Government of Nepal
Ministry of Physical Infrastructure and Transport
Department of Roads
Project Directorate (ADB)
Kathmandu, Nepal

SASEC Mugling-Pokhara Highway Improvement Phase I Project-(SMPHIP)
(ADB Project No. 52097-002)

Mugling-Anbukhaireni-Pokhara Road (Section – 2) From Km 49+700 to km 88+583

Contract No. SMPHIP/OCB/MAP/02

Phase 1: Upgrading Works
(Upgrading of existing road from 2-Lanes to 4 Lanes and Service Lanes, Structures, Bridges, etc. including Defect Notification Period)

Phase 2: Performance Based Maintenance Works
(Maintenance works consisting of all activities to be carried out to achieve and keep the road assets as defined in the PBM Specifications)

Bidding Document

Part I Bidding Procedures

Section 1 Instruction to Bidders
Section 2 Bid Data Sheet
Section 3 Evaluation and Qualification Criteria Section
Section 4 Bidding Forms incl. Bills of Quantities
Section 5 Eligible Countries

November, 2019

For Reference Only

Preface

This Bidding Document for the Procurement of Works (Single Stage – Two Envelope) has been prepared by the Government of Nepal, Ministry of Physical Infrastructure and Transport, Department of Roads, Project Directorate (ADB) and is based on the Standard Bidding Document for the Procurement of Works (SBD Works) issued by the Asian Development Bank dated June 2018.

ADB's SBD Works has the structure and the provisions of the Master Procurement Document entitled "Bidding Documents for the Procurement of Works", prepared by multilateral development banks and other public international financial institutions, except where ADB-specific considerations have required a change.

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Table of Contents - Summary Description

PART I BIDDING PROCEDURES

Section 1 - Instructions to Bidders (ITB) ---------- **1-1**
This Section specifies the procedures to be followed by Bidders in the preparation and submission of their Bids. Information is also provided on the submission, opening, and evaluation of bids and on the award of contract.

Section 2 - Bid Data Sheet (BDS) ---------- **2-1**
This Section consists of provisions that are specific to each procurement and supplement the information or requirements included in Section 1 - Instructions to Bidders.

Section 3 - Evaluation and Qualification Criteria (EQC) ---------- **3-1**
This Section contains the criteria to determine the lowest evaluated bid and the qualifications of the Bidder to perform the contract.

Section 4 - Bidding Forms (BDF) ---------- **4-1**
This Section contains the forms which are to be completed by the Bidder and submitted as part of his Bid.

Section 5 - Eligible Countries (ELC) ---------- **5-1**
This Section contains the list of eligible countries.

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Section 6 - Employer's Requirements (ERQ) ---------- **6-1**
This Section contains the Specifications, Drawings, and Supplementary Information that describe the Works to be procured, Personnel Requirements, and Equipment Requirements.

Section 6A – Summary of Description of Works
This Section contains the summary list of main works to be executed under the contract. Specification, Special provisions and, the Drawings, that describe the Works to be procured.

Section 6B – Standard Specifications
This document has been issued under the authority of the Government of Nepal, Ministry of Physical Planning and Works, Department of Roads (July 2001), it can be purchased from the Central Road Laboratory, Kupandole, Lalitpur.

Section 6C – Special Provisions
This section contains amendments, supplements, etc. to the standard specifications to suit the specific requirements of the project, including sections regarding Minor Bridges and PBM works

Section 6D – Drawings
The drawings are presented in a separate volume.

Section 6E – Personnel Requirements
This section provides the information on Personnel Requirements

Section 6F – Equipment Requirements
This section provides the information on Equipment Requirements

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PART III CONDITIONS OF CONTRACT AND CONTRACT FORMS

Section 7 - General Conditions of Contract (GCC) ---------- 7-1
This Section contains the general clauses that govern the Contract. These General Conditions shall be the Conditions of Contract for Construction, Multilateral Development Bank Harmonized Edition, prepared by the Fédération Internationale des Ingénieurs-Conseil (FIDIC 2010 MDB version). These Conditions are subject to the variations and additions set out in Section 8 (Particular Conditions of Contract).

Section 8 - Particular Conditions of Contract (PCC) ---------- 8-1
This Section contains provisions that are specific to each contract and that modify or supplement the GCC. Whenever there is a conflict, the provisions herein shall prevail over those in the GCC

Section 9 - Contract Forms (COF) ---------- 9-1
This Section contains forms, which, once completed, will form part of the Contract. The forms for Performance Security and Advance Payment Security, when required, shall only be completed by the successful Bidder after contract award.

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Section 1 - Instructions to Bidders

(Single – Stage, Two-Envelope Bidding Procedure)

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Section 1 - Instructions to Bidders

A. General

1. Scope of Bid

1.1 In connection with the Invitation for Bids (IFB) indicated in the Bid Data Sheet (BDS), the Employer, as indicated in the BDS, issues this Bidding Document for the procurement of Works as specified in Section 6 (Employer's Requirements). The name, identification, and number of contracts of the open competitive bidding (OCB) are provided in the BDS.

