



**Environmental
Protection
Agency**

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Environmental Permit (Renewed and Varied)

Issued under the Environmental Protection Act, Cap. 20:05, Laws of Guyana, the Environmental Protection (Amendment) Act, 2005, and the Environmental Protection (Authorisations) Regulations, 2000.

Reference No.:	20210914- GPLWR
Fee:	Medium (C2) i.e. US\$800 per year
Fee Paid:	US\$4000 for Five (5) year (March 2023- February 2028)
Addressee:	Guyana Power and Light Inc. Area "E" Plantation New Friendship, Wakenaam, Essequibo River
Activity:	Operation of a Power Generation Facility inclusive of Five (5) Caterpillar Diesel Engines, a Solar Power Plant and a Battery System

Guyana Power and Light Inc. hereinafter referred to as the "Permit Holder", is hereby authorised in accordance with the Environmental Protection Act, Cap. 20:05, the Environmental Protection (Amendment) Act, 2005, and the Environmental Protection (Authorisations) Regulations, 2000, to operate the Power Generation Facility inclusive of Five (5) Caterpillar Diesel Engines, a Solar Power Plant and a Battery System) at Area "E" Plantation New Friendship, Wakenaam, Essequibo River, hereinafter referred to as the "Project", in a manner indicated in the Application for Renewal and Variance of Environmental Authorisation submitted on February 02, 2023 and subject to the terms and conditions set forth herein under the Environmental Protection Act, Cap. 20:05, existing and/or forthcoming regulations, guidelines, best practices, and standards relevant to this project.

This is a Renewal & Variance of Environmental Permit Ref. #: 20210914- GPLWR issued to Guyana Power & Light inc (GPL)- Wakenaam for the period March 2023 to February 2028. This Environmental Permit is hereby varied to include a solar power plant and a battery system.

The Permit Holder, His Servants, Agents, and/or Sub-Contractor(s) shall comply with the following Terms and Conditions for Operation:

1.0 OPERATION

- 1.1 Make an application to the Agency to vary this Permit in instances where it becomes necessary to:
 - i. change the construction, operation, structure, or layout of the facility and all

- ii. change equipment, machine, apparatus, mechanism, system or technology serving the facility;
 - iii. change the position and design of any outlet at the point or points of discharge of effluents; or
 - iv. effect any other change outlined in Regulation 20(3) of the Environmental Protection (Authorisations) Regulations.
- 1.2 Emergency spill cleanup kits shall be installed by **September 20, 2023** at the Project for response to potential spills. Kits should contain absorbent materials, drain seals, and other appropriate tools for clean-up.
- 1.3 Fire prevention and control equipment shall be maintained in accordance with Guyana Fire Service Approval.
- 1.4 All employees and third parties under the Project's direction shall be made aware of the conditions of the Environmental Authorisation
- 1.5 The Permit Holder shall provide training on good environmental practices. An annual training schedule shall be kept and submitted to the Agency upon request.
- 1.6 Adhere to the requirements of the **Occupational Safety and Health Act, Cap. 99:01, Laws of Guyana.**

2.0 POWER GENERATION

- 2.1 The most recent copy of the inspection and maintenance report of the Caterpillar Diesel Engine shall be submitted to the EPA by **June 30, 2023.**
- 2.2 Submit an Environmental Assessment and Management Plan (EAMP) for the Project by **December 31, 2023.** The EAMP shall include an Air and Noise Monitoring Plan, Water Quality Monitoring Plan, and Emergency Spill Response Plan (ESRP) which shall include, but not be limited to local emergency response authorities, notification of national and local authorities, coordination of clean-up activities, and assessment of health hazards to human and the environment.
- 2.3 The following records shall be maintained for all power generation engines identified at the Project:
- a. Megawatt thermal input
 - b. Calorific value
 - c. Fuel-oil consumption
- 2.4 The records outlined in **conditions 2.3** shall be submitted to the EPA as a component of the **Annual Report.**

