G**overnment of Kerala**

**Department of Disaster Management**

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**Kerala State Disaster Management Authority**

**NCRMP – Kerala, SPIU**

**Institute of Land and Disaster Management, PTP Nagar, Thiruvananthapuram, Kerala – 695 038**

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## APPOINTMENT OF THIRD PARTY QUALITY AUDIT

**TERMS OF REFERENCE**

1. **Project Background**

The National Cyclone Risk Mitigation Project Phase-II (NCRMP-II) is a centrally sponsored project with World Bank assistance to reduce vulnerability in cyclone and other hydro-meteorological hazards of coastal area in the State of Kerala. The main aim and objective of the Project is to strengthen the structural and non-structural cyclone mitigation efforts and reduce the cyclone risk and vulnerability in the coastal districts prone to cyclones. Its objective is to increase the capacity of the State entities to effectively plan for respond to and recover from disaster in the 9 coastal districts of the State. As one of the different initiatives, the Government of India along with the respective State Governments is implementing a World Bank financed project called the “National Cyclone Risk Mitigation Project” (NCRMP-II). The Project has specific objectives to support the long-term vision of the Government by (a) building national capacity for implementation of National Cyclone Risk Mitigation Project approach in the country, and (b) piloting the approach in the states of Kerala. The National Component of the Project focuses on expanding the institutional capacity and knowledge base needed for National Cyclone Risk Mitigation Project. The State Components include capacity building at the state level, preparation of National Cyclone Risk Mitigation Project plans, and a range of complementary local pilot investments. A State Project Implementation Unit (SPIU) in the State of Kerala has been set up. The Additional Chief Secretary, Disaster Management Department, Government of Kerala heads the SPIU as Project Director. The SPIU is responsible for coordinating and monitoring the implementation of the Project. The project in Kerala will be implemented in the nine coastal districts by the Revenue and Disaster Management Department, Government of Kerala through Kerala PWD. The Project has four components as mentioned below:

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**Component A:** Early warning dissemination systems (100% CSS)

**Component B:** Cyclone Risk Mitigation Infrastructure (75% CSS)

**Component C:** Technical assistance for capacity building

**Component D:** Project Management & Implementation support

The present request for proposal pertains to Component B: Third Party Quality Auditor.

**2.0 Location**

NCRMP-SPIU,

Institute of Land and Disaster Management (ILDM),

PTP Nagar, Kerala State Disaster Management Authority (KSDMA),

Department of Disaster Management,

Government of Kerala, Thiruvananthapuram-695 038

**3.0 Reporting to**

NCRMP-SPIU, Kerala

**Period of TPQA – 30 months**

**4.0 Objectives of the Third Party Quality Audit:**

* Assist the SPIU to maintain the quality standards of the civil and electrical works by independent assessment/audit of the quality of works at various stages of construction of Multipurpose Cyclone Shelters and being monitored by NCRMP SPIU (State Project Implementation Unit) – Kerala. Implementation works entrusted to PWD.
* Certify the quality, and provide the necessary guidance and support to address any necessary improvements for proper completion.
* Assess and report on the compliance with the requirements of Environmental and Social Frame work (ESMF), including the management measures provided in the Environmental Management Plans and the Resettlement Action Plans, wherever required.

1. **Scope of Work/Tasks:**

The scope of services for the TPQA assignment includes:

1. **Project Inception (Preparatory/Pre-Construction Stage)**
2. At this stage the Consultant shall conduct a preliminary review of standard contract documents, drawings, specifications, materials reports and status of the work for the current contracts to obtain understanding of the scope and complexities of the assignment. This

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exercise will also include familiarization with the Environment and Social Framework

(ESMF) and Environment Management Plans (EMP).