1.2 Throughout this Bidding Document,

(a) the term "in writing" means communicated in written form and delivered against receipt;

(b) except where the context requires otherwise, words indicating the singular also include the plural and words indicating the plural also include the singular; and

(c) "day" means calendar day.

2. Source of Funds

2.1 The Borrower or Recipient (hereinafter called "Borrower") indicated in the BDS has applied for or received financing (hereinafter called "funds") from the Asian Development Bank (hereinafter called "ADB") toward the cost of the project named in the BDS. The Borrower intends to apply a portion of the funds to eligible payments under the contract(s) for which this Bidding Document is issued.

2.2 Payments by the ADB will be made only at the request of the Borrower and upon approval by ADB in accordance with the terms and conditions of the Financing Agreement between the Borrower and ADB (hereinafter called "Financing Agreement"), and will be subject in all respects to the terms and conditions of that Financing Agreement. No party other than the Borrower shall derive any rights from the Financing Agreement or have any claim to the funds.

3. Fraud and Corruption

3.1 ADB's Anticorruption Policy (1998, as amended to date) requires Borrowers (including beneficiaries of ADB-financed activity), as well as Bidders, Suppliers, and Contractors under ADB-financed contracts, observe the highest standard of ethics during the procurement and execution of such contracts. In pursuance of this policy, ADB

(a) defines, for the purposes of this provision, the terms set forth below as follows:

(i) "corrupt practice" means the offering, giving, receiving, or soliciting, directly or indirectly, anything of value to influence improperly the actions of another party;

(ii) "fraudulent practice" means any act or omission, including a misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain a financial or other benefit or to avoid an obligation;

(iii) "coercive practice" means impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party;

(iv) "collusive practice" means an arrangement between two or more parties designed to achieve an improper

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purpose, including influencing improperly the actions of another party;

(v) "abuse" means theft, waste, or improper use of assets related to ADB-related activity, either committed intentionally or through reckless disregard;

(vi) "conflict of interest" means any situation in which a party has interests that could improperly influence that party's performance of official duties or responsibilities, contractual obligations, or compliance with applicable laws and regulations;

(vii) "obstructive practice" means (a) deliberately destroying, falsifying, altering, or concealing of evidence material to an ADB investigation, or deliberately making false statements to investigators, with the intent to impede an ADB investigation; (b) threatening, harassing, or intimidating any party to prevent it from disclosing its knowledge of matters relevant to a Bank investigation or from pursuing the investigation; or (c) deliberate acts intended to impede the exercise of ADB's contractual rights of audit or inspection or access to information; and

(viii) "integrity violation" is any act, as defined under ADB's Integrity Principles and Guidelines (2015, as amended from time to time), which violates ADB's Anticorruption Policy, including (i) to (vii) above and the following: violations of ADB sanctions, retaliation against whistleblowers or witnesses, and other violations of ADB's Anticorruption Policy, including failure to adhere to the highest ethical standard.

(b) will reject a proposal for award if it determines that the Bidder recommended for award has, directly or through an agent, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices or other integrity violations in competing for the Contract;

(c) will cancel the portion of the financing allocated to a contract if it determines at any time that representatives of the Borrower or of a beneficiary of ADB-financing engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices or other integrity violations during the procurement or the execution of that contract, without the Borrower having taken timely and appropriate action satisfactory to ADB to remedy the situation;

(d) will impose remedial actions on a firm or an individual, at any time, in accordance with ADB's Anticorruption Policy and Integrity Principles and Guidelines, including declaring ineligible, either indefinitely or for a stated period of time, to participate[1] in ADB-financed, -administered, or -supported activities or to benefit from an ADB-financed, -administered, or -supported contract, financially or otherwise, if it at any time determines that the firm or individual has, directly or through an agent, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices or other integrity violations; and

(e) will have the right to require that a provision be included in bidding documents and in contracts financed by ADB, requiring Bidders, suppliers and contractors to permit ADB or its representative to inspect their accounts and records and other documents relating to

[1] Whether as a Contractor, Subcontractor, Consultant, Manufacturer or Supplier, or Service Provider; or in any other capacity (different names are used depending on the particular Bidding Document).

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the bid submission and contract performance and to have them audited by auditors appointed by ADB.