3.0 AIR QUALITY MANAGEMENT

- 3.1 Adhere to the provisions of the **Environmental Protection (Air Quality) Regulations, 2000.**
- 3.2 Conduct visual monitoring to determine the opacity of the emissions being released and immediately respond to visible (opaque, grey to black) emissions that exceed six (6) minutes. Record the date and time of any such incidents and actions taken to resolve such air pollution episodes. All records shall be available to the Agency upon request.
- 3.3 Monitor ambient air quality at the boundary of the property to assess compliance with the requisite standards below:

No.	Air Pollutant	Averaging Time	Maximum Permissible Level	Type of Monitoring
1.	Carbon Monoxide	1 h	35ppm	Ambient
2.	Nitrogen Dioxide	1 h	200µg/m ³	Ambient
3.	Sulfur Dioxide	24 h	20 µg/m ³	Ambient
4.	PM _{2.5}	24 h	25 µg/m ³	Ambient
5.	PM ₁₀	24h	50µg/m ³	Ambient

- 3.4 Monitoring shall be conducted during normal operations by trained personnel utilizing calibrated equipment. Results of all monitoring exercises should be maintained and submitted in the Annual Report.
- 3.5 Conduct stack emission testing of all engines older than five (5) years and the incinerator to determine compliance with the requisite standards outlined below:

No.	Air Pollutant	Maximum Permissible Level	Type of Monitoring
1.	Carbon Monoxide	1000mg/m ³	Stack
2.	Oxides of Nitrogen	350mg/m ³	Stack
3.	Sulphuric Trioxide	100mg/m ³	Stack
4.	Particulate Matter	100mg/m ³	Stack

All monitoring shall be conducted on a regular basis (**determined by the EAMP/Permit Holder and approved by the EPA**) by trained personnel using calibrated equipment. Records of all monitoring exercises shall be maintained and submitted as a component of the Annual Report.

- 3.6 The calibration certificates shall be submitted to the EPA as a component of the project's **Annual Report.**

- 3.7 Calculate annual emissions of carbon dioxide and carbon dioxide equivalent from the operation of the engines. The recommended formula for the calculation of annual emissions of carbon dioxide is:

$$E = A \times EF \times (1-ER/100)$$

Where:

- E = emissions;
- A = activity rate;
- EF = emission factor, and
- ER = overall emission reduction efficiency (%)

The Developer shall determine a methodology for the calculation of carbon dioxide equivalent which shall be submitted to the EPA for approval.

The results of all calculations should be submitted in the Annual Report.

4.0 NOISE MANAGEMENT

- 4.1 Adhere to the provisions of the **Environmental Protection (Noise Management) Regulations, 2000.**
- 4.2 All significant noise-producing equipment, such as generators, shall be equipped with silencers or mufflers and/or be enclosed in suitable acoustic enclosures where necessary, to reduce noise levels impacting the surrounding environment to achieve compliance with Guyana National Bureau of Standards (GNBS) requirement.
- 4.3 Noise emissions from the operation shall be monitored at the property boundary to determine compliance with the Guyana National Bureau of Standards (GNBS) Guidelines for Noise Emission into the Environment.

Industrial Limits: 100 dB (Day-time (06:00 h -18:00 h))

80 dB (Night- time (18:00 h - 06:00 h))

The Permit Holder shall determine a Noise Quality Monitoring Plan and submit this plan along with noise quality test results to the Agency as part of the EAMP requested in **Permit Condition 2.2**. Monitoring shall be conducted by trained personnel using calibrated Type 2 Sound Level Meters.

5.0 SOLAR PHOTOVOLTAIC PANEL

- 5.1 Photovoltaic system panels shall be installed in accordance with the manufacturer's instructions.
- 5.2 Operation and maintenance schedules shall be followed for the photovoltaic systems according to the manufacturer's instructions.
- 5.3 Manufacturer's specifications for the photovoltaic (PV) modules, mounting systems, combiner boxes (if used), inverters, and disconnects shall be provided.



