holidays 08h00-14h00; • No machinery /equipment which may lend itself to creating a noise nuisance, to be utilised on Sundays and public holidays; • Construction workers should be made aware that they are not to make excessive noise (e.g. shouting, hooting).	• Disturbance of surrounding residents through noisy machinery and general construction noises. • Disturbance of surrounding residents through the operations of the depot.	• Developer; • Construction workers	Construction and operation phases

	• A noise control policy must be compiled and enforced to control the level of noise at the facility, paying particular reference to the immediate neighbours.			
Aesthetics & "Sense of Place" Impacts	• The areas that will not be developed must be landscaped using indigenous species.	• Visual intrusion by construction site activities. • Permanent sight illumination from on site lighting causing light pollution. • Temporary illumination from accessing vehicles. • Disturbance to ones sense of place from infrastructure introduction.	The developer	Construction & Operation phases;
Air Quality Impacts	• Dust suppression measures such as dampening must be implemented to reduce dust on site during construction; • Construction vehicles travelling along the access roads must adhere to speed limits to avoid creating excessive dust, especially during dry and windy conditions; • Where a dust nuisance is unavoidable, screening is to be provided; and	• Dust generation during construction phase; • Release of vapours into the surrounding environment during the refueling of the AST, transportation vehicles refueling, fuel spillage and motor vehicle exhausts	The developer	Construction and operation phases

	• No fires are allowed on-site.			

9.0 CONCLUSIONS AND RECOMMENDATIONS

The following recommendations are made as they relate to the primary environmental issues identified during the course of the EIA:
The proposed development of a depot is seen as a positive development when viewed in the broader context as this will result in improved service and better environmental management of the site and the country at large. This includes improved infrastructure and installation and operational methods that will reduce environmental risks associated with operation of the depot and bulk fuel transportation form Kisumu or Mwanza to Uganda.

The consulting team advocates for the following recommendations;

The following recommendations are made as they relate to the primary environmental issues identified during the course of the EIA:

Tank and pipe work installation

The following measures should be undertaken in order to prevent ground water contamination:

- All pipe work must be installed on non-cohesive drainage/bedding material in reverse graded trenches, to ensure that any lost product will migrate to the containment that will be constructed on site;
- The tank farm must be lined with a heavy-duty HDPE liner or clay layer to prevent infiltration of product to the ground water should a leak/spill occur;
- The void around the Aboveground Storage Tanks must be back filled with free-draining granular material to ensure that any product loss through the Storage Tanks bottom or ancillary pipe work will flow towards the low point into a containment; and
- All pipelines must be fuel-grade HDPE piping with thermo-weld fittings and conform to the API and other industry related standards.

Storm water

- All surface spillages must be contained on site through channels and trenches, these must be diverted to an oil / water separator or sump of sufficient capacity;
- The forecourt will be concrete paved to prevent infiltration of fuel into the subsurface soils with surface runoff designed to flow towards a

centralised collection point which is connected to an oil/water separator;
- The area around the filler points will be concreted and the drainage connected to the oil/water separator;
- The oil / water separator should be regularly checked and kept clean to prevent blockage and overflow. Any material collected must be disposed at an appropriately registered waste disposal site; and
- All accidental surface spills of oil or fuel must be contained on-site and diverted to the oil/water separator.

General

- All employees at the proposed depot must be aware of the HSE policy and implementation thereof, in addition to the Emergency Plan, Environmental Management Plan and The Petroleum Supply Act, 2003;
- The filler point and tank must be fitted with overfill protection. The critical level should be such that a space remains in the tank to accommodate the delivery hose volume (2%);
- It is suggested there should be a specially designed sealed containment tank to collect spilled product from the filler points or any spillage from which product can be removed;
- Monitoring of piping sump(s)/trench and other secondary containment low points by industry standard technology;
- The integrity of the Storage Tanks and pipelines must be tested through vacu-sonic and pressure testing at least once a year;
- During fuel tanker/barge delivery, the cabin crew must be present at all times during product offloading;
- Regular product monitoring and reconciliation must be undertaken;
- During the monitoring event, the wet stock reconciliation records must be scrutinised to ensure that the records are maintained and any discrepancies in product volume must be flagged for further investigation immediately;
- In the event of a suspected product loss, the Storage Tanks and subsurface pipe work must be tested to identify problem areas. Problem areas should be isolated and shut down immediately and appropriate remedial action be implemented as soon as possible;
- All minor spills must be cleaned and a spill management procedure must be prepared to include procedures for spill cleanup, waste and waste water collection and disposal;

- Spill kits must be kept on site and staff must be trained to execute a spill management procedure;
- An emergency preparedness procedure should be developed for the site; and
- If a significant spillage event occurs that cannot be contained on site, it is recommended that an assessment be performed to determine if remediation / rehabilitation may be required.

10.0 REFERENCES

1. The National Environment Act, CAP 153;
2. "Tanker History". *GlobalSecurity.org.* Alexandria, Virginia*:* John E. Pike*. Retrieved 10/Jan 2016.*
3. *Spyrou, Andrew (2011).* From T-2 to Supertanker: Development of the Oil Tanker, 1940-2000. *Retrieved 2016.*
4. Loem K. Paik and Tak K. Lee, Damage and Residual Strength of Double-Hull Tankers in Grounding, *International Journal of Offshore and Polar Engineering, Vol. 5, No. 4, December 1995.*
5. European Commission / European Maritime Safety Agency (2005). Double Hull Tankers: High Level Panel of Experts Report.
6. Environment Impact Assessment Guidelines, 1997;
7. Environment Impact Assessment Regulations, 1998;
8. The National Environment (Waste Management) Regulations, 1999
9. Occupational Safety and Health Act 2006;
10. Environment Standards and Preliminary Environment Impact Assessment for Water Quality and Discharge Of Effluent Into Water and Land, 1998.
11. The Petroleum Supply Act 2003
12. The Petroleum Supply (General) Regulations, 2009

11 APPENDICES

- Letter of approval of Terms of Reference for the EIA
- Certificate of Title
- Letter from local council recommending the project
- Soil Test and Analysis Report
- Water test and analysis report
- MOU between the Government of Uganda and the Developers
- Layout Plan for the proposed facility

Mahathi Infra (Uganda) Ltd

APPENDIX I;

Letter of approval of Terms of Reference for the EIA

NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY (NEMA)

NEMA House
Plot 17, 19 & 21, Jinja Road
P.O.Box 22255, Kampala. UGANDA.
Tel: 256-414-251064, 251065, 251068
342758, 342759, 342717
Fax: 256-414-257521 /232680
Email: info@nemaug.org
Website: www.nemaug.org

NEMA/4.5

15th January, 2016

The Director,
Mahathi Infra Uganda Limited,
11th Floor, Diamond Trust Building, Kampala,
KAMPALA.

Tel: +256 772 118800

RE: REVIEW OF THE SCOPING REPORT AND TERMS OF REFERENCE PERTAINING TO THE PROPOSED FUEL DEPOT, IN BUGIRI–BUKASA VILLAGE, WAKISO

This is in reference to the submission to this Authority, of the Scoping Report and Terms of Reference (TOR) for carrying out environmental impact assessment (EIA) for the above-mentioned Project, on Plots 5, 185 and 454, Block 429 Busiro, in Bugiri–Bukasa Village, Katabi Sub-county, Wakiso District, for review and consideration for approval. This Authority has finalised the review and grants formal **APPROVAL** of the said Scoping Report and TOR.

In addition, you are advised to consider certain key aspects during the conduct of the EIA and preparation of the EIA report, as outlined below. Also note that **full contact details of developer** should be provided to enable effective communication between this Authority and the Developer.

(i) In order to determine whether there are no encumbrances to the proposed project activities and/or whether the proposed project location site is suitable for setting up a fuel depot, carry out comprehensive consultations involving the relevant key stakeholders including, among others, the Petroleum Supply Department *(Ministry of Energy and Mineral Development)*, Occupational Safety and Health, Wakiso District Local Government Authorities, and the local community in the neighbourhood; and, include in the EIA report **the views and concerns of the persons consulted.**

(ii) Indicate clearly and describe the **source(s) of supply of fuel** to be stored in the Depot.

(iii) Provide comprehensive narratives on the **design and components of the Fuel Fuel Depot, auxiliary support structures and the related activities;** and indicate the proposed access and routing of fuel to the project, and the proposed installed capacity of the Depot, respectively.

(iv) Provide **comprehensive baseline information/data** relating to the project area, and **a set of clear coloured photographs** showing the current state of sections of the project area and its immediate surroundings and regulated and sensitive areas including the Lake Victoria shores.

(v) Ensure that soil samples obtained from the project site is analysed in certified analytical laboratory, and that the **soil and water analysis results are appended** to the EIA report.

(vi) Provide **coloured location map(s) that are clear, well-labelled and legible** *(preferably covering A-4 or A-3 paper size)*, and a **set of GPS coordinates,** relating to the project area.

(vii) Append to the EIA report **clear, well-labelled and legible copy** of the proposed **site lay-out plan** *(preferably on A-3 paper size)* – showing the lay-out of the Fuel Depot components.

(viii) **Carry out analyses of alternatives/options** in terms of project location, project design, fuel transport routes, among other aspects.

(ix) Provide **detailed evaluation of the potential environmental impacts, risks and residual impacts** that are associated with the proposed project components and activities.

(x) Provide **comprehensive mitigation and environmental management and monitoring plans**, respectively *(preferably in table matrix format)*, that related to the identified potential environmental impacts and risks.

(xi) Be mindful of any other critical environmental aspects/concerns which may have not been initially foreseen during the preparation of the Scoping Report and TOR, and **include evaluations of such concerns in the EIA report.**

(xii) Append to the EIA report copies of **authentic land ownership documents.**

(xiii) Indicate the **total project (investment) cost** covering all the project components and activities.

This is, therefore, to recommend that you proceed with carrying out the EIA for the proposed Project. We look forward to your cooperation and receipt of copies of comprehensive EIA report, for our further action.

(NOTE: Please, note that approval of the TOR DOES NOT give you permission to start implementing any of the proposed project activities. THIS IS NOT A CERTIFICATE OF APPROVAL)

Margaret Aanyu
FOR: EXECUTIVE DIRECTOR

c.c Mr. Wilbroad Kukundakwe,
Industrial & Natural Resources Consults Ltd.,
P.O. Box 74698,
KAMPALA.

Tel: +256 772 842416 / 702 842416

Mahathi Infra (Uganda) Ltd

APPENDIX II;

Certificate of Land Titles

UGANDA

REGISTRATION
OF TITLES
ACT

Certificate of Title

District ..... MENGO ..... County ..... BUSIRO .....

Block ..... 429 ..... Plot ..... 5 .....

Office of Titles

KAMPALA

.....

COUNTY: BUSIRO

SUB-COUNTY: SSAABADDU

ISSUED 06/3/58

NAME OR DESCRIPTION: BUGIRI

UGANDA
THE LAND REGISTER

PART I-PROPERTY

DISTRICT	PLOT
MENGO	5
BLOCK No.	
429	

AREA IN ~~HECTARES~~ A

22.00		

ALL THAT piece of PRIVATE MAILO land situate and described above which is indicated on the Registry Plan by the Block and Plot numbers written hereon

Easements, rights, etc. appurtenant to the land

REGISTRAR OF TITLES

Proprietor's Signature or Mark

PART II-OWNERSHIP

SEAL OF OFFICE

Date and time of Registration	Instrumment No.	Proprietor's Name and Address	Father's Name (if applicable)	Clan (if applicable)	Registrar's Sig
6.3.58	KLA13750 & KLA17548	~~YOWANA MAMBEYI~~ Bugiri Ssabaddu Busiro	~~Musole~~	~~Butiko~~	
12.11.2002 9.00 a.m	KLA243078	MIKAYIRI LUGONVU (Administrator of the estate of the late Yowana Mambeyi A/C 0247/2002 High Court of Uganda)			
29.11.2002 11.20 a.m	KLA243867	~~RACHEAL MAYANJA and JOHN BUWEMBO MAYANJA~~ P.O. Box 21325, Kampala	Y. Mayanja	Ngeye	
6.12.15 9.28 a.m	KLA328776	MAHATHI INFRA UGANDA LIMITED P.O. Box 10101, KAMPALA			

COUNTY: BUSIRO
BLOCK: 429
PLOT: 5
SCALE 1: 5,000

For: COMMISSIONER OF LANDS AND SURVEYS

PART III-INCUMBRANCES

ate and time Registration	Instrumment No.	Name and Address for Services of Mortgagee Creditor, Caveator. etc	Particulars	Registrar's Signature

UGANDA

REGISTRATION
OF TITLES
ACT

Certificate of Title

District ..... MENGO ..... County ..... BUSIRO .....

Block ..... 429 ..... Plot ..... ~~140~~ ~~184~~ 185 455 .....

Office of Titles

KAMPALA

.....

BUSIRO

NTY: SSAABADDU

UGANDA
THE LAND REGISTER

PART I-PROPERTY

DESCRIPTION: LAND AT BUGIRI

ALL THAT piece of PRIVATE MAILO land situate and described above which is indicated on the Registry Plan by the Block and Plot numbers written hereon