3.2 All Bidders, consultants, contractors, suppliers, and other third parties engaged or involved in ADB-related activities have a duty to cooperate fully in any screening or investigation when requested by ADB to do so. Such cooperation includes, but is not limited to, the following:

(a) being available to be interviewed and replying fully and truthfully to all questions asked;

(b) providing ADB with any items requested that are within the party's control including, but not limited to, documents and other physical objects;

(c) upon written request by ADB, authorizing other related entities to release directly to ADB such information that is specifically and materially related, directly or indirectly, to the said entities or issues which are the subject of the investigation;

(d) cooperating with all reasonable requests to search or physically inspect their person and/or work areas, including files, electronic databases, and personal property used on ADB activities, or that utilizes ADB's Information and Communications Technology (ICT) resources or systems (including mobile phones, personal electronic devices, and electronic storage devices such as external disk drives);

(e) cooperating in any testing requested by ADB, including but not limited to, fingerprint identification, handwriting analysis, and physical examination and analysis; and

(f) preserving and protecting confidentiality of all information discussed with, and as required by, ADB.

3.3 All Bidders, consultants, contractors and suppliers shall ensure that, in its contract with its sub-consultants, Subcontractors, and other third parties engaged or involved in ADB-related activities, such sub-consultants, Subcontractors, and other third parties similarly undertake the foregoing duty to cooperate fully in any screening or investigation when requested by ADB to do so.

3.4 The Employer hereby puts the Bidder on notice that the Bidder or any Joint Venture partner of the Bidder (if any) may not be able to receive any payments under the Contract if the Bidder or any of its Joint Venture partners, as appropriate, is, or is owned (in whole or in part) by a person or entity subject to applicable sanctions.

3.5 Furthermore, Bidders shall be aware of the provision stated in Subclause 1.15 and 15.6 of the Conditions of Contract.

4. Eligible Bidders

4.1 A Bidder may be a natural person, private entity, or government-owned enterprise subject to ITB 4.5—or any combination of them with a formal intent to enter into an agreement or under an existing agreement in the form of a Joint Venture. In the case of a Joint Venture,

(a) all partners shall be jointly and severally liable; and

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(b) the Joint Venture shall nominate a Representative who shall have the authority to conduct all business for and on behalf of any and all the parties of the Joint Venture during the bidding process and, in the event the Joint Venture is awarded the Contract, during contract execution.

4.2 A Bidder, and all parties constituting the Bidder, shall have the nationality of an eligible country, in accordance with Section 5 (Eligible Countries). A Bidder shall be deemed to have the nationality of a country if the Bidder is a citizen or is constituted, incorporated, or registered, and operates in conformity with the provisions of the laws of that country. This criterion shall also apply to the determination of the nationality of proposed Subcontractors or Suppliers for any part of the Contract including related services.

4.3 A Bidder shall not have a conflict of interest. All Bidders found to have a conflict of interest shall be disqualified. A Bidder may be considered to be in a conflict of interest with one or more parties in the bidding process if any of, including but not limited to, the following apply:

(a) they have controlling shareholders in common; or

(b) they receive or have received any direct or indirect subsidy from any of them; or

(c) they have the same legal representative for purposes of this bid; or

(d) they have a relationship with each other, directly or through common third parties, that puts them in a position to have access to material information about or improperly influence the bid of another Bidder, or influence the decisions of the Employer regarding this bidding process; or

(e) a Bidder participates in more than one bid in this bidding process, either individually or as a partner in a Joint Venture, except for alternative offers permitted under ITB 13 of the Bidding Document. This will result in the disqualification of all Bids in which it is involved. However, subject to any finding of a conflict of interest in terms of ITB 4.3(a)-(d) above, this does not limit the participation of a Bidder as a Subcontractor in another Bid or of a firm as a Subcontractor in more than one Bid; or

(f) a Bidder, Joint Venture partner, associates, parent company, or any affiliated entity, participated as a Consultant in the preparation of the design or technical specifications of the works that are the subject of the Bid; or

(g) a Bidder was affiliated with a firm or entity that has been hired (or is proposed to be hired) by the Employer or Borrower as Engineer for the contract; or

(h) a Bidder would be providing goods, works, or nonconsulting services resulting from or directly related to consulting services for the preparation or implementation of the project specified in the BDS ITB 2.1 that it provided or were provided by any affiliate that directly or indirectly controls, is controlled by, or is under common control with that firm.

4.4 A firm shall not be eligible to participate in any procurement activities under an ADB-financed, -administered, or -supported project while under temporary suspension or debarment by ADB pursuant to its Anticorruption Policy (see ITB 3), whether such debarment was directly

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imposed by ADB, or enforced by ADB pursuant to the Agreement for Mutual Enforcement of Debarment Decisions. A bid from a temporary suspended or debarred firm will be rejected.

4.5 Government-owned enterprises in the Employer's country shall be eligible only if they can establish that they (i) are legally and financially autonomous, (ii) operate under commercial law, and (iii) are not a dependent agency of the Employer.

4.6 A Bidder shall not be under suspension from bidding by the Employer as the result of the execution of a Bid–Securing Declaration.

4.7 Bidders shall provide such evidence of their continued eligibility satisfactory to the Employer, as the Employer shall reasonably request.

