



Environmental Protection Agency

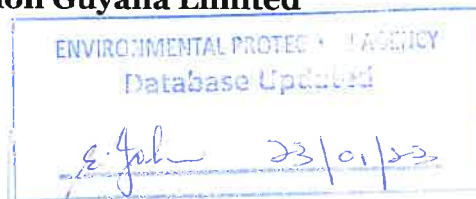
Ganges Street, Sophia,
Georgetown, GUYANA
Tel.: (592)-225-5467-9
Fax: (592)- 225-5481
Email: epa@epaguyana.org
Website:
<http://www.epaguyana.org>

Environmental Permit

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.: | 20210528-NGPLE |
| Fees: | Extra Large (C1) – USD \$3100 per year |
| Fees Paid: | USD \$15,500 (i.e. 5 years: November 25, 2022 – November 24, 2027) |

Addressee(s): **Mr. Alistair Routledge**
President
Esso Exploration and Production Guyana Limited
86 Duke Street
Kingston
Georgetown
Guyana.



Activity: **Gas to Energy Project – Development of Natural Gas Transport Pipeline, Materials Offloading Facility and Natural Gas Liquids Plant, Offshore Guyana and Region 3, Onshore Guyana.**

Esso Exploration and Production Guyana Limited (EEPGL), hereinafter referred to as the "Permit Holder", is hereby authorised by the Environmental Protection Agency (EPA), hereinafter referred to as the "Agency", in accordance with the Environmental Protection Act, Cap 20:05, Laws of Guyana and the Environmental Protection (Amendment) Act, 2005, and its accompanying Regulations, to undertake the Gas to Energy Project, hereinafter referred to as the "Project", which includes but is not limited to, installation and operation of riser tie-ins at two Floating Production, Storage, and Offloading (FPSO) vessels for supply of gas, subsea equipment, offshore pipeline and onshore pipeline; construction and operations of a materials offloading facility, heavy haul road and Natural Gas Liquids (NGL) Plant, as well as the development of laydown areas / temporary work spaces,

Handwritten signature and initials.

Environmental Permit - Ref. No.: 20210528-NGPLE

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

as well as the use of shorebase facilities and marine/aviation services in support of these activities, in the manner indicated in the Application submitted on June 24, 2021, the National Oil Spill Contingency Plan, the Environmental Impact Assessment dated November 17, 2022, and the Environmental and Socioeconomic Management Plan dated November 17, 2022, which includes the Revised Oil Spill Response Plan dated November 17, 2022, and Wildlife Response Plan, all of which may be updated from time to time, and are subject to the terms and conditions set forth herein and any existing or forthcoming regulations, best practices, approvals, directives, guidelines and standards relevant to this Project.

I. GENERAL – Pipeline and Natural Gas Liquids Plant (NGL)

1. The Permit Holder shall comply with all applicable laws, regulations and guidelines, including but not limited to the following:
 - a. Environmental Protection Act, Cap 20:05, Laws of Guyana and associated Regulations;
 - b. Petroleum Exploration and Production Act, 1986;
 - c. Petroleum Exploration and Production (Amendment) Act, 1992;
 - d. Drainage and Irrigation Act, Cap 64:03, Laws of Guyana and associated Regulations;
 - e. Maritime Zone Act, Cap 63:01, Laws of Guyana and associated Regulations;
 - f. Sea Defence Act, Cap 64:02, Laws of Guyana and associated Regulations;
 - g. Pesticides and Toxic Chemicals Act, No. 13 of 2000;
 - h. Pesticides and Toxic Chemicals Regulations, No. 8 of 2004 and associated Regulations;
 - i. Pesticides and Toxic Chemicals (Amendment) Regulations, No.8 of 2007;
 - j. Laws and regulations enacted by Guyana to implement the National Policy Framework; and
 - k. International Conventions and Protocols.
2. The Permit Holder shall comply with any directions which the Agency gives from time to time, including but not limited to, those directions given in furtherance of the implementation of any international or other obligation under any treaty or International Law related to the environmental protection of Guyana and surrounding regions likely to be affected (including neighbouring South American Coast and Caribbean Sea).
3. The Permit Holder shall ensure that onshore and offshore contractors contracted by the Permit Holder are duly authorised by the Agency to conduct any activities related to the purposes for which this Permit is granted.

Environmental Permit - Ref. No.: 20210528-NGPLE

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

4. The Permit Holder shall update the environmental and social baseline within the Area of Influence (AOI) of the Project. The updated environmental baseline shall include but not be limited to the Ecosystem Services and Dependencies; and Air Quality Assessment and shall be prepared by an independent consultant, approved by the Agency.
 - a. Within **sixty (60) calendar days** of signing this Permit, the Permit Holder shall submit to the Agency for approval, a Terms of Reference (TOR) for the preparation of the updated environmental and social baseline; and within **one (1) year** of the date of the Agency's approval of the TORs, the Permit Holder shall submit a report of the updated environmental and social baseline.
5. The Permit Holder shall utilise the best available and most appropriate techniques and technologies during the conduct of its operations.
6. The Permit Holder shall establish and maintain Standard Operation Procedures (SOPs) for safe operations of the pipeline and NGL Plant. These SOPs must address all aspects of the operation including but not limited to natural gas transport/transfer and separation.
 - a. The Permit Holder must ensure that all employees associated with the operations of the pipeline and NGL Plant are regularly trained on the SOPs required in Condition 6 above.
7. The Permit Holder shall conduct integrity tests on the pipeline and NGL Plant prior to the commencement of operations and at regular intervals in keeping with good international industry practice (GIIP) during the lifetime of the Project. All tests shall be documented, which documentation shall include but not be limited to a clear indication of the scope and objective of each test, type of test conducted, the test methodology and test results. The information shall be made available to the Agency upon request.
8. The Permit Holder shall develop and implement a project specific Stakeholder Engagement Plan (SEP) that includes measures for continued engagement with communities aimed at increasing awareness of the nature of the Project, and the measures in place to prevent, avoid, and mitigate environmental and social impacts and emergencies/accidents.
 - a. The Permit Holder shall submit the SEP to the Agency prior the commencement of any Project activity.
 - b. The Permit Holder shall commence engagement in accordance with SEP prior to the commencement of construction
 - c. The Permit Holder shall monitor the frequency of engagement with stakeholders, including fisherfolk, communities within the direct AOI,

- vulnerable groups, Indigenous populations, users of the water bodies, and farmers.
- d. The Permit holder shall submit a summary report of the engagement with stakeholders as a component of the Annual Report. The report must include but not be limited to the date of each stakeholder engagement, the location, the objective of the engagement, and key comments and concerns raised. The Agency reserves the right to request any additional details of stakeholder engagements.
9. The Permit Holder shall implement and maintain a transparent, accessible, and consistent Community Grievance Mechanism (CGM), prior to the onset of Project activities. The Permit Holder shall ensure that the CGM is in keeping with the World Bank's Approach to Grievances Redress in Projects and take measures to promote the CGM, and ensure that it is widely publicized and understood by the public.
- a. The Permit Holder shall track the number and type of grievances received and resolved by the CGM, and adjust the CGM and other management measures on an ongoing basis, as appropriate, based on feedback received.
- b. The Permit Holder shall prominently display the contact information for the CGM throughout the life of all phases of the project.
10. The Permit Holder shall restore all roads to their pre-construction condition following the completion of each contractor's component of the construction process (potentially including retention and handover of temporary bridge spans to the Government of Guyana, where appropriate).
11. The Permit Holder shall adopt and implement a Chance Find Procedure that outlines actions to be taken in the event of a potential chance find of heritage or cultural resources. The Procedure shall be submitted to the EPA upon request.
12. Should any potential cultural heritage resources be found, the Permit Holder shall consult with the National Trust of Guyana (NTG) prior to disturbing such resources, and comply with any directives given.
13. The Permit Holder shall develop and implement a Road Safety Management Procedure (RSMP), prior to the commencement of construction activities, to mitigate risks of vehicular accidents associated with Project-related ground transportation activities. The procedure must be submitted to the EPA (and all other relevant authorities), prior to the commencement of construction activities, and include, at a minimum, the following components:
- a. Definition of typical, primary travel routes for ground transportation in the Georgetown area;

Environmental Permit - Ref. No.: 20210528-NGPLE

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

- b. development of an onshore logistics/journey management plan to reduce potential conflicts with local road traffic when transporting goods to/from onshore support facilities;
 - c. definition of required driver training for Project-dedicated drivers, including (but not limited to) defensive driving, loading/unloading procedures, and safe transport of passengers, as applicable;
 - d. designation and enforcement of speed limits through speed governors, global positioning system, or other monitoring systems for Project-dedicated vehicles;
 - e. avoidance of deliveries during typical peak-traffic hours as well as scheduled openings of the Demerara Harbour Bridge, to the extent reasonably practicable;
 - f. monitoring and management of driver fatigue; and
 - g. definition of vehicle inspection and maintenance protocols that include all applicable safety equipment for Project-dedicated vehicles; and Community outreach to communicate information relating to major delivery events or periods.
14. The Permit Holder shall implement a community safety program for potentially impacted schools and neighborhoods to increase awareness and minimize the potential for community impacts due to Project vehicle movements.
- a. The Permit Holder shall submit the plan for the community safety program to the Agency prior to the initiation of onshore construction activities.
15. The Permit Holder shall ensure that the pipeline and NGL Plant construction and installation are guided by geotechnical studies.
16. At least **six (6) months** prior to Project start-up the Permit Holder shall submit for the Agency's review a detailed Flood Management Plan that provides contingencies or mitigations in a flooding event. For the purposes of this Permit, start-up shall be defined as the activity that occurs at the end of commissioning where production operations are initiated for the first time.

Construction Management

17. The Permit Holder shall ensure that appropriate soil erosion and sediment controls are employed and maintained in effective operating conditions during construction, and all exposed soil and other fills, as well as any work below the ordinary high-water mark or high tide line, are permanently stabilized at the earliest practicable date.
18. The Permit Holder shall conduct routine (daily at a minimum) inspections of erosion, and sedimentation control measures while bare soils are exposed, and take immediate action(s) to rectify and mitigate any breaches.

19. The removal of mangroves is strictly prohibited without prior approval from the Agency. The Permit Holder must seek approval from the Agency at least seven calendar (7) days prior to the planned commencement of mangrove removal.
20. The Permit Holder shall ensure that that all trucks used to transport construction materials to the site are covered.
21. The Permit Holder shall establish suitable areas for material stockpile and equipment storage during construction and operation.
22. The Permit Holder shall adequately store and/or cover temporary stockpiles of construction materials and excavated waste in a secured designated area to prevent accidental release into the Demerara River. The designated area must **not** be placed within thirty (30) meters of the Demerara River or other primary/main water bodies within the Project's AOI.
23. The Permit Holder shall avoid soil and water contamination from fuel, grease, waste oils and other petroleum products that might be used at the construction site.
24. The Permit Holder shall store all oils, fuel, paints and chemicals in a designated area at least thirty (30) meters away from the Demerara River or other water bodies within the Project's AOI.
25. The Permit Holder shall conduct paced, sequential clearing to allow for adequate time for any wildlife to move away from work zones.
26. The Permit Holder shall limit clearing and disturbance to the designated work areas. Minimize the area of bare soil at any one time to the extent practicable, and progressively revegetate or otherwise stabilize disturbed areas as work moves along the construction footprint.
27. The Permit Holder shall ensure that temporary structures are removed, to the maximum extent practicable, after their use have been discontinued. The affected areas must be revegetated, as appropriate.

