Terms of References (ToR)

For

Assessing the potential for augmentation of local water resources through ground water (shallow/ deep) recharge/aquifer recharge and rain water harvesting at Nagpur under the project on ‘Accelerating climate action through the promotion of Urban Low Emission Development Strategies (Urban-LEDS II)

About the project

The Nagpur Municipal Corporation and the Nagpur Smart and Sustainable City Development Corporation Limited (NSSCDCL), with support from ICLEI-Local Governments for Sustainability, South Asia (ICLEI South Asia) and UN-Habitat are implementing a project on ‘Accelerating climate action through the promotion of Urban Low Emission Development Strategies (Urban-LEDS II)’ in Nagpur funded by European Commission. This project aims to reduce greenhouse gas emissions and support the climate actions at local level by the promotion of Urban Low Emission Development Strategies (Urban LEDS) in cities/towns of emerging economies (Brazil, Colombia, India, Indonesia and South Africa) and Least Developed Countries (Bangladesh, Lao PDR and Rwanda). This objective is aligned with the implementation of the Paris Agreement under the UNFCCC.

Background

Nagpur – 2nd capital of Maharashtra is one of the rapidly developing cities in central India and also ranks third in the list of the urban centres in the state of Maharashtra. The Nagpur Municipal Corporation (NMC) has a jurisdictional area of about 225.08 sq km and is divided into 136 administrative wards. Geographically, Nagpur city lies at the origin (vertex) of the “V” shaped Nag River Basin with its vertex at the edge of the Deccan trap plateau and arms spread eastward in the alluvial plain up to the Wainganga River. There is a well-demarcated drainage with a continuous slope from east to west in the central areas of the city. Nag River and its main tributary and the Pili River originate within Nagpur and are considered to be main rivers in this basin.

Nagpur city, being one of the 100 smart cities under India’s Smart Cities ission, is implementing several projects in the city under two categories i.e. pan-city projects and Area based Development (ABD) projects. Nagpur’s Smart city project is being implemented by Nagpur Smart and Sustainable City Development Corporation Limited (NSSCDCL) - a special purpose Vehicle (SPV), registered under The Companies Act, jointly owned by NMC. Under the Smart City project about 7.0 sq. km. area located in the eastern part of the Nagpur city has been demarcated for
Area Based Development (ABD) including the areas of Pardi, Bharatwada, Punapur and Bhandewadi.
To promote sustainable development, NSSCDCL is undertaking several initiatives such as a Central Command and Control center, public bicycle sharing, LED street-lighting, network of video monitor displays, CCTVs, along with interventions such as river rejuvenation, smart waste management, environment sensors, rain water harvesting, and green affordable housing.

The City Development Plan of Nagpur states that given increasing population growth and development, the demand for water supply will increase significantly, thereby increasing the need to tap the groundwater resource for potable as well as non-potable usage. Considering the scarcity of surface water during the summer season and insufficient supply in the rural areas as well as outskirts of the area, it is very essential to make provision for the exploitation of groundwater on a large scale. Promoting rainwater harvesting and enhancing ground water table of the city are key goals sought by NSSCDCL for Nagpur Smart City.

In this regard ICLEI South Asia seeks consultancy from expert(s) (individual/organization/consortium) to access the potential for augmentation of local water resources through ground water (shallow/ deep) recharge/aquifer recharge and rain water harvesting at Nagpur. This project will be implemented by ICLEI – South Asia, in collaboration with NSSCDCL and NMC. The details of work are mentioned in the following table.