rights, etc. appurtenant to the land

REGISTRAR OF TITLES

DISTRICT	PLOT No.
MENGO	~~140~~ ~~184~~ 455 ~~185~~
BLOCK No. 429	

AREA IN HECTARES

6.069			
KLA365527			
3.336			
KLA503526			
2.932			

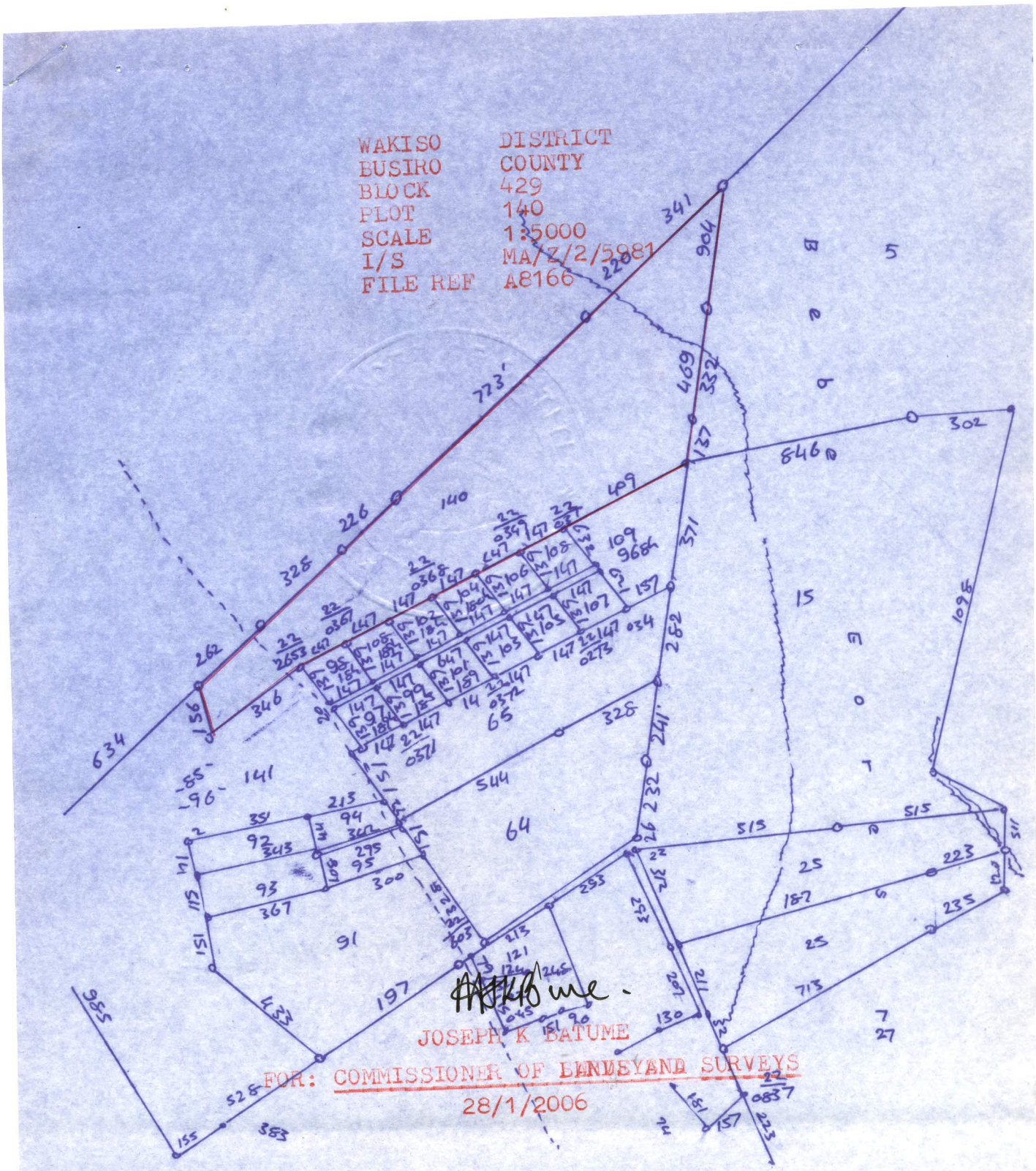
Proprietor's Signature or Mark

PART II-OWNERSHIP

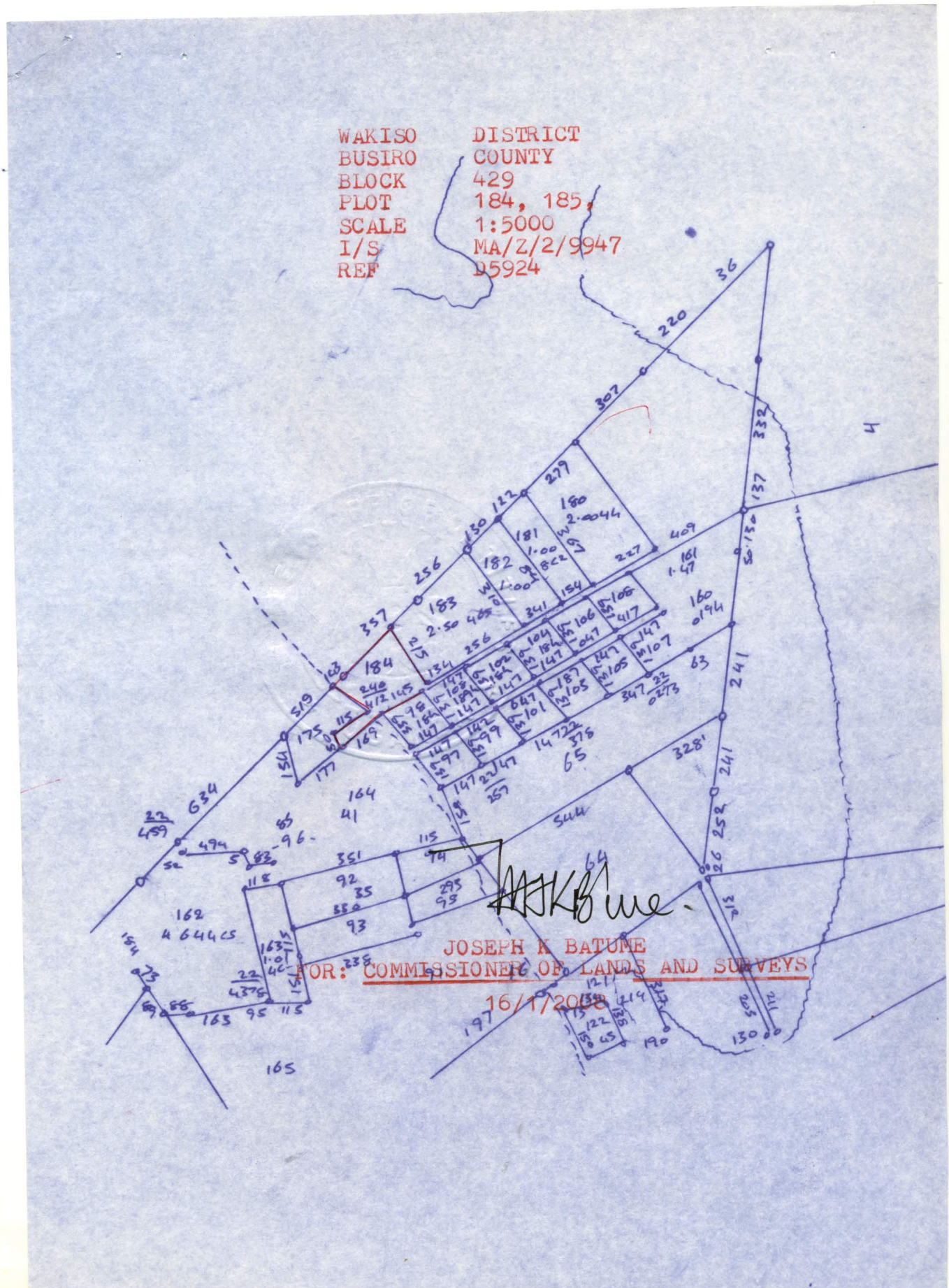
SEAL OF OFFICE

...e ...on	Instrumment No.	Proprietor's Name and Address	Father's Name (if applicable)	Clan (if applicable)	Registrar's Signature
...m	KLA328729	~~TEREZA NABISERE(Administrator of the estate of the late Nataliya Nakate Adm.Cause No.1151 of 2003 of the High Court of Uganda)~~			
...m	KLA328733	~~JOHN BUWEMBO MAYANJA~~ P.O. Box 8138,Kampala			
...m	KLA328747	MAHATHI INFRA UGANDA LIMITED P.O. Box 10101, KAMPALA.			


WAKISO DISTRICT
BUSIRO COUNTY
BLOCK 429
PLOT 455, 185
I/S MA/Z/4/3891
SCALE 1:5000
REF E3887
JOSEPH K. BATUME
FOR: COMMISSIONER OF LANDS AND SURVEYS
9/2/2011


WAKISO DISTRICT
BUSIRO COUNTY
BLOCK 429
PLOT 140
SCALE 1:5000
I/S MA/Z/2/5981
FILE REF A8166
JOSEPH K BATUME
FOR: COMMISSIONER OF LAND AND SURVEYS
28/1/2006

WAKISO DISTRICT
BUSIRO COUNTY
BLOCK 429
PLOT 184, 185,
SCALE 1:5000
I/S MA/Z/2/9947
REF 05924



PART III-INCUMBRANCES

Date and time of Registration	Instrumment No.	Name and Address for Services of Mortgagee Creditor, Caveator. etc	Particulars	Registrar's Signature

APPENDIX III:

Recommendation Letter from the LC

Bugiri Bukasa Local Council I

THE REPUBLIC OF UGANDA

P.O. Box 96 Kisubj, Wakiso District
Tel: 0774-434653 / 0782-471117

Sabaddu Katabi Sub-County
Sabagabo Kisubi Parish

19th/01/2016

THE EXECTIVE DIRECTOR
NEMA

Dear Sir/madam,

RE: NO OBJECTION

We hereby support the upcoming project of a fuel depot in our area as this will bring development through providing job to our youth and other related services.

We also urge the developers to give the first priority of non technical jobs to our youths.

Thanks.

Yours in Service
Mukasa Samuel
General Secretary

CHAIRMAN L.C.I
BUGIRI BUKASA
SUBARABO
KISUBI PARISH
DATE: 19/01/16

CC MBHATHI INFRA (U) LTD

Mahathi Infra (Uganda) Ltd

Appendix IV:

Soil test and Analysis Results

MAKERERE UNIVERSITY

P. O .Box 7062 Kampala- Uganda
Cables: "MAKUNIKA"
E-mail:ap@caes.mak.ac.ug

Fax: +256-414-531641
Phone: +256-414-533580

COLLEGE OF AGRICULTURAL AND ENVIRONMENTAL SCIENCES
SCHOOL OF AGRICULTURAL SCIENCES
Department of Agricultural Production

SOIL ANALYSIS RESULTS

Sample at Bugiri-Bukesa
The Site Proposed For Fuel Depot
Located On Plots 185 And 5, Block 429, Busiro, Bugiri Bukesa Village, Katabi Wakiso District
Client: Mahathi Infra (U) Ltd

Laboratory Analysis

The air-dried soil samples were pounded, sieved through 2 mm to remove any debris then subjected to physical and chemical analysis following standard methods described by Okalebo *et al.* (2002)'. Soil pH was measured in a soil water solution ratio of 1:2.5; Organic matter by potassium dichromate wet acid oxidation method; total N determined by Kjeldhal digestion; Extractable P by Bray P1 method; exchangeable bases from an ammonium acetate extract by flame photometry (K^+, Na^+) and atomic absorption spectrophotometer (Ca^{2+}, Mg^{2+}); and particle size distribution (texture) using the Bouyoucos (hydrometer) method. Heavy Metals and trace elements by AAS from an EDTA extract

Routine Analysis

pH	OM	N	Av.P	Na	K	Ca	Mg	%Sand	%Clay	%Silt
	%ge		ppm	Cmoles/kg				Texture		
8.9	3.98	0.25	81.32	1.04	0.98	13.6	4.24	59.0	22.0	19.0

Trace Element And Heavy Metals

	Cu	Zn	Fe	Mn	Cd	Pb	Cr	Ni
Detected Conc.	ppm(mg/kg)							
	2.25	4.98	356.2	52.3	0.20	0.11	0.12	0.00
Normal Ranges	0.1-3.0	1-40	50-1000	5-500	0.03-0.3	0.2-2.0	0.1-20.0	0.05-5.0

Remarks

1. The soil pH is a very important parameter and normal values range between 5.5-7.5.
2. The level of available phosphorus is rated as high.
3. Texture is sandy clay loam
4. Trace elements and heavy metals are indicators of pollution if their concentrations are above normal ranges, the indicated ranges are normal

Bonny Balikuddembe 21 Jan 20
Senior Laboratory Technician
Soil, Water and Plant Analytical Laboratory

DEPARTMENT OF AGRICULTURAL PRODUCTION
SCHOOL OF AGRICULTURAL SCIENCES
21 JAN 2016
CAES-MAKERERE UNIVERSITY
P.O.BOX 7062, KAMPALA

Appendix V:

Water test and Analysis Results

NATIONAL WATER & SEWERAGE CORPORATION
KAMPALA WATER

KW

Our Ref: _____

Your Ref: _____

Date: 22/01/2016

P.O. Box 70255 KAMPALA
PLOT 18/20 6TH STREET
INDUSTRIAL AREA
TEL: 0414-315500/1
FAX: 0414-349020

CLIENT ; MAHATHI INFRA (U) LTD, P.O.BOX 10101 KAMPALA
SAMPLE SOURCE ; SURFACE WATER FROM LAKE VICTORIA AT BUGIRI, BUKASA.
PROJECT ; PROPOSED FUEL DEPOT ON PLOT 58185, BLOCK 429, BUSIRO-KATABI SUBCOUNTY, WAKISO DISTRICT

REPORT OF PHYSICO-CHEMICAL AND BACTERIOLOGICAL ANALYSIS OF SURFACE WATER SAMPLE

Parameters	Units	Water sample	National Standards
Temperature	°C	23.5	25 - 32
pH	-	7.18	6.5– 8.5
Conductivity	µs/cm	109	2500
Turbidity	Ntu	13	10
Total dissolved solids	mg/l	70.0	1200
Total Alkalinity (as $CaCO_3$)	mg/l	56	500
Magnesium as $Mg2^{++}$	mg/l	3.84	50
Calcium as Ca2++	mg/l	9.6	75
Hardness total as $CaCO_3$)	mg/	40	500
Total Iron	mg/l	0.60	1.0
Total suspended solids	mg/l	4	0
Chlorides	mg/l	35	500
Nitrates	mg/l	1	5
Faecal coli forms	CFU/100ml	280	0
Colour	Ptco	134	15
Phosphate Reactive	mg/l	0.24	5
Sulphates	mg/l	12	200
Ecoli	CFU/100ml	32	0
BOD	Mg/l	4	50
COD	Mg/l	16	100
Oil&Grease	Mg/l	0	0

The surface water showed good physcio-chemical and poor bacteriological quality of the source except colour, Turbidity& TSS, .There is need for conventional treatment before the water can be used for livestock and domestic supply

TUMWEBAZE STEPHEN

FOR QUALITY ASSURANCE MANAGER

NWSC KAMPALA WATER
22 JAN 2016
GGABA

Mahathi Infra (Uganda) Ltd

Appendix VI

MOU between the Government of Uganda and the Developers

TELEGRAMS: ENERMIN
TELEPHONE: 230243/235895
GENERAL LINE: 257863/349010
FAX: 349342/234732
E-MAIL: psmemd@energy.go.ug
IN ANY CORRESPONDENCE ON
THIS SUBJECT PLEASE QUOTE NO.
PET/297/456/01

THE REPUBLIC OF UGANDA

MINISTRY OF ENERGY AND
MINERAL DEVELOPMENT
P. O. BOX 7270
KAMPALA

4th August 2015

Y. Ravi Shankar
Managing Director
Mahathi Infra Services Pvt. Ltd.
House No. 1-62-191, Plot No. 191
1st Floor, Tagore Towers, Kivuri Hills
Madhapur, Hyderabad-500033, **India**

RE: AGREEMENT FOR THE TRANSPORTATION OF PETROLEUM PRODUCTS BY BARGES OVER LAKE VICTORIA TO AND FROM UGANDA

Reference is made to your letter dated 24th June 2015 addressed to Hon Peter T. Lokeris, Minister of State for Mineral Development in which you availed us an investment proposal with regard to the above-captioned mode of transporting petroleum products over Lake Victoria to and from Uganda.

As you recall, we welcomed the proposal and negotiated an agreement with you to take the matter forward. The agreement was concluded between the parties and signed on your part on the 24th day of July 2015 following its clearance. On our part, the agreement was executed on the 31st day of July 2015 thereby making it effective.

The purpose of this letter, therefore, is to forward to you the herewith enclosed original copy of the Agreement for your record and use.

Rev. Justaf Frank Tukwasibwe
For: PERMANENT SECRETARY

Encls

AGREEMENT FOR

THE TRANSPORTATION OF PETROLEUM PRODUCTS BY BARGES OVER LAKE VICTORIA FROM KISUMU - KENYA TO PORT BELL AND JINJA - UGANDA

BETWEEN

MAHATHI INFRA SERVICES PRIVATE LIMITED

AND

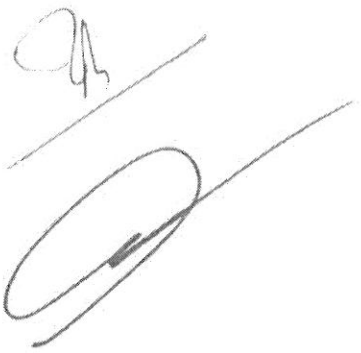
THE GOVERNMENT OF UGANDA

This Agreement is entered into by the following parties on the 31st day of July 2015 ("Agreement Date").

i) Mahathi Infra Services Private Ltd ("MISPL") which expression shall include authorized representatives of MISPL and its patterns and their respective successors, heirs, executors and assigns.
Address: Plot No. 191, 1st Floor, Tagore Towers
Kavuri Hills, Madhapur, Hyderabad- 500033, **India**

ii) Government of Uganda ("GoU") represented by the Ministry of Energy and Mineral Development.
Address: Amber House, Plot 29/33 Kampala Road
P.O. Box 7270, **Kampala - Uganda**

MISPL and GoU hereinafter are referred as "Party"respectively and "Parties"collectively.



