FINAL TERMS AND SCOPE FOR THE CONDUCT OF THE ENVIRONMENTAL IMPACT ASSESSMENT (EIA):

GAS TO ENERGY PROJECT.

APPROVED September 21, 2021.

PREAMBLE

The Terms and Scope herein has been developed to guide the preparation of the Environmental Impact Assessment (EIA) for the Gas to Energy (GTE) Project.

The Terms and Scope was prepared by the Environmental Protection Agency (EPA) in consultation with Environmental Resources Management (Consultants) which has been approved by the EPA to undertake the EIA for the above stated Project.

In accordance with the Environmental Protection Act Cap.20:05 the EPA published a notice of the Project and made available to members of the public a summary of the proposed Project. The public had 28 days to make written submissions setting out those questions and matters, which they require to be answered or considered in the EIA. The Terms and Scope herein was developed following this public notification period and sets out the requirements, both general and specific, that the consultants should address in the conduct of the EIA.

CONTENTS

1. INTRODUCTION

The Environmental Protection Agency (EPA) received from Esso Exploration and Production Guyana Limited (EEPGL) an application for Environmental Authorisation for the Gas to Energy Project, Onshore and Offshore Guyana (Project). The application was made in accordance with Section 11(1) of the Environmental Protection Act Cap.20:05 (EP Act Cap.20:05) and was accompanied by a summary of the Project with information on:

- The proposed site, design, size and duration;
- The possible effects on the environment; and
- A non-technical explanation.

The EPA conducted a review of the application and determined, in accordance with Part IV 11 (2) (b) of the EP Act Cap.20:05, that the Project may significantly affect the environment and will require an Environmental Impact Assessment (EIA). The EPA consequently, and in accordance with Part IV 11 (6), of the EP Act Cap.20:05, published, at EEPGL's expense, in a daily newspaper, a notice of the Project and made available to members of the public the aforementioned Project summary.

In accordance with Part IV 11 (4) of the EP Act Cap.20:05, this EIA will be carried out by independent and suitably qualified persons. Environmental Resources Management (ERM) was approved by the EPA as the consultants to conduct the EIA ("Consultants").

This Terms and Scope guides the preparation of the EIA. While Section 11 of the Act specifies "EIA", this Terms and Scope seeks to include social and economic components in keeping with current and international best practices for EIAs.

2. BACKGROUND INFORMATION

EEPGL is seeking Environmental Authorisation to construct and operate a pipeline from the Liza Phase 1 and Liza Phase 2 Floating Production, Storage, and Offloading (FPSO) vessels to an onshore natural gas liquids processing plant (NGL Plant). EEPGL is the designated Operator of the Stabroek Block and seeks authorisation for the Project on behalf of itself and co-venturers: Hess Guyana Exploration Limited and CNOOC Petroleum Guyana Limited.

Figure 2-1 provides a schematic of the major components of the Project, as well as the associated power plant. The power plant will be constructed, owned, and operated by the Government of Guyana or another entity. Therefore, for the purposes of this Terms and

Scope, the power plant and distribution of electricity from the power plant are not included in the scope of the EIA, except for their consideration when addressing cumulative impacts for the Project.

Table 2-1: Major Components of Project Infrastructure

Major Component	Description
Offshore Pipeline	12" diameter pipeline that will transport up to 50 MMSCFD of gas from Liza Phase 1 and Liza Phase 2 FPSOs to the connection with the onshore pipeline.
Onshore Pipeline	12" diameter pipeline that will transport up to 50 MMSCFD of gas from the connection with the offshore pipeline to the NGL Plant. The maximum flow capacity of the pipeline will be approximately 120 MMSCFD.
NGL Plant	Onshore plant that will remove propane, butane, and pentane NGLs—with the ability to be sold—and treat remaining gas to specifications required by the power plant, including dehydration and pressure let-down of gas received through the onshore pipeline.
Temporary Material Offloading Facility (MOF)	A temporary MOF may be established on the west bank of the Demerara River for offloading of heavy modules (use determination to be finalized pending detailed design study) and imported material or equipment.
Associated Infrastructure Upgrades	Some degree of construction access road development/improvement will likely be required along the onshore pipeline route. This will likely comprise a combination of soil stabilization and temporary hard surfacing, with restoration following completion of construction.
Logistics Support	• Ground-based vehicles, marine and riverine vessels, and helicopters will provide logistics support throughout all Project stages. • The Project will use existing onshore infrastructure support, including but not limited to shore bases, fabrication and fuel supply facilities, and waste management facilities.

The offshore pipeline will traverse approximately 220 kilometers (km), connecting with the onshore pipeline at a shore landing located west of the Demerara River. The onshore pipeline will extend approximately 27 km from the shore landing to the NGL Plant Site. As noted in the Government of Guyana letter of June 23, 2021, to allow for optimization, the final pipeline alignment will be within (+/-) 200 meters (m) of the government-proposed right-of-way (ROW). The final pipeline alignment and ROW will be optimized through this EIA process.

The NGL Plant Site lies approximately 23 km upriver on the west bank of the Demerara River on abandoned sugarcane fields. The NGL Plant Site occupies an area of approximately 40 acres (approximately 16 hectares [ha]). An additional area of approximately 100 acres (approximately 40 ha) adjacent to the NGL Plant Site may be used by EEPGL's construction contractor for support of the Project during construction.

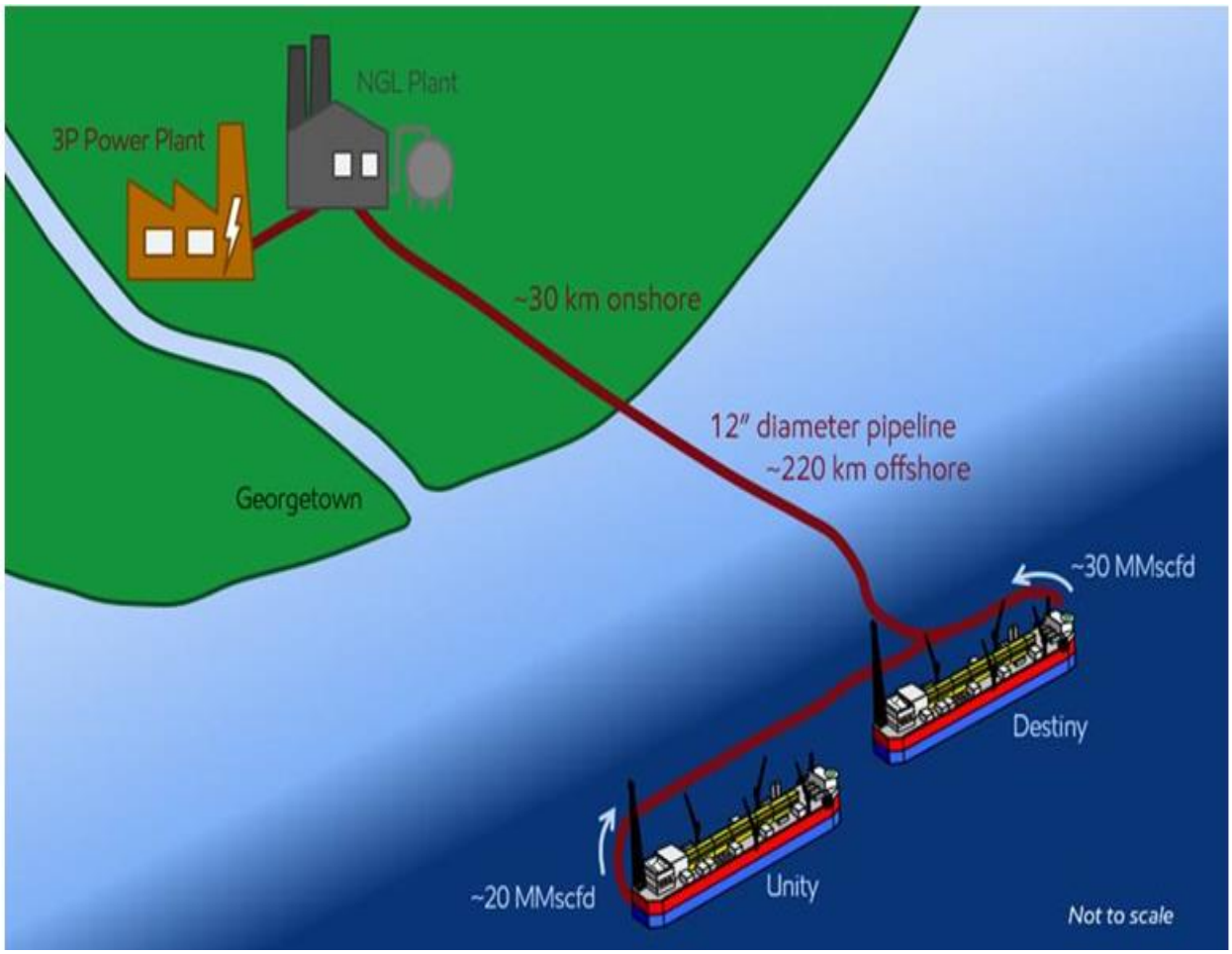

Figure 2-1: Notional Project Schematic

In addition, a temporary MOF may be utilized on the west bank of the Demerara River for offloading of heavy modules as well as other imported site construction materials (e.g., piles, rebar). The temporary MOF potentially could include a vessel-based crane, an offloading barge with riverside mooring points, and a ramp connection to a riverside laydown area. In-water activities may be required as part of the temporary MOF construction, the extent of which will be identified in future studies.

