ROME SER 5 COMPLEX:
Wearhouse and Office Building

Project Developer: SER 5 **Inc.**

A subsidiary of JOP Holdings Inc.

Project Contact: Address: Telephone: Business E-mail:	Mr. Youdhia Persaud Lot 9 Bel Air Gardens, Georgetown, Guyana 592-626-1503 Guygas1@gmail.com

Date: 23rd December, 2024

TABLE OF CONTENTS

1 INTRODUCTION

SER 5 Inc. is a privately owned company operated by Mr Yodhia Persaud and registered under the Companies Act of Guyana on December 8, 2022. Its office is located at Lot 9 Bel Air Gardens, Georgetown, Guyana.

SER 5 Inc. is desirous of developing a warehouse complex and office building to support the oil and gas sector (referred to hereafter as the "Project") and is therefore seeking environmental authorisation from the Guyana Environmental Protection Agency (referred to hereafter as the "Agency").

Project Developer:	SER 5 Inc.
Project Name:	Wearhouse and Office Building
Location:	Rome, Georgetown, Region No.4
Locality:	Lot SER 5, Plantation Rome, East Bank Demerara.
Size of Project Area:	10 acres
Project Components:	• 2 Nos. Warehouse • Office Building (4storey) • Power Generator Block • Water Reservoir • Parking Areas • Security Hut
Power Requirement (Generators):	500 KW
Lifespan of Project:	75 years
Current Status of Project	Application for environmental authorisation
Nearest Residence:	1,500 meters (South Ruimveldt Park)
Nearest Major Waterway:	Approx. 4km West of Project Site (Demerara River)
Ecologically Sensitive Areas:	Demerara River. Eccles Canal.

2 SITE DESCRIPTION

2.1 PHYSICAL LOCATION

The proposed project is located at Plantation Roam along the Heroes Highway East Bank Demerara (GPS: 6.724105, -58.192789) with dimensions of 340 m x 118 m.

The Haags Bosh Dump site is found approximately 1km Southwest of the project site with a drainage canal separating the two sites.

The Demerara River is situated approximately 4.5 km from the western perimeter of the project site.

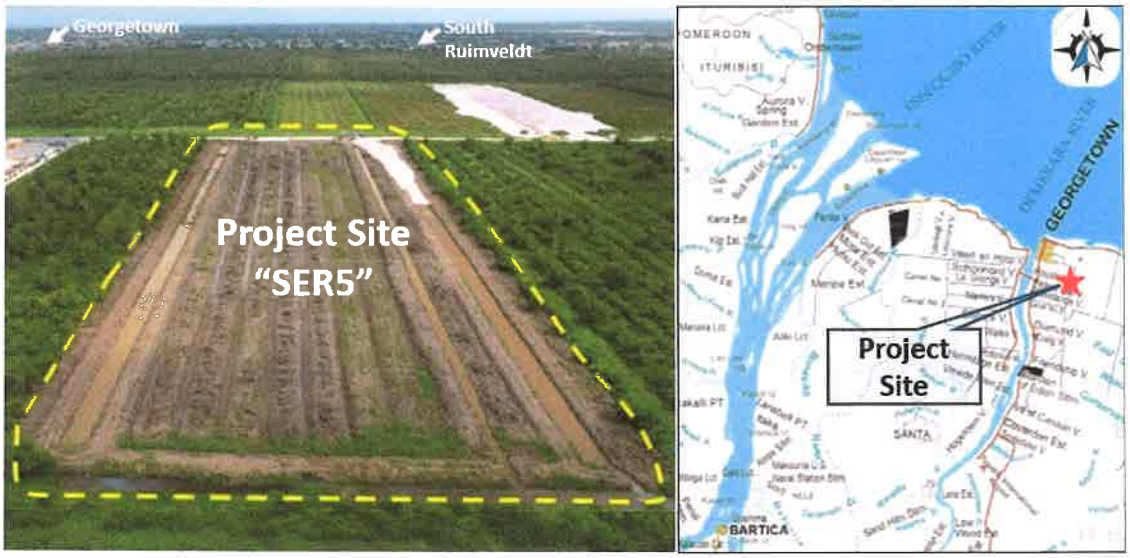

Figure 1: Project Site Location.

The project site is in a built-up area with predominantly commercial and industrial establishments.