WHEREAS MISPL based in Hyderabad, India is a professional company engaged in the execution of infrastructure projects in oil and gas sector.

WHEREAS MISPL is desirous of investing in transportation of Petroleum Products to Uganda over Lake Victoria and has established its business in Uganda.

WHEREAS MISPL has submitted a proposal to the GoU for the development of oil transport system through Lake Victoria by self-propelled Oil tanker Barges to Port Bell or Jinja in Uganda from Kisumu in Kenya (the proposal is attached as **appendix "A"**)

WHEREAS presently most of Uganda's Petroleum Products are transported by road from Kenya to the needed locations in Uganda.

WHEREAS the Parties have noted that road transport of Petroleum Products is very expensive and has other serious associated problems and that Barge transport will bring several advantages.

WHEREAS MISPL holds that the proposal shall benefit the people and GoU in ways like:

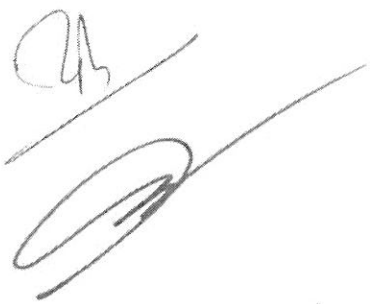
- Reduction in the transportation costs of Petroleum Products to Uganda by approximately 50% compared to current road transport cost
- Reduction in road traffic congestion
- Reduction in road repairs
- Enhancement of road safety
- Control of adulteration/pilferage of Petroleum Products
- Avoidance of uncertain supplies of Petroleum Products
- Reduction in pollution of the environment.

WHEREAS GoU is willing to support the MISPL project on the supply and transportation of the country's Petroleum Products.

WHEREAS GoU has agreed to the soundness and intended benefits of the proposal made by MISPL and desires that MISPL goes ahead with its implementation.

WHEREAS GoU has issued a letter to MISPL encouraging and supporting the proposal made by the MISPL (the letter are attached to this Agreement as **appendix B)**

WHEREAS GoU and MISPL have decided to sign this Agreement declaring the obligations of MISPL and the supporting role of the GoU and the steps they shall take to implement the proposal.



NOW THEREFORE THE PARTIES AGREE AS FOLLOWS:

1. INTERPRETATION

In this Agreement and the appendices thereto, unless inconsistent with or otherwise indicated by the context, the following term/expressions are explained as below:

Agent – Somebody appointed to act on behalf of another person (known as the principal). The amount of the authority to deal has its subject to agreement between the principal and the agent. However, unless told otherwise, third parties can assume the agent has full powers to deal.

Barges– Any ship or tanker or water transport vessel used for transport of bulk petroleum products in liquid form.

Company seal – an embossing press used to indicate the official signature of a company when accompanied by the signature(s) of officer(s) of the company.

Confidentiality agreement- an agreement made to protect confidential information if it has to be disclosed to another party.

Consideration – price paid by one side for the goods/services supplied by the other.

Client – a person who buys goods or services but not as part of their business.

Effective Date – Date of obtaining the requisite Petroleum Operating Licence in accordance with the Petroleum Supply Act, 2003.

Employment contract – a contract between an employer and employee.

Encumbrance – means any encumbrance such as mortgage, charge, pledge, lien, hypothecation, security interest, assignment, privilege or priority of any kind having the effect of security or other such obligations and shall include without limitation any designation of loss payees or beneficiaries or any similar arrangements under any insurance policy pertaining to the project, physical encumbrances on the assets of the project.

Financial close – means the date on which the financing documents providing for funding by the lenders have become effective and MISPL has immediate access to such funding under the Financing Documents.

Financing Documents – means collectively the document evidencing Lenders' commitment to finance the debt component of cost of the Project.

Incorporate – inclusion in, or adoption of, some term or condition as part of the Agreement.

Injunction – a remedy sometimes awarded by the court that stops some action being taken.

Jurisdiction - a jurisdiction clause sets out the country or state laws whose laws will govern the Agreement and where any legal action must take place.

Lenders - means bank, financial institutions, funds or trusts who provide or refinance the debts component of the cost of the project (including guarantees and other forms of credit facilities) including provision of working capital facilities.

Liability – a person or business deemed liable is subject to a legal obligation.

Material Breach – means an act or event which affects the ability of either party to perform any of its obligations under and in accordance with the provisions of this Agreement.

Oil Terminal – Facility to store, receive and deliver Petroleum Products

Parent Company- where one company owns more than 50% of the voting rights of another company it is the parent company, which in turn becomes its subsidiary.

Partnership – when two or more people or organizations join together to carry on a business.

Petroleum Products – Liquid products obtained from processing of crude petroleum oil like gasoline, diesel, kerosene, jet A1, Furnace or fuel oil, Naphta, etc

Proposal- Commercial possibility to do business by two or multiple parties

Proxy – a person who acts on behalf of another for a specific purpose or the form used to make such an appointment.

Registered office- the official address of the company as stated on the register at the Registration of Services Bureau.

Site – Means all the places where the Project or any part thereof is going to be executed, developed, operated and maintained in accordance with the provisions of this Agreement, including land being procured by MISPL for the construction and development of oil terminal.

2. **THE PROJECT PROPOSAL**(Barge transport of Petroleum Products on Lake Victoria)
   1) MISPL has submitted a proposal to the GoU for the development of Oil transport system through Lake Victoria by self propelled Oil Tanker Barges to Port Bell or Jinja in Uganda from Kisumu, Kenya. Currently most products are transported by road from Kenya to different locations in Uganda including the Jinja fuel depot.

   2) Infrastructure requirements for implementation of the Barge transport are as follows:
      a) Number of Barges required – 4 (to increase to 6 when demand increases)
      b) New Oil Terminal to be built at Kampala (near Port Bell preferred)
      c) Pipeline connecting New Oil Terminal and Port Bell.
      d) Pipeline connecting Jinja Port and tanks in Jinja.
      e) Barge berthing and unloading facilities at Port Bell and Jinja.
      f) Barge loading facilities at Kisumu, Kenya.

   3) MISPL proposes to develop a new Oil Terminal near Port Bell and connecting pipeline from Port Bell, in accordance with the Proposal

   4) MISPL proposes to build the Oil Terminal as per international standards and specifications like API, ASME, and BS.

   5) MISPL proposes to procure land for building the Oil Terminal near Port Bell to facilitate unloading of Petroleum Products from Barges.

   6) MISPL shall invest, own and operate new Oil Terminal and laying connecting pipelines from Port Bell.

   7) For operation and maintenance of the Oil Terminal and as a return on investment, MISPL shall levy transport and handling charges from clients on products handled.

   8) MISPL shall adhere to international norms like NFPA for provision of safety and the firefighting requirements for the Oil Terminal.

3. **PURPOSE /OBJECTIVE**
   1) The objective of the Agreement is to facilitate co-operation and mutual assistance between MISPL and the GoU and to clearly identify the roles and responsibilities of MISPL and the GoU as they may relate to each other and set out the areas where both will cooperate and coordinate their activities.

4. **RELATIONSHIP OF THE PARTIES**
   1) MISPL shall not assign or transfer or purport to assign or transfer any of its rights and obligations under this Agreement without further written consent of the GoU.

   2) This Agreement shall not be interpreted or construed to create an association, joint venture or partnership between the Parties and shall not impose any partnership obligation or liability upon each Party, and neither Party shall have any right, power

or authority to enter into any agreement or undertaking for, or act on behalf of, or to act as or be an agent or representative of, or to otherwise bind, the other Party.

5. **GRANT OF RIGHTS**

1) Subject to applicable laws of Uganda, GoU shall grant MISPL the following rights:
   a) To develop, design, engineer and finance the Project;
   b) Apply for and obtain the construction and operating permits and or licences in accordance with the applicable law;
   c) Levy, demand and collect transport charges and handling charges from users/ clients for using the Project or any part thereof; and
   d) Right to maintain the Project or any part thereof in accordance with the provisions of this Agreement and relevant laws.

6. **OBLIGATION OF THE PARTIES**

1) **Roles and Responsibilities of GoU**

GoU agrees to support the Project in the following ways:

a) Take all necessary steps to ensure the completion of the processes required for MISPL to obtain all necessary approvals and complete all the procedures required for the implementation of the Project;
b) Facilitate the acquisition of any land and right of way that might be required for the implementation of the Project at the cost of MISPL;
c) Assist and provide support to MISPL in obtaining applicable permits and exemptions (where applicable) in relation to the Project and in accordance with existing applicable laws and regulations;
d) Engage relevant East African Governments and other GoU agencies for any permissions and approvals required for successful operation of Barges over Lake Victoria;
e) Assist MISPL in its request to Kenya Pipeline Company (KPC) for provision of loading infrastructure for barges and necessary manpower by discussing the matter with the Government of Kenya.
f) Support MISPL to access usage of existing infrastructure for the implementation of the Project;
g) Facilitate the issuance of work permits for specialized workers required in the implementation of the Project, generally in accordance with Uganda's local content and skills transfer requirements. Work permits shall be granted for specialized jobs for which skilled labor are not locally available.
h) Provide security and protection from any violent or unlawful activities by individuals or groups during the implementation of the Project. Security and protection other than that provided ordinarily by the GoU to its citizens and their property shall be the responsibility of MISPL. However, in view of strategic importance of the project assets, GoU may give such protection to these assets as deemed necessary as per GoU assessment.
i) Permit repatriation of the investment and profits in foreign currency during the Agreement period.

j) Provide Tax incentives for the Project where applicable in accordance with the laws of Uganda.

k) Acknowledges that MISPL has initiated this Proposal, which gives considerable financial and social benefits to the people and the GoU. MISPL is planning to spend significant time and resources, both internal and external, for implementation of the Project. Further acknowledges that for the implementation of the Project and its commercial viability, it is essential and critical that exclusivity rights be granted as provided hereunder: -
   (i) Exclusivity to the MISPL for five (5) years from the Effective Date.
   (ii) Exclusivity for further five (5) years upon first renewal of the Petroleum Operating Licence.
   (iii) Over the Exclusivity period, no other party other than the MISPL shall be permitted to introduce Barges or tankers for transporting Petroleum Products on Lake Victoria to and from Uganda for the above period without written consent from MISPL.
   (iv) GoU may revoke the exclusivity granted to MISPL only when MISPL has committed any Material Breach, which could not be cured by MISPL within a period of ninety (90) calendar days from the date of receipt of notice of such default from GoU.

2) **Obligations of MISPL**

MISPL agrees to observe, comply and perform the following:

a) Invest, own, and operate the Barges for the Project. Ownership of the Barges shall remain with MISPL at all times and MISPL shall not recover any cost towards such investment from GoU.
b) Fabricate, build and assemble the Barges (with approximate capacity of 4000 MT) at a location near Lake Victoria where they can be launched on the lake.
c) Ensure that the Barges' design and construction comply with all the international standards and safeguards in water transport.
d) Ensure that the Barges are being certified as per International Safety norms by agencies like Bureau VERITAS Lloyds, ABS, DNV etc.
e) Make all efforts to introduce the first two 4000 MT capacity Barges within 18 months of signing this Agreement and the next two barges within 27 months of signing of this Agreement.
f) Operate the Barges and endeavor to maximize their capacities to ensure maximum benefit to consumers.
g) Ensure the implementation of all the aspects of operational safety and shall use experienced and professional operations teams.
h) Develop an appropriate Emergency Response Plan for Barge Transport (ERPBT) of fuels on Lake Victoria.
i) Develop and implement detailed procedures for:
   (i) Barge loading
   (ii) Safe navigation
   (iii) Barge unloading
   (iv) Maintaining vessel stability at all times

(v) Firefighting equipment training.

j) Ensure that the following essential processes are carried out for Project:
   (i) Carryout channel survey and channel mapping for barge travel.
   (ii) Bathymetric survey of port and channel.
   (iii) Prepare updated navigation charts for Lake Victoria.

k) Procure and submit all required documentation and shall procure all statutory approvals needed for implementation of the Project.

l) Determine transport and handling charges through Barges based on market conditions and in accordance with the applicable law.

m) Organize and facilitate the inspection of the existing barge berthing facilities at Port Bell and Jinja by a competent third party to determine the works that need to be carried out at the ports for safe berthing of Barges.

n) Use the report of the competent third party along with the Bills of Quantities and estimates of works to be carried out for safe berthing of the Barges and Port Bell and Jinja ports.

o) Carry out the required up-gradation works needed for safe berthing of the barges at Port Bell and Jinja ports after getting consent from relevant authorities. (Work shall be carried out before the barges are ready for operation.)

p) Provide unloading facilities like pipelines, valves, hoses etc, at Port Bell and Jinja ports required for safe unloading of barges. All works shall be carried out as per international standards like API, ASME, NFPA etc. This place shall be barricaded and safe guarded to restrict entry to the unloading area.

q) Provide all the safety and fire fighting facilities as per the international standards like NFPA, ISGOTT etc for the unloading facilities.

r) Submit request to the Kenya Pipeline Company (KPC) for provision of barge loading facilities and required storage tanks at Kisumu Port. Request KPC to provide manpower and infrastructure for regular loading of Barges.

s) Carry out all design, construction and operation activities in safe manner by experienced and qualified manpower well trained in carrying out the respective jobs.

t) Undertake all activities with adherence to all safety and environment protection systems to ensure safe working. Comply with all critical safety standards required for barge design and operations;
   (i) SOLAS (International Convention for the safety of the Life at Sea, 1974)
   (ii) COLREG (Convention on the International Regulations for preventing collisions at sea, 1972.
   (iii) ISGOTT (International Safety guide for Oil Tankers and Terminals
   (iv) OCIMF (Oil Companies International Marine Forum)

u) Comply with all the safety requirements laid down in Lake Victoria (Transport) Maritime Regulations dated 25th August 2010.

v) Ensure that the Project is executed in accordance with the applicable laws of Uganda and international standards and shall adopt such design, construction and operation procedures so that the eco-system or Lake Victoria is not polluted.

w) Undertake to ensure the implementation of corporate social responsibility initiatives which will include (i) improving fish culture in Lake Victoria by working with the Ministry responsible for Fisheries, (ii) phased reduction in

1.M

algae and hyacinth affected areas in Lake Victoria by working with National Environmental Management Authority (NEMA), (iii) improvement in green covers in lake surrounding areas by with Municipal Authorities and NEMA, (iv) improvement in facilities to local communities like schools, hospitals, etc.

7. **INSURANCE**
   1) During the subsistence of this Agreement entered into thereafter, MISPL shall, at its own cost and expense, obtain and maintain such insurance for such maximum sums as may be required as per the laws of Uganda and such other insurances as may be necessary or prudent in accordance with good industry practice. MISPL may assign the insurance policies to the vendors, if agreed, in their favor as security for the financial assistance provided by them to the project.

8. **FORCE MAJEURE**
   1) If a Force Majeure Event occurs and MISPL is prevented by that Force Majeure Event from performing any one or more obligations under this agreement the "Nonperforming party" will be excused from performing those obligations.

