

सुचना !!! सुचना !!! सुचना !!!

प्रथम पटक प्रकाशित मिति: २०८१/११/२१

प्रस्तुत विषयमा यस कम्पनी अन्तर्गत का.म.न.पा-२९, सिंहदरबार परिसर भित्र तपशिल बमोजिमको परामर्श सेवा सम्बन्धि कार्य गर्नु परेको हुँदा यस कम्पनीमा आजको मिति सम्म सुची दर्ता भएका कम्पनी / फर्महरूलाई के कति दर रेटमा काम गर सकिन्छ ? यो सुचना प्रकाशन मितिले ७ दिन भित्र Term of Reference (TOR) मा उल्लेख भए अनुसार प्रस्ताव (RFP) पेश गर्नु हुन सबैलाई जानकारी गराइन्छ ।

तपशिल:

S.N	Description of Works	Estimated Amount
1	Construction of Advanced Water Treatment Plant	6,53,258.76

## **Terms of Reference (ToR) for Advanced Water Treatment Plant for KUKL**

### **1. Introduction**

Kathmandu Upatyaka Khanepani Limited (KUKL) aims to establish an **Advanced Water Treatment Plant** within **Singha Durbar** to supply treated drinking water to all government offices inside the premises. The current raw water from boreholes contains **ammonia levels exceeding 48 mg/L** and **color of 15 TCU units**, necessitating an advanced treatment system to meet **National Drinking Water Standards-2079**.

To address this issue, KUKL seeks to hire a **qualified consultant** to design a water treatment system capable of effectively removing ammonia and ensuring compliance with national and international drinking water standards.

### **2. Objectives**

The key objectives of this project are:

- To **design and develop an advanced water treatment system** to treat high ammonia levels, color issues, and other contaminants.
- To ensure the treated water meet **Nepal Drinking Water Quality Standards (NDWQS)**.
- To prepare **detailed engineering drawings** for the proposed water treatment plant.
- To recommend suitable **treatment technologies**, including ammonia and color removal processes.
- To assess **cost estimates, operation, and maintenance (O&M) strategies**.

### **3. Scope of Work**

The consultant shall carry out the following tasks:

#### **3.1 Assessment of Raw Water Quality**

- Conduct a **detailed water quality analysis** of borehole water, focusing on **ammonia, color, iron, manganese, turbidity, and microbial contamination**.
- Identify seasonal variations in water quality.
- Assess potential health risks due to high ammonia levels and color in drinking water.

#### **3.2 Technology Selection for Water Treatment**

- Identify **appropriate treatment technologies** for ammonia and color removal, such as **biological filtration, ion exchange, breakpoint chlorination, aeration, and activated carbon filtration**.

- Evaluate treatment efficiency, feasibility, and economic viability.
- Propose a **treatment process flowchart** from raw water intake to treated water distribution.

### 3.3 Design of Water Treatment Plant

- Design **all components** of the treatment plant, including:
  - Raw water intake system
  - Pre-treatment unit (sedimentation, filtration, aeration, and coagulation)
  - Ammonia and color removal system
  - Disinfection system (chlorination/UV treatment)
  - Storage and distribution system
  - Sludge management and waste disposal system
- Prepare **hydraulic and process calculations**.
- Ensure compliance with **government and international water treatment standards**.

### 3.4 Preparation of Detailed Drawings and Reports

- Develop **detailed engineering drawings** of the plant, including:
  - Civil, mechanical, and electrical layouts
  - Piping and instrumentation diagrams (P&ID)
  - Structural and architectural plans
- Prepare **GIS-based mapping** of the plant layout and pipeline network.
- Submit a **comprehensive Detailed Project Report (DPR)** with:
  - Design criteria and treatment process
  - Technical specifications of equipment and materials
  - Bill of Quantities (BoQ) and cost estimates
  - Environmental and social impact assessment
  - Operation and maintenance guidelines

## 4. Methodology

The consultant will follow these steps

- **Data Collection:** Conduct field visits, collect water samples, and analyze quality parameters.
- **Feasibility Study:** Evaluate different treatment technologies and select the most suitable option.
- **Design & Engineering:** Develop detailed designs, drawings, and process flowcharts.
- **Stakeholder Consultation:** Engage with KUKL and government representatives to ensure project feasibility.
- **Report Preparation:** Compile all findings into the **DPR**, including technical, economic, and environmental aspects.

## 5. Deliverables

The consultant must deliver the following:

1. **Inception Report:** Initial assessment and work plan.
2. **Water Quality Report:** Analysis of raw water contamination.
3. **Technology Selection Report:** Justification for recommended treatment methods.
4. **Engineering Drawings:** Complete civil, mechanical, and electrical design plans.
5. **GIS-Based Mapping:** Digital layout of the treatment plant and pipeline network.
6. **Detailed Project Report (DPR):** Final comprehensive report with findings, recommendations, and cost estimates.

## 6. Project Duration and Criteria

The project is expected to be completed within **one months**. **Consultant should submit proposed design system to remove high amount of ammonia and color.**

## 7. Team Composition

The consultant team should include:

- **Water Treatment Expert (1)** – Lead the treatment process design.
- **Civil Engineer (1)** – Design structural components of the plant.
- **Mechanical Engineer (1)** – Oversee mechanical design and equipment selection.
- **Geo Technical Expert (1)**
- **Structural Engineer (1)**
- **GIS Expert (1)** – Develop digital maps and system layout.

## 8. Reporting and Coordination

- The consultant will report to **KUKL** and concerned government agencies.
- Monthly progress reports will be submitted.
- The final **DPR and design drawings** will be presented for approval.

## 9. Budget and Payment Terms

- The total budget will be negotiated based on project complexity.
- Payments will be made upon successful completion of key deliverables.

## 10. Conclusion

This project aims to provide **safe, high-quality drinking water** to all government offices inside Singha Durbar by implementing an **advanced water treatment system**. The final DPR will guide the **construction and operation** of a modern, efficient, and sustainable treatment plant.

---