

## BULACAN BULK WATER SUPPLY PROJECT (BBWSP)

# Terms of Reference

For the Hiring of Individual Consultant: *(Process Engineer)*

### I. OBJECTIVE

The objective of this procurement is to engage the professional services of specialized individual that will do the work that is highly technical or proprietary pertinent to the construction, process review/evaluation, and commissioning of the 388 Million Liters per Day ("MLD") Water Treatment Facility covering Stage 1 and Stage 2 of the Bulacan Bulk Water Supply Project (BBWSP) prior to its final acceptance by the Metropolitan Waterworks and Sewerage System (MWSS). The work also involves among others, the review of technical submissions, conduct of process proving, facility commissioning, and assistance to the MWSS in the assessment and documentation of the Concessionaire's compliance with the Minimum Performance Standards and Specifications (MPSS) of the Project during the construction period and during the testing and commissioning. The required assistance is in view of the non-availability of expert engineers, within the MWSS current organizational structure, in the field of water treatment process design and its testing/commissioning.

This procurement shall be done in accordance with the provisions under Section 53.7 of the 2016 Revised Implementing Rules and Regulations (IRR) of Republic Act 9184.

### II. BACKGROUND

The MWSS is implementing the BBWSP based on a performance/output-based scheme in accordance with Republic Act No. 6957 (as amended), otherwise known as the Build Operate Transfer Law ("**BOT Law**") and pursuant to MWSS Board Resolution No. 2014-044-CO dated 24 April 2014 and NEDA Board Approval on 21 November 2013.

The objective of the BBWSP is to supply treated bulk water to the entire Province of Bulacan thru the water districts. The project will mitigate the deteriorating condition of ground water in the province, which was already found in critical condition due to over-extraction.

After a competitive public bidding in accordance with the Implementing Rules and Regulations of the BOT Law ("**BOT Law IRR**"), the MWSS has entered into a Concession Agreement with the Winning Bidder – SMC-K water Consortium, now the Luzon Clean Water Development Corporation ("**LCWDC**" or the "**Concessionaire**").

Under the Concession Agreement, the Concessionaire, will among others, (a) finance, plan, develop, design, construct, test, commission the Facilities; (b) implement the Project in accordance of the Concession Agreement; and (c) operate, manage, maintain repair/refurbish the Facilities, and eventually transfer title to the MWSS.

Specifically, and as provided in the Project's Minimum Performance Specification and Standards ("**MPSS**"), the Facilities include, among others, the following:

- Water Source Development;
- Aqueduct Interconnection, Intake and Lift Station;

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- Water Treatment Plant, complete with support buildings and structures including treated water reservoir;
- Raw Water and Treated Water conveyance facilities complete with necessary appurtenances
- Bridge and Culvert Crossings;
- SCADA system;
- Lift and Booster Pump Stations;
- Security Fence;
- Sludge Treatment Facility;
- Access Road and Pipe Bridges;

The implementation schedules for Stage 1 and Stage 2 are as follows:

Construction period:

- |         |                              |
|---------|------------------------------|
| Stage 1 | - April 2016 to October 2018 |
| Stage 2 | - April 2016 to April 2019   |

Process Proving:

- |         |                 |
|---------|-----------------|
| Stage 1 | - November 2018 |
| Stage 2 | - May 2019      |

Commissioning:

- |         |                 |
|---------|-----------------|
| Stage 1 | - November 2018 |
| Stage 2 | - May 2019      |

As implementing agency of the Project, the MWSS must ensure its successful implementation and that the objectives are attained. Thus, although the Project is being implemented based on performance/output-based scheme, the MWSS is obliged to ensure that (a) the Concessionaire adheres to the Project Milestones (b) the Facilities meet the required specifications and standards, as prescribed in the MPSS of the Concession Agreement.

To this end, the Concession Agreement provides, among others, that:

- The Concessionaire will submit the Draft Detailed Engineering Design (“DED”) and Construction Schedule of the Facilities for Stages 1 and 2 to MWSS for review and comment by MWSS. *(Completed)*
- The MWSS have the right to monitor the progress of the Works. “Works” is defined as “the design, procurement, engineering, construction, rectification, completion, testing and commissioning” of among others, Stage 1 and Stage 2.
- During the execution of the Works, the MWSS and the Concessionaire shall conduct meetings as prescribed in the MPSS for the exchange of information, including regular construction review meetings to facilitate the completion of the Works.
- The Concessionaire will submit the Commissioning and Acceptance Plan for Stages 1 and 2 for approval by MWSS.
- The constructed facilities for Stages 1 and 2 will undergo commissioning and acceptance tests before partial or full acceptance by MWSS, in accordance with the Approved Commissioning and Acceptance Plan.
- The Concessionaire will submit its Operation and Maintenance (“O&M”) Manual for approval by MWSS.