6.0 BATTERY SYSTEM

- 6.1 New and used lithium batteries shall be securely stored, away from rain and any other water sources.
- 6.2 The base of the storage/collection area shall be free of cracks and gaps, and impervious to leaks or spills.

7.0 FUEL HANDLING AND STORAGE

- 7.1 Adopt and comply with the National SOP “Guidance for the Design, Construction, Modification, and Maintenance of Petrol Filling Stations” and any forthcoming code of practice/guidelines pertaining to the operation of fuel storage.
- 7.2 Fuel shall at all times be stored above-ground and away from ignition sources. ‘**No Smoking**’ signs shall be posted where fuel is handled or stored.
- 7.3 Existing secondary containment around the fuel tanks shall be inspected monthly for cracks and breakage to ensure they are liquid-tight to withstand hydrostatic pressure of any contained liquid when full.
- 7.4 The entire base of the secondary containment of the fuel storage facility shall be impervious material by **September 30, 2023**.
- 7.5 All secondary containment shall remain sealed and all piping must enter or exit the containment **over** the wall by **September 30, 2023**. Secondary containment shall provide total containment, and no part of the tank infrastructure (e.g., dispenser, filling hoses, and valves) shall protrude outside the containment.
- 7.6 Discharge from the secondary containment is **Strictly Prohibited**.
- 7.7 Wastewater from the secondary containment shall be channeled to the oil-water separator for treatment.
- 7.8 Fuel storage tanks shall be visually inspected to verify their integrity.
- 7.9 Protection measures for fuel storage tanks such as painting and coating shall be maintained to minimise corrosion of fuel tanks.
- 7.10 Overfill protection shall be installed and maintained on all fuel tanks. This may include an automatic shut-off device or an audible or visible overfill alarm.

8.0 STORAGE OF CHEMICALS (LUBRICANTS AND GREASE)

- 8.1 Chemical Storage Areas shall be clearly labeled with “Danger, Chemical Storage Area- Authorized Personnel Only” where applicable as a spill control measure

- 8.2 Flammable materials shall be stored away from ignition sources. ‘**No Smoking**’ signs should be posted where these materials are handled and stored.
- 8.3 Secondary containment (bund area) shall be established and maintained around storage areas of all liquid chemicals. The secondary containment (bund area) shall possess 110% of the volume of liquid stored within the largest storage container and walls shall be constructed of impermeable materials.
- 8.4 Chemicals shall be stored in accordance with the manufacturer’s directions or Safety Data Sheet (SDS) instructions.
- 8.5 Safety Data Sheets shall be mounted on site by **September 30, 2023** to be readily available and easily accessible at all times at the Project.
- 8.6 Chemicals shall be segregated and stored in accordance with their hazard characteristics compatibility e.g., toxic, flammable, corrosive, acid, etc.
- 8.7 Chemical containers shall be clearly labelled in accordance with the Globally Harmonized System of Classification and Labelling. The following must be evident:
- a. Signal Word;
 - b. GHS Symbols- (Hazard Pictograms);
 - c. Manufacturer Information;
 - d. Precautionary Statements/ First Aid;
 - e. Hazard Statements; and
 - f. Product Name or Identifiers.
- 8.8 Storage containers shall be inspected for signs of leakage or corrosion and damaged containers **must be** replaced **immediately**. Inspection reports must be maintained and signed by the appropriately qualified inspecting officer and his/her supervisor.
- 8.9 Chemicals **shall not** be stored on damaged or inadequately secured racking or on damaged pallets thereby minimizing the risk of spills.
- 8.10 A register of the quantities of chemicals stored at the Project shall be established by **September 20, 2023**. Registered information shall be maintained on-site and made available to the EPA upon request.
- 8.11 All employees involved in the management of chemicals shall be trained on Hazardous Material Communication and Emergency Preparedness Response. Training reports shall be maintained on-site and made available to the EPA upon request.

