Lebanon Renewable Energy and System Reinforcement Project (P180501)

Litani River Authority

Terms of Reference

Hydrology/hydraulics Expert

Dam Safety Panel of Experts (DSPOE)

A- Introduction

The Litani River is the longest river in Lebanon, with length of 170 km, and a discharge capacity of some 750 million cubic meters per annum. The river rises at an altitude of 1000 m asl in the Bekaa valley in the north-east of the country, and flows southwards then west, entering the Mediterranean Sea some 8 km north of Tyre. The water resources of the Litani River are managed by the Litani River Authority (LRA) under the Ministry of Energy and Water, which is responsible for electricity generation, municipal and irrigation supplies and preservation of water quality, and for monitoring and controlling abstractions. The infrastructure on the Litani River owned and operated by LRA includes the Qaraoun Dam and a cascade of three downstream hydropower plants: Markabi, Awali and Joun HEPs, with an aggregate installed capacity of 192 MW. The key characteristics of these plants are as follows:

Qaraoun Dam

Date of completion:	1964
Type:	Concrete faced rockfill dam (CFRD)
Height:	61 metres
Crest length:	1090 m
Gross storage:	220 million m^3
Active storage:	170 million m^3
Dead storage:	50 million m^3
Full supply level:	858 m asl
Minimum operating level:	820 m asl

Markabi HEP (also known as Ibrahim Abdel Al HPP)

Date of Commissioning:	1962
Install Capacity:	36 MW
Number of Units:	2 no. vertical Francis units
T-G Unit capacity:	18 MW each
Original manufacture:	Andritz Hydro
Gross head:	199 m
Tunnel length:	6.4 km
Headwater level:	858 m asl
Tailwater level:	659 m asl

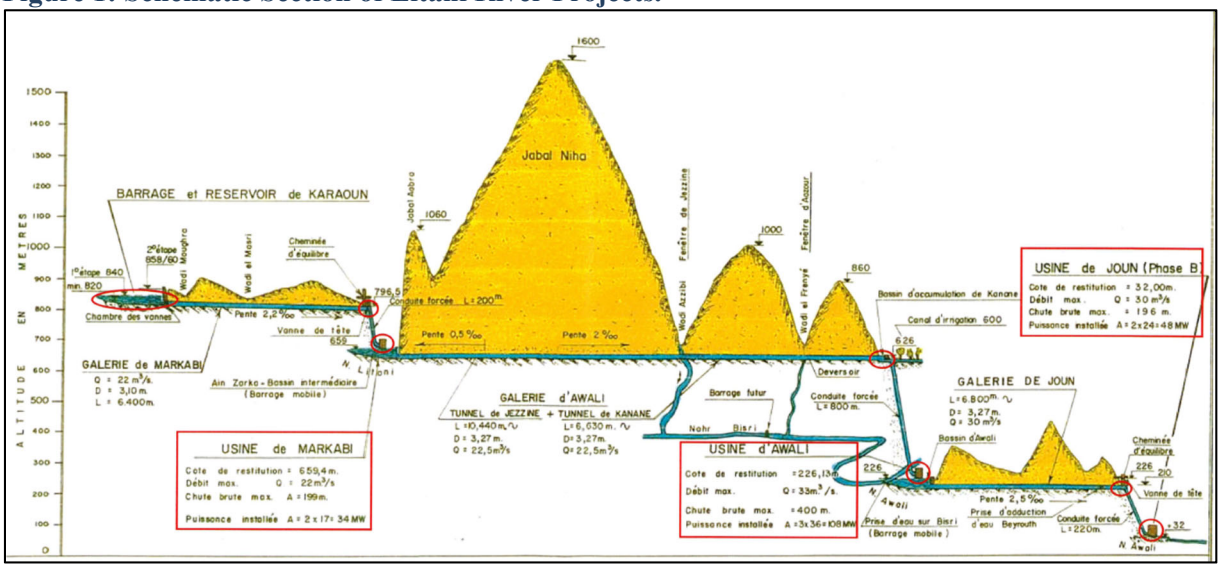
Awali HEP (also known as Paul Arcashe HPP)

