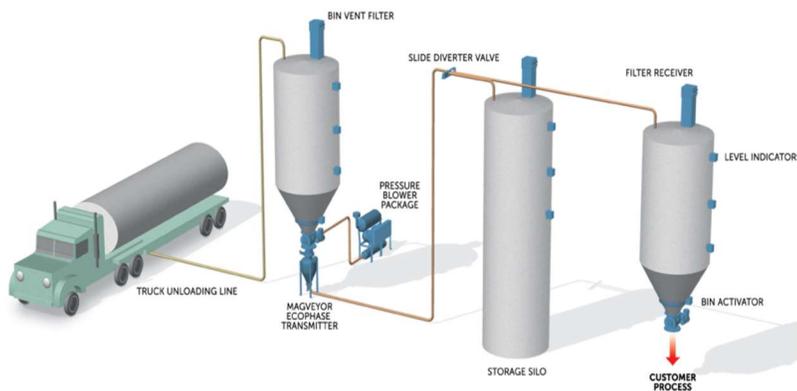


Vista Trading & Logistics (Guyana) Inc.



Project Summary

October, 2020

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Background

Cement is primarily valued as the key ingredient of concrete, the most widely used construction material in the world. Most types of cement are geared toward these diverse and widespread building needs. However, there are also specialty cements that reach beyond construction to fill critical needs in other industries. One such product is oil-well cement, which the petroleum industry uses for drilling oil and natural-gas wells. Oil-well cements conform to American Petroleum Institute (API) Specification 10A¹ for well cementing applications. It performs consistently in well cementing applications at extremes of depth, temperature, and pressure. Oil-well cement must be slow-setting and able to withstand the high temperatures and pressures of these deep wells. There are three type of oil-well cement which includes:

- Grade O or Ordinary which is utilized commonly
- HSR or High Sulphate Resistant
- MSR or Moderate Sulphate Resistant

Each grade is utilized where it is relevant to a specific scope of oil well sulfate situations, temperatures, pressures, plus depths. Oil well cement has turned out to be exceptionally beneficial for the oil business because of its attributes and the process plays a significant role in well-drilling operations. Meanwhile, there are two major factors affecting cement slurry performance which includes the concentration of additives and their distribution throughout the cement blend. Thus, the right type of equipment and processes are critical factors in achieving an optimized cementing job.

Vista Trading and Logistics (Guyana) Limited intends to import and supply cement to the offshore oil and gas industry in Guyana at its proposed location at Le Resouvenir, East Coast Demerara. This project summary has been prepared as part of its application for environmental authorization from the Environmental Protection Agency (EPA).

Company Profile

Vista Trading and Logistics (Guyana) Inc. is subsidiary company of Toolsie Persaud Limited (TPL). The name Toolsie Persaud Limited (TPL)² has been prevalent in Guyanese history for over the past eighty (80) years. This family owned company has been predominately integrated in the building and construction industry of Guyana. TPL stands as the parent company to numerous others ranging in logging, sawmilling, marine transport, quarrying, manufacturing, and general hardware. It is also known for providing quality products and services to its many customers.

¹ https://global.ihs.com/doc_detail.cfm?document_name=API%20SPEC%2010A&item_s_key=00128165. Accessed 11 oct, 2020

² <https://tpl-gy.com/>

Location of Proposed Project

The proposed construction of the warehouse to bag and distribute oil-well cement and other gas related equipment will be located at Le Ressouvenir on the East Coast Demerara approximately 11.26 kilometres (7 miles) away from the capital city, Georgetown. The total land area is approximately 1.0 acre which is characterized by predominately fine-textured, heavy clay soils. Annual rainfall varies from about 90 inches to 120 inches during two marked rainy seasons: April to August and November to January. The area is zoned for commercial and industrial activities with sensitive ecosystems, schools, hospitals and major water ways and sea defenses located more than one (1) kilometer from designated area. However, surrounding land uses include residences approximately 50 metres to the south and west, and greater than 100 metres to the east. A place of worship is approximately 150 metres north, and a hotel 230 metres north as well. A drainage canal is 450 metres west and mangroves and sea are 680 metres north. The current land use is classified as Mixed Commercial use.



Figure 1: Showing proposed location of the project (Source: Google Earth, 2020)

The proposed location, activity, and inherent technological safeguards (see details below) will not impact any sensitive ecosystems (water ways, mangroves), nor impact air quality and land in the surrounding vicinity.