Air Quality and Noise Management

28. The Permit Holder shall strictly adhere to the provisions of the Environmental Protection (Noise Management) Regulations, 2000, and the Environmental Protection (Air Quality) Regulations, 2000.
29. The Permit Holder shall, where practicable, ensure that all noise producing devices and/or equipment are retrofitted with appropriate and effective noise reducing devices (e.g., silencers, mufflers and enclosures, etc.).

Environmental Permit - Ref. No.: 20210528-NGPLE

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

30. The Permit Holder shall implement the necessary engineering controls, administrative controls and training, in accordance with GIIP, to protect human health and the environment from noise- induced harm and injury.
31. The Permit Holder shall ensure that all construction and operational activities are done in such a manner so as to prevent, minimise, control and/or avoid adverse noise nuisance to the surrounding environment.
32. The Permit Holder shall comply with the Guyana National Bureau of Standards (GNBS) Guidelines for Noise Emissions into the Environment. Sound levels from sound-making devices should not exceed the limits below:
 - i. Construction Limits: 90 dB [Day-time (06:00 h - 18:00 h)]
75 dB [Night time (18:00 h - 06:00)].
33. If noise levels stipulated in Condition 32 above are likely to be exceeded and may potentially affect nearby communities of residents, the Permit Holder shall notify potentially affected residents/communities, accordingly, ahead of the planned activity.
34. The Permit Holder shall ensure that all sound-making devices are placed on suitable foundations to reasonably reduce the effect of vibrations. Adequate equipment maintenance must be done and any obsolete tools and equipment managed in accordance with manufacturer's recommendations.
35. The Permit Holder shall implement environmentally-effective and technically feasible best practices, in accordance with the World Bank and the American Petroleum Institute (API) Standards and Recommended Practices for detecting leaks and reducing emissions.
36. The Permit Holder shall ensure that all facilities are designed and operated to maximize energy efficiency and reduce fugitive emissions.
37. The Permit Holder shall ensure that there is no use of chlorofluorocarbons (CFCs) and polychlorinated biphenyls (PCBs) unless such use is authorised by the Agency.

Water Quality Management

38. The Permit Holder shall strictly adhere to the provisions of the Environmental Protection (Water Quality) Regulations, 2000.
39. The Permit Holder shall not discharge contaminants into the environment unless authorised, in keeping with prescribed limits, and in accordance with GIIP.
40. The Permit Holder shall ensure that any Project activity which creates an impoundment of water, adverse effects to the aquatic system due to accelerating

the passage of water, and/or restricting its flow is minimized to the extent practicable.

41. The Permit Holder shall ensure that any Project-generated permanent and temporary crossings of water bodies are suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of aquatic species.

Waste Management

42. The Permit Holder shall strictly adhere to the provisions of the Environmental Protection (Hazardous Waste Management) Regulations, 2000, and the Environmental Protection (Litter Enforcement) Regulations, 2013.
43. The Permit Holder shall ensure effective management and disposal of waste and recoverable materials generated by the Project in accordance with GIIP, the Environmental Protection Act, Cap. 20:05, Laws of Guyana and the most recently Agency approved Waste Management Plan.
44. The Permit Holder shall ensure that all waste management contractors handling Project waste streams are authorized by the Agency.
45. The Permit Holder shall contractually require all waste management contractors undertaking the transport, treatment and disposal of such waste streams, to carry out such tasks in accordance with the most recently Agency approved Waste Management Plan.
46. The Permit Holder shall steward and annually audit the activities of all waste management contractors handling the Project waste streams. The Final Audit Report shall be submitted to the Agency within **thirty (30) days** of completion of the audit.
47. The Permit Holder shall classify and profile all waste streams in accordance with the most recent Waste Profile Sheet approved by the Agency.
- a. All Waste Profile Sheets and accompanying/supporting documents, including Safety Data Sheets (SDSs) and analytical test results, must be submitted to the Agency at least **six (6) months** before Project Start-up.
48. The Permit Holder shall avoid, reduce, and reuse/recycle wastes prior to disposal in accordance with the waste management hierarchy.
49. The Permit Holder shall, as far as practicable, conduct refuelling, oil changes and maintenance of vehicles, machinery and other equipment on an impervious base. Spills should be cleaned-up by the best practicable means.

Environmental Permit - Ref. No.: 20210528-NGPLE

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

50. The open burning of waste is **strictly prohibited**. The Permit Holder must seek the Agency's approval at least **seven (7) days** prior to the burning of vegetative waste.
51. The Permit Holder shall ensure that all radioactive wastes are handled and disposed of in accordance with the most recently Agency approved Waste Management Plan, and as directed by the Agency.
52. The Permit Holder shall ensure that all radioactive sources that are no longer in use are returned to their suppliers.

Spills and Emergency Management

53. The Permit Holder shall employ and maintain appropriate procedures in keeping with GIIP to detect leaks, capture spills and minimize the release of hydrocarbons during transport/transfer, resale and other Project related activities.
54. In the event of an emission, discharge or spillage of any contaminant into the water, on land or in the air, the Permit Holder shall control or eliminate all contaminants, and remediate any resulting damage, to the extent practicable.
55. The Permit Holder shall provide the finances, equipment and technical capacity to adequately and, in accordance with International Petroleum Industry Environmental Conservation Association (IPIECA), API Standards and Recommended Practices, or GIIP, appropriately, respond to any emergency that may occur as a result of the execution of the Project.
56. The Permit Holder shall bear all costs of the restoration, rehabilitation and compensation required as a result of damage incurred due to release of contaminant(s), emission(s), discharge(s), spill(s) or other occurrence, resulting from the execution of the Project. The costs herein referred to shall be independently assessed and evaluated by a third party determined by the Agency. Nothing contained herein shall prejudice the right of public and private actors to pursue criminal and/or civil action against the Permit Holder.
57. The Permit Holder shall notify the Agency within **twelve (12) hours** of the discovery of any emergency occurring offshore, and within **three (3) hours** of the discovery of any emergency occurring onshore, which emergencies shall include but not be limited to:
 - a. the accidental or unintended discharge or emission of contaminants;
 - b. sudden onset disaster;
 - c. an accident; or

- d. any other occurrence, whether induced by natural, technological or human factors, which causes or threatens to cause severe environmental damage and harm to human health and livelihood.
58. The Permit Holder shall complete and submit an "Incident Notification Form for Spills and Emergencies in Onshore Operations" or an "Incident Notification Form for Spills and Emergencies in Offshore Operations" using the most recent template to the Agency, within **forty-eight (48) hours** of any discharge of contaminants amounting to **five (5) gallons or more**. A follow-up incident notification form shall be completed and submitted within **seventy-two (72) hours** of the submission of the initial notification form (**a total of five days after the discharge of contaminants**).
59. The Permit Holder shall record and report to the Agency, on a monthly basis, all near misses, spills and unwanted or accidental discharges, amounting to less than five (5) gallons.
60. The Permit Holder shall establish procedures for analyzing accidents and failures for the purpose of determining the causes of the failure and minimizing the possibility of a recurrence. This information shall be made available to the Agency upon request.
61. The Permit Holder shall ensure that the procedures employed for loading, storage, processing, and offloading operations, either for consumables (i.e., fuel, drilling fluids, and additives) or for liquid products, minimize spill risks.
62. The Permit Holder shall ensure continued surveillance of the pipeline and NGL Plant to detect leaks, monitor their condition and take appropriate action(s) in case of failures, leakage, corrosion, substantial changes in cathodic protection requirements, and other abnormal operating and maintenance conditions.
63. The Permit Holder shall develop and maintain an Emergency Response Plan (ERP) in keeping with GIIP. The ERP must include, but not be limited to:
- a. procedures to be followed in the event of NLG Plant and/or pipeline malfunction;
 - b. the actions personnel must take to respond to fires, explosions, or any unplanned sudden or non-sudden release of hydrocarbon or hazardous waste to air, soil, or water body;
 - c. systems for notification of national and local emergency response authorities and regulatory bodies;
 - d. the names and contact information of all persons qualified to act as emergency responders;

Environmental Permit - Ref. No.: 20210528-NGPLE

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

- e. a list of all emergency response equipment at the facility (internal and external), including decontamination equipment, and a map showing where these equipment are located; and
 - f. an evacuation plan for facility personnel where there is a possibility that evacuation could be necessary. This plan must describe signal(s) to be used to begin evacuation, evacuation routes, and alternate evacuation routes (in cases where the primary routes could be blocked by releases of hazardous waste or fires), muster point(s), etc.
64. The ERP developed in accordance with Condition 63 shall be submitted to the Agency at least **six (6) months** before start-up.
65. As part of detailed design, the Permit Holder shall complete an Escape, Evacuation, and Rescue Assessment and Response/Management Plan; Dispersion Analysis; Fire and Explosion Hazards Assessment Study and Response/Management Plan. The final assessment, analysis and study (with the respective response/management plan) shall be submitted to the Agency at least **six (6) months** before start-up. The Agency reserves the right to order the implementation of the recommendations of the assessment and study as deemed necessary.
66. The Permit Holder shall strategically place and maintain gas, smoke, and fire detection equipment to automatically initiate protection actions to isolate the source of a leak, minimize the possibility of ignition, and activate fire suppression systems and pumps.
67. The Permit Holder shall provide active fire protection for the NGL facility, including a pressurized ring main, with sufficient capacity to provide at least 4 hours of continued operation of fire pumps at maximum capacity.
68. The Permit Holder shall install foam deluge systems in areas with potential for hydrocarbon fires.
69. The Permit Holder shall provide structural fire proofing, where necessary, to reduce the risk of equipment and structures collapsing.
70. The Permit Holder shall adhere to electrical classification of equipment to reduce the likelihood that equipment will ignite flammable gases or liquids.
71. The Permit Holder shall install emergency shutdown systems to enable isolation and blowdown/depressurization of equipment.
- a. The Permit Holder shall provide notification of the Main Emergency Shutdown to the Agency within **twenty-four (24) hours** of its initiation, in addition o any relevant information requested by the Agency thereafter.

- b. The Permit Holder shall provide notification to the Agency, within **twelve (12) hours**, of resuming operations after an Emergency Shutdown event.
72. The Permit Holder shall **annually** simulate the entire ERP with relevant stakeholders as directed and/or approved by the Agency. The Agency reserves the right to attend any exercise organised in accordance with this Condition.
73. In satisfying Condition 72, the Permit Holder shall, at a minimum:
- a. simulate conditions in the area of operations, including but limited to, seasonal weather variations;
 - b. cover a range of scenarios including, but not limited to, responses to large continuous gas leaks, gas leaks of a short duration and limited volume, and worst-case scenarios;
 - c. conduct an emergency response "table top" exercise. The exercise must test the emergency response team's organization, communication, and decision making in managing a response. The emergency response scenario must not be revealed to team members before the exercise starts;
 - d. conduct a deployment exercise of response equipment identified in the ERP. Each type of equipment must be deployed and operated although it is not necessary to deploy and operate each individual piece of equipment.
 - e. conduct a notification exercise for each facility that is manned on a 24- hour basis. The exercise must test the ability of facility personnel to communicate pertinent information in a timely manner to the qualified individual;
 - f. conduct a deployment exercise of any response equipment which the Permit Holder is required to maintain along the route of the onshore section of the pipeline or on dedicated vessels. Each type of this equipment must be deployed and operated; and
 - g. comply with any further requirement which the Agency may request.
74. The Permit Holder shall produce appropriate documentation, to the EPA, evidencing the conduct of the exercises required by Condition 72, which documentation must be submitted no later than **thirty (30) calendar days** following their conduct, and include information concerning the:
- a. type of exercises;
 - b. date and time of the exercises;
 - c. description of the exercise;
 - d. objectives met; and
 - e. lessons learned.
75. The Permit Holder shall continuously build capacity in key areas, including but not limited to Emergency Response, where applicable, and upon requests made by the Agency and other key national Agencies, Community Based Organizations,

Environmental Permit - Ref. No.: 20210528-NGPLE

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

Regional Democratic Councils, Neighbourhood Democratic Councils and relevant stakeholders in Regions 1, 2, 3, 4, 5, and 6.