9.0 WATER QUALITY MANAGEMENT

- 9.1 Adhere to the provisions of the **Environmental Protection (Water Quality) Regulations, 2000.**
- 9.2 The oil- water separator at the Project shall be maintained and the GPS coordinate for this separator and its final discharge point shall be submitted to the EPA **by December 31, 2023.**
- 9.3 All effluent from secondary containments at the Project shall flow through the oil-water separator and should be in accordance with the Guyana National Bureau of Standards (GNBS) *Interim Guidelines for Industrial Effluent Discharge into the Environment*. The following allowable limits should not be exceeded:

Parameter	Maximum Concentration	Units
Oil and Grease	Total Petroleum Hydrocarbon (TPH) < 40	mg/L
Thermal effluent	<40	°C

- 9.4 The water quality monitoring plan shall be determined **by the EAMP/Permit Holder and approved by the EPA.** Water quality monitoring shall be conducted by trained personnel using calibrated equipment. Records of all monitoring exercises shall be maintained and submitted as a component of the Annual Report.
- 9.5 Fuel/lubricants including waste oils shall not be drained from equipment onto the ground or into waterways.
- 9.6 Interceptor drains shall be maintained on site, they must be adequately sloped to collect storm flow.

10.0 HAZARDOUS WASTES (WASTE OIL AND SLUDGE) MANAGEMENT

- 10.1 Adhere to the provisions of the **Environmental Protection (Hazardous Waste Management) Regulations 2000.**
- 10.2 Hazardous wastes such as; waste oils, and waste chemical agents such as gypsum flue gas desulfurization generated by the power plant operation, shall be treated and disposed of by a certified Hazardous Waste Treatment and Disposal Company.
- 10.3 Hazardous waste shall be stored in sealed metal containers, appropriate for the waste stream.
- 10.4 Hazardous waste containers shall be labelled with the following:
- The words **“Waste Oil or “Used oil” and “Sludge”**
 - Beginning accumulation date

- 10.5 Hazardous waste shall be stored in a covered, bunded area by **September 30, 2023**. This area shall include the following:
- Signage- **"Hazardous Waste Storage Area"**
 - Low traffic
 - No floor drains
 - Secondary containment capable of containing 110% of the largest volume therein.
- 10.6 Hazardous waste shall be treated and/or disposed of by a Hazardous Waste Disposal Facility that is authorized by the EPA. All hazardous waste treatment and disposal shall be documented on a Waste Manifest Form which shall be submitted to the EPA upon request. The manifest must contain the following:
- The name and address of the generator;
 - The name, description, and hazard class of the waste;
 - The number and type of containers;
 - The quantity of waste being transported and collected; and
 - The name and address of the facility designated to receive the waste.
- 10.7 An incident spill report shall document **EVERY** occurrence of spills during the collection and/or transportation of hazardous waste. A copy of the spill report shall be submitted to the Agency **within twenty-four (24) hours of the incident**.
- 10.8 A Notification and Clean-up Plan for the Project shall be a component of the EAMP. The plan should include, but not be limited to, the location of all materials stored and a notification and clean-up plan for each proposed site of operation in the event of a spill.
- 10.9 Damaged Photovoltaics Panels and Battery Energy Storage System (BESS) shall be returned to the Guyana Energy Agency (GEA) for safe storage, treatment and disposal.
- 11.0 COMPLIANCE MONITORING AND REPORTING**
- 11.1 Notify the Environmental Protection Agency **within one (1) hour** of the occurrence of any environmental emergencies (e.g. oil spills, hazardous materials/wastes spills, sudden onset disaster, natural, technological, or human-induced factors that cause or threaten to cause severe environmental damage as well as harm to human health or livelihood).
- 11.2 Monitor the implementation of the conditions of this Permit, insofar as they involve adherence by your employees and all third parties under your direction.
- 11.3 Notify the Agency in writing of any change of name or ownership of the Permit Holder's facility within **thirty (30) days** after the change occurs.
- 11.4 Notify the Agency **within twenty-one (21) days** in event of death, bankruptcy, liquidation or receivership of the Permit Holder or if the Company becomes a party

to an amalgamation.