1. The Consultant will also have discussions with the key stakeholders at SPIU to understand implementation status, basis for site selection, the various manuals and guidelines prepared for the project and the nature and frequency of various field tests to be performed on civil works and reporting arrangements.
2. After the initial study and discussions, the Consultant will prepare and submit a Project Inception Report, within 30 days of issue of work order. The Inception report would include items like:
3. Detailed methodology for execution of the audit, including the various tests that will be conducted and outlining quality audit procedures.
4. Detailed methodology for checking compliance to Environment and Social Management Framework (ESMF) including the EMPs and applicable laws pertaining to environment protection and labour welfare.
5. Audit plan for the first year clearly identifying the audit stage for each type of work.
6. Overall team deployment schedule
7. Reporting formats including schedule of reporting and verification of compliance to observations.
8. Reporting and escalation protocols including methodology for integrating the audit results in payment certification system and
9. Evaluation of the project MIS and suggesting updating requirements for capturing the audit reports, compliance and linking with payment certification syste
10. **Audit Planning**
11. During the inception for first year and subsequently at the beginning of next year an audit plan will be prepared in consultation with SPIU. The audit plan would be updated quarterly and may be revised on the basis of findings of the audits conducted in the preceding quarter.
12. **Stage of Audits**
13. Each site shall be audited at least once during each stage of work as shown below. Wherever one or more stages of work for a particular work are executed simultaneously, audit can be carried out under a single inspection.

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| **Sl.No.** | **Infrastructure** | **STAGE OF AUDIT** |
|  | **MPCS** |  |
| 1. |  | Footing / Piling Work |
| 2 |  | Plinth level |
| 3 |  | Ground Floor Slab |
| 4 |  | First Floor Slab |
| 5 |  | Second Floor Slab |
| 6 |  | Roof Slab |
| 7 |  | Completion of walls |
| 8 |  | Completion of flooring & finishing of other items |
| 9 |  | Water Supply & Sanitation |
| 10 |  | Electrification & its allied works |
| 11 |  | Final Completion |

1. **Testing Frequency**
2. The frequency of tests to be carried out shall be as specified in the relevant specifications. A testing plan giving the testing frequency, standards and acceptance criteria must be prepared and incorporated in the Inception Report.
3. **Execution of audits**
4. The execution of audits will be in accordance with the approach and methodology agreed in the Inception Report and in accordance with the audit plan.

In general the purpose of quality audit exercise is to ensure that the works are:

* 1. Executed according to the designs, drawings and specifications as specified in the bidding documents / applicable standards, and that good engineering practices are followed in construction.
  2. True to desired lines, levels and finishing.
  3. Executed following the EMP provisions included in the bidding documents and in general follow the agreed provisions in the ESMF.

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* 1. Executed following the relevant laws / statutes and practices / guidelines related to workers welfare, safety at worksite, insurances, etc.
  2. The quality audit at construction sites shall include (but not be limited to) the following: Assess independently the quality of construction vis-à-vis the standards specified in the bidding documents and good engineering practices including disaster resistant construction standards.
  3. Review the degree of quality control exercised during the construction by the contractor maintaining adequate arrangements / practices (tests, numbers, frequency, approach and timing etc.) / documentation (QC registers, test reports, observations of supervisory staff, compliances etc) and the degree of monitoring done by the line department identify non-compliances and suggests necessary improvements and compliance methodologies.

1. Through the agreed Audit strategy and a series of test procedures:
   1. Review that the materials have been procured stored and used in accordance with the quality standard requirements set forth in the contract agreement.
   2. Review that the workmanship of the work confirms to specified standards.
   3. Review that the test reports of the materials / workmanship that were tested by the contract as required in the individual contract document are satisfactory.
2. Carry out additional testing of the materials and on works at any stage of construction wherever necessary at site or in the approved laboratories at the request of SPIU.
3. Review the action taken on the earlier reported non-compliances and recertify including following up with the heads of implementing agencies for action on earlier reported non-compliances.
4. Assist the SPIU in resolving the issues related to non-compliances. The consultant’s responsibility does not end by merely pointing the defects rather they should facilitate the follow up action required to rectify the defects.
5. Create photo documentation of quality related issues including its compliances with date and geo-tags.
6. Check and report on compliance to:
   1. Environment Management Plans (EMP) defined in the contract document and the Resettlement Action Plans (RAP) if any as mentioned in the DPR

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* 1. Environment laws / regulations of Govt. of India and rules formulated by the concerned State Government.
  2. Labor laws/ regulations applicable to construction sites.
  3. Safety management at the construction sites as per the relevant IS codes such as (but not limited to) IS 3764: Code of safety for excavation work (first revision), IS 5916: Safety code for construction involving use of hot bituminous materials etc.
  4. Specifications of agencies like Indian Road Congress, Ministry of Shipping and Road Transport, Central Public Health Engineering Organization, Bureau of Indian Standards, Ministry of Rural Development (MORD), Ministry of Road Transport and Highways (MORTH) etc as applicable.

