

# TECHNOLOGY INFORMATICS DESIGN ENDEAVOUR



## Terms of Reference / Request for Proposal

**Date: 10.06.2026**

Technology Informatics Design Endeavour (TIDE) invites proposals for the "Supply, Installation, Commissioning, Monitoring, and Evaluation of Groundwater Recharge Interventions for Aquifer Restoration and Water Security in Project Towns under the Integrated Water Management Programme."

TIDE welcomes innovative solutions and actively encourages submissions from new and early-stage organisations, including start-ups, research institutions, and incorporated enterprises.

### 1. Introduction

Technology Informatics Design Endeavour (TIDE) is a development organisation based in Bengaluru that leverages technology for conserving the environment, creating livelihoods, and addressing societal issues. TIDE's work encompasses energy access and biomass-based cooking solutions, environment conservation through energy, waste and water interventions, and technology-based innovative livelihoods, particularly with a focus on rural women. TIDE is currently implementing a project titled Integrated Water Management in partnership with BORDA, in different towns of Karnataka. For more information about TIDE, please visit [www.tide-india.org](http://www.tide-india.org)

<b>Title</b>	Supply, Installation, Commissioning, Monitoring and Evaluation of Groundwater Recharge Interventions for Aquifer Restoration and Water Security in Project Towns under the Integrated Water Management Programme
<b>Location</b>	Project towns in Chikkaballapura District, Karnataka (exact sites to be identified during the assessment stage).
<b>Nature of Assignment</b>	<p>Assessment, design, supply, installation, commissioning of groundwater recharge interventions aimed at restoring groundwater levels, improving aquifer recharge and strengthening long-term water security in groundwater-dependent towns.</p> <p>The assignment shall include hydrogeological assessment, identification of suitable recharge opportunities, evaluation of recharge water sources, design and implementation of pilot recharge interventions, groundwater monitoring, impact assessment and preparation of operation and maintenance plans.</p>
<b>Contract period</b>	The contract period will be for a duration of 30 days

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Technology Informatics Design Endeavour  
FF1, Sapthagiri apartments, No 30, 10<sup>th</sup> cross, 15<sup>th</sup> main road, RMV extension, Sadashivanagar,  
Bengaluru – 560080

Email – [info@tide-india.org](mailto:info@tide-india.org)

Ph – 080 2361 2031

## 2. Background of Project

The project towns are highly dependent on groundwater as the primary source of municipal and domestic water supply. Groundwater is abstracted through a large number of borewells distributed across the towns and surrounding areas.

Over the past several years, increasing groundwater extraction, recurrent droughts, changing rainfall patterns and inadequate natural recharge have resulted in declining groundwater levels across the region. As groundwater levels have fallen, many borewells that historically yielded water have experienced reduced discharge or have become non-functional. In many cases, these borewells were originally productive and are believed to have become defunct due to prolonged groundwater depletion rather than poor siting or absence of an aquifer.

The sustainability of water supply in such groundwater-dependent towns depends not only on efficient water use and groundwater abstraction management, but also on actively replenishing groundwater resources. Managed Aquifer Recharge (MAR) provides an opportunity to enhance groundwater availability by facilitating the infiltration of clean rainwater and surface runoff into suitable aquifers through scientifically designed recharge interventions.

However, groundwater recharge interventions must be carefully planned. Their effectiveness depends on hydrogeological conditions, aquifer characteristics, groundwater quality, recharge source availability and long-term maintenance requirements. Recharge interventions should therefore be based on site-specific assessment rather than standardized designs.

Through this assignment, TIDE seeks to identify and demonstrate appropriate groundwater recharge interventions that can contribute to improved groundwater resilience and long-term water security. The assignment will assess groundwater conditions, identify strategic recharge opportunities, evaluate suitable recharge water sources, implement pilot recharge structures and assess their effectiveness.

