

**TERMS OF REFERENCE (TOR)
OF
DESIGN AND SUPERVISION CONSULTANT (DSC)
FOR
NEPAL URBAN GOVERNANCE AND INFRASTRUCTURE PROJECT (NUGIP)
UNDER SHUKLAGANDAKI MUNICIPALITY**

1. BACKGROUND

Government of Nepal has received loan from the International Development Association ("World Bank") toward the cost of Nepal Urban Governance and Infrastructure Project (NUGIP). The Department of Urban Development and Building Construction (DUDBC) within the Ministry of Urban Development (MoUD) is the primary implementing agency for this project, and bears the complete responsibility of project implementation, management, supervision and coordination. A Project Coordination Office (PCO) has been established under the MOUD, DUDBC for carrying out activities related to the project. The PCO at DUDBC is responsible for coordinating implementation on day to day. The PCO comprises of a Project Director (PD), Deputy Project Director (DPD), Project Engineers (PE), and other key project management/technical staff.

The Project Development Objective (PDO) of the NUGIP is to improve core municipal infrastructure services and strengthen institutional capacity in participating municipalities) in Nepal. In particular, NUGIP will aim at a) improving access to core municipal services (includes expansion of coverage, and construction and rehabilitation of basic infrastructure systems, e.g., urban roads & storm water drainage, wastewater collection and treatment, water supply including consumer water meters in new networks, lake restoration, interstate bus terminals, and municipal buildings) in participating municipalities; b) strengthening planning, budgeting and implementation systems for municipal service delivery; and c) strengthening municipal finances and financial management systems. The NUGIP will support 17 cities (with infrastructure and capacity building programs) in two priority strategic urban clusters in eastern cluster (Provinces 1 and 2) and western cluster (Provinces 4 and 5). It will also support 4 additional cities in capacity building programs. However, the support for Covid response as LIPW (Labour Intensive Public Works) component will span across 12 other municipalities.

The 17 municipalities will be responsible for planning, preparation and implementation of the municipal infrastructure investments with direct support from proposed Design and Supervision Consultants (DSC) and PCO. Each municipality will have a Project Implementation Unit (PIU) committed for all project activities within the municipality. On the other hand, PCO and a proposed Urban Development Support Team (UDST) will support 21 municipalities (17above + 4 additional) in planning, preparation and implementation of institutional capacity development (ICD) programs. The 12 municipalities will take the overall responsibility of planning, administration, financial management, implementation and monitoring of LIPW. A Project Management Support Team (PMST) comprising highly qualified international and local experts will support PCO in managing and supervising the implementation of all five components of the project, coordinating with participating municipalities, monitoring the implementation progress of all the project activities and compliance with the policies and procedures (technical, institutional, fiduciary and safeguards) agreed between the Government of Nepal (GoN) and the Bank, and submitting periodic progress and compliance reports to the Bank task team. PMST will support PCO in monitoring the performance and delivery of DSCs and UDST.

The PIU within Shuklagandaki Municipality (herein also referred to as the 'Client') which is established for project implementation at metropolitan, will be supported by a Design and Supervision Consultant (DSC, herein also referred to as the 'Consultant') team comprising qualified experts on technical, FM, procurement, environment and social safeguards. The PIU, with the support of the DSC, will be responsible for design and construction supervision under component 1 of the project, as per the policies and procedures (technical, institutional, fiduciary and safeguards) agreed between the Government of Nepal (GoN) and the Bank. The DSC will be engaged to help metropolitan in planning, designing, undertaking procurements, managing contracts etc.

A two-layered mechanism has been proposed for project oversight and ensuring proper accountability at the local and federal level. At the federal level, a high-level Project Steering Committee (PSC) will be headed by Secretary-MoUD, comprising key MoUD and DUDBC officials as well as representatives from other relevant federal ministries/agencies like MoFAGA, Department of Water Supply and Department of Roads. Deputy Director General

– Urban Development in DUDBC will be the member secretary and convener. Similarly, at the local level, every municipality will have a Municipal Coordination Committee (MCC) which will be headed by the Mayor and will constitute the Deputy Mayor, all the elected ward representatives and head of the key departments of municipality (engineering, planning, finance etc.).

The NUGIP will comprise the following five components:

1.1 Component 1: Urban Development Grants (UDGs) M for strategic Municipal Infrastructure and Service Delivery

The component will provide UDGs to participating municipalities for financing strategic municipal infrastructure subprojects focusing on, among others, rehabilitation and improvements in municipal roads, drainage, drinking water supply, and onsite sanitation, as well as associated design and supervision costs. The component will support the operationalization of Nepal's first urban sector conditional grant (UDG) system, which focuses exclusively on strategic municipal infrastructure and service delivery improvement at the local level. The UDG allocations have been determined based on an objective and transparent allocation formula, and will allow municipalities to develop their multi-year municipal investment program in year 1. Municipalities will identify, design, and implement identified subprojects in line with the guidelines and procedures outlined in the Project Implementation Manual (PIM). The component, through the design and implementation support, will help the participating municipalities in developing robust contract structuring and implementation modalities to attract private sector participation for construction as well as operation and maintenance of the municipal infrastructure, to the extent possible.

Selection and implementation of subprojects under UDG: In line with their constitutional mandate, municipalities will have full discretion and responsibility to (i) identify, plan, and execute their municipal infrastructure investment subprojects, and (ii) submit regular financial and physical progress reports to Ministry of Urban Development (MoUD). Strategic municipal infrastructure priorities will be identified and selected by municipalities based on (i) municipal infrastructure and services gap assessment, conducted jointly with municipalities during project preparation; (ii) community engagement/participatory processes through municipal forums organized by the elected local government representatives; (iii) implementation readiness in terms of unencumbered land availability and other natural resource allocation approvals; (iv) environment and social safeguards risk assessment intended to screen out subprojects with potentially negative impacts, as per the Environment and Social Management Framework (ESMF); and (v) subject to the total UDG allocation ceiling for the respective municipalities.

Grant access conditions (GACs) and disbursement: Each participating municipality will have to qualify to a set of GACs annually to access UDG and utilize them for the identified infrastructure subprojects. GACs are focused on strengthening institutional systems for improved service delivery at the local level, and accordingly designed to ensure that the municipalities comply with: (i) the prescribed subproject identification and selection process focusing on strategic municipal investment; (ii) adequate procurement and contract management systems, consistent with the Bank's Procurement Regulations; (iii) FM and reporting systems; and (iv) ESMF including the negative list of investments. The PCO at DUDBC under MoUD will verify the compliance of each participating municipality against GACs on an annual basis and the qualified participating Municipalities will receive their respective UDG allocations on an annual basis in sync with the federal government's annual budgeting and disbursement procedures. MoF will disburse UDG directly to municipalities on a quadrimester basis through the District Treasury Comptroller Office (DTCO). All the participating municipalities will be required to sign a participation agreement (PA) with the MoUD to agree to the terms and conditions of the proposed Project, as well as their roles and responsibilities.