There are no identifiable natural resources resident to the area of the project site.

The sensitive receptors most likely to be impacted by the project are identified as:

- Demerara River – situated approximately 4.5km from the western perimeter of the Project site and is the final effluent discharge point of the Project.

- Eccles Drainage Canal - situated approximately 109 meters from the northern perimeter of the Project site and is an intermediary effluent discharge point of the Project.

2.2 HYDROLOGY AND DRAINAGE

The soil and drainage characteristics of the Low Coastal Plain influence the hydrology and drainage of the project site. The clay-rich soil in this area is known for its poor drainage capabilities. The proposed project site will have effluent drainage structures along all four boundaries. These drainage structures direct effluent into a canal along the property's South perimeter. This canal ultimately discharges into the Demerara River, serving as the final point of effluent discharge.

2.3 SURFACE WATER QUALITY

The Demerara River is the major waterway near the project site, with water quality data sourced from Environmental Impact Statements (EIS) prepared by the Guyana Environmental Protection Agency.

In 2005, samples from Supply, East Bank Demerara, showed an average turbidity of 110.1 NTUs, a pH of 4.1, and dissolved oxygen levels of 7.85 mg/L. In 2006, samples from Providence, East Bank Demerara, revealed a lower turbidity of 20.2 NTUs, a pH of 6.9, and dissolved oxygen levels of 2.01 mg/L. By 2008, six samples from Georgetown recorded an average turbidity of 9.9 NTUs, a pH of 6.4, and dissolved solids of 10.7 mg/L.

A 2006 study by the EPA assessed the Demerara watershed, identifying two distinct environments: brackish and freshwater. The brackish environment had an average pH of 6.2 due to the mixing of fresh and saline water, while the freshwater environment had a pH of 4.5. This dynamic shifts with 12-hour tidal rotations, where brackish water flows upstream during high tide and freshwater flows downstream during low tide. Nutrient analysis showed nitrate levels at 0.2 mg/L and higher ammonia concentrations in the freshwater environment (0.4 mg/L compared to 0.2 mg/L in brackish water), attributed to runoff from agriculture, municipal discharges, and mining camps. Phosphate concentrations were undetectable with the methods used, while silica levels remained consistent at 0.3 mg/L throughout the river.

2.4 GROUNDWATER QUALITY

The project site is associated with the coastal aquifers of Guyana which span an area of approximately 18,000 km². The *Upper Sands* coastal aquifer was first drilled in 1781 but was quickly abandoned due to its high salinity. In 1913, the *A-Sands* aquifer was drilled, offering better quality water and becoming the primary source of potable water for the coastal region. Turbidity readings from samples taken at various well sites between 2010 and 2014 showed an average of 11.3 NTUs, with values ranging from 0.13 to 204 NTUs. Coastal aquifers in Guyana are generally known for their visibly high turbidity.

2.5 CLIMATE

The project site climate is typical to that of the coastal plains of Guyana. The lower coastal plains experience a tropical climate characterized by warm temperatures and heavy rainfall. Along the coastal areas, rainfall occurs on approximately 200 days each year. Temperatures remain relatively consistent, with a mean daily temperature of 25.9°C and a mean annual temperature of 26.1°C. However, daily temperature variations can reach up to 6°C. Annual rainfall ranges between 1,778 mm and 2,800 mm.

The site is subject to the two wet and two dry seasons each year, driven by the annual movement of the Intertropical Convergence Zone (ITCZ). The northward shift of the ITCZ causes the primary wet season, which lasts from mid-April to late July, with peak rainfall occurring in June. The southward shift of the ITCZ brings the secondary wet season from mid-November to late January, with December experiencing the highest rainfall. The periods between these wet seasons constitute the dry seasons. Additionally, westerly-moving surface pressure systems bring rainfall to Guyana, while global weather patterns like La Niña and El Niño influence rainfall levels.

3 PROJECT DESIGN & CONSTRUCTION

The SER5 complex is designed for the oil and gas sector. It will house mainly heavy-duty parts and machinery. The complex consists of two warehouses and a 4-storey office building. A power generator block and water reservoir are also provided.