The additional support area and the temporary MOF would only be used during the construction phase of the Project and any temporary structures or equipment would be removed from this area upon completion of the construction phase.

Figure 2-2 depicts the offshore pipeline route and Figure 2-3 depicts the onshore pipeline route and the location of the Gas to Energy industrial zone, in which the NGL Plant will be located.

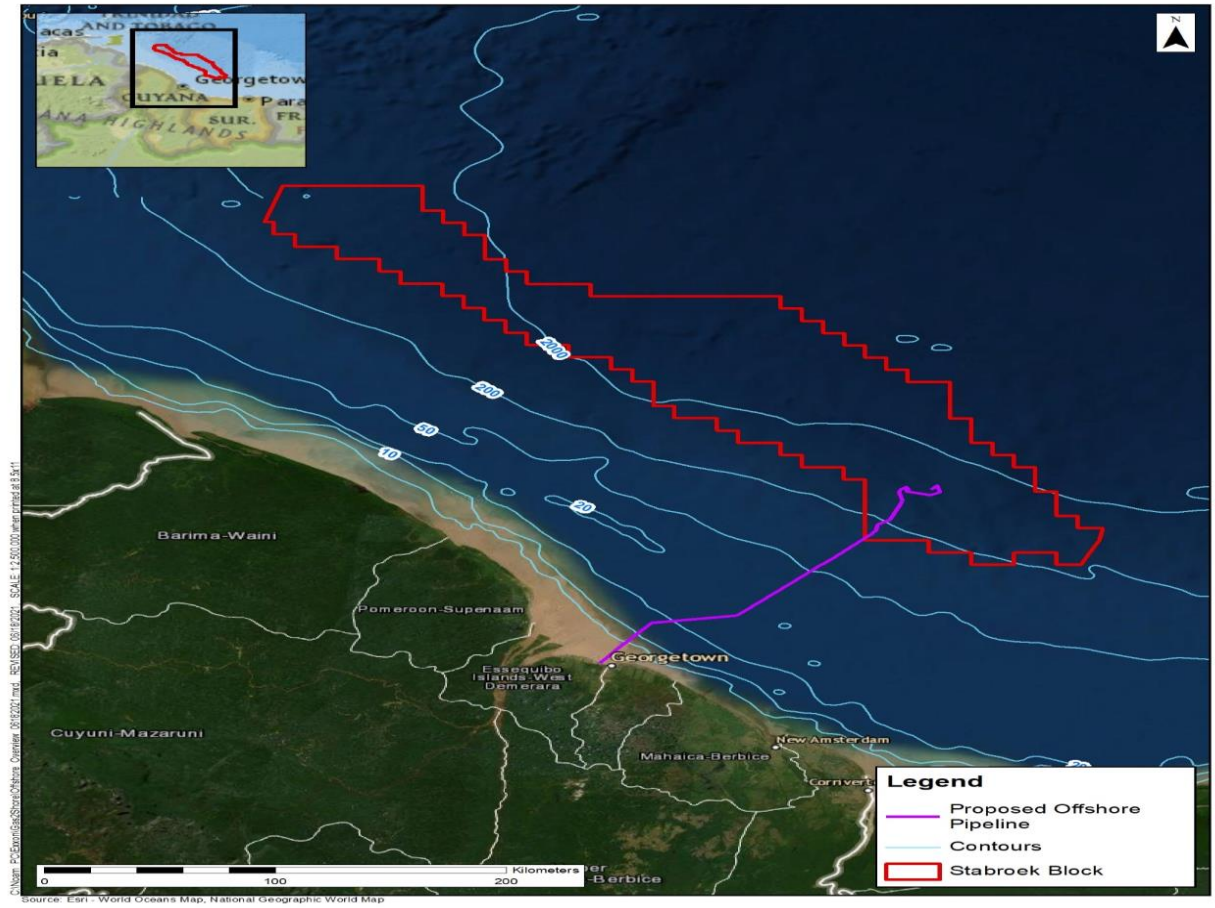

Figure 2-2: Offshore Pipeline Route

Figure 2-3: Onshore Pipeline Route and Gas to Energy Industrial Zone (in which NGL Plant will be located)

3. DESCRIPTION OF THE PROJECT

A detailed Project description must be provided and shall include but not be limited to:

A. The Project design including identification and detailed description of all components of the Project, including ancillary services in accordance with the EP Act Cap.20:05

B. Detailed process description of all construction and operational phases (i.e., natural gas pipeline installation and NGL plant construction, commissioning, and start-up; facility operations and maintenance, including logistical support and waste management; and decommissioning) of the proposed Project.

C. Description of proposed best available techniques, which consider economic and technical feasibility as well as facilities and controls to prevent or mitigate pollution from all components and processes related to construction, installation, testing, start-up, unplanned events, operations etc.

D. Discussion/description of the proposed Project in relation to existing and/or other planned/proposed projects or activities in the Project area.

E. Identification of staffing, support facilities and services that would be required during the different phases of the activity.

F. Identification of storage containers; barrels, drums, totes etc. and other similar items that can be reused, through sterilisation and those that need to be disposed.

4. SCOPE OF THE EIA

In accordance with Part IV (11) (5) of the EP Act Cap.20:05, every EIA shall contain the following information: -

(a) A detailed description of the Project, including but not limited to:

(i) The geographical area involved, the physical characteristics of the whole Project and the area requirements during the installation and operational phases, including plans and drawings;

(ii) The characteristics of the installation, construction, operation, and decommissioning process, including the nature and quantity of the materials used, plans, and drawings.

(iii) An estimate, by type and quantity (or concentrations, as appropriate), of expected contaminants, residues and emissions (water, air and soil pollution, noise, vibration, light, heat, radiation) resulting from the operation of the proposed Project;

(iv) The length of time of the Project;

(v) Studies outlined in the Appendix of the Terms and Scope

(b) An outline of the main alternatives studied by the developer and an indication of the main reasons for the developer's choice, taking into account the environmental factors;

(c) Direct, indirect and cumulative impacts/effects of the proposed Project on the environment including but not limited to: -

i. Human beings;
ii. Flora and fauna and species habitats;
iii. Water;
iv. Marine sediments and terrestrial soil;
v. Air and climatic factors;
vi. Material assets, the cultural heritage and the seascape;
vii. Natural resources, including how much of a particular resource is degraded or eliminated, and how quickly the natural system may deteriorate;
viii. The ecological balance and ecosystems;
ix. The interaction between the factors listed above; and
x. Any other environmental factor which needs to be taken into account or which the Agency may reasonably require to be included; and

xi. In accordance with Part IV, 11 (4) (b) of the EP Act Cap.20:05, the EIA must assess the Project with a view to the need to protect and improve human health and living conditions and the need to preserve the stability of ecosystems as well as the diversity of species.

(d) An indication of any difficulties (technical deficiencies or lack of knowledge or expertise) encountered by the developer in compiling the required information;

(e) A description of the best available technology;

(f) A description of any hazards or dangers which may arise from the Project and an assessment of the risk to the environment, socio-economics, and cultural heritage;

(g) A description of the measures which the proposed developer intends to use to mitigate any adverse effects and a statement of reasonable alternatives (if any) and reasons for their rejection;

(h) A statement of the degree of irreversible damage, and an explanation of how it is assessed;

(i) An Emergency Response Plan (ERP) summary addressing the procedures for containing and cleaning up any pollution or spill of any contaminant;

(j) The developer's programme for rehabilitation and restoration of the environment; and;

(k) A non-technical summary of the information provided under the preceding paragraphs.

5. REQUIREMENTS FOR THE ENVIRONMENTAL IMPACT ASSESSMENT AND ENVIRONMENTAL IMPACT STATEMENT

5.1 ORGANISATION OF THE REPORT (ENVIRONMENTAL IMPACT ASSESSMENT)

The EIA Report shall focus on significant environmental issues and must provide all the relevant information needed by the EPA to consider fully any adverse or beneficial impacts of the proposal. Where not covered by Guyanese laws or regulations, relevant international standards and guidelines such as but not limited to World Bank, International Maritime Organization (IMO), International Convention for the Prevention of Pollution by Ships, 1973, as modified by the Protocol of 1978 (MARPOL 73/78), and World Health Organization must be referenced in the EIA in discussions pertaining to operating and environmental practices.