4.8 Firms shall be excluded if by an act of compliance with a decision of the United Nations Security Council taken under Chapter VII of the Charter of the United Nations, the Borrower's country prohibits any import of goods or contracting of works or services from that country or any payments to persons or entities in that country.

4.9 In case a prequalification process has been conducted prior to the bidding process, this bidding is open only to prequalified Bidders.

5. Eligible Materials, Equipment and Services

5.1 The materials, equipment, and services to be supplied under the Contract shall have their origin in eligible source countries as defined in ITB 4.2, and all expenditures under the Contract will be limited to such materials, equipment, and services. At the Employer's request, Bidders may be required to provide evidence of the origin of materials, equipment, and services.

5.2 For purposes of ITB 5.1 above, "origin" means the place where the materials and equipment are mined, grown, produced, or manufactured, and from which the services are provided. Materials and equipment are produced when, through manufacturing, processing, or substantial or major assembling of components, a commercially recognized product results that differs substantially in its basic characteristics or in purpose or utility from its components.

B. Contents of Bidding Document

6. Sections of Bidding Document

6.1 The Bidding Document consist of Parts I, II, and III, which include all the sections indicated below, and should be read in conjunction with any addenda issued in accordance with ITB 8.

PART I Bidding Procedures
Section 1 - Instructions to Bidders (ITB)
Section 2 - Bid Data Sheet (BDS)
Section 3 - Evaluation and Qualification Criteria (EQC)
Section 4 - Bidding Forms (BDF)
Section 5 - Eligible Countries (ELC)

PART II Requirements
Section 6 - Employer's Requirements (ERQ)

PART III Conditions of Contract and Contract Forms
Section 7 - General Conditions of Contract (GCC)
Section 8 - Particular Conditions of Contract (PCC)
Section 9 - Contract Forms (COF)

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6.2 The IFB issued by the Employer is not part of the Bidding Document.

6.3 The Employer is not responsible for the completeness of the Bidding Document and their addenda, if they were not obtained directly from the source stated by the Employer in the IFB.

6.4 The Bidder is expected to examine all instructions, forms, terms, and specifications in the Bidding Document. Failure to furnish all information or documentation required by the Bidding Document may result in the rejection of the bid.

7. Clarification of Bidding Document, Site Visit, Pre-Bid Meeting

7.1 A prospective Bidder requiring any clarification on the Bidding Document shall contact the Employer in writing at the Employer's address indicated in the BDS or raise his inquiries during the pre-bid meeting if provided for in accordance with ITB 7.4. The Employer will respond in writing to any request for clarification, provided that such request is received no later than 21 days prior to the deadline for submission of bids. The Employer shall forward copies of its response to all Bidders who have acquired the Bidding Document in accordance with ITB 6.3, including a description of the inquiry but without identifying its source. Should the Employer deem it necessary to amend the Bidding Document as a result of a request for clarification, it shall do so following the procedure under ITB 8 and ITB 22.2.

7.2 The Bidder is advised to visit and examine the Site of Works and its surroundings and obtain for itself on its own responsibility all information that may be necessary for preparing the Bid and entering into a contract for construction of the Works. The costs of visiting the Site shall be at the Bidder's own expense.

7.3 The Bidder and any of its personnel or agents will be granted permission by the Employer to enter its premises and lands for the purpose of such visit, but only upon the express condition that the Bidder, its personnel, and agents will release and indemnify the Employer and its personnel and agents from and against all liability in respect thereof, and will be responsible for death or personal injury, loss of or damage to property, and any other loss, damage, costs, and expenses incurred as a result of the inspection.

7.4 The Bidder's designated representative is invited to attend a pre-bid meeting, if provided for in the BDS. The purpose of the meeting will be to clarify issues and to answer questions on any matter that may be raised at that stage.

7.5 The Bidder is requested to submit any questions in writing, to reach the Employer not later than 1 week before the meeting.

7.6 Minutes of the pre-bid meeting, including the text of the questions raised, without identifying the source, and the responses given, together with any responses prepared after the meeting, will be transmitted promptly to all Bidders who have acquired the Bidding Document in accordance with ITB 6.3. Any modification to the Bidding Document that may become necessary as a result of the pre-bid meeting shall be made by the Employer exclusively through the issue of an addendum pursuant to ITB 8 and not through the minutes of the pre-bid meeting.

7.7 Nonattendance at the pre-bid meeting will not be a cause for disqualification of a Bidder.

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8. Amendment of Bidding Document

8.1 At any time prior to the deadline for submission of Bids, the Employer may amend the Bidding Document by issuing addenda.

8.2 Any addendum issued shall be part of the Bidding Document and shall be communicated in writing to all who have obtained the Bidding Document from the Employer in accordance with ITB 6.3.