1.2 Component 2: Institutional Strengthening of the Participating Municipalities

The component will finance operational costs, goods, training and technical assistance support to strengthen the institutional systems and capacities of participating municipalities (21 municipalities in total) for improved urban management and service delivery in the areas of, among others: (i) integrated urban development planning; (ii) OSR mobilization; (iii)

municipal FM, procurement, and contract management; (iv) citizen engagement and gender inclusion; (v) urban infrastructure asset management system (including climate resilience), and (vi) institutional performance monitoring and reporting system for municipalities. In addition to these six core urban management areas, the technical assistance will also include dedicated support to the municipalities in the context of the COVID-19 pandemic, including in support to design targeted interventions to help reduce the risk of spread of the virus, among others. The specific technical assistance can be tailored to meet the needs of the municipality. The component will also finance limited goods for the municipalities (such as office equipment and fixtures) and specific goods that may be required to support the work program across the six key thematic areas or in relation to COVID-19 recovery activities (e.g. software, tools), and similar.

Institutional strengthening of the participating municipalities will be undertaken through three types of delivery modalities: (i) assistance for developing manuals, toolkits, and operational systems and equipment; (ii) formal learning and classroom training; and (iii) on-the-job handholding support to municipal staff. Urban Development Support Teams (UDST), comprising a mix of international and local experts will provide support to the participating municipalities in identified areas of institutional strengthening and COVID-19 recovery support.

The component will adopt a demand-based approach to provide institutional strengthening support to the participating municipalities. The UDST will be required to work closely with each of the participating municipalities to develop their respective city-level Institutional Strengthening Program (ISP) within the thematic areas, which will identify specific activities of support and delivery modalities in the first six months of the Project, based on comprehensive needs assessment and on the stakeholder consultations. The proposed participatory process will allow elected representatives, municipal officials, citizens, and other key stakeholders to identify and prioritize their institutional capacity gaps within the identified thematic areas of support, and accordingly seek support. The city-level ISPs will determine the delivery modalities based on the gaps and priorities identified by the municipalities and the results to be achieved by the municipalities. The city-level ISPs will be implemented by the participating municipalities with UDST's technical support and progress will be monitored/reviewed annually. The institutional strengthening support to the municipalities under this component is aligned and coordinated with the multi-donor funded PLGSP and the ongoing Bank-supported IPFMRP.

1.3 Component 3: Support to Municipalities for COVID-19 Recovery

This component provides support and relief to vulnerable groups in twelve municipalities to help mitigate the short- and medium-term negative impact of the COVID-19 crisis through rapid labour-intensive public works (LIPW). The component will finance (i) payment of wages for unskilled labor to undertake temporary employment in participating municipalities; (ii) expenses for works, tools, and materials for the implementation of such projects; and (iii) expenses related to management of the LIPW (consultations, administration, and supervision). Target beneficiaries for the LIPW will be individuals from mostly poor and vulnerable households. Participants will be provided with appropriate training on construction methods, where required, and specific occupational health and safety measures, including the use of protective personal equipment. The selection process for beneficiaries will have provisions for inclusion of vulnerable groups including the elderly, physically challenged, minorities, and disadvantaged groups. The LIPW subprojects will require a minimum percentage representation of female workers. The criteria and other guidance for targeting beneficiaries will be detailed in the LIPW POM.

The LIPW subprojects will be selected based on local priorities and implemented through the involvement of communities, including UCs or representative groups such as women's groups, or disadvantaged groups at the municipal or ward level. Selection of eligible projects will be guided by a listed of preapproved activities as well as a negative list that will prohibit any projects with substantial impacts in terms of social and environmental safeguards. Example of eligible activities include (i) regular maintenance of municipal infrastructure, including maintenance and cleaning of streets, roads and drainages, public spaces, parks, and community facilities; and (ii) construction of some basic infrastructure, including community water facilities such as water distribution schemes, water kiosks, wells, and public washing

facilities. The projects will be required to have a minimum share of labor costs, to ensure high employment. A full list of eligible activities will be established in the LIPW POM.

The funds for LIPW will be disbursed based on approval of eligibility of the proposed activities for LIPW subprojects. All the participating municipalities for Component 3 will be required to sign a participation agreement with the MoUD to agree to the terms and conditions of the proposed Project, as well as their roles and responsibilities. Municipalities will be responsible for identification, implementation, and supervision of the subprojects. The distribution formula, eligible expenses/activities, and detailed implementation modalities, as well as detailed process for identification and approval of projects and of beneficiaries, will be included in the LIPW POM.

1.4 Component 4: Contingency Emergency Response

The proposed project includes a Contingent Emergency Response (CER) component to respond rapidly at the Government's request in the event of an eligible disaster, including climate-related events and pandemics. This Component will finance the implementation of emergency infrastructure reconstruction, rehabilitation, and associated studies (Emergency Response Activities). Resources will be allocated to this component as needed by the project during implementation. Disbursements will be made against a preestablished list of critical goods or the procurement of goods, works, and consultant services required to support the immediate response and recovery needs of the GoN. A separate Implementation Manual for this component will be prepared by the GoN within the first six months of implementation and will provide detailed guidelines and instructions on how to trigger the CER component and use funds.

1.5 Component 5: Project Management and Coordination

This component will provide support to the MoUD for managing, coordinating, and monitoring the implementation of the proposed Project, and also for enhancing its federal policy and regulatory role for urban development. More specifically, it will finance (i) operational expenses of a dedicated team established in MoUD for managing, coordinating, and monitoring the implementation of the proposed Project, including due diligence, quality control, and reporting to the Bank on fiduciary, environment & social safeguards, and technical aspects; (ii) policy and regulatory support to the MoUD for supporting Nepal's evolving urban sector and increasing private sector engagement; (iii) analytical studies and assessment, including baseline, mid-term, and final evaluation of the Project, as well as support for an information management and monitoring system to better track, document, and analyze Nepal's urban development; (iv) knowledge-sharing mechanisms to provide learning and experience-sharing opportunities for other municipalities; and (v) support for designing and scaling up the Project, or preparatory activities for the Bank's follow-up urban engagement. Overall, the component will focus on supporting the MoUD in coordinating project implementation and strengthening its new policy-making role in the evolving federal context.

