2024

PROJECT SUMMARY (updated)

PURAN BROTHERS INC.™

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Waste Oil Management; Shredding of Plastic Totes; Laydown Yard; Mechanic Workshop; and Fuel Storage

Plot A9 and A17 Plantation Peter's Hall, East Bank Demerara

INTRODUCTION

Puran Brothers Disposal Inc. is an incorporated waste management company with over 35 years of experience in the waste management sector. The company's diverse operations include the collection, transportation, and treatment of both solid and liquid wastes across six of the ten Administrative Regions of Guyana, namely 2, 3, 4, 5, 6, and 7.

The Company has acquired 15 acres of industrial lands at Plantation Peter's Hall, East Bank Demerara, and intends to expand its operation to this location to include:

- Waste Oil Management – the collection, transportation, storage, and exportation for recovery.
- Shredding of plastic totes and bottles – shredded waste exported for recycling
- Laydown Yard – storage of pre-stressed piles
- Mechanic and Fabrication Workshop
- Fuel Storage

To ensure compliance with environmental regulations, Puran Brothers Disposal Inc. is seeking environmental authorization from the Environmental Protection Agency (EPA), for its operation at Peter's Hall.

PROJECT LOCATION

The "project" encompassing the abovementioned operations will be located at Plots A9, A16, and A17, Plantation Peter's Hall, East Bank Demerara. This area occupies a land space of 15 acres within an industrial zone.

The project is accessed via the Heroes Highway, then left at the Jaguar monument into the industrial zone. The site is surrounded by other industrial operations including the Haags Bosch Sanitary Landfill to the north; an integrated hazardous waste management operation to the east; Japarts Construction activities to the south and a concrete batching plant to the west.

The closest residents are located 349 meters south of the project. Furthermore, the empty lands between the residents and the project are covered with shrubby vegetation, thereby buffering the residents from the project. The closest major waterway to the project is the Demerara River, located over 1km west of the project.

Figure two (2) demarcates the location of each activity within the project site. The layout presented shows that three (3) plots (Plot A9, Plot A16, and Plot A17) will be utilized by Purans, extending across 15 acres. The company intends to occupy the entire area with industrial activities including but not limited to the activities stated in this Project Summary.