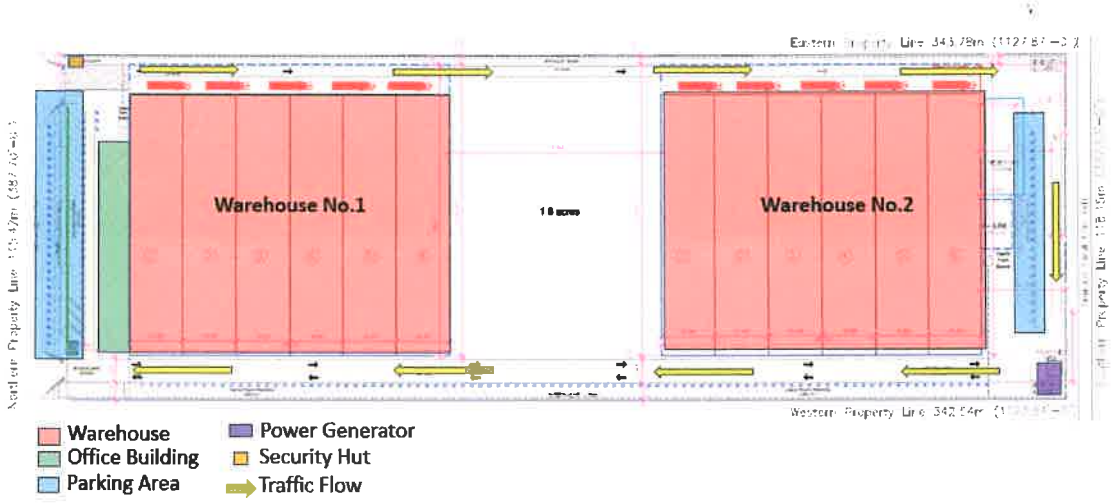

Figure 2: Design Layout

3.1 Assess Road

The access road within the compound is an 8" reinforced concrete pavement design to accommodate 40' container trucks.

3.2 Foundation Design

The office building is to be supported by a deep (piled) foundation while the warehouse will be bearing on reinforced concrete strip footings (shallow foundation).

3.3 The Building Process

The construction of a warehouse and office building on a ten-acre plot for the oil and gas sector involves a planned and thorough building process tailored to industry-specific requirements.

It begins with site preparation, including land clearing, grading, and ensuring proper drainage to accommodate heavy-duty operations. Next, a strong foundation is laid to support the steel or reinforced concrete structure, designed to meet stringent safety, durability, and environmental standards.

The building phase includes the erection of high-capacity warehouse and office building units, fire-resistant walls, and specialized flooring to handle heavy equipment. Advanced security systems, ventilation, and fire suppression systems are integrated to ensure compliance with industry regulations.

The project concludes with careful testing and certification to deliver a facility ready for safe and efficient operations.

3.4 Construction Methodology

- **Site Assessment** – A detailed site assessment will be conducted with the Project Manager, Engineer, Clerk of Work and any other relevant personnel, to ensure that a proper investigation is done, with all factors taken into consideration to minimize any possible variations to the scope of work.

- **Procurement of Materials** - Materials required to execute the first phase of the project will be sought and procured. The materials referred to being cement, sand, stone, high tension steel, binding wire, form work etc. These materials will be utilized to complete the substructural works to the building as outlined within the reference drawings provided within the document. As the works progress, other materials which may be required at each stage will be procured and delivered in a timely manner, ensuring that the work progresses smoothly, and that the deadline/project timeline is met.

- **Mobilization to Site** – All necessary tools, labour, equipment, machinery and plant required to commence and execute the work until

its completion, will be mobilized to site within three days upon the receipt of a commencement order from the Employer.

- **Layout of Building** – All necessary profiles, levels and lines, will be drawn and set as required and in accordance with the drawings received to allow for the proper demarcation of building footprint.
- **Excavation and Earthworks** – Excavation of foundation trenching for building and fence to required depth, width and thickness in accordance with drawings and Engineer's instructions. Discarding of spoils as required to an approved area offsite. Dewatering of excavated trenching.

- **Sandfill** – Sandfilling with approved fine aggregate, soaking and compacting as required to meet set thickness as per drawings and specifications. All required tests to be conducted for moisture content.

- **Reinforcement** – Preparation of rebar for foundation mat, curb wall starter bars, beams, lintels, floor slabs and columns, inclusive of main bars and stirrups as outlined within Bill of Quantities and Drawings.
- **Formwork** – Preparation of all formwork for foundation, columns, beams, slabs etc. will be done, using approved ply along with approved timber, inclusive of straps and battens, place and fixed into position, ready to concrete pour.