Details of the consultancy services:

<table>
<thead>
<tr>
<th>Sr.</th>
<th>Title</th>
<th>Details</th>
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<tbody>
<tr>
<td>A</td>
<td>Task</td>
<td>Assessing the potential for augmentation of local water resources through ground water (shallow/ deep) recharge/aquifer recharge and rain water harvesting at Nagpur</td>
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<tr>
<td></td>
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<td>Location: Nagpur Municipal Corporation, Maharashtra, India</td>
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<td>B</td>
<td>Overall scope of the work</td>
<td>The scope of above mentioned task is as following:</td>
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<td>a) Hydro-geological study of the city and demarcation of micro-catchments/drainage pattern</td>
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<td>b) Selection of micro-catchment for detailed study including analysis of groundwater levels and quality</td>
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<td></td>
<td></td>
<td>c) Prioritization and selection of site, in-depth study of</td>
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### Description of the scope

#### a) Hydro-geological study of the city and demarcation of micro-catchments/drainage pattern

Hydro-geological study shall include detailed assessment of city’s catchment area based on existing available data/information and delineation of micro-watershed maps based on drainage patterns. Secondary data collection on groundwater assessment, aquifer characteristics, drainage pattern, lithologs and study of hydrographs. This task shall also comprise of rainfall data - trend analysis and review of available hydrological/ground water studies for the city.

#### b) Selection of micro-catchment for detailed study including analysis of groundwater levels and quality

A micro-catchment is expected to be shortlisted based on various parameters favorable to recharge aquifer through rainwater harvesting. Within the selected micro-catchment or administrative areas, walk through surveys shall be carried out to identify possible sites/buildings for collection of rainwater. The second part of this task shall include developing aquifer maps (to depict levels and quality) through periodic analysis of watershed and groundwater at selected locations in Nagpur city. The locations and frequency of monitoring shall be finalized in consultation with ICLEI South Asia and Nagpur Municipal Corporation (NMC)/ NSSCDCCL (minimum 2 samples at 10 locations for physical, chemical, biological and trace elements/heavy metals are envisaged). This study should prepare aquifer maps; identify possible contaminants, their sources and potential remedies to control

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<td><strong>C</strong></td>
<td>technological options for aquifer recharge and suitable IoT solutions for water level, quality monitoring</td>
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<tr>
<td>d)</td>
<td>Preparation of Request for Proposal (RfP) documents for demonstrating pilot project and IoT based groundwater monitoring along with cost estimates and necessary working designs, drawings, documents</td>
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<td>e)</td>
<td>City-wide plan of various solutions and suitable locations for augmentation of local water resources through groundwater (shallow/ deep) recharge/aquifer recharge and rainwater harvesting</td>
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<tr>
<td>f)</td>
<td>Monitoring and evaluation plan</td>
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the same. Based on the study ground water quality parameters to be monitored in future will be finalized.

c) Prioritization and selection of site, in-depth study of technological options for aquifer recharge and suitable IoT solutions for water level, quality monitoring

On the basis of hydro-geological study and walk through surveys it is envisaged to prioritize and select potential site/s for aquifer recharge. Sites having existing functional ground water recharge system at public premises (NMC owned) may also be considered to enhance its effectiveness or monitoring of the ground water. The same shall be justified based on site characteristics, aquifer characteristics, and potential of ground water (shallow/ deep) recharge/aquifer recharge and rain water harvesting. A detailed report shall be prepared on suggesting various site specific technological solutions available for ground water recharge, requirement of additional technical studies if any like Ground profiling, Fracture Density Analysis, Vertical Electrical Sounding to select particular location and its effectiveness. Recommended solutions should ensure the permissible quality of infiltrated water as prescribed by local/regional authorities, through adequate filtration mechanisms. This task shall also include site specific in-depth assessment of available Internet of Things (IoT) based technologies such as sensors, remote communication etc. to monitor ground water and effectiveness of the designed system. The IoT based technology shall be capable to communicate with Nagpur Smart City’s Command Operation Centre (CoC) remotely.

d) Preparation of RfP documents for demonstrating pilot project and IoT based groundwater monitoring along with cost estimates and necessary working designs, drawings, documents

Selected consultant is expected to prepare detailed RfP document including terms of reference (ToR) and bill of quantities (BoQ) based on the feedback by ICLEI South Asia, NMC and NSSCDCL for the technology, designs, location and IoT solutions including civil work. The cost estimates should be according to the applicable local (project area) guidelines/DSR. This ground level implementation is to demonstrate effective means of ground water (shallow/deep) recharge/aquifer recharge and rain water harvesting, including quality of infiltrated water having replication potential.
It should be noted that a separate contractor/firm will be selected for implementation of the pilot, through the RfP document prepared under this assignment. ICLEI South Asia will lead the contracting process of this separate contractor/firm for implementation. This task will also include assisting the project team in selection of said contractor/firm for implementation and to then supervise and oversee the implementation.