2. OBJECTIVE OF THIS ASSIGNMENT

“The objective of this assignment is to provide consultancy service for engineering design and implementation supervision support at Shuklagandaki Municipality (herein also referred to as the ‘Client’) as well as supporting the municipalities in assessing and managing environmental and social (E&S) risks and impacts in compliance with national requirements, WB safeguard policies etc and in carrying out citizen and stakeholder engagement activities as outlined in ESMF and PIM for implementation of its strategic municipal infrastructure investments under NUGIP.

3. SCOPE OF WORK

The detailed scope of work for this assignment is as follows –

3.1 Activity 1 – Design support during investment planning and preparation stage

i. Sub-Activity A - Preparation of Detailed Project Reports (DPRs)

- a. Review and update the DPR provided by the client
- b. The Consultant shall carry out all necessary detailed engineering surveys and investigations, as required for the prioritised sub-projects and/or as required by the Client and World Bank. Such key surveys and investigations include, but are not limited to:
 - 1) For potential investments in municipal roads: detailed toposheet surveys; traffic surveys; road safety audits; surveys for junctions/intersections; geotechnical investigations for pavement, cross drainage structures such as culverts, minor/major bridges, retaining walls; investigations for ensuring structural integrity of existing structures; cadastral mapping/surveys for assessing the land ownership; hydrological investigations and hydraulic surveys.
 - 2) For potential investments in drainage: toposheet surveys; drainage water quality surveys; geotechnical investigations; cadastral mapping/surveys for assessing land ownership; hydrological investigations and hydraulic surveys.
- c. Before initiating the surveys, investigations and audits, the consultant shall submit the schedule and cost of survey/investigations/audits to be conducted for each potential investment along with the details of the laboratory/technical institution engaged for conducting the investigations. These laboratory/technical institutions should be a Govt. of Nepal accredited institution and shall be approved by the Client in advance.
- d. After conducting the surveys, investigations and audits, the Consultant shall prepare the comprehensive survey/investigation/audit output reports and submit them to the Client for review and approval. The Consultant shall be solely responsible for the technical authenticity of the data provided in the survey/investigation/audit reports and shall conduct additional surveys/investigations, at its own cost, in case of any discrepancy found in survey/investigation/audit by the Client.
- e. The Consultant shall carry out detailed technical assessments based on surveys/investigations/audits output reports and prepare detailed engineering designs in accordance with the design guidelines agreed between the PCO and the World Bank. The Consultant shall also conduct detailed technical analyses for assessing the operation and maintenance requirements for the proposed project and prepare O&M plans for its design period.
- f. The Consultant shall propose project specific climate change and disaster resilience interventions, in line with the overall climate change and disaster resilience interventions framework as detailed in the PIM. Such interventions across key focus sectors include, but not limited to,
 - 1) Municipal roads : Construction / pavement of local roads will include design elements (such as bicycle lanes and energy efficient street lighting for disaster prevention and to mitigate climate change) and materials intended for prevailing and changing of frequency climate events to prevent shortening of road life cycles and/or temporary loss of accessibility. The design of road and its elements will be based on future traffic projections and road safety principles, sound pavement, earthquake and flood resistant bridges, access to nearby properties etc.
 - 2) Storm water drainage: Construction, rehabilitation or increased capacity of storm water drainage in roads will contribute to better flood risk reduction.
 - 3) Street lights: Installation of solar powered street lighting systems will contribute to renewable energy generation, thus reducing GHG emissions.
 - 4) Project may have few potential investments in water sector, waste water sector and solid waste management sector as well that are not identified yet.
- g. The Consultant shall ensure that the technical designs and O&M plans incorporate the climate change and disaster resilience interventions as well as other project specific recommendations, including road safety audits for any investment in municipal roads.
- h. The Consultant shall ensure that the technical designs incorporate responsive design in terms of gender and inclusion including road security considerations for example, street lighting, universal access, separate toilets for males and females, ramps duct tiles (pavements)
- i. The Consultant shall check and update drawings, as per international standards, required for construction. Depending on the implementation modality of the proposed project (for instance for projects being planned to be implemented on Admeasurement

model) these detailed designs and drawings should serve the purpose of Good-For-Construction designs and drawings.

- j. The Consultant shall check detailed cost estimates, based on the district SORs, as per the proposed designs and technological solutions and carry out comprehensive financial, affordability, sustainability, sensitivity, and economic analyses for the proposed sub-projects, as well as the financial health analysis of the implementing municipality. For items in the proposed design, for which item rate is not available, the consultant shall carry out necessary analysis, market research and support PIU/Client in finalising the SOR for such missing items in line with Govt. of Nepal's guidelines.
- k. The Consultant shall carry out a detailed assessment of the existing institutional capacity of the implementing municipality and shall propose the implementation modality for the proposed project, considering the risk-responsibility allocations, technological complexity of the proposed project and existing capacity of the implementing municipality.
- l. The Consultant shall ensure that the DPRs meet the quality acceptable to the Client and the World Bank. The tentative structure required to be followed for preparation of DPRs is summarised in Annexure. The DPRs shall be approved by PIUs before submission to PCO and World Bank for review and approval. Following approval from the PCO and World Bank, the Consultant shall assist the PIU in obtaining project approval from the Chief Administrative Officer (CAO) or Mayor or municipal executive.

ii. Sub-activity B – Preparation of environmental and social instruments for the identified investments:

Following the guidelines, requirements and procedures required as per the NUGIP's Environment and Social Management Framework (ESMF), the consultants shall prepare all the safeguard documents for the sub-projects based on the findings of the environmental and social impact assessment (ESIA) for which DPRs have been/are being prepared. This would include, but not limited to:

- a. Collection and desk review of relevant technical sub-project documentation, such as DPRs, maps and location plans, designs, studies, drawings, maps, etc.
- b. Site visits and surveys of such sub-project sites and relevant areas of influence to verify social and environmental site conditions, anticipate potential risks and impacts, including an initial estimate of their scope, magnitude, geographic scope and likely duration;
- c. Determine which instruments are required for assessment and planning through environmental and social screening.
- d. Analyse environmental and social conditions, identify anticipated risks and impacts, and develop management and mitigation measures/plan, including monitoring plan, institutional responsibilities and arrangements for permits and licensing.
- e. Support the PIU in the disclosure of environmental and social instruments and in consultation process following the local regulations and the Bank requirements and include in the final version of the ESIA how the issues raised during the consultation process were addressed.
- f. Ensure that the ESIA/ environmental and social management (ESMP) is prepared in line and in coordination with the DPRs.
- g. Based on the ESIA develop detailed management Plans (e.g. ESMP, resettlement action plan (RAP), vulnerable communities development (VCDP), sexual exploitation and abuse and sexual harassment (SEA/SH) prevention action plan etc. as required for the bidding documents. Follow process for VCDP as per ESMF. The ESMP provisions should be of a quality, in line with the ESMF, that allows their immediate integration into tender packages for the respective contracts.
- h. Ensure that the recommendations and mitigation measures provided in ESIA/ESMPs on social and environmental safeguards, VCDP, RAP, SEA/SH are reflected in the design and costing (initial as well as recurring expenditure) of the DPR and bidding documents, as applicable.
- i. Ensure that the stakeholder consultation in line with the ESMF and PIM are undertaken as part of instrument preparation.
- j. Ensure that a GRM is established using existing mechanisms at the municipality level, to enable local communities/stakeholders to raise questions/concerns