Figure 1: Google Maps showing the project location

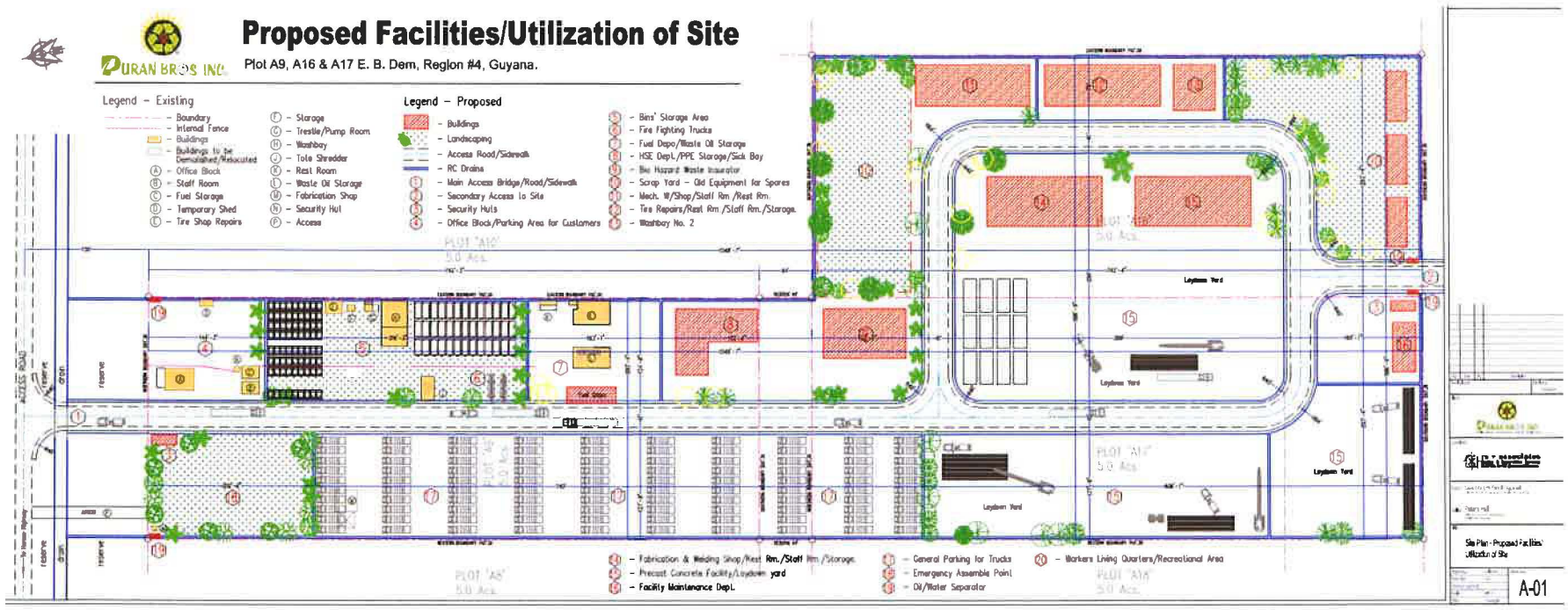

Figure 2: Layout of the Project Site

PROJECT DESCRIPTION

Puran Brothers Disposal Inc. project at Plantation Peter's Hall comprises the following operations:

- Waste Oil Management – the collection, transportation, ***storage***, and exportation of waste oil for recovery.
- Shredding of plastic totes and bottles – shredded waste exported for recycling
- Laydown Yard – producing and storage of pre-stressed piles
- Mechanic and Fabrication Workshop
- Fuel Storage

Waste Oil Management

Waste oil is any petroleum-based or synthetic oil that has become unsuitable for its original purpose due to impurities or loss of original properties. This project focuses on the waste oil used in vehicle engines and generated via mechanical workshops during oil changes. Given the significant fleet of vehicles active across the company's expansive operations, Puran Brothers will be the primary generator of waste oil, generating approximately ***2725 liters*** of waste oil monthly. The project will also target other waste oil generators in Regions 3 and 4.

To control the quality of the waste oil, 45-gallon plastic drums will be placed at the point of generation (workshops) by the project to facilitate the separation of the waste oil from other hazardous waste thus reducing contamination.

Transport of the waste oil from the point of generation to the project site in Peter's Hall will be facilitated by the project. Waste oil will be transferred from the 45-gallon drums into a vacuum tanker truck via a pump system and transported to the project site. The project will utilize two vacuum tanker trucks.

Figure 2: Vacuum Tanker Truck for waste oil transport

The storage of waste oil at Peter's Hall will be accommodated by three (3) 13,000-liter metal storage tanks providing an overall storage capacity of **39,000 liters**. The storage facility will include a concrete base or foundation, three cylindrical storage tanks, a stormwater shed, an oil-water separator, and transfer pumps.

A secondary containment of concrete material will be constructed around the storage facility to contain 110% of the volume of one tank. A release valve will be installed within the walls of the secondary containment to release contaminated wastewater. Released wastewater will be directed to the external drains after passing through either of the two oil-water separators at the northern boundary. A pump system will transfer the waste oil from the vacuum tankers to the storage tanks by pipes installed over the containment wall.

Stored waste oil will be exported to international countries such as India for recovery purposes. In this regard, the waste oil will be transferred from the storage tanks to a Flexi tank similar to the one in Figure 3 for export. Given that waste oil is considered hazardous waste in Guyana, it will be exported under the Basel Convention for Transboundary Movement of Hazardous Waste and their disposal.