A training program should be conducted jointly for hands on training to NMC and NSSDCL officials for operation and maintenance.

e) City-wide plan of various solutions and suitable locations for augmentation of local water resources through ground water (shallow/ deep) recharge/aquifer recharge and rain water harvesting

Recommendations for aquifer recharge and rain water harvesting methods considering various land use areas, structures and consumption patterns. This task includes rain water harvesting/ground water recharge potential calculations of each option and prioritizing the same. Standard designs specific to priority locations (depending on the hydrogeology of the area) to enable wider adoption of rainwater harvesting/ground water recharge at the city level are also sought.

f) Monitoring and evaluation framework

A detailed monitoring and evaluation framework should be prepared based on various technology and IoT solutions suitable for local conditions for post implementation monitoring. This framework will also consider responsibility matrix, IEC and communication with various stakeholders to increase the effectiveness and efficiency of various measures to augment local water resources through ground water (shallow/deep) recharge/aquifer recharge and rain water harvesting.

<table>
<thead>
<tr>
<th>Project Deliverables and time frame</th>
<th>Tasks and Deliverables</th>
<th>Time line</th>
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<tbody>
<tr>
<td>1) A baseline assessment report of ground water in Nagpur Based on the scope as mentioned at points ‘a’ and ‘b’</td>
<td>Within two (2) months from the award of contract</td>
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of section C: Description of the scope’ of this document

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<tr>
<td>2</td>
<td>A report on prioritization of sites with concern rationalization, in-depth study of technological options for aquifer recharge and suitable IoT solutions for ground water monitoring</td>
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<td>Within three and half (3.5) months from the award of contract</td>
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<td>3</td>
<td>RfP document for demonstrating pilot project along with its cost estimates, to be used by ICLEI South Asia to hire a separate contractor/firm for pilot implementation</td>
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<td>Within four (4) months from the award of contract</td>
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<td>4</td>
<td>Supervision during implementation of pilot project and training NMC and NSSDCL officials for operation and maintenance of the pilot project</td>
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<td>Within six and half (6.5) months from the award of contract</td>
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<td>5</td>
<td>Development of City-wide plan for augmentation of local water resources through ground water (shallow/deep) recharge/aquifer recharge and rain water harvesting (including aquifer maps); Monitoring and evaluation framework</td>
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<td>Within seven (7) months from the award of contract</td>
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**Note:** Selection of another contractor/firm to carry out pilot project implementation (contracting to be done by ICLEI South Asia) and on-ground implementation of said pilot (supervised by selected consultant under this ToR) is sought to happen between tasks no. 3 and 4 of section D: “Project Deliverables and time frame”, i.e. over a period of 4 months and within 6 months from award of contract