- k. The ESIA/ESMPs shall be approved by PIU before submission to PCO for review and approval. Following the approval from the PCO, the Consultant shall assist the PIU in obtaining the approval on the ESIA/ESMPs from the municipality/Chief Administrative Officer (CAO).

iii. Sub-Activity C - Preparation of bid documents and support for bid process management and contracting: The Consultants shall

- a. Prepare the bid documents in accordance with the procurement guidelines of the World Bank, ensuring appropriate performance indicators are included.
- b. Prepare the various schedules in the bid documents, including technical specifications, construction schedules, applicable Environment Health and Safety (EHS) Guidelines), O&M schedules, environmental and social safeguards measures including SEA/SH risk mitigation measures in line with the ESMP prepared for the sub-project, and in line with WB safeguard policies , as per the Project's construction and operational requirements.
- c. Provide coordination support to the PIU for approval of bid documents from the municipality/Chief Administrative Officer (CAO).
- d. Provide handholding support to PIU during tendering processes, pre-bid meetings, minutes of pre-bid meetings and corrigendum/addendums, bid evaluations, negotiations (as applicable) and contract signing.

3.2 Activity 2 - Supervision support during investment implementation stage (Construction Stage)

i. Sub-Activity A – Supervision support for ESMP Implementation and of other management plans: The consultant shall

- a. Provide oversight on environmental and social management aspects of sub-projects and ensure ESMPs are implemented.
- b. Ensure timely disclosure of final ESIA, ESMPs, RAP, and other management plans as required before implementation, as part of project preparation in project locations and in a form accessible to the public.
- c. Support the municipalities to undertake resettlement activities as outlined in the RAP e.g. obtaining cadastral maps, confirming land ownership, land acquisition activities, provision of compensation and livelihoods support, consultations with project-affected people etc.
- d. This includes ensuring that awareness raising sessions on workers Code of Conduct (CoC) are provided to workers (and are part of bidding documents) and that CoCs are required to be signed by all workers.
- e. Establish a system to monitor environmental and social safeguards comprising of COVID 19 measures of the sub-project regularly via site visits etc., including monitoring the indicators set out in the monitoring plan of the ESMPs
- f. Monitor the effectiveness with which the ESMP and other management plans such as RAP are implemented and recommend necessary corrective actions to be taken to the Client/ PIU.
- g. Prepare monthly progress reports on ESMP implementation and environmental monitoring reports on sub-projects, and submit them to Client for approval.
- h. Ensure that consultations are being undertaken in line with management plans including meaningful consultation with women throughout the project lifecycle
- i. Ensure that the grievance mechanism is functioning effectively and is receiving grievances, including channels for SEA/SH-related grievances; make recommendations to address any grievances brought about through the Grievance Redress Mechanism in a timely manner as per the ESIA, ESMPs, RAP, SEA/SH.

ii. Sub-Activity B – Supervision and QA/QC support for construction:

- a. Task 1 – Adherence to QA/QC guidelines mentioned in DPRs and Contractor's contract: The Consultant shall
 - 1) Ensure that the sub-projects' construction activities are in line with the QA/QC guidelines agreed with the PCO and the World Bank as part of the PIM.
 - 2) Review and recommend for approval contractor's quality assurance procedures and documents.
 - 3) Establish a system to expeditiously proof-check the structural designs and processes provided by the contractors. Prepare quality assurance and quality control

plans—which should include inspection and test plan for construction materials—and ensure that the approved plans are being followed by the contractor.

4) Exercise and perform the duties, liabilities, functions and obligations as laid down in the Contract Agreement entered between municipality and the respective contractors within the given time frame and budgeted provision, with reasonable skill, care and diligence and ensure that the works are executed strictly as per the terms and conditions of the Contract Agreement entered between municipality and the respective contractors within the given time frame and budgeted provisions.

5) Carry out a scrutiny/technical audit of the reports, drawings, designs, estimates, BOQ etc. prepared by the contractor such as progress reports, site surveys, evaluation and analysis, including soil investigation, structural design, design of internal and external services, plumbing, drainage, water supply, sewerage internal roads, electrification works etc., as the case may be based on the details available in approved DPR.

6) Carry out day-to-day supervision of construction works at site, quality control, and progress monitoring, and take measurements to certify quantities on the Contractor's claim.

7) Assess adequacy of various infrastructures (e.g., water supply, labour camp, testing facilities, power, storage, etc.) set up at site by Contractor for proper mobilization of works. Review the contractor's proposal and monitor actual arrangements for security, safety of site, gate control, medical care, emergency preparedness, emergency response, on-site safety training of employees, safety during demolitions, fire prevention, etc.

8) Analyse project execution schedules submitted by the contractor for its feasibility and whether it is in line with the overall project schedule.

b. Task 2 – Inspections, testing and site visits during construction: The Consultant shall

1) Verify and certify the setting out/initiation of works of Contractor in relation to the benchmark, reference marks and lines to ensure correct position, level or alignment.

2) Recommend the approval of the measuring instruments, indicators, calibrations and other apparatus to be used for carrying out tests/inspections. Approve the test schedule, detailed test procedure and method statement. Attend tests or inspection either at any part of the project/ worksite or at place of installation and place of manufacture, as the case may be. Approve the type and number of performance and operational tests to demonstrate compliance of the installations with output requirements. Countersign contractor's report of every test/inspection after witnessing them.

3) Conduct periodic and frequent inspections of all work sites to check the nature and quality of work conducted; verify the materials, equipment and labour engaged at the site; review the quality control tests and test results; ensure that the work is implemented in accordance with the approved standards; and ensure that the quality control procedures set forth under the contract are being followed. Any problems observed and recommended remedial actions are to be immediately notified to the PIU/client.

4) Witness all quality control sampling and testing done by the contractor. Compile and review all quality control data obtained from tests conducted by the contractor or by others and verify the accuracy of the test data by checking the procedures used in the field for sampling and testing the materials and works.

5) Carry out independent sampling and testing wherever considered necessary, or as may otherwise be required to check and verify the accuracy of the test results conducted by the contractor. Assess the test results, recommend on acceptance of the materials supplied and on the works completed and ensure that proper records of the tests conducted are maintained.

