Office of Municipal Executive

Madhuwan Municipality

Bardiya

Lumbini Province, Nepal

Terms of Reference (TOR)

Of

Consulting Services

For

Initial Environmental Examination (IEE) Study for the Sustainable Extraction of Riverbed Materials for Babai and Karnali Geruwa River at Madhuwan Municipality, Bardiya

F/Y: 2083/2084

2083

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ABBREVIATION AND ACRONYMS

CBS	Central Bureau of Statistics
CF	Community Forest
FGD	Focus group discussion
KII	Key informant interview
CITES	Convention on International Trade of Endangered Species of Wild Flora and Fauna
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EPA	Environmental Protection Act
EPR	Environmental Protection Regulation
GoN	Government of Nepal
HH	House Hold
HIA	High Impact Area
IEE	Initial Environmental Examination
km	Kilometer
LIA	Low Impact Area
m	Meter
m2	Square meter m3 /s Cubic meter per second
masl	Meter above sea level
VAT	Value Added Tax
ToR	Terms of Reference

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1. Name and Address of the individual preparing the report

1.1. Proposal Proponent

Madhuwan Municipality is the proponent of proposal for the Sustainable Extraction of Riverbed Materials from Babai and Karnali River at Madhuwan Municipality, Bardiya.

The Name and Contact Address of the proponent is as follows.

Madhuwan Municipality, Bardiya, Nepal

Office of the Municipal Executive

Tel. No.: +977-084-440111(office)

E-mail: madhuwanmun@gmail.com

1.2. Organization responsible for preparing the report

The proponent is responsible to carry out Initial Environmental Examination (IEE) for the proposed proposal. Madhuwan Municipality will provide necessary technical support to the Proponent of the Proposal.

2. General Introduction of the Proposal

2.1 Background

River is the mirror of society. Many ancient civilizations were flourished on the bank of the river. Rivers maintain ecological balance as well as provide source of income if managed properly. Fishes and riverbed materials (sand, cobble, pebble, boulders, etc.) are the sources of income from natural river, these are the important resources in the construction industry. Within those ecosystem services, the extraction of river bed material is one of particularly important types of human activity in river ecosystems. Sand and gravel mining have been a serious environmental problem around the globe in recent years. Instream mining directly alters the channel geometry and bed elevation. By removing sediment from the channel, instream material extraction disrupts the pre-existing balance between sediment supply and transporting capacity, typically inducing incision upstream and downstream of the extraction site. The resultant incision alters the frequency of floodplain inundation along the river courses, lowers valley floor water tables and frequently leads to destruction of bridges and channelization structures.

For the development purposes the natural resources like river bed material (Sand, gravel, Cobbles and boulder) are the major raw material. The development of the country is mainly focused on the growth of urbanization and industrialization of that country. The increasing demand of river bed materials, the illegal mining (sand mafia) and mining in the agricultural

field, floodplain area is increasing and it effect the health, physical process and different function of rivers, degradation of the riparian zone, degradation of aquatic and terrestrial biodiversity. There are many environmental effects that are generated due to the unscientific and up hazard river bed mining.

The Madhuwan Municipality (मधुवननगरपालिका), hereinafter referred to as "the Client/Office," situated in the Bardiya district of Lumbini province, Nepal, is seeking to engage the services of a consultant for the ***Initial Environmental Examination (IEE) Study for the Sustainable Extraction of Riverbed Materials from Babai and Karnali River at Madhuwan Municipality, Bardiya.***

2.2 The Project Area

Madhuwan Municipality is green and clean City lies in Bardiya district of Lumbini Province. It is one out of six municipality of Bardiya District. The municipality is surrounded by Gulariya in the east, India borders from the south, Geruwa Rural Municipality in the west. Bardiya National Park touches the border of the municipality by north.

Madhuwan Municipality (मधुवननगरपालिका) was established in 2017 (2073 BS) as a local government (self-government) of Nepal. The headquarters of MadhuwanNagarpalika (Municipality) is located in Madhuwan-6, Sanoshree Taratal, Bardiya District, Lumbini Province of Nepal. The total area of the Madhuwan Municipality is 129.73 square kilometers and the total population of this rural municipality as of 2011 (2068 BS) Nepal census is 46437 individuals and density is 369/km2 (930/sq mi). This municipality is divided into total 9 wards.