8.3 To give prospective Bidders reasonable time in which to take an addendum into account in preparing their Bids, the Employer may, at its discretion, extend the deadline for the submission of Bids, pursuant to ITB 22.2

C. Preparation of Bids

9. Cost of Bidding

9.1 The Bidder shall bear all costs associated with the preparation and submission of its Bid, and the Employer shall in no case be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.

10. Language of Bid

10.1 The Bid, as well as all correspondence and documents relating to the bid exchanged by the Bidder and the Employer, shall be written in the language specified in the BDS. Supporting documents and printed literature that are part of the Bid may be in another language provided they are accompanied by an accurate translation of the relevant passages in the language specified in the BDS, in which case, for purposes of interpretation of the Bid, such translation shall govern.

11. Documents Comprising the Bid

11.1 The Bid shall comprise two envelopes submitted simultaneously, one called the Technical Bid containing the documents listed in ITB 11.2 and the other the Price Bid containing the documents listed in ITB 11.3, both envelopes enclosed together in an outer single envelope.

11.2 The Technical Bid shall comprise the following:

(a) Letter of Technical Bid;

(b) Bid Security or Bid-Securing Declaration, in accordance with ITB 19;

(c) alternative Bids, if permissible, in accordance with ITB 13;

(d) written confirmation authorizing the signatory of the Bid to commit the Bidder, in accordance with ITB 20.2;

(e) documentary evidence in accordance with ITB 17, establishing the Bidder's qualifications to perform the contract;

(f) Technical Proposal in accordance with ITB 16; and

(g) any other document required in the BDS.

11.3 The Price Bid shall comprise the following:

(a) Letter of Price Bid;

(b) completed Price Schedules, in accordance with ITB 12 and ITB 14;

(c) alternative price Bids, at Bidder's option and if permissible, in accordance with ITB 13; and

(d) any other document required in the BDS.

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11.4 In addition to the requirements under ITB 11.2, Bids submitted by a Joint Venture shall include a copy of the Joint Venture Agreement entered into by all partners. Alternatively, a Letter of Intent to execute a Joint Venture Agreement in the event of a successful Bid shall be signed by all partners and submitted with the Bid, together with a copy of the proposed agreement.

12. Letters of Bid and Schedules

12.1 The Letters of Technical Bid and Price Bid, and the Schedules, including the Bill of Quantities, shall be prepared using the relevant forms furnished in Section 4 (Bidding Forms). The forms must be completed without any alterations to the text, and no substitutes shall be accepted. All blank spaces shall be filled in with the information requested and as required in the BDS.

13. Alternative Bids

13.1 Unless otherwise indicated in the BDS, alternative Bids shall not be considered.

13.2 When alternative times for completion are explicitly invited, a statement to that effect will be included in the BDS, as will the method of evaluating different times for completion.

13.3 Except as provided under ITB 13.4 below, Bidders wishing to offer technical alternatives to the requirements of the Bidding Document must first price the Employer's design as described in the Bidding Document and shall further provide all information necessary for a complete evaluation of the alternative by the Employer, including drawings, design calculations, technical specifications, breakdown of prices, and proposed construction methodology and other relevant details. Only the technical alternatives, if any, of the lowest evaluated Bidder conforming to the basic technical requirements shall be considered by the Employer.

13.4 When specified in the BDS, Bidders are permitted to submit alternative technical solutions for specified parts of the Works. Such parts will be identified in the BDS and described in Section 6 (Employer's Requirements). The method for their evaluation will be stipulated in Section 3 (Evaluation and Qualification Criteria).

14. Bid Prices and Discounts

14.1 The prices and discounts quoted by the Bidder in the Letter of Price Bid and in the Bill of Quantities shall conform to the requirements specified below.

14.2 The Bidder shall fill in rates and prices for all items of the Works described in the Bill of Quantities. Items against which no rate or price is entered by the Bidder will not be paid for by the Employer when executed and shall be deemed covered by the rates for other items and prices in the Bill of Quantities.

14.3 The price to be quoted in the Letter of Price Bid, in accordance with ITB 12.1, shall be the total price of the Bid, excluding any discounts offered. Absence of the total bid price in the Letter of Price Bid may result in the rejection of the Bid.

14.4 The Bidder shall quote any discounts and the methodology for their application in the Letter of Price Bid, in accordance with ITB 12.1.

14.5 The prices shall be either fixed or adjustable as specified in the BDS.

(a) In the case of Fixed Price, prices quoted by the Bidder shall be fixed during the Bidder's performance of the contract and not subject to

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variation on any account. A Bid submitted with an adjustable price will be treated as nonresponsive and rejected.

(b) In the case of Adjustable Price, prices quoted by the Bidder shall be subject to adjustment during performance of the contract to reflect changes in the cost elements such as labor, material, transport, and contractor's equipment in accordance with the provisions of the Conditions of Contract. A Bid submitted with a fixed price will be treated as nonresponsive and be rejected. The Bidder shall furnish the indexes and weightings for the price adjustment formulas in the Tables of Adjustment Data included in Section 4 (Bidding Forms) and the Employer may require the Bidder to justify its proposed indexes and weightings. Any bid that omits indexes and weightings shall be subject to clarification with the Bidder.