The technology and process

A pneumatic conveying system is a process by which bulk materials of almost any type are transferred or injected using a gas flow as the conveying medium from one or more sources to one or more destinations. Air is the most used gas but may not be selected for use with reactive materials and/or where there is a threat of dust explosions. A well designed pneumatic conveying system is often a more practical and economical method of transporting materials from one point to another than alternative mechanical systems (belt conveyors, screw conveyors, vibrating conveyors, drag conveyors and other methodologies) because of three key reasons:

- pneumatic systems are relatively economical to install and operate
- pneumatic systems are totally enclosed and if required can operate entirely without moving parts encountering the conveyed material. Being enclosed these are relatively clean, more environmentally acceptable, and simple to maintain
- pneumatic systems are flexible in terms of rerouting and expansion. A pneumatic system can convey a product at any place a pipeline can run.

Pneumatic conveying can be used for particles ranging from fine powders to pellets and bulk densities of 16 to 3200 kg/m³ (1 to 200 lb/ft³). As a rule, pneumatic conveying will work for particles up to 2 inches in diameter @ typical density. By "typical density" we mean that a 2-inch particle of a polymer resin can be moved via pneumatic conveying, but a 2-inch lead ball would not.

Major pneumatic system components include:

- Pressure blowers and vacuum pumps with integral sound enclosures
- Rotary airlock valves
- Transfer line including piping, elbows; divert valves (flex-tube diverters, Wye-diverters, plug diverters and other line diverter configurations).
- Filter receivers
- Cyclone separators
- Gain-in-weight and loss of- weight batching systems
- Dust collectors and bin vents
- Controls and electrical equipment
- Silos, day bins and other storage vessels

Pneumatic conveying systems ensure all dust is captured in bag filters and automatically recycled in the system. Hence there is no production of waste and as the facility is only for storage and bagging of cement the process and technology have zero requirement for water thus ensuring zero effluent discharge. The process and technology is installed and conducted in a fully enclosed system.

Construction Phase

The construction phase of the proposed project will be executed in a manner that will ensure efficiency and quality products being delivered. This phase includes the construction of a warehouse to house all equipment necessary to bag and bulk transport oil-well cement and other oil and gas related equipment to potential clients. Refer to Appendix 1 for Site Plan of Proposed Project. Vista Trading & Logistics (Guyana) Inc. intends to have a work force of about twenty (20) skilled and semi-skilled workers. Figure 2 below shows the different activities that will form part of the construction phase.

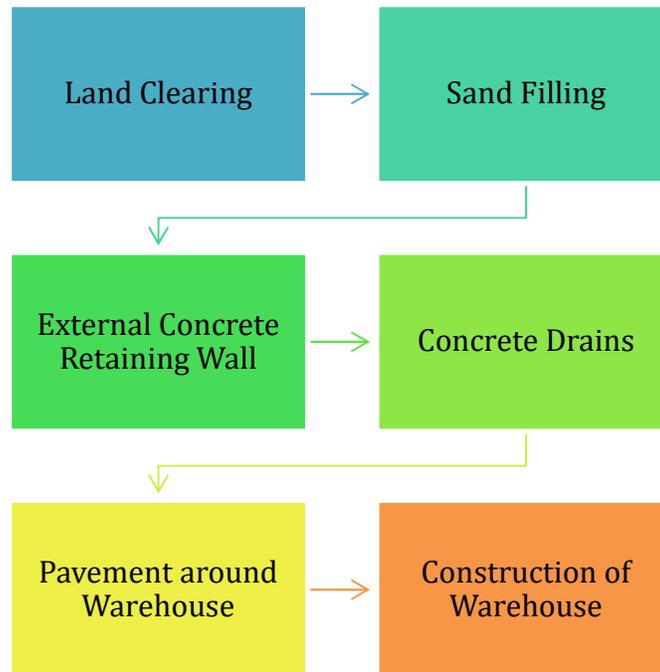


Figure 2: Various activities that will be done during the construction phases

Requirements for Contractors during construction

At all times Contractors should be required to conform to the following stipulations in implementing construction works:

- Adherence to all regulatory requirements and authorizations e.g. EPA
- There should be clear demarcation of the extent of Contractor's work sites including areas for material storage, working yards and plant storage.
- Health and safety equipment (including protective clothing and boots) should be available and in use at work sites and construction facilities/camps. First Aid boxes will be mandatory.