Madhuwan Municipalty was incorporated on 10 March 2017 (Falgun 27, 2073 BS) fulfilling the requirement of the Constitution of Nepal 2015 (2072 BS). Ministry of Federal Affairs and General Administration (MoFAGA) replaced all old VDCs and Municipalities into 753 new local level bodies. SanoshreeTaratal, Suryapatuwa and Dhodhari Village development committees (VDCs) were incorporated to form this Municipality.

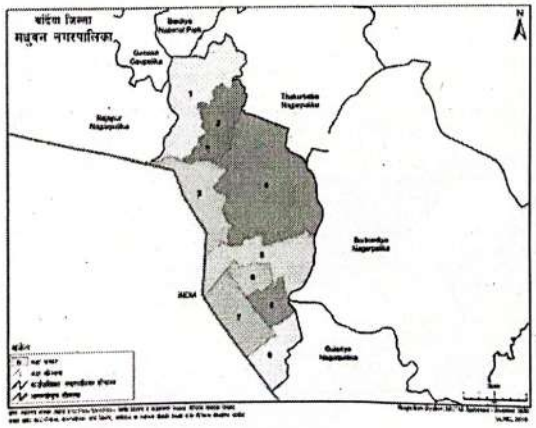


Fig: Location Map of Madhuwan Municipality

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2.3 Objectives of IEE

The main objective of the assignment is to prepare the Initial Environmental Examination (IEE) Study Report for the Babai and Karnali River, Madhuwan Municipality, Bardiya. The principal services to be provided by the consultants to fulfil the objective of the services are detailed below. However, these services are indicative of the overall tasks to be performed by the consultants. The consultant shall be responsible for carrying out all necessary office and field works including topographical map study, alignment assessment, geological assessment, necessary laboratory testing to prepare revised Report, which shall incorporate all the priority issues of work by categorizing them into physical, biological, socio-economic, and cultural aspects of both Beneficial and Adverse types, for both pre-construction, construction and post-construction, operational and maintenance stages, as per EPA 2076 and EPR 2077 (Rule 12) with amendments.

The main objective of the IEE study is to access and inform decision makers by identifying file potentially significant environmental effects and risks of the proposed project and to suggest appropriate mitigation measures to mitigate/minimize the adverse impacts so that the project is implemented in an environmentally sound manner. The objectives of this IEE study are:

1. To document the physical, biological and socio-economic and cultural baseline condition of the project area;
2. To identify, predict assess the adverse and beneficial environmental impacts of the proposed project in project affected area in terms of magnitude, extent and duration during the project construction and operation phases;
3. To suggest appropriate and pragmatic mitigation and enhancement measures for potential adverse impacts.
4. To familiarize various stakeholders with the IEE outcomes through public consultation and participation programs and to incorporate their relevant concerns and issues in environmental management plan;
5. To prepare an environment management plan as well as effective monitoring and auditing programs; and
6. To facilitate informed decision making including setting the environmental terms and conditions for implementing the proposed project

2.4 Scope of Services:

1. To identify impacts from the project implementation on physical, biological, socio-economic, and cultural environment of the project area, and to propose practical and site specific environmental measures to minimize, mitigate such impacts.

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3. Data requirement and study methodology

The IEE study of proposed Proposal will be carried out according to the EPA 2076 and EPR 2077 and with its subsequent amendments. The following procedures will be considered to prepare IEE study report.

3.1. Desk study

Secondary information will be collected by reviewing relevant documents. Information related to physical environment such as geographical location and land use patterns will be obtained by using topographic maps, MUNICIPALITY and district profile. The biological information of flora and fauna will be obtained from reviewing relevant articles published from government and non-government agency. Information on local community forest will be collected from reviewing operational plan of Community Forests (CF). Additionally, protected species of the Proposal area will be tallied with the protected species' list of GoN and other international conventions to which Nepal is a signatory. The socio-economic information such as demographic pattern, social service centres, religion, occupation, etc will be obtained by reviewing documents published by Central Bureau of Statistics (CBS), district profile, MUNICIPALITY profile and other Proposal related documents. Furthermore, the collected data will be categorized in terms of physical, biological, socio-economic and cultural environment. Existing acts, rule, policies, legislation and guidelines related to sand/gravel/boulder collection/extraction will be reviewed and documented for the preparation of IEE study report.