The introduction to the EIA shall provide an explanation of the scope of the proposal and the issues and decisions which led to the proposal at this time and in this context, including a history of events leading up to Project formulation, envisaged time scale for implementation and Project life, anticipated establishment costs and actions already taken at the Project site.

The EIA Consultants and EEPGL shall ensure that all aspects contained in the suggested table of contents outlined below are addressed and integrated into the EIA Report, including integration of mitigation and monitoring measures for each medium/receptor.

Suggested table of contents:

Glossary

- Environmental Impact Statement (Executive / Non-technical Summary)

- Chapter 1: Introduction
    - Purpose and Scope of the EIA
    - Goal and Objectives of the EIA
    - Components of the EIA

- Chapter 2: Policy, Regulatory, and Administrative Framework
    - Guyana EIA legislative process
    - Other Relevant Guyana Legislation
    - Applicable International Treaties and Standards
    - Applicable International Standards

- Chapter 3: EIA Approach and Impact Assessment Methodology
    - Screening
    - Scoping
    - Assessment of Existing Conditions
    - Interaction with Design and Decision-making Process
    - Stakeholder Engagement, including stakeholder identification and consultation (records/minutes etc. in appendices)
    - Project Area of Influence
    - Resources and Receptors Assessed in the EIA
    - Assessment of Impacts and Identification of Mitigation Measures, including Significance Criteria

- Chapter 4: Alternatives
    - Project Alternatives (pipeline vs. LNG vessel)
    - Location Alternatives
    - Construction Alternatives
    - Operations/Process Alternatives
    - No Project Alternative

- Chapter 5: Project Description
    - Project Area
    - Onshore and Offshore Infrastructure
    - Construction Methodologies and Staging
    - Pre-commissioning Activities
    - Operations and Maintenance
    - Decommissioning

- Chapter 6: Stakeholder Engagement
    - Summary of consultations undertaken, issues raises, and where these issues have been addressed within the EIA

- Chapter 7: Assessment and Mitigation of Potential Impacts from Planned Activities – Physical Resources
        - Marine Geology and Sediments
            - Methodology
            - Existing conditions, baseline studies
            - Impact prediction and assessment
            - Mitigation and Monitoring Measures
            - Assessment of Residual Impacts

- Onshore Geology and Riverine Sediments
  - Methodology
  - Existing conditions, baseline studies
  - Impact prediction and assessment
  - Mitigation and Monitoring Measures
  - Assessment of Residual Impacts

- Soils
  - Methodology
  - Existing conditions, baseline studies
  - Impact prediction and assessment
  - Mitigation and Monitoring Measures
  - Assessment of Residual Impacts

- Air Quality, Climate, and Climate Change
  - Methodology
  - Existing conditions, baseline studies
  - Impact prediction and assessment
  - Mitigation and Monitoring Measures
  - Assessment of Residual Impacts

- Sound, Vibration, and Light
  - Methodology
  - Existing conditions, baseline studies
  - Impact prediction and assessment
  - Mitigation and Monitoring Measures
  - Assessment of Residual Impacts

- Water Quality (Marine, Riverine, and Onshore Surface Waters; and Groundwater)
  - Methodology
  - Existing conditions, baseline studies
  - Impact prediction and assessment
  - Mitigation and Monitoring Measures
  - Assessment of Residual Impacts

- Wastes
  - Methodology
  - Existing conditions (including existing and approved waste management facilities, baseline studies
  - Impact prediction and assessment
  - Mitigation and Monitoring Measures
  - Assessment of Residual Impacts

- Chapter 8: Assessment and Mitigation of Potential Impacts from Planned Activities – Biological Resources
  - Protected Areas and Special Status Species
    - Methodology
    - Existing conditions, baseline studies
    - Impact prediction and assessment
    - Mitigation and Monitoring Measures
    - Assessment of Residual Impacts

  - Marine and Coastal Biodiversity
    - Methodology
    - Existing conditions, baseline studies
    - Impact prediction and assessment
    - Mitigation and Monitoring Measures
    - Assessment of Residual Impacts

  - Terrestrial Biodiversity
    - Methodology
    - Existing conditions, baseline studies
    - Impact prediction and assessment
    - Mitigation and Monitoring Measures
    - Assessment of Residual Impacts

  - Freshwater Biodiversity (Demerara River, streams and canals)
    - Methodology
    - Existing conditions, baseline studies
    - Impact prediction and assessment
    - Mitigation and Monitoring Measures
    - Assessment of Residual Impacts

- Ecological Balance and Ecosystems
  - Methodology
  - Existing conditions, baseline studies
  - Impact prediction and assessment
  - Mitigation and Monitoring Measures
  - Assessment of Residual Impacts

- Chapter 9: Assessment and Mitigation of Potential Impacts from Planned Activities – Socioeconomic Resources
  - Socioeconomic Conditions (including economic activity, population, employment, and livelihoods)
    - Methodology
    - Existing conditions, baseline studies
    - Impact prediction and assessment
    - Mitigation and Monitoring Measures
    - Assessment of Residual Impacts

  - Community Health and Wellbeing
    - Methodology
    - Existing conditions, baseline studies
    - Impact prediction and assessment
    - Mitigation and Monitoring Measures
    - Assessment of Residual Impacts

  - Social Infrastructure and Services (including schools, community services, roads and traffic)
    - Methodology
    - Existing conditions, baseline studies
    - Impact prediction and assessment
    - Mitigation and Monitoring Measures
    - Assessment of Residual Impacts

  - Marine and River Use, Vessel Transportation
    - Methodology
    - Existing conditions, baseline studies
    - Impact prediction and assessment
    - Mitigation and Monitoring Measures
    - Assessment of Residual Impacts

- Cultural Heritage
  - Methodology
  - Existing conditions, baseline studies
  - Impact prediction and assessment
  - Mitigation and Monitoring Measures
  - Assessment of Residual Impacts

- Land Use and Ownership
  - Methodology
  - Existing conditions, baseline studies
  - Impact prediction and assessment (including land acquisition, physical and economic displacement)
  - Mitigation and Monitoring Measures
  - Assessment of Residual Impacts

- Landscape and Visual
  - Methodology
  - Existing conditions, baseline studies
  - Impact prediction and assessment
  - Mitigation and Monitoring Measures
  - Assessment of Residual Impacts

- Ecosystem Services (including analysis of previous environmental sensitivity studies for the coastal regions)
  - Methodology
  - Existing conditions, baseline studies
  - Impact prediction and assessment
  - Mitigation and Monitoring Measures
  - Assessment of Residual Impacts

- Indigenous Peoples
  - Methodology
  - Existing conditions, baseline studies
  - Impact prediction and assessment
  - Mitigation and Monitoring Measures
  - Assessment of Residual Impacts

- Chapter 10: Unplanned Events
    - Introduction
    - Types of Potential Unplanned Events
    - Resource/Receptor-Specific Impact Assessments
    - Identification of Precautionary Measures
    - Assessment of Residual Risk

- Chapter 11: Cumulative Impacts
    - Introduction
    - Objectives and Scope
    - Methodology
    - Other Projects and External Drivers
    - VEC Selection and Description
    - Impact prediction and assessment
    - Cumulative Impact Management Framework

- Chapter 12: Transboundary Impacts
    - Description of potential transboundary impacts that may occur as a result of Project activities

- Chapter 13: Environmental and Socioeconomic Management Plan Framework
    - Introduction
    - Regulatory and Policy Framework
    - Environmental and Socioeconomic Management Plan (ESMP) Structure
    - General ESMP Guiding Principles
    - Management Plan Contents (including a Waste Management Plan)
    - Environmental Monitoring, Reporting and Verification Framework
    - Management of Change

- Chapter 14: Residual Impacts and Conclusion
    - Summary of Residual Impacts
    - Summary of Project Benefits
    - Conclusion

- Chapter 15: References

- Appendices
    - Curricula vitae for team of Consultants representing ERM

- All relevant documentation supporting the EIA including summary records of consultations, data collection/survey forms etc.
- Modelling (e.g., Air Quality, Water Quality, Onshore Noise)
- ERP summary
- ESMP
- GTE Preliminary Decommissioning Plan

5.2 STUDY AREA/AREA OF INFLUENCE

The study area/area of influence (AOI) for the purposes of this EIA will be segregated into a Direct AOI and an Indirect AOI.