6) Facilitate and conduct joint periodic inspections on an as-required basis with the PIU/client, including their representatives/consultants, to inspect and accept interim work completion stages of the sub-project work to allow the contractor to proceed with further works. In the event that the work fails to meet the required standards, any removal and replacement or other remedial measures which may be required should be clearly explained along with a time schedule for completing such work.

7) Facilitate and conduct joint final inspection(s) of the completed works along with the PIU and the PCO, including their representatives/consultants, and contractor,

preparing a statement of exceptions for any works which may remain to be completed.

8) Participate in monthly inspections and site coordination meetings of PIU/Client, and Contractor for all works to review the overall progress and quality of the works, review any issues, (the instructions which were issued to the contractor to address these problems and the contractor's compliance with these instructions), and agree on any further actions which may be required to be taken to improve either the progress or quality of the works. Assist PIU in preparing and issuing the minutes of such meeting.

c. Task 3 – Handholding support for addressing site specific issues: The Consultant shall

1) Advise PIU at site on specific problems/issues related to quality of construction, as and when such problems are detected and brought to notice. Inform PIU of any instances of non-conformity/non-compliance of construction parameters (e.g., materials, workmanship, specification).

2) Develop necessary instruction/sketches in case of inadequacy in drawings/specification detected or where it is necessary to elaborate on design due to variation of site/soil condition in consultation with PIU as required, along with cost variations.

3) Provide timely recommendations on variations/cost estimates and change orders as required, along with justification and analysis of rates so as to avoid any delay in execution.

4) Prepare detailed PERT/CPM (Program Evaluation Review Technique/Critical Path Method) and other chart analyses of various project related activities regarding time frame, resource allocation and scheduling etc. using latest techniques, including developing MIS for approval.

5) Ensure measurement of all items having financial value in the measurement book and/or level filed book at all times so that a complete record is obtained of all works performed under the contract.

6) Ensure that the problems noted and actions taken / to be taken are recorded in the site order book. Assess reasons for delay in implementation and recommend ways to accelerate project implementation.

d. Task 4 – Conducting detailed assessment for any variations: The Consultant shall

1) Recommend the cost of completing any urgent unforeseen works, if required, related to the project, in the event of Contractor's delay/unwillingness/inability after conducting detailed costs assessment.

2) Review the progress and quality of the works and prepare a detailed assessment report for advising/recommending PIU and Client on any necessary variations to the contracts, including work programs, work procedures, inputs, safety, quality, variation orders, completion dates, and/or any other matters which may affect the timely and satisfactory completion of the work. Propose and present for approval any changes in the plans which may be deemed necessary and indicate any effect such changes may have on the contract.

3) Review the variation orders or claims from the contractors for time extension, extra compensation, or expenses or other similar matters prepared by PIU/client and advise on actions that may be required on such variations.

e. Task 5 – Assisting PIU in preparation of progress/completion reports: The Consultant shall

1) Attend progress review meetings called by Client/PIU and submit updates if required on project progress and issues.

2) Assist PIU in preparation of project progress/completion reports for issuance of Completion/Operational Acceptance Certificate to the Contractor within specified time after completion of tests on commissioning/defect liability. Verify whether after receipt of Completion/Operational acceptance certificate, the Contractor has cleared and removed from site all his/her equipment (no longer required), surplus materials, wreckages, rubbish and temporary structures. Determine whether the site's facilities are in clean and safe conditions.

3) Verify during clearing and grubbing operation on worksite by Contractor that the minimum practicably necessary activities to construct the works have been conducted

and verify that trees and other vegetation designated for preservation are not damaged and are fully protected.

f. Task 6 – Supervising Contractor’s post construction and execution demonstration activities: The Consultant shall

- 1) Verify “as built” design–build documents and drawings. Provide Client/PIU a list of all necessary warranties which need to be handed over by the contractor.
- 2) Ensure that utility shifting has been done and other facilities such as sign boards have been restored by the contractor as required, verify exploratory excavation by the Contractor for checking the exact position/location/co-ordinate of the existing services and verify the adequacy of arrangements made by the service provider for any diversion or removal of services required.
- 3) Verify adequacy of safeguards being provided by the Contractor to pipes, cables etc. and ensure that Contractor adopts methods which pose least possible interference to existing amenities.
- 4) Verify whether all water and waste products from the sites are discharged as per applicable regulations.
- 5) Witness Contractor’s demonstration for proper functioning and operation of all mechanical and electrical equipment with design and specification both individually and as part of the system. This includes witnessing and recording each process, each of auxiliary equipment’s, distribution system & systematic completion of plant for pre-commissioning.
- 6) Scrutinize the Plant Modification proposal prepared by the Contractor, in case of failure of performance test, and approve the same after required improvement. Witness the modification work during implementation stage and witness the repeat guarantee test by the Contractor.
- 7) Review structural soundness reports cum certificate produced by the contractor, and if required, provide independent structural soundness certificate to facilities.

g. Task 7 – Record keeping and reporting: The Consultant shall

- 1) Ensure that all the necessary records for the activities detailed in the above tasks are duly maintained in soft and hard copies, with proper backups.
- 2) Prepare detailed monthly progress and completion reports of the activities related to the above mentioned tasks and share with PIU/Client for independent verification and approval.
- 3) Prepare sub-project contract completion report summarizing the construction activities and indicating, among other items, contract changes, claims or disputes, or any other substantive matters having an effect on the cost and progress of the works. The report, to be submitted to the PIU/Client must contain accurate and complete "As Built" drawings for the completed works.

3.3 Activity 3 - Supervision support during investment implementation stage (Operations Stage)

i. Monitoring: The Consultant shall also monitor investment sub-projects during the defect-liability period, or O&M period including any ESMP measures outlined for operation phase for satisfactory performance, and share detailed reports on the quality of work along with recommendations for improvements, as part of the monthly reports.

ii. The Consultant shall develop an O&M protocol for each sub-project investment and present it to municipality through a brief workshop so as to enable municipality to manage the created assets in a technically sound and financially efficient manner.

iii. Consultant’s work will be supervised closely by the municipality.

3.4 Activity 4 – General Management and Planning support:

The Consultant shall

i. Advice and assist PIU in preparing the annual work plan and forecast of fund requirements for Component 1 of the Project for submission to the PCO.

ii. Advice and assist PIU in the compilation, preparation and submission of reimbursement claims for each sub-project for submission to the PCO.