76. The Permit Holder shall implement a Corrosion Management System to monitor risks and identify corrective actions in the atmospheric zone, splash zone, submerged zone and internal zones of the relevant sections of the pipeline.
77. The Permit Holder shall implement appropriate preventative maintenance and monitoring programs, in accordance with IPIECA, API Standards and Recommended Practices or GIIP, as appropriate to ensure the integrity of all equipment.
78. The Permit Holder shall inspect, maintain and operate emergency response and containment equipment in accordance with the most recently Agency approved ERP, which inspection and maintenance shall include monthly inspections of emergency response equipment and annual preventive maintenance program execution.
79. The Permit Holder shall have a written Alarm Management Plan to provide for effective controller response to alarms. The plan must include provisions to:
 - a. review safety-related alarm operations using a process that ensures alarms are accurate and support safe pipeline and NGL Plant operations;
 - b. identify at least once each calendar month points affecting safety, alarm inhibitions, generated false alarms, or that have had forced or manual values for periods of time exceeding that required for associated maintenance or operating activities;
 - c. verify the correct safety-related alarm set-point values and alarm descriptions at least once each calendar year, but at intervals not to exceed 15 months;
 - d. review the alarm management plan required by this Permit at least once each calendar year, but at intervals not exceeding 15 months, to determine the effectiveness of the plan;
 - e. monitor the content and volume of general activity being directed to and required of each controller at least once each calendar year, but at intervals not to exceed 15 months, that will assure controllers have sufficient time to analyze and react to incoming alarms; and
 - f. address deficiencies identified through the implementation of paragraphs (a.) to (e.) outlined in this Permit Condition.
80. The Permit Holder shall maintain an Oil Spill Response Plan (OSRP) to facilitate an effective response to a marine or riverine fuel spill, including maintaining the equipment and other resources specified in the OSRP and conducting periodic training and drills.

Handwritten signature and initials

Employees and Personal Safety

81. The Permit Holder shall strictly adhere to the provisions of the Occupational Safety and Health Act, Cap. 99:01, Laws, of Guyana.
82. The Permit Holder shall establish a controller training program and review the training program content to identify potential improvements at least once each calendar year, but at intervals not to exceeding 15 months. The controller training program must provide for training each controller to carry out the roles and responsibilities defined by the Permit Holder. In addition, the training program must include the following elements:
- a. responding to abnormal operating conditions likely to occur simultaneously or in sequence;
 - b. use of a computerized simulator or non-computerized (tabletop) method for training controllers to recognize abnormal operating conditions;
 - c. training controllers on their responsibilities for communication under the operator's emergency response procedures;
 - d. training that will provide a controller a working knowledge of the pipeline system, especially during the development of abnormal operating conditions;
 - e. for pipeline operating setups that are periodically, but infrequently used, provide an opportunity for controllers to review relevant procedures in advance of their application; and
 - f. control room team training and exercises that include both controllers and other individuals, defined by the operator, who would reasonably be expected to operationally collaborate with controllers (control room personnel) during normal, abnormal or emergency situations.
83. The Permit Holder shall staff a Health Safety and Environmental Advisor with responsibility for the implementation of the Health, Safety, Environmental and Social Management Plan and the terms and conditions of this Permit, and establish a Health and Safety Committee focusing on employee engagements and maintaining Safety and Health culture within the Project workforce.
84. The Permit Holder shall employ a Safety Management System for its operations which system shall include but shall not be limited to, regular inspection and maintenance of all aspects of both the onshore and offshore sections of the pipeline. All maintenance activities shall be logged, documented and submitted to the Agency upon request.
85. The Permit Holder shall conduct the necessary operational and preventative routine maintenance activities on all facilities, and submit a tentative schedule outlining the planned maintenance activities on request by the Agency.

Environmental Permit - Ref. No.: 20210528-NGPLE

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

86. The Permit Holder shall conduct a Hazard and Operability (HAZOP) Analysis and a Hazard Identifications (HAZID) Study which identify potential hazards or operability problems in all systems that can lead to a process upset and submit reports of same on request by the Agency.
87. The Permit Holder shall implement safeguards to prevent, control and mitigate all hazards which accompany operations.
88. The Permit Holder must ensure that changes that could affect control room operations are coordinated with the control room personnel by performing each of the following:
 - a. establish communications between control room representatives, operator's management, and associated field personnel when planning and implementing physical changes to pipeline equipment or configuration;
 - b. require its field personnel to contact the control room when emergency conditions exist and when making field changes that affect control room operations; and
 - c. seek control room or control room management participation in planning prior to implementation of significant pipeline hydraulic or configuration changes.

Compliance Monitoring and Reporting

89. The Permit Holder shall monitor the implementation of the conditions of this Permit, insofar as they involve adherence by employees and all other third parties under the Permit Holder's direction.
90. All submissions on analyses, contaminant reports, discharges or any other environmental data shall be signed and submitted in both a printed copy and in an editable electronic copy.
91. The Permit Holder shall ensure that the Agency has "real-time" remote access to available environmental monitoring data from the control room, prior to start-up.
92. The Permit Holder shall retain records of all monitoring information, including, all calibration and maintenance records and all original strip chart records for continuous monitoring instrumentation, and copies of all reports required by this Permit, for a period of at least **three (3) years** from the date of the sample, measurement, report or application.
93. The Permit Holder shall retain records of investigations, tests, analyses, assessments, repairs, replacements, alterations, and other actions taken for at least **three (3) years** and make them available to the Agency upon request.

94. The Permit Holder shall report to the Agency, any non-compliance with the Permit, within **twenty-four (24) hours** of the time the Permit Holder (or third parties) becomes aware of the said non-compliance, outlining the anticipated manner in which it may endanger human health or the environment.
- a. Within **seventy-two (72) hours** of the awareness of the non-compliance, the Permit Holder shall submit to the Agency, a written report containing a description of the non-compliance, its causes, the period of non-compliance, exact dates and times known at the time of reporting, and the anticipated time it is expected to continue if the non-compliance has not been corrected within seventy-two (72) hours.
95. The Permit Holder shall submit, within **six (6) months** of issuance of this Permit, an Environmental and Socioeconomic Monitoring Plan for the Project. For each phase of the project the Monitoring Plan shall include, but not be limited to:
- a. the requirements of this Permit;
- b. resources to be monitored (physical, biological, socioeconomic, etc.);
- c. parameter(s) to be monitored for each resource;
- d. monitoring locations;
- e. monitoring protocols and frequencies;
- f. Key Performance Indicators (KPIs) and international standards;
- g. monitoring responsibilities;
- h. reporting requirements and standards;
- i. required corrective action(s);
- j. quality assurance/quality control (QA/QC) plans; and
- k. any further requirements which the Agency may require.
- i. The Monitoring Plan shall be prepared in consultation with and jointly implemented by the Permit Holder and the Agency. External expertise (local and international) may be sourced by the Agency as may be required to augment this Monitoring Plan and/or conduct associated audits.
- ii. Capacity (e.g., training) within the Agency shall be supported by the Permit Holder where necessary and practical.
- iii. The Permit Holder shall be responsible for all costs associated with this Monitoring Plan and its implementation, and any associated independent audits.
- iv. The Permit Holder shall analyse the results gleaned from the monitoring against ambient data to establish temporal trends and monitor and report on any environmental change(s) and action(s) take.

Environmental Permit - Ref. No.: 20210528-NGPLE

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

96. The Permit Holder shall conduct pre-construction surveys in the canals where neotropical and giant otters are known to occur to determine whether otters are present and to determine if the giant otter den site identified during baseline surveys conducted in support of the EIA conducted in the furtherance of this Project is active. If otters are found, consult with local and international experts and implement appropriate measures to minimize impacts on otters.
- a. The Permit Holder shall submit the final survey reports to the Agency within **thirty (30) days** of conclusion of the survey.
97. The Permit Holder shall monitor other uses of the water bodies in the Project AOI where otters are known to occur based on baseline surveys to document the presence and activity of otters during construction phase.
- a. The Permit Holder shall submit to the Agency for review, a consolidated report of the monitoring activities done during construction as a component of the Annual Report.
98. The Permit Holder shall submit an Annual Report to the Agency on or before **March 31** every year regarding its compliance with this Permit. The Annual Report shall include, but may not be limited to, activities for the previous year and contain:
- a. the identification information of the facility;
- b. a summary of hazardous materials used in operation. This must include but may not be limited to the following information:
- i. Name and description;
- ii. Hazard Classification e.g., code or class;
- iii. Quantity used per month; and
- iv. Characteristic(s) that make(s) the material (s) hazardous e.g., flammability, toxicity.
- c. the types and quantities of waste including hazardous waste generated, treatment and disposal (both onshore and offshore);
- d. the report on generation, treatment and disposal of wastewater generated on all vessels associated with the project;
- e. notwithstanding the obligation to immediately report any accidents and non-compliances with this Permit, a summary of any accidents and non-compliances that may have occurred and any action(s) taken shall be provided;
- f. a record of all routine marine species observations on vessels, and any mitigation measures implemented to avoid injury or harm;
- g. an inventory of prior years' aggregate greenhouse gas (GHG) emissions as well as other criteria pollutants, fugitive emissions, and Scope 1 and Scope 2 emissions as a result of the execution of the GTE Project. The

Environmental Permit - Ref. No.: 20210528-NGPLE

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

- information along with the methodology employed to calculate the emissions must be provided;
- h. a report on the number of environmental grievances received, types of environmental grievances received, the percentage of environmental grievances resolved via the Project Community Grievance Mechanism and the average time within which the environmental grievances are processed and resolved;
 - i. any other matter this Permit requires to be concluded in this Report; and
 - j. any other matter the Agency may require.
99. The Permit Holder shall submit a Monthly Report to the Agency on the activities of the previous month, progress of the operation and compliance with the conditions under which this Permit was granted. The Monthly Report shall be submitted in both printed and electronic copies and must include but may not be limited to:
- a. a report of wastes stored on all vessels;
 - b. copies of waste manifests and chain of custody forms for all waste (including hazardous waste) generated and transported;
 - c. a report on any of the items described in Condition 168 that are lost overboard;
 - d. a report on spills amounting to less than five (5) gallons;
 - e. a record of all inspections and maintenance conducted on the in-country emergency response and containment equipment;
 - f. any other matter this Permit requires to be concluded in this Report; and
 - g. any other matter the Agency may require.
100. The Permit Holder shall submit a report on the progress of Project activities and compliance with conditions in the Project's Environmental Permit within thirty (30) days of completion of the following Project stages: Construction, Installation, Commissioning, Start-up, Production Operations, and Decommissioning.
101. The Permit Holder shall use an effective Environmental Management System with policies and procedures for environmental compliance and improvements, and shall perform internal audits on at least an annual basis. The Permit Holder shall submit the results of the internal audits to the Agency in the Annual Report required under Condition 98. All areas of shortcomings identified by the audit must be addressed by the Permit Holder before the next year's audit.
102. The Permit Holder shall perform independent external compliance audits on all embedded controls, including the Operation Integrity Management System (OIMS) and the ERP, on at least an annual basis. Within **thirty (30) calendar days** of receipt, the Permit Holder shall submit the Final Audit Report to the Agency. All areas of shortcomings identified by the independent external audit

Environmental Permit - Ref. No.: 20210528-NGPLE

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

must be addressed by the Permit Holder before the next year's audit. The Agency reserves the right to partake in all independent external audits.