1. The Consultants shall also inspect, review and report the adequacy and competence of contractor’s staff, labor and machinery.
2. Review the works progress in accordance with agreed milestones and work schedules and provide regular updates for including need for increasing resources and / or change in work plan for timely execution.
3. Certify the compliances to the observations made during the earlier visits; and provide overall opinion on the quality of works based on audit done.
4. All the apparatus and equipment for the field testing shall be procured by the Firm at its own cost. The Firm shall be free to take back these apparatus and equipment on completion of the contract.
5. The tests shall include all common tests as specified. Where use of back office laboratory is necessary, Consultant will take the samples and get it tested in accredited/approved laboratories which will be first inspected and recommended for accrediting by Consultant under the project by SPIU. The identification and certification of the testing agency will be specific to the tests that can be carried out in a particular laboratory.
6. To the extent possible field testing and sampling shall be done in the presence of Engineer/Contractor’s representative and the process should be photo documented with geo tagging.
7. Surprise field visits shall also be carried out without advance information to the PIA’s and Contractors.

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1. Upon field inspection and tests the Consultants, where required and in critical cases through the Engineer in Charge shall arrange to issue ‘stop work’ notice to the contractors and assist in remedying the defects. This shall be done only in exceptional cases where continuance of works may jeopardize the ultimate quality and safety of structure, safety of workers and of third parties etc.
2. The Contract Documents are the basis of all works to be undertaken under the Project. These are standard documents which will be made available to the Consultant.
3. Annexure A contains a list of indicative quality checks on materials, equipment and appurtenances that should not be considered as limiting. In consultation with the other consultants, [PMU](file:///C:\spiu) and line Departments; based on Annex A of the ToR; the specifications in the bid documents and relevant standards; prepare standard Quality Assurance Plan (tests, stage, frequency, standards to be complied, guidance on judging from test results, critical workmanship requirements, critical stages of work that require Engineer’s presence “as a must” etc.) for various types of works to be audited and formats for documenting the quality test results and reporting of such tests.
4. **Reporting**
5. The SPIU of the State will be the nodal agency for the execution of this assignment.
6. The field visits which shall be an ongoing activity shall be undertaken as per the audit strategy finalized. Audit reports will be submitted within 3 days of inspection of the work. The reports shall highlight for each contract package, status and progress of work, audit opinion, status of compliance to earlier observations, critical issues, and follow-up actions. The Consultants will submit all the work audit inspection reports to SPIU with one copy each to the Engineer of the Contract and head of the concerned line department. Any critical issues needing stoppage of work need to be reported immediately both to the Engineer and the SPIU, through different means (telephone, SMS, e-mail, fax etc.)
7. At the end of every week the Consultant shall submit a report containing the details of field visits undertaken during the week indicating the date of visit. In addition to the site level reports and weekly report, consolidated reports would be submitted every month, quarter and also year, compiling the findings in the site reports, summary audit opinion, corrective actions, progress of works and issues etc. The Consultant may be also required to make presentations on audit findings at the designated forums as and when required by the client.

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1. Annual review report would be submitted at the end of financial year and a final review report would be submitted at the end of the project / this consultancy assignment. The monthly, quarterly annual and final review reports should also include good practices and lessons learnt with regard to quality systems and ESMF implementation.
2. In addition, the consultant will comply with any other reporting requirements as agreed in the project inception stage. Reports on non-compliances are to be transmitted immediately (on real time basis through email/ other means) and the communication shall be simultaneous to the concerned engineer, line department and the SPIU.
3. **Training and Orientation of contractors and implementation agencies**
4. Trainings will be organized by the state SPIU every quarter. The consultant will conduct training sessions for the staff of the implementing agency and the contractor teams to highlight the key audit findings, guide on the corrective action required and also train them on the required construction techniques, environment and social management aspects etc. The proceedings of each such individual training session shall be properly documented by the Consultant and shared with the SPIU of State. The cost of such trainings shall be born by the consultant.
5. **Update the Project monitoring system**
6. All site visit reports, audit findings, Non-compliance Reports (NCR’s), progress reports, suggested corrective action, status of completion of corrective action etc. along with photographs should be uploaded to the website of State Disaster Management Authority i.e. <http://www.sdma.kerala.gov.in>. The SPIU will provide separate access to the Consultant for uploading all reports. In case of any difficulty in uploading in <http://www.sdma.kerala.gov.in> website, the Consultant shall make its own arrangements for creation of separate website and uploading all its audit reports if website is not made available by NCRMP-SPIU.
7. **Schedule of Deliverables**

The consultancy will be initially for a period of 30 months. The SPIU will facilitate for the Consultant to conduct audit as per the strategy.