3.2. Field Survey and Site Investigation

In order to meet the above objectives, the different methods for information collection such as walk through survey, inventory survey, sampling, focused group discussion and house hold surveys may be used. The secondary information through published and unpublished reports, and maps and photographs interpretation may also be used. The Proponent shall collect and analyze bio-physical environmental information in the Proposal area (High Impact Area within physical coverage of 50 to 150m and Medium Impact Area within the physical coverage of about 150 to 500m. Socio-economic information shall be collected and analyzed for 500 m (depending upon the settlement pattern) from the boundary of the Proposal area on all sides (immediate influence area as Low Impact Area) Madhuwan Municipality fall under this category. The IEE study shall make every effort to quantify and evaluate site-specific impacts to the extent applicable in all resources within the High Impact Area. The census shall be carried out particularly to collect data regarding households whose land or houses will be located within the Proposal area and those that are to be acquired.

3.2.1 Physical Environment

Information on physical environment shall be collected through literatures, maps, and walk through survey. The use of appropriate and calibrated equipment is encouraged to quantify information.

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3.2.2 Biological Environment

Information on biological environment such as vegetation shall be collected by standard ecological methodologies shall be adopted in order to quantify vegetation of the forest of all possible categories such as disturbed, medium disturbed and undisturbed. Number of trees to be cleared for implementation of the Proposal shall be recorded by counting method or sample plot method. Wildlife distribution and occurrence in the Proposal area shall be collected through pug marks of the wild animals, jungle trek and observation method including discussion with the local people. Fishery information shall be generated by capture-recapture method, and by asking the local people and site observation. The Proponent may use data sheets to collect the field level information.

3.2.3 Socio-EconomicEnvironment

Socio-economic information shall be collected by using questionnaire, checklists, observation, interaction with the local people, focus group discussion (FGD), Key informant interview (KII) and discussion with concerned stakeholders and community groups. The Proponent shall collect information on possible damage of infrastructures, and community services through checklists and focus group discussion. Information on land acquisition and compensation issues shall be collected through intensive household survey at least in the direct impact zone.

3.3 Public Hearing

During data collection for IEE study, public hearing will be carried out at appropriate places considering the views, suggestions and comments on the Proposal implementation. Public hearing will also be carried out through discussions with concerned stakeholders, key informants and other groups.

3.4 Public Notice

While preparing IEE report, Seven days public notice will be published in national daily newspaper to inform the stakeholders about the Proposal activities. Further, the notice will be affixed in the offices of concerned Municipality, DCC, schools, hospitals, health posts and other public offices located near to the Proposal area requesting them to provide their written opinions, suggestions and comments about the Proposal implementation activities.

3.5 Recommendation Letters

Recommendation of affected Municipality as per EPR will be collected and attached in the IEE report. Also, if the Proposal requires forest land of community forest to be cleared, the recommendations from these affected community forest shall be collected and attached in the IEE report. If the Proposal requires land from government forest/community forest or trees are needed to be cut down from them, then comments and suggestions from District Forest Office and affected community forests should be attached in the IEE report along with their recommendation letters.

3.6 Data Analysis and Impact Prediction

After collecting baseline field data from the Proposal area on physical, biological, socio-economic and cultural environment, these will be analyzed and interpreted as per EPR 2077. The analysis shall be made on the nature, magnitude, duration and extent of the impacts due to construction and operation activities of the Proposal. Mitigation measures and monitoring plans will be described for each impact. Data collection for IEE study as aforementioned methods will first be compiled and classified to relevant components (Physical, Cultural, Socio-Economic and Biological) for convenience and to avoid possible mismatches. Computer software with usage of expert's opinion will be primary tool to process data coming from physical, socio economic and cultural domain. While categorizing the impacts into 'significant and insignificant depending on the nature of impact, the following aspects shall be made to each of the impact:

1. Nature : Direct or Indirect
2. Magnitude : High, Moderate, Low
3. Extent: Site specific, Local and National
4. Timing : Short term, Medium-term, Long-term
5. Duration : Temporary, Permanent
6. Impact quality: Beneficial, Negative

4. Policies, Law and manual to be undertaken into account while preparing the report

The policy documents, acts, regulations and guidelines as indicated below shall be reviewed and relevant provisions shall be referred in the IEE report. A concrete recommendation shall be made in the IEE report as to whether or not the Proposal could be implemented after reviewing acts and regulations. Any legal provision that surface against Proposal implementation will be investigated and put forth with recommendations, if felt necessary will be made in the IEE report. In particular, the following documents will be considered during IEE report preparation.