103. The Permit Holder shall bear the cost of all environmental audits and compliance monitoring requested and conducted at the instance of the Agency in relation to this Permit.
104. The Permit Holder shall notify the Agency in writing and obtain its approval for ANY proposed changes to the operation at least **twenty-one (21) calendar days** prior to making the change. The notification shall contain a description of the proposed change in operation. It is not necessary to make such a notification if an application to vary this permit has been made and the application contains a description of the proposed change. In this condition 'change in operation' means a change in the nature or functioning of the facility, or an extension, or any additional installation, which may have consequences for the environment. Changes to operation may include but not be limited to the following:
 - a. changes in equipment, or technology;
 - b. installation of new equipment, machines, apparatus, mechanisms, systems or technologies serving the facility or operation (excluding those installed for the purpose of routine maintenance);
 - c. changes to equipment, machines, apparatus, mechanisms, systems or technologies serving the facility or operation (excluding those changes conducted for the purpose of routine maintenance);
 - d. changes in activities not stipulated in this Permit; and
 - e. any variance prescribed by Regulation 20(3) of the Environmental Authorisations Regulations, 2000.
105. At least **three (3) years** prior to planned decommissioning of the Project, the Permit Holder shall submit to the Agency for approval a Comparative Assessment for Decommissioning. The Assessment must at a minimum:
 - a. Compare the potential impacts on safety, environment, stakeholders, and technical feasibility, in an effort to select the appropriate decommissioning option;
 - b. Ensure management of risks to people and the environment;
 - c. Be carried out using decision support tools (e.g., multicriteria analysis) which are rational, transparent and retraceable; and allow the management of conflicting objectives; and
 - d. Consider the facility decommissioning operations, and the management of facilities infrastructure returned to shore.
106. At least **two (2) years** prior to planned decommissioning of the Project, the Permit Holder shall submit to the Agency for approval a Decommissioning Plan in

Environmental Permit - Ref. No.: 20210528-NGPLE

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

keeping with the Agency approved Comparative Assessment for Decommissioning. The Decommissioning Plan shall at a minimum:

- a. Collect environmental data to establish the pre-decommissioning baseline, in a similar manner to the Environmental Baseline Studies;
- b. Evaluate the long-term environmental, social and financial risks, and means of addressing these risks;
- c. Consider the management of infrastructure, shipping of used infrastructure, and the management of facilities infrastructure returned to shore; and
- d. Include a risk-based programme for post-decommissioning environmental monitoring and aftercare.

107. The Permit Holder shall notify the Agency in writing, at least **thirty (30) calendar days** prior to planned decommissioning of the Project.

Financial Assurance and Liability for Pollution Damage

108. The Permit Holder is liable for all costs associated with clean up, restoration and compensation for any damages caused by any discharge of any contaminant, including the cost of all investigations into pollution incidents or discharge of contaminants, conducted at the instance of Agency.
109. The Permit Holder shall provide and/or declare within reasonable time upon signing of this permit a combination of the following forms of Financial Assurance to cover all its legitimate liabilities under this Permit. These shall include:
- a. Insurance in accordance with Condition 114 and shall cover clean up and third party liability on terms that are market standard for the type of coverage; and
 - b. A Parent Company/Affiliate (of Operator and Co-Venturers (CoVs)) undertaking that provides indemnification for liabilities under this Permit.
110. The above individually or a combination shall atleast be guided by an estimate of the sum of the reasonably credible costs, expenses, and liabilities that may arise from any breaches of this Permit. Liabilities are considered to include costs associated with responding to an incident, clean-up and remediation and monitoring. The estimation is not expected to address unidentifiable or inestimable costs which may be associated with compensation for loss and ongoing damage to other parties, and which are able to be pursued through civil action.
111. Notwithstanding the above, the Agency may require such further forms of Financial Assurance, and coverage as it considers appropriate.

Environmental Permit - Ref. No.: 20210528-NGPLE

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

112. The Permit Holder, his Servants and/or Agents shall be liable jointly and/or severally for any gross negligence or willful misconduct to the marine environment, biodiversity, protected species and natural habitat with respect to any release or discharge, spill, contaminant fluids, oil or lubricants any facilities permitted under this Project.
113. The Permit Holder, his Servants and/or Agents shall be liable jointly and/or severally for environmental damage due to pollution from its activities within Guyana, its territorial waters, contiguous zones, continental margins continental shelf, and Exclusive Economic Zone, inclusive of damage to the marine environment, biodiversity, protected species and natural habitat with respect to any release or discharge, spill, or contamination which is attributable to the Permit Holder and his agents or contractors. This is in accordance with Section 49 (1) of the Maritime Zones Act 2010 and is subject to any other existing or forthcoming laws, regulations and standards governing the protection of the marine environment.
114. The Permit Holder shall have valid and effective Environmental Liability Insurance, of such type and in such amount as is customary in the international petroleum and natural gas industry, for petroleum and natural gas operations in relation to this Permit, which Insurance shall be procured from an Insurance Company assigned grade A+ by the Better Business Bureau (BBB) or equivalent as deemed appropriate by the Agency, and shall include, but may not be limited to Insurance in respect of:
 - a. loss or damage to all assets used in Project;
 - b. environmental damage caused in the course of the Project for which the Permit Holder will be, jointly and severally, held responsible;
 - c. loss or damage to property or bodily injury suffered by any third party in the course of the Project for which the Permit Holder is liable to;
 - d. the cost of removal of wreckage and clean-up operations required as a result of an accident occurring in the course of permitted activities;
 - e. EEPGL's liability to its employees engaged in the Project; and
 - f. any other requirement(s) made by the Agency.
115. Notwithstanding Condition 114, the Agency may require such further amounts, types and coverage of insurance as is customary in the international petroleum and natural gas industry or required by applicable law.
116. Condition 114 shall not be interpreted to mean the Permit Holder, its Parent Company, Servants and/or Agents will not be liable to any other existing or forthcoming applicable laws, rules and regulations related to financial assurance for Petroleum and Natural Gas Operations within or out of the jurisdiction of Guyana.

117. This Permit is issued subject to the fulfillment of the obligations outlined in Condition 114 above. Failure to fulfill such obligations or commitments is in breach of this Permit and may result in its suspension or cancellation pursuant to section 13(1)(a) of the Environmental Protection Act Cap 20:05.
118. The Permit Holder shall submit to the Agency, as soon as reasonably practicable upon its request:
- a. the Environmental Liability Insurance policies in both a printed and electronic copy;
 - b. a summary of the Environmental Liability Insurance policies detailing the insurer, the type of insurance, the amount of coverage provided by each policy, key terms of the insurances policies, what types of environmental damage the policies cover, what types of environmental damage the policies do not cover, and the duration of each policy;
 - c. evidence that the insurer is authorised to provide the insurance in Guyana;
 - d. evidence of authorisation of the institution or parent (insurers) to provide insurance;
 - e. evidence of the insurer's financial strength; and
 - f. evidence of the insurer's BBB grade.
119. The Permit Holder must, as soon as reasonably practicable, provide from the Parent Company or Affiliate Companies of Permit Holder and its Co-Venturers ("Affiliates") one or more legally binding agreements to the Agency, in which the Parent Company or Affiliate Companies of Permit Holder and its Co-Venturers undertake to provide adequate financial resources for Permit Holder and its Co-Venturers to pay or satisfy their respective environmental obligations regarding the Stabroek Block, if the Permit Holder and/or its Co-Venturers fail to do so, and to so indemnify and keep indemnified the Agency and the Government of Guyana, against all such environmental obligations regarding the Stabroek Block.
- a. Provide evidence of the following:
 - i. That the Affiliate(s) are authorised to provide that guarantee or agreement in this jurisdiction.
 - ii. That the Affiliate(s) have sufficient financial strength for the amount of the potential liability.
 - iii. That the Affiliate(s) have the corporate legal capacity to enter into the agreement.
 - b. Agree to the following:
 - i. To provide notification of cancellation, expiration, renewal or non-renewal and expiry dates of the Agreement.

Environmental Permit - Ref. No.: 20210528-NGPLE

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

- ii. As well as, to provide annual audited financial statements and notification if the Affiliate(s) are no longer likely to be able to meet specified financial obligations.
120. The Permit Holder shall compensate any person who suffers any loss or damage as a result of any contravention of section 19(1), in accordance with section 19(3)(e) of the Environmental Protection Act Cap. 20:05, Laws of Guyana.
121. The Permit Holder, his Servants and/or Agents shall be liable for any material or serious environmental harm caused by their pollution of the environment in accordance with section 39 (2) and (4) of the Environmental Protection Act, Cap. 20:05, Laws of Guyana.
122. The Permit Holder, his Servants and/or Agents shall be jointly and severally liable for any negligence or willful misconduct which causes harm to the environment, biodiversity, protected species and natural habitat.
123. The terms and conditions of this Permit are binding upon the Permit Holder and the Permit Holder is responsible for any violations hereunder. The Permit Holder shall make such agent(s) or contractors (and their sub-contractors) aware of the Conditions of this Permit.
124. 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 a risk of serious pollution of the environment or any damage to public health, the Agency shall issue to the Permit Holder a Prohibition Notice in accordance with section 27 of the Environmental Protection Act Cap. 20:05, Laws of Guyana.
125. Should the Permit Holder contravene or be likely to contravene any condition of this Permit, the Agency may issue an Enforcement Notice in accordance with section 26 of the Environmental Protection Act Cap. 20:05, Laws of Guyana.

Institutional Authority

126. The Agency reserves the right to conduct regular inspections of the permitted operation(s) as part of its monitoring and enforcement requirements under the Environmental Protection Act, Cap. 20:05, Laws of Guyana, the Environmental Protection (Amendment) Act, 2005, and the Environmental Protection (Authorisations) Regulations, 2000, and any forthcoming regulations, best practices, guidelines and standards made under this Act.
127. The Permit Holder shall at all times, allow entry to the permitted facility to any Officer designated by the Agency 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

Environmental Permit - Ref. No.: 20210528-NGPLE

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

- assault, obstruct or hinder an authorised officer 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.
128. This Environmental Permit is not the final development consent. Permission from the other relevant regulatory bodies must be obtained prior to Project implementation as required.
129. The Permit shall be governed by, interpreted and construed in accordance with the Laws of Guyana including but not limited to the Environmental Protection Act Cap 20:05 and Regulations and such rules of International Law as may be applicable and appropriate, including the generally accepted customs and usages of the international petroleum and natural gas industry.
130. The Agency reserves the continuous and irrevocable right to order the sampling and analysis of any discharges, effluent or waste emanating from the Project, for analysis by an independent certified laboratory or other institution Agency, approved by the Agency, at the expense of the Permit Holder.
131. The Agency reserves the right to suspend, modify or cancel this Permit, in consideration of:
- a. any changes in fee structure as determined by the Agency for projects of this nature;
 - b. improvement in environmental best practices, and best available techniques which consider economic and technological feasibility; and
 - c. any other information arising from compliance monitoring, including the successful completion of an independent third-party audit of the facility.
132. This Permit is effective for the period stipulated herein (**November 25, 2022 – November 24, 2027**) noting however, this Permit and conditions herein, and applicable fees will be reviewed annually in consideration of the previous year's annual audit required by Condition 102, and any other matters which the Agency considers appropriate.
133. The Permit Holder shall notify the Agency in writing, 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.
134. The Permit Holder shall inform the Agency in writing prior to or within **twenty-one (21) days** of any change of name or ownership of the Project.
135. The Permit Holder shall not assign or transfer the Environmental Permit to any person without prior consent from the Agency.

