Project Summary

CNH Establishment Inc.

CNH Establishment Inc
4 Symth Street,
Georgetown,
Demerara,
Guyana

GESS
GeoEnvironmental
& SURVEYING SOLUTIONS

Contents

1.0 Company Background

CNH Establishment Inc. is a Guyanese registered company with registration number 4334 (see Annex A for a copy of Certificate of Incorporation). The company was established on April 9th, 1998, with its office located at Lot 7 Princess Street, Charlestown, Georgetown, Guyana. The company is currently under the leadership of Mr. Sherridon Williams (see Annex B for a copy of Identification Card). Since its establishment, CNH Establishment Inc. has been engaged a number of business ventures of which include trucking, construction and warehouses.

Over the years, the company would have acquired some 206.42 acres of lands located in Princess Carolina, West Bank Demerara (see Annex C for a copy of certificate of titled land). These lands comprise of Parcels 51, 52, 53, 54, 55, 56 and 110 of Block LV West Coast Demerara.

The recent rise in demand for sand and loam in Guyana, as a result of the booming construction country wide has provided the impetus for CNH Establishment Inc. to invest in the sand mining operation at the 206.42 acres of lands located in Princess Carolina, West Bank Demerara.

An application for mining permit has already been made to the Guyana Geology and Mines Commission (GGMC) and the areas applied for have been gazetted (See Annex D for a copy of GGMC's response). In addition, the company has since paid all environmental bonds to GGMC (see Annex E for a copy of the receipt issued by GGMC for the payment of environmental bonds).

In keeping with all legal procedures, the company has also submitted an application for an Environmental Permit to the Environmental Protection Agency (EPA). This document therefore provides a summary of the proposed sand mining operations and potential impacts to the surrounding environment. Mitigation measures to help minimize these impacts are also recommended.

2.0 Project Overview

The proposed silica sand mining operation by CNH Establishment Inc., is an industrial mining project focused on the extraction of high-grade silica sand to support Guyana's growing demand for construction and industrial materials. The mine is located in Princess Carolina, West Bank Demerara, and covers a total area of 206.42 acres. Over its operational lifespan, the mine is projected to yield a total of 17,773,809.12 tons of silica sand, with an initial target of producing 200,000 tons per year to supply both local and regional markets.

The mining operation will adopt an open-cast, mechanized method, utilizing heavy-duty machinery to efficiently extract, transport, and process the silica sand. The mine will operate 84 hours per week, maintaining consistent production cycles. Initial capital investment in the project totals USD 247,000, with anticipated annual operating costs of USD 105,183, reflecting a focus on cost-efficiency and sustainable operational planning.
The mine will employ a workforce of 10 full-time employees under the direction of one site manager, responsible for overseeing day-to-day operations and ensuring adherence to safety, environmental, and production standards. The workforce structure is as follows:

Management:	1 Site Manager
Security:	1 Security Guard for on-site asset protection
Operations:	4 Truck Drivers, 2 Excavator Operators, and 2 Loader Operators

This skilled team will be supported by a fleet of specialized equipment, including 2 excavators, a bulldozer, 2 wheel loaders, and 4 dump trucks with a capacity of 24 tons each. These resources will enable efficient extraction and transport of silica sand from the mine site to storage and processing areas.

The mechanized approach to open-cast mining ensures that the project maximizes production efficiency while adhering to best practices for resource management. This method reduces the environmental footprint of the mining process and aligns with CNH Establishment Inc.'s commitment to sustainable mining practices. Through strategic planning, investment in skilled labor, and the use of robust equipment, the CNH Silica Sand Mine aims to become a pivotal supplier within Guyana's industrial landscape, contributing to the country's infrastructure development and economic growth.

2.0 Project Site Location and Land Use

As noted, CNH Establishment Inc. is venturing into the sand mining operation along the west bank of the Demerara River. Specifically, the project will be located on 206.42-acre of land situated at Princess Carolina, West Bank Demerara. The property is located at Princess Carolina, West Bank Demerara approximately 37.7 km southwest of the Capital Georgetown, 6.09 km from the Cheddi Jagan International Airport and 10.3 km from the Soesdyke junction. The total area is 206.42 acres; from Georgetown it can be accessed via the East Bank of Demerara road network to Timehri then a boat to the location for a total travel time of 50 minutes. Alternatively, the area can be accessed exclusively by boat from Georgetown for a total travel time of 30 minutes. The project location can be found on Terra Surveys Topographic Map 28NW. The property has its eastern most boundary Demerara River and extends westward. The Sandhill-Makouria Road plies to the south west of the project area. Figure 1 shows the location of the proposed silica sand mining site.