- If required, fuel storage sites during construction will be bonded by breems to confine and mitigate the effects of any spillage. The capacity of the confined area to be 100% of volume of fuel stored and protected from rainwater.
- Discharge of dust and fumes should be minimized and there should be no burning of materials/substances.
- Dump trucks will be equipped with devices to prevent material spillage and roads should be kept clean of mud and construction debris.
- The contractor should remove all construction equipment and scrap waste from his sites on completion.

Operation Phase

Overview of Method

During the operation phase, the transfer of bulk (oil well) cement to silos and bulk tanker wagons for transport to customers, using hoppers will be executed. To achieve this, the ECOPHASE Pneumatic – conveying system or similar type technology will be employed. The ECOPHASE system is part of a patented process that uses a continuous feeding device to feed material into a small vessel. This vessel is equipped with the necessary level controls to ensure the material is at a desired level in the vessel (MagnumSystems, 2017)³. The material level in the vessel is kept to a constant level to ensure that air, from the air management system, and the material are adequately mixed insuring optimum fluidization of the product. This is what allows the ECOPHASE pneumatic conveying system to perform as well as it does. The ECOPHASE system has proven itself successful on products like Bentonite clay, Portland cement, Limestone, Bauxite clay, Gypsum and Fly Ash. This system will often replace either a dilute or dense phase system with little or no modifications needed. Vista Trading and Logistics (Guyana) Inc. will be equipped with the 1400 model cement silo to aid in bulk storing of oil-well cement. A past winner of the Special Meritorious Award for Engineering Innovation from the *Petroleum Engineer International Magazine*, outlined that having appropriate equipment and material separating system is critical for accurate density control and minimizing cement dust (Energy, 2020)⁴.

Advantages of ECOPHASE Conveying Systems

In these times of increasing concern over power consumption and the greater concern over the bottom line, producers need to increase production while keeping capital cost down. While most producers look at cutting personnel, services, and raw ingredient cost to increase profits, looking at lowering costs such as energy usage can provide a more economical alternative. In most cases the ECOPHASE system has a Return on Investment (ROI) of less than 5 years on the energy savings alone. Additionally, this system allows for:

- Minimal material degradation as the material is transported at low velocity

³ <https://www.magnumsystems.com/pneumatic-conveying/eco-phase/>

⁴ <https://www.hartenergy.com/mea>

- Handles wide variety of material such as fragile, abrasive, and friable as well as materials with high bulk densities
- Minimum wear and tear of the system
- Minimum maintenance
- No material spillage, no dust emissions, clean environment
- Low noise operation
- Low air flow rate

Industries utilizing ECOPHASE – conveying system

A wide variety of industries ranging from cement to chemicals, food and mineral processing utilizing this system which ensure maximum production and little to no impacts to the environment.



Operation Process

Storage silos will be set up and filled via a pneumatic discharge system from the trailers or equipment in the building which will then be loaded into tankers using a feeder screw conveyor (grey item angled to the bottom of the silo in Figure 3). After that the product will be subjected to the bin activator then the pressure blower package and ECOPHASE transmitter which ultimately discharge the final product that will be bagged.

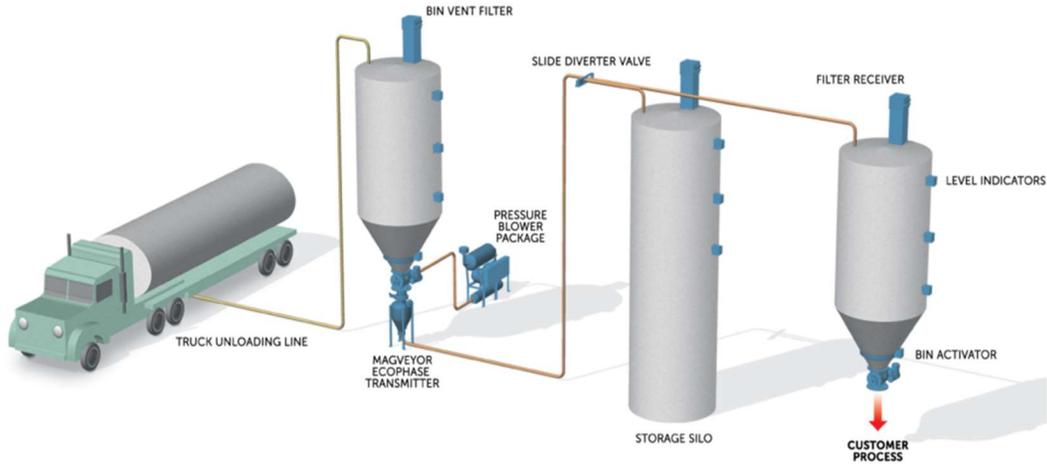


Figure 3: ECOPHASE – conveying system. Diagram illustrates the step up of the storage silos and the process from trucking to the final stage of bagged cement.