4.1 Constitution of Nepal

Plans, Policies and Strategies

1. National Environment Policy, 2076 B.S.
2. National Climate Change Policy 2076 B.S.
3. National Forest Policy 2075 B.S.
4. Land Use Policy, 2072 B.S.

Acts and Regulations

1. Environment Protection Act, 2076
2. Environment Protection Rules, 2077

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3. Plant Protection Act, 2007
4. National Parks and Wildlife Conservation Act, 1973
5. Soil and Watershed Conservation Act, 1982
6. Forest Act 2076 B.S. and Rules 2077 B.S.
7. Forest Regulation, 2079B.S.
8. Tourism Act 1978
9. Labour Act, 2017
10. Land Acquisition Act, 2034 B.S.
11. Local Government Operation Act, 2074 B.S.
12. Industrial Enterprises Act, 2020
13. Aquatic Animals Protection Act, 1993
14. Water Resources Act, 1993
15. Water Resources Regulations, 1993
16. Solid Waste Management Act, 2068 B.S.and Rules 2070 B.S.

4.2 *Guidelines and Manuals*

1. National Environmental Impact Assessment Guideline, 1993
2. Community Forest Guidelines, 2001
3. Guidelines on Land-use for Other Purposes, 2063 B.S
4. IEE reports of previous fiscal years.

4.3 Convetions

1. Convention on Biological Diversity, 1992
2. CITES, 1973
3. Convention No 169 concerning indigenous and tribal people in Independent Countries

Any significant conflicts and issues related to the environment and others shall be identified and recommendations shall be based on the above-mentioned policies, rules and regulations. The proponent will describe the pertinent regulations and standards governing environmental quality, health and safety, protection of the sensitive areas, protection of the endangered species, land use control etc. At district, Municipality and ward level. The proponent shall also review the responsibilities of the local, district, and central level institutions and recommended steps to ensure for necessary coordination during the Proposal implementation.

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5. PREPARATION OF THE REPORT

The IEE report shall be prepared in consonance with the contents given on the Schedule-11 of the EPR 2077. The report shall document systematically the baseline data on physical, biological as well as socio-economic and cultural environment

5.1 Time Schedule, Budget and Study Team

The estimated study time schedule, cost and team composition is as follows.

5.1.1 Time Schedule

The estimated time schedule for completion of the IEE study is **21 days** as given in Table 5.1. Here, time schedule for approval of ToR and IEE report is not included.

Table 5.1: Time Schedule for IEE Study

Activities/Month	2081Mansir
Public notice publication, Field visit/study and public consultation meeting	
IEE Draft report writing& submission	
Final IEE report writing with incorporating comments	
Submission of Final report and approval	

5.1.2 Study Team

The following professionals will carry out the IEE study:

1. Environmental Specialist - Team Leader
2. Geologist/Geo-Tech Engineer -Team Member
3. Hydrologist -Team Member
4. Socio-Economist - Team Member
5. Natural Resource Expert -Team Member
6. Surveyor(sub engineers) - Team Member
7. Draft Person -Team Member

5.1.3 Budget

The total amount allocated by municipality for IEE study is about NRs 4,89,001.85.