Land use on this property will prioritize sustainable mining practices which is common to the surrounding areas. Figure 2 shows the major land uses surround the project area.

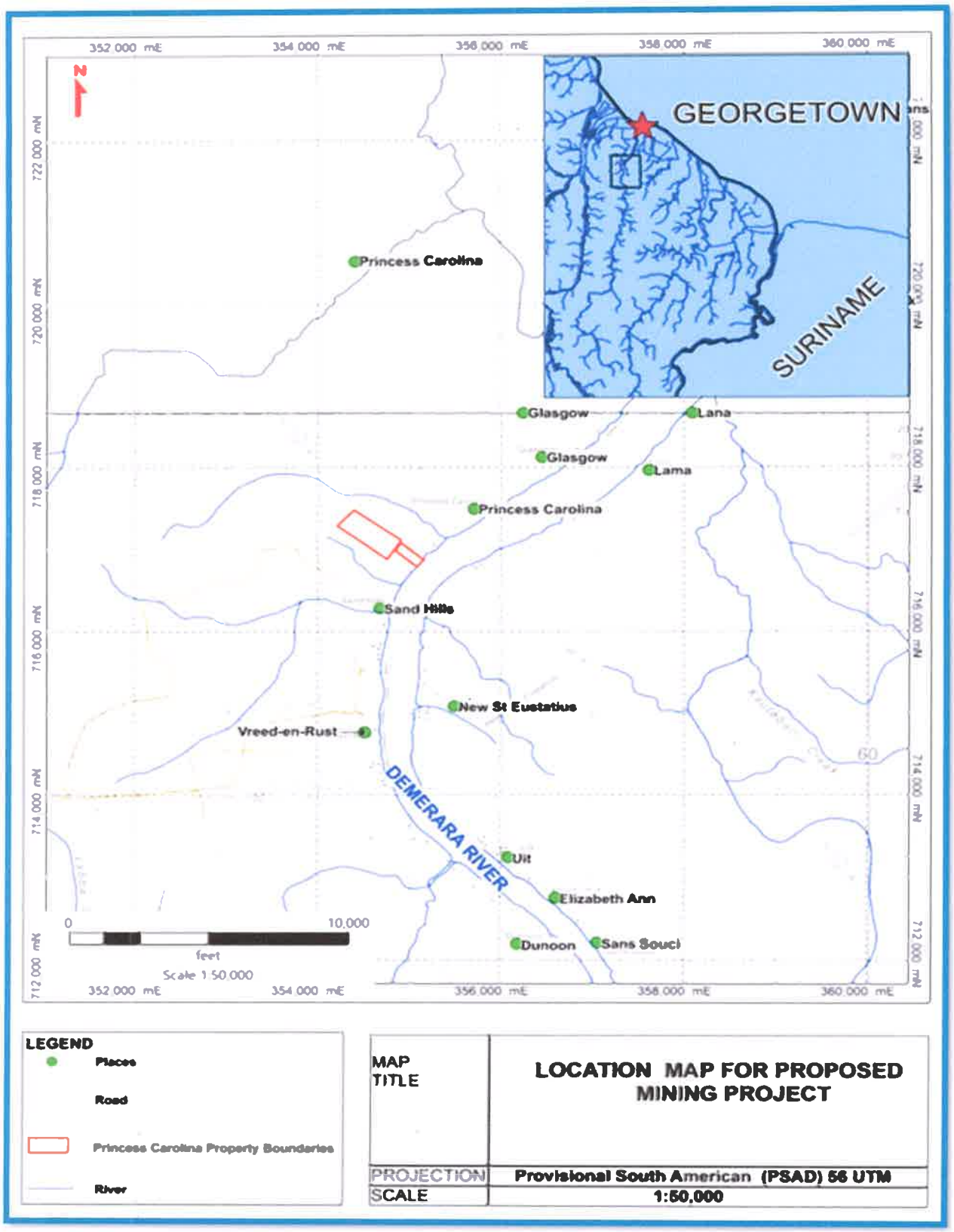

Figure 1: Location Map of Proposed Silica Sand Mine (West Bank Demerara)

