Term of Reference
GPS & GIS based Digital Profile of Chandragiri Municipality

1. **Background**
   Information System is one of the basic component of development. It provides information of possibilities, opportunity as well as problem of specific area. So, it is very much important for making future development plan. Local Government Operation Act 2074, stated that each local level should identify the resources, analyses the opportunity and Problems of the municipality and set up the future vision of the municipality.

   Reliable information about Demography, Land use, Physical infrastructure, Social, Environmental and Economic condition of the municipality helps to prepare different types of plan and policy. For prioritization of project database is the one of the major required documents.

   This digital database includes Municipality present land use, Demography, Physical Infrastructure, Institution development, Social and Economic condition, available natural and human resources etc. Information is the key for making long term plan of municipality.

   In the context stated above, Government of Nepal, Chandragiri Municipality has initiate for the preparation of Digital Profile So, Chandragiri Municipality, Office of Municipal Executive invites proposals from the experienced eligible national consultants/firms who are qualified as per ToR for the preparation of Digital Profile.

2. **Study area**
   Chandragiri Municipality situated in south-west part of Kathmandu valley in Province 3. The total area of the municipality is 43.92 Sq.km. Chandragiri Municipality was declared on 2 December 2014 merging eleven VDCs, Purano Naikap Bhanjyang, Naya Naikap, Thankot, Mahadevsthan, Matatirtha, Machhegaun, Balambu, Dahachowk, Tinthana, Satungal of Kathmandu. Chandragiri municipality has been divided into 15 wards for the efficient administration. Chandragiri Municipality is surrounded by Kritipur Municipality in the east, Dhunibeshi Municipality in the West, Nagarjun Municipality in the North and Dakshinkali Municipality in the south.

   The total population of the municipality as per the census 2068 B.S. is 85,198 with male population 42,881 and female population 42,317, municipality holds 3.38% population of Kathmandu valley. The total population of Kathmandu valley in 2068 is 2,517,023 (CBS 2068). From 2058 B.S to 2068 B.S, total population of Chandragiri Municipality increased from 55,032 to 85,198 at population growth rate of 4.44 %.

   The highest population is in Ward no. 15, the lowest population is in Ward no. 2, and the average population is in Ward no. 4. Similarly, the highest population density is in Ward no. 9, and the lowest population density is in Ward no. 1. The household count in the municipality is 20,532. The average household size is 4.2.

3. **Objectives of the Study**

   The main objective of this assignment is to digitalize the detailed socio-economic data of every single household as well as institution within this municipality so as to facilitate the municipality in decision making, planning and policy development and service delivery. At the end of the assignment, municipality expects the consultant/s to deliver a fully developed information system to be used by the municipality office and ward offices with data of households, institutions integrated with the GIS maps.

   Chandragiri Municipality intends to keep digital records of all households and institutions so as to make the communication with the residents easier and deliver better services in the future to its residents. On the basis of the output, municipality intends to develop a system later to increase the revenue by accurately tracing the tax brackets residents and households fall under and bring all citizens under the tax bracket system.

4. **Scope of the work**

   Conduct socio-economic census of individual households and institutions:
   - Use mobile based questionnaire and GPS to collect data from every household and institutions including its photographs and spatial information.
   - Provide a unique household ID for each house in the municipality and integrate the ID with the questionnaire.
   - The data to be collected (minimum) will be outlined in the Request for Proposal.
   - The questionnaire and the working procedure shall be as per the Rural /Urban Profile preparation Procedure, 2075 and discussion with municipal officials.
   - Document and will be further discussed with the appointed consultant.

   Prepare thematic resource maps:
   - Preparation of thematic resource map from the GIS System of municipality.
   - Generate thematic information by conducting spatial analysis.
   - Facilitate the municipality by identifying all the natural and man-made resources within the municipality for planning and policy development.
   - The web-based GIS map must include but not be limited to climatic information, land use, Agriculture, livestock, heritage sites, Local festivals, Jatra, touristic area, hydrology, greenery (parks/community forests), open spaces, cultural and religious places, connectivity (roads/streets), infrastructures, facilities for public, private / public institutions and demographics, development possibility on agriculture, tourism and industries.
   - Preparation of ward wise digital Map with various information for every ward offices.
   - Preparation of location map to be put on major roads junction showing direction and other useful information.