Recharge interventions may include recharge of shallow aquifers, recharge of deep aquifers, recharge of defunct borewells, recharge pits, infiltration structures and nature-based solutions, depending on site-specific conditions and technical feasibility.

The assignment is intended to generate practical evidence and replicable approaches for groundwater recharge in groundwater-stressed towns.

## 3. Objectives of the Assignment

The objectives of this assignment are to:

1. Identify suitable locations and opportunities for groundwater recharge.
2. Assess the suitability of defunct and low-yielding borewells for recharge interventions.
3. Evaluate potential recharge water sources and associated water quality risks.
4. Design and implement pilot groundwater recharge interventions based on hydrogeological suitability.
5. Demonstrate approaches for restoring groundwater levels and strengthening local water security.

6. Assess the effectiveness of implemented recharge interventions.
7. Develop operation and maintenance plans for long-term sustainability.

#### 4. Terms of Reference

The bidder shall be responsible for the activities and roles mentioned herein, and shall also support TIDE wherever reasonable and possible, to ensure that the objectives of the assignment are met. The details of the assignment are given below:

#### 5. Scope of Work

The bidder shall undertake the following activities.

##### Phase 1: Groundwater Assessment and Recharge Opportunity Identification

###### A. Hydrogeological Assessment

The bidder shall undertake a hydrogeological assessment of the proposed project area, including:

- Review of available hydrogeological information and groundwater studies.
- Assessment of aquifer characteristics.
- Identification of shallow and deep aquifer systems.
- Assessment of groundwater availability and groundwater stress.
- Review of historical groundwater trends where data is available.
- Assessment of groundwater recharge potential.
- Identification of factors contributing to groundwater depletion.

###### B. Borewell Assessment

The bidder shall identify and assess:

- Defunct borewells.
- Low-yielding borewells.
- Functional borewells that may benefit from nearby recharge interventions.

The assessment shall include:

- Structural condition assessment.
- Review of available well records.
- Local stakeholder consultations.
- Assessment of previous yield and current status.

- Determination of suitability for recharge.

Preference shall be given to borewells that were historically productive but have become defunct or low yielding due to groundwater depletion.

### **C. Recharge Opportunity Mapping**

The bidder shall identify suitable locations for recharge interventions, including:

- Defunct borewells.
- Existing functional borewells.
- Public lands.
- Open spaces.
- Stormwater pathways.
- Institutional campuses.
- Areas with high recharge potential.
- Areas experiencing significant groundwater stress.

The bidder shall prepare a recharge opportunity map indicating priority intervention locations.

### **D. Recharge Water Source Assessment**

The bidder shall identify and evaluate potential recharge water sources, including:

- Rooftop rainwater.
- Surface runoff.
- Stormwater.
- Other locally available water sources.

The assessment shall include:

- Seasonal availability.
- Quantity estimation.
- Water quality assessment.
- Contamination risks.
- Treatment and filtration requirements.

The bidder shall clearly indicate which water sources are suitable and unsuitable for recharge.

## Phase 2: Design of Recharge Interventions

Based on the assessment findings, the bidder shall propose site-specific recharge interventions.

Recharge interventions may include, but shall not be limited to:

### Deep Aquifer Recharge

- Recharge through suitable borewells.
- Recharge shafts.
- Recharge wells.
- Borewell recharge systems with appropriate filtration.

### Shallow Aquifer Recharge

- Recharge pits.
- Percolation pits.
- Infiltration trenches.
- Recharge wells.
- Soak pits.
- Vegetated swales.
- Bio-retention systems.
- Other nature-based solutions.

The bidder may propose innovative approaches provided they are technically justified and suitable for local conditions.

For each intervention, the bidder shall provide:

- Design rationale.
- Design drawings.
- Dimensions.
- Design calculations.
- Estimated recharge volume.
- Catchment assumptions.
- Water quality safeguards.
- Operation and maintenance requirements.