   2) For purposes of this agreement, "Force Majeure Event" means, with respect to the MISPL, any event or circumstance, regardless of whether it was foreseeable, that was not caused by that party and that prevents a party from complying with any of its obligations under this agreement [(other than an obligation to pay money)], on condition that that party that uses reasonable efforts to minimise any Force Majeure Event. Without limiting to the generality of the foregoing, "Force Majeure Event" includes (i) act of God, epidemic, extremely adverse weather conditions, lightening, earthquake, landslide, cyclone, flood, volcanic eruption, chemical or radioactive contamination or fire or explosion; (ii) an act of war (whether declared or undeclared), invasion, armed conflict or act of foreign enemy, blockade, embargo, riot, insurrection, terrorist or military action, civil commotion; (iii) any judgement or order of any court of competent jurisdiction or statutory authority made against a Party in any proceedings for reasons other than (a) failure of the affected party to comply with any Applicable Law or Applicable Permit, or (b) on account of breach of any applicable law or permit or of any contract; (iv) strikes, boycotts, interrupting supplies and services to the Project; (v) any event or circumstances of a nature analogous to any of the foregoing and (vi) any Political Event. Political Event includes Change in Law, compulsory acquisition in national interest or expropriation of the Project or any assets of the Project, refusal to renew the license(s) for political reasons etc.

   3) Upon occurrence of a Force Majeure Event, MISPL shall promptly notify GoU of occurrence of that Force Majeure Event, its effect on performance, and how long that MISPL expects it to last. Thereafter MISPL shall update that information as reasonably necessary to GoU. During a Force Majeure Event, GoU shall use reasonable efforts to limit damages to MISPL and to resume its performance under this Agreement.

9 1.M

9. **ASSIGNMENT**

1) MISPL shall be allowed to create Encumbrance on the Project or any part or all there of or on rights and benefits arising under this Agreement, as security for the credit facilities granted by the Lenders.

10. SETTLEMENT OF DISPUTES

1) The Government of Uganda and MISPL shall make every effort to resolve amicably by direct informal negotiation any disagreement or dispute arising between them under or in accordance with this Agreement or interpretation thereof.

2) If the Parties fail to resolve such a dispute by mutual consultation within thirty (30) days from the commencement of such consultation, either Party may require that the dispute be referred for resolution in accordance with the Arbitration and Conciliation Act, Cap 4, Laws of Uganda.

11. CHANGE OF SCOPE

1) The Parties may mutually agree in writing, notwithstanding anything to the contrary contained in this Agreement, the provision of any additional works and services by MISPL which are not contained in the scope of the Project as contemplated by this Agreement.

12. REPRESENTATION AND WARRANTIES

1) Each Party represents to the other Party(ies) to this Agreement that (i) such Party is duly authorized to execute this Agreement, (ii) any prior consents and/or approvals that may be required for the execution of this Agreement have already been obtained by such Party and that no further consents and/or approvals are required to be obtained by such Party for the execution of this Agreement and (iii) the execution of this Agreement and performance of the obligations under this Agreement does not violate any contract or law applicable to such Party.

13. BINDING PROVISIONS AND SURVIVAL

1) The provisions in this Agreement are binding and validly enforceable against each of the Parties.

14. NOTICES

1) Each notice, demand or other communication given or made under this Agreement shall be in writing and delivered or sent to the relevant Party at its address and/or email set (or such other address and/or email as the addressee has by seven (7) calendar days prior written notice specified to the other parties).

2) The addresses for communication are as below:

a) For MISPL:

Y. Ravi Shankar
Managing Director
Mahathi Infra Services Pvt. Ltd.
House No. 1-62-191, Plot No. 191
1st Floor, Tagore Towers, Kivuri Hills
Madhapur, Hyderabad-500033, India

a) For GoU:

The Permanent Secretary
Ministry of Energy and Mineral Development
Amber House, Plot 29/33 Kampala Road
P.O. Box 7270
Kampala, Uganda

15. **CONSTRUCTION.**

1) Unless the context of this Agreement clearly requires otherwise, (a) references to the plural include the singular, the singular the plural and the part the whole, (b) references to any gender include all genders, (c) "including" (in its various forms) means "including but not limited to" or "including without limitation", (d) the words "shall" and "will" have the same meaning, (e) "or" has the inclusive meaning represented by the phrase "and/or", (f) references to a particular statute or regulation include all rules and regulations there under and any predecessor or successor statute, rules or regulations, in each case as amended or otherwise modified from time to time, (g) references to a particular Person include such Person's successor and assigns to the extent not prohibited by this Agreement, (h) unless otherwise specified, "$" is in reference to United States dollars, (i) references to Sections, subsections, Schedules or Exhibits refer to sections, subsections, schedules or exhibits, as applicable, of this Agreement and (j) the words "herein" and "hereunder" shall refer to this Agreement in its entirety, including any Schedules or Exhibits, and not to any particular provision of this Agreement. This Agreement shall be construed without regard to any presumption or rule requiring construction or interpretation against the Party drafting an instrument or causing any instrument to be drafted. Any Schedules referred to herein shall be construed with, and as an integral part of, this Agreement to the same extent as if they were set forth verbatim herein.

16. **EXECUTION THROUGH SPECIAL PURPOSE VEHICLE (SPV)**

1) The MISPL shall be permitted to create Special Purpose Vehicle (SPV) or SPVs or Subsidiary Company or Subsidiary Companies as deemed suitable by the MISPL, for implementation of the Project. GoU agrees to transfer and/ or issue all such permission, approvals, sanctions, benefits, grants, exemptions, etc., relating to the Project as may be required in the name of such SPV(s) or Subsidiary Company(ies).

I.M

It may be further noted that MISPL may bring in a new partner (equity or otherwise) for the purpose of financing the Project and for its easier implementation.

17. **NO PARTNERSHIP**

1) This Agreement shall not be interpreted or construed to create an association, joint venture or partnership between the Parties or to impose any partnership obligation upon either Party, and neither Party shall have any right, power or authority to enter into any agreement or undertaking for, or act on behalf of, or to act as or be an agent or representative of, or to otherwise bind, the other Party.

18. **FURTHER ACTIONS AND DOCUMENTS**

1) Each Party agrees to execute, acknowledge and deliver all such further instruments, and to do all such further acts, as may be reasonably necessary or appropriate to carry out the intent and purposes of this Agreement.

19. **FINAL PROVISIONS AND COUNTERPARTS**

1) All modifications required should be made in writing upon common agreement between parties and such shall be treated as amendments to the current Agreement.
2) This Agreement is made in two parts with equal legal relevance duly executed by both parties.

20. **TERMINATION**

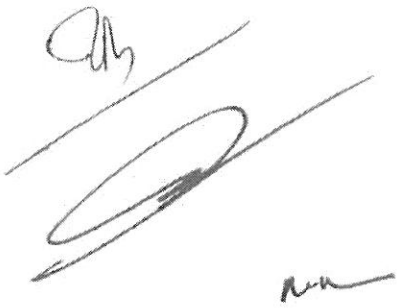
Either Party may, by not less than sixty (60) days' written notice of termination to the other Party, terminate the Agreement, if there is breach of any of the obligations of that Party under the Agreement.

21. **DURATION**

Duration of the Agreement shall be twelve (12) years from the Agreement Date or the duration of the Exclusivity, whichever is earlier.

22. **LAW APPLICABLE**

This Agreement shall be construed in accordance with the Laws of Uganda.



1.M

IN WITNESS WHEREOF, the Parties have signed this Agreement in [five (5) originals], through their respective duly authorised representatives, on the day, month and year indicated above.

The Government

SIGNED for and on behalf of
THE REPUBLIC OF UGANDA
Represented by the
MINISTRY FOR ENERGY AND MINERAL DEVELOPMENT

By .....

MINISTRY OF ENERGY
& MINERAL DEVLOPMENT
P.O. Box 7270, Kampala

Minister of Energy & Minerals Development

In the presence of:

.....

Permanent Secretary

MAHATHI INFRA SERVICES PVT LIMITED

Signed for and on behalf of
MIHATHI INFRA SERVICES PVT LIMITED

By ..... (Ravi Shankar Yandapalli)

MAHATHI INFRA SERVICES PVT. LTD. HYDERABAD

In the presence of:

.....

Dr. Fr. Capt. Mukuka. Ph.D.

201399

THE REPUBLIC OF UGANDA

Certificate of Incorporation

(Under section 18(3) of the companies Act 2012)

I CERTIFY that M/S MAHATHI INFRA (UGANDA) LIMITED

.....

has this day been incorporated with Limited Liability.

Dated at Kampala, this 18TH day

of MAY the year 2015

KISAALU LEAH AGNES

ASST. Registrar of Companies

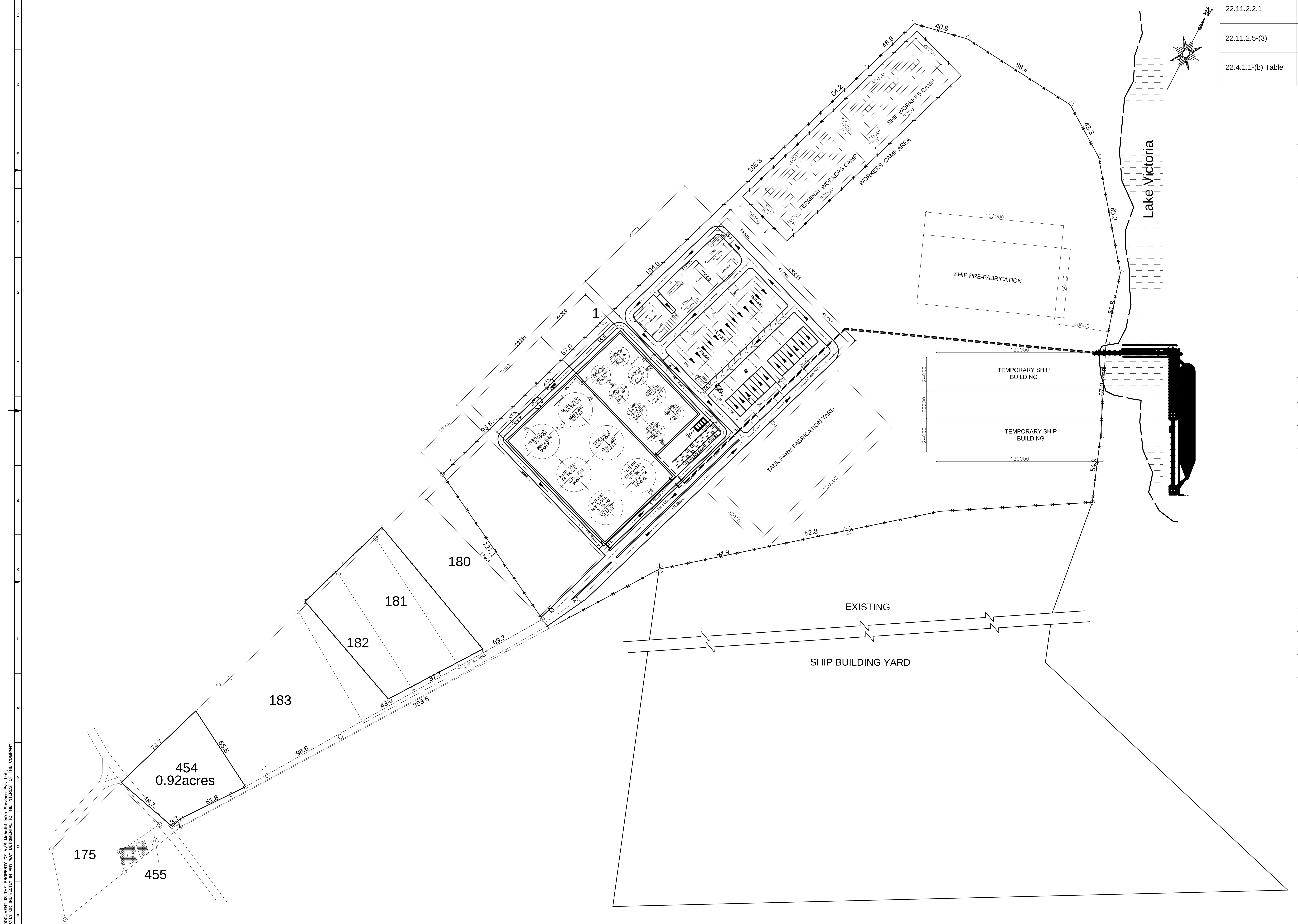
Printed by Uganda Printing and Publishing Corporation

Mahathi Infra (Uganda) Ltd

APPENDIX VII;

Layout Plans for the proposed facility

Boundary Opening of Plots 5, 185 and 454 Block 429 Busiro Wakiso District



ACCORDING TO NFPA 30,2012 Edition, DISTANCE BETWEEN TANK TO OTHER FACILITIES

CLAUSE	FIXED ROOF TANK CLASS I OR II LIQUIDS	DISTANCE IN (M) AS PER NFPA	DISTANCE IN (M) AS IN LAYOUT
CLAUSE 22.4.2.1	DISTANCE BETWEEN TANKS (1/6 SUM OF ANY TWO ADJACENT TANK DIAMETER BUT NOT LESS THAN 3 FT)	8 M/4.6M	8 M/5M
CLAUSE 22.11.3.3	DISTANCE BETWEEN STORAGE TANK TO BUILDING & ANY PROPERTY	3 M	16.6 M
CLAUSE 28.4.1	DISTANCE BETWEEN STORAGE TANK TO TANK VEHICLE AND TANK CAR LOADING UNLOADING FACILITIES, WARE HOUSE OTHER PLANT BUILDING	7.6 M	35 M
22.11.2.2.1	INTERIOR HEIGHT OF DYKE SHOULD NOT EXCEED 6 FEET.	1.8 M	1.8 M
22.11.2.5-(3)	DISTANCE BETWEEN TANK OUTER TO DYKE WALL INTERIOR TOE SHALL NOT BE LESSTHAN 15 FEET	5 M	5.0 M
22.4.1.1-(b) Table	FROM PROPERTY LINE THAT IS OR CAN BE BUILT UPON, INCLUDING THE OPPOSITE SIDE OF A PUBLIC WAY	9.2 M	14.2 M

LEGEND

	Lake Shore-line
	Wall Fence
	Wire Fence
	Structures
5	Plot Boundary
	Existing main road

SL.No.	STORAGE TANK	EQUIPMENT TAG No.	CAPACITY	QTY (No.)
1	GASOLINE TANK	MISPL-VLU-GO-TK-001	9000 KL	1
2	GASOLINE TANK	MISPL-VLU-GO-TK-002	9000 KL	1
3	DIESEL TANK	MISPL-VLU-DL-TK-001	9000 KL	1
4	DIESEL TANK	MISPL-VLU-DL-TK-002	9000 KL	1
5	JET A1 TANK	MISPL-VLU-JT-TK-001	2000 KL	1
6	JET A1 TANK	MISPL-VLU-JT-TK-002	2000 KL	1
7	KEROSENE TANK	MISPL-VLU-KE-TK-001	2000 KL	1
8	KEROSENE TANK	MISPL-VLU-KE-TK-002	2000 KL	1
9	GASOLINE TANK (FUTURE)	MISPL-VLU-GO-TK-003	9000 KL	1
10	DIESEL TANK (FUTURE)	MISPL-VLU-DL-TK-003	9000 KL	1
11	JET A1 TANK (FUTURE)	MISPL-VLU-JT-TK-003	2000 KL	1
12	KEROSENE TANK (FUTURE)	MISPL-VLU-KE-TK-003	2000 KL	1
13	JET A1 TANK (FUTURE)	MISPL-VLU-JT-TK-004	2000 KL	1
14	KEROSENE TANK (FUTURE)	MISPL-VLU-KE-TK-004	2000 KL	1