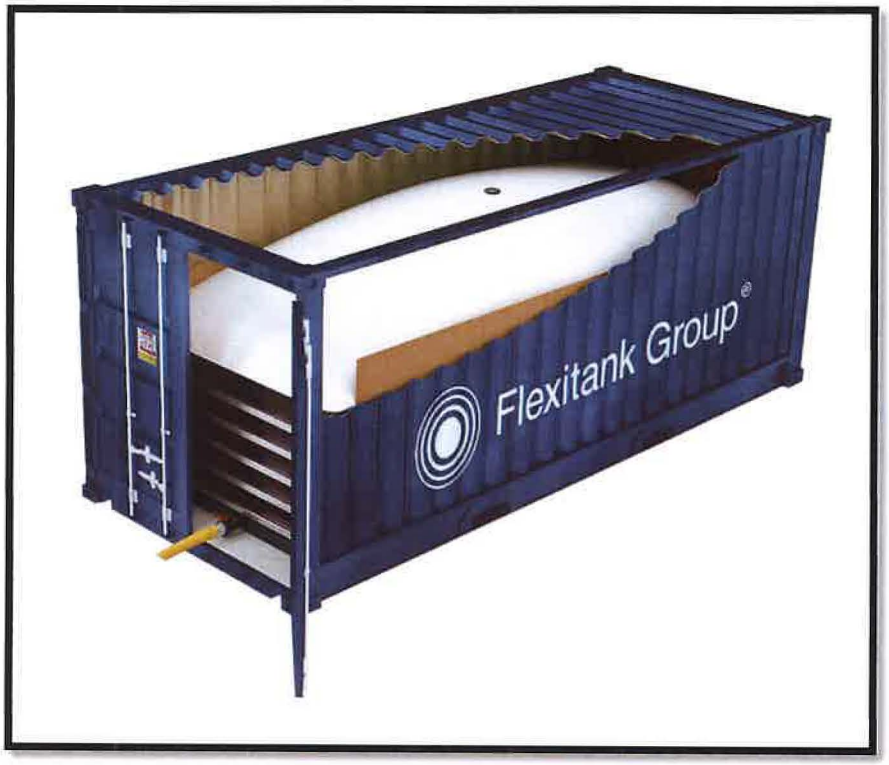

Figure 3: Flexitank for the export of waste oil.

Intermediate Bulk Container (IBC) Shredding

The developing Oil and Gas sector in Guyana requires large quantities of materials which are transported in 1000 liters IBC totes. IBCs are reusable transport packaging for liquid and granular (solid) materials. The containers are enormously stable and offer a high level of safety during transport and storage. Once the

totes have exceeded their usefulness and become waste, the disposal of the totes at the Landfill soon becomes problematic. The bulky nature of this waste takes up too much space and volume in the landfill and will result in reducing the life span of the landfill.

In this regard, this project intends to shred the waste IBC containers and export the shredded material to Trinidad and Tobago for recycling. Companies within the oil and gas sector including Schlumberger and Halliburton will provide a steady supply of waste IBC totes. These totes will be collected by the project and stored at the site in preparation for shredding. Approximately 500 totes will be shredded per month.

A WALI WLS5 shredder will be installed at the project. The specifications of the shredder are:

- Model: WALI WLS5
- Size and Dimension: two-shaft; spans 16.8*9.1*9.9ft
- Power: 44kW-300KW
- Motor: dual motor and dual reducer drive system.

This heavy-duty shredder will have a PLC control system that enables monitoring and overload protection.