- iii. Advice and assist PIU in the preparation of required financial management reports as detailed in the FM section of the PIM. Such reports include, are but not limited to, (i) accounting books and records, (ii) financial and accounting reports, (iii) Interim Unaudited Financial Reports, (iv) Annual Project Financial Statements, and (v) Internal Audit Report
- iv. Advice and assist PIU in the preparation of grant access condition compliance report for disbursement.
- v. Advice and assist PIU in implementing internal control systems, as recommended in the PIM.
- vi. Advice and assist PIU in implementation of measures outlined in ESMP and other instruments, and preparing necessary E&S reports
- vii. Advice and assist PIU in providing necessary information, as required by Client for Monitoring and Evaluations systems for NUGIP implementation.
- viii. Advise and assist the PIU/Client in implementing and managing all aspects of the NUGIP in respective municipality.
- ix. Provide support to PIU in carrying out ongoing citizen and stakeholder engagement activities.
- x. Provide coordination support to the PIU for approval of various documents/reports by municipality and the PCO.
- xi. Provide coordination support to PIU during external audit being conducted by the Office of Auditor General (OAG).
- xii. Support the Client in managing all tasks required under this contract and others to be agreed from time to time, and ensuring delivery of outputs in a timely and satisfactory manner in accordance with the agreed project implementation schedule.

4. REPORTS, DELIVERABLES, PERIOD OF PERFORMANCE, PAYMENT

4.1 List of Reports and Schedule of Deliveries. The Consultant shall prepare the following reports in English and complete digital files in a format and manner acceptable to the Client and the PCO/World Bank. All the reports will need to be reviewed and approved by the Engineer/CAO of the PIU/municipality, and no-objection will be sought from the World Bank through PCO before being finalized for payments. PCO will review all the documents/reports prepared/submitted by municipality and give necessary recommendations and correction measures before processing for no-objection. Draft versions of the report would be prepared initially, and submitted in 3 hard copies and 1 soft copy. Final versions would be submitted within two weeks following receipt of comments from the PCO (*an exception shall be for the Monthly and Quarterly Reports where the report is to be finalized in one week*). The PCO's comments would generally be provided within one week of receipt of the draft report. The consultant will be required to make a power point presentation with all important deliverables.

- i. Inception Report (IR).** The draft IR shall be submitted within one month after commencement of assignment. The IR shall *inter alia* include approach to the assignment, objectives, detailed methodologies and work plans for each Task (and respective sub-activities) of the assignment. It must also detail the related tasks, activities, schedule of activities, sub-project preparation (DPRs/Bid documents/ ESMPs/ESIAs for sub-project), detailed time-tasks/schedule listing all tasks, mobilization plan, anticipated difficulties including resource gaps that have become apparent, deficiencies in PIU's/Client's assistance. It must bring to Client's attention major problems that might affect the direction and progress of the work.
- ii. Monthly Reports (MR).** The draft MR shall be submitted within a week from the end of each month. The MR shall *inter alia* include work progress on all components, tasks undertaken, results achieved, meetings held and persons met, staff deployment, difficulties encountered, and forecast of assistance required from the client for each activity/task of the assignment. The monthly reports shall also incorporate monthly progress and construction supervision reports for individual projects as well as the deployment tables for the input-based payments, as certified by the municipalities which were supported during the month as per the deployment plan. The MR shall be submitted for every month except for the month ending quarter, as per the format prescribed in the PIM.
- iii. Quadrimester Report (QR):** The draft Quadrimester report shall be submitted within two weeks from the end of the quadrimester for which the report is submitted. The QR shall *inter alia* include work progress, team mobilization, tasks undertaken, results achieved, meetings held and persons met, planning of activities for next trimester, updated works schedule and staff mobilization plan, status of M&E indicators, difficulties

encountered, forecast of assistance required for each Part of the assignment from the client. The Quadrimester report shall include physical and financial progress reports related to the use of the UDG, as per the format prescribed in PIM. A separate quadimester internal audit report shall be prepared in the format as prescribed in the PIM as well.

- iv. Annual Reports (AR):** The annual reports shall be submitted within week from the end of fiscal year for which the report is submitted. The AR shall *inter alia* include work progress, team mobilization, tasks undertaken, results achieved, meetings held and persons met, planning of activities for next quarter, updated works schedule and staff mobilization plan, status of M&E indicators, difficulties encountered, forecast of assistance required for each Part of the assignment from the client.
- v. Mid-term Report (MTR):** The mid-term report shall be submitted within two weeks after the contract is halfway through the contract period. The IR shall *inter alia* include work progress, team mobilization, tasks undertaken, results achieved, meetings held and persons met, planning of activities for next quarter, updated works schedule and staff mobilization plan, status of M&E indicators, difficulties encountered, forecast of assistance required for each Part of the assignment from the client.
- vi. Final Report:** The completion report of the consultants providing the details of overall work progress and final documentations.
- vii. Other documents: DPRs/Bid documents/ESMPs/ESIAs for sub-projects:** The consultant shall submit project specific draft and final (based on comments from PIU/PCO) DPRs/Bid documents/ ESMPs/ESIAs as per the project preparation schedule specified in the Inception Report. These documents should incorporate all the necessary surveys, investigations, technical assessments, social-environmental assessments, financial assessments, detailed designs/drawings, as required for the sub-project and as per the activities detailed in the ToR.

4.2 Report Format

- a. The report shall contain/present the data, information, assumptions and corresponding justification, analysis, and conclusions and recommendations.
- b. All reports required by the ToR shall provide a clear presentation and include a table of contents and an executive summary. The main body of the text shall be organized in sections and focus on the findings and recommendations and their justification. Supporting data and analysis shall be included in the Annex which will be referenced as appropriate in the body of the text. All paragraphs in the executive summary, main text, and Annex(es), shall be numbered to facilitate reading across the report.
- c. The report shall be illustrated as appropriate with such drawings, sketches, photographs, tables, graphs, and maps to aid comprehension and assimilation of their contents.
- d. The consultants will need to submit a draft template for all reports as part of the inception **report** which will be reviewed by the PCO and WB for adequacy. The consultant will incorporate all suggestions and submit the deliverables accordingly.

4.3 Period of Performance: The DSC will be engaged by the client for a period of approximately 2.5 years.

4.4 Payment: The Consultant shall be compensated based on a time-based structure that accounts for (i) submission of key deliverables due at the time and (ii) input of each key expert.

4.5 Deliverables and Milestones

Other than sub-project regular reporting (Inception, Monthly, Quadrimesterly, Yearly, Mid Term and Final reports), the consultant should also deliver the following in hard and soft copies, as appropriate, to the PIU/municipality within the set times. (Cumulative weeks; Note: Contract signing = zero weeks)

- i. Update of Detailed Project Reports (DPRs) – 12 weeks
- ii. Preparation of environmental and social instruments (ESIA/ESMP/RAP/VCDP/GAP/SEP) for the identified investments – 14 weeks

- iii. Preparation of bidding documents and support for bid process management and contracting – 22 weeks
- iv. Construction supervision and contract management – 130 weeks approx. as per the work volume

Note: The deployment of Key Experts shall be harmonized (full time and / or intermittent or 'as and when needed' basis) as per the scope of services, above milestones and changes (if any).