NOTES:-

ISSUE-TYPE

(A) PRELIMINARY (E) FOR CONSTRUCTION
(B) FOR APPROVAL (F) AS PURCHASED
(C) FOR INFORMATION (G) AS BUILT
(D) FOR QUOTATION (H) CANCELLED

NATURE OF REVISION & DESCRIPTION

Mahathi Infra Services Pvt.Ltd.
No.3A&B,1st Floor,Topaz,Amrutha Hills,Punjagutta,HYDERABAD-500055 (A.P)

PO/LOI NO:

RELEASED FOR	DATE	SIGN
PRELIMINARY		
TENDER		
ENGINEERING		
CONSTRUCTION		

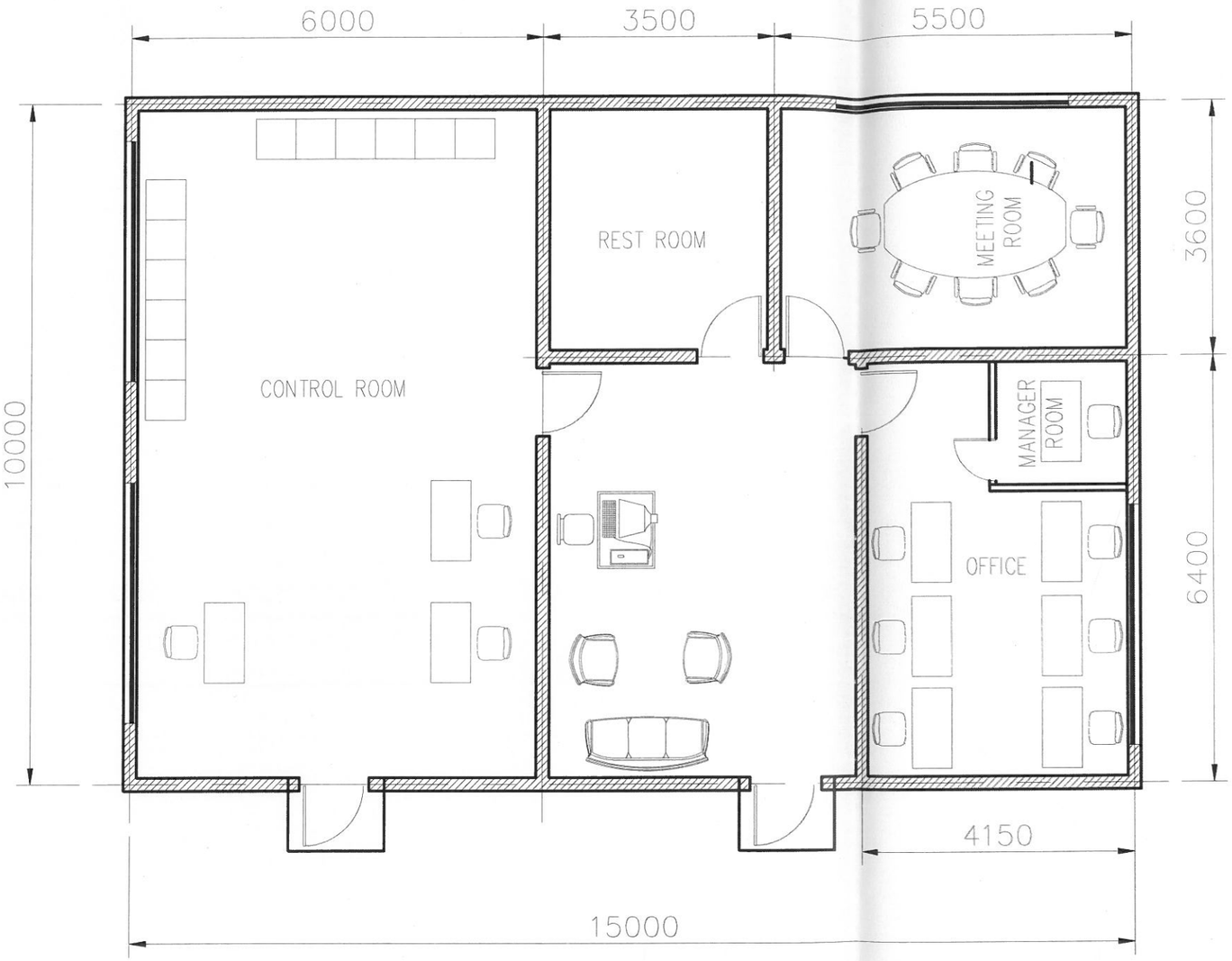
TITLE: FUEL TERIMINAL PROPOSED LAYOUT OF UGANDA

DESIGN: XXXX	CHECKED: XXXXX	DEPT: E	SCALE: NTS	SHEET:
PREPARED: XXX	APPROVED: YKS	JOB NO: XXXX	DATE: 11/12/15	1 OF 1

MISPL DRG.NO. XXXX-XXX-XXX-XXX | CLIENT DRG.NO. XXXX | REV. 10

A0

N(PLANT)



NOTES:-
1. ALL DIMENSIONS ARE IN mm. UNLESS OTHERWISE SPECIFIED.
2. ALL ELEVATION ARE IN METER. UNLESS OTHERWISE SPECIFIED.

LEGEND:
EL ELEVATION
FFL FINISHED FLOOR LEVEL
TLA TRUCK LOADING ARM

ISSUE-TYPE
(A) PRELIMINARY (E) FOR CONSTRUCTION
(B) FOR APPROVAL (F) AS PURCHASED
(C) FOR INFORMATION (G) AS BUILT
(D) FOR QUOTATION (H) CANCELLED

REV.	DATE	NATURE OF REVISION & DESCRIPTION	PREPARED	CHECKED	APPROVED
0	29-12-15	SUBMISSION FOR APPROVAL	JSN	VVV	PSR

PROJECT
UGANDA LAKE VICTORIA
FUEL TRANSPORTATION

VENDOR
mahathi Infra Services Pvt. Mahathi Infra Services Pvt.Ltd.
MADHAPUR,HYDERABAD-500033 (A.P)

PO/LOI NO:

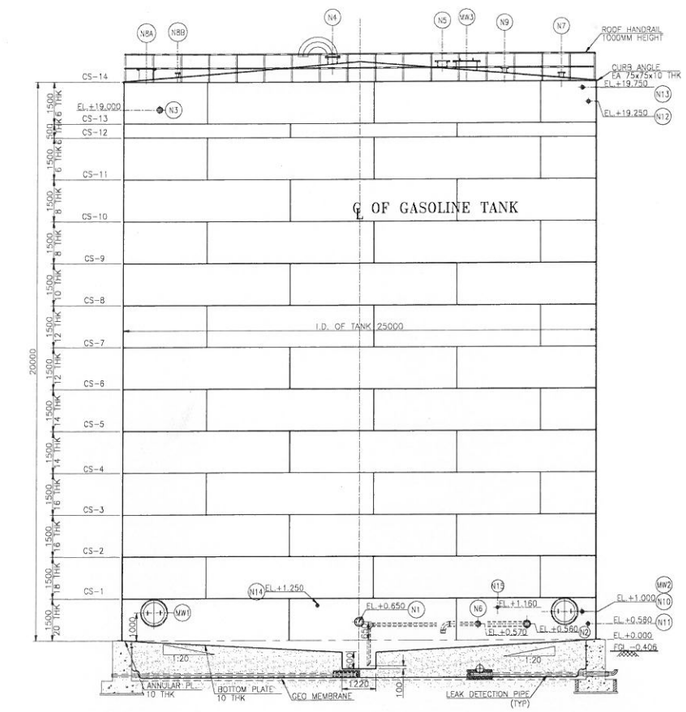
RELEASED FOR	DATE	SIGN
PRELIMINARY		
TENDER		
ENGINEERING	29/12/15	
CONSTRUCTION		

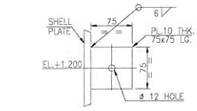
TITLE: **ADMINISTRATION & CONTROL ROOM**
15 M Lg x 10 M Wide
AT UGANDA

DESIGN:	CHECKED:	DEPT:	SCALE:	SHEET:
JSN	VVV	E	NTS	1 OF 1
PREPARED:	APPROVED:	JOB NO:	DATE:	
JSN	PSR	ULVFTP	29/12/15	

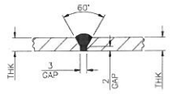
MISPL DRG.NO.: MISPL-ULVFTP-15-AC-ADCR01
CLIENT DRG.NO.: XXXX-XXXX-XX-XXX-XXXX
REV.: 00

A1

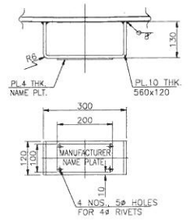




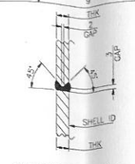
DETAIL OF EARTHING BOSS
(QTY.3 NOS.)



TYPICAL VERTICAL SHELL JOINTS
COMPLETE PENETRATION



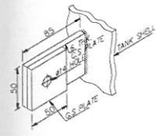
DETAIL OF NAME PLATE BRACKET



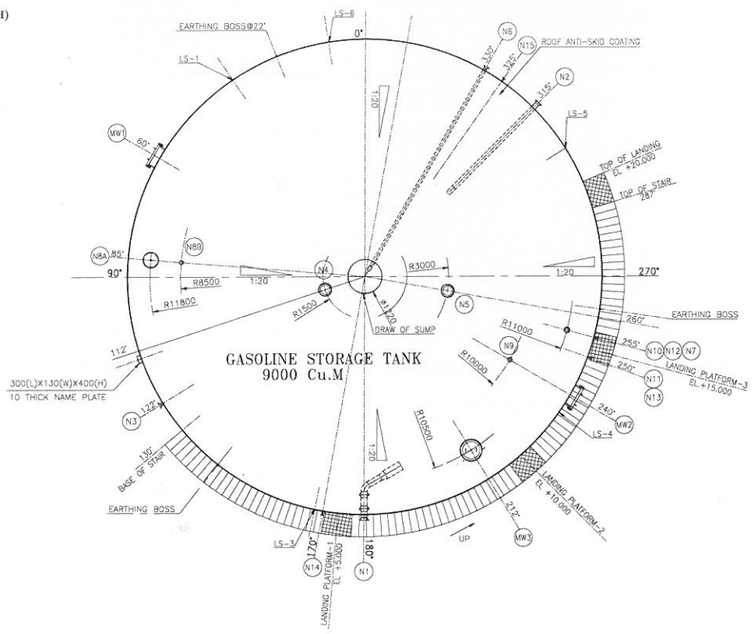
TYPICAL HORIZONTAL SHELL JOINTS
(SCALENTS)

NOZZLE SCHEDULED FOR HFO STORAGE TANK (3990-TK-201)

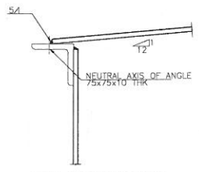
NOZZLES	SERVICE	NOM. BORE	Thk./ Sch.	FLANGES			NOZZLES		ELEVATION (M)	REMARKS
				STD.	TYPE	CLASS	RF PAD	PROJ.		
N1	RECIEPT	200(8")	Sch40	ANSI B16.5	WNRF	300#	ø485x10Thk	200	0.650	
N2	DISCHARGE	150(6")	Sch40	ANSI B16.5	WNRF	150#	ø400x10 Thk	200	0.560	
N3	FOAM INLET	100(4")	Sch40	ANSI B16.5	WNRF	150#	ø305x8Thk	175	16.000	
N4	VENT NORMAL	350(14")	Sch10	ANSI B16.5	SORF	150#	ø850x8Thk	250		ROOF NOZZLE
N5	VENT (EMERGNCY)	350(14")	Sch10	ANSI B16.5	SORF	150#	ø850x8Thk	250		ROOF NOZZLE
N6	DRAIN	100(4")	Sch40	ANSI B16.5	WNRF	150#	ø305x8Thk	175	0.570	
N7	MANUAL GAUGE	150(6")	Sch80	ANSI B16.5	SORF	150#	ø375x8Thk	150		ROOF NOZZLE
N8A	MANHOLE FOR RADAR LEVEL GAUGE	500(20")	10Thk	AS PER API 650			ø1000x8Thk	400		ROOF NOZZLE
N8B	TEMPERATURE/ LEVEL SENSOR	80(3")	Sch40	ANSI B16.5	SORF	150#	ø305x8Thk	150		ROOF NOZZLE
N9	SPARE FOR INSTRUMENTATION	100(4")	Sch40	ANSI B16.5	SORF	150#	ø305x8Thk	150		ROOF NOZZLE
N10	LLA	25(1")	Sch80	ANSI B16.5	WNRF	150#	8THK X 40mm FLAT	150	1.000	
N11	LLLA	25(1")	Sch80	ANSI B16.5	WNRF	150#	8THK X 40mm FLAT	150	0.560	
N12	HLA	25(1")	Sch80	ANSI B16.5	WNRF	150#	8THK X 40mm FLAT	150	19.00	
N13	HHLA	25(1")	Sch80	ANSI B16.5	WNRF	150#	8THK X 40mm FLAT	150	19.50	
N14	RELIEF INLET NOZZLE	40(1 1/2")	Sch80	ANSI B16.5	WNRF	150#	8THK X 40mm FLAT	150	1.250	
N15	RELIEF INLET NOZZLE	40(1 1/2")	Sch80	ANSI B16.5	WNRF	150#	8THK X 40mm FLAT	150	1.160	
MW1	MANWAY-1	750(30")	10Thk	AS PER API 650			ø1545x10 Thk	300	1.000	WITH COVER & HANDLES
MW2	MANWAY-2	750(30")	10Thk	AS PER API 650			ø1545x10 Thk	300	1.000	WITH COVER & HANDLES
MW3	MANWAY-3	750(30")	10Thk	AS PER API 650			ø1545x10 Thk	300		WITH COVER & HANDLES