- **Concrete works** – Placing of blinding to top of sandfill layer in approved mix ratio as stipulated within BOQ. Placing of DPM 500 gauge with all necessary laps catered for. Cutting, placing, fixing and securing form work to top of blinding layer at width depicted within drawings, to received reinforcement matting, column steel, starter bars and concrete. Mix and place structural concrete to required strength stipulated within BOQ and prepare cube samples for testing. Pouring of concrete will be done for all columns and beams of the general building, ground floor and first floor slab, after decking pan has been successfully installed.

- **Roof** – Cutting of all required GH timber members, rafters, purlins, ridges, king posts, straps, ties, fascias etc., fixing and securing into position as outlined on drawings with appropriate ironmongery. Installation of approved zinc sheeting, flashing, gutters and downpipes.

- **Blockwork** – Supply and installation of approved HCB for curb and general external and internal walls, fence wall, in stretcher bond with mix ratio of mortar as indicated within BOQ. Works will be inclusive of rendering of both surfaces with ½" plaster of ratio as indicated within BOQ.

- **Electrical Works** -This will include the installation of lights, switches, outlets, wires, cables, alarms, breakers, panels, conduits, trunking, testing and certification of the system as required and in accordance with the drawings and standards.

- **Finishing Works** – Installation of doors, windows, frames, skirting, moulding, installation of suspended ceiling, tiling, priming and painting of all exposed concrete and wooden surfaces. Works will be scheduled/organized in a manner which ensures maximum productivity and progression of all finishing works.

- **Site Clearance and Demobilization** – General site clearance and cleaning of yard and building, to ensure facility is readily prepared for the end user to inhabit. Demobilization of all tools, machinery, plant, equipment and personnel from site.

- **Quality Inspections** - Regular quality inspections will be conducted to ensure that all work meets the highest standard. Joint inspections will be scheduled, and walkthroughs done per a monthly basis or as required by the request of the Project Manager and Client.

Figure 3: Artist Impression of the Proposed Construction.

4 Impact Assessment for the Construction and Use of a Warehouse and Office Building

The potential environmental and social impacts associated with the construction and operation of the warehouse and office building for the oil and gas sector were assessed using two key elements:

1. **magnitude of potential impact** and
2. **sensitivity of the receiving environment.**

4.1 Magnitude of Potential Impact

The magnitude of potential impacts reflects the extent and degree of change caused by the project and is evaluated based on:

- **Geographical Extent:** The impact is localized to the immediate project site and its surroundings, with observable effects on nearby industrial or urban areas.
- **Intensity:** Potential emissions, discharges, and noise during construction and operation are evaluated against local and international standards, focusing on their toxicity, persistence, and compliance.
- **Duration:** Impacts may be short-term (during construction) or long-term (operational phase), depending on the activity. Timing and periodicity, such as peak operational periods, are also considered.
- **Likelihood:** The likelihood of impacts varies based on activities, from low (routine operations) to high (potential accidents or equipment failures).

4.2 Sensitivity of the Receiving Environment

The sensitivity of the environment and human receptors to the project depends on the characteristics of the affected areas and populations:

- **Ecological Environment:** The project is located in an industrial zone with low-sensitivity environments. However, any nearby water bodies, protected lands, or critical habitats will require careful management to avoid significant impact.
- **Flora/Fauna:** While the construction site may have some resilient species, care will be taken to ensure no protected or endangered species are affected. Landscaping and green zones may also mitigate impacts.

- **Human Receptors:** Noise, vibrations, and air quality changes could temporarily affect nearby workers or residents during construction.

  However, the area is likely to be dominated by transient or industrial populations with a lower sensitivity compared to residential or school zones.

By carefully managing these factors, the construction and operation of the Project will minimize potential negative impacts while supporting the needs of the oil and gas sector.