The Direct AOI is the area within which the Project has the potential for direct construction and/or operational impacts, such as substrate or land disturbance, vegetation clearing, and land acquisition. This area includes the following:

- Offshore pipeline — the area to be disturbed by the construction of the offshore pipeline and subsea tie-in infrastructure is conservatively assumed to be a 30-m-wide and approximately 220-km-long corridor.
- Onshore pipeline — the area to be disturbed by the construction of the onshore pipeline is conservatively assumed to be a 23-m-wide by 27 km-long corridor, plus the additional areas that will be disturbed by additional temporary work spaces and access road and bridge development/improvements.
- NGL Plant — the NGL Plant will require approximately 140 acres (approximately 57 ha) within the Gas to Energy industrial zone site, including construction laydown areas. Since the exact locations of the NGL Plant and construction laydown areas within the Gas to Energy industrial zone site are not yet finalized, the entire Gas to Energy industrial zone site and potentially affected upstream and downstream canals have been preliminarily included within the Direct AOI.
- Temporary MOF and Lower Demerara River—the area to be disturbed by the construction of the temporary MOF will be located on the west bank of the Demerara River. This component of the Direct AOI will include both the in-water area of disturbance, and the onshore area that will be temporarily disturbed or used to facilitate transport of materials from the temporary MOF to the Gas to Energy industrial zone site. This also includes the stretch of the lower Demerara River from its mouth to the temporary MOF, which will be used to transport heavy equipment and facility modules.

The offshore and onshore components of the Direct AOI are depicted on Figures 2-1, 2-2, and 2-3. The planned Project activities will generate noise and discharges to water and

emissions to air, which could result in potential impacts on ambient sound, water quality, and air quality, respectively, outside the geographic extent encompassed by the Direct AOI. The EIA will include modeling of these elements, and the results of the modeling will be used to confirm that the Direct AOI is inclusive of the extent of potentially significant impacts on resources/receptors (or adjust it, as appropriate).

The Indirect AOI is the area within which the Project has the potential for indirect construction and/or operational impacts. The Indirect AOI is defined as follows:

- Offshore Indirect AOI — there will be the potential for indirect impacts associated with unplanned events associated with the offshore pipeline (e.g., fuel spills from construction vessels). Modeling will be conducted to define the area that could potentially be affected by such an unplanned event.
- Onshore Indirect AOI — this includes Regions 2, 3, and 4. Portions of these regions could potentially experience indirect adverse environmental and social impacts (e.g., interference with fisheries activities during offshore pipeline installation) as well as socio-economic benefits (e.g., job creation, purchasing of services and goods).

Specific Project Location

Describe Project location to include overall positioning of the offshore and onshore pipelines, NGL Plant, temporary MOF, and other support facilities; an indication of the proposed components in relation to one another and surrounding areas; boundaries, buffer zones / setback distances; fishing and transportation routes; relationship to other onshore and offshore activities in the area; and clear definition of the boundaries within which the activity is intended to occur.

Mapping and Use of Geographical Information System

Mapping, as referred to in this Terms and Scope, shall be considered to be spatial data to scale, represented in digital or printed format. Mapping should be illustrated with the use of photographs, map sheets and diagrams at easily understood and appropriate scales to illustrate the spatial extent of the Project and the impact area. Printed maps of the site area shall clearly indicate the layout of the facilities in the context of the immediate site, as well as relative to the wider study area. Each printed map shall be at appropriate/easily understood scales for the overview being illustrated (e.g. 1:10 000 or 1:5000 for site plans) and shall be inserted at the point of reference in the text in the EIA. In the event that any of the maps are large and/or bulky, these should be incorporated into one of the appendices, as appropriate. All maps and figures shall adhere to the following guidelines:

- Spatial data shall be appropriately scaled;

- Map/figures shall be clearly legible and include proper legends/keys;
- Maps/figures shall be dated and the source of the datum stated;
- Maps/figures shall include an appropriate scale and a north arrow.

The use of scanned documents, texts or graphics is not preferred. All documents or content that is reproduced from existing sources will be clearly legible.

Due to the scale and nature of this intended Project and the study area, the use of geographical information systems (GIS) to represent spatial data shall be required wherever practicable. Submitted data shall be presented in a working GIS project compatible with ArcMap 10.3 and be organised into discrete themes (i.e. shape files, geodatabases). Data themes shall illustrate, but not necessarily be limited to, the following features/attributes:

- Location of onshore and offshore Project components;
- Location of the onshore pipeline corridor and the NGL Plant;
- Proposed buffer zones / setback distances;
- Site layout for Project;
- Baseline AOI;
- Marine and terrestrial habitats;
- Demographics of the AOI;
- Recreation facilities/activities within the AOI (if applicable);
- Topography (contour lines at appropriate intervals, preferably in meters), including derived digital elevation models (DEMs) and triangulated irregular networks (TINs);
- Sampling points for baseline data;
- Intended effluent discharge points;
- Administrative areas (e.g., regional corporation);
- Known archaeological sites and sites of historical interest; and
- Proposed monitoring stations/points.

Digital data themes or shape files should be clearly labelled/annotated with supporting metadata. The use of GIS would not otherwise exclude the use of photographs, map sheets and diagrams at easily understood and appropriate scales to illustrate the spatial extent of the Project and the impacted area. Such photographs should be indexed with the map sheet to aid in the illustration process. Updated high resolution aerial and satellite imagery should be used as reference data.

Baseline air and water quality data will be presented in a format consistent with these guidelines in consultation with EPA.

5.3 METHODOLOGY AND SIGNIFICANCE CRITERIA

Describe the general methodology used in the conduct of the EIA, including data collection and analysis, impact analysis, cumulative impact analysis, formulation of mitigation measures and monitoring programme, and assessment of alternatives. A method of determination of impact significance must be clearly outlined, including specific significance criteria that would allow the reader to understand the level of impact of the Project on key ecological and socio-cultural components and how these levels were estimated.

Data collection methodologies, protocols and quality assurance and control procedures should clearly be described and in accordance with established standards. Contractors and suppliers for offshore surveys should implement quality assurance systems that are appropriate to their study scopes. These systems should apply to all aspects of the work from sample collection and analysis to presentation and reporting of the results.

The name, address, and contact information for any laboratory that is used for analysis must be included in the EIA, including evidence of competency and skill set of personnel collecting data. Field staff shall self-certify that they calibrated portable lab equipment in accordance with manufacturer's specifications and provide a copy of the calibration specifications as an appendix to the EIA.

5.4 PROJECT ALTERNATIVES

The Project Proponent is required to examine and describe alternatives to the proposed Project, including components and design in accordance with Section 11 of the EP Act Cap.20:05. This investigation should include, but not necessarily be limited to, the following aspects:

- The EIA will discuss feasible alternatives for the proposed Project and location;
- The EIA will describe the alternatives considered for the development concept;
- The EIA will describe the alternatives considered for key Project technologies, including key equipment and key environmental performance criteria, during the design development - where such alternatives could have a potential environmental impact. The basis for selecting the preferred alternative should be described in the context of good international industry practice and relevant international standards and guidelines.
- The reasoning for the selection of the proposed Project compared to other potential options should be given;

- For project components involving significant greenhouse gas (GHG) emissions, the alternatives analysis shall compare the GHG emissions for each alternative;
- The no action' alternative must also be considered. Provide a comparison of impacts as a result of a continuation of existing activities and conditions with those of the proposed Project and action alternatives. This will demonstrate potential changes in the existing socio-cultural and environmental baseline conditions without the Project. Alternatives shall be discussed in sufficient detail to clarify the reasons for preferring certain options and rejecting others. The reasons for choice of the preferred option(s) must be explained, including the following:
    - A comparison of the adverse and beneficial effects (both to the environment and community) used as the basis for selection;
    - Compliance with government policy;
    - Compliance with the principles and objectives of sustainable development;
    - The impact of significant delay or abandonment of the Project before all of the proposed phases are completed.

5.5 LEGISLATIVE AND REGULATORY FRAMEWORK

Examine the general policy, legislative and regulatory framework such as national policies and legislations relevant to the Project, which are not environmental media-specific, and assess the extent to which the Project is in line with these requirements. This examination should include, but not necessarily be limited to the following:

- Environmental Protection Act Cap.20:05 and Regulations 2000;
- National environmental policy and legislation, planning and development control frameworks including protected areas and environmental quality standards with implications for the Project, such as environmental protection, health and safety and land-use control;
- Regional and international agreements and conventions relevant to the Project and its activities;
- Regulatory agencies responsible for environmental protection and planning, their resources and capacity to address the issues raised by the Project; and
- The local, regional, national and international laws relevant to the Project and/or its potential impacts.

The EIA will also describe how the proposed Project might support Guyana in meeting relevant commitments to the United Nations Sustainable Development Goals and the United Nations Framework Convention on Climate Change (UNFCCC).

5.6 STAKEHOLDER IDENTIFICATION AND CONSULTATION

This is enshrined in Section (11) (9) of the EP Act Cap.20:05, which states: During the course of the EIA the developer and the person carrying out the EIA shall:

(a) Consult members of the public, interested bodies and organisations;
(b) Provide to members of the public on request, and at no more than the reasonable cost of photocopying, copies of information obtained for the purpose of the EIA.