Environmental Permit - Ref. No.: 20210528-NGPLE

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

136. This Permit must be renewed by submitting a completed Application Form for Renewal of Environmental Authorisation to the Agency at least **six (6) months** before this Permit expires, that is, no later than **May 24, 2027**.
137. This Environmental Permit shall remain valid until **November 24, 2027**, unless otherwise revised, amended, suspended, or revoked in accordance with its provisions or the Environmental Protection Act, Cap 20:05, Laws of Guyana, the Environmental Protection (Amendment) Act, 2005, and the Environmental Protection (Authorisations) Regulations, 2000.
138. 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 to penalties prescribed under the Environmental Protection Act, Cap. 20:05, Laws of Guyana, the Environmental Protection Regulation, 2000 and other applicable Laws of Guyana.

II. Offshore Pipeline

General

139. The Permit Holder shall ensure that the Subsea Umbilicals, Risers and Flowlines (SURF) and pipeline is designed to comply with all Guyanese codes, standards, and regulations, as well as applicable international design codes and standard, including but limited to the following main design codes and standards:
 - a. Risers:
 - i. American Petroleum Institute (API) Recommended Practice (RP) 1111;
 - ii. API RP 2RD;
 - iii. API STD 2RD.
 - b. Subsea structures:
 - i. API RP 2A.
 - c. Infield pipelines and offshore pipeline:
 - i. API RP 1111.
140. The Permit Holder shall augment the ongoing stakeholder engagement process (along with relevant authorities) to identify commercial cargo, commercial fishing, and subsistence fishing vessel operators who might not ordinarily receive Notices to Mariners and, where possible, communicate with them regarding major vessel movements.
141. The Permit Holder shall proactively engage with nearshore artisanal fisherfolk in advance of construction and advertise a cut-off date for all fisherfolk to remove fishing equipment from the nearshore Project Exclusion Zone.

142. The Permit Holder shall bury the offshore pipeline in shallow water depths, and as required by GIIP.

Water Quality Management

143. Discharges of pollutants/contaminants from Project vessels in coastal waters (i.e., **twelve (12) nautical miles**) in amounts, concentrations or levels in excess of that prescribed by the regulations or stipulated by any environmental authorisation are prohibited.
144. The Permit Holder shall ensure that each Project vessel abides by the International Convention for the Prevention of Pollution from Ships (MARPOL), the International Maritime Organization (IMO) Guidelines including the International Convention for the Control and Management of Ship's Ballast Water and Sediments (2004).
145. The Permit Holder shall ensure that Project vessels wastewater discharge from the on-board Sewage Treatment Plant complies with the aquatic discharge standards as set out in MARPOL 73/78 regulations.
146. The Permit Holder shall ensure that Project vessels record the volume of ballast water discharged and location (per ballasting operation) on all vessels and submit the information as a component of the Monthly Report.
147. The Permit Holder shall ensure that Project vessels discharges from the oily/bilge separator is in accordance with Annex IV of MARPOL 73/78 requirements.
148. The Permit Holder ensure that Project vessels treat bilge water in accordance with MARPOL 73/78 requirements to achieve an oil in water content of **<15 ppm** (parts per million).
- a. The Permit Holder shall ensure that Project vessels perform oil in water content monitoring (automatic) of bilge water and submit the oil in water content of each discharge from each vessel as a component of the Monthly Report.
149. The Permit Holder shall ensure that Project vessels residual chlorine concentration of each treated sewage discharged from each vessel is below **0.5 mg/L** in accordance with MARPOL 73/78 regulations.
- a. The Permit Holder shall ensure that Project vessels record the residual chlorine concentration of each treated sewage discharged from each vessel and submit the information as a component of the Monthly Report.

Environmental Permit - Ref. No.: 20210528-NGPLE

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

150. The Permit Holder shall ensure that there is no oil sheen from any effluent discharge stream originating from each Project vessel.
151. The Permit Holder shall monitor precommissioning-related discharges (i.e., flow lines/risers commissioning fluids, including hydrotesting waters) to ensure that there is no visible oil sheen.
152. Should an oil sheen be observed, the Permit Holder shall immediately cease all discharges and take all necessary measures to identify and rectify the cause of the sheen.
153. The Permit Holder shall ensure that there is no discharge of ozone-depleting substances (ODS) in accordance with the International Convention for the Prevention of Pollution from Ships (MARPOL 73/78) Annex VI.
154. The Permit Holder shall ensure that leak detection mechanisms and monitoring systems, in accordance with GIIP, are in place for the equipment, treatment and storage facilities (fuel, chemical, etc.) on applicable Project vessels.
155. The Permit Holder shall implement chemical selection processes and principles that exhibit recognized industry safety, health, and environmental standards. Use low-hazard substances. Consider the Offshore Chemical Notification Scheme (CEFAS 2019) as a resource for chemical selection. The chemical selection process must align with applicable Guyanese laws and regulations, and GIIP and includes:
 - a. Review of material safety data sheets;
 - b. Evaluation of alternate chemicals;
 - c. Consideration of hazard properties while balancing operational effectiveness and meeting performance criteria, including:
 - i. Using the minimum effective dose of required chemicals; and
 - ii. Using the minimum safety risk relative to flammability and volatility.
 - d. Risk evaluation of residual chemical releases into the environment.
156. The Permit Holder shall use Only Offshore Chemical Notification Scheme (OCNS) Gold Standard hydrostatic test chemicals to test the pipeline.
157. The Permit Holder shall seek the approval from the Pesticide and Toxic Chemical Control Board (PTCCB) for the use of all chemicals to be used in the execution of the project prior to their use.
158. The Permit Holder shall record the quantities of grey water, black water, and comminuted food waste discharged in Garbage Record Book for all Project vessels, and submit the importation as a component of the Monthly Report.

Handwritten signature and initials

159. The Permit Holder shall monitor and manage suction dredging or jet plowing and burial rates to improve efficiency and reduce turbidity, in keeping with GIIP.
160. To the extent practicable, the Permit Holder shall avoid suction/jetting any deeper than what is required for protection of the pipeline.

Waste Management

161. The Permit Holder shall implement best practices and best available techniques (BAT) as outlined in the World Bank Group Environmental, Health and Safety (EHS) General Introduction Guidelines (2007) and Environmental Health and Safety Guidelines for Offshore Oil and Gas Development (2017) with respect to the prevention of the spillage of hazardous materials from offshore facilities.
162. The Permit Holder shall record any accidental release of waste into the marine environment and corrective actions implemented. The notification as required herein shall be submitted to the Agency within **twenty-four (24) hours** of the release.
163. The Permit Holder shall implement lifting and transfer procedures to cater for the retrieval of any waste accidentally released overboard, if reasonably practical.
164. The Permit Holder shall ensure that the person(s) responsible for each Project vessel, maintain a Garbage Management Plan and Garbage Record Book detailing the manner in which waste is managed and disposed. The Garbage Management Plan shall include all information as per Annex V of MARPOL regulations (including waste type, quantity stored on-board, waste delivered ashore, amount of waste generated, and waste discharged at sea) and be kept on each vessel.
165. The Permit Holder shall ensure that Project vessels manage and dispose of putrescible waste in accordance with Annex V of MARPOL 73/78, Regulations for the Prevention of Pollution by Garbage from Ships.
166. The Permit Holder shall ensure that weekly inspections of the waste storage areas and container(s) aboard each Project vessel, are conducted. A log detailing the findings of these inspections shall be maintained and submitted to the Agency upon request.
167. The Permit Holder shall ensure that the transport of all hazardous waste offsite for treatment and/or disposal is accompanied by a manifest which includes the name and address of waste generator, name and description of the waste and hazard class, number and type of containers, quantity transported and name and address of receiving facility, and the signatures of the hazardous waste generator and transporter. The manifest required herein shall be submitted to the Agency in the Monthly Report.

Environmental Permit - Ref. No.: 20210528-NGPLE

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

168. The Permit Holder shall not dispose of equipment, cables, chains, containers, or other like materials in the marine environment.
169. Materials, equipment, tools, chains, containers, spools, reels, drums and other items used which are of such shape or configuration that they are likely to snag or damage fishing devices shall be:
 - a. kept in a suitable storage area or a marked container when not in use, or prior to transport;
 - b. recovered after use and securely stored until suitable disposal is accomplished; and
 - c. tracked using the appropriate manifest form.
170. The Permit Holder shall keep a record of any of the items described in Condition 168 that are lost overboard and shall submit said record to the Agency, in the Monthly Report.
171. The Permit Holder shall ensure that Project vessels handle, store, and dispose sewage and sullage in accordance with Annex IV of MARPOL 73/78, Regulations for the Prevention of Pollution by Sewage from Ships.
172. The Permit Holder shall ensure that Project vessels maintain an Oil Record Book to document the manner in which sludge, oil, bilge water, waste oil, etc., are disposed, in accordance with MARPOL 73/78 requirements.
173. The Permit Holder shall ensure that Project vessels manage and dispose of all food waste in accordance with MARPOL 73/78 requirements prior to discharge.

Marine Ecosystem Management

174. The Permit Holder shall ensure that all Project vessels adhere to the Joint Nature Conservation Committee (JNCC) Guidelines (2010) during operation.
175. The Permit Holder shall ensure that monitoring of marine mammals, riverine mammals, marine turtles, and rafting marine birds are undertaken on board all Project vessels. The Permit Holder shall maintain a record of all detections of marine mammals, riverine mammals, marine turtles, and rafting marine birds, and submit same to the Agency in the Annual Report.

Handwritten signature/initials

III. Onshore Pipeline

Construction Management

176. The Permit Holder shall design the onshore pipeline to a Class 3 location classification under the American Society of Mechanical Engineers (ASME) B31.8.
177. The Permit Holder shall ensure that the pipeline is designed and maintained to mitigate any reasonably anticipated detrimental effects of water currents, scouring, storms, soft bottoms, mud slides and other environmental factors.
178. The Permit Holder shall require construction contractors to contact the relevant utility companies to locate, identify, and mark existing underground utilities to prevent accidental damage during onshore pipeline construction.
179. The Permit Holder shall restore and revegetate the onshore pipeline corridor as soon as reasonably practical after the completion of construction, or as otherwise agreed with landowner.
180. The Permit Holder shall conduct post-restoration vegetative cover monitoring along the onshore pipeline corridor, or as otherwise agreed with landowners.
181. The Permit Holder shall complete pipeline road crossings using trenchless methods where practicable. Where open-trench crossings are used, minimize the time of road closure to the extent practicable, and provide adequate detours.
182. The Permit Holder shall seek approval from the Sea Defence Board and comply with the condition of the Approval for the onshore pipeline crossing.
183. The Permit Holder shall avoid physical disturbance of silk cotton trees where reasonably practicable. If disturbance of a silk cotton tree(s) is unavoidable, the Permit Holder shall engage with community leaders and the National Trust.
184. The Permit Holder shall maintain a high-visibility exclusion fence around silk cotton trees during construction activities and preserve a buffer around the trees during construction activities in the vicinity of the trees.
185. The Permit Holder shall ensure an archaeological monitor is present when work, including open-cut techniques, occurs in a segment of the onshore pipeline corridor where a silk cotton tree is present in the Right-of-Way (RoW).
186. The Permit Holder shall install a fiber optic cable (FOC)-based system along the pipeline at the time the pipeline is buried, to detect leaks and/or third-party intrusion the pipeline.

