Terms of Reference

GUYANA PETROLEUM RESOURCES GOVERNANCE AND MANAGEMENT PROJECT (P166730)

CONSULTANCY SERVICES FOR THE REVIEW AND EVALUATION OF FIELD DEVELOPMENT PLANS (FDP) - UARU

1. BACKGROUND

As the Cooperative Republic of Guyana moves into a new chapter of history as a petroleum producing nation, sustainable development lies at the core of the Government of the Cooperative Republic of Guyana's (GoG's) goals for the sector. Being keenly aware that petroleum is a non-renewable resource, considerations related to its extraction and conversion into financial capital highlight the requirement and responsibility to ensure that the resource is prudently managed, from the time petroleum 'appears' at the wellhead, for the long-lasting benefit of Guyana. In developing the policies, legal framework, institutions, and systems to oversee and manage the sector, the GoG is committed to ensuring that this framework allows both present and future generations to reap the benefits.

Guyana's petroleum sector is progressing swiftly with two FPSOs already producing and two additional projects sanctioned and expected to come on stream in 4Q 2023 and 4Q 2025. These existing and planned petroleum developments, coupled with ongoing assessment of new discoveries, has led the GoG to focus on optimizing and enhancing its regulatory capacity to oversee the upstream sector (exploration, development, and production) through developing policy and legislation, building up internal capacity, promoting governance and transparency, and undertaking financial and economic planning.

The Guyana Petroleum Resources Governance and Management Project (GPRGMP) (the 'Project') is supported by the World Bank, and aims to enhance the Government's capacity to achieve its management goals for the petroleum sector through interventions focused on enhancing legal and institutional frameworks and strengthening the capacity of key institutions to manage the oil and gas sector in Guyana.

2. OBJECTIVE

The objective of the assignment is for the Consultant to provide advisory services, technical support and training and capacity strengthening services to the GoG, through the Ministry of Natural Resources (MNR), and the Sector Regulator – the Guyana Geology and Mines Commission (GGMC) or the Petroleum Commission (PC) once established – and other attendant Ministries with the aim of enhancing the country's core capacity to

review, approve, authorize, and oversee, monitor and report on the implementation of Field Development Plan(s) (FDP).

3. SCOPE OF WORK

Under the present Terms of Reference, the Consultant is invited to fulfill the scope of work described below:

A. Detailed Assessment of the Uaru Concept Selection Process and Field Development Plan

1. Support the GoG in the assessment of petroleum development concept proposals and proposed resource depletion plans for development projects under consideration. This will be conducted within the context of the local legislative framework, applicable agreements and international best practices. This includes, **at a minimum** an assessment of:
    a. The design philosophy strategy and development models, as well as the criteria utilized in the Licensee's[1] choices including cost effectiveness. potential tie-ins, and production licensing philosophy;
    b. The scenarios for development and analysis of geophysical and geological models, their volumetrics and associated uncertainties.
    c. The well & reservoir management and depletion strategies under consideration;
    d. The proposed FPSO design and topside facilities considering the GoG's objective of 'no routine flaring';
    e. Modifications made to previously used factilities design and the Licensee's justification for these;
    f. Financial modelling and calculation of net present values;
    g. The proposed project cost estimates economic analyses, cost savings and overall implications for the cost bank;
    h. The risk management strategy for the risks identified in each development scenario;
    i. The incorporation of lessons learnt from previous FDPs and associated studies by the Licensee, as well as identifying how the Licensee is addressing these findings in the context of new FDPs being considered;
    j. How the development scenarios can incorporate climate solutions;

    and a review of relevant documentation.

[1] The Licensee will be determined by the Client.

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2. Prepare a report detailing the analysis results, along with recommendations, supporting rationale and references in the evaluation of the proposed development concepts. The report shall address at minimum, compliance or non-compliance with the requirements of the existing legislative and contractual framework, particularly the Petroleum (Exploration and Production) Act 1986 and the Environmental Protection Act 1996, the Petroleum Agreement, and international best practices and industry standards. It will also specify any identified deficiencies, cost bank implications and the practicality of proposed scenarios, and areas to be addressed by the Licensee either prior to or at FDP submission.