The key deliverables for the assignment along with respective timelines are as follows:

* An inception report containing the Quality Audit methodology, field procedures and quality control plan within 15 days of signing the contract.

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* Quality Assurance Plan and reporting formats for approval of SPIU by end of 30 days of signing of contract
* Audit reports would be prepared for each site and submitted within 3 days of completion of the field inspection and completion of work.
* In addition to the site level reports, consolidated reports would be submitted concurrently or every month and quarter, compiling the findings in the site reports, corrective actions etc.
* Timely submission of TPQA reports to SPIU in approved formats.
  + Monthly progress report within seven days of the end of reporting month and Quarterly Summary Report within 15days from end of quarter
  + Annual Review Report within 15days from end of financial year
  + Final Review Report – three months prior to winding up of the project or completion of the consultant’s contract, whichever is earlier.
* An Updated Quality Audit report in case of re-audit/revisit to the same site.
* The Agency will be, if needed, make a presentation on site quality audit, clarification on any issues and answer questions raised by SPIU, NDMA, Ministry of Home Affairs or World Bank.
* Presentation to the SPIU on the findings of the audit and suggestions every quarter.

1. **Profile of the firm, team composition and estimated man month inputs:**
2. **Profile**

The Agency will have 10 years of experience in Quality Audit (Technical and performance audit) especially in infrastructure projects in India.

Familiar with M&E systems and MIS

Proficient in English & Malayalam both written and spoken.

Priority will be given to candidates with experience in post-disaster reconstruction projects, and having undertaken projects in cyclone prone areas.

1. **Team Composition**

Estimated input for 30 months consultancy services is 51 Man Months for Key professional staff, Man months for local staff site team, 216 Man months for local technical support staff site teams

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and 30 Man months for administrative support staff. However, the details of the man-month input can be finalized at the inception stage.

The list of sites proposed to be audited in has been provided as Annexure B. 3 sites (one at Trivandrum and 2 sites at Ernakulam) subject to change

The consultant’s team shall be organized as follows:

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| Teams | Positions | Qualifications |
| 1. Project Management Team | * Project Manager (Civil engineer) | * 15-20 years of experience in construction management of multiple location civil engineering projects in a senior supervisory position. Familiar with disaster resilient construction techniques will be added advantage. Experience of working in coastal regions will be added advantage. Past experience of having conducted technical audit for WB project is desirable |
| * Environment Management Expert | * Atleast 10 years of experience in the field of environment, good knowledge of Government/ World Bank procedures and policies for environment safeguards is a prerequisite. The person should have hands on experience in projects funded by World Bank or multilateral agencies in India. |
| * Social Management Expert | * Atleast 10 years of experience in the field of environment, good knowledge of Government/ World Bank procedures and policies for environment safeguards is a prerequisite. The person should have hands on experience in projects funded by World Bank or multilateral agencies in India. |
| * MIS Specialist | * MIS – Atleast 5 years in MIS management specific to construction projects. |
| 1. Site Team | * Engineers (Multi-purpose Cyclone Cyclone Shelter | Atleast 7-10 years in the field of civil engineering and should have worked in technical/ quality audit teams in the past.  Should have experience in construction of disaster resilient buildings/ construction  Experience of working in the coastal regions is desirable |
|  | * Senior Electrical engineer | Atleast 10 years of experience in field of electrical engineering and should have managed technical audit in the past. Demonstrate expertise of working in coastal areas. Past experience of conducting technical audit for World Bank projects is desirable. |

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1. **Data and services to be provided by the client**

The Consultant will be provided access to all such information as is necessary to plan and execute the assignment. It shall include:

* List of sites
* Contracts/tenders for selected sites, including special specifications
* Project documents available in public domain such as ESMF, Procurement Plan, Manuals etc.
* Access to sites, and support of the line department

1. **Review and monitoring of consultants work**

Consultant’s performance and quality of work will be continuously reviewed by a Committee set up as below at SPIU. There would be formal review, monthly/annually by a Committee set up as below at SPIU at the inception stage. Unsatisfactory performance will invite action including pre closure of contract in accordance with the contract provisions.