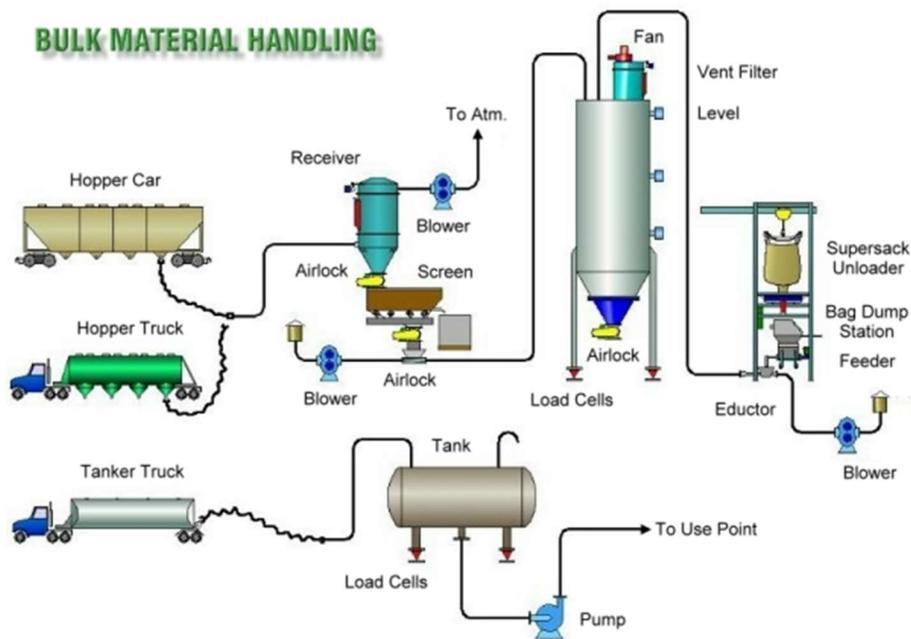


Figure 4: ECOPHASE Conveying system in detail using three different method of trucking – Hopper Car, Hopper Truck and Tanker Truck.

Refer to Appendix 2 for SOP for Cement loading process, Analysis Sheets and Silo designs

Possible Impacts from Proposed Activity

The proposed activity and its inherent technological safeguards will result in the project having little to no significant impact to the environment. However, table 1 identifies the possible impacts and proposed mitigation measures.

Table 1: Showing potential impacts and mitigation measures

Environmental Component	Nature of Impact	Impact significance	Mitigation measures
Land	Erosion due to topsoil and vegetation removal during construction	Localised, Short-term, mitigable, insignificant, reversible	Minimize removal of vegetation to only areas where necessary. Revegetate where practical. Temporary bund exposed soil and redirect flows from heavy runoff areas that threaten erosion. Landscaping to reduce sloping. The development of the landscape and planting of trees and vegetative cover will be carried out after construction work.
Air Quality	Emissions from vehicles	Insignificant, short-term, mitigable, localised	Ensure equipment and vehicles are maintained according to manufacturer's specification.
	The removal of the surface layers of the soil will generate dust particles during the clearing of the site Dust emissions during transfer of cement to and from silos	Insignificant, mitigable	Avoid open storage of sand and other materials that may become windblown. Wet areas during construction. The process of spraying water should be carried out at least three times on every construction day especially if construction work is carried out during the dry season. Haulage trucks will be covered, and the aggregates sprayed with water before loading the haulage trucks. Transfer machinery equipped with dust collector to trap emissions from transfer process.