Date of Commissioning:	1965
Install Capacity:	108 MW
Number of Units:	3 no. 5-jet vertical Pelton units
T-G Unit capacity:	36 MW each
Original manufacture:	GE Vernova (Turbines) and Siemens (Generators)
Gross head:	400 m
Tunnel length:	17.0 km
Headwater level:	626 m asl
Tailwater level:	226 m asl

Joun HEP (also known as Charles Helou HPP)

Date of Commissioning:	1968
Install Capacity:	48 MW
Number of Units:	2 no. horizontal Francis units
T-G Unit capacity:	24 MW each
Original manufacture:	Voith-Siemens Hydro
Gross head:	196 m
Tunnel length:	6.8 km
Headwater level:	226 m asl
Tailwater level:	32 m asl

Figure 1: Schematic Section of Litani River Projects.



In 2024, with the support of the World Bank, the following studies for LRA with other studies for EDL were completed to inform the design of the World Bank financed US$250 million Lebanon Renewable Energy and System Reinforcement Project (P180501):

- Due Diligence on Rehabilitation Needs of LRA Hydropower Projects (Sep. 2024),
- Tier 1[1] Safety Assessment of Qaraoun Dam (Jul. 2024)
- Tier 1 Safety Assessment of Anan and Awali Dams (Aug. 2024).

Those studies completed by the Client (LRA) are hereinafter referred to as "Preparatory Studies". The full list, including relevant environmental and social documents, is presented in Annex [2] and those will be provided to short-listed consultants.

The World Bank approved the US$250 million in IBRD financing for the needs of the whole above project (P180501) on October 1, 2024.

The **Sub-components 2.2 and 3.2** of the Project (P180501), at a total estimated cost of US$30 million, will be financing the rehabilitation of LRA HPPs and Strengthening of Dam Safety (hereinafter referred to as "the Project").

Sub-component 2.2 : Rehabilitation of LRA HPPs and Strengthening of Dam Safety

In accordance with the specifications provided by LRA Owner's Engineer as approved by LRA:
(a) Support for the rehabilitation and replacement of key electricity generation equipment as well as monitoring and control systems at Joun, Awali, Markabi HPPs, including through, *inter alia,* replacement and rehabilitation of turbines and inlet valves; replacement, redesign and reconstruction of seals of safety valves; replacement of speed governors, including supply of spare parts; replacement of voltage transformers in the switch yard; renewal of the electric cabinets; replacement of actuators; overhaul of injectors; rehabilitation of speed governors; rehabilitation of excitation system and voltage regulators; replacement of control, protection, and SCADA systems; and supply and installation of triphase disconnectors.

[1] According to classification of assessments as per the World Bank Good Practice Note on Dam Safety, Oct. 2020.
[2] This annex are available at the following link : https://www.litani.gov.lb/en-us/aboutlra/worldbankagreement

(b) **Strengthening of the safety of the Qaraoun dam, including through the supply and installation of monitoring instrumentation; crack injection in the plinth gallery; and maintenance of valves.**

Sub component 3.2 Project Implementation Support, Technical Studies for LRA, and Dam Safety Panel of Experts for Part 2.2 of the Project

(a) Financing of the LRA Owner's Engineer to support the LRA with preparation of procurement documents for main contracts under the Project, tendering process, technical supervision of contracts, monitoring of contractors' compliance with the requirements of E&S instruments, site supervision and quality control, and review and approval of payment certificates, and other aspects of contracts related to rehabilitation of HPPs and improvement of dam safety.
(b) Support for the Tier 2 dam safety assessment in accordance with the relevant Environmental and Social Standards for Qaraoun, Anan Lake, and Joun Lake dams; bathymetric study of the Qaraoun lake to estimate sedimentation and actual reservoir capacity; dam break and flood propagation study. Perform hydrological study to determine floods with different return periods and PMF, Following the study define the design flood and check adequacy of the spillway. If not adequate prepare a feasibility study for a supplementary spillway. and other technical, economic, financial and related studies as required during implementation of the Project.
(c) Support for the preparation of the instrumentation plan, update of operation and maintenance plan, update of emergency preparedness plan.
(d) **Providing consultancy services to the LRA-PMT and the Project Steering Committee and appointment and functioning of the DSPOE.**
(e) Capacity building for LRA on technical, contract management, and dam safety aspects of hydropower.
(f) Carrying out the external audits and providing support for strengthening financial management and reporting at LRA.