   Prepare large scale GIS based Digital base map:
   - Large scale digital digital base maps scaled for office uses to be prepared and delivered to the municipality.
   - Very High Scale satellite image to be used and provided to the Municipality Office of the whole municipality.
   - Details of, but not limited to buildings, private, institutions, religious places, Governmental, semi-governmental and non-governmental organizations, street or road networks, public service delivery offices, water bodies along with details of terrain and topography.

- All acquired digital data field survey will be entered into the Municipal GIS to be integrated with the Municipal Information System.
- Multiple levels of validation and quality analysis to be carried out before finalization.

Aquire cadastral land parcel digital data:
- Acquire cadastral land parcel digital data from the Department of Land Information and Archive with assistance from municipality & integrated with the system.
- On field validation of data will be done to ensure validity and accuracy.

Design and Development of user-friendly application to integrate information system with GIS Data and all Maps.

- A fully matured and bug free web-based system to be handed over to the Municipality Office with complete source code and database.
- The whole system should be designed and developed in such a way that it may be used as prototype for other local level through GoN Department of Information Technology.
- All the maps (resource and Digital Base Map) of high resolutions must be integrated in the information system.
- One click complete access must be granted for both the maps and data from the same system.
- If the users want to search locations, institutions or unique house number than it shows the all directions and follow the shortest route along with the direction from the same system.
- Reports having both the maps and data need to be granted from the system after integration.
- User friendly interface(web & mobile application) with high security and speed must be delivered.
- Development of mobile as well as web-based application for data retrieval and observation. It should be designed in such a way that data can be updated.
- Hosting and Maintenance for the first year must be included in the quotation.
- The system must be able to handle 3 levels of User Accounts/user groups for simultaneous use and with different privileges and hierarchy.

1. Administrative/ IT Department of Municipality
   The Municipality Information System will be used by Administrative/It Department of Municipality with full privileges and features. It will have complete rights to view, edit and update the Municipal information database.
2. Subjective Section
   The department of municipality with limited privileges and features. It will have complete right to view the respective department data.

3. Ward executives
   The Municipality Information System will also be used by Ward offices with limited privileges and features. It will have rights to view and update individual ward information. It will have right to update/edit limited and dedicated municipal database.

4. Peoples
   Individual people can read all the reports and queries generated by the application and incase of his own information one can entirely view details, but only have a liberty to comment on his own information.

Capacitate and institutionalize the municipality office:
- Provide a detailed User Manual for the Municipality Office of the Information System integrated with MIS including GIS data and maps.
- Conduct presentation and orientation with all the stakeholders of the municipality and ward offices making them familiar with the system and its utilization.
- Conduct several training sessions as per the requirement so as to capacitate the personnel assigned by the municipality to make them well versed with the system developed.

Facilitate the municipality with extensive reporting of households, institutions, landmarks and geo spatial information:
- The system has to produce instant reports of households, residents, land masses, topography, ward segregation, demographics, landmarks and all other digitalized data.
- Dynamic info-graphical reporting as per the requirement of the Municipality to be made easily accessible in the system.

A fully scalable information system that can be used for each household to register and update information on their own at later stage:
- The Municipality Information System must be scalable so that in future all residents can login to the system to view their details and update or request for update accordingly.
- The system must be able to take 60,000 or more user accounts.

5. **Study methodology**

   The study method constitutes the following phases.

- Preliminary overall preparation and planning for field mobilization and questionnaire finalization.
- Organization of Municipal level orientation meeting and field level meeting.
- Preparation of Compatible mobile application for household/ Institutional data collection and training for enumerator as well as municipal coordinators.
- Preparation of Maps for Field Visit/appraisal and field work.
- Collection of Primary data using Tab/GPS in each household within the municipality.
- Design and Development of application for different hierarchy of users.
- Presentation and collection of feedback from the concerned agencies.