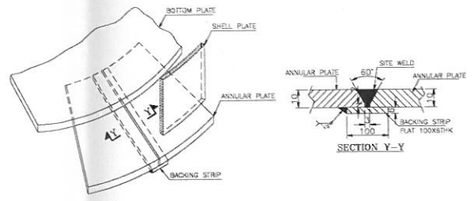
DETAIL OF EARTHING STRIP(EC)
(ORIENTATION IS AS PER SITE CONDITION) : 3 Nos



PLAN VIEW / ORIENTATION



DETAIL OF FRANGIBLE JOINT



TYPICAL JOINT OF ANNULAR PLATES UNDER TANK SHELL PLATE & BASE PLATE AND ANNULAR PLATE

DESIGN DATA

MECHANICAL	DESIGN/FABRICATION CODE		API 650 12th EDITION
	DESIGN WIND SPEED		WIND SPEED 160 KM/H
	SEISMIC CODE /FACTOR		ZONE 2A
	SHELL DESIGN METHOD		ONE FOOT / VARIABLE DESIGN POINT
	TANK SIZE	m	ø25m & 20m HT
	TANK NOMINAL VOLUME	m^3	9817.35
	TANK WORKING VOLUME	m^3	9076.57
	NO OF TANKS		1
	FOUNDATION TYPE		AS PER DESIGN
	CORROSION ALLOWANCE	m.m.	3.0 mm (SHELL, ROOF, BOTTOM)
	MINIMUM THICKNESS-SHELL & ROOF PLATE.	m.m.	6 (INCL. CA)
	WELD JOINT EFFICIENCY		0.85
	TANK BOTTOM TYPE		CONE DOWN TO WATER DRAW OFF SUMP
	TANK ROOF TYPE		SELF SUPPORTED CONE ROOF
	TYPE OF TANK		CONE ROOF VERTICAL TANK
	TYPE OF ROOF		CONE ROOF AS PER API 650 & NFPA 30
	STIFFENING RING		AS PER CODE
	DESIGN LIQUID LEVEL		18500mm
	RADIOGRAPHY INSPECTION		AS PER CODE
	STRESS RELIEVING INSPECTION		AS PER CODE
	CATHODE PROTECTION		YES
	EMPTY WT.	Tonns	233
	OPERATING WT.	Tonns	–
	HYDROTEST WATER	Tonns	–
	EXTERNAL ACCESS		SPIRAL STAIR WAY AT 39° SLOPE WITH INTERMEDIATE 3 LANDING PLATFORMS
	HAND RAILING		SPIRAL STAIR WAY AND ALL AROUND THE ROOF
	EARTHING BOSS		3 NOS
PROCESS	CONTENT		GASOLINE STORAGE TANK
	SPECIFIC GRAVITY		0.985
	VISCOSITY	Cst	–
	FLASH POINT	°C	–
	VAPOUR PRESSURE		–
	FILLING RATE	m^3 / hr	–
	EMPTYING RATE	m^3 / hr	–
	STORAGE TEMP.	°C	AMBIENT
	STORAGE PRESSURE	Kpl	ATMOSPHERE
	DESIGN PRESSURE	Kpl	ATMOSPHERE
	DESIGN TEMP.	°C	SHELL : 30 ROOF : 30
MATERIAL	SHELL, BOTTOM,ANNULAR PLATE, ROOF PLATE		A 36 OR EQUIVALENT
	STRUCTURAL		A 36 OR EQUIVALENT
	NOZZLE FLANGE		A 105
	NOZZLE NECKS		A 106 GR.B
	FABRICATED NOZZLE NECK AND MANHOLE NECK		A 36 OR EQUIVALENT
	BOLT & NUTS		ASTM A193 Gr.B7 / ASTM A194 Gr.2H
	PIPE FITTINGS		SA 234 WPB / A105
	GASKET		COMPRESSED NON-ASBESTOS FIBRE
	INSULATION SUPPORTS		–
	STAIRS / HANDRAILS/ PLATFORM		A 36 OR EQUIVALENT
	EARTHING BOSS		A 36 OR EQUIVALENT
	FOAM SYSTEM		YES
	PAINTING INTERNAL		–
	PAINTING EXTERNAL		–

SUMMARY VALUE FOR STORAGE TANK

S.NO	SHELL COURSE NO. (FROM BOTTOM)	HEIGHT IN (m) (FROM BOTTOM)	THICKNESS (IN mm)
1	1	0-1.5	20
2	2	1.5-3	18
3	3	3-4.5	16
4	4	4.5-6	16
5	5	6-7.5	14
6	6	7.5-9	14
7	7	9-10.5	12
8	8	10.5-12	12
9	9	12-13.5	10
10	10	13.5-15	8
11	11	15-16.5	8
12	12	16.5-18	6
13	13	18-18.5	6
14	14	18.5-20	6
15	BOTTOM PLATE		10
16	ANNULAR PLATE		10
17	ROOF PLATE		8

LEGENDS

EL – ELEVATION
CS – CIRCUMFERENCE SEAM
LS – LONGITUDINAL SEAM
THK – THICKNESS

NOTES:–
1. ALL DIMENSIONS ARE IN "mm" UNLESS OTHERWISE SPECIFIED.
2. ALL ELEVATIONS ARE IN "meters" UNLESS OTHERWISE SPECIFIED.

ISSUE TYPE

(A) PRELIMINARY (E) FOR CONSTRUCTION
(B) FOR APPROVAL (F) AS PURCHASED
(C) FOR INFORMATION (G) AS BUILT
(D) FOR QUOTATION (H) CANCELLED

REV.	DATE	NATURE OF REVISION & DESCRIPTION	PREPARED	CHECKED	APPROVED
00	28/12/15	SUBMISSION FOR APPROVAL	JSN	VVV	PSR

PROJECT: UGANDA LAKE VICTORIA FUEL TRANSPORTATION

EPC: Mahathi Infra Services Pvt. Ltd.
MADHAPUR, HYDERABAD-500033 (T.S)

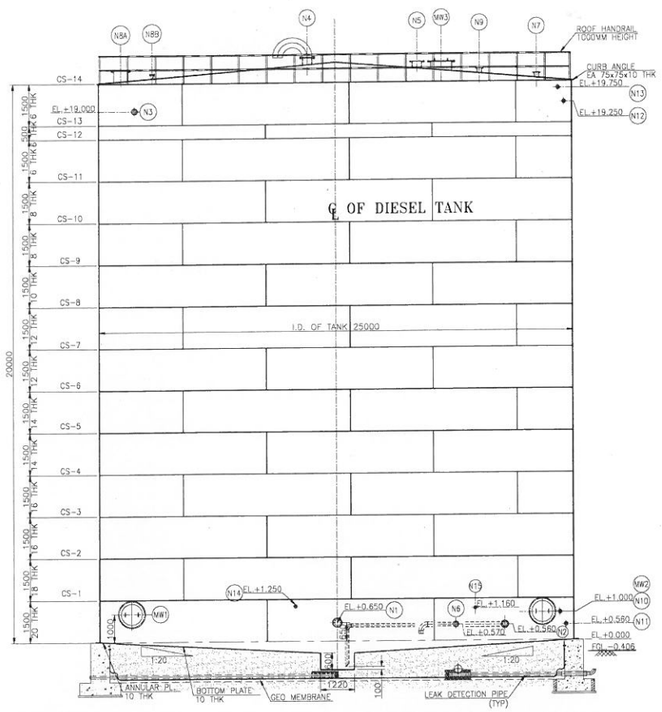
PO/LOI NO:

RELEASED FOR	DATE	SIGN
PRELIMINARY		
TENDER		
ENGINEERING	28/12/15	
CONSTRUCTION		

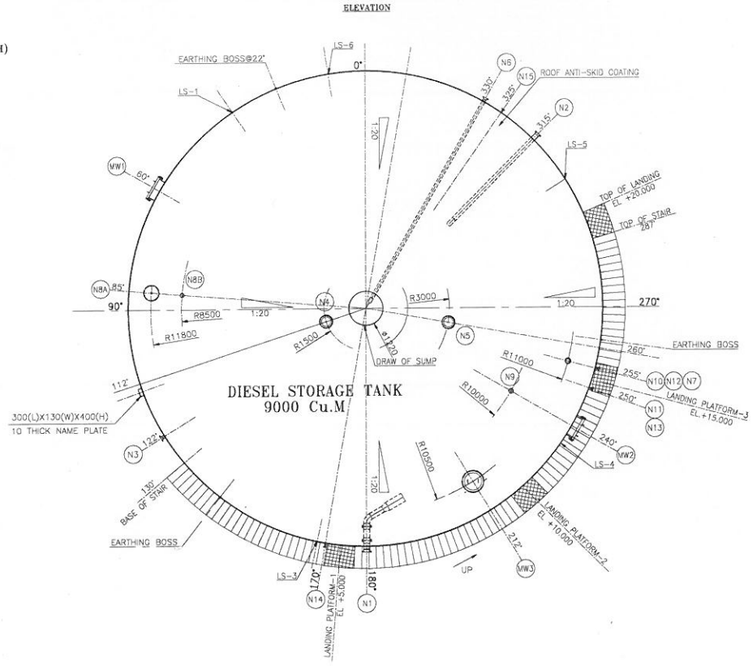
TITLE: GENERAL ARRANGEMENT FOR GASOLINE ø25m & 20m HT AT UGANDA

DESIGN: JSN CHECKED: VVV DEPT: E SCALE: NTS SHEET: 1 OF 1
PREPARED: JSN APPROVED: PSR JOB NO: ULVFTP-09 DATE: 28/12/15

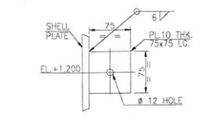
MISPL ORG.NO. MISPL-ULVFTP-15-GA-GAST01
CLIENT ORG.NO. XXXX-XXXX-XX-XXX-XXXX
REV. 00



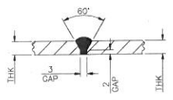
ELEVATION



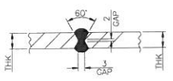
PLAN VIEW / ORIENTATION



DETAIL OF EARTHING BOSS
(QTY.3 NOS.)

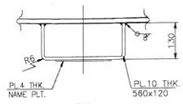


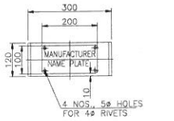
SINGLE-V BUTT JOINT
BELOW 12MM THK



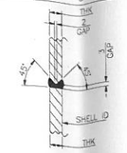
DOUBLE-V BUTT JOINT
ABOVE 12MM THK

TYPICAL VERTICAL SHELL JOINTS
COMPLETE PENTRATION



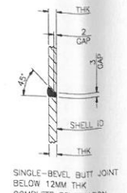


DETAIL OF NAME PLATE BRACKET

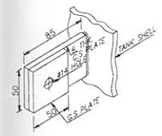


DOUBLE-BEVEL BUTT JOINT
ABOVE 12MM THK

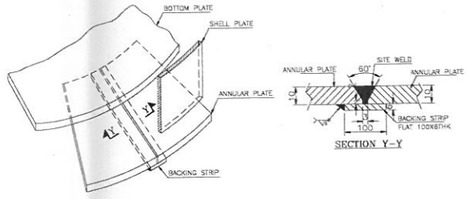
TYPICAL HORIZONTAL SHELL JOINTS
(SCALE:NTS)



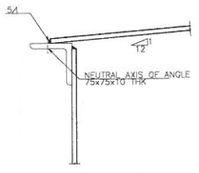
SINGLE-BEVEL BUTT JOINT
BELOW 12MM THK
COMPLETE PENETRATION



DETAIL OF EARTHING STRIP(EC)
(ORIENTATION IS AS PER SITE CONDITION) : 3 Nos



TYPICAL JOINT OF ANNULAR PLATES UNDER TANK SHELL PLATE & BASE PLATE AND ANNULAR PLATE



DETAIL OF FRANGIBLE JOINT

NOZZLE SCHEDULED FOR HFO STORAGE TANK (3990-TK-201)

NOZZLES	SERVICE	NOM. BORE	Thk./ Sch.	FLANGES			NOZZLES		ELEVATION (M)	REMARKS
				STD.	TYPE	CLASS	RF PAD	PROJ.		
N1	RECIEPT	200(8")	Sch40	ANSI B16.5	WNRF	300#	ø485x10Thk	200	0.650	
N2	DISCHARGE	150(6")	Sch40	ANSI B16.5	WNRF	150#	ø400x10 Thk	200	0.560	
N3	FOAM INLET	100(4")	Sch40	ANSI B16.5	WNRF	150#	ø305x8Thk	175	16.000	
N4	VENT NORMAL	350(14")	Sch10	ANSI B16.5	SORF	150#	ø850x8Thk	250	ROOF NOZZLE	
N5	VENT (EMERGENCY)	350(14")	Sch10	ANSI B16.5	SORF	150#	ø850x8Thk	250	ROOF NOZZLE	
N6	DRAIN	100(4")	Sch40	ANSI B16.5	WNRF	150#	ø305x8Thk	175	0.570	
N7	MANUAL GAUGE	150(6")	Sch80	ANSI B16.5	SORF	150#	ø375x8Thk	150	ROOF NOZZLE	
N8A	MANHOLE FOR RADAR LEVEL GAUGE	500(20")	10Thk	AS PER API 650			ø1000x8Thk	400	ROOF NOZZLE	
N8B	TEMPERATURE/ LEVEL SENSOR	80(3")	Sch40	ANSI B16.5	SORF	150#	ø305x8Thk	150	ROOF NOZZLE	
N9	SPARE FOR INSTRUMENTATION	100(4")	Sch40	ANSI B16.5	SORF	150#	ø305x8Thk	150	ROOF NOZZLE	
N10	LLA	25(1")	Sch80	ANSI B16.5	WNRF	150#	8THK X 40mm FLAT	150	1.000	
N11	LLLA	25(1")	Sch80	ANSI B16.5	WNRF	150#	8THK X 40mm FLAT	150	0.560	
N12	HLA	25(1")	Sch80	ANSI B16.5	WNRF	150#	8THK X 40mm FLAT	150	19.00	
N13	HHLA	25(1")	Sch80	ANSI B16.5	WNRF	150#	8THK X 40mm FLAT	150	19.50	
N14	RELIEF INLET NOZZLE	40(1 1/2")	Sch80	ANSI B16.5	WNRF	150#	8THK X 40mm FLAT	150	1.250	
N15	RELIEF INLET NOZZLE	40(1 1/2")	Sch80	ANSI B16.5	WNRF	150#	8THK X 40mm FLAT	150	1.160	
MW1	MANWAY-1	750(30")	10Thk	AS PER API 650			ø1545x10 THK	300	1.000	WITH COVER & HANDLES
MW2	MANWAY-2	750(30")	10Thk	AS PER API 650			ø1545x10 THK	300	1.000	WITH COVER & HANDLES
MW3	MANWAY-3	750(30")	10Thk	AS PER API 650			ø1545x10 THK	300	WITH COVER & HANDLES	

DESIGN DATA

MECHANICAL	DESIGN/FABRICATION CODE		API 650 12th EDITION
	DESIGN WIND SPEED		WIND SPEED 160 KM/H
	SEISMIC CODE /FACTOR		ZONE 2A
	SHELL DESIGN METHOD		ONE FOOT / VARIABLE DESIGN POINT
	TANK SIZE	m	ø25m & 20m HT
	TANK NOMINAL VOLUME	m^3	9817.35
	TANK WORKING VOLUME	m^3	9076.57
	NO OF TANKS		1
	FOUNDATION TYPE		AS PER DESIGN
	CORROSION ALLOWANCE	m.m.	3.0 mm (SHELL, ROOF, BOTTOM)
	MINIMUM THICKNESS-SHELL & ROOF PLATE.	m.m.	6 (INCL. CA)
	WELD JOINT EFFICIENCY		0.85
	TANK BOTTOM TYPE		CONE DOWN TO WATER DRAW OFF SUMP
	TANK ROOF TYPE		SELF SUPPORTED CONE ROOF
	TYPE OF TANK		CONE ROOF VERTICAL TANK
	TYPE OF ROOF		CONE ROOF AS PER API 650 & NFPA 30
	STIFFENING RING		AS PER CODE
	DESIGN LIQUID LEVEL		18500mm
	RADIOGRAPHY INSPECTION		AS PER CODE
	STRESS RELIEVING INSPECTION		AS PER CODE
	CATHODE PROTECTION		YES
	EMPTY WT.	Tonns	233
	OPERATING WT.	Tonns	–
	HYDROTEST WATER	Tonns	–
	EXTERNAL ACCESS		SPIRAL STAIR WAY AT 39° SLOPE WITH INTERMEDIATE 3 LANDING PLATFORMS
	HAND RAILING		SPIRAL STAIR WAY AND ALL AROUND THE ROOF
	EARTHING BOSS		3 NOS
PROCESS	CONTENT		DIESEL STORAGE TANK
	SPECIFIC GRAVITY		0.985
	VISCOSITY	Cst	–
	FLASH POINT	°C	–
	VAPOUR PRESSURE		–
	FILLING RATE	m^3 / hr	–
	EMPTYING RATE	m^3 / hr	–
	STORAGE TEMP.	°C	AMBIENT
	STORAGE PRESSURE	Kpl	ATMOSPHERE
	DESIGN PRESSURE	Kpl	ATMOSPHERE
	DESIGN TEMP.	°C	SHELL : 30 ROOF : 30
MATERIAL	SHELL, BOTTOM,ANNULAR PLATE, ROOF PLATE		A 36 OR EQUIVALENT
	STRUCTURAL		A 36 OR EQUIVALENT
	NOZZLE FLANGE		A 105
	NOZZLE NECKS		A 106 GR.B
	FABRICATED NOZZLE NECK AND MANHOLE NECK		A 36 OR EQUIVALENT
	BOLT & NUTS		ASTM A193 Gr.B7 / ASTM A194 Gr.2H
	PIPE FITTINGS		SA 234 WPB / A105
	GASKET		COMPRESSED NON-ASBESTOS FIBRE
	INSULATION SUPPORTS		–
	STAIRS / HANDRAILS/ PLATFORM		A 36 OR EQUIVALENT
	EARTHING BOSS		A 36 OR EQUIVALENT
	FOAM SYSTEM		YES
	PAINTING INTERNAL		–
	PAINTING EXTERNAL		–