B- Independent Panels of Experts

The Client (LRA) intends to appoint a **Dam Safety Panel of Experts (DSPOE)** for the Project **to advise on dam safety assessment for Qaraoun dam,** and other technical issues. The general task of the panel is to review all relevant design, engineering, construction and dam safety aspects. The members of DSPOE will be selected by the Client based on the required skill-mix. The members will constitute a group of high-level, internationally-recognized professionals.

The DSPOE shall operate in accordance with a Panel Charter, which is annexed (Annex 2) to this TOR and agreed upon by the Client and all Panel members. Each member is required to sign a declaration confirming their independence and absence of any conflict of interest.

These Terms of Reference (TOR) address the specific scope of work for the Hydrology/hydraulics Expert

C- Objectives of the Dam Safety Panel of Experts

The TOR for the Engineering/Dam Safety Panel has the following objectives: (a) to ensure due diligence and international quality standards **in the rehabilitation of the Qaraoun dam**, including integration of international standards for data, methodologies, benchmarks for impacts, design criteria, and construction methodologies and procedures; (b) to provide high level and professional independent advice and guidance to support objectivity and credibility in the development and implementation of designs and **in the rehabilitation of the Qaraoun dam**, and (c) to share technical expertise and knowledge and so contribute to dialogue amongst the various stakeholders. The primary outcome from this effort is to ensure international standards of design and construction, risk evaluation and impact assessment are met, and to

assure a level of confidence amongst all stakeholders in the quality and integrity of the implementation process.

D- Engineering/Dam Safety Panel Organization and Membership

The **DSPOE** will include the following expertise:

- **Dam Engineering Expert and POE Chairperson** with proven experience in dam safety, rehabilitation, and the design, interpretation, and supervision of auscultation systems for Concrete Face Rockfill (CFRD) dams.
- **Geotechnical Engineering Expert** possessing extensive experience in geotechnical investigations, design, and construction of Concrete Face Rockfill (CFRD) dams.
- **Hydrology and Hydraulics Expert** with proven expertise in hydrological analysis, hydraulic modeling, and the design and construction of large dams and associated spillway structures.

All DSPOE members, including the Chairperson, must be independent experts. They shall not be affiliated with the Client (LRA), the project's design consultants, the Owner's Engineer, or the construction contractors. Upon appointment, and throughout their tenure, each member will submit a signed declaration of impartiality and disclose any actual or potential conflicts of interest; the Client will maintain a register of such declarations

All Engineering/Dam Safety Panel members should be independent and familiar with the internationally-accepted safety and safeguard policies, including the World Bank Environmental and Social Framework (ESF), Environmental and Social Standard 4 (ESS4) – Community Health and Safety and its Annex 1 on Safety of Dams[3], and the ability to work in teams. The specialists will have a demonstrated capacity to prepare reports in English.

The Dam Engineering Expert will be designated as the Chairperson of the Panel. The Chairperson will coordinate the activities and communications of the Panel, as well as call and chair its meetings. He/She will ensure the independence and objectivity of the Panel and its members, and provide balance in the Panel's reviews and recommendations.

It is highly desirable that a strong continuity of knowledge of the Project issues and progress be maintained. Nevertheless, the constitution of DSPOE may change over the Project period and the Panel may request that the Client temporarily provide the assistance of other experts if, in the Panel's opinion, it is advisable to do so. It is expected that, after the first meeting of the Panel, an initial assessment will be provided on the need for the induction of any additional members in the Panel.