The final intervention sites shall be approved by TIDE prior to implementation.

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### **Phase 3: Supply, Installation and Commissioning**

The bidder shall:

- Procure and supply all required materials.
- Construct and install approved recharge structures.
- Implement filtration and sediment removal measures.
- Install overflow arrangements where required.
- Commission the completed systems.
- Conduct functional testing.

All structures shall be constructed using durable materials and shall be designed for ease of maintenance.

### **Phase 4: Groundwater Protection and Water Quality Safeguards**

The bidder shall ensure that recharge interventions do not adversely affect groundwater quality.

At a minimum:

- First-flush diversion systems shall be provided where applicable.
- Sedimentation and silt removal arrangements shall be incorporated.
- Suitable filtration systems shall be provided.
- Recharge of untreated sewage or greywater shall not be permitted.
- Runoff carrying significant contamination risk shall not be used.
- Additional safeguards shall be adopted where recharge to deeper aquifers is proposed.

The bidder shall clearly document all groundwater protection measures.

### **Phase 5: Monitoring and Impact Assessment**

The bidder shall establish baseline conditions prior to implementation and assess the effectiveness of the interventions.

Monitoring activities shall include:

- Baseline groundwater-level measurements.
- Identification of monitoring locations.
- Post-installation groundwater-level observations.
- Observation of recharge structure performance.
- Assessment of recharge volumes.

The impact assessment shall include:

- Estimated groundwater recharge achieved.
- Groundwater-level response, where measurable.
- Performance of recharge structures.
- Assessment of benefits and limitations.
- Recommendations for scale-up.

Recognising that aquifer response may require longer time periods, the bidder may use a combination of field observations and hydrogeological estimation methods.

### **Phase 6: Operation and Maintenance Planning**

The bidder shall prepare an Operation and Maintenance (O&M) Plan for each intervention.

The plan shall include:

- Routine maintenance requirements.
- Cleaning schedules.
- Desilting procedures.
- Inspection protocols.
- Roles and responsibilities.
- Estimated annual maintenance costs.
- Recommended maintenance frequency.

The bidder shall also provide training to designated personnel responsible for operation and maintenance.

## **6. Deliverables**

### **Deliverable 1: Groundwater Assessment and Recharge Opportunity Report**

Including:

- Hydrogeological assessment.
- Groundwater stress assessment.
- Borewell assessment.
- Recharge opportunity mapping.
- Recharge water source assessment.
- Recommended intervention locations.

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### **Deliverable 2: Recharge Intervention Design Package**

Including:

- Site-specific designs.
- Drawings.
- Design calculations.
- Estimated recharge potential.
- Bills of quantities.
- O&M requirements.

### **Deliverable 3: Installation and Commissioning Report**

Including:

- Details of structures installed.
- Construction records.
- As-built drawings.
- Testing and commissioning records.
- Photographic documentation.

### **Deliverable 4: Monitoring and Impact Assessment Report**

Including:

- Baseline groundwater conditions.
- Monitoring observations.
- Estimated recharge benefits.
- Groundwater response assessment.
- Lessons learned.

### **Deliverable 5: O&M Manual and Training Report**

Including:

- Maintenance procedures.
- Inspection checklists.
- Desilting protocols.
- Training documentation.
- Annual maintenance recommendations.

**7. Eligibility Criteria**

The bidder should meet the following minimum eligibility criteria:

The company / firm / contractor / institution / start-up should be registered with a legally binding registration document.
Maintenance of comprehensive documentation related to statutory compliance, including permits, approvals, monitoring records, and compliance reports.
The bidder shall not have been blacklisted by central / state government agencies and shall have no legal liability towards any governmental or non-governmental agency.
<b>Note: The bidders need to submit supporting documentary evidence for the criteria.</b>