3. Considering the existing legislative framework, applicable agreements, international best practices and the specific conditions present in Guyana, conduct an in-depth review of field development plans (FDP), and supporting documents (including related FDP's) submitted by the Licensee(s). This in-depth review must include **at a minimum** an assessment of:

    a. The strategy and the development model, as well as the criteria utilized in the Licensee's choices including an assessment of cost effectiveness and potential alternatives.
    b. The geological and geophysical interpretations, models, volumetrics and associated uncertainties assessed for individual reservoirs and at the field level.
    c. The production simulations and estimation of hydrocarbons to be produced, including recovery efficiency analysis, taking into consideration the use of natural gas for injection and export.
    d. The proposed project schedule, including tail end production.
    e. The proposed subsea system.
    f. The well & reservoir management including well design and production technology, and depletion strategy, taking into consideration the GoG's objective of maximizing the recovery of hydrocarbon resources and no-gas flared.
    g. The proposed FPSO design and topside facilities.
    h. The Licensee's plan to ensure the most efficient and beneficial use of the petroleum resources.
    i. The associated financial models, economic analyses and cost estimates and reports submitted by the Licensee towards ensuring financial optimization of oil and gas recovery profiles.
    j. The Decommissioning Plan and Budget.
    k. The natural gas utilization plan for the field.
    l. The overall risk management strategy.

m. The incorporation of the lessons learnt from previous FDPs and related studies by the Licensee, as well as identifying how the Licensee(s) have addressed these findings in the context of a new FDP.
n. Any revisions made to the FDP so as to ensure that the issues and deficiencies or requested modifications identified in the original FDP have been adequately addressed.
o. How the Licensee has incorporated and can incorporate climate solutions into the proposed development.

4. Prepare a report detailing the analysis results, along with recommendations and supporting rationale and references in the evaluation of the FDP. The report shall address at minimum, compliance or non-compliance with the requirements of the existing legislative and contractual framework, particularly the Petroleum (Exploration and Production) Act 1986 and the Environmental Protection Act 1996, the Petroleum Agreement, and international best practices and industry standards. It will also specify any deficiencies, unresolved issues and areas for additional assessment or technical analysis that the GoG should request from the Licensee(s), before making a determination on the FDP.

5. Support the MNR in identifying and drafting conditions which may be included in the Petroleum Production Licence (PPL).

B. FDP MANAGEMENT, OVERSIGHT, MONITORING AND REPORTING

6. Support the MNR's engagements and information exchanges with the Licensee(s), including:

    a. the formulation of responses and communications to the Licensee(s);
    b. analyzing and advising on communication received from the Licensee(s) on any revisions made to the FDP so as to ensure that the issues and deficiencies or requested modifications identified in the original FDP have been adequately addressed.
    c. Participate in meetings and discussions as needed.

7. Document the field development review process and outcomes, including specific references to international best practices and industry standards, in a manner and format to support future reference for similar review exercises and overall improvement of the FDP review process and provide it as an attachment to the FDP Review Report.

8. Provide ad hoc technical advice on matters arising from the MNR's governance and management of the petroleum sector as requested by the client.

9. FDP – Management, Oversight, Monitoring and Reporting: Provide support for the development of monitoring, reporting, verification and documentation protocols and methodologies for FDP implementation management and oversight, including monitoring and review procedures and assessment of outcomes, in a manner and format that facilitates future reference and continuous improvement.

C. Detailed Assessment of the Environmental and Social Impact Assessment of the Proposed Uaru FDP

10. Considering the existing legislative framework, applicable agreements, international best practices and the specific conditions present in Guyana, conduct an in-depth review of the FDP's Environmental and Social Impact Assessment (ESIA) and supporting documentation submitted by the Licensee(s). This in-depth review must include at a minimum an assessment of:

    d. The Environmental and Social Management (ESM) strategy and development model, as well as the criteria utilized in the Licensee's choices.
    e. The adequacy of the FDP's design philosophy for the minimization of the carbon footprint of operations, the carbon intensity of production, and the avoidance of GHG emissions, including zero routine gas flaring objectives.
    f. The ESM impact of production simulations and estimation of hydrocarbons to be produced, including recovery efficiency analysis taking into consideration the use of natural gas for injection and export.
    g. The proposed project schedule, including tail end production.
    h. The ESM impact of the proposed subsea system.
    i. The ESM impacts of well & reservoir management including well design and production technology, and depletion strategy, taking into consideration the GoG's objective of maximizing the recovery of hydrocarbon resources, minimizing the carbon footprint of operations, the carbon intensity of production and zero routine gas flaring objectives.
    j. The ESM impact of proposed design for FPSO and topside facilities.
    k. The ESM implications of the FDP's financial models, economic analyses and cost estimates and reports submitted by the Licensee towards ensuring financial optimization of oil and gas recovery profiles.
    l. The Health, Safety, Environment and Social (HSES) impacts and proposed mitigation measures.

m. The Decommissioning Plan and Budget.
n. The ESM impact of natural gas utilization plan for the field.
o. The overall ESM risk management strategy.
p. The incorporation of ESM lessons learned from previous FDPs and associated studies, as well as identifying the extent and expected effectiveness of their integration into the FDPs under consideration.
q. Any revisions made to the ESIA so as to ensure that the ESM issues and deficiencies or requested modifications identified in the original FDP have been adequately addressed.
r. How the Licensee has incorporated and can incorporate climate solutions into the proposed development.