14.6 If so indicated in ITB 1.1, bids are being invited for individual contracts or for any combination of contracts (packages). Bidders wishing to offer any price reduction for the award of more than one Contract shall specify in their bid the price reductions applicable to each package, or alternatively, to individual Contracts within the package. Price reductions or discounts shall be submitted in accordance with ITB 14.4, provided the Bids for all contracts are submitted and opened at the same time.

14.7 All duties, taxes, and other levies payable by the Contractor under the Contract, or for any other cause, as of the date 28 days prior to the deadline for submission of bids, shall be included in the rates and prices and the total Bid Price submitted by the Bidder.

15. Currencies of Bid and Payment

15.1 The unit rates and the prices shall be quoted by the Bidder entirely in the currency specified in the BDS.

15.2 Bidders shall indicate the portion of the bid price that corresponds to expenditures incurred in the currency of the Employer's country in the Schedule of Payment Currencies included in Section 4 (Bidding Forms).

15.3 Bidders expecting to incur expenditures in other currencies for inputs to the Works supplied from outside the Employer's country and wishing to be paid accordingly may indicate the other currencies in the Schedule of Payment Currencies included in Section 4 (Bidding Forms).

15.4 The rates of exchange to be used by the Bidder for currency conversion during bid preparation shall be the selling rates for similar transactions prevailing on the date 28 days prior to the deadline for submission of bids published by the source specified in the BDS. If exchange rates are not so published for certain currencies, the Bidder shall state the rates used and the source. Bidders should note that for the purpose of payments, the exchange rates confirmed by the source specified in the BDS as the selling rates prevailing 28 days prior to the deadline for submission of Bids shall apply for the duration of the Contract so that no currency exchange risk is borne by the Bidder.

15.5 Foreign currency requirements indicated by the Bidders in the Schedule of Payment Currencies shall include but not limited to the specific requirements for

(a) expatriate staff and labor employed directly on the Works;

(b) social, insurance, medical and other charges relating to such expatriate staff and labor, and foreign travel expenses;

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(c) imported materials, both temporary and permanent, including fuels, oil and lubricants required for the Works;

(d) depreciation and usage of imported Plant and Contractor's Equipment, including spare parts, required for the Works;

(e) foreign insurance and freight charges for imported materials, Plant and Contractor's Equipment, including spare parts; and

(f) overhead expenses, fees, profit, and financial charges arising outside the Employer's country in connection with the Works.

15.6 Bidders may be required by the Employer to clarify their foreign currency requirements, and to substantiate that the amounts included in the unit rates and prices and shown in the Schedule of Payment Currencies are reasonable and responsive to ITB 15.3 above, in which case a detailed breakdown of its foreign currency requirements shall be provided by the Bidder.

15.7 Bidders should note that during the progress of the Works, the foreign currency requirements of the outstanding balance of the Contract Price may be adjusted by agreement between the Employer and the Contractor in order to reflect any changes in foreign currency requirements for the Contract, in accordance with Subclause 14.15 of the Conditions of Contract. Any such adjustment shall be effected by comparing the percentages quoted in the bid with the amounts already used in the Works and the Contractor's future needs for imported items.

16. Documents Comprising the Technical Proposal

16.1 The Bidder shall furnish a Technical Proposal including a statement of work methods, equipment, personnel, schedule, and any other information as stipulated in Section 4 (Bidding Forms), in sufficient detail to demonstrate the adequacy of the Bidders' proposal to meet the work requirements and the completion time.

17. Documents Establishing the Qualifications of the Bidder

17.1 To establish its qualifications to perform the Contract in accordance with Section 3 (Evaluation and Qualification Criteria) the Bidder shall provide the information requested in the corresponding information sheets included in Section 4 (Bidding Forms).

17.2 Domestic Bidders, individually or in Joint Ventures, applying for eligibility for domestic preference shall supply all information required to satisfy the criteria for eligibility as described in ITB 36.

18. Period of Validity of Bids

18.1 Bids shall remain valid for the period specified in the BDS after the bid submission deadline date prescribed by the Employer. A bid valid for a shorter period shall be rejected by the Employer as nonresponsive.

18.2 In exceptional circumstances, prior to the expiration of the bid validity period, the Employer may request Bidders to extend the period of validity of their Bids. The request and the responses shall be made in writing. If a bid security is requested in accordance with ITB 19, it shall also be extended 28 days beyond the deadline of the extended validity period. A Bidder may refuse the request without forfeiting its bid security. A Bidder granting the request shall not be required or permitted to modify its Bid.