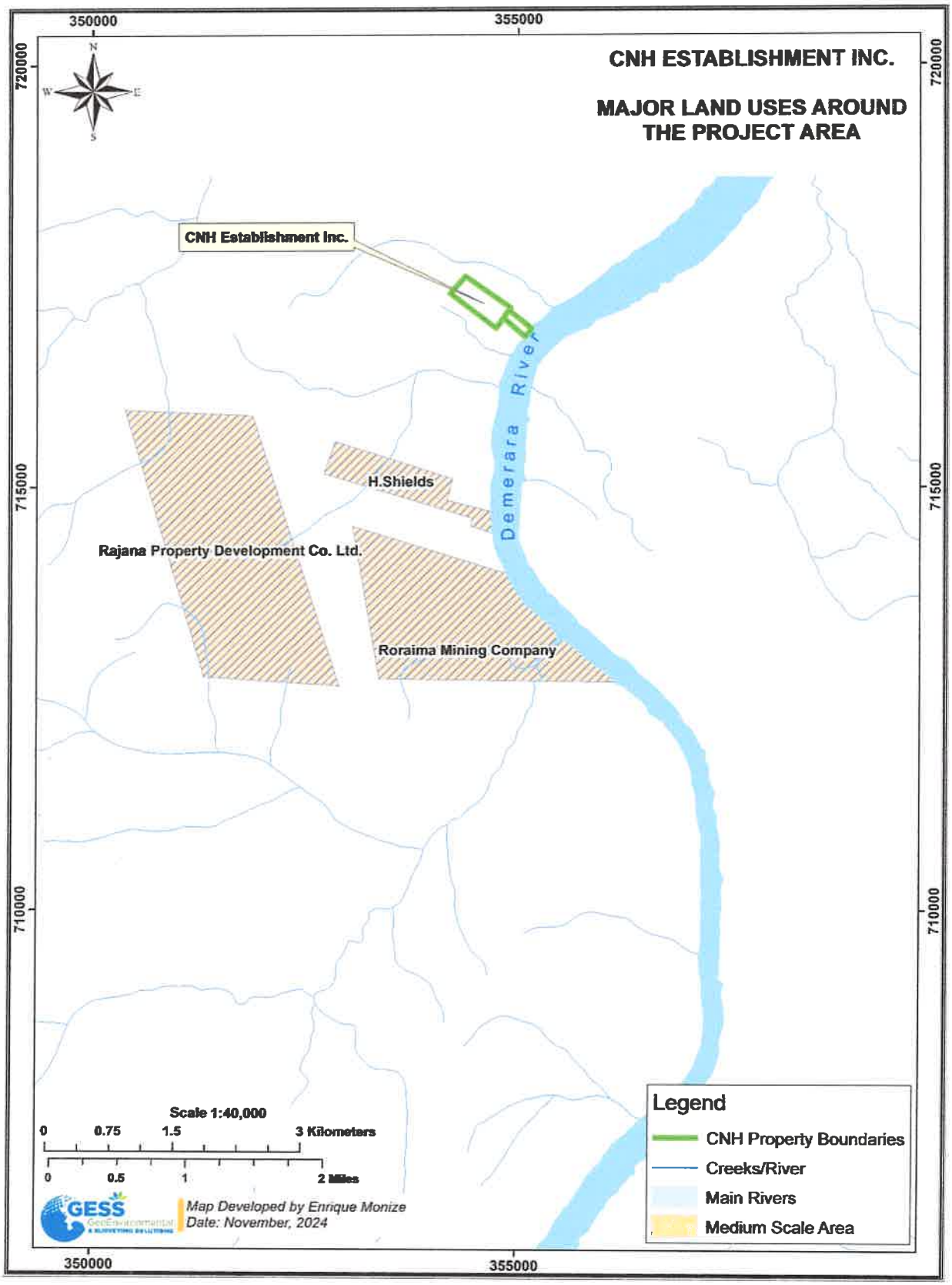

Figure 2: Major Surrounding Land Uses

3.0 Project Description

3.1 Mine and Facility Layout

The simplicity of the mine facilities caters for the effective extraction of resources while maintaining a small ecological foot print. This makes it easier for reclamation initiatives after mining has been completed.