The EPA has determined that consultations should be conducted with (but not limited to) the following stakeholders:

- The Guyana Geology and Mines Commission (GGMC);
- The Regional Democratic Council, Regions #1 - 6;
- Ministry of Natural Resources;
- Indigenous Peoples representatives' groups and communities;
- Community-based organisations, NGOs including the World Wildlife Fund (WWF-Guianas) and Conservation International (CI – Guyana), Local decision-making bodies;
- Centers for Disease Control and Prevention;
- Central Housing and Planning Authority;
- Guyana Lands and Survey Commission;
- Guyana Office for Investment;
- Other appropriate local authorities in Guyana;
- Other industry stakeholders in the vicinity;
- Other business interests that may be affected by the Project; and
- The Public (include but not limited to fisherfolk, vulnerable groups, and communities directly affected by the Project) (Refer to Appendix 2 for Stakeholder Consultation Plan for further guidance).

The EIA shall address the concerns raised during the scoping and during the consultation(s) as part of the conduct of the EIA. The EIA Report must demonstrate that public concerns have been adequately considered by suggesting possible modifications to the Project proposal or by clarification of items within the document.

All public consultation results must be documented and relevant records included in the appendices of the EIA. These records shall also contain details on the manner in which the public was notified, the groups targeted, a description of the stakeholder consultation

process, a list of all stakeholder groups included in the process, the number of meetings held, location of the meetings, dates held, minutes of all meetings, a copy of the survey questionnaires used (if any), and the results of surveys.

5.7 DESCRIPTION OF THE PROJECT

A detailed Project description will be provided, including design, and the various phases of the proposed Project covering construction, installation, start-up, unplanned events and operations; historical and current state of operations and/or exploration. Project description shall include:

The characteristics of the Project phases, including the nature and quantity of the materials used, plans, drawings, and models. Discussion on characteristics shall include but not be limited to the following:

- The Project location and land/ROW acquisition requirements;
- Detailed construction method statement for each phase of the Project;
- Detailed description of construction, installation, pre-commissioning, commissioning, and start-up of each Project component, using graphics (such as process flow diagrams) to illustrate the process, including but not limited to:
    - Pipeline System
        - Layout of offshore pipeline and connection to FPSOs;
        - Layout of onshore pipeline;
        - Pipeline construction techniques and installation;
        - Pipeline pre-commissioning, including hydrostatic testing, pigging, and inerting; and
        - Pipeline cathodic/anti-corrosion protection, metering, and safety features for both offshore and onshore pipeline sections.
    - NGL Plant
        - Clearing and earthwork;
        - Layout of NGL Plant; and
        - Construction process.
    - Temporary Facilities
        - Temporary MOF:
            - Required dredging, including dredging method, location, quantity, disposal location, and potential for maintenance dredging (limited to construction phase given the MOF is temporary).
            - Marine vessel traffic to/from the temporary MOF;
            - Offloading operations; and
            - Decommissioning.

    - Associated Infrastructure
        - Road/bridge needs for pipeline ROW and NGL Plant Site; and
        - Utility needs.
    - Services and Logistics Support
        - Identification of required support facilities, including shore bases, warehouses, storage and pipe yards, fabrication facilities, fuel supply facilities, and waste management facilities in Guyana; and
        - Identification of logistical support needed, including ground vehicles, on-water vessels, and helicopters.
    - Offshore ancillary services, which are limited to the construction phase (e.g., fuel bunkering, supply vessels)
- Detailed description of Project operations and maintenance, and decommissioning of the Project; using graphics (such as process flow diagrams) to illustrate the process:
    - Pipeline System
        - Pipeline maintenance and monitoring.
    - NGL Plant
        - Process operation, including pressure let-down, mercury removal, acid gas removal, dehydration, and fractionation to separate a mixture of light hydrocarbons into various pure productions.
- Maintenance (e.g., preventative, corrective, breakdown) schedule for each key component of the Project infrastructure;
- Operational life expectancy of the NGL plant and pipelines;
- High-level description of Project decommissioning;
- Identification of staffing and services that would be required during each Project phase;
- Description of best available techniques, which consider economic and technical feasibility as well as facilities and controls to prevent or mitigate pollution for key facilities including the pipeline system and NGL Plant;
- Description of water discharges, air emission, and soil impacts for each Project phase;
- Discussion of the Project in the context of existing and/or other proposed projects or activities in the Project area;
- Non-routine, unplanned events
    - Hazardous material spill or release;
    - Natural gas leak;
    - Other unplanned events (e.g., vehicular accident, helicopter accident, vessel collision).

Schematics/graphics shall be included to illustrate the process, including, but not limited to:

- Location and layout of subsurface and surface facilities;
- NGL Process Systems;
- Safety and Personal Protection Systems:
  - Firewater system
  - Fire and gas detection system
  - Blanket gas generation

Additional specific information required by the EPA to be included in the Project Description are included in Appendix 3.

5.8 ENVIRONMENTAL SETTING/BASELINE CONDITIONS/STUDIES

Existing Information/Studies

As indicated in the suggested table of contents, representative baseline data for the specific environmental medium including data compiled by review of existing information published, experts and other sources will be presented in separate chapters. Each chapter must contain an assessment of the environmental consequences on that specific medium imposed by the Project stresses for each element of the Project including construction, operation and closure. The impacts must be classified based on the impact assessment methodology. The assessment must include impacts classification after implementation of mitigation measures. Mitigation (environmental management) measures and monitoring protocols must be included for respective chapter and medium to address the identified impacts.

The following is a general guide to the expected level of assessment and type of information required:

All readily available information, including representative information and baseline data relevant to the proposed Project site and the direct and indirect AOI will be assembled and reviewed including local maps and any existing EIAs. The AOI will encompass the watershed and water bodies that may be possibly affected by liquid and soils waste emanating from the Project operations. The review should as far as possible will examine publicly available documents held by but not limited to the EPA, the GGMC, Ministry of Natural Resources and other local authorities and NGOs. The review will also examine data on environmental, economic and social variables, which may include site geology, hydrogeology, surface water flow, land use in the Project area and its vicinity, the

proximity of indigenous communities and the likely presence of archaeological resources in the area etc.

- Examples of documents to be reviewed include:
- Fisheries and shipping studies for the area
- Data on aquatic resources of the area
- NGOs information on the AOI, including CI - Guyana and WWF-Guianas
- Topographic Maps, etc.

All readily available historic and representative baseline data for the bio-physical and socio-cultural environment must be assembled and evaluated. The historic baseline data will possibly include:

- Biological resources in the area including the presence of any unique ecosystems, natural habitat or endangered and or critically endangered species
- Historical and cultural association of the AOI
- Permanent or transient uses of the AOI
- Metocean data
- Risk of natural hazards, e.g. seismic events
- Local meteorological conditions

Historic baseline data must be compiled for socio-economic variables in the AOI including historical human activities within proximity of the study area, persons who engage in these activities and any artefacts related to those activities.

Baseline Studies/Assessment

Field and additional studies will be undertaken to fill appropriate data and knowledge gaps to enable a comprehensive description of the baseline data for the specific medium, as necessary to update existing information where appropriate. The data presented shall be representative of the study area/AOI. The term 'representative' defines the extent to which a set of measurements taken at a collection site spatially and temporally reflects the actual conditions within the AOI. Therefore, in instances where the data are being collected and reported from stations that are located off site i.e. outside the boundaries of the AOI, a justification must be provided to demonstrate that the data are representative of the AOI. Otherwise, the Proponent will be required to provide more accurate, site-specific data. The study must include changes that may occur before the Project commences in light of previous, ongoing (i.e. other operations within the defined study area) or future activities that could reasonably be determined to have a combined effect. Sufficient detail must be given to allow a clear understanding of the likely negative impacts of the proposed Project and to assess the effectiveness of any proposed mitigation

measures on the specific module. An examination of any positive impacts should also be included to ensure as comprehensive an assessment as possible. Adequate spatial and temporal samples shall be taken to ensure a proper assessment of baseline conditions.

Baseline information shall include but not necessarily be limited to the following:

Air Quality, Climate, and Climate Change

As far as practicable, the following should be described:

- The wind regime of the Project area, including wind speed and direction, prevailing wind conditions, seasonal variations and storm conditions as supported by representative meteorological data for the area.
- Rainfall in the areas, including seasonal variations.
- Air Temperature and Relative Humidity.
- Appropriate ambient air quality parameters associated with expected emissions of this type of project and supporting baseline data.

Water Resources

With regard to this medium, information will be provided on ambient water quality, including surface water, groundwater water, and marine water, including comparison with applicable water quality guidelines. The groundwater and surface water samples must be analysed for metals, volatiles, semi-volatiles, and pesticide and herbicides in the AOI.

Soils

Soil samples collected during the baseline study must be analysed for metals, volatiles, semi-volatiles, and pesticide and herbicides in the AOI.

Geophysical and Geotechnical Studies

A geophysical and geotechnical field study will be conducted for the pipeline to support Project design. A desktop probabilistic seismic hazard assessment will also be conducted to provide input to the pipeline's seismic design considering various hazards (e.g., earthquakes, landslides, slope instability, substrate condition).

Noise and Vibration

The noise baseline study shall include collection of ambient noise within the project area. No vibration baseline study will be conducted, but the EIA will assess potential impacts

from Project vibration and include any appropriate mitigation and/or monitoring measures.