SUMMARY VALUE FOR STORAGE TANK

S.NO	SHELL COURSE NO. (FROM BOTTOM)	HEIGHT IN (m) (FROM BOTTOM)	THICKNESS (IN mm)
1	1	0-1.5	20
2	2	1.5-3	18
3	3	3-4.5	16
4	4	4.5-6	15
5	5	6-7.5	14
6	6	7.5-9	14
7	7	9-10.5	12
8	8	10.5-12	12
9	9	12-13.5	10
10	10	13.5-15	8
11	11	15-16.5	8
12	12	16.5-18	6
13	13	18-18.5	6
14	14	18.5-20	6
15	BOTTOM PLATE		10
16	ANNULAR PLATE		10
17	ROOF PLATE		8

LEGENDS

EL – ELEVATION
CS – CIRCUMFERENCE SEAM
LS – LONGITUDINAL SEAM
THK – THICKNESS

NOTES:–

1. ALL DIMENSIONS ARE IN "mm" UNLESS OTHERWISE SPECIFIED.
2. ALL ELEVATIONS ARE IN "meters" UNLESS OTHERWISE SPECIFIED.

ISSUE TYPE

(A) PRELIMINARY	(E) FOR CONSTRUCTION
(B) FOR APPROVAL	(F) AS PURCHASED
(C) FOR INFORMATION	(G) AS BUILT
(D) FOR QUOTATION	(H) CANCELLED

REV.	DATE	NATURE OF REVISION & DESCRIPTION	PREPARED	CHECKED	APPROVED
00	28/12/15	SUBMISSION FOR APPROVAL	JSN	VVV	PSR

PROJECT: UGANDA LAKE VICTORIA FUEL TRANSPORTATION

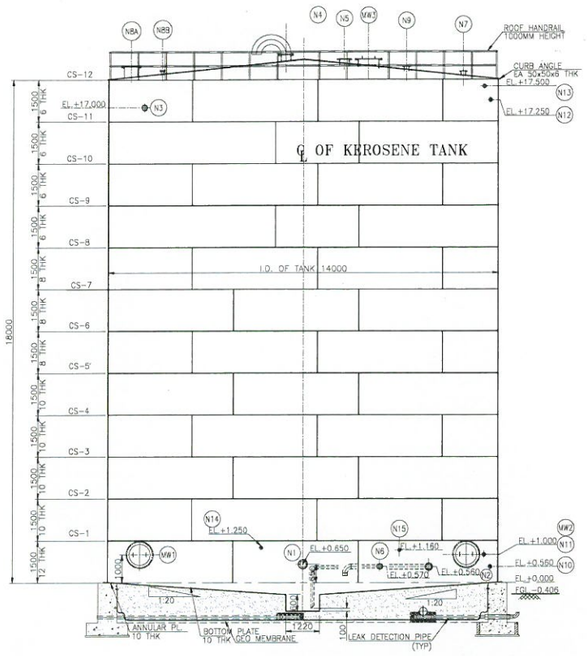
EPC: Mahathi Infra Services Pvt. Ltd., MADHAPUR, HYDERABAD-500033 (T.S)

PO/LOI NO:			
RELEASED FOR	DATE	SIGN	
PRELIMINARY			
TENDER			
ENGINEERING	28/12/15		
CONSTRUCTION			

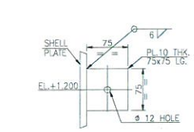
TITLE: GENERAL ARRANGEMENT FOR DIESEL ø25m & 20m HT AT UGANDA

DESIGN: JSN	CHECKED: VVV	DEPT: E	SCALE: NTS	SHEET:
PREPARED: JSN	APPROVED: PSR	JOB NO: ULVFTP-09	DATE: 28/12/15	1 OF 1

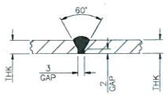
MISPL. DRG.NO.	CLIENT DRG.NO.	REV.
MISPL-ULVFTP-15-GA-DEST01	XXXX-XXXX-XX-XXX-XXXX	00



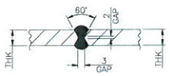
ELEVATION



DETAIL OF EARTHING BOSS
(QTY.3 NOS.)

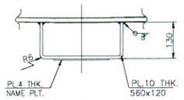


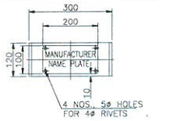
SINGLE-V BUTT JOINT
BELOW 12MM THK



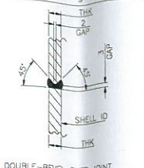
DOUBLE-V BUTT JOINT
ABOVE 12MM THK

TYPICAL VERTICAL SHELL JOINTS
COMPLETE PENETRATION



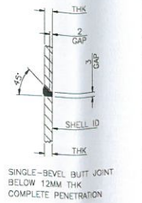


DETAIL OF NAME PLATE BRACKET

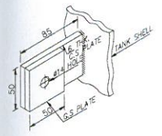


DOUBLE-BEVEL BUTT JOINT
ABOVE 12MM THK

TYPICAL HORIZONTAL SHELL JOINTS
(SCALE:NTS)



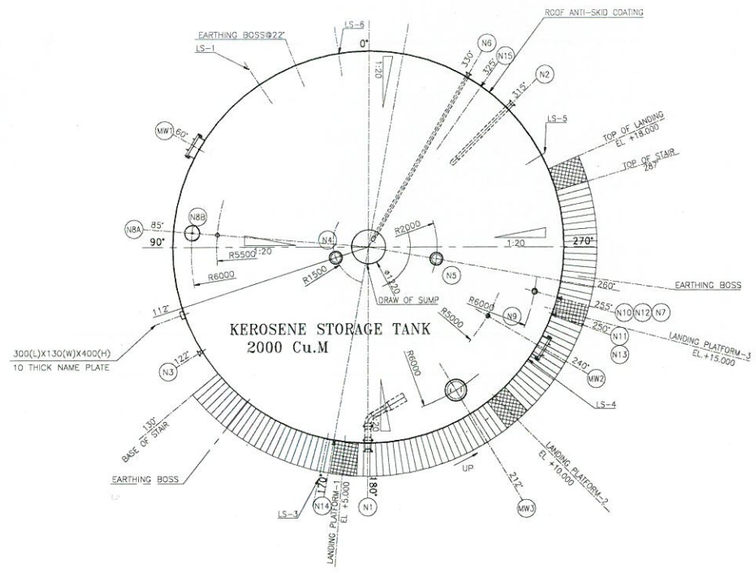
SINGLE-BEVEL BUTT JOINT
BELOW 12MM THK
COMPLETE PENETRATION



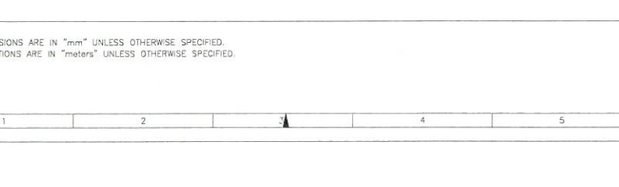
DETAIL OF EARTHING STRIP(EC)
(ORIENTATION IS AS PER SITE CONDITION) : 3 Nos

NOZZLE SCHEDULED FOR HFO STORAGE TANK (3990-TK-201)

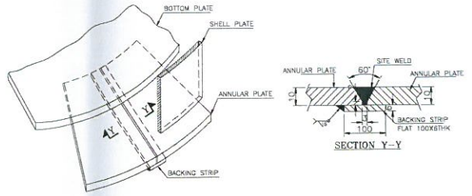
NOZZLES	SERVICE	NOM. BORE	Thk./ Sch.	FLANGES			NOZZLES		ELEVATION (M)	REMARKS
				STD.	TYPE	CLASS	RF PAD	PROJ.		
N1	RECIEPT	200(8")	Sch40	ANSI B16.5	WNRF	300#	ø485x10Thk	200	0.650	
N2	DISCHARGE	150(6")	Sch40	ANSI B16.5	WNRF	150#	ø400x10 Thk	200	0.560	
N3	FOAM INLET	100(4")	Sch40	ANSI B16.5	WNRF	150#	ø305x8Thk	175	17.000	
N4	VENT NORMAL	350(14")	Sch10	ANSI B16.5	SORF	150#	ø850x8Thk	250	ROOF NOZZLE	
N5	VENT (EMERGENCY)	350(14")	Sch10	ANSI B16.5	SORF	150#	ø850x8Thk	250	ROOF NOZZLE	
N6	DRAIN	100(4")	Sch40	ANSI B16.5	WNRF	150#	ø305x8Thk	175	0.570	
N7	MANUAL GAUGE	150(6")	Sch80	ANSI B16.5	SORF	150#	ø375x8Thk	150	ROOF NOZZLE	
N8A	MANHOLE FOR RADAR LEVEL GAUGE	500(20")	10Thk	AS PER API 650			ø1000x8Thk	400	ROOF NOZZLE	
N8B	TEMPERATURE/ LEVEL SENSOR	80(3")	Sch40	ANSI B16.5	SORF	150#	ø305x8Thk	150	ROOF NOZZLE	
N9	SPARE FOR INSTRUMENTATION	100(4")	Sch40	ANSI B16.5	SORF	150#	ø305x8Thk	150	ROOF NOZZLE	
N10	LLA	25(1")	Sch80	ANSI B16.5	WNRF	150#	8THK X 40mm FLAT	150	1.000	
N11	LLLA	25(1")	Sch80	ANSI B16.5	WNRF	150#	8THK X 40mm FLAT	150	0.560	
N12	HLA	25(1")	Sch80	ANSI B16.5	WNRF	150#	8THK X 40mm FLAT	150	17.25	
N13	HHLA	25(1")	Sch80	ANSI B16.5	WNRF	150#	8THK X 40mm FLAT	150	17.50	
N14	RELIEF INLET NOZZLE	40(1 1/2")	Sch80	ANSI B16.5	WNRF	150#	8THK X 40mm FLAT	150	1.250	
N15	RELIEF INLET NOZZLE	40(1 1/2")	Sch80	ANSI B16.5	WNRF	150#	8THK X 40mm FLAT	150	1.160	
MW1	MANWAY-1	750(30")	10Thk	AS PER API 650			ø1545x10 THK	300	1.000	WITH COVER & HANDLES
MW2	MANWAY-2	750(30")	10Thk	AS PER API 650			ø1545x10 THK	300	1.000	WITH COVER & HANDLES
MW3	MANWAY-3	750(30")	10Thk	AS PER API 650			ø1545x10 THK	300	WITH COVER & HANDLES	



PLAN VIEW / ORIENTATION



DETAIL OF FRANGIBLE JOINT



SECTION Y-Y

TYPICAL JOINT OF ANNULAR PLATES UNDER TANK SHELL PLATE & BASE PLATE AND ANNULAR PLATE

DESIGN DATA

MECHANICAL	DESIGN/FABRICATION CODE		API 650 12th EDITION
	DESIGN WIND SPEED		WIND SPEED 160 KM/H
	SEISMIC CODE /FACTOR		ZONE 2A
	SHELL DESIGN METHOD		ONE FOOT / VARIABLE DESIGN POINT
	TANK SIZE	m	ø14m & 18m HT
	TANK NOMINAL VOLUME	m^3	2615
	TANK WORKING VOLUME	m^3	2461
	NO OF TANKS		1
	FOUNDATION TYPE		AS PER DESIGN
	CORROSION ALLOWANCE	m.m.	3.0 mm (SHELL, ROOF, BOTTOM)
	MINIMUM THICKNESS-SHELL & ROOF PLATE,	m.m.	6 (INCL. CA)
	WELD JOINT EFFICIENCY		0.85
	TANK BOTTOM TYPE		CONE DOWN TO WATER DRAW OFF SUMP
	TANK ROOF TYPE		SELF SUPPORTED CONE ROOF
	TYPE OF TANK		CONE ROOF VERTICAL TANK
	TYPE OF ROOF		CONE ROOF AS PER API 650 & NFPA 30
	STIFFENING RING		AS PER CODE
	DESIGN LIQUID LEVEL		16000mm
	RADIOGRAPHY INSPECTION		AS PER CODE
	STRESS RELIEVING INSPECTION		AS PER CODE
	CATHODE PROTECTION		YES
	EMPTY WT.	Tonns	80.27
	OPERATING WT.	Tonns	–
	HYDROTEST WATER	Tonns	–
	EXTERNAL ACCESS		SPIRAL STAIR WAY AT 39° SLOPE WITH INTERMEDIATE 3 LANDING PLATFORMS
	HAND RAILING		SPIRAL STAIR WAY AND ALL AROUND THE ROOF
	EARTHING BOSS		3 NOS
PROCESS	CONTENT		KEROSENE STORAGE TANK
	SPECIFIC GRAVITY		0.985
	VISCOSITY	Cst	–
	FLASH POINT	°C	–
	VAPOUR PRESSURE		–
	FILLING RATE	m^3 / hr	–
	EMPTYING RATE	m^3 / hr	–
	STORAGE TEMP.	°C	AMBIENT
	STORAGE PRESSURE	Kpl	ATMOSPHERE
	DESIGN PRESSURE	Kpl	ATMOSPHERE
	DESIGN TEMP.	°C	SHELL : 30 ROOF : 30
MATERIAL	SHELL, BOTTOM,ANNULAR PLATE, ROOF PLATE		A 36 OR EQUIVALENT
	STRUCTURAL		A 36 OR EQUIVALENT
	NOZZLE FLANGE		A 105
	NOZZLE NECKS		A 106 GR.B
	FABRICATED NOZZLE NECK AND MANHOLE NECK		A 36 OR EQUIVALENT
	BOLT & NUTS		ASTM A193 Gr.B7 / ASTM A194 Gr.2H
	PIPE FITTINGS		SA 234 WPB / A105
	GASKET		COMPRESSED NON-ASBESTOS FIBRE
	INSULATION SUPPORTS		–
	STAIRS / HANDRAILS/ PLATFORM		A 36 OR EQUIVALENT
	EARTHING BOSS		A 36 OR EQUIVALENT
	FOAM SYSTEM		YES
	PAINTING	INTERNAL	–
		EXTERNAL	–

SUMMARY VALUE FOR STORAGE TANK

S.NO	SHELL COURSE NO. (FROM BOTTOM)	HEIGHT IN (m) (FROM BOTTOM)	THICKNESS (IN mm)
1	1	0–1.5	12
2	2	1.5–3	10
3	3	3–4.5	10
4	4	4.5–6	10
5	5	6–7.5	10
6	6	7.5–9	8
7	7	9–10.5	8
8	8	10.5–12	8
9	9	12–13.5	6
10	10	13.5–15	6
11	11	15–16.5	6
12	12	16.5–18	6
13	BOTTOM PLATE		10
14	ANNULAR PLATE		10
15	ROOF PLATE		8
16			
17			

LEGENDS

EL – ELEVATION
CS – CIRCUMFERENCE SEAM
LS – LONGITUDINAL SEAM
THK – THICKNESS

NOTES:–
1. ALL DIMENSIONS ARE IN "mm" UNLESS OTHERWISE SPECIFIED.
2. ALL ELEVATIONS ARE IN "meters" UNLESS OTHERWISE SPECIFIED.