5.1.4 Payment to Consultant

Payments shall be made based on the deliverable required by Madhuwan Municipality as per the following:

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6. Specific impacts on the implementation of Proposal on the Environment

6.1 Physical Environment

1. Impact due to site clearance
2. Change in land use (loss or degradation of productive land)
3. Sediment transport/Scouring
4. Any other issues likely to arise during IEE study

6.2 Biological environment

Impacts on vegetation due to clearance for the Proposal activities;

1. Loss of Forest (Forest type and available plant species)
2. Impacts on protected species of flora and fauna;
3. Any other issues likely to arise during IEE study including biodiversity aspects.
4. Impacts on aquatic habitat;
5. Impacts on forest, forest products and vegetation of surrounding area and dependent wildlife due to increased human activities
6. Impacts on wildlife and bird due to destruction of its habitat;
7. Impacts on protected species of flora and fauna;
8. Any other issues likely to rise during IEE study

6.3 Socio-economic and Cultural Environment

1. Land acquisition, compensation issues and people's displacement
2. Impact on gender and vulnerable groups (including extension/evacuation of squatter settlement)
3. Any other issues likely to arise during IEE study
4. Impact on occupational health, safety and sanitation and solid waste management
5. Loss or degradation of farm land and impact on agriculture productivity and livestock
6. Social conflict

7. Change in social structure, traditional and cultural practices, and rituals of the rural people due to exposition to outside workforce
8. Impact on law and order in the Proposal area due to large work force;
9. Impact due to proposal site infrastructure development
10. Impact on religious, cultural and historical sites (including cremation site)
11. Impact on gender and vulnerable groups (including extension/evacuation of squatter settlement)
12. Impact on nearby human settlements
13. Impact on use of other natural resources
14. Conflict in revenue/income sharing mechanism
15. other public concern issues
16. Any other issues likely to arise during IEE study.

6.4 Beneficial impacts

1. Employment opportunity for skilled, semi-skilled and unskilled local people
2. Employment opportunity for local people and human resource development
3. Boost up of local economy from tourism
4. Impact on gender and vulnerable groups;
5. Business opportunity to local people;

7. Alternatives for the implementation of the proposal on the environment

During IEE study of the Proposal, an alternative analysis of the Proposal implementation shall be performed considering various aspects like proposal site, operation procedure and technology and schedule. Alternative analysis shall be performed on the following aspects:

1. Alternative Design
2. Alternative Project Site
3. Alternatives Method, resources, procedure and schedule
4. Raw Material Alternatives
5. Others

8. Mitigation and enhancement measures

Preventive, corrective and compensatory mitigation measures as identified and anticipated in the study shall be included in the IEE report. Each of the identified adverse impacts shall be evaluated in detail and cost-effective mitigation measures will be suggested to minimise the

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adverse impacts. Social enhancement measures shall be proposed to enhance beneficial impacts due to implementation of the Proposal. The mitigation measures shall be categorized in terms of physical, biological, socio-economic and cultural environment during proposal construction and operation phase. The detail IEE report shall include the following:

1. Mitigation and enhancement measures during construction and operation phases for each environment; agencies responsible for implementation and construction
2. Preparation of Environment Management Plan (EMP)

9. Others Necessary Matters

Report format and deliverables References, annexes, maps, photos, tables, charts and questionnaire as relevant and applicable shall be included in the report.

10. Agreement

The Consultant will be required to enter into an agreement with Madhuwan Municipality,Bardiya.

11. Taxation

The Consultant shall be fully responsible for all taxes including VAT applicable as per the rules and regulations of Government of Nepal and for that the taxes except VAT shall be deducted at the source at the time of payment. The consultant shall be responsible for clearance of VAT. All payments shall be made after deducting taxes.

Madhuwan Municipality
Office of Municipal Executive
Bardiya
Lumbini Province, Nepal

Bill of Quantity

Program: IEE of Babai River and Karnali Geruwa River for extraction of river bed materials.(Sand,Aggregates and Gravel)

S.N.	Description	Unit	Person / Qty.	Rate		Total	Remark
				in figure	In words		
A	**Manpower**						
1	Team Leader/ Environmentalist/Environment Engieer	M-days	21.00				
2	Geologist	M-days	15.00				
3	Hydrologist	M-days	15.00				
4	Socio Economist	M-days	15.00				
5	Natural Resource Expert	M-days	15.00				
6	Surveyor	M-days	15.00				
7	Draft Person	M-days	7.00				
B	Transportation, accomodation, fooding, lab test etc	LS	1.00				
C	Report printing, photocopies, binding and other miscellaneous all complete.	LS	1.00				
D	**Total (A+B+C)**						
E	VAT @ 13% of Total D						
F	**GRAND TOTAL (D+E)**						

Name of Firm :-
Sign Stamp :-
Date:-

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