CRITERIA FOR RATING IMPACTS

Cumulative Impacts Assessment

VEC	Magnitude of Effect	Sensitivity of Receptor/ Source	Cumulative Impact	Mitigation Measures	Residual Impacts
Ambient air quality paramet ers (PM 2.5, PM 10, NO2, CO)	Moderate	High	Health and environmental hazard, CO is a precursor to particulate matter; respiratory disease	Fuel filters, dust suppression measures, covering stockpile with tarpaulin, covering trucks, reduce vehicle and machine idling	Moderate
Noise Emissions	Moderate	High	Occupational health hazard; hearing impairment over time; creates nuisance noise in the ambient environment away from source.	Equipe heavy equipment workers with ear muffs; limit activities to daytime hours; control traffic; minimize idling machines and equipment	Moderate
Water Quality	Moderate	High	Effluent discharge can cause water degradation over time; discharge into ecologically sensitive environments may cause ecosystem and livelihood disruptions	Monitor effluent discharge parameters; utilize oil separators; avoid waste chemicals from entering into effluent drains	Moderate
Oil Spills	Low	Medium	Oil/fuel spills into soil and waterways can result in the destruction of aquatic ecosystems, killing fish, plants,	Use secondary containment areas; develop a safety plan and have spill kits on hand to clean up.	Negligible

			and other marine life.		

4.3 OIL & CHEMICAL SPILL MANAGEMENT & MITIGATION MEASURES

- Develop and implement a needed spill contingency plan.
- Maintain a written list of all known hazardous chemicals and materials using an identifier that can be traced to the Safety Data Sheet (SDS).
- Implement measures to prevent spills from occurring.
- Store all fuel and chemicals in sealed, leak-proof containers.
- Ensure all equipment is free from damage and wear and tear.
- Routinely inspect and service all storage tanks, valves, joints, hoses, seals, vehicles, and other equipment where spills and leakage may occur.
- Maintain an impervious secondary containment bond which would have at least 110% containment capacity around all fuel and chemical storage tanks to a temporary holding area in the event of a spill.
- Install drip trays or similar apparatus to collect small drips of fuel or other chemicals. "
- Inspect daily all storage tanks and equipment that house materials with potential for spills and leakage.
- Monitor, record, and report spills to the Guyana Environmental Protection
  Agency (EPA).

- Monitor and record chemical incidents.
- Report chemical monitoring data as required to the Guyana EPA.

4.4 WASTE MANAGEMENT & MITIGATION MEASURES

- Segregate all waste in their respective holding containers and ensure waste containers are labeled appropriately. Container labels should be clear and visible/facing the user.
- Ensure waste collection containers are placed at strategic locations and where the waste in generated. Puran Brothers Inc. will dispose of nonhazardous and non-chemical waste.
- Ensure all hazardous waste is secured prior to their transport or final disposal
- Ensure holding containers for hazardous waste are designed for the type of hazardous waste.
- Ensure hazardous waste is disposed of appropriately and that only licensed/certified, or otherwise approved waste management and disposal companies can collect and dispose of hazardous.

4.5 EMERGENCY PREPAREDNESS & RESPONSE PLAN

Emergency Preparedness & Response Plan (EPRP)

SER 5 Inc. has prepared an Emergency Preparedness & Response Plan (EPRP) that provides guidelines for preventing and responding to emergency situations, aiming to minimize injuries, loss of life, and environmental impacts. Its main objective is to prepare employees to handle emergencies effectively.

Functions of the EPRP:

- Define roles, responsibilities, authorities, and procedures for managing emergencies.
- Outline systems and protocols for medical, environmental, fire, evacuation, and spill emergencies.
- Specify training requirements for emergency response personnel.
- Detail procedures for testing emergency response systems.

Key Elements of the EPRP:

- Train employees in emergency procedures and post these procedures at strategic locations.
- Store flammable chemicals securely in designated containers and cabinets.
- Install and maintain emergency alert and firefighting equipment (e.g., alarms, smoke detectors, fire extinguishers).
- Post clear usage instructions near emergency equipment.
- Display emergency contact information prominently throughout the facility.
- Establish and monitor safety objectives and incident response protocols.
- Conduct regular emergency drills for scenarios such as medical, fire, spill, and environmental incidents.
- Comply with all emergency preparedness permit requirements (e.g., fire extinguishers, sand buckets, sprinklers).
- Periodically test emergency systems (e.g., alert mechanisms, communication channels).
- Train employees in firefighting equipment and procedures.

- Hold routine and ad-hoc safety meetings, especially after incidents or near misses.
- Implement systems for reporting incidents, hazards, and near misses.

By adhering to the EPRP, SER 5 Inc. ensures readiness and resilience in emergencies