ISSUE TYPE
(A) PRELIMINARY (E) FOR CONSTRUCTION
(B) FOR APPROVAL (F) AS PURCHASED
(C) FOR INFORMATION (G) AS BUILT
(D) FOR QUOTATION (H) CANCELLED

REV.	DATE	NATURE OF REVISION & DESCRIPTION	PREPARED	CHECKED	APPROVED
00	28/12/15	SUBMISSION FOR APPROVAL	JSN	VVV	PSR

PROJECT: UGANDA LAKE VICTORIA FUEL TRANSPORTATION

EPC: Mahathi Infra Services Pvt. Ltd.
MADHAPUR, HYDERABAD-500033 (T.S)

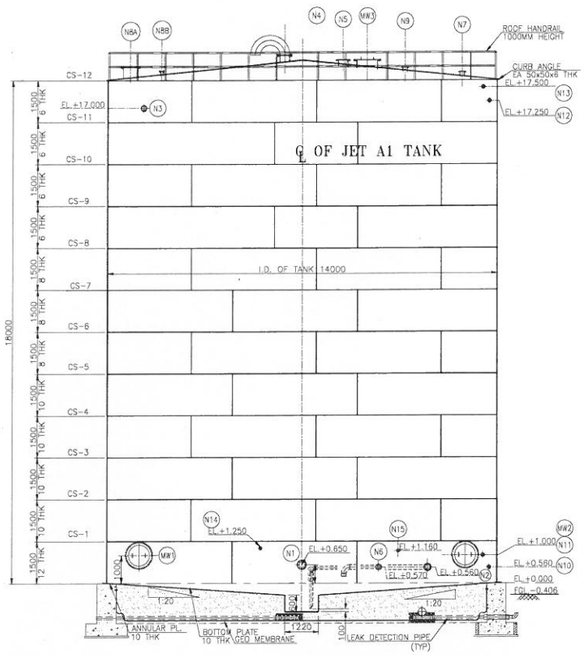
PO/LOI NO:

RELEASED FOR	DATE	SIGN
PRELIMINARY		
TENDER		
ENGINEERING	28/12/15	
CONSTRUCTION		

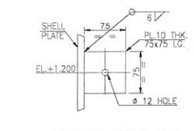
TITLE: GENERAL ARRANGEMENT FOR KEROSENE ø14m & 18m HT AT UGANDA

DESIGN: JSN	CHECKED: VVV	DEPT: E	SCALE: NTS	SHEET:
PREPARED: JSN	APPROVED: PSR	JOB NO: ULVFTP-09	DATE: 28/12/15	1 OF 1

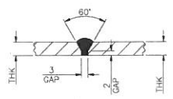
MISPL DRG.NO.: MISPL-ULVFTP-15-GA-KRT01
CLIENT DRG.NO.: XXXX-XXXX-XXX-XXXX
REV.: 00



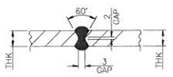
ELEVATION



DETAIL OF EARTHING BOSS
(QTY.3 NOS.)

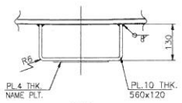


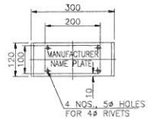
SINGLE-V BUTT JOINT
BELOW 12MM THK



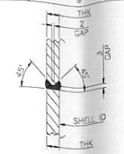
DOUBLE-V BUTT JOINT
ABOVE 12MM THK

TYPICAL VERTICAL SHELL JOINTS
COMPLETE PENETRATION



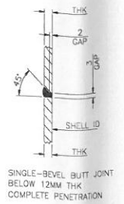


DETAIL OF NAME PLATE BRACKET



DOUBLE-BEVEL BUTT JOINT
ABOVE 12MM THK

TYPICAL HORIZONTAL SHELL JOINTS
(SCALE:NTS)



SINGLE-BEVEL BUTT JOINT
BELOW 12MM THK
COMPLETE PENETRATION

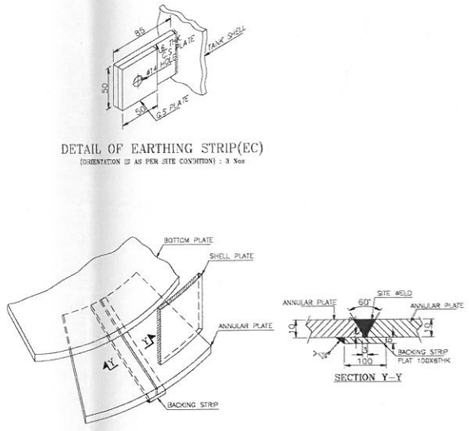
NOZZLE SCHEDULED FOR HFO STORAGE TANK (3990-TK-201)

NOZZLES	SERVICE	NOM. BORE	Thk./ Sch.	FLANGES			NOZZLES		ELEVATION (M)	REMARKS
				STD.	TYPE	CLASS	RF PAD	PROJ.		
N1	RECIEPT	200(8")	Sch40	ANSI B16.5	WNRF	300#	ø485x10Thk	200	0.650	
N2	DISCHARGE	150(6")	Sch40	ANSI B16.5	WNRF	150#	ø400x10 Thk	200	0.560	
N3	FOAM INLET	100(4")	Sch40	ANSI B16.5	WNRF	150#	ø305x8Thk	175	17.000	
N4	VENT NORMAL	350(14")	Sch10	ANSI B16.5	SORF	150#	ø550x8Thk	250	ROOF NOZZLE	
N5	VENT (EMERGENCY)	350(14")	Sch10	ANSI B16.5	SORF	150#	ø550x8Thk	250	ROOF NOZZLE	
N6	DRAIN	100(4")	Sch40	ANSI B16.5	WNRF	150#	ø305x8Thk	175	0.570	
N7	MANUAL GAUGE	150(6")	Sch80	ANSI B16.5	SORF	150#	ø375x8Thk	150	ROOF NOZZLE	
N8A	MANHOLE FOR RADAR LEVEL GAUGE	500(20")	10Thk	AS PER API 650			ø1000x8Thk	400	ROOF NOZZLE	
N8B	TEMPERATURE/ LEVEL SENSOR	80(3")	Sch40	ANSI B16.5	SORF	150#	ø305x8Thk	150	ROOF NOZZLE	
N9	SPARE FOR INSTRUMENTATION	100(4")	Sch40	ANSI B16.5	SORF	150#	ø305x8Thk	150	ROOF NOZZLE	
N10	LLA	25(1")	Sch80	ANSI B16.5	WNRF	150#	8THK X 40mm FLAT	150	1.000	
N11	LLLA	25(1")	Sch80	ANSI B16.5	WNRF	150#	8THK X 40mm FLAT	150	0.560	
N12	HLA	25(1")	Sch80	ANSI B16.5	WNRF	150#	8THK X 40mm FLAT	150	17.25	
N13	HHLA	25(1")	Sch80	ANSI B16.5	WNRF	150#	8THK X 40mm FLAT	150	17.50	
N14	RELIEF INLET NOZZLE	40(1 1/2")	Sch80	ANSI B16.5	WNRF	150#	8THK X 40mm FLAT	150	1.250	
N15	RELIEF INLET NOZZLE	40(1 1/2")	Sch80	ANSI B16.5	WNRF	150#	8THK X 40mm FLAT	150	1.160	
MW1	MANWAY-1	750(30")	10Thk	AS PER API 650			ø1545x10 Thk	300	1.000	WITH COVER & HANDLES
MW2	MANWAY-2	750(30")	10Thk	AS PER API 650			ø1545x10 Thk	300	1.000	WITH COVER & HANDLES
MW3	MANWAY-3	750(30")	10Thk	AS PER API 650			ø1545x10 Thk	300	WITH COVER & HANDLES	

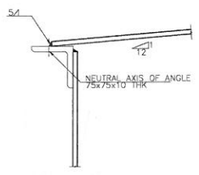
DETAIL OF EARTHING STRIP(EC)
(ORIENTATION IS AS PER SITE CONDITION) : 3 Nos

DESIGN DATA

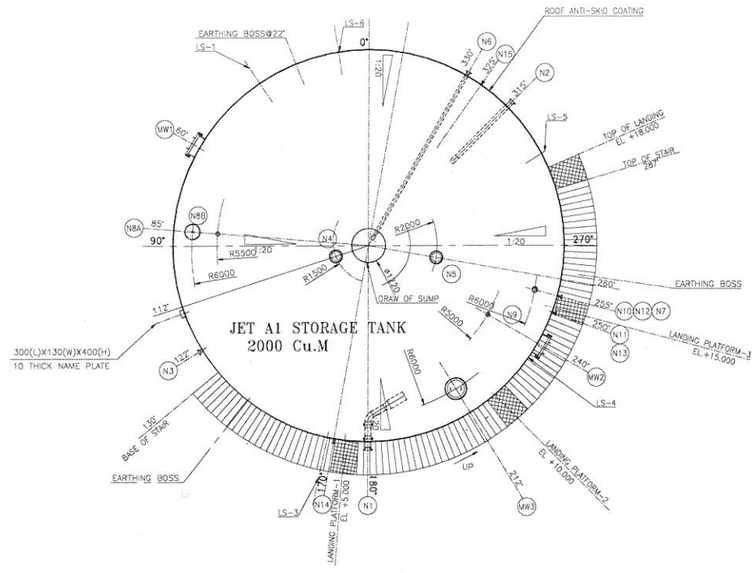
MECHANICAL	DESIGN/FABRICATION CODE		API 650 12th EDITION
	DESIGN WIND SPEED		WIND SPEED 160 KM/H
	SEISMIC CODE /FACTOR		ZONE 2A
	SHELL DESIGN METHOD		ONE FOOT / VARIABLE DESIGN POINT
	TANK SIZE	m	ø14m & 18m HT
	TANK NOMINAL VOLUME	m^3	2615
	TANK WORKING VOLUME	m^3	2461
	NO OF TANKS		1
	FOUNDATION TYPE		AS PER DESIGN
	CORROSION ALLOWANCE	m.m.	3.0 mm (SHELL, ROOF, BOTTOM)
	MINIMUM THICKNESS-SHELL & ROOF PLATE.	m.m.	6 (INCL. CA)
	WELD JOINT EFFICIENCY		0.85
	TANK BOTTOM TYPE		CONE DOWN TO WATER DRAW OFF SUMP
	TANK ROOF TYPE		SELF SUPPORTED CONE ROOF
	TYPE OF TANK		CONE ROOF VERTICAL TANK
	TYPE OF ROOF		CONE ROOF AS PER API 650 & NFPA 30
	STIFFENING RING		AS PER CODE
	DESIGN LIQUID LEVEL		16000mm
	RADIOGRAPHY INSPECTION		AS PER CODE
	STRESS RELIEVING INSPECTION		AS PER CODE
	CATHODE PROTECTION		YES
	EMPTY WT.	Tonns	80.27
	OPERATING WT.	Tonns	–
	HYDROTEST WATER	Tonns	–
	EXTERNAL ACCESS		SPIRAL STAIR WAY AT 39° SLOPE WITH INTERMEDIATE 3 LANDING PLATFORMS
	HAND RAILING		SPIRAL STAIR WAY AND ALL AROUND THE ROOF
	EARTHING BOSS		3 NOS
PROCESS	CONTENT		JET A1 STORAGE TANK
	SPECIFIC GRAVITY		0.985
	VISCOSITY	Cst	–
	FLASH POINT	°C	–
	VAPOUR PRESSURE		–
	FILLING RATE	m^3 / hr	–
	EMPTYING RATE	m^3 / hr	–
	STORAGE TEMP.	°C	AMBIENT
	STORAGE PRESSURE	Kpl	ATMOSPHERE
	DESIGN PRESSURE	Kpl	ATMOSPHERE
	DESIGN TEMP.	°C	SHELL : 30 ROOF : 30
MATERIAL	SHELL, BOTTOM,ANNULAR PLATE, ROOF PLATE		A 36 OR EQUIVALENT
	STRUCTURAL		A 36 OR EQUIVALENT
	NOZZLE FLANGE		A 105
	NOZZLE NECKS		A 106 GR.B
	FABRICATED NOZZLE NECK AND MANHOLE NECK		A 36 OR EQUIVALENT
	BOLT & NUTS		ASTM A193 Gr.B7 / ASTM A194 Gr.2H
	PIPE FITTINGS		SA 234 WPB / A105
	GASKET		COMPRESSED NON-ASBESTOS FIBRE
	INSULATION SUPPORTS		–
	STAIRS / HANDRAILS/ PLATFORM		A 36 OR EQUIVALENT
	EARTHING BOSS		A 36 OR EQUIVALENT
	FOAM SYSTEM		YES
	PAINTING	INTERNAL	–
		EXTERNAL	–



TYPICAL JOINT OF ANNULAR PLATES UNDER TANK SHELL PLATE & BASE PLATE AND ANNULAR PLATE



DETAIL OF FRANGIBLE JOINT



PLAN VIEW / ORIENTATION

SUMMARY VALUE FOR STORAGE TANK

S.NO	SHELL COURSE NO. (FROM BOTTOM)	HEIGHT IN (m) (FROM BOTTOM)	THICKNESS (IN mm)
1	1	0-1.5	12
2	2	1.5-3	10
3	3	3-4.5	10
4	4	4.5-6	10
5	5	6-7.5	10
6	6	7.5-9	8
7	7	9-10.5	8
8	8	10.5-12	8
9	9	12-13.5	6
10	10	13.5-15	6
11	11	15-16.5	6
12	12	16.5-18	6
13	BOTTOM PLATE		10
14	ANNULAR PLATE		10
15	ROOF PLATE		8
16			
17			

LEGENDS

EL – ELEVATION
CS – CIRCUMFERENCE SEAM
LS – LONGITUDINAL SEAM
THK – THICKNESS

NOTES:–

1. ALL DIMENSIONS ARE IN "mm" UNLESS OTHERWISE SPECIFIED.
2. ALL ELEVATIONS ARE IN "meters" UNLESS OTHERWISE SPECIFIED.

ISSUE TYPE

(A) PRELIMINARY (E) FOR CONSTRUCTION
(B) FOR APPROVAL (F) AS PURCHASED
(C) FOR INFORMATION (G) AS BUILT
(D) FOR QUOTATION (H) CANCELLED

REV.	DATE	NATURE OF REVISION & DESCRIPTION	PREPARED	CHECKED	APPROVED
00	28/12/15	SUBMISSION FOR APPROVAL	JSN	VVV	PSR

PROJECT: UGANDA LAKE VICTORIA FUEL TRANSPORTATION

EPC: mahathi Infra Services Pvt. Ltd. — Mahathi Infra Services Pvt. Ltd.
MADHAPUR, HYDERABAD-500033 (T.S)

PO/LOI NO:

RELEASED FOR	DATE	SIGN
PRELIMINARY		
TENDER		
ENGINEERING	28/12/15	
CONSTRUCTION		

TITLE: GENERAL ARRANGEMENT FOR JET A1 ø14m & 18m HT AT UGANDA

DESIGN: JSN	CHECKED: VVV	DEPT: E	SCALE: NTS	SHEET:
PREPARED: JSN	APPROVED: PSR	JOB NO: ULVFTP-09	DATE: 28/12/15	1 OF 1

MISPL DRG.NO.: MISPL-ULVFTP-15-GA-JAT01
CLIENT DRG.NO.: XXXX-XXXX-XXX-XXXX
REV.: 00