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### III. SCOPE OF WORK

The consultant shall, among others:

#### A. For Deliverable No. 1

- 1) Review the submissions of LCWDC/Contractor within his period of engagement and recommend approval or proper actions for compliance of rectifications/corrections by the LCWDC/Contractor, if any;
- 2) Prepare and submit through BBWSP-PMO, for approval of MWSS, the manual of procedures necessary to effectively and efficiently monitor and manage the commissioning phase of the project in terms of processes and operations;
- 3) Review completeness of the "Operation and Maintenance Manuals" submitted by LCWDC/Contractor, that includes all necessary methodology, list of equipment, laboratory testing, procedures, sampling collections and others to be compliant to national and international standards;
- 4) Review the Commissioning Plans submitted by LCWDC/Contractor considering the different activities to be undertaken and the significance of each activity during the commissioning period;

#### B. For Deliverable Nos. 2, 3 and 4

- 5) Review and validate the treatability studies conducted on laboratory scale to determine required chemical dosages on chemical treatment;
- 6) Review and validate the treatment efficiency on every unit operation processes versus design criteria and standards based on the actual test result undertaken.
- 7) Collect split samples of treated water for laboratory analysis and determine compliance to Philippine National Standards for Drinking Water (PNDS).
- 8) Prior to issuance of "Commissioning and Acceptance Certificate" of the constructed WTP facilities and in coordination with the BBWSP-PMO, Concessionaire, and representative/s of the water districts:
  - (a) conduct "*Commissioning and Acceptance Test*" in accordance with the approved Commissioning and Acceptance Plan;
  - (b) prepare punch list of items that need corrections, rectifications, and/or adjustments ("Punch List");
  - (c) conduct Final Inspection of the constructed facilities upon completion of the items for correction, rectification and adjustment as specified in the Punch List.
  - (d) monitor and check the compliance of the completed WTP facilities with the MPSS during the 30-day process proving period.
- 9) Upon determination that (i) construction has been fully completed, (ii) Punch List has been rectified, and (iii) the 30-day process proving has been successfully completed,
  - (a) prepare a report and certify to the BBWSP-PMO that the constructed WTP facility is in good operating condition and meets the requirement of the Commissioning and Acceptance Standards;
  - (b) prepare the "**Commissioning and Acceptance Certificate**" and recommend, through the BBWSP-PMO for approval by MWSS, the issuance thereof based on the results of the Final Commissioning and Acceptance Test;
- 10) Perform such other duties and responsibilities as may be required by MWSS/BBWSP-PMO.

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#### IV. CONSULTANT'S QUALIFICATIONS

- Must be a registered Sanitary Engineer or Chemical Engineer. Master's degree in line with his profession is preferred.
- Must have at least 15 years post licensed experienced in the field of water or wastewater engineering.
- Must have a track record as a Process Designer in at least one (1) successfully completed water treatment or wastewater treatment project within the last ten (10) years, subject to submission of a certification from the project owner/client.
- Must have at least seven (7) years actual experience in the operation and management of water treatment or wastewater treatment plant.

#### V. REPORTING / DELIVERABLES

The Consultant shall prepare and submit to the MWSS four (4) hard copies and one (1) soft copy of the following reports:

- Deliverable No. 1:** – Manual of procedures necessary to effectively and efficiently monitor and manage the commissioning phase of Stage 1 and Stage 2 of the project in terms of Operation and Processes of the Facility, including the Commissioning and Acceptance Standards;
- Report on the review of completeness of the "Operation and Maintenance Manuals" submitted by the LCWDC/Contractor.
  - Report on the O&M and Commissioning Plan.
  - The above deliverables shall be complied no later than thirty (30) calendar days prior to the scheduled start of the Process Proving for Stage 1.
- Deliverable No. 2:** – Report on the Plant's operational performance and efficiency based on the results of the 30 days Process Proving Period to be submitted no later than fifteen (15) calendar days after the MWSS' issuance of commissioning and acceptance certificate for **Stage 1**.
- Deliverable No. 3:** – Report on the Plant's operational performance and efficiency based on the results of the 30 days Process Proving Period to be submitted no later than fifteen (15) calendar days from the MWSS' issuance of commissioning and acceptance certificate for **Stage 2**.
- Deliverable No. 4:** – Comprehensive Final Report, which shall be submitted no later than thirty (30) calendar days from the MWSS' issuance of commissioning and acceptance certificate for **Stage 2**. The report shall include among others, the comprehensive documentation of the works performed during the consultant's engagement, results of the process proving of the facilities, commissioning and acceptance, and all other the related operational concerns pertaining to treatment processes and compliance with the Minimum Performance Standards (MPSS) of the project, to include projected annual O&M costs, i.e. energy cost, chemical, etc.

#### VI. TERMS OF PAYMENT

- 15% - Down payment
- 25% - Upon compliance of Deliverable No. 1

- 25% - Upon compliance of Deliverable No. 2
- 25% - Upon compliance of Deliverable No. 3
- 10% - Upon compliance of Deliverable No. 4

**VII. APPROVED BUDGET FOR THE CONTRACT**

The total Approved Budget for the Contract (ABC) is **Six Hundred Ninety-Four Thousand Pesos (PhP 694,000.00)**, inclusive of 12% Value-Added Tax (VAT).

**VIII. DURATION OF THE SERVICES**

The Contract duration shall be in a total of Four (4) months, reckoned from the Consultant's receipt of Notice to Proceed (NTP), which shall be served intermittently until the full commissioning, final acceptance, and start of commercial operation of Stage 1 and Stage 2.

**IX. INSTITUTIONAL ARRANGEMENT**

- The consultant shall receive guidance from, and report directly to the MWSS/BBWSP-PMO who shall then supervise its work;
- MWSS will provide office space and basic office furniture for the consultant's use;
- Consultant shall provide its own computer/laptop

**TECHNICAL WORKING GROUP**

  
**DELFIN U. SESPEÑE**  
 Member

  
**CALIXTA V. EUGENIO**  
 Member

  
**JOSE ALFREDO B. ESCOTO, JR.**  
 Member

  
**JOSE D. DORADO, JR.**  
 Chairman

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