Environmental Permit - Ref. No.: 20210528-NGPLE

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

Water Quality Management

187. The Permit Holder shall ensure that hydrostatic testing is carried out in accordance with the International Finance Corporation (IFC) Environmental, Health, and Safety Guidelines – Onshore Oil and Gas Development.
188. The Permit Holder shall discharge hydrostatic test water to the Demerara River or adjoining drainage canal only under higher flow conditions to the extent practicable.
189. The Permit Holder shall monitor aquatic macroinvertebrates, fish, and water quality at baseline survey sites for **one (1) year** after the pipeline is installed and every **three (3) years** once the Project becomes fully operational.
 - a. The Permit Holder shall submit to the Agency the reports gleaned from the monitoring exercises required by Condition 189 within **thirty (30) calendar days** of completion of each monitoring exercise.
190. The Permit Holder shall reduce sediment loading of waste water and run-off by:
 - a. reducing exposure time of soil and rock to wind or water, by monitoring and reducing length of time between vegetation clearance and grading, and between grading and reinstatement; and
 - b. limiting the amount of pipeline trench left open during construction at any one time.
191. The Permit Holder shall design Horizontal Directional Drilling (HDD) fluid composition based on consideration of the characteristics of the soils through which HDD bores will be completed and adjust drilling fluids as needed during HDD operations based on the results of HDD fluids/cuttings returns.
 - a. The Permit Holder shall submit to the Agency, within **seven (7) calendar days** of the commencement of drilling, a list and the estimated quantities of all additives to be used in the drilling fluids.
 - b. The Permit Holder shall notify the Agency at least **seven (7) calendar days** to making any changes in the type of drilling fluid to be used, and outline the disposal/treatment method to be applied. Notice given after 7-days period required here shall only be accepted where the Agency is satisfied that the notification period was not feasible due to flow assurance or safety risks.
192. The Permit Holder shall use only non-petrochemical-based, non-hazardous additives that comply with permit requirements, and GIIP, such as NSF

Environmental Permit - Ref. No.: 20210528-NGPLE

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

International/ANSI 60 Drinking Water Treatment Chemicals— Health Effects compliant in the drilling fluids.

193. The Permit Holder shall visually monitor the ground surface and nearby surface waterbodies (e.g., canals) during advancement of HDD borings for any evidence of fluid release.
194. The Permit Holder shall immediately cease HDD boring once there is evidence of fluid released and only recommence HDD boring once the cause(s) of the fluid release has been identified and permanently rectified.
195. The Permit Holder shall at a minimum visual monitor HDD fluid/cuttings returns every four (4) hours to assess for potential or actual fluid loss to formation.
196. If it has been determined that there is a potential or actual fluid loss to formation, the Permit Holder shall immediately cease HDD and only recommence HDD once the cause(s) of fluid loss to formation has been identified and permanently rectified in keeping with GIIP.
197. The Permit Holder shall conduct dewatering along work segments and only for durations required to implement the construction activity for the work segment; cease dewatering as soon as reasonably practicable after completing pipeline installation in a work segment.
198. The Permit Holder shall dewater any trenches by first installing temporary drainage and use methods to prevent excessive transport of sediments into existing canals.
199. To the extent reasonably practicable, the Permit Holder shall return extracted waters from dewatering to an adjacent segment of the same waterbody to minimize/avoid long-term decreases in water level in the waterbody.
200. The Permit Holder shall use the industry standard filtration techniques to reduce solids content in dewatering discharges to surface water features.
201. The Permit Holder shall monitor solids content of dewatering discharges and submit a consolidated report on the solid content of dewatering discharges as a component of the monthly report.

Environmental Permit - Ref. No.: 20210528-NGPLE

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

Air Quality and Noise Management

202. During open trenching and HDD operations along the onshore pipeline corridor, the Permit Holder shall conduct a noise monitoring assessment(s) during the initial stages of construction and again during later stages of construction (as warranted based on changes in the nature of construction activities, weather conditions, or other factors) to quantify the actual extent of Project noise impacts. Based on the result of this assessment, the Permit Holder shall implement additional mitigations, if practicable, for areas where residential structures fall within Moderate to Major noise level effects, prior to the pipeline construction operation arriving at these areas.
 - a. The Permit Holder shall submit each noise monitoring assessment to the Agency in each Monthly Report.
203. To the extent practicable, the Permit Holder shall position the HDD rig on the side of the HDD segment associated with the smaller number of potential residential structures that could experience a Moderate to Major noise level.
204. The Permit Holder shall plan HDD operations to avoid operation during night time hours (18:00 hrs - 06:00 hrs), such that night time operations are conducted only if an unexpected situation results in a delay that extends an uninterruptable activity into night time hours or if boring conditions are such that there is not reasonable means for avoiding night time hours.
205. The Permit Holder shall conduct visual monitoring, at least twice daily, of dust level downwind of material stockpiles along the onshore pipeline corridor in close proximity to residential structures. Employ appropriate mitigation actions when dust levels have the potential to negatively impact residents.

Onshore Pipeline Operation

206. The Permit Holder shall ensure that any segment of the pipeline which becomes unsafe is replaced, repaired, or removed from service. If a segment of the pipeline is determined to be in an unsatisfactory condition but no immediate hazard exists, the Permit Holder shall initiate a program to recondition or phase out the segment involved, or, if the segment cannot be reconditioned or phased out, reduce the maximum allowable operating pressure.
207. The Permit Holder shall ensure that the pipeline is provided with an external protective coating capable of minimizing underfilm corrosion and a cathodic protection system designed to mitigate corrosion for the lifetime of the Project.
208. The Permit Holder shall conduct routine internal inspections for corrosion through the use of pipeline intelligent pigging tools.

Environmental Permit - Ref. No.: 20210528-NGPLE

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

209. The Permit Holder shall install and maintain an automatic shutdown valve (SDV) at the point where the pipeline boards the FPSOs. The SDV must be connected to the automatic- and remote-emergency shut-in systems.
210. The Permit Holder shall install aboveground pipeline markers along the onshore pipeline corridor, indicating the location of the buried pipeline and including standard signage to not excavate in the area prior to contacting the Permit Holder.
211. The Permit Holder shall ensure that pipeline markers are placed and maintained as close as practical over the buried pipeline, as outlined below:
 - a. At each crossing of a public road and any other navigation pathway; and
 - b. Wherever necessary to identify the location of the buried pipeline to reduce the possibility of damage or interference.
212. The Permit Holder must ensure that marker warnings are placed at intervals along the pipeline. The following must be written legibly on a background of sharply contrasting color on each line marker:
 - a. The word **“Warning,” “Caution,” or “Danger”** followed by the words **“Gas (or name of gas transported) Pipeline”** must be in letters at least 1 inch (25 millimeters) high with 1/4 inch (6.4 millimeters) stroke.
 - b. The name of the operator and the telephone number where the operator can be reached at all times.
213. The Permit Holder shall ensure that the maximum allowable operating pressure (MAOP) does not exceed the least of the following:
 - a. Internal design pressure of the pipeline, valves, flanges, and fittings;
 - b. Eighty (80) percent of the hydrostatic pressure test (HPT) pressure of the pipeline; or
 - c. If applicable, the MAOP of the receiving pipeline when the proposed pipeline and the receiving pipeline are connected at a subsea tie-in.
214. For the aboveground valve near the shore landing, install anti-cut/anti-climb perimeter fencing around the valve, with fiber optic intrusion detection, 24-hour per day closed circuit television monitoring (CCTV) of the compound, and security lighting.

IV. Natural Gas Liquids (NGL) Plant

Construction Management

215. The Permit Holder shall design equipment at the NGL Plant so that:
- in-plant sound levels in accessible areas do not exceed 85 A-weighted decibels (dBA) under normal operations or 115 for emergency events where possible, and implement additional noise controls where sound level limitation cannot be maintained, and
 - community and/or fence-line noise levels do not exceed applicable regulations.
216. The Permit Holder shall configure and maintain spacing and layout of the NGL Plant to minimize the risk of fire and explosion, including consideration of detailed fire and explosion analysis studies and measures to minimize the accumulation and spread of flammable gases and liquids, minimize probability of ignition, and facilitate effective emergency response.
217. The Permit Holder shall ensure that the NGL Plant is designed to comply with all Guyanese codes, standards, and regulations, as well as applicable international design codes and standard, including but limited to the following main design codes and standards:
- American Society of Mechanical Engineers (ASME) boiler and pressure vessel code;
 - American Petroleum Institute (API) Standards 620, 650, 660, 661, 668, 662, 560, 534, 651;
 - International Organisation for Standards (ISO) 16812, 13706, 15547, 9001, 14000;
 - ASME;
 - American National Standards Institute;
 - American Welding Society;
 - National Electrical Code;
 - American Society for Testing and Materials (ASTM) International.

Air Quality and Noise Management

218. To reduce the potential for residential structures to experience noise levels in keeping with GNBS' Guidelines for Noise Emissions into the Environment during night time instances where intermittent noise sources are operating at the NGL Plant, the Permit Holder shall conduct planned start-up and maintenance activities during daytime hours to the extent practicable.
219. The Permit Holder shall ensure that emissions from the Project do not exceed the following levels:

Environmental Permit - Ref. No.: 20210528-NGPLE

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

| Pollutant | Averaging Time | WHO Level ($\mu\text{g}/\text{m}^3$) |
|-------------------------------------|------------------------------------|--|
| PM _{2.5} | 1 year | 10 |
| | 24 h (99 th percentile) | 25 |
| PM ₁₀ | 1 year | 20 |
| | 24 h (99 th percentile) | 50 |
| Nitrogen dioxide (NO ₂) | 1 year | 40 |
| | 1 year | 200 |
| Sulphur Dioxide (SO ₂) | 24 hour | 20 |
| | 10 min | 500 |
| Ozone | 8 h (daily maximum) | 100 |
| Carbon Monoxide (CO) | 8h | 9 ppm |

- a. The Permit Holder shall conduct fenceline monitoring of the parameters stated in Condition 219 and submit the information as a component of the Annual Report.
220. At least **six (6) month** prior to Project start-up, the Permit Holder shall submit a detailed Methane Emissions Monitoring Plan for the Agency's review and approval.
221. The Permit Holder shall employ reasonable efforts and execute a maintenance program to minimize equipment breakdowns and NGL Plant upsets that could result in flaring, and make provisions for equipment sparing and plant turndown protocols.
222. NGL Plant turndown protocols must be submitted to the Agency for review prior to start-up.
223. The Permit Holder shall shut down (or throttle down) sources of combustion equipment within the NGL Plant in intermittent use where reasonably practicable in order to reduce air emissions.
224. The Permit Holder shall monitor the volume of fuel used by all combustion sources and equipment at the NGL Plant and submit a consolidated report on fuel used as a component of the Annual Report.
225. Routine flaring and venting are strictly prohibited. For the purpose of this Permit, pilot and purge gas, storage bullet and loading rack emissions, tank flashing emission, standing/working/breathing losses, low pressure streams are not taken to constitute routine flaring and venting.
226. Flaring and venting are only permissible during commissioning, start-up or special circumstances, which for the purposes of this Permit, are defined as follows:
- a. Commissioning shall be defined as the process of ensuring that all systems and components are designed, installed, tested, operated, and maintained according to the operational requirements or manufacturer's

Environmental Permit - Ref. No.: 20210528-NGPLE

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

specifications. This condition shall also apply to the commissioning of any new units or systems post-production, or the renovation of existing units or systems, which may require flaring. During commissioning, all gas systems, must be properly installed, fully leak tested and able to receive gas, before start-up.