Chairman- Project Director

Member Convener – State Project Manager

Members –Construction Manager of NCRMP-SPIU, Procurement Specialist of NCRMP-SPIU, Executive Engineer PWD of respective Districts.

Member – Environment and Social Specialist of NCRMP-SPIU

Member – State Community Mobiliser of NCRMP-SPIU

Decision made by SPIU Director shall be final.

1. **Annexure A: Indicative test requirements:**

As per CPWD Specifications applicable for the work

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1. **Annexure B: List of proposed project site**
2. Details of the sites as follows:

| **Sl. No.** | **Taluk, Village, Place** | **Survey No.** | **Ownership** |
| --- | --- | --- | --- |
|  | **Kasargode** |  |  |
|  | Kasargod, Kudlu(Shiribagilu) Block:58, Revenue land Uliyathaduka | 232 | Revenue |
|  | Hosdurg, Pullur, Revenue land, Pullur | 110/1A3A | Revenue |
|  | Manjeswar, Koipady, Block: 37, Govt. Senior Basic School, Kumbla | 1681/1pt | Education |
|  | **Kannur** |  |  |
|  | Kannur, Kannur-2 Ward 3: Block:1 Town Higher Secondary, SN Park-Chalad | TS 44 | Education |
|  | Thalassery, Kathiroor, Revenue land, Ponniam | 89/3 | Revenue |
|  | **Kozhikode** |  |  |
|  | Quilandy, Thikkodi, Ground of GVH.SS Payyolli | 82/4C2 | Education |
|  | Kozhikode, Kasaba, Revenue land near Kasaba Village Office | 17-17-737/3 | Revenue |
|  | **Malappuram** |  |  |
|  | Tiroor, Vettom, G.N.U.P.S Paravanna | 23/6 | Education |
|  | Ponnani, Perumbadappu, G.H.S.S Palppetty | 108/7 | Education |
|  | **Thrissur** |  |  |
|  | Chavakkad, Kadapuram, near Village Office, Kadappuram | 101/48 | Revenue |
|  | Kodungalloor, Azhikode, Revenue land near village office Azhikode | 298/2 | Revenue |
|  | **Ernakulam** |  |  |
|  | Kochi, Pallipuram, Block:2 , Revenue land near Village Office, Pallipuram | 196/5 | Revenue |
|  | Paravoor, Moothakunnam, Near Sarva Shiksh Abhiyan, Thurithipuram | 252/3A,B,252/2-3,252/1-2 | Education |
|  | **Alappuzha** |  |  |
|  | Karthikappally, Cheruthana, Block-5, Govt. Higher Secondary School Ayamparambu | 371/1 | Education |
|  | Karthikappally, Kumarapuram, Block:2 G.L.P.S Karuvatta | 529/13 | Education |
|  | Cherthala, Mararikulam North, Block: 30, Revenue land, Janakshemam Colony | 322/6 | Revenue |
|  | Ambalapuzha, Purakkad, Block:21, Govt. High School, Naluchira | 50/5 | Education |
|  | Kuttanad, Kainakari North, Block-7, Government High School, Kuppapuram | 65/5 | Education |

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| **Sl. No.** | **Taluk, Village, Place** | **Survey No.** | **Ownership** |
|  | **Kollam** |  |  |
|  | Karunagappally, Thazhava, Block:11, Revenue land in Thazhava village office compound | 706/5 | Revenue |
|  | Karunagappally, Karunagappally, Block:19, Kallada Irrigation Project Land | 582/11 1.63 | Irrigation Department |
|  | **Thiruvananthapuram** |  |  |
|  | Thiruvananthapuram, Muttathara, Revenue land near sewage farm, Muttathara | 2798 | Revenue |

**Sd/-**

**State Project Manager**

**NCRMP-SPIU**