E- Scope of Work of the Engineering/Dam Safety Panel

Input Stages

The objectives of the Panel's reviews are to assure: safe, economic and state of the art designs; efficient, expeditious, and high quality construction; long term stability of the dam; and timely preparation and

[3] The Good Practice Note on Dam Safety (WB, October 2020) under the ESF provides useful reference in particular on using a risk management approach to the application of dam safety requirements. The Note is accessible at https://hdl.handle.net/10986/35484

implementation of dam safety plans[4] as per recognized international standards (ICOLD). Specifically, the Panel will carry out the following main tasks:

- Review the design criteria and design documents developed by the Owner's Engineer and/or Contractor (as applicable) developed by Contractors to ensure that the solutions developed to date are technically robust and safe.
- Review the quality assurance systems in place to ensure that the constructed civil works and the equipment supplied comply with the applicable specifications.
- Identify any design or construction issues that require additional verification and recommend the measures required to satisfactorily address these issues.
- Advise on the overall safety standard and criteria, considering the potential risk of the dam and consequences, as well as the national regulations and international standards and practices.
- Review the stability analysis and resulting factors of safety for normal, unusual, and extreme loading conditions for the main dam, spillways structures, and outlet works, including determination of seismic loading criteria.
- Review the sediment assessment and management plan, and preliminary Operation and Maintenance plan.
- Review the design of existing Qaraoun spillway and potential new spillway in case it is deemed necessary, and outlet facilities, including flow conditions, energy dissipation, sediment handling capability, and downstream riverbed and slope protection, including physical hydraulic model tests and the impact on the final hydraulic structure designs.
- Advise on the design for dam instrumentation system and the program for collecting, analyzing, and maintaining data to be obtained.
- Review and advise on the organization, procedures, program, and capacity to carry out long-term monitoring of the dam safety status.
- Review adequacy of the dam safety plans.

The Panel will develop and agree with the Client on a schedule of meetings and field visits to enable the Panel to provide timely advice to the Client on any design, construction and operation aspects that are of potential concern. The Panel will make at least one field inspection per year to evaluate quality control procedures being used during construction and to evaluate whether materials being used and construction methods being employed meet the design parameters and contract specifications. The Panel will review any major field design changes that occur because of changed field conditions or other reasons. The schedule of meetings and field visits will be periodically reviewed taking into account the latest schedules for the various design and construction activities. The findings and recommendations of the Panel resulting from each of these meetings and field visits will be submitted in a report.

The Panel will review the Operation and Maintenance Plan (O&MP) and Emergency Preparedness Plan (EPP), including dam breach analysis, flooding simulation, surveillance and instruments monitoring, emergency release plan, and designation of responsible operating personnel so that the O&MP and EPP are in place as required under Environmental and Social Commitment Plan (ESCP) of the Project.

[4] These should include a plan for construction supervision and quality assurance, an instrumentation plan, an operation and maintenance plan, and an emergency preparedness plan. Appendix 1-4 of the GPN on Dam Safety (World Bank, 2020) provide useful reference.

The inputs of the Panel will continue until the completion of the rehabilitation works and satisfactory initial operation (for the duration of two months) of the rehabilitated assets. The Panel will continuously review and evaluate:

- The organization, procedures, program, and capacity to carry out long-term monitoring of the dam safety status, including the inspection frequency, instrumentation data management system, project data files, evaluation criteria, and means to provide remedial actions.
- The adequacy of the O&MP and Operation and Maintenance Manual and the establishment of project operations procedures and review and evaluate the adequacy of the EPP, including downstream flooding effects, emergency reservoir drawdown, notification of impending dangers to downstream municipal authorities, major flood early warning systems, major flood spilling operations plans, and site access during emergencies.
- The procedures for handling project records, including as-built drawings, operation records, inspection records, instrumentation data and other information associated with the long-term safety of the dam.

Share knowledge through consultations, meetings and field visits

The Panel members will share technical expertise and knowledge through meetings, consultations and field visits. Specifically, the Panel will share knowledge and international experience / good practices with the Client, Consultants and other relevant entities at Panel meetings and field visits. The Panel may be required by the Client to share information and international perspectives with other countries of the region and/or other stakeholders.

Project Documents

The Client will provide access to electronic copies of the following project documents prior to the first Panel meeting:

- All of the reports prepared under the assessment studies that were completed in 2022-2024.
- Other technical and design documents pertaining to the Project.
- Various studies and assessments that were carried out for the safety and other aspects of the Project.
- DSPOE Panel Charter; latest O&MP, EPP, and Instrumentation Plan; CSQAP (for substantial remedial works); and a CoI declaration form to be signed by the expert.