Biological Environment

For this medium the baseline shall include the following data on aquatic flora and fauna:

- Use of site-specific field surveys to assess the aquatic environments for impact prediction and development of mitigation and monitoring programmes. The sampling regime must be scientifically rigorous and statistically significant to allow for future comparisons.
- Life cycles, seasonality and migration of species (where applicable) shall also be captured.
- Information on plant species and communities that are present within the AOI, including information on any rare or endangered plant species, and information on any specialised or unique plant communities that may be present.
- Mapping of plant communities (for example mangroves) and the area of estimation of any community type that may be lost due to Project activities.
- Fauna of the site and their use of the surrounding environments - document and describe any species of wildlife including, but not limited to, amphibians, fish, reptiles, birds, mammals and invertebrates, that use the AOI.
- Detailed habitat assessment, including identification of those of resident species of major watercourses on site, and especially those which will be altered by the Project (where applicable).
- Artisanal and ocean fisheries (whether commercial, subsistence, or recreational), including the species targeted by local communities in the study area.
- Environmentally sensitive species and areas in the AOI.
- Rare, threatened, endangered and endemic species.
- Details on any invasive species (flora and fauna) discovered during baseline surveys.
- Map showing biodiversity distribution.

Ecosystem Services

The baseline shall examine the direct and indirect contributions of the Project area to biodiversity health and human wellbeing with an emphasis on current users or beneficiaries. Further, the EIA will need to provide information on ecosystem services and identify priority ecosystem services.

Social and Economic, and Cultural Environment

The baseline will describe the social and economic baseline of the Project. Representation of the baseline conditions will be relevant to the proposed Project's AOI, as it relates to its potential bio-physical and socio-economic and cultural impacts. This may be achieved through the collection, reporting and analysis of appropriate and sufficient data from relevant sources and primary research. Map overlays (depicting any socio-economic users within the areas of potential impact) should be used to provide a spatial portrayal of socio-economic and cultural data. Field studies shall be undertaken as necessary to fully establish an appropriate social baseline, and to update information that may no longer be current. Appropriate data gathering methods shall be used commensurate with the level of detail required to determine risk to socio-economic and cultural components.

The social baseline shall include, but not be limited to, the following information:

- Information about the traditional, existing and proposed social and economic uses of Project's AOI identified above, and the nature, size, location and duration of their potential interactions with the environment. Social and economic use shall be described both for amenity and aesthetics, and in terms of its importance to cultural activities.
- Customs, aspiration and attitudes - indicate (by providing summary of consultation results) the perceived acceptability of the proposed Project to nearby communities and users of the area.
- Archaeological, cultural and historic value of the areas.
- A discussion of Local Content and Capacity-building efforts being undertaken by the Proponent.

5.9 IMPACT ASSESSMENT

Identify all impacts that could arise during each phase of the operation and distinguish, where applicable, between negative and positive impacts, direct and indirect impacts, immediate, short-term and long-term impacts, and cumulative impacts. To illustrate significance, direct comparisons should be made between estimates of the potential impacts and the baseline conditions for given parameters/indicators.

Describe impacts quantitatively, as far as possible. The reliability of forecasts and predictions shall be indicated as appropriate. Impacts must be categorised and illustrated using an appropriate format e.g. matrices where applicable. Data from other existing

activities using the same technology should be used to compare, or assist in the prediction of impacts for this proposed Project, where applicable.

Areas of impact/hazards shall be illustrated in map form and those that are unavoidable or irreversible must be specifically identified. Significant changes to baseline conditions shall also be quantified where possible. A determination of impact significance shall be provided for each key environmental, socio-economic, and cultural component (by major phase or activity) after considering the application of proposed mitigation measures (i.e. rate the significance of residual effects following mitigation).

The potential impacts to be discussed include, but are not limited to, those related to:

- Human beings and community (health, safety, socio-cultural);

- Investigate possible effects to demographic and socio-economic and cultural profiles of the communities that would be potentially affected by the Project e.g. consider local employment and training, local procurement, vulnerable groups (youth and elderly, handicapped, other users of the area etc.), transport, health services, security, lifestyle and culture. The potential for unplanned settlements, overloading of any community infrastructure and social conflict between workers and communities, should also be included;

- The introduction of increased dangers (e.g. fire, explosion, spills, chemical and other hazardous substances, if applicable) to the surrounding environment, including coastal communities;

- Infrastructure and utilities (water, electricity, services, waste disposal, etc.). Consider the indirect impact of accessibility of this area to humans and the attendant demand on infrastructure and utilities;

- Impact of the Project on transportation planning and traffic — discuss potential health and safety impacts due to changes in marine and riverine vessel traffic and onshore vehicular traffic conditions, such as increased volumes;

- Discuss the potential for changes to air quality that might increase human exposure to contaminants/pollution including the impacts of the increased volume of dust and the potential health impacts associated with exposure to these contaminants/pollutants;

- Flora and fauna including, but not limited to, such aspects as:
    - Impacts on terrestrial and aquatic habitat use and ecology;
    - Impacts to sensitive species such as endangered or subsistence/commercially exploited species;
    - Expected changes in the health of flora and fauna that will result from the introduction of the activity. This must include any expected changes to species count and diversity within the study area. The assumptions used for making such correlations must be explained;
    - Natural habitats - determine/estimate the degree of habitat degradation likely to occur both in qualitative and quantitative terms (i.e. extent of habitat degradation or reduction as well as the reduction in biodiversity and available ecological niches);
    - Wider impacts on marine ecology of the study area, as effects are transferred along the food chain;
    - Include impact to migration pathways for fauna over production life of the field.

- Water quality — including, but not limited to, such aspects as the effect of the discharges from the Project on water quality (discharges include but not limited to domestic wastewater, process water, hydrostatic test water, and storm water). The EIA will assess the impacts of all anticipated Project-affected discharges or runoff. This assessment will be supported by modelling analyses, as appropriate.

- Air quality, climate and climate change, including, but not limited to, such aspects as:

    - Air quality as a result of exhaust emissions from machinery and equipment;
    - Upset events which require processes such as flaring and venting;
    - Description of Project design elements that will result in reduced emissions, including GHG emissions;
    - Impacts to air from area, mobile, and stationary sources;
    - Predicted air quality emissions shall be compared to appropriate international standards (e.g., WHO and USEPA standards for ambient air quality and stack emissions);
    - Estimated Project emissions for each phase of the Project. Dispersion modelling (e.g., AERMOD) will be used to evaluate operational phase point source emission sources. Construction and decommissioning phase area emission sources will be estimated using a spreadsheet application. A quantitative discussion of Scope 1 (direct emissions from Project) and Scope 2 (emissions resulting from generation of power purchased by the Project

for the Project's use/consumption) GHG emission inventory will be prepared in accordance with API and the Intergovernmental Panel on Climate Change methodologies. GHG emissions from the Project will be compared to national and regional emissions and typical emissions from NGL projects;
  - The impacts of atmospheric emissions (including GHG emissions) must be rated in the EIA and a description of steps taken to reduce GHG emissions must be provided. GHG emissions reduction measures should be identified as appropriate;
  - Potential options to mitigate emissions impacts, including GHG emissions, should be discussed; and
  - An inventory of GHG emissions from the Project, as well as all of EEPGL's current and planned exploration, development and production operations in Guyana.

- Vibration and Light: In the absence of national standards for vibration and light, international impact standards shall be referenced and compared with the results of the impact assessment.

- Marine sediments and geology: Assess the potential for operations to affect the stability of the seafloor substrate in terms of subsurface stability (i.e. vulnerability to erosion), shear strength, porosity and compressibility and the area of seafloor affected by installation of subsea infrastructure. This assessment should be done in the context of baseline pre-development conditions.

- Water quality: Assess the types and sources of contaminants in any streams draining from the Project site into main natural watercourses. Analysis must include assessment of seasonal variations, and comparison of findings with acceptable water quality standards consistent with international standards and guidelines (World Bank, MARPOL 73/78, IMO, where applicable).

- Wastes: Identify the activities of all phases of the Project that may produce both hazardous and non-hazardous solid waste, and assess the possible impacts associated with the type of waste produced. Describe and assess the expected waste streams from the proposed Project activities during the installation, operational and decommissioning phases of the Project, as per Appendix 1 (Waste Management Plan). This will include information on the quantity, form, hazard, and toxicity of each significant waste stream, as well as any attributes that may affect its likelihood of dispersal in the environment, as well the associated risk of causing environmental harm. EIA to confirm that current hazardous and non-hazardous waste facilities in Georgetown have sufficient capacity, are upgraded

and suitable for their utilisation for cumulative Project waste. The consultant will consult with EPA to obtain a list of approved waste management facilities in Guyana, the wastes each is authorized to manage and dispose, their capacity, and other applicable information.

- Impacts on archaeological and historical sites and cultural resources of interest, where applicable.