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<tr>
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<th>Payment schedule</th>
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<td>• First instalment (20%): At the time of signing the contract</td>
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<td></td>
<td>• Second instalment: (30%): Satisfactory completion and acceptance by NSSDCL and ICLEI South Asia of deliverables 1 and 2 as mentioned in ‘section D – Deliverables and timeframe’ of this document</td>
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|   | Third Instalment (20%): Satisfactory completion and acceptance by NSSDCL and ICLEI South Asia of deliverables 3 and 4 as mentioned in ‘section D – Deliverables and timeframe’ of this document  
   | Fourth Instalment (30%): Satisfactory completion and acceptance by NSSDCL and ICLEI South Asia of deliverable 5 as mentioned in ‘section D – Deliverables and timeframe’ of this document |   |
| F | Methodology | The consultancy will entail a combination of: comprehensive desk reviews and document analysis; baseline data collection and analysis, consultations with key stakeholders, site visits, field work etc. |
| G | Qualification and experience | The consultant should qualify for the following minimum qualifications and experience:  
   **Eligibility**  
   Individual/organization/consortium can bid for this contract. At least two of the following conditions are required to satisfy as eligibility for this ToR. In case of consortium each partner individually is required to satisfy the eligibility criterion.  
   1. Minimum 10 years of experience for the similar consultancy/tasks/projects related to groundwater recharge/ground water assessment/rainwater harvesting, watershed analysis etc.  
   2. Successful completion of at least five projects with the ULBs or state government departments on groundwater recharge/ground water assessment/rainwater harvesting/watershed analysis in last 3 years, particularly for technical evaluation and design. Consultants should furnish the self-attested copy of work orders for these works and a copy of certificates for satisfactory construction of these plants/facilities from the same Institution. Photographs of the work implemented should also be submitted.  
   3. Minimum turnover of Rs. 20 lakh during last 2 years would be required in case of organization(s) and minimum of 3 Utilization Certificates or other completion documents for projects exceeding 10 lakh rupees (for last 2 years) each would be required in case of individuals  
   **Additional information**  
   1) Experience of working in the State or city would be an
additional benefit.
2) The consultant shall demonstrate ability to effectively work and manage similar projects of consultancy.
3) Experience of on-ground implementation of similar projects as envisaged in this ToR will be an additional benefit. Experience in designing and implementing IoT based solutions is preferred especially for ground water management.
4) The consultant shall demonstrate strong understanding of the field related to this ToR along with academic background of at least masters in relevant fields.
5) In case of consortium a lead partner shall be defined and the same will be responsible for all the deliverables.

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<th>Proposal submission</th>
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**Details required in proposal:**

**Technical Bid:**

Technical bid shall cover following points.
1. **Proposal with approach and methodology for undertaking the current assignment. Detailed work plan (activity schedule and duration) to accomplish the task within the scheduled project duration.**
2. Credentials of organization(s) and or individual
3. Details of at least 3 similar previous projects implemented by the organization(s)/individual with documentary proof for the same
4. Registration certificate
5. GST, PAN or TIN number details
6. Audited accounts statements for last 3 year
7. CVs of key personnel along with time distribution should be given. All relevant CVs shall be provided in full detail. If the CV of a proposed staff is found incorrect, the award of the consultancy to the bidder may also be liable to cancellation in such an event.
8. Proposal/bid Submission Form (Annexure I)

**Financial bid:**

Financial bid shall cover following points.
1. **Financial bid for the tasks listed in the ToR document. The total cost should include all the expenses for required to complete all the tasks mentioned in this ToR. Financial bids should be inclusive of all taxes, travel and per-diem costs etc.**
2. Item wise break up for all components
3. Financial details of the organization(s) to confirm its eligibility
Note: All Technical and Financial bids should preferably be in English. Financial bid should include all costs including taxes, transport, labour, etc. and should be all inclusive. Bidders are encouraged to visit the site before submission of bid. Soft copy of the proposal/bid document (technical and financial) should be mailed to ICLEI South Asia on the contact details mentioned in this document no later than 20th June 2020.

Qualified individual/organization/consortium should send cover letter, two sets of the technical and financial proposals (in separate envelopes) to the contact information provided in this ToR document in hard copy within three days of the last date of soft copy bid submission. Please send your application with “Assessing the potential for augmentation of local water resources through ground water (shallow/ deep) recharge/aquifer recharge and rain water harvesting at Nagpur” in the subject line and on a sealed envelope.

Please note:

a) The bidder shall acquaint with the work and working conditions at site and locality. No claim shall be entertained on this issue after the bid has been submitted.

b) The hard copy of bid document shall reach to the above mentioned address not later than 3 days from the last date of submission of bid document, provided the bid has been submitted through email before the due date of submission. (Relaxation may be given to submit the hard copies subject to lockdown guidelines in concerned city due to pandemic situation)

c) Bid Validity: All bids submitted shall remain valid for a period of 30 days from the time of submission. Any bids submitted for a lesser duration can be disqualified.

d) Notification of selected consultant: The bid shall remain open for a total of 15 days from the day of floating the ToR. Only the successful/shortlisted consultant(s) would be notified.