- 11.5 Maintain and submit to the Agency records of the type, composition and quantity of contaminant released (i.e., any solid, liquid, gas, odor, sound, vibration, radiation, heat or combination of any of them).
- 11.6 Submit **Annual Reports** to the EPA on your compliance with this Environmental Permit on or before **March 31, each year**.
- 11.7 Report to the Agency any non-compliance(s) with the Environmental Permit:
 - i. Within **twenty-four (24) hours** of the time the Holder of the Environmental Authorisation for Operation becomes aware of the non-compliance outlining the anticipated manner in which human health or the environment may be impacted.
 - ii. Within **seventy-two (72) hours** of the time the Holder of the Environmental Permit becomes aware of the non-compliance, submit to the Agency a written report containing a description of the non-compliance, its cause, the period of non-compliance including exact dates and time and the anticipated time it is expected to continue if the non-compliance(s) has not been corrected.
- 11.8 Comply with any lawful directions given by the EPA from time-to-time in furtherance of the implementation of any international or other obligation for the environmental protection of Guyana.
- 11.9 It is the responsibility of the Permit Holder to ensure the permitted activity and premises are secured and that all practicable steps necessary to prevent fires, explosions, leaks or suspected leaks and spills at the permitted premises are taken.
- 12.0 INSTITUTIONAL AUTHORITY/ LIABILITIES**
 - 12.1 The Permit Holder shall be liable for any material environmental harm caused by polluting the environment, pursuant to s. 39 of the Environmental Protection Act, Cap. 20:05, Laws of Guyana.
 - 12.2 The Permit Holder shall be liable for any serious environmental harm caused by polluting the environment, pursuant to s. 39 of the Environmental Protection Act, Cap. 20:05, Laws of Guyana.
 - 12.3 The Permit Holder shall be liable for any activity that causes or is likely to cause pollution of the environment unless all reasonable and practicable measures are taken to prevent or minimize any resulting adverse effect, pursuant to s. 19 of the Environmental Protection Act, Cap. 20:05, Laws of Guyana.
 - 12.4 The Permit Holder shall be liable for discharging, causing or permitting the entry

into the environment, of any contaminant in any amount, concentration or level excess of that prescribed by the regulations or stipulated by this Environmental Permit, pursuant to s. 19 of the Environmental Protection Act, Cap. 20:05, Laws of Guyana.

- 12.5 The Permit Holder shall be liable to compensate any person who suffers any loss or damage as a result of contravening conditions 10.3 and 10.4 of this Environmental Permit, pursuant to s. 19 of the Environmental Protection Act, Cap. 20:05, Laws of Guyana.
- 12.6 The Permit Holder shall not be indemnified by the Agency for any activity that causes or is likely to cause pollution to the environment, resulting from adverse effects through the discharge, any contaminant in any amount, concentration, ultra hazardous substances, chemicals or otherwise, and shall be rendered liable to prosecution and to penalties prescribed under the Environmental Protection Act and Regulations.
- 12.7 The Permit Holder shall be liable of any gross negligence or willful misconduct caused by the Permit Holder, his Servants and/or Agents, to the environment, biodiversity, protected species and natural habitat with respect to any release, discharge, or spill, of contaminant fluids, oil or lubricants.
- 12.8 Should the Permit Holder contravene or be likely to contravene any condition of this Permit, the Agency (EPA) may serve on him an Enforcement Notice in accordance with Section 26 of the Environmental Protection Act, Cap. 20:05, Laws of Guyana.
- 12.9 Where it appears to the Agency that the Permit Holder is engaged in any activity that may pose a serious threat to natural resources or the environment, or a risk of serious pollution of the environment or any damage to public health, the EPA may issue to the Permit Holder a Prohibition Notice, which may order him to immediately cease the offending activity, in accordance with Section 27 of the Environmental Protection Act, Cap. 20:05, Laws of Guyana.
- 12.10 The EPA reserves the right to conduct regular inspections of the Permit Holder's activities as part of its monitoring and enforcement requirements under the Environmental Protection Act, Cap 20:05, and the Environmental Protection (Amendment) Act, 2005, and Environmental Protection (Authorisations) Regulations, 2000.
- 12.11 The Permit Holder, His Servants and/or Agents shall at all times, allow entry to the permitted facility to any Officer designated by the EPA for the purposes of conducting inspections or any other legitimate business of the Agency. Pursuant to Section 38 of the Environmental Protection Act, Cap. 20:05, Laws of Guyana, it is an offence to assault, obstruct or hinder an authorised person in the execution of his/her duty under the said Act or its Regulations and the Permit Holder shall be liable to penalties prescribed under paragraph (c) of the Fifth Schedule for doing so.