The Panel will request any other relevant documents that it may require for its review work.

Panel Reports

The Panel will document each of its meetings. The meeting reports will summarize, inter alia, the experts present at the meetings, the reference material provided, topics reviewed, the analyses carried out, the key areas of concern, the requests for additional information/analysis, the conclusions and recommendations for risk management, potential mitigation measures and solutions and approaches for corrective measures, and the actions to be taken by the concerned parties. It should incorporate and respond to comments received in that period from the Client, consultants, contractors and other stakeholders, and should include a statement of actions taken on the recommendations of the previous meeting of the Panel. The Panel will present its draft meeting report prior to the departure of the members from Lebanon. The Panel reports will be signed by each participating member.

At the completion of its assignment, the Panel will provide a final report identifying any residual issues and providing recommendations for the operational phase of the project, including periodic safety inspections of the dam after completion and implementation of measures required to address safety deficiencies.

All Panel reports will be in the English language.

Client Supporting Services

The Client will provide the following services:

- The Client will ensure the timely availability of all documents required for the Panel to fulfil its mandate. The necessary documentation for each Panel meeting will be provided at least two weeks in advance of the meeting.
- The Client shall take necessary actions to facilitate travel clearances of the members of the Panel or specialists requested by the Panel, and shall provide full and safe physical access to the proposed project areas and sites.
- The Client shall (free of charge) provide office space during the Panel meetings.
- The Client will make available authorized and knowledgeable personnel for discussions at the request of the Engineering/Dam Safety Panel.
- The Client will provide English translations of documents that are in Arabic of French at the request of the Engineering/Dam Safety Panel.

F- Implementation Duration and Contract:

(i) The work schedule and milestones will be agreed with the LRA in coordination with other relevant office after appointment. Members of the DSPOE are expected to conduct an initial mission during detailed design and construction preparation phase. Thereafter, the Panel will conduct missions, including site visits, at a minimum frequency of one per year throughout the rehabilitation period. Each mission is estimated at 5 working days.

(ii) The DSPOE will be maintained on an on-call basis throughout the rehabilitation period to provide technical review and guidance as requested by the LRA. This is in addition to the regularly scheduled missions outlined in item (i)

(iii) The services of the DSPOE are envisaged to **start in July 2026** for an initial period of 5 working days under the LRA possibly using the WB Project Preparation Advance in support of preparatory activities.

(iv) At the request of the LRA, DSPOE members may provide technical support at their home offices and through video/audio conferences.

G- Outputs

The DSPOE shall submit one consolidated Report after each mission. The Dam Specialist and Chairperson (DSE) will consolidate inputs from all DSPOE members. This report shall indicate issues to be paid attention to, needs for further detailed analysis, and propose solutions. The DSPOE may be required to work with other relevant agencies and entities in the project, such as the designer, the Technical Services , The Owner's Engineer and the contractors in order to clarify relevant issues. The World bank may also send experts to the meetings. The DSPOE may also prepare other reports, if required.

H- Scope of Work of Hydrology & Hydraulics expert

The primary tasks of the Hydrology & Hydraulics expert of the DSPOE will include, but not necessarily be limited to the following:

(i) Review the hydrological and hydraulic engineering aspects of the design reports for the rehabilitation works on **Qaraoun** , as relevant.

(ii) Review the scouring assessment of the plunge pool, including previous numerical and physical model studies, as well as the rehabilitation design concept for controlling the plunge pool scouring.

(iii) Review the design criteria and specifications of the plunge pool reshaping works from hydraulic / scouring engineering perspective, as well as drawings and construction plans.

(iv) Review the hydraulic design of the spillway gates, including new upstream emergency gates and downstream flood gates, as well as hydraulic profile under various operating conditions.

(v) Review the criteria, methodology and adequacy of design flood, flood routing study, and spillway capacity and recommend measures if any.

(vi) Review and advise on integration of climate change projections into hydrological and flood analyses, testing design floods, spillway capacity and reservoir operating rules across plausible future scenarios.

(vii) Review the overall reservoir operational rules for flood control and power generation including operational records (reservoir water level, inflow, discharge volume, etc.) and hydrological /meteorological monitoring data.