For bid submission (soft copy):

i) Soumya Chaturvedula,
Deputy Director,
ICLEI South Asia,
Email: soumya.chaturvedula@iclei.org
ii) Nikhil Kolsepatil,
Manager (Energy & Climate),
ICLEI South Asia,
Email: nikhil.kolsepatil@iclei.org

iii) Bhaskar Padigala,
Deputy Manager (Energy & Climate),
ICLEI South Asia,
Email: bhaskar.padigala@iclei.org

For bid submission (physical/hard copy):
Bhaskar Padigala,
Deputy Manager (Energy & Climate),
ICLEI South Asia,
C-3, Green Park Extension, New Delhi-110016, India
Tel: +91-11-49747200 Fax: +91-11-49747201
Email: bhaskar.padigala@iclei.org
Website: www.southasia.iclei.org

For local information and queries:
Shardul Venegurkar
City Project Officer, Nagpur
ICLEI – South Asia
Email: shardul.venegurkar@iclei.org
Contact number: 7276293919

Other terms and conditions

1) The Terms of Reference (ToR) shall be downloaded free of cost from the ICLEI South Asia website
2) The bid shall be valid for a period of 30 days from the date of submission of bid document
3) A bidder shall submit the bid documents that satisfies each and every condition laid down in this notice, failing which, the bid will be liable to be rejected by ICLEI South Asia
4) In case the bidder wishes to sub-contract part of his deliverables, the final responsibility of delivery and performance solely lies with the bidder
5) Selected consultant has to deliver expertise and assist project team which will be consists of the representatives of ICLEI South Asia and officials of NMC and NSSDCL.
6) Selected consultant (individual/organization/consortium) is expected to perform the activities as mentioned in the section ‘C’ and provide deliverables as mentioned in the section ‘D’ following the methodology prescribed in the section ‘F’ of this ToR.
7) The consultant is allowed to propose amendments to the methodology, when they find it necessary. Actual amendment in methodology will be in force only after written approval from ICLEI South Asia.
8) The bidder shall be deemed to have carefully examined the work and site conditions. In this regard, he/she will be given necessary information to the best of knowledge of ICLEI South Asia in consultation with NMC and NSSCDCL but without any guarantee to it.
9) If applicant has any doubt as to the meaning of any portions of these general contract terms, or the scope of the work, or any other matter concerning the contract, he/she shall in good time, before submitting his/her proposal, set forth the particulars thereof and submit them to the point of contact, as given in this ToR, by email in order that such doubts may be clarified authoritatively before tendering. Once a proposal is submitted, the matter will be decided according to the ToR conditions in the absence of such authentic pre-clarification.
10) All applications will be treated in the strictest confidence and only successful candidates will be contacted for further discussions.
11) The technical and financial proposals should be submitted as separate documents.
12) In case the winning bidder fails to indicate his/her intent to undertake the said work within the stipulated time of 7 (seven) days and observe the formalities as above, the Letter of Intent will be cancelled and the next bidder will be finalised by ICLEI South Asia in consultation with NMC and NSSCDCL officials.
13) ICLEI South Asia reserves all the rights to reject any proposal, and to terminate the selection process and reject all proposals at any time, without thereby incurring any liability to the affected applicant or any obligation to inform the affected applicants of the grounds for such decision.
14) It should be noted that the consultant has to work in Nagpur within the NMC jurisdiction and hence instructions to bidders will be given by ICLEI South Asia in consultation with NMC and NSSCDCL officials.
15) ICLEI South Asia will be overall in-charge for all the works that would be executed under the present scope of work.
16) The applicant shall also obtain necessary permissions from concerned government departments related to the work/data collection if deemed necessary and in coordination with NMC, NSSCDCL and ICLEI South Asia.
17) All data and information received from NMC, NSSDCL and ICLEI South Asia for the purpose of this assignment are to be treated confidentially and are only to be used in connection with the execution of these Terms of Reference.
18) The contents of written materials obtained and used in this assignment may not be disclosed to any third parties without written approval from ICLEI South Asia and/or NMC and NSSCDCL.
19) The decision of ICLEI South Asia will be final and binding.
20) The proposals received will be scrutinized and evaluated by the ICLEI – South Asia in consultation with NSSDCL and NMC.