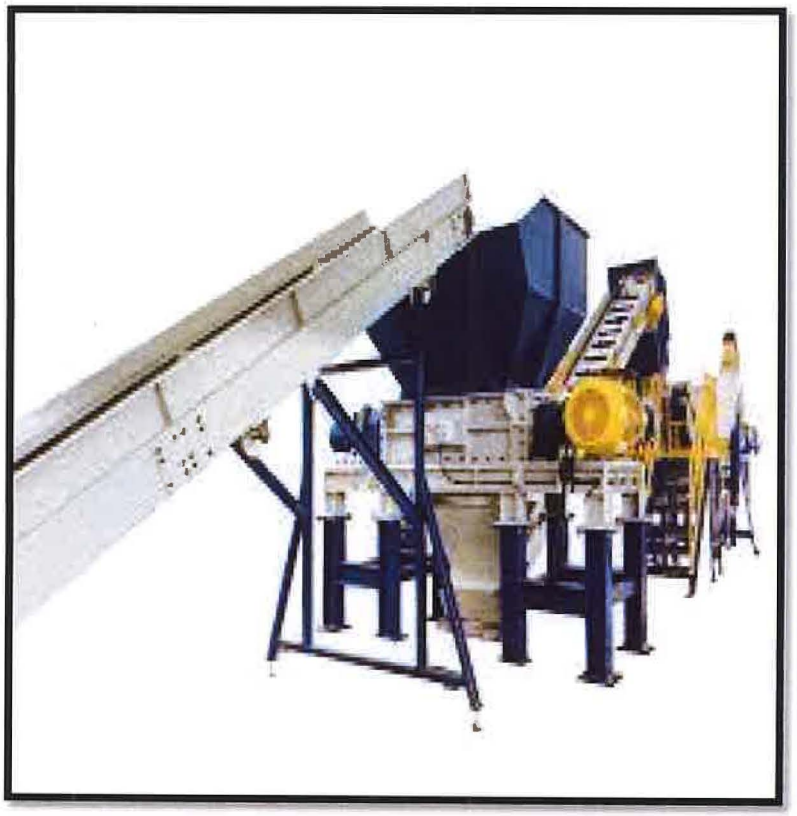

Figure 4: Image of IBC Shredder

The shredding process commences with loading the totes into the shredder's hopper via the conveyor belt. The hydraulic ram presses the totes against the rotating rotor that shreds the totes uniformly to a homogeneous particle size of 60-80 mm, which is the ideal size for further processing or recycling.

It will also be possible to shred the IBCs without prior separation of the plastic tank and mesh cage. The robust shredders can easily shred both plastic and metals such as steel. The metal scraps will then be separated from the plastic flakes using appropriate separation technology such as metal separators or metal detectors. Shredded material will then be packaged and stored for export to Trinidad and Tobago for recycling.

Laydown Yard

The project will also include a laydown yard for pre-stressed piles. High-quality concrete procured from Puran Brothers Top-Mix Construction will be used to produce pre-stressed piles. Wire strands will be set to the correct tensile strength within metal molds. The Project has procured metal molds capable of producing 40-120ft long piles.

Figure 5: Pre-stress metal mold

Figure 6: Pre-stress Pile cable machine

The primary operation within the laydown yard will be curing and storing pre-stressed piles. This will therefore involve using large equipment such as forklifts to move piles around.

Mechanic and Fabrication Workshop

Given the quantity and types of vehicles and equipment required by the project including vacuum tanker trucks (2), dump trucks, hauler trucks, front-end loaders, forklifts, etc. this project will also include a mechanic and fabrication workshop.

Mechanic activities will include inspecting and changing the oil, tires, brake pads, and filters on vehicles and equipment. Fabrication is performing welding jobs using a welding machine. The workshop will encompass a semi-enclose shed with an impervious base, metal roofing, and secondary containment. The designated area will be labeled with the required signage.

Hazardous wastes generated by this operation including waste oil, used oil filters, oily rags, waste tires, and scrap metals will be stored in designated areas before proceeding to treatment or disposal at Haags Bosch Sanitary Landfill.

Fuel Storage

To facilitate the refueling of vehicles and equipment used by the project, **4500 liters** of fuel will be stored in a metal above-ground tank. The fuel storage area will be of impervious material and include secondary containment to contain 110% of the volume of the tank. Transfer pipes will be installed over the containment. Contaminated wastewater from the containment will be directed to an oil-water separator for treatment before discharge into the environment.

POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

This section identifies and describes the potential adverse environmental impacts of the project. Mitigation measures are described in detail to reduce or mitigate the identified impacts.

Project Activities	Potential Environmental Impacts	Mitigation Measures
Waste Oil Management Collection, Transportation, Storage, and Export for Recovery **Fuel Storage**	***Soil and water contamination from a spill and accidental release of waste oil into the environment.*** Waste oil is hazardous because it contains polycyclic aromatic hydrocarbons (PAHs), which are acutely toxic to animals including humans. Waste oil also contains heavy metal particles due to machinery wear and tear which can lead to soil and water contamination. ***Emissions into the atmosphere*** Fuel storage operations can release atmospheric emissions of volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), and other air pollutants. These pollutants can contribute to air quality issues. ***Leaks and Spills*:** Leaks and spills of petroleum products and other hazardous liquids can contaminate soil, groundwater, and surface water bodies. This can have a devastating impact on wildlife, ecosystems, and human health. ***Fires and Explosions*:** Storage tanks can be susceptible to fires and explosions, which can cause property damage, personal injuries, and environmental contamination.	The base or foundation of the waste oil and fuel storage areas will be constructed with an impervious base to reduce soil contamination. Storage tanks will be equipped with secondary containment systems to capture and contain any leaks or spills. Channelized emissions, including vapors generated during processes like tank filling and emptying, will be directed to Processing Units such as **Vapour Recovery Units (VRU)** for treatment. This will not only recover valuable substances, preventing product loss but will also reduce air pollution. **Emergency Plans**: the project will develop and implement emergency plans to respond to leaks, spills, fires, explosions, and other potential risks. **Staff Training**: employees will receive training on the environmental risks associated with their activities and the safety and environmental protection measures they need to implement.

Intermediate Bulk Container (IBC) Shredding	**Noise** Noise levels will increase during the shredding of the IBC containers. Noise will also be generated from other sources on site, including operating machinery/equipment, vehicle engines, and generators.	Since the facility is in an industrial area, the noise receptors would mainly be the employees. In addition, the nearest noise-sensitive receivers are the residents more than 350 m away from the proposed facility. However, once adequate noise reduction and suppression measures are implemented, the generated noise should not significantly affect human receptors. Mitigation measures will include: Regular equipment maintenance to reduce noise generated by the equipment and machines including the Shredder. Care will be taken to ensure that equipment is properly lubricated and aligned, as misaligned equipment can produce excessive noise. The project will use noise-reducing technologies such as silencers or mufflers for exhaust systems, which can help reduce noise levels. Workers operating equipment that generates noise will be equipped with noise protection gear. Workers operating equipment generating noise levels greater than 80 dBA continuously for 8 hours or more would use earmuffs. Workers exposed to prolonged noise levels of 70 – 80 dBA would wear earplugs. Limiting the hours during which site activities are likely to create high levels of noise or vibration to between 6 am and 6 pm.
Laydown Yard	**Noise and Vibration** Caused by the movement of vehicles and equipment; and loading and offloading of piles.	
Mechanic and Fabrication Workshop	**Soil and water contamination from the discharge of hazardous materials and waste**	The workshop base will be constructed with impervious materials to reduce soil contamination.

	In mechanic workshops, there are accidental or deliberate discharges of petrol, diesel, solvents, grease, and lubricants on the land and into waterways. Many of these petroleum products are organic and synthetic chemicals that can be highly toxic and hazardous to animals including humans. Used oil is less viscous than unused oil; when disposed of into the soil, it adsorbs the soil particles, reduces porosity, and therefore reduces the aeration of the soil; resulting in metal contamination of topsoil.	Waste oil will be collected and secured in 45-gallon plastic drums and stored within the workshop on an impervious surface before transfer to the waste oil tanks. A secondary bund will be installed around the designated waste oil storage area of the workshop. The project will construct and maintain defined drainage around the workshop that manages oil change, etc. Install labeling and signs at the workshop. Designate a scrap metal waste storage area on an impervious surface/base.