19. Bid Security/Bid-Securing Declaration

19.1 Unless otherwise specified in the BDS, the Bidder shall furnish as part of its Bid, in original form, either a Bid-Securing Declaration or a bid security as specified in the BDS. In the case of a bid security, the amount and currency shall be as specified in the BDS.

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19.2 If a Bid-Securing Declaration is required pursuant to ITB 19.1, it shall use the form included in Section 4 (Bidding Forms). The Employer will declare a Bidder ineligible to be awarded a Contract for a specified period of time, as indicated in the BDS, if the Bid-Securing Declaration is executed.

19.3 If a bid security is specified pursuant to ITB 19.1, the bid security shall be, at the Bidder's option, in any of the following forms:

(a) an unconditional bank guarantee,

(b) an irrevocable letter of credit,

(c) a cashier's or certified check, or

(d) SWIFT message in the form of MT760.

all from a reputable source from an eligible country as described in Section 5 (Eligible Countries). In the case of a bank guarantee, the bid security shall be submitted either using the Bid Security Form included in Section 4 (Bidding Forms) or another form acceptable to the Employer. The form must include the complete name of the Bidder. The bid security shall be valid for 28 days beyond the original validity period of the bid, or beyond any period of extension if requested under ITB 18.2.

19.4 Unless otherwise specified in the BDS, any Bid not accompanied by a substantially compliant bid security or Bid-Securing Declaration, if one is required in accordance with ITB 19.1, shall be rejected by the Employer as nonresponsive.

19.5 If a bid security is specified pursuant to ITB 19.1, the bid security of unsuccessful Bidders shall be returned promptly upon the successful Bidder's furnishing of the performance security pursuant to ITB 45.

19.6 If a bid security is specified pursuant to ITB 19.1, the bid security of the successful Bidder shall be returned promptly once the successful Bidder has signed the Contract and furnished the required performance security.

19.7 The bid security may be forfeited or the Bid Securing Declaration executed, if

(a) notwithstanding ITB 24.3, a Bidder withdraws its bid during the period of bid validity specified by the Bidder on the Letters of Technical Bid and Price Bid, except as provided in ITB 18.2; or

(b) the successful Bidder fails to

(i) sign the Contract in accordance with ITB 44;

(ii) furnish a performance security in accordance with ITB 45;

(iii) accept the arithmetical correction of its Bid in accordance with ITB 34; or

(iv) furnish a domestic preference security, if so required.

19.8 If the bid security is required as per ITB 19.1, the bid security of a Joint Venture shall be in the name of the Joint Venture that submits the Bid. If the Joint Venture has not been legally constituted at the time of bidding, the bid security shall be in the name of any or all of the Joint Venture partners. If the Bid-Securing Declaration is required as per ITB 19.1, the Bid-Securing Declaration of a Joint Venture shall be in the name of the Joint Venture that submits the Bid. If the Joint Venture has

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not been legally constituted at the time of bidding, the Bid-Securing Declaration shall be in the names of all future partners as named in the letter of intent mentioned in ITB 4.1.

20. Format and Signing of Bid

20.1 The Bidder shall prepare one original set of the Technical Bid and one original set of the Price Bid comprising the Bid as described in ITB 11 and clearly mark it "ORIGINAL - TECHNICAL BID" and "ORIGINAL - PRICE BID." Alternative Bids, if permitted in accordance with ITB 13, shall be clearly marked "ALTERNATIVE." In addition, the Bidder shall submit copies of the Technical and Price Bids, in the number specified in the BDS, and clearly mark each of them "COPY." In the event of any discrepancy between the original and the copies, the original shall prevail.

20.2 The original and all copies of the Bid shall be typed or written in indelible ink and shall be signed by a person duly authorized to sign on behalf of the Bidder. This authorization shall consist of a written confirmation as specified in the BDS and shall be attached to the bid. The name and position held by each person signing the authorization must be typed or printed below the signature. If a Bidder submits a deficient authorization, the Bid shall not be rejected in the first instance. The Employer shall request the Bidder to submit an acceptable authorization within the number of days as specified in the BDS. Failure to provide an acceptable authorization within the period as stated in the Employer's request shall cause the rejection of the Bid. If either the Letter of Technical Bid or Letter of Price Bid or Bid-Securing Declaration (if applicable) is not signed, the Bid shall be rejected.

20.3 Any amendments such as interlineations, erasures, or overwriting shall be valid only if they are signed or initialed by the person signing the Bid.