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Issued under of the Environmental Protection Act, Cap 20:05, Laws of Guyana, the Environmental Protection (Amendment) Act, 2005, and the Environmental Protection (Authorisations) Regulations, 2000.

- 12.12 The EPA has the right to modify, cancel or suspend this Permit for breach of any of the terms and conditions contained herein.
- 12.13 **This Environmental Permit is not the final consent; all relevant Permissions should be obtained from other regulatory bodies for continued operation.**
- 12.14 This Environmental Permit is effective for the period stipulated herein; **March 2023 to February 2028.**
- 12.15 This Environmental Permit shall remain valid until **February 28, 2028**, unless otherwise suspended, cancelled, modified, or varied, in accordance with the provisions of this Permit or the Environmental Protection Act, Cap. 20:05, Laws of
- 12.16 Guyana, Environmental Protection (Amendment) Act, 2005, and the Environmental Protection (Authorisations) Regulations, 2000.
- 12.17 This Permit must be renewed by submitting a completed Renewal Application Form for Environmental Authorisation to the Agency at least six months before this Permit expires, that is, no later than **October 31, 2027.**
- 12.18 Any late submission of renewal application (s) after the specified date as stated above, may require the Permit Holder to pay, in addition to the renewal fee, a late penalty fee (accruing at the time such obligation was first owed for renewal) at a rate of **two thousand dollars (GY\$2000.00) per day for every business day late, until such renewal application is submitted to the Agency**, without prejudice to any other rights of the Permit Holder in connection therewith.
- 12.19 Failure to comply with the requirements of this Permit or with applicable laws and regulations, whether existing or forthcoming, shall render the Permit Holder liable to prosecution and penalties, inclusive of civil penalties, injunctive relief, and imprisonment, as prescribed under the Environmental Protection Act, Cap. 20:05, Laws of Guyana, the Environmental Protection Regulations, and other applicable Laws of Guyana.

Signed by  on behalf of the Environmental Protection Agency.

Kemraj Parsram
Executive Director

Date

2023-03-17



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Issued under of the Environmental Protection Act, Cap 20:05, Laws of Guyana, the Environmental Protection (Amendment) Act, 2005, and the Environmental Protection (Authorisations) Regulations, 2000.

I hereby accept the above terms and conditions upon which this Environmental Permit is granted and agree to abide by the Environmental Protection Act, Cap. 20:05, the Environmental Protection (Amendment) Act, 2005, and the Environmental Protection (Authorisations) Regulations, 2000, and any existing or forthcoming regulations, guidelines, best practices, and standards made under this Act.

NAME:	Arifet Hassan
DATE:	2023-04-04
SIGNATURE:	Arifet Hassan
DESIGNATION:	Environmental officer (Ag)