**8. Evaluation Criteria**

S. No	Indicator	Description	Document Evidence	Weightage
1	<b>Bid Price</b>	Price quoted by the agency for completion of the project.	Provide a lump-sum cost in Annexure IV along with supporting documentation detailing the breakdown of components, specifications, etc.	<b>50%</b>
2	<b>Technical Capability &amp; Innovation</b>	Demonstrated capability to deliver the proposed solution and the strength and innovativeness of the approach. There is no minimum number of years of experience; new and early-stage organisations (including those with 1–2 years of experience or recently incorporated start-ups and research institutions) are eligible and encouraged to apply.	Any of the following, as available: details of similar work, pilots, field trials or proof-of-concept (project name and description, dates, location, value); test reports or performance data for the proposed solution; prototype/technology-readiness evidence; patents, certifications, awards, or incubation / institutional backing; and CVs of key technical staff.	<b>50%</b>

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All eligible firms will be graded on the above criteria. The one with the highest grade will be awarded the contract.

### 9. Duration of the Assignment

The project shall be completed within 30 days of the contract's award. The agency should adhere to the work plan shown below (subject to revision based on mutual consent or as per ground conditions).

#### Work Plan

The project duration is indicatively spread over the following weeks from the date of award of contract:

Activity	June 3 <sup>rd</sup> week	June 4 <sup>th</sup> week	June 5 <sup>th</sup> week/July 1 <sup>st</sup> week
Award of contract			
Site investigation, hydrogeological assessment and feasibility			
Construction / installation of recharge structures, commissioning and testing			

### 10. Schedule of Payment

Sl. No.	Milestone / Deliverable	Activities Covered	Stage of Payment	Percentage of Contract Value
1	Feasibility Assessment and Inception Report	Site investigation, hydrogeological assessment, borewell assessment, recharge opportunity mapping, stakeholder consultations, submission and approval of the Groundwater Assessment and Recharge Opportunity Report (Deliverable 1)	Upon submission and approval of Deliverable 1	20%

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2	Design Report and Commissioning Readiness	Preparation and approval of site-specific designs, drawings, design calculations, bills of quantities, recharge potential estimates, procurement planning, and mobilization for implementation (Deliverable 2)	Upon submission and approval of Deliverable 2 and commencement of installation activities	30%
3	Completion of Installation, Construction and Commissioning	Supply of materials, construction and installation of approved recharge structures, testing, commissioning, preparation of as-built drawings, photographic documentation, and submission of Installation and Commissioning Report (Deliverable 3)	Upon successful completion and certification of installation and commissioning activities	30%
4	Submission and Acceptance of Final Deliverables	Monitoring and impact assessment, preparation of Monitoring and Impact Assessment Report (Deliverable 4), O&M Manual, training of designated personnel, submission of Training Report (Deliverable 5), and completion of all contractual obligations	Upon acceptance of all final deliverables and closure of the assignment	20%
Total				100%

**Note:** The payment schedule will be finalised in consultation with the bidder at the contract-award stage. All payments will be made only after the original invoice is received at the office address.

### 11. Submission of Proposal and Deliverables

The proposal must be submitted over email to [arun.kumar@tide-india.org](mailto:arun.kumar@tide-india.org) and [procurement@tide-india.org](mailto:procurement@tide-india.org) with the following documents attached:

- Supporting documents for the eligibility and evaluation criteria.
- Self-certification of not being blacklisted by central / state government agencies.
- Properly filled Annexure I to IV (and Annexure V as applicable).



## TECHNOLOGY INFORMATICS DESIGN ENDEAVOUR

### Confidentiality and Intellectual and Other Property Rights

All reports, notes, statistics and other documents and data compiled and collected, or software developed by the Contractor under this Agreement shall be confidential and the property of TIDE. The Parties herein agree to keep the terms of this ToR and any information which any or all of the parties become acquainted with confidential, and such information shall not be disclosed, either directly or indirectly, to third parties or used in any way or manner that would be detrimental to the business of the partners.

Sd/-

Director – TIDE

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