Environmental Component	Nature of Impact	Impact significance	Mitigation measures
Noise	Noise from vehicles and equipment, generator	Insignificant, short-term, mitigable, localised	Ensure appropriate soundproof and/or sound attenuating devices are on equipment/vehicles/generator. Maintain appropriate working hours between 6 am to 18:00 hrs.
Surface water	Fuel leaks/spills from vehicles/equipment during construction and operation Sedimentation from storm water runoff during rain episodes	Insignificant, short-term, mitigable, localised	Proper handling during transfer of fuel and spill kits in place for clean-up of immediate leakages/spills. Avoid earthworks during rain events. Install appropriate interceptor drains and general drainage designs and management to prevent surface runoff entering directly into major water courses.
Waste	Waste generated during construction and operation that are generally municipal/domestic in nature. Contaminated materials, rags from servicing and/or any spills. Sewage	Insignificant, mitigable	Recover and recycle as far as practical. Garbage receptacles placed at appropriate locations on vessel and covered. Regular collection and disposal by authorized disposal services for disposal at EPA approved disposal sites/landfill. Enforcement of waste management and safe handling of waste. All contaminated solvents and solvents used to clean equipment are collected and stored in a drum for final disposal at an EPA approved disposal site/landfill. Solvent laden dirty rags are kept in a closed container and labelled "HAZARDOUS WASTE". Sewage is collected and disposed of by authorized disposal services.

Environmental Component	Nature of Impact	Impact significance	Mitigation measures
Human Health and Safety	Potential for accidents and upset conditions related to workers safety and health during construction	Mitigable	Provide workers with training in the proper use and maintenance of equipment. Appropriate PPE and safety equipment. Proper housekeeping. First aid for all staff on the site.
	Impacts on residents	Insignificant, mitigable	No significant impacts is expected to residents.