- b. Start-up shall be defined as the activity that occurs at the end of commissioning where production operations are initiated for the first time.
 - c. Special Circumstances include emergencies, maintenance and restart which are defined as follows:
 - i. Emergencies:
 - a) Controlled - any unavoidable expected event, including inclement weather conditions, strictly requiring the flaring of gas; and
 - b) Safety Response - any unplanned event requiring the flaring of gas for safety purposes or flaring required to maintain the flare system in a safe and ready condition and pilot flame.
 - ii. Maintenance:
 - a) Planned/unplanned maintenance and inspections on gas handling system and related processes, pipeline pigging, and construction activities.
 - b) Scheduled production testing, other evaluation testing, or the necessary blow down to perform these procedures; and maintenance required during and after an emergency shutdown or restart.
 - iii. Restart: the act of resuming production following a shutdown event.
227. The Permit Holder shall not exceed **sixty (60) cumulative days** of flaring during start-up. For the purpose of this Condition, any day that gas is flared above background flare levels, regardless of the duration, is considered **one (1) day** of flaring.
228. The Permit Holder shall notify the Agency of the expected duration and flaring volumes expected during start-up and commissioning, respectively, at least **six (6) months** before start-up and commissioning, for its Approval.
229. The Permit Holder shall notify the Agency within **twenty-four (24) hours** of all special circumstances which result in a flaring event lasting more than **twelve (12) hours**.

230. With the exception of the background flare, where any of the abovementioned Special Circumstances is expected to exceed **fourteen (14) calendar days**, the Permit Holder shall seek Approval from the Agency for flaring within the first **ninety-six (96) hours** of the commencement of flaring.
231. Where flaring during Start-up is expected to exceed sixty (60) cumulative days, the Permit Holder shall seek an Approval from the Agency for flaring no later than **five (5) calendar days** prior to the end of the sixty (60) cumulative-day period.
232. When seeking an Approval under Condition 230 or Condition 231, the Permit Holder shall submit the following to the Agency:
- a. a description of conditions which include, but may not be limited to, commissioning schedule, start-up schedule and maintenance schedule, where applicable;
 - b. schedule for flaring;
 - c. justification(s) for required approval; and
 - d. daily projected flare volumes.
233. The Agency reserves the right to require the submission of such further information it deems necessary, before issuing an Approval for flaring.
234. An Approval for flaring shall be subject to such terms and conditions as may be required by the Agency, including the strict adherence to Conditions 237, 238 and 239.
235. An Approval shall not be issued for a period exceeding **sixty (60) calendar days**. Where flaring exceeds or is expected to exceed the sixty calendar (60) day period, the Permit Holder shall seek an additional Approval at least **forty-eight (48) hours** before the expiration of the existing Approval, which additional Approval may be issued subject to such further terms and conditions as the Agency deems appropriate.
236. The terms and conditions of any Approval for flaring shall be considered as forming part of the present Permit so that any breach or contravention thereof, shall be considered a breach or contravention of the Permit.
237. The Permit Holder shall pay **US\$50 per tonne of carbon dioxide equivalents (CO₂e) emitted** as a result of flaring in excess of the periods of flaring expressly stipulated at 227 and 230 above.
238. The Permit Holder shall submit a CO₂e Emissions Payment Calculations Report within **twenty-eight (28) calendar days** from the date of expiration of the Approval granted by the Agency. CO₂e emission payments shall be made payable

Environmental Permit - Ref. No.: 20210528-NGPLE

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

to the Agency within **fourteen (14) calendar days** of the Agency's approval of the CO₂e Emissions Payment Calculations Report or as may be expressly stipulated by the Approval.

239. Nothing contained herein shall be interpreted to mean that the Agency rescinds its authority to revise the rate of US\$50 per tonne established by Condition 237 for the emission of CO₂e for any period of continuous flaring beyond sixty (60) days, to order the cessation of all flaring, or take any other course of action provided by the Environmental Protection Act Cap 20:05.
240. The Permit Holder shall estimate GHG emissions, including carbon dioxide (CO₂) and CO₂e emissions, accordance with sound engineering mass and energy balance calculation, and accurate data.
241. The Permit Holder shall estimate all GHG emissions in accordance with the most recent updated versions of the following approved methodologies:
- a. American Petroleum Institute's (API) Compendium of Greenhouse Gas Emissions Methodologies for the Oil and Gas Industry;
 - b. Intergovernmental Panel on Climate Change (IPCC) Guidelines for National Greenhouse Gas Inventory;
 - c. U.S. Code of Federal Regulations (CFR), Title 40 – Protection of the Environment, Chapter I – Environmental Protection Agency, Subchapter C – Air Programs, Part 98 – Mandatory Greenhouse Gas Reporting, Subpart W – Petroleum and Natural Gas Systems (USEPA 40CFR98.233 – Calculating GHG Emissions); or
 - d. Any other equivalent standard/document approved by the Agency.
242. The Permit Holder shall summarise and report to the Agency, the considerations made to calculate the volume of GHG emissions.
243. Prior to a flaring event, the Permit Holder shall:
- a. ensure that flare equipment, gas handling system(s) and all combustion equipment are designed and built to API Standards and Recommended Practices;
 - b. ensure that flare equipment and gas handling system(s) are inspected, correctly installed, function tested, certified for use under operation conditions, and maintained in accordance with manufacturers' specifications, prior to start-up and throughout operations;
 - c. calibrate and maintain a flare metering system in accordance with the manufacturers' recommendations which calibration certificate must be submitted to the Agency upon completion of calibration;
 - d. ensure that the flaring stack is installed a safe distance from storage tanks;

- e. minimize the risk of pilot flare blowout by ensuring sufficient exit velocity and providing wind guards;
- f. determine the minimum exit velocity required to avoid pilot flare blowout and submit information to the Agency six (6) months before planned start-up;
- g. operate the facility in a manner to keep overpressure events as low as practically possible and install high-integrity instruments and pressure protection systems to respond to overpressure events; and
- h. implement burner maintenance and replacement programs in accordance with manufacturer's recommendations to ensure continuous maximum flare efficiency.

244. During a flaring event, the Permit Holder shall:

- a. employ a metering system with an accuracy of plus or minus five (5) percent to determine the quantity of gas to the flare system;
- b. ensure that the flaring systems are being operated within manufacturers' recommended specifications;
- c. use flare tip of a non-pollutant type, with low NO_x emissions, and a burning efficiency high enough to support low hydrocarbon emissions to the atmosphere;
- d. optimize the size and number of burning nozzles;
- e. flare in a manner which controls odour and smoke emissions, where practicable;
- f. ensure that the volumes of hydrocarbons flared and the estimated quantity of specific pollutants emitted from flaring including but not limited to carbon dioxide (CO₂), carbon dioxide equivalent (CO₂e), nitrogen oxides (NO_x), sulfur oxides (SO_x), carbon monoxide (CO), particulate matter, hydrogen sulfide (H₂S), volatile organic compounds (VOCs), methane and ethane, benzene, ethyl benzene, toluene, and xylenes (BTEX), and glycols, and the methodology used to determine the concentration of each pollutant, are recorded and submitted to the Agency as a component of the Monthly Report;
- g. control and optimize flare operations to achieve maximum combustion efficiency;
- h. minimize liquid carryover and entrainment in the gas flare stream with a suitable liquid separation system designed in accordance with API Standards and Recommended Practices;
- i. equip liquid separation system (e.g., knockout drum) with high-level facility shutdown or high-level alarms and empty as needed to increase flare combustion efficiency; and
- j. minimize flame lift off and/or flame lick.

245. After a flaring event, the Permit Holder shall maintain a consolidated record of all flaring events, regardless of size and duration, including begin times, end times



Environmental Permit - Ref. No.: 20210528-NGPLE

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

and volumes, meter calibration and maintenance records commencing from commissioning and throughout the duration of the Permit.

Waste Management

246. The Permit Holder shall ensure that hazardous waste is stored in a bunded area and covered when possible. This area shall include the following:
- low traffic;
 - no floor drains; and
 - secondary containment capable of containing 110% of the largest volume therein.
247. The Permit Holder shall ensure that Hazardous Waste Storage areas are clearly labelled, secured and well illuminated when not in use. The following warning signs shall be clearly posted:
- Hazardous Waste Storage Area;
 - Danger- Authorized Personnel Only;
 - No Smoking; and
 - No Eating or Drinking.
248. The Permit Holder shall ensure that hazardous waste is be stored away from ignition sources.
249. The Permit Holder shall ensure that hazardous waste containers are appropriate/compatible for the hazardous waste stream being stored and that the containers are labelled with the following:
- The words "**Hazardous Waste**"
 - The type of waste.
 - Beginning accumulation date i.e., date when the container was first placed in the Hazardous Waste Storage Area. Should the hazardous waste container be reused, the date hazardous waste was first placed in the container shall be recorded on the container.
250. The Permit Holder shall ensure that waste oil containers are labelled with the following:
- The words "**Waste Oil or 'Used Oil'**"
 - Beginning accumulation date.
251. The Permit Holder shall ensure that hazardous waste is not stored in containers made of, or lined with materials with which it is incompatible so that the integrity of the container is not impaired or compromised.

Environmental Permit - Ref. No.: 20210528-NGPLE

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

252. The Permit Holder shall ensure that hazardous waste storage containers are inspected periodically for signs of leakage, deterioration or corrosion and damaged containers must be replaced as soon as practical. Inspection reports must be maintained and signed by the appropriately qualified personnel and his/her supervisor, and made available to the Agency upon request.
253. The Permit Holder shall ensure that all hazardous waste are treated and/ or disposed of by an Agency authorised Hazardous Waste Treatment Facility. All hazardous waste treatment shall be documented on a Waste Manifest Form which shall be submitted to the Agency as a component of the Monthly Report. The manifest must contain the following:
- a. The name and address of the generator;
 - b. The name, description, and hazard class of the waste;
 - c. The number and type of containers;
 - d. The quantity of waste being transported and collected; and
 - e. The name and address of the facility designated to receive the waste.

Water Quality Management

254. Where a ground water extraction well(s) is required to be constructed, the Permit Holder shall:
- a. Seek approval from the Hydrometeorological Services prior to well(s) construction.
 - b. Submit the following information to the Agency at least **thirty (30) days** prior the construction of the well(s):
 - i. site map showing the location of the proposed well;
 - ii. proposed well design;
 - iii. the name and qualifications of the well driller contracted;
 - iv. proposed well construction method including drilling method and,
 - v. procedures to be used, including pollution prevention plan and drilling fluids to be used.
 - c. Submit the following information to the Agency within **forty-five (45) days** of well completion:
 - i. GPS co-ordinates of the constructed water well and
 - ii. the well log and abstraction rates for the well.

The Agency may request the Permit Holder to submit any data/information gleaned from any analysis conducted on the water quality of the well(s) as a component of the Annual Report.