The limits of the pit will be located in the eastern half of the property with advancement westwards. Adequate access road will be built to allow safe 2way movement of trucks and equipment in and out of the mining area.

A small security post will be constructed to cater for security personnel and a booth for the collection of fees for everyday "walk in" customers. In addition, portable sanitary blocks will be rented for use by staff, potable water will be transported as needed and an approved fuel containment area for fuel storage will be constructed. These will all be located outside of the active mining area.

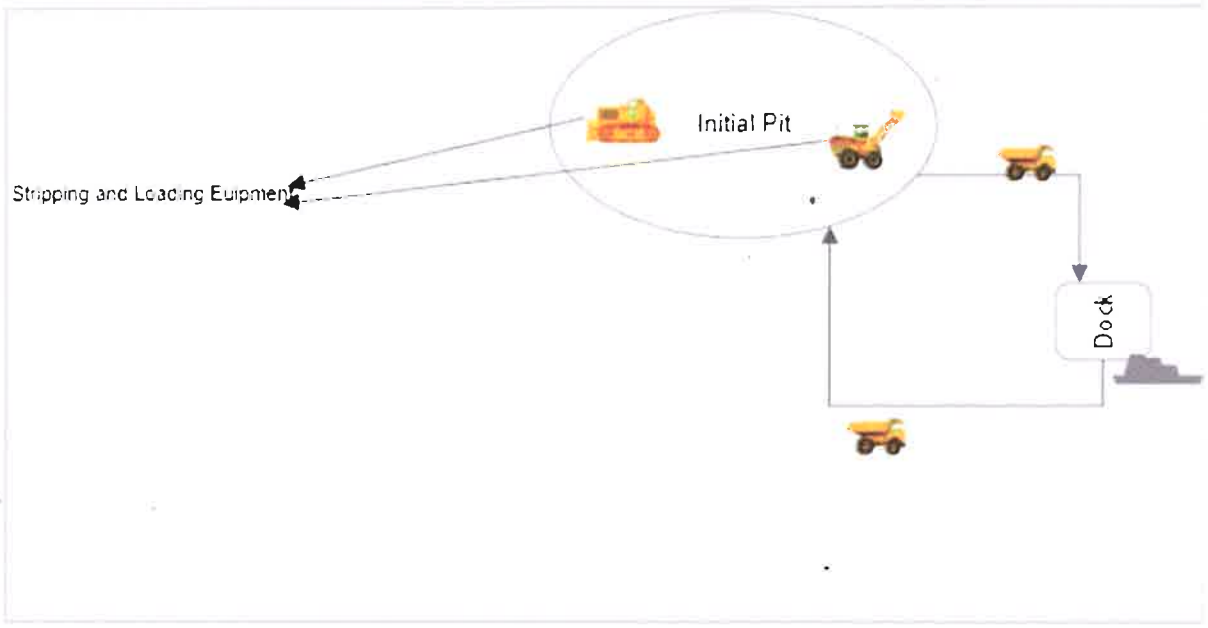

Figure 3: Sketch of Proposed Initial Layout

3.2 Stripping and Mining Methods

The mine will progress westwards as resources are depleted. Debushing will be completed and overburden will be removed using a bull dozer with adequate push backs for increased safety. The overburden thickness varies from 1m to 2m reducing the operating cost of the mine. Overburden removed will be stockpiled in spoil piles for future use during the closure phase.

Mining will be accomplished using a simple open cast system utilizing hydraulic excavators for digging, front end loaders for loading and double axel 45-ton dump trucks for hauling. This operation is expected to flow continuously with stockpiling and loading occurring simultaneously.

Mining will not exceed the water table and 8m benches will be utilized with 10m width for easy maneuverability of digging equipment.

3.3 Waste Dump Design

Waste material will be stored in a suitable area in the southern section of the allotted area. This will adequately cater for storage until backfilling and revegetation is activated during reclamation. Efforts will also be taken to prevent slippages and excess surface run off due to rainfall since sedimentation can harm aquatic life.