11. Prepare an ESIA review report detailing the results of the ESM assessment and recommendations, along with supporting rationale and references in the evaluation of the FDP and ESIA. The report shall address at minimum, compliance or non-compliance with the requirements of the existing legislative and contractual framework, particularly the Petroleum (Exploration and Production) Act 1986 and the Environmental Protection Act 1996, the Petroleum Agreement, and international best practices and industry standards. It will also specify any ESM deficiencies, unresolved issues and areas of additional assessment or technical analysis that the GoG should request from the Licensee(s), before making a determination on the adequacy of the FDP and the ESIA.

12. Support the EPA in identifying and drafting conditions which may be included in the Environmental Permit.

D. ESIA MANAGEMENT, OVERSIGHT, MONITORING AND REPORTING

13. ESIA – Management, Oversight, Monitoring and Reporting: Provide support for the development of monitoring, reporting, verification and documentation protocols and methodologies for ESIA implementation management and oversight, including monitoring and review procedures and assessment of outcomes, in a manner and format that facilitates future reference and continuous improvement.

14. Support the EPA's engagements and information exchanges with the Licensee(s), including:

s. the formulation of responses and communications to the Licensee(s);
t. analyzing and advising on communication received from the Licensee(s) on any revisions made to the ESIA so as to ensure that the issues and

deficiencies or requested modifications identified in the original ESIA have been adequately addressed.

u. Participate in meetings and discussions as needed.

E. Training and Institutional Capacity

15. Strengthen the institutional capacity of the MNR, the Sector Regulator and other attendant Ministries / Beneficiary Agencies, as determined by the MNR, to discharge their functions and responsibilities through the following activities:

a) Conduct a **Needs Assessment** to evaluate the current FDP review, approval, licensing, oversight, monitoring, and reporting processes with the aim of identifying areas for improvement. This assessment shall include a benchmarked review of FDP assessment procedures in other countries to recommend improvements.

b) Develop an **Integral Training and Capacity Strengthening Program**, including substantive theoretical and on-the-job training components for MNR, Sector Regulator and other attendant Ministries / Beneficiary Agencies as determined by the MNR for the duration of the assignment, including the use of relevant software available to assess submitted data. This shall include intensive, hands-on engagement with GoG technical and financial teams for the duration of the assignment.

c) Create an **FDP Evaluation Manual** which establishes an evaluation, oversight, monitoring and reporting protocol for FDPs and associated documents. This shall include as attachments, technical, financial and other relevant templates/models to be used post FDP approval to facilitate future FDP and ESIA review processes from pre-submission engagements to FDP review closure and provide training for use of same.

4. Duration of Assignment

The duration of the assignment is expected to be 52 (fifty-two) weeks, commencing ..... 2022 during which time the Consultant is expected to be physically present in Guyana for an agreed time. The consultant is requested to present a proposal with a timeline allocation for the assignment and any assumptions made regarding the level of effort indicated in this TOR.

5. Deliverables

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The core deliverables for this assignment are the provision of advice and assistance to the Client as required in executing the Scope of Work. The Consultant will be expected to prepare written answers to queries from the MNR, inclusive of well documented advice and recommendations.

The Consultant will also be required to prepare and deliver:

Deliverable	Deadline
1. Inception Report inclusive of work plan and schedule for the review of the FDP and ESIA.	1 week after contract effectiveness
2. Needs Assessment Report.	2 weeks after contract effectiveness
3. Integral training and capacity strengthening program, inclusive of expected outcomes and a curriculum (MNR's written approval will be required for this plan).	2 weeks after contract effectiveness
4. Draft report on the review of proposed development concepts	4 weeks after contract effectiveness
5. Final draft report on the review of proposed development concepts	5 weeks after contract effectiveness
6. Draft FDP Review Report	8 weeks after contract effectiveness
7. Draft ESIA Review Report	8 weeks after contract effectiveness
8. Final Draft FDP Review Report	10 weeks after contract effectiveness
9. Final Draft ESIA Review Report	10 weeks after contract effectiveness