(viii) Review the overall construction plan and the discharge for selected return periods of both upstream and downstream cofferdam arrangements from hydrological and hydraulic aspects.

(ix) Recommend additional actions and measures to assure the safety of the dam's design and construction plan considering potential hydrological / hydraulic risks and required safety level if any.

(x) Review the Construction Supervision and Quality Assurance Plan (CSQAP) as it relates to hydraulic structures and hydrometric monitoring, and advise on adequacy and implementation.

(xi) Review the technical specifications and drawings of the bidding document and provide technical support for the hydraulic design aspects of bidding process, including pre-qualification, bid evaluation, contract negotiations.

(xii) Review the adequacy of hydro-meteorological monitoring instruments, including their numbers, locations, monitoring frequency, etc.

(xiii) Review the Operation and Maintenance Plan and the Emergency Preparedness Plan or Framework Plan regarding the conditions and operational procedures of the spillway gates and other hydraulic outlet facilities.

(xiv) Review sedimentation issues in the reservoir and management strategy / plan for ensuring long term sustainability if relevant.

(xv) Review the quality of contractors/suppliers works and construction supervision regarding hydraulic /scouring engineering aspects related to the plunge pool reshaping and manufacturing / installation of the new emergency gates and new set of stop beams and their conformity to their technical specifications.

(xvi) Coordinate with the DSPOE Chair and other panelists to fulfill assignments in the field and his/her home offices. All formal technical advice and reporting to the Client shall be channeled through the DSPOE Chairperson to ensure a single, consolidated panel report.

(xvii) Attend meetings with the client, its consultants (Designer, Owner's Engineer) and the World Bank to provide independent technical advice as a DSPOE member.

I- Experience and Qualifications Requirements

The Hydrology & Hydraulics expert should meet the following minimum requirements:

- An advanced degree in Hydrology, Hydraulics, Water Resources or related field or other relevant majors,
- Minimum 25 years of experience in relevant professional works,
- Having worked as a hydrologist and hydraulic design expert in designing and construction of large dams including concrete dams, under climate change impact assessment
- Top notch expertise and experience in rock scouring assessment and energy dissipation design of large dams,
- Intensive experience in hydrological and hydraulic aspects of construction plan and schedule for large-scale or complex dam projects.
- Intensive experience of hydrological and hydraulic aspects of dam safety planning, instrumentation and monitoring.

J- Standard provisions

Confidentiality: The Consultant shall treat all documents and information received in connection with this assignment as confidential and shall not disclose them to any third party without prior written consent of the Client.

Conflict of Interest: The Consultant shall disclose any actual or potential conflicts and shall not engage in downstream services related to works they review under this assignment.

Ownership of Outputs: All reports, data, and materials produced under this assignment shall be the property of the Litani River Authority.

Deliverable Acceptance and Payment: The Client will review and accept deliverables; payments will be linked to satisfactory acceptance of specified deliverables.

Annex 2: Panel Charter to be adapted for the DSPOE

Panel Charter template to be adapted for the DSPOE. It is structured to be annexed to each TOR and finalized during the inception mission (Mission 1). Text in brackets can be tailored to the project.

Title: Panel Charter – Dam Safety Panel of Experts (DSPOE)

1. Purpose and mandate

   Purpose: To provide independent, expert advice to the Client on dam safety risks and risk management across design, construction, and commissioning/refilling of [Project/Dam(s)], in accordance with World Bank ESS4 Annex 1 and the Dam Safety Good Practice Note.

   Mandate: Advise on adequacy of designs, construction controls, operational preparedness, and emergency readiness; track resolution of recommendations; and report findings to the Client, with reports copied to the World Bank.

2. Composition and independence

   Members: [Chairperson – Dam Engineering], [Hydrology & Hydraulics Expert], [Geotechnical Expert]. Additional specialists may be co-opted with Client agreement.

   Independence: Members must have no current affiliation or financial interest with the Client, designer/owner's engineer, contractors, or suppliers related to the project.

   Conflict of Interest: Each member signs a declaration of impartiality and discloses any actual/potential conflicts on appointment and throughout the assignment. The Client maintains a CoI register.