- The design parameters are highlighted below:
- Overall slope 18.4° (3H:1V)
- Maximum Dump Height 50m
- Setback from major creeks 100m
- Setback from pit crest 40m

3.4 Equipment Selection

The main equipment need is to satisfy the stripping and mining operations. An equipment list is presented as follows:

Description	Quantity
CAT 320 Hydraulic Excavator	2
CAT D09 Bulldozer	1
CAT 986K Wheel Loader	2
Dump Trucks (25 tons)	4

Table 1: Equipment List and Description

3.5 Staffing

Designation	No. of Staff Required
Manager	1
Security	1
Truck Drivers	4
Excavator Operator	2
Front End Loader Operator	2
Total	**10**

Table 1: Proposed Staffing List

4.0 Potential Impacts and Management Measures

4.1 Water Management

To mitigate the potential impacts on water quality from the silica sand mining operation, CNH Establishment Inc. will implement several strategic management measures. Protective berms will be constructed around the mining site to control surface runoff and prevent contamination of nearby water bodies. These berms will act as barriers, channeling runoff into designated collection areas where it can be treated or safely redirected, thereby minimizing the risk of sedimentation and pollutant flow into adjacent rivers and streams. In addition, retention basins will be installed to capture sediment-laden water, allowing particulates to settle before the water is discharged.

Furthermore, spoil piles and stockpiles of mined material will be carefully managed to reduce the likelihood of erosion and sediment displacement. All spoil piles will be stocked at a stable angle of repose to prevent slippage, which helps contain sediments even during heavy rainfall. The areas surrounding these stockpiles will be monitored for signs of erosion, and additional stabilization measures like silt fences or vegetation cover may be implemented as needed. By ensuring that these piles are securely positioned, the risk of uncontrolled runoff carrying sediment into surrounding watercourses is significantly reduced. A comprehensive water quality monitoring program will be conducted regularly to detect any signs of contamination early, allowing for swift corrective actions to protect local groundwater and surface water resources.

4.2 Air Quality

Silica sand mining activities, such as excavation, transportation, and processing, have the potential to generate dust that may impact air quality in the surrounding area. Particulate matter, particularly fine silica dust, can pose health risks to workers and nearby residents if not adequately controlled. To address these concerns, CNH Establishment Inc. will implement a range of dust suppression measures to minimize airborne dust emissions from the mining site.

One of the key strategies will involve the use of spray bars mounted on trucks that regularly traverse the site. These spray bars will release fine mists of water to dampen road surfaces and material piles, effectively reducing the generation of dust during transport and handling. Additionally, the excavation and loading areas will be periodically watered, especially during dry and windy conditions, to prevent dust from becoming airborne. Stockpiles will also be covered or treated with dust suppressants to further minimize particulate release.

To protect workers, CNH will enforce the use of personal protective equipment (PPE), including respirators, for those operating in high-exposure zones. Continuous air quality monitoring will be conducted to ensure that dust levels remain within safe and regulatory limits, allowing for immediate corrective action if necessary. Through these measures, CNH aims to mitigate dust emissions and maintain air quality, safeguarding both employee health and the well-being of surrounding communities.

4.3 Noise

The operation of heavy machinery, including excavators, trucks, and front-end loaders, during silica sand mining activities can generate significant noise. This has the potential to disturb nearby communities, as well as the local fauna, especially during periods of continuous operation. Prolonged exposure to elevated noise levels may also affect the health and safety of workers, leading to fatigue and possible hearing impairment. However, CNH Establishment Inc. is committed to managing noise emissions to prevent undue disturbance.

A key aspect of the noise management strategy is to ensure that noise levels do not exceed the Environmental Protection Agency's recommended threshold of 100 dB. CNH will implement several measures to control noise pollution, such as equipping machinery with noise suppression devices, including mufflers and silencers, to reduce

operational noise. Additionally, noise-generating activities will primarily be scheduled during daylight hours to minimize disturbances to the surrounding community and wildlife.
To further mitigate noise impacts, temporary noise barriers will be erected around high-noise areas, and vegetation buffers may be maintained to act as natural sound dampeners. Workers operating in high-noise zones will be provided with appropriate hearing protection, such as earmuffs or earplugs, to safeguard their health. Routine noise monitoring will be conducted to ensure compliance with EPA standards, allowing for prompt adjustments if noise levels approach the regulatory limits. Through these measures, CNH aims to maintain noise at manageable levels, ensuring minimal impact on the surrounding environment and community.