Note: Input of key experts will be supervised and monitored by PIU. Involvement of intermittent/unallocated experts shall be consistent with the staffing schedule agreed with the PIU.

5. DATA, LOCAL SERVICES AND FACILITIES TO BE PROVIDED BY CLIENT

5.1 The Client would make the following available to the Consultant:

- i. Any supporting documents like permits and licenses necessary for the completion of the Consultant's duties and assistance with any special arrangements to allow the Consultant to enter any restricted areas related to the Project.
- ii. Access to all relevant previous studies, reports, documents and contracts related to the Project on request by the Consultant.
- iii. Assistance with arranging meetings with the concerned Ministry and Department of the Government of Nepal, Department of the State Government, project executing agencies at National, Provincial and municipality level and other authorities as necessary during the course of the Consultant's work.

5.2 The Consultant shall verify and be satisfied with the accuracy of the data/information provided by the Client before these are used. Data/information/material provided to the Consultant shall remain the property of the originating agency and shall be provided solely for the purpose of the work conducted under this contract. All such borrowed material shall be returned to the Client upon completion of the assignment. Apart from data/information provided by the Client and that which the Consultant could procure from other agencies, the Consultant shall be responsible to collect any other data/information required for the assignment, through field survey and investigations.

5.3 Provisional sum will be allocated by the Client for all - investigations, such as geotechnical investigations and non-destructive tests for structural integrity of existing structures including the cost of surveys required for DPRs and surveys/tests—for baseline environmental and social data as required for ESIA/ESMPs.

6. REPORTING REQUIREMENTS

6.1 The entire assignment shall be carried out under the overall guidance of the PIU/Municipality, PCO and World Bank. At all steps, the Consultant will be required to closely engage and seek inputs from the Client, PCO, Bank team and other consultants hired by PCO/World Bank.

6.2 Team Leader will lead both the Investment planning/preparation and Construction & Implementation Supervision parts and will report to the Engineer/CAO of PIU in Municipality. He/she will work closely with the PIU team, PMST (hired by the PCO) and core task team members (local and international) from the World Bank. He/she will lead and be responsible for the overall delivery and performance of this assignment. The Team leader will be responsible for delivery of scope of work for Activities 1 and 4 (as detailed in Section C above) and Activities 2 and 3 (as detailed in Section C above). He/she must coordinate the preparation and finalisation of inception/monthly/quadrimester/interim/final reports in addition to the other tasks with support from the team members. The day-to-day activities, works planning and staff utilization for various activities will be coordinated and supervised by the Client /PIU and also monitored by PMST hired by PCO.

6.3 The Consultant will need to organize the visits/meetings for data collection and stakeholder consultations on their own and provide coordination support for arranging any monthly/quarterly review meetings for specific projects. The PCO's/Bank's task team may join some of the consultation meetings.

7. FIRM'S EXPERIENCE, LIST OF KEY POSITIONS AND THEIR ROLES AND RESPONSIBILITIES

7.1 The consulting firm and JV partners, in case of JV, should be in core consulting business in civil engineering infrastructure design and supervision works for at least 5 years. The firm should have completed at least one contract having contract value of USD 150,000 or more in design and supervision of civil engineering infrastructure works like road/highway & drainage, water supply, sewerage, irrigation etc. Consultant's general experience in design & supervision of any civil engineering / infrastructure related services; its specific design & supervision experience in urban/municipal level infrastructure projects; and its prior experience in infrastructure projects supported by international development agencies (multilateral and/or bilateral) each with contract value of USD 75,000 or more will have added advantage. Moreover, consultant's standing years of relevant experience in Design & supervision of urban/municipal related infrastructure works and its technical, managerial & organizational capability will also be given preferences.

7.2 It is estimated that about 81 man-months of key experts as listed below, will be required for the assignment. In addition to these key positions, other technical and non-technical professionals and support staffs will be required to carry out this assignment from time to time. The Consultant can propose and alternate deployment schedule for the proposed team as per their approach and methodology for the execution of this assignment with due justification.

7.3 It is to be noted that the deployment of staff by the firm will be strictly monitored by the client and frequent replacement of key team members will be discouraged. However, the firm may, with proper justification, request the client and the World Bank in writing for a replacement of a key personnel with an alternative whose credentials are equivalent or better than the existing team member.

7.4 List of Key Experts

S.N.	Experts/Positions	No.	National (N) / Int'l (I)	Full Time (FT) / Part Time (PT)	Total Time Inputs (Person Months)	Activity 1 & 4	Activity 2 & 3
1	<i>Team Leader Cum Road Engineer</i>	1	N	FT	30	10	20
2	<i>Urban Planner</i>	1	N	PT	3	2	1
3	<i>Hydraulic Engineer</i>	1	N	PT	2	1	1
4	<i>Environmental Specialist</i>	1	N	PT	3	1.5	1.5
5	<i>Social Development Specialist</i>	1	N	PT	3	1.5	1.5
6	<i>Procurement Specialist</i>	1	N	PT	3	1.5	1.5
7	<i>Geotechnical Engineer</i>	1	N	PT	2	1	1
8	<i>Road Safety Engineer</i>	1	N	PT	1	0.5	0.5
9	<i>Bridge/Structural Engineer</i>	1	N	PT	2	1	1
10	<i>Surveyor Cum CAD Engineer</i>	1	N	PT	3	3	
11	<i>Quantity Surveyor</i>	1	N	PT	2	1	1
12	<i>Supervision and Quality Control Engineer</i>	1	N	PT	27		27
	<i>Total</i>				81		

Note: Provisional Sum will be established to hire any key expertise currently not envisaged by this Project.