- Assess potential impact of the Project on those functions and services, and describe what management measures would have to be implemented in the Project design to achieve sustainable management of the Project.

5.10 MITIGATION AND MONITORING—ENVIRONMENTAL AND SOCIAL MANAGAMENT PLAN

Mitigation measures and monitoring should be presented in the form of an ESMP, and will consolidate the management measures recommended for each environmental medium and social receptor into resource/receptor-specific sections. The ESMP shall be the management plan for the Project that seeks to manage identified potential impacts and environmental issues (by media) resulting from the proposed Project, describing the specific measures to be taken to avoid, manage or compensate for identified potential negative impacts. Mitigation measures shall specifically describe how existing pollution would be handled to prevent a cumulative effect with respect to the intended Project.

Proposed mitigation measures to reduce adverse effects and measures to enhance benefits must be clearly described. A list of all commitments for mitigation, monitoring and follow-up measures must be clearly recorded and included in the respective chapters for each environmental medium. This list shall include, at a minimum:

- Energy efficiency of process equipment - with an explanation of how the Project's design has been engineered to minimise GHG emissions - should be discussed in the EIA with GHG minimisation justification.

- In consideration of significant adverse impacts that were identified and analysed in the EIA, measures shall be identified through assessment of Best Available Technologies, consistent with good international practice to avoid, mitigate or remedy such impacts to acceptable levels. These should satisfy, and show comparison with, local environmental, health and safety standards/guidelines and, where these are not available, international standards/guidelines shall be used. In those cases where negative impacts are known or expected to be significant, it is to the Proponent's benefit to follow the impact hierarchy of avoidance, minimisation, and mitigation in the Project planning. Avoidance of impacts (e.g. to sensitive areas) should be the first choice and is the most beneficial

to the Applicant in economic terms. If significant impacts can be avoided, the costs and delays associated with mitigation planning and permitting are also avoided. If impacts cannot be entirely avoided, it is to the Proponent's benefit to minimise impacts for the same reasons. Mitigation is the least desirable course of action because of the costs and delays related to mitigation planning, design, permitting and implementation, as well as potential for some measure of degradation to or loss of natural resources.

- A detailed monitoring plan (including monitoring frequency and reporting formats) must be provided within the ESMP for the different aspects (e.g., air quality, water quality) of the Project to ensure that mitigation measures are achieving their objectives. Where monitoring indicates that objectives are not being met, contingency plans to minimise adverse situations that may arise (or that have arisen) must be described. Monitoring programmes shall address the physical, biological and social impacts of the Project. The parameters/indicators to be monitored and their respective frequencies of measurement must be detailed.

- EIA will include a Temporary Material/Marine Offloading Facility Restoration Plan.

5.11 CUMULATIVE IMPACTS

An assessment will be conducted of the cumulative socio-economic and environmental effects that are likely to result from the proposed activities in combination with other existing, approved and proposed projects in the AOI that could be reasonably be considered to have a combined effect. The cumulative assessment must be based on an adequate understanding of the design and operation of the proposed activity, as well as other existing, approved and proposed projects.

5.12 EMERGENCY RESPONSE PLAN SUMMARY

A summary of the ERP must be prepared outlining the response procedures and preventive measures that are essential for effective and timely management of an emergency situation / unplanned events, which includes the following:

- Applicable legislative framework for emergency response in Guyana
- What possible emergency may occur and what actions can be taken to prevent an emergency;
- What precautions would minimise the effects of an emergency, should one occur;
- What immediate actions personnel should take to contain an emergency;
- Whether employees have the skills necessary to carry out the procedures outlined within the ERP;

- Who will assume temporary command of the emergency effort;
- Who is in charge of which parts of the emergency operation;
- What kinds of special services and mutual aid support are available to sustain rescue actions, including the Civil Defence Commission's response capabilities in the event of an emergency;
- How key personnel will obtain information and assess reports to make critical decisions;
- Detail how in the command structure, training, and resource provision is the Company ERP intended or designed to incorporate local, national and regional response efforts; and
- What media relations procedures would be undertaken in the event of an emergency.

5.13 GTE DECOMMISSIONING

A description of GTE decommissioning must be provided in the EIA along with a description of activities associated with this phase taking into account environmental considerations. The conceptual decommissioning plan provided in the EIA study must include the following details:

i. Regulatory framework guiding the decommissioning programme.
ii. Overview of installations that will be decommissioned
iii. Proposed decommissioning options/methods and environmental considerations, taking into account the ever-evolving international best practices,
iv. Proposed methods for disposal and removal of waste
v. Proposed monitoring programmes post decommissioning
vi. Identify the potential waste streams resulting from decommissioning, such as general construction debris, as well as the potential for contamination (e.g., heavy metals such as mercury), and identify potential waste treatment and management options for facility decommissioning.

5.14 OTHER INFORMATION

Environmental assessment requires interdisciplinary analysis. Experts in their relevant fields should interpret information obtained and where necessary, appropriate references and technical/scientific analyses shall be provided to support such interpretations. This shall also apply to social issues, especially when dealing with sensitive matters.

An EIA shall be submitted for public comment in accordance with Section 11 (10) of the EP Act Section 11(10) stipulates a period of not less than sixty (60) days to receive public comments and this EIA and EIS would be made available for such comments as part of an administrative record.

In order to aid the review process, the following information should be submitted to the EPA:

- Four (4) hard copies and one (1) digital copy of the EIA Report to be submitted to the EPA in the first instance for preliminary review. If the EPA is not satisfied with the original submission, the documents will be returned to the Proponent to address these concerns; If the submission is deemed acceptable, the Proponent will be requested to submit a further 21 hard copies and two (2) digital copies of the EIS;
- Digital copies of the EIS should be in PDF format and the Executive Summary in Microsoft Word. Each Module/Volume of the EIS and each Appendix must be individual PDF files; all spatial and mapped data required must be provided digitally in a GIS format compatible with ArcMap 10.3.

These will be copied and used for the public comment process, as well as being available to other departments/agencies that would have a critical role in the evaluation of the EIS.

A list of all studies and reports contributing the preparation of the EIA must be identified in the EIA Report.

List of Appendices

Appendix 1: Waste Management Plan

The EIA should include or make reference to a Waste Management Plan covering management of all wastes that could be generated by the Project. The Project Waste Management Plan should reference, tier off, and/or be generally consistent with the EEPGL Comprehensive Waste Management Plan, which is currently under preparation. This Comprehensive Waste Management Plan addresses the long-term management of wastes (i.e., from generation to ultimate disposal) and will establish a long-term sustainable waste management system for EEPGL-generated wastes in Guyana. It is acknowledged that the Project may generate different types of wastes and, if so, may need to supplement the Comprehensive Waste Management Plan.

The Project plans to use existing waste management facilities to the extent they exist and are approved to operate in Guyana. If the Project will generate any types of wastes for which there are no approved management/disposal facilities in Guyana, the EIA will evaluate management and disposal options, which could include on-site alternatives, consistent with the Comprehensive Waste Management Plan.

The Project Waste Management Plan should include, at a minimum, the following elements:

- Scope and Objectives
- Roles and Responsibilities
- Regulatory Requirements and Guidelines
- Waste Management Strategy
    - Waste categories/types/classifications, including any hazardous, toxic, or mercury-contaminated wastes
    - Characterize and quantify process related solid waste, and the method(s) and location for the disposal/reuse/recycle of solid waste
    - Waste generation volumes by category/type
    - Waste storage locations and quantities, by waste type
    - Waste management/treatment practices and locations
    - Handling of wastes
    - Waste segregation and storage
    - Waste tracking
    - Waste transfers
    - Waste disposal, including methods and locations
    - Identify the use of any offsite waste storage, management, or disposal facilities, and confirm their status as an approved waste management facility in Guyana with EPA
- Waste Management Methods

- Emergency Response
- Training
- Waste Monitoring and Reporting
- Estimated Project Waste Types and Quantities
- Standardised forms to be used for waste management

Appendix 2 – Stakeholder Consultation Plan for GTE Project.

The EIA is one of the principal platforms which promotes participation of the public in the process of integrating environmental concerns in planning for development on a sustainable basis Section 4 (1)(b); Environmental Protection Act, cap.20:05, Laws of Guyana. Moreover, Section 9 (a) requires consultation with members of the public, interested bodies and organisations.

ERM will inform the EPA of its strategy for consulting with stakeholders in a meaningful and culturally appropriate manner in a stakeholder consultation plan. The consultation plan should capture the following information:

1.0 Summary of previous stakeholder activities relative to the proposed Project, including type of information disseminated, formats, times, dates, locations, individuals, groups and organisations engaged.

2.0 Define the purpose and scope - imperative to the stakeholder engagement process is clearly defining the purpose and scope of the stakeholder consultation and making that information clear to stakeholders. In determining the purpose and scope, the following should be considered:

(a) Baseline studies such as demographic factors, housing, health, employment, and infrastructure;
(b) Economic considerations;
(c) Possible impacts on traditional systems of land tenure and other uses of natural resources;
(d) Gender considerations;
(e) Generational considerations;
(f) Health and safety aspects;
(g) Effects on social cohesion;
(h) Traditional lifestyles;
(j) Cumulative socio-economic impacts of multiple operations within the Stabroek Block and surrounding offshore and onshore activities.