4.4 Flora and Fauna
The development and operation of the silica sand mining site may result in disturbances to the local flora and fauna due to habitat alteration, increased human activity, and the potential for noise and dust emissions. While it has been observed that previous mining activities and nearby riverside communities have already caused some wildlife to retreat further inland, CNH Establishment Inc. is committed to minimizing its environmental footprint to ensure that the surrounding ecosystems are preserved as much as possible.
To protect local wildlife and vegetation, CNH will designate specialized operators responsible for conducting periodic monitoring and checks throughout the project's duration. These designated personnel will focus on ensuring that wildlife remains insulated from negative effects associated with mining activities, such as noise, dust, and habitat disruption. Measures like maintaining buffer zones around critical habitats and reducing unnecessary land clearing will be implemented to minimize habitat loss.
The ultimate goal of the project is to leave the smallest ecological footprint possible. This includes a commitment to rehabilitating the site after mining activities have concluded. CNH will focus on restoring the mined areas to their original state by implementing reforestation and soil stabilization efforts using native plant species. This approach will help promote the return of displaced wildlife over time and encourage the natural regeneration of the ecosystem, ensuring that the land can eventually recover its original ecological balance.

4.5 Waste Management
The operation of the silica sand mine will generate various types of waste, including solid waste like packaging materials, scrap metal, and damaged equipment, as well as hazardous waste such as used oils, filters, and lubricants. If not properly managed, these waste materials could pose risks to the environment, including soil and water contamination, as well as potential health hazards for workers and the surrounding community. CNH Establishment Inc. recognizes the importance of responsible waste management to minimize these risks and ensure compliance with environmental regulations.

CNH's waste management plan prioritizes recycling and reusing materials wherever possible, significantly reducing the need for disposal. Designated receptacles will be placed throughout the site to ensure proper waste segregation, making it easier to identify materials that can be recycled or repurposed. For waste that cannot be recycled, CNH will follow strict disposal protocols aligned with Environmental Protection Agency (EPA) guidelines. Non-recyclable waste will be transported to approved dump sites to prevent illegal dumping and potential environmental contamination.

Additionally, hazardous waste will be stored in secure, labeled containers to prevent leaks or spills, with periodic inspections conducted to ensure proper handling. CNH will train its staff on waste management procedures to promote adherence to best practices and maintain a clean and safe working environment. By implementing these measures, CNH aims to minimize waste-related environmental impacts and uphold its commitment to sustainable mining operations.

4.6 Soil Impact

The operation of the silica sand mine may have significant impacts on soil integrity due to excavation, heavy machinery movement, and site preparation. Potential impacts include soil erosion, loss of topsoil, compaction, and the risk of contamination from potential spills of fuels and lubricants. These changes could affect soil quality and its ability to support vegetation if not properly managed. To address these concerns, CNH Establishment Inc. will employ a range of best management practices to mitigate soil impacts and promote site rehabilitation.

To control soil erosion, CNH will implement protective measures such as erosion control barriers, silt fences, and the strategic placement of berms. During excavation, topsoil and organic matter will be carefully removed, stockpiled, and stored for future use. These stockpiles will be regularly monitored to prevent erosion and will be covered as needed to preserve their quality. Once mining activities in a particular area are completed, the stored topsoil and organic matter will be re-spread across the disturbed areas, followed by soil de-compaction to enhance soil structure.

Re-vegetation will be a critical part of the rehabilitation process. Native plant species will be introduced to stabilize the soil, prevent further erosion, and restore the natural ecosystem. In addition, CNH will implement a comprehensive spill control and clean-up plan to prevent soil contamination. This plan includes designated spill kits on-site, regular training for staff on spill response, and routine inspections to ensure the integrity of storage tanks and equipment. Through these measures, CNH aims to maintain soil health, minimize its environmental footprint, and ensure that the mined areas can be effectively rehabilitated for long-term ecological stability.

5.0 Occupational Health and Safety

The silica sand mining project conducted by CNH Establishment Inc. will involve various activities that may pose potential risks to the health and safety of its workforce. Key hazards include exposure to silica dust, noise from heavy machinery, and the inherent risks associated with operating heavy equipment such as excavators, trucks, and front-end loaders. CNH is dedicated to fostering a safe work environment and prioritizing the health and well-being of its employees by implementing comprehensive occupational health and safety measures.

To mitigate the risks associated with silica dust exposure, CNH will enforce the use of appropriate Personal Protective Equipment (PPE), including respirators, especially for personnel working in high dust areas. Spray bars mounted on trucks and regular site watering will be employed to control dust emissions, thus reducing the risk of respiratory illnesses like silicosis. Routine air quality assessments will also be conducted to monitor dust levels and ensure they remain within safe regulatory limits.