21) Detailed Work Order will be issued to winning applicant within fifteen (15) days of announcing the results.

22) The selected applicant is to forward the signed and sealed work order to ICLEI at the earliest or not more than seven (7) working days of issue of work order.

Extension of date of completion
On occurrences of any events causing delay as stated hereunder, the bidder shall intimate immediately in writing to ICLEI South Asia.

Materials/Appliance at site
Neither ICLEI South Asia nor NMC and NSSCDCL undertakes any responsibility for supply of any materials/ equipment/ appliance/ tool for site analysis to the bidder.

All materials/ equipment/ tools brought to site by the bidder shall be the responsibility of the bidder. NMC, NSSCDCL and ICLEI South Asia shall extend help as and when approached by the bidder to keep any materials/ equipment/ appliance/ tool, however not liable for any loss, theft or damage due to fire or other cause, the responsibility for which shall lie entirely on the bidder.

Final Inspection of Work
NMC, NSSCDCL and ICLEI South Asia team shall jointly make final inspection/review of all work included in the contract/work order, or any portion thereof, or any completed structure forming part of the work of the contract, as soon as practicable after notification by the bidder that the work is completed and ready for acceptance.

Conflict Resolution
In case of a conflict, the same would be addressed through mutual discussions. In case the conflict cannot be mutually sorted, the ICLEI South Asia’s decision would be final and binding.

Termination of Contract
In case the consultant is unable to perform as per the expectations of the project team and/or project cities, the contract of the consultant can be terminated based on mutual consent. In case of contract termination, the consultant would be paid on the basis of deliverables completed to the satisfaction of ICLEI South Asia.

Force Majeure
In case of extraordinary events under force majeure (Natural phenomena, including but not limited to abnormally bad weather, unprecedented flood and draught, earthquakes & epidemics, political upheaval, strikes, lockouts, acts of any
Government (domestic/foreign) including but not limited to war, properties, and quarantine embargoes), the terms of contract can be redrafted through mutual consent. In such cases, none of the parties can be held liable under the Contract.
Annexure I: Proposal/Bid Submission Form

To
Executive Director
ICLEI-Local Governments for Sustainability, South Asia
New Delhi – 110016

I/We have read and examined the terms of reference (ToR) documents relating to Assessing the potential for augmentation of local water resources through ground water (shallow/ deep) recharge/aquifer recharge and rain water harvesting at Nagpur, Maharashtra under the project ‘Urban-LEDS II’ including the main tender document and Annexure I.

I/We hereby submit our proposal for execution of the work/consultancy referred to in the aforesaid documents in accordance with the terms and conditions contained or referred to therein and in accordance in all respects with the specifications, designs, drawings and other relevant details at the rates furnished in the bid document and within the period(s) of completion as stipulated in Annexure documents and our proposal.

If I/We fail to keep the proposal open as aforesaid of make any modifications in the terms and conditions of the proposal which are not acceptable to ICLEI South Asia or after signing of contract are unable to provide work or services to the satisfaction of ICLEI South Asia as per the terms of the contract and annexure documents, I/We agree that ICLEI South Asia shall without prejudice to any other right, be at liberty to forfeit earnest money absolutely. Should this proposal be accepted, I /We agree to abide by & fulfil all the terms conditions of aforesaid document and the annexure documents.

If after the proposal is accepted, I/we fail to commence the execution of the work, I/We agree that ICLEI South Asia shall without prejudice to any other right or remedy is at liberty to forfeit the said earnest money absolutely.

Signature and stamp of applicant…………………………

Name………………………………………………………………

Organization…………………………………………………………

Date and place……………………………………