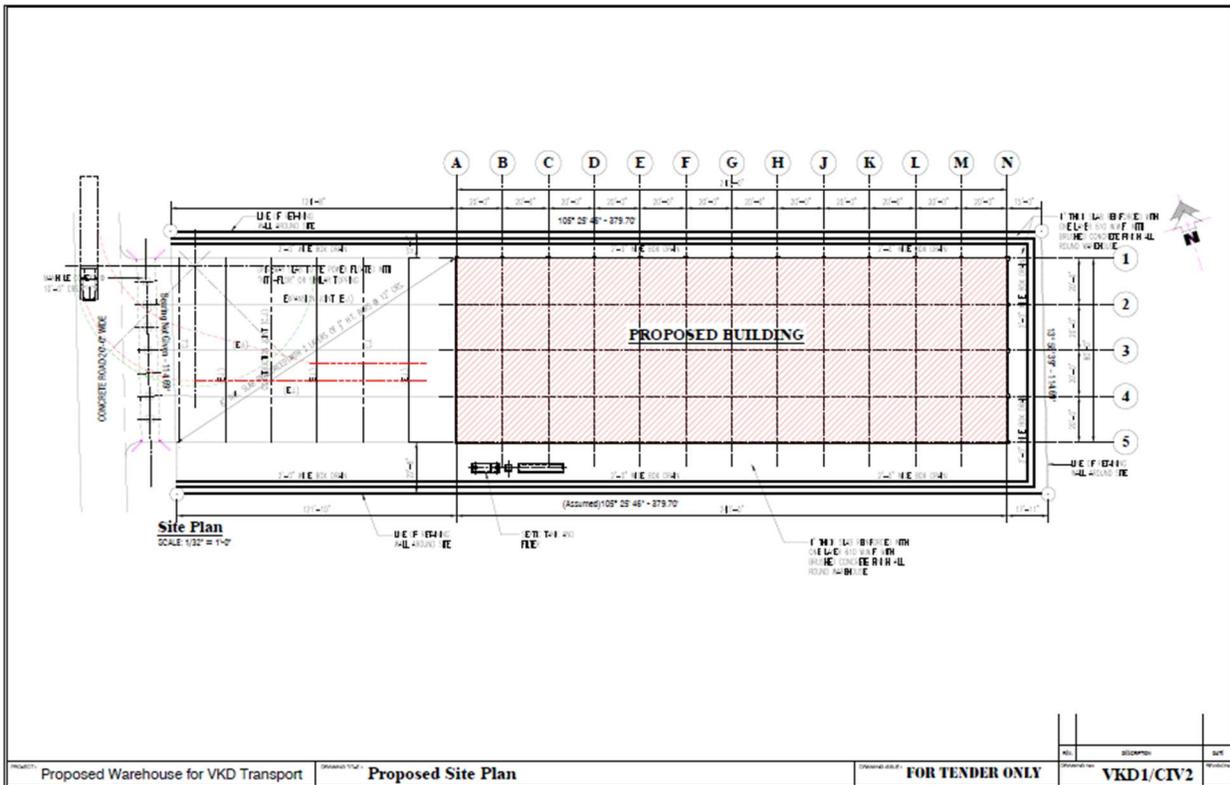
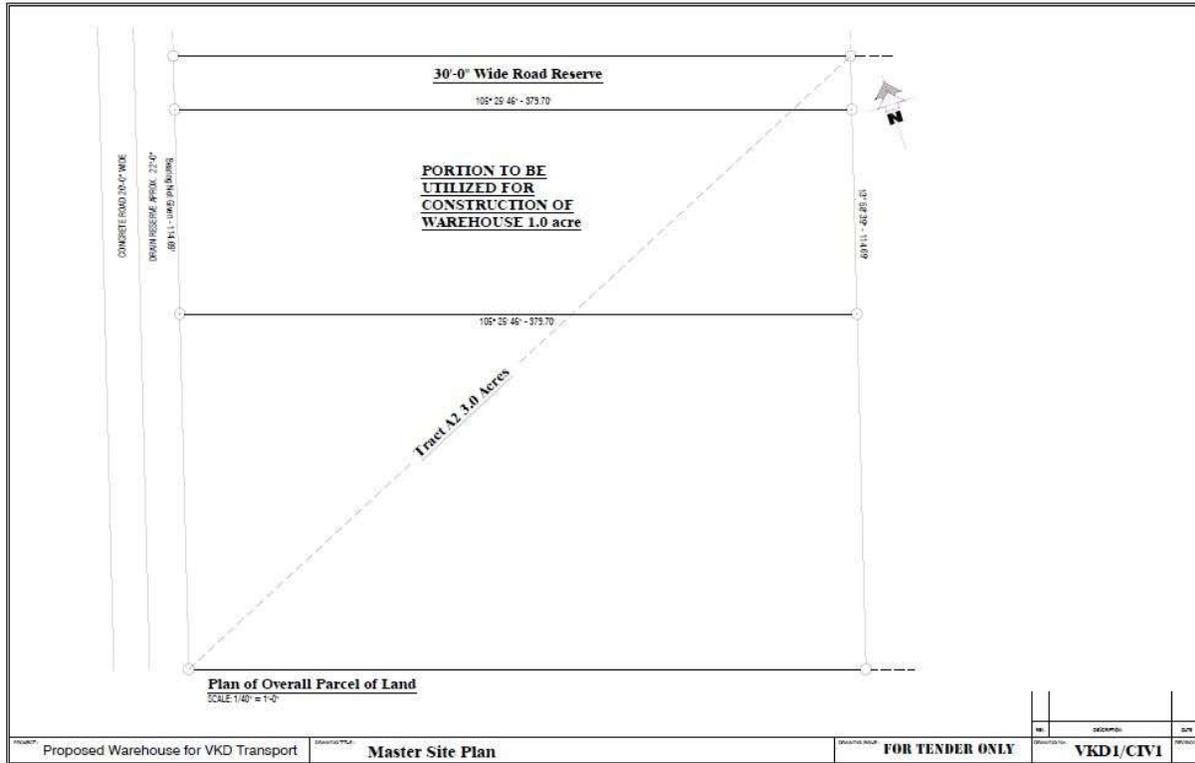
Health and Safety Management

During construction and operation there will be opportunities to increase awareness of health and safety issues and implement appropriate standards of performance. Occupational and environmental health in and around the contractor’s camps and facilities will also be subject to such scrutiny. It should be a requirement that the contractors supervising foremen will have basic First Aid training. There should also be plans for coping with emergencies. A fully stocked First Aid kit (and set of emergency numbers) will be available at each worksite and workshop. Appropriate safety protection equipment should always be worn. Protective equipment includes hard boots and hats, protection for eyes and ear. Likewise, fire prevention measures should be in place, including the deployment of adequate functional extinguishers and simple dry sand buckets. The project monitoring programme should include inspection of safety equipment use. Basic hygiene standards should be required, with waste disposal collection containers and disposal by authorized companies.

Environmental Monitoring

Environmental monitoring programs will be implemented to address all activities that have been identified to have potential impacts on the environment during normal operations and upset conditions. Environmental monitoring activities would be based on direct or indirect indicators of emissions, and resource use as applicable.

Appendix 1 - Site Plan



Appendix 2 – Supporting documents

Attachments

- SOP for Loading of cement from bags into tankers using cement hopper
- Job Safety/Hazard Analysis Sheet
- Agreement of sale