Deliverable	Deadline
10. First Training and Capacity Strengthening Report	24 weeks after contract effectiveness
11. Draft Management, Oversight, Monitoring and Reporting - Report	36 weeks after contract effectiveness
12. Draft Final Management, Oversight, Monitoring and Reporting - Report	40 weeks after contract effectiveness
13. FDP Evaluation Manual	45 weeks after contract effectiveness.
14. Draft Final Training and Capacity Strengthening Report	50 weeks after contract effectiveness

All deliverables in electronic and printed copies will be required in English and will be submitted to the Client for review and approval within the deadlines established. The World Bank may also review the deliverables for consistency with World Bank Safeguards. It is expected that certain deliverables may require several drafts to incorporate comments by the World Bank, the Client, and relevant stakeholders before they are determined to be final.

6. IMPLEMENTATION ARRANGEMENTS

Implementation arrangements are:

- The MNR will designate a Focal Point to work with the Consultant. The Focal Point will provide existing documentation regarding the Project and ensure meetings with the operators as needed, nevertheless, the Consultant will be responsible for obtaining all the necessary public information required to perform the tasks included in this TOR.
- The Consultant is expected to incorporate selected professional staff of the MNR, the sector regulator and any attendant Beneficiary Agencies into their team to participate in the project activities and provide requisite training and guidance throughout the execution of the assignment. The GoG will cover the costs

associated with travel and accommodation for the staff participating in training should it be required.

- Training activities:
  - Will be conducted in parallel to and throughout the implementation of activities during the assignment,
  - Will take advantage of every opportunity these activities may provide,
  - Will consist of both theoretical and on-the-job, practical training elements, and,
  - Will be structured and scheduled in terms of location and duration with due consideration for the work responsibilities and time demands of trainees.
- The consultant is expected to be physically present in Guyana for at least 80% of the 52 (fifty-two) week contract period.
- The Consultant is expected to be available for audio or videoconferences when required.
- In light of possible travel restrictions related to ongoing global health concerns, the Consultant and the Client will develop distance-facilitating engagement alternatives to the in-country requirements, only if and as needed, until such time as the remainder of the original in-country requirements may be safely carried out as per prevailing health standards.
- The Consultant shall make its own arrangements for carrying out its services, including accommodation, transport, health insurance, document(s) translation/reproduction.

7. EXPECTED EXPERIENCE AND REQUIRED QUALIFICATIONS

To be eligible for the assignment, the Consultant will be an internationally recognized firm with prior experience completing similar assignments, providing evaluations and opinions for similar deepwater development projects in analogous operating and geological environments and must also have previously considered climate change impacts of oil and gas developments and possible solutions. The Consultant will be required to demonstrate advisory experience and knowledge of petroleum sector development frameworks related to field developments, and in providing professional opinions (such as Competent Person's Reports) to Governments on oil and gas field development planning and execution.

The Consultant may propose the best team configuration to achieve the assignment's overall goals and is expected to have access to a pool of skilled professionals to supplement it as needed**.** To be considered for the assignment, proposed team members should have in-depth international expertise, regional knowledge and expertise, and **the**

following minimum qualifications (though consultants are invited to propose further skills as deemed appropriate for successfully meeting the objectives of the assignment).

8. TEAM COMPOSITION

The assignment's core team is expected to consist of a cadre of international experts specialized in specific assignment component and content areas. If necessary, the Consultant may resort to evidently qualified local expertise and support.

There will be no flexibility shown in regard to the number and type of Key Experts. Key Experts are expected to remain in Georgetown for at least 80% of their time input.

Non-Key Experts and locally procured specialized support team members are not subject to scoring and the Consultant will have flexibility in adding any position considered necessary to fulfil the ToR requirements.

Estimated staff-days detailed below are indicative. Proponents will be expected to independently fine-tune the required staff-days in their proposals.

K-1, Team leader

Team Leader will be responsible for overall project planning, implementation, coordination, supervision, management and related tasks. The team leader should have wide experience of working with versatile teams and excellent planning, organizational and communication skills with the ability to guide multidisciplinary technical teams. The team leader proposed for the assignment should possess at least a Master's degree in petroleum engineering, geology, or similar discipline with a minimum 15 years of prior explicit public and private sector experience in the oil & gas sector and a minimum 10 years of experience in successfully managing large, complex technical assistance projects.

K-2. Geology/Geophysics/Geosciences

Should have experience in reservoir evaluation and characterization with respect to environment of deposition, petrophysics, mapping, 3D geo-modeling and volumetric assessments using both deterministic and probabilistic methods. Familiarity with industry-standard geological modelling software is a requirement.