6. **Roles & Responsibilities**

Role of the Consultant
i. Consultant shall be responsible to supply technical personnel and complete consulting work as stipulated in ToR. and work under the team leader. Consultant's personnel shall directly participate in fieldwork and plan preparation, under the supervision and instructions of the team leader. The fieldwork among other things includes data gathering, ward and municipal level meetings as per requirement.

ii.   Consultant shall be responsible for making available of logistics including computers, printer, scanner photocopier, and vehicle as stipulated in ToR for use in the field.

iii.   Consultant shall be responsible for undertaking necessary training programs to municipal as   well as departmental technical personnel on data collection, management and other relevant computer skills that are required in connection to profile preparation.

iv.   Keep appropriately the records and minutes of the meetings/ workshops.

v.   Gather data and carry out necessary analysis and inform the outcome of such analysis to the team leader and to the planning team during plan preparation.

vi.   Undertake the task of preparing digital profile in complete as described in this TOR, under the supervision of the team leader.

vii.   The consultant shall accomplish the work in close contact and guidance with the Office of Municipal Executive.

viii.   Consultant shall be responsible for Annual Maintenance (AMC) for the first year.

Role of the Municipality
i.   Municipality shall depute its senior official preferably from the Technical section to coordinate internally and externally in the entire process till the completion of preparation profile. Municipality shall also depute the full-time technical officer/ personnel to be associated with the study team.

ii.   Municipality shall help the team to provide and gather data. It may also raise specific issues and provide suggestions separately to the team.

iii.   Municipality should have its own server to handle its data after completion of hosting period of the consultant
iv.   Municipality shall make the payment of contract amount to the consultant.

7. **Expected outputs**
The consultant shall prepare a complete profile comprising of relevant data and information

- Demographic like population chart, migration trend, growth trend etc.
- Socio economic like health and educational, gender, income, and occupation.
- Physical and Social Infrastructures like road, electricity, telecommunication, water supply drainage and sewerage etc.
- Existing Land use pattern/classification Agriculture, Forest, road, residential areas, urban areas, commercial, institutional, open spaces. Play grounds, rivers, lake, pond, religious centers/areas.
- Environmental status like sanitation, solid waste, pollutions.
- Maps as per necessary
- Analysis of collected data should be presented in charts, diagram and graphs as per requirements.

- Development of user-friendly application for different hierarchy of users.
- An up to-date profile shall be prepared comprising of base-line information of the existing physical, social, environment financial and organizational state of the municipality. Apart from the key statistics, such base line information shall also include textual descriptions, maps, and key problems prevailing in the wards and the municipality.

8. **Composition of Study Team**

Proposed personnel for the Preparation of the Digital Profile of Chandragiri Municipality.

A	Key Expert/Description	Quantity	Person Month	Minimum requirement
1	**Project Manager**	**1**	**5**	
1.1	Qualification of Project Manager			Master degree in related field
1.2	General Experience of Project Manager			10 years of work experiences in related field.
1.3	Specific Work Experience of Project Manager			Experience as Project Manager in 10 Projects
2	**Urban Planar**	**1**	**4.5**	
2.1	Qualification of Urban Planar			Bachelor degree in Architecture/Civil Engineering/ M.A in (Geography) or equivalent
2.2	General Experience of Urban Planar			5 years of work experiences in related field.
2.3	Specific Work Experience of Urban Planar			Experience as Urban Planner in 7 Projects
3	**GIS Expert**	**1**	**4**	
3.1	Qualification of GIS Expert			Bachelor Degree in Geo-information/ RS/ GIS
3.2	General Experience of GIS Expert			5 years of work experiences in related field.
3.3	Specific Work Experience of GIS Expert			Experience as GIS Expert in 7 Projects
4	**Senior Software/Web-Application Developer**	**2**	**3**	
4.1	Qualification of Senior Software/Web-Application Developer			Bachelor degree in IT Related Field
4.2	General Experience of Senior Software/Web-Application Developer			5 years of work experiences in related field.
4.3	Specific Work Experience of Senior Software/Web-Application Developer			Experience as Senior Software/Web-Application Developer in 7 Projects
6	**Senior Android/IOS Developer**	**2**	**2**	