7.5 Key Resources experience, roles and responsibilities

S.N.	Experts	No	Experience
1	Team Leader Cum Road Engineer	1	<ul style="list-style-type: none"> • Master's degree in transport or highway engineering with a bachelor's degree in civil engineering. • Minimum of 10 years of experience in planning, designing, project management / construction supervision of roads / highway • Experience in procurement and contract management of infrastructure projects. • Familiar with the World Bank's Procurement Regulations: Procurement of Goods Works, Non-Consulting and Consulting Services is essential. • Experience leading a multidisciplinary team. • Strong leadership, analytical, communications, interpersonal and project management skills. • Proven track record in planning and designing municipal roads infrastructure for urban cities.
2	Urban Planner	1	<ul style="list-style-type: none"> • Master's degree in urban/regional planning or equivalent with a minimum of 10 years of work experience in municipal planning. • Experience of preparing urban physical development /strategic plans, master plans, capital investment plans for emerging cities and municipalities. • Experience in bilateral and or multilateral funded projects such as World Bank, ADB as urban planner. • Ability to work in an interdisciplinary team. • Skills in communicating with authorities and other stakeholders. • Demonstrated capabilities in report writing
3	Environmental Specialist	1	<ul style="list-style-type: none"> • Master's degree in environmental sciences or equivalent with a minimum of 7 years of work experience in infrastructure or road projects after completion of bachelor's degree. • Must have worked at least in one World Bank financed project and is familiar with the environmental safeguards requirements of projects financed by the World Bank or by another international finance institution. • Must be conversant with the present environment related legislative and institutional laws/regulations in Nepal.
4	Social Development Specialist	1	<ul style="list-style-type: none"> • Master's degree in social sciences with a minimum of 7 years of work experience in managing social aspects of infrastructure or road projects after completion of bachelor's degree, and including experience in gender and social inclusion • Must have worked in at least one project financed by the World Bank or by another international finance institution, and is familiar with the World Bank's social safeguards requirements

			<p>in projects.</p> <ul style="list-style-type: none"> • Familiarity with road/infrastructure sector laws, regulations and policies of the Nepal, particularly as they relate to the social impacts of works.
5	Procurement Specialist	1	<ul style="list-style-type: none"> • Bachelor's degree in engineering and Master's degree in Construction Management or Procurement / Contract Management or equivalent. • Minimum 10 years of work experience in procurement of public works. • Familiarity with the World Bank's Procurement Regulations: Procurement of Goods, Works, Non-Consulting and Consulting Services; and Bank's Standard RFP documents, Bidding Documents is essential.
6	Storm Drainage Engineer/Hydraulic Engineer	1	<ul style="list-style-type: none"> • Master's degree in water resource engineering/hydraulic engineering/environmental engineering or related subject and bachelor's degree in civil engineering. • Minimum 7 years of experience in planning/ designing/ construction supervision of storm water drainage projects after completion of bachelor's degree. • Experience in bilateral and or multilateral funded projects such as World Bank, ADB. • Ability to work in an interdisciplinary team. • Skills in communicating with authorities and other stakeholders. • Demonstrated capabilities in report writing
7	Bridge/Structural Engineer	1	<ul style="list-style-type: none"> • Master's degree in bridge or structural engineering. • Minimum 7 years of experience in detailed engineering design of RCC / Pre-stressed bridges, construction supervision etc after completion of bachelor's degree. • The experience must include seismic designing of structures (buildings, bridges, roads) and sub-surface infrastructure (laying of pipes, foundations etc) infrastructure components. • Experience in bilateral and or multilateral funded projects such as World Bank, ADB. • Ability to work in an interdisciplinary team. • Skills in communicating with authorities and other stakeholders. • Demonstrated capabilities in report writing
8	Geotechnical Engineer	1	<ul style="list-style-type: none"> • A civil engineer with a master's degree in geotechnical engineering. • 7 years of proven track record in designing sub-surface infrastructure as well as structures for buildings, roads, embankments, bridges etc after completion of bachelor's degree. • Must be conversant with various geotechnical investigations/studies, such as bore hole investigations, trial pits investigations, required for constructing core municipal infrastructure in disaster (floods, earthquakes, landslides) prone

			areas.
9	Road Safety Engineer	1	<ul style="list-style-type: none"> • A post graduate or equivalent degree in civil engineering, highway engineering, transportation engineering, or road safety engineering. • Minimum 7 years of relevant work experience after completion of bachelor's degree. • Should have worked as a Road Safety Auditor for at least one Road Projects, including in Road Safety Audit at design stage. • Should have a thorough experience in road safety audits, design, construction, supervision and management of road safety related engineering interventions. • Must have previously worked on a development bank (such as World Bank, ADB) funded project on a similar assignment.
10	Surveyor cum CAD Engineer	1	<ul style="list-style-type: none"> • Bachelor's degree in Civil engineering with minimum 7 years of experience in surveying and drafting of road/drainage works. • Sound working knowledge in handling survey equipment - Total Station, GPS; exporting survey data for analysis / design of road and drainage. • Familiarity with software required for drafting such as AutoCad, preparing drawings for engineering designs and surveys is essential. • Sound working knowledge of quantity / cost estimation and documentations. • Basic knowledge of road design is preferable.
11	Quantity Surveyor	1	<ul style="list-style-type: none"> • Bachelor's degree in Civil engineering with minimum 7 years of experience in surveying and drafting of road/drainage works. • Sound working knowledge of rate analysis, quantity / cost estimation and documentations.
12	Supervision and Quality Control Engineer	1	<ul style="list-style-type: none"> • Bachelor's degree in Civil engineering with minimum 7 years of experience in construction supervision of road or other municipal infrastructures. • Sound working knowledge of quantity / cost estimation and documentations. • Experience of construction supervision in roads/highways and bridges etc.

Annexure – Suggestive DPR Structure

- **Salient features**
- **Executive summary**
- **Chapter 1:** Introduction
- **Chapter 2:** Project understanding
- **Chapter 3:** Existing condition
- **Chapter 4:** Surveys and investigations
- **Chapter 5:** Design criterion
- **Chapter 6:** Improvement proposals
- **Chapter 7:** Detailed designs for project components such as pavements, bridges, culverts, retaining walls, water/waste water treatment plants, pumping stations, sewage networks, water transmission and distribution network, waste processing facilities, Sanitary Landfill Facility, capping of dumpsites etc.)
- **Chapter 8:** Environmental and social impact assessment as per ESIA's
- **Chapter 9:** Road Safety aspects (for any project involving municipal roads and vehicle mobilisation such as collection and transportation of SWM/septage.)
- **Chapter 10:** Disaster management and climate resilience
- **Chapter 11:** Detailed cost estimate (capital and operation & maintenance)
- **Chapter 12:** Economic and financial analysis, including affordability analysis for user charges, if applicable.
- **Chapter 13:** Financial health of municipality
- **Chapter 14:** Institutional assessment and proposed institutional structure for project implementation
- **Chapter 15:** Conclusions and recommendations
- **Annexures**
 - List of drawings, legends and abbreviation
 - Key plan, location map, mtmp map, land use plan, catchment area map and indicative plan
 - Typical cross sections
 - Topographical survey map
 - Plan and profile drawings
 - Structure drawings
 - Utility drawings
 - Land ownership documents and water allocation certificates, if applicable.
 - Standard drawings
 - Detailed cross sections at every 20m interval
 - Detailed general arrangement (ga) & good for construction (gfc) for structural drawings
 - Investigation and surveys reports