K-3. Reservoir Expert

Should have experience in reservoir engineering management and technical, economic and risk analysis including reservoir modeling and production forecasting. Should also have experience in developing depletion plans/strategies and improved recovery techniques to optimize reservoir production and well performance. Familiarity with EM Power and/or Eclipse is a requirement.

K-4. Drilling Engineer

Should have experience in offshore drilling projects (both exploration and production) with background in the engineering, operations and project management aspects of well construction.

K-5. Subsea/ Pipeline Operations

Should have in-depth knowledge of technological aspects of offshore Development facilities (Subsea development, including Subsea Production system, flow assurance, Subsea facilities and operations).

K-6 Surface Facilities Expertise

Should have comprehensive knowledge about reviewing FPSO topsides designs, equipment specifications and construction specifications with safety and efficiency in mind taking into consideration the broader facility design constraints.

K-7 Economist / Cost Analyst

Experience in cost evaluation from exploration, appraisal to production as well as capital and operating cost planning and budgeting, benchmarking of costs within industry acceptable ranges and Oil and Gas asset valuation.

K-8 Gas Specialist

At least fifteen (15) years' experience assessing the commercial viability of gas resources, and advising sovereign governments on the relative benefits of associated gas development and the implications for development projects and gas negotiations.

K-9 Oil and Gas Lawyer

At least fifteen (15) years' experience in Oil and Gas Law, including experience in drafting Petroleum Production Licences or in the statutory petroleum production permitting

review, assessment and permitting process, including the application of international best practices and industry requirements.

Specialists:

The Consultant is expected to bring in specialized expertise from its own organization or otherwise as required in support of the lead experts mentioned above. These specialized resources would be made available for specific time periods as needed during project implementation.

To be considered for the assignment, proposed team members should submit their respective CV's, demonstrating their international, regional, and local expertise. The team leader and core team members of the Consultant's team shall not change throughout the duration of the contract with the GoG. Any staff changes will require the MNR's prior written approval. The Consultant's recommendations must be consistent with the World Bank's safeguard policies.

International specialist team (INDICATIVE)

Position	Estimated staff-days	Minimum academic qualification	Minimum years of relevant experience
K-1, Team Leader	50	Master's degree in petroleum engineering, geology, or similar discipline	15
K-2, Geology/Geophysics/Geosciences	30	Bachelor's degree in geology, petroleum geology, process engineering or similar	10
K-3, Reservoir Expert	30	Bachelor's degree in petroleum geology or reservoir engineering. Experience in	10

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Position	Estimated staff-days	Minimum academic qualification	Minimum years of relevant experience
		reservoir engineering management and technical, economic and risk analysis	
K-4, Drilling Engineer	30	An engineering Bachelor's degree. Experience in offshore drilling projects (both exploration and production)	10
K-5, Subsea/ Pipeline Operations	30	An engineering Bachelor's degree. Experience in offshore Development facilities in Oil and Gas	10
K-6, Surface Facilities Expertise	30	An engineering Bachelor's degree. Experience in reviewing FPSO topsides designs, equipment specifications and construction specifications	10
K-7, Economist /Cost Analysis	30	Master's degree in Petroleum	10

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Position	Estimated staff-days	Minimum academic qualification	Minimum years of relevant experience
		Economics, Accounting, Economics, Finance or similar field. Experience in petroleum cost evaluation and benchmarking of costs within oil and gas industry	
K-8, Gas Specialist	30	Master's degree or higher in Economics, Finance, Petroleum Engineering, Business Administration, Marketing, or related discipline. Commercial experience with gas resources	10
K-9, Oil and Gas Lawyer	20	Attorney-at-Law with experience practicing in common law jurisdiction	15
TOTAL	**280**		

9. Conflict of Interest

The Consultant is required to disclose any potential conflicts of interest arising out of other assignments. Where the Consultant currently represents any party or potential

stakeholders that would create conflict of interest or to the extent any conflict of interest would arise in the future, the Consultant shall detail any measures that may be required to avoid conflicts of interest in connection with the implementation of this assignment.

10. CONFIDENTIALITY

The Consultant shall be required to keep confidential all information received, gathered or communicated, directly or indirectly, from relevant authorities, agencies, ministries, the World Bank or other stakeholders as well as all copies or analyses that the Consultant has made, or that have been made by third parties, on the basis of such information (collectively, the Material). The Consultant shall use the Material exclusively for the purpose of providing the services described in these Terms of Reference. The confidentiality obligations shall not apply to information in the public domain.

All reports and work products from the consultant will be delivered to only specifically designated representatives within the MNR and the sector regulator.