3. Scope of advisory services

- Designs and studies: Review and advise on design criteria, risk assessments (including PFMA), analyses, and design packages prepared by the Owner's Engineer/Contractor.
- Construction and temporary works: Review Construction Supervision and Quality Assurance systems (CSQAP) and safety of temporary works (cofferdams, diversions, dewatering), and advise on corrective actions.
- Monitoring and instrumentation: Review and advise on the Instrumentation Plan, monitoring systems, baseline readings, and thresholds/action levels.

- Operations and emergency preparedness: Review and advise on the Operation & Maintenance Plan (O&MP), Emergency Preparedness Plan (EPP), roles and communications with authorities and communities, and drills/exercises.
- Commissioning/refilling: Where rehabilitation involves drawdown and controlled re-impoundment, review and advise on the Refilling/Commissioning Plan and readiness prior to refilling; support monitoring during refilling. If no drawdown is required, review proportionate commissioning checks and updates to O&MP/EPP.
- Hydrology and climate: Advise on hydrological data, flood estimation, flood routing, spillway/outlet capacity, reservoir operations, and climate change stress testing.

4. Deliverables and timing

- Inception (Mission 1): Panel Charter agreed; signed CoI declarations; document transmittal protocol; mission schedule; inception report issued within [10] working days of mission close.
- Subsequent missions: A consolidated DSPOE mission report, signed by attending members, within [10–15] working days after each mission. Reports include recommendations, priority/risk rating, and a status log of previously issued recommendations.
- Ad-hoc advice: Written notes or memos in response to time-critical queries; incorporated into the next mission report.

5. Meetings and mission cadence

- Planned missions: [e.g., design freeze/tender readiness; construction start; key construction milestones; pre-commissioning; commissioning/refilling monitoring].
- Notification: Client informs the World Bank and panel members at least [3] weeks before each mission and circulates the agenda and pre-reads [10] working days in advance.
- Attendance: Meetings with Client, Owner’s Engineer/Designer, Contractor(s), and, as needed, regulators and emergency authorities; site inspections will be included each mission.

6. Reporting protocol

- Consolidation: The Chair consolidates inputs and issues a single panel report per mission. Dissenting views are recorded alongside the majority view.

- Distribution: Reports are addressed to the Client and copied to the World Bank. The Client shares responses and an action plan within [15] working days, including responsibility and timeline for each recommendation.
- Tracking: The DSPOE maintains a recommendation log with status categories (Open, In progress, Closed, Not applicable) and risk prioritization.

7. Communication and document control

- Document transmittal: The Client provides a register and secure workspace for document exchange. Version control and dates are recorded. The minimum corpus includes: CSQAP, Instrumentation Plan, O&MP, EPP, Refilling/Commissioning Plan (as applicable), PFMA/risk analyses, design packages, and monitoring data.
- Confidentiality: Panel members keep project information confidential, except as required for reporting to the Client and the World Bank.

8. Roles and responsibilities

- Chairperson: Leads missions; coordinates panel inputs; manages the recommendation log; ensures timely reporting; liaises with the Client and the World Bank.
- Panel members: Prepare in advance; participate in missions; provide written inputs by agreed deadlines; support drafting of recommendations and verification of closure evidence.
- Client: Ensures access to information, site(s), and relevant personnel; coordinates responses/action plans; facilitates follow-up on recommendations.

9. Logistics and administration

- Mission planning: The Client proposes mission dates, agendas, and site visit logistics; travel and accommodation are arranged per the contract.
- Health, safety and security: Panel members comply with site HSS requirements and receive safety briefings before site access.
- Remuneration and expenses: As per individual contracts; this Charter governs operations and reporting, not commercial terms.

10. Amendment and duration

- This Charter may be amended by mutual written agreement between the Client and DSPOE Chair. It remains in force for the duration of the DSPOE assignment for [Project/Dam(s)].

Annex A: Recommendation Log Template

- ID; Recommendation text; Risk rating (High/Med/Low); Responsible party; Due date; Status; Evidence of closure; Notes.

To be tailored to the project name, insert the specific mission schedule, and align the reporting timelines with those already in the TORs.