Environmental Permit - Ref. No.: 20210528-NGPLE

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

255. The Permit Holder shall construct and maintain a Process Waste Water Treatment Plant (PWWTP) that complies with World Bank Indicative Values for Effluents Levels for Natural Gas Processing Facilities (World Bank 2007b), through which all contaminated wastewater generated by the NGL Plant and its supporting operations including potentially contaminated storm water from process area storm water drainage (such as loading racks, flares, compressor drains and sub-station areas) must be routed.
256. The Permit Holder shall conduct routine inspections to confirm the PWWTP is working according to design specifications and monitor the following parameters in each effluent.

| Parameter | Units | Daily Maximum Concentration | Frequency of Reporting |
|------------------------------|-------|-----------------------------|------------------------|
| pH | - | 6-9 | Quarterly |
| BOD | mg/L | 50 | |
| Oil & Grease | | 10 | |
| Total Suspended Solids (TSS) | | 50 | |
| Chemical Oxygen Demand | | 150 | |
| Cadmium | | 0.1 | |
| Total Residual Chlorine | | 0.5 | |
| Chromium | | 0.5 | |
| Copper | | 0.5 | |
| Iron | | 3 | |
| Zinc | | 1 | |
| Cyanide Total/Free | | 0.1/1.0 | |
| Lead | | 0.2 | |
| Heavy Metals | | 5 | |
| Phenol | | 0.5 | |
| Total Nitrogen | | 40 | |
| Total Phosphorus | | 2 | |

257. The Permit Holder shall:
- monitor effluent from the PWWTP monthly until all parameters are within discharge limits and submit a quarterly report to the Agency for review and approval. A summary of each quarterly report shall be submitted as a component of the Annual Report;
 - once all parameters in each effluent from the PWWTP are within the discharge limits, monitoring shall be done every **six (6) months** and the monitoring report submitted to the Agency as a component of the Annual Report;
 - ensure that the discharge limits are achieved, without dilution, at least 95 percent of the time that the plant or unit is operating (to be calculated as a proportion of annual operating hours);
 - report the total volume of wastewater discharged from the PWWTP (cubic meters per year) in the Annual report, along with the volume of wastewater discharged on a monthly basis;

Environmental Permit - Ref. No.: 20210528-NGPLE

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

- e. ensure that all sludge produced by the PWWTP is removed at the indicated scheduled time by an Agency approved waste contractor.
- f. submit the GPS coordinates (including shape files and attribute data) of the discharge point(s) for the treated effluent from the PWWTP and the GPS coordinates (including shape files and attribute data) of the receiving drain(s)/canal(s) which flows into the Demerara River;
- g. present all data as per the "EPA Guidelines for Submission of Water Quality Analytical Data (Wastewater)", and include the following:
 - i. the exact location (including GPS coordinates), date and time of sampling;
 - ii. the person(s) who performed the sampling;
 - iii. the results of all the analyses; and
 - iv. copies of original laboratory analytical reports, certification of the laboratory, chain of custody forms, quality assurance/quality control (QA/QC) procedures and forms.

258. The Permit Holder shall construct and maintain a Sanitary Waste Water Treatment Plant (SWWTP) that complies with World Bank Indicative Values for Treated Sanitary Sewage Discharges (World Bank 2007a) below:

| Parameter | Units | Daily Maximum Concentration | Frequency of Reporting |
|------------------------------|------------|-----------------------------|------------------------|
| pH | - | 6-9 | Quarterly |
| BOD | mg/L | 50 | |
| Oil & Grease | | 10 | |
| Total Suspended Solids (TSS) | | 50 | |
| Chemical Oxygen Demand | | 150 | |
| Total Residual Chlorine | | 0.5 | |
| Total Nitrogen | | 10 | |
| Total Phosphorus | | 2 | |
| Total Coliform Bacteria | MPN/100 mL | 400 | |

259. The Permit Holder shall:

- a. monitor effluent from the SWWTP on monthly until all parameters are within discharge limits and submit a quarterly report to the Agency for review and approval. A summary of each quarterly report shall be submitted as a component of the Annual Report;
- b. once all parameters in each effluent from the SWWTP are within the discharge limits, monitoring shall be done every **six (6) months** and the monitoring report submitted to the Agency as a component of the Annual Report;
- c. ensure that the discharge limits are achieved, without dilution, at least 95 percent of the time that the plant or unit is operating (to be calculated as a proportion of annual operating hours);

Environmental Permit - Ref. No.: 20210528-NGPLE

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

- d. report the total volume of wastewater discharged from the SWWTP (cubic meters per year) in the Annual report, along with the volume of wastewater discharged on a monthly basis;
 - e. ensure that all sludge produced by the SWWTP is removed at the indicated scheduled time by a licensed waste contractor.
 - f. submit the GPS coordinates (including shape files and attribute data) of the discharge point(s) for the treated effluent from the SWWTP and the GPS coordinates (including shape files and attribute data) of the receiving drain(s)/canal(s) which flows into the Demerara River;
 - g. present all data as per the "EPA Guidelines for Submission of Water Quality Analytical Data (Wastewater)", and include the following:
 - i. the exact location (including GPS coordinates), date and time of sampling;
 - ii. the person(s) who performed the sampling;
 - iii. the results of all the analyses;
 - iv. copies of original laboratory analytical reports, certification of the laboratory, chain of custody forms, quality assurance/quality control (QA/QC) procedures and forms.
260. The Permit Holder shall construct and maintain a storm water management facility at the NGL Plant site in accordance with the following directives:
- a. The Permit Holder shall construct and maintain an appropriate drainage system capable of handling the probable maximum precipitation storm event at the NGL Plant site.
 - b. The Permit Holder shall ensure that all storm water discharge are directed into appropriately designed storm water management pond(s) before discharge into external drain(s)/canal(s).
 - c. The Permit Holder shall conduct weekly inspections of the storm water pond(s) and within 24 hours of, or as soon as practical after, intense rainfall (i.e. more than 10 mm of rainfall per hour) to verify the functionality of such control measures and facilitate necessary maintenance works or upgrading.
 - d. During each discharge event, the Permit Holder shall conduct visual monitoring of the receiving water surface in the vicinity of the outfall(s) within the Project's AOI, for visible sheen(s) on the water surface. Monitoring must be conducted at a time of maximum discharge during daylight.
 - e. The Permit Holder shall document each inspection, which documentation shall be made available to the Agency upon request. The documentation shall include but not be limited to the following:

Environmental Permit - Ref. No.: 20210528-NGPLE

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

- i. The date and time of each inspection;
 - ii. Prevailing weather conditions and rainfall events;
 - iii. Name(s) of person(s) who conducted each inspection;
 - iv. Observed site conditions to determine whether containment measures were breached, including, but not limited to, oily stains, turbid runoff, etc.
261. All discharges to the Demerara River/Canals, whether directly from the SWWTP, PWWTP and/or the storm water discharge, must be meet standards specified in Conditions 256 and 258, respectively.

Fuel Storage

262. The Permit Holder shall ensure that storage tanks and other components at the NGL Plant (e.g., pipes, valves, pumps, etc.) are designed and installed in accordance with Best Available Techniques to ensure structural design integrity, to avoid catastrophic failures and prevent fires and explosions during operations. Best Available Technologies may include provisions for the following:
- a. Overfill Protection;
 - b. Secondary Containment;
 - c. Metering and Flow Control;
 - d. Fire Protection; or
 - e. Grounding.
263. Hydrocarbon storage tanks shall remain mounted above-ground and away from ignition sources. The following shall be posted on all tanks:
- a. 'No Smoking'
 - b. Type of hydrocarbon stored
 - c. Capacity of tank
264. The Permit Holder shall ensure that all storage tanks, pipe lines and other associated components undergo periodic inspection for corrosion and ensuring structural integrity. Measures such as painting, coating or installation of cathodic protection system shall be implemented where applicable to minimize corrosion and maintain integrity of tanks and pipelines.
265. The Permit Holder shall establish and maintain that secondary containment around storage tanks of all liquid hydrocarbons. Containment shall be inspected periodically for cracks and breakage to ensure they are liquid tight to withstand hydrostatic pressure of any contained liquid when full.
266. The Permit Holder shall ensure that containment bunds remain sealed and all piping must enter or exit the bund over the wall. Bunds shall provide total

Environmental Permit - Ref. No.: 20210528-NGPLE

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

containment, and no part of the tank infrastructure (e.g., dispenser, filling hoses and valves) shall protrude outside the bund.

267. The Permit Holder shall install and maintain overfill protection on the storage tanks of all liquid hydrocarbon. This may include an automatic shut off device or an audible or visible overfill alarm.
268. The Permit Holder shall ensure that the safe fill level is clearly identified on the gauge and set at 90% to prevent overfilling. In the event of overfilling, all discharges shall be released into the containment bund.

Spills and Emergency Management

269. The Permit Holder shall ensure that the NGL Plant is equipped with the following:
 - a. An internal communications or alarm system capable of providing immediate emergency instruction to facility personnel.
 - b. Portable fire extinguishers, fire control equipment (including special extinguishing equipment, such as that using foam, inert gas, or dry chemicals), spill control equipment, and decontamination equipment.
 - c. Water at adequate volume and pressure to supply water hose streams, foam producing equipment, automatic sprinklers, or water spray systems.
270. The Permit Holder shall establish SOPs for inspecting and maintaining safety and emergency equipment, security devices, and operating and structural equipment that are important to preventing, detecting, or responding to environmental or human health hazards.
271. The Permit Holder shall ensure that all the facility's communications or alarm systems, fire protection equipment, spill control equipment, and decontamination equipment, are tested and maintained in accordance with manufacturer's specifications and GIIP.
272. The Permit Holder shall ensure that the facility is designed and maintained so that there is sufficient aisle space to allow the unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of facility.

V. Material Offloading Facility (MOF)

273. Dredging must only be conducted for this infrastructure to create or maintain safe navigation access, channels, turning basins and berth/docks, or for environmental reasons.
274. The Permit Holder shall ensure that dredged material disposal as well as the conduct of all land reclamation dredging, construction dredging and maintenance

dredging are handled in such a way as to prevent negative impacts on habitats or pose a significant hazard to human health and the environment.

275. The Permit Holder shall ensure that methods for excavation and dredging must be selected to minimise the suspension of sediments and/or destruction of benthic habitat.
276. The Permit Holder Shall implement all necessary measures to reduce turbidity and the release of contaminants from re-suspension of sediments in the water column and from exposure of sediments to higher oxygen levels.
277. The Permit Holder shall monitor siltation within a 500 meters radius both upstream and downstream of the banks of the Demerara River. Qualitative and Quantitative data must be recorded made available to the Agency upon request.
278. The Permit Holder shall take special precautions as it relates to marine life disturbance from Project activities within the Project AOI.
279. The Permit Holder shall ensure to the extent practical that dredging and construction is done to coincide with low flow periods of the Demerara River and water bodies within the Project's AOI.
280. The Permit Holder shall conduct dredging operations so as to maintain the ability for passenger vessels to pass (up and down) the river of the temporary MOF.
281. The Permit Holder shall monitor and manage excess overflow from hopper on dredging facility to improve efficiency and reduce turbidity in dredging supernatant.
282. The Permit Holder shall monitor and manage suction rate to improve efficiency and reduce turbidity in the water column during dredging.
283. The Permit Holder shall ensure to use smallest practicable diameter pipes for the piles for the temporary MOF.
284. The Permit Holder shall ensure the use of noise attenuating methods when driving piles in the Demerara River as appropriate, especially if large-diameter steel pipes are used as piles.
285. The Permit Holder must seek approval from the Government of Guyana, the EPA, and any other relevant authority, for the continue/permanent use of the temporary MOF.

Environmental Permit - Ref. No.: 20210528-NGPLE

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

286. The Permit Holder shall ensure an archaeological monitor is present when initial ground disturbance work occurs at the temporary MOF site.

Signed by



on behalf of the Environmental Protection Agency.

Date:

25.11.2022

Esso Exploration and Production Guyana Limited (EEPGL), hereby accepts the above terms and conditions upon which this Environmental Permit is granted and agrees to abide by the Environmental Protection Act, Cap. 20:05, Laws of Guyana, the Environmental Protection (Amendment) Act, 2005, and the Environmental Protection (Authorisations) Regulations, 2000, and any existing or forthcoming regulations, best practices, guidelines and standards made under this Act.

NAME:

ALISTAR G. ROUTLEDGE

DESIGNATION:

PRESIDENT

SIGNATURE:

[Signature]

DATE:

25 NOVEMBER 2022