3.0 Identification of stakeholders – In preparing and implementing the engagement plan, ERM should describe the methods used in the stakeholder mapping exercise based on:

a) Whether they will be directly or indirectly affected by the proposed Project and whether that impact may be positive or negative;

b) Stakeholders who may have an interest in the proposed Project; and
c) Stakeholder who can influence the proposed Project outcome.

3.1 In profiling stakeholders and methods of engagement, consideration should be given to cultural context, expectations of the engagement, level of influence, capacity to engage (language barriers, disability, gender etc.).

3.2 Socio-economic status, social diversity, and gender aspects should also be assessed.

3.3 Emphasis should be placed on vulnerable groups in identifying how the proposed Project risks and benefits will be distributed among stakeholders.

3.4 Stakeholder identification and mapping should consider the stakeholder categories listed below (categories provided in bold text; examples of stakeholder within each category are also provided for reference):

Regulatory/Government organisations -President of Guyana; Department of Environment and Climate Change; Ministry of Natural Resources; Sectoral Committee on Natural Resources; Members of Cabinet; Opposition Government leaders, GGMC; GMC; EPA; Protected Areas Commission; Government Information Agency; Civil Defence Commission; Maritime Administration Department; leadership of Regions 1-10; Attorney General; Civil Aviation Authority; Guyana Defence Force; Transport and Harbours Department

Pesticides and Toxic Chemicals Board; Hydrometeorological Service; Guyana Forestry Commission; Guyana Tourism Authority; Bureau of Statistics; National Trust of Guyana; National Toashao's council; Ministry of Agriculture Fisheries Department, National Agricultural Research Institute, Mangrove Restoration Project Unit; Guyana Energy Agency, Ministry of Health, Ministry of Local Government; Ministry of Tourism; Ministry of Indigenous Peoples Affairs; Guyana Police Force; Guyana Defence Force, Guyana Wildlife Conservation and Management Commission; Guyana Power and light; Guyana Water Inc.; Ministry of Education; Ministry of Foreign Affairs; Ministry of Finance; Regional Democratic Councils (Regions 1-10) and Region 03 Neighbourhood Democratic Councils (Wakenaam, Leguan, Mora/Parika, Hydronie/Good Hope, Greenwich Park, Vergenoegen, Tuschen/Uitvlugt, Stewartville/Cornelia Ida, Hague/Blankenburg, La Jalousie/Nouvelle Flanders, Best/Klien/ Pouderoyen, Malgre Tout/Meer Zorgen, La Grange/Nimes, Canal's Polder and Toevlugt/Patentia), Centers for Disease Control and Prevention, Central Housing and Planning Authority, Guyana Lands and Survey Commission, and Guyana Office for Investment

Community Groups - Georgetown residents; coastal beach users/residents; sea users; indigenous people; artisanal and commercial fisher folk

Vulnerable groups: Indigenous peoples in Regions 1 – 6; women; persons with disability; Civil Society Organisations, the Elderly, Migrants. Detailed consultations should be conducted with communities in Region 1

Non-Governmental Organisations (NGOs): Conservation International; World Wildlife Fund; Iwokrama Centre for Rainforest Development, Caribbean Youth Environment Network, Guyana Youth and Environment Network; Religious organisations; Guyana Marine Conservation; Society; Seawalls and beyond; other environmental groups

Private Sector: Fuel and Waste Contractors, Subcontractors, and Suppliers; Transportation association and operators; Market vendors; speedboat operators; Gas Station operators, farmers, water distributors/supplies, Waste Treatment operators

Academic Institutions: Caribbean Agricultural Research and Development Institute; University of Guyana; other universities and technical institutes, UG Centre for the Study of Biological Diversity; academia and researchers

Professional, Business and Workers' Associations: Private Sector Commission; Guyana Oil & Gas Association, Guyana Manufacturing and Services Association; Guyana Association of Trawler Owners and Seafood Processors; Shipping Association of Guyana; Chambers of Commerce; National Aquaculture Association of Guyana; Tourism and Hospitality Association of Guyana

Media- Stabroek News, Kaieteur News, Guyana Chronicle, Guyana Times, www.demerarawaves.com, www.inewsguyana.com, www.newsroom.gy, www.citizensreportgy.com, National Communications Network TV

NB. This is not an exhaustive list

4.0 Identify the appropriate fora and methods for the consultation with the various categories of stakeholders.

4.1 Clearly state which method will be used for which category of stakeholders based on mapping outcome. Methods can include but are not limited to;

a) Interviews with stakeholder representatives
b) Surveys and polls
c) Questionnaires

d) Public meetings
e) Workshops
f) Focus groups with specific stakeholders
g) Participatory methods – such as partnerships with locals' communities, NGOs and other stakeholders.

5.0 Schedule for implementation of plan – The consultation plan should include a schedule for the implementation, highlighting format, dates, locations and times for various date consultation activities. There may be need to conduct pre-consultation engagement to ensure the implementation schedule is feasible.

6.0 Resources and Responsibilities – The plan should clearly identify the resources required for the consultation activities and persons who would be managing and implementing the stakeholder engagement component of the proposed Project.

7.0 Documentation of consultation activities – The plan should make provision for documentation of the consultation process, including methods used, record of who participated and who did not, timeframe of consultation activity, summary of major concerns, expectations and perceptions, summary of key discussions and interventions.

8.0 Grievance Redress Mechanism – A grievance redress mechanism should be integrated into the plan, which describes how the proposed Project will deal with people affected by the proposed Project. This should include how grievances can be brought to EEPGL's attention and what the system for recourse.

9.0 Monitoring and Reporting - Describe any plans to involve Project stakeholders (including affected communities) or third-party monitors in the monitoring of Project impacts and mitigation programmes. Describe how and when the results of stakeholder engagement activities will be reported back to affected stakeholders as well as broader stakeholder groups.

10.0 Other – In keeping with international best practices, the development of a stakeholder engagement and consultation is essential for effective stakeholder engagement. In order to strengthen the issue of stakeholder consultation and build

trust, the Agency also recommends EEPGL utilise the [1]ten (10) elements of stakeholder consultation as follows:

a) Identification of priority issues;
b) Stakeholder analysis and consultation plan;
c) Prior Information;
d) Appropriate fora and methods for the consultation process;
e) Grievance Redress mechanism;
f) Design and implementation decisions considering stakeholder perspectives;
g) Feedback to stakeholders and transparency in decision-making;
h) Baseline data, action plans and management systems;
i) Documentation and public disclosure; and
j) Ongoing stakeholder consultation during implementation.

[1] These principles were extracted from Inter-American Development Bank (2017), Meaningful Stakeholder Consultation

Appendix 3 List of Specific Items to be included in the Project Description

The Project Description shall include the following elements:

- Provide the type of material the risers will be made of.
- Provide the jointing methodology used to connect the riser to the pipelines.
- Provide the type of base layer used before placement of pipes within trenching.
- Provide the type of Flaring System considered for the Natural Gas Liquids (NGL) Plant.
- Provide the type of filter used for the stack, and if it is a secondary (Back-up) filtration system for the Stack.
- Provide the specifications of the filter traps (tolerance, etc.) that will be used.
- Provide the proposed method of storage and disposal of the used filters.
- Specifications on the NGL plant (blow off valves, containment systems, gas suppression systems, etc.
- How will operations be monitored (e.g., for gas leakage)?
- Provide separation process of the various components of the gas.
- Provide design specifications of the gas in the pipelines (flow rate, pressure and volume).
- Will revetment be considered during construction where Horizontal Directional Drilling is done, what design will be used to cut off flow of gas from pipelines (e.g., under roads) to repair damaged pipes?
- Real time gas leaks / breakage detection system and pressure detection system (will pipes be labelled at intervals).
- Corrosion protection types and methods (e.g., epoxy coatings) to be used below the sea/river bed and above and below ground.
- Mention the type of welding used. Joining gas lines by welding is acceptable but Non-Destructive Testing or other approved test(s) of the pipes at each joint is required, to determine the soundness and integrity of welds.
- Provide the thickness of the pipelines.
- Describe any proposed anchoring of the pipeline (onshore and offshore) and if not required provide the technical rationale supporting this conclusion.
- Where will the shut off valves be positioned? Will they be manually or remotely controlled?
- How will lines be flushed out and at what intervals?
- What safety signage is proposed for the onshore and offshore pipelines?
- Describe which Government of Guyana agencies will be consulted with or notified during applicable project activities (e.g., trenching, clearing).
- Provide the frequency of flaring.
- Provide the expected flare volumes, during start up and operation.
- Discuss the security of onshore and offshore facilities. For example, protection of pipelines, demarcation, signage, etc.