In terms of noise management, CNH will ensure that noise levels do not exceed the Environmental Protection Agency's recommended threshold of 100 dB. Workers operating near high-noise machinery will be provided with ear protection, such as earmuffs or earplugs, to prevent hearing damage. Noise monitoring will be conducted regularly, and any machinery found to be operating above safe noise levels will be promptly serviced.

To address the risks associated with heavy machinery and vehicle operations, CNH will establish clear protocols, including designated pathways for vehicle movement, regular equipment maintenance, and safety signage throughout the site. All operators and drivers will undergo specialized training on safe equipment handling and emergency procedures. Safety drills will be conducted periodically to prepare the workforce for potential incidents, ensuring that all personnel are familiar with the proper actions to take in case of emergencies.

Furthermore, CNH will implement a Health, Safety, and Environment (HSE) management system that includes routine inspections, incident reporting mechanisms, and continuous staff training. Regular health check-ups will be conducted for workers to detect any early signs of occupational illnesses, allowing for timely intervention. By maintaining strict

safety protocols and fostering a culture of safety awareness, CNH aims to minimize workplace accidents and protect the health of its employees, ensuring a safe and productive working environment throughout the lifespan of the mining project.

6.0 Closure and Reclamation

6.1 Objectives of Reclamation and Closure

The objectives of this Rehabilitation and Closure are to:

1. Provide a framework for site rehabilitation throughout the life of the project;
2. Outline the implementation procedure for the habitat management area and identify ongoing management requirements;
3. Define management requirements for riparian areas, including management of specific work sites within riparian areas;
4. Describe the strategies for management of remnant vegetation, habitat values and property management issues;
5. Outline the landscaping strategy for the project area; and
6. Outline closure activities.

6.2 Sequence of Closure and Topsoil Management

Before the reserves have been depleted, the mine will transfer to "closure mode" where implementation of closure and reclamation concepts will take precedence. Simultaneous backfilling will commence while the resource is in its final stage of depletion. Additionally, carefully stored top soil will be used to overlay filled areas. Planting and nurturing of trees will eventual encourage wildlife such as birds and small mammals to find habitats in the area. The rationale for this well planned and carefully choreographed reclamation effort is to return the natural environment as close as possible to its original state. This is usually a very slow process but can be achieved overtime.

There will be sufficient topsoil to rehabilitate the disturbed areas within the mine footprint. Topsoil will be disturbed for infrastructure and mining activities in accordance with stripping depths discussed. Topsoil stripping will be managed to ensure maximum recovery of the soil.

Topsoil will be managed in accordance with the following measures:

1. Areas where topsoil has been replaced will then be seeded with a native species and cover crop mix to achieve the White Sand Forest vegetation community.

2. Stripped topsoil will then be placed in stockpiles no greater in depth than 3 meters and will be deep ripped and seeded if they are to remain in place for longer than six months; and all topsoil stockpiles will be clearly identified so that they are not inadvertently covered with overburden or damaged by other activities.

3. Where possible, stripped topsoil will be placed immediately onto shaped emplacement areas to ensure best use of soil seed stores and maintenance of soil structure. Fertilizer and other ameliorants will be added to re-spread topsoil as necessary to ensure effective rehabilitation outcomes.

4. The topsoil balance will be reviewed on an ongoing basis to ensure that actual topsoil recovery is sufficient to meet rehabilitation requirements.

In essence the proposed mining project is not expected to adversely affect the environment or surrounding communities therefore the project can be carried out safely. The community will benefit from employment and routine maintenance of infrastructure. Market and financial analysis has shown that this project can be operated profitably.

7.0 Conclusion

The silica sand mining project by CNH Establishment Inc. focuses on sustainable and responsible operations. Comprehensive measures will address air and water quality, noise control, waste management, soil preservation, and protection of local wildlife to minimize environmental impact. Key strategies include dust suppression, erosion control, proper waste handling, and periodic monitoring to ensure compliance with EPA's standards. CNH is committed to site rehabilitation, aiming to restore the area to its natural state post-mining while prioritizing worker safety and community well-being. The project is designed to achieve minimal disruption and support long-term ecological sustainability.