A	Key Expert/Description	Quantity	Person Month	Minimum requirement
6.1	Qualification of Senior Android/IOS Developer			Bachelor degree in IT Related Field
6.2	General Experience of Senior Android/IOS Developer			5 years of experiences in related field.
6.3	Specific Work Experience of Senior Android/IOS Developer			Experience as Android/IOS Developer in 7 Projects
8	**Information Security expert**	**1**	**1**	
8.1	Qualification of Information Security expert			Bachelor degree in IT related field
8.2	General Experience of Information Security expert			5 years of experiences in related field.
8.3	Specific Work Experience of Information Security expert			Experience as Information Security expert in 7 Projects
9	**Statistician**	**1**	**2**	
9.1	Qualification of Statistician			Bachelor degree in Statistician or related field
9.2	General Experience of Statistician			5 years of experiences in related field.
9.3	Specific Work Experience of Statistician			Experience as Statistician in 7 Projects
10	**Documentation expert**	**1**	**4**	
10.1	Qualification of Documentation expert			Bachelor degree any stream having sound knowledge in related field
10.2	General Experience of Documentation expert			2 years of experiences in related field.
10.3	Specific Work Experience of Documentation expert			Experience as Documentation expert in 5 Projects
11	**Capacity Building and Training expert**	**1**	**1**	
11.1	Qualification of Capacity Building and Training expert			Bachelor degree in any stream having sound knowledge in related field
11.2	General Experience of Capacity Building and Training expert			2 years of experiences in related field.
11.3	Specific Work Experience of Capacity Building and Training expert			Experience as Capacity Building and Training expert in 5 Projects
12	**Quality Assurance Engineer**	**1**	**2**	
12.1	Qualification of Quality Assurance Engineer			Bachelor degree in IT Related Field
12.2	General Experience of Quality Assurance Engineer			2 years of experiences in related field.

A	Key Expert/Description	Quantity	Person Month	Minimum requirement
12.3	Specific Work Experience of Quality Assurance Engineer			Experience as Quality Assurance Engineer in 5 Projects
13	**Database Designer**	**1**	**3**	
13.1	Qualification of Database Designer			Bachelor degree in IT Related Field
13.2	General Experience of Database Designer			2 years of experiences in related field.
13.3	Specific Work Experience of Database Designer			Experience as Database Designer in 5 Projects
14	**Field Supervisor**	**8**	**2**	
14.1	Qualification of Field Supervisor			bachelor degree in Sociology/Economist/Civil Engineering or related field
14.2	General Experience of Field Supervisor			2 years of experiences in related field.
14.3	Specific Work Experience of Field Supervisor			Experience as Field Supervisor in 5 Projects
15	**Computer Operator**	**3**	**2**	Assurance letter from the consulting firm that mentioned manpower shall be available during project execution.
16	**Field Enumerators**	**30**	**2**	Assurance letter from the consulting firm that mentioned manpower shall be available during project execution.
17	**GIS/CAD Operator**	**2**	**2**	Assurance letter from the consulting firm that mentioned manpower shall be available during project execution.

9. **Report submission Format and Schedule**

Consultant shall submit the report in following format and time schedule.

S.N.	Report	Time period	Content	Format & Number of copies of report
1	Inception Report	within 1 Month of Agreement Date	• Thoroughly understanding of ToR. • Crystallize the Detail Methodology. • Study Team Interacts with expert and concerned stake holders. • Sample Questionnaire and Check list.	3 hard copies
2	Field Report	At the end of 2.5 month from the date of the agreement	• Collection of Primary and Secondary Data in Hard copy. • Analyze the data of various sector.	3 hard copies
3	Draft Report	At the end of 4.0 month from the date of the agreement	• Draft Digital Profile of the municipality • Software Application	3 hard copies
4	Final Report	At the end of 5 month	• Final Digital Profile incorporating the comments on draft report. • Software Application	5 hard copies and a soft copy

10. **Payment Schedule**

Consulting fee shall be released based on the deliverable. Installment of payment shall be as follows.

S. No	No. of installments	Time Period (from the date of the agreement)	Payment in % of agreement amount
1	Inception Report	1 Month	10
2	Field Report	2.5 month	20
3	Draft Report	4.0 month	30
4	Final Report	5.0 month	40