D. Submission and Opening of Bids

21. Sealing and Marking of Bids

21.1 Bidders may always submit their Bids by mail or by hand. When so specified in the BDS, Bidders shall have the option of submitting their Bids electronically. Procedures for submission, sealing, and marking are as follows:

(a) Bidders submitting Bids by mail or by hand shall enclose the original of the Technical Bid, the original of the Price Bid, and each copy of the Technical Bid and each copy of the Price Bid, in separate sealed envelopes, duly marking the envelopes as "ORIGINAL - TECHNICAL BID," "ORIGINAL - PRICE BID," and "COPY NO… - TECHNICAL BID" and "COPY NO…. - PRICE BID." These envelopes, the first containing the originals and the others containing copies, shall then be enclosed in one single envelope per set. If permitted in accordance with ITB 13, alternative Bids shall be similarly sealed, marked and included in the sets. The rest of the procedure shall be in accordance with ITB 21.2 and ITB 21.5.

(b) Bidders submitting Bids electronically shall follow the electronic bid submission procedures specified in the BDS.

21.2 The inner and outer envelopes shall

(a) bear the name and address of the Bidder;

(b) be addressed to the Employer in accordance with BDS 22.1; and

(c) bear the specific identification of this bidding process indicated in the BDS 1.1.

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21.3 The outer envelopes and the inner envelopes containing the Technical Bid shall bear a warning not to open before the time and date for the opening of Technical Bid, in accordance with ITB 25.1.

21.4 The inner envelopes containing the Price Bid shall bear a warning not to open until advised by the Employer in accordance with ITB 25.7.

21.5 If all envelopes are not sealed and marked as required, the Employer will assume no responsibility for the misplacement or premature opening of the Bid.

22. Deadline for Submission of Bids

22.1 Bids must be received by the Employer at the address and no later than the date and time indicated in the BDS.

22.2 The Employer may, at its discretion, extend the deadline for the submission of Bids by amending the Bidding Document in accordance with ITB 8, in which case all rights and obligations of the Employer and Bidders previously subject to the deadline shall thereafter be subject to the deadline as extended.

23. Late Bids

23.1 The Employer shall not consider any Bid that arrives after the deadline for submission of bids, in accordance with ITB 22. Any bid received by the Employer after the deadline for submission of Bids shall be declared late, rejected, and returned unopened to the Bidder.

24. Withdrawal, Substitution, and Modification of Bids

24.1 A Bidder may withdraw, substitute, or modify its Bid – Technical or Price – after it has been submitted by sending a written notice, duly signed by an authorized representative, and shall include a copy of the authorization in accordance with ITB 20.2 (except for withdrawal notices, which do not require copies). The corresponding substitution or modification of the Bid must accompany the respective written notice. All notices must be

(a) prepared and submitted in accordance with ITB 20 and ITB 21 (except for withdrawal notices, which do not require copies), and in addition, the respective envelopes shall be clearly marked "WITHDRAWAL," "SUBSTITUTION," "MODIFICATION"; and

(b) received by the Employer no later than the deadline prescribed for submission of Bids, in accordance with ITB 22.

24.2 Bids requested to be withdrawn in accordance with ITB 24.1 shall be returned unopened to the Bidders.

24.3 No Bid may be withdrawn, substituted, or modified in the interval between the deadline for submission of Bids and the expiration of the period of bid validity specified by the Bidder on the Letters of Technical Bid and Price Bid or any extension thereof.

25. Bid Opening

25.1 The Employer shall open the Technical Bids in public at the address, on the date and time specified in the BDS in the presence of Bidders` designated representatives and anyone who chooses to attend. Any specific electronic bid opening procedures required if electronic bidding is permitted in accordance with ITB 21.1, shall be as specified in the BDS. The Price Bids will remain unopened and will be held in custody of the Employer until the specified time of their opening. If the Technical Bid and the Price Bid are submitted together in one envelope, the Employer may reject the entire Bid. Alternatively, the Price Bid may be immediately resealed for later evaluation.

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25.2 First, envelopes marked "WITHDRAWAL" shall be opened and read out and the envelope with the corresponding Bid shall not be opened, but returned to the Bidder. No bid withdrawal shall be permitted unless the corresponding withdrawal notice contains a valid authorization to request the withdrawal and is read out at bid opening.

25.3 Second, outer envelopes marked "SUBSTITUTION" shall be opened. The inner envelopes containing the Substitution Technical Bid and/or Substitution Price Bid shall be exchanged for the corresponding envelopes being substituted, which are to be returned to the Bidder unopened. Only the Substitution Technical Bid, if any, shall be opened, read out, and recorded. Substitution Price Bid will remain unopened in accordance with ITB 25.1. No envelope shall be substituted unless the corresponding substitution notice contains a valid authorization to request the substitution and is read out and recorded at bid opening.

25.4 Next, outer envelopes marked "MODIFICATION" shall be opened. No Technical Bid and/or Price Bid shall be modified unless the corresponding modification notice contains a valid authorization to request the modification and is read out and recorded at the opening of Technical Bids. Only the Technical Bids, both Original as well as Modification, are to be opened, read out, and recorded at the opening. Price Bids, both Original as well as Modification, will remain unopened in accordance with ITB 25.1.

25.5 All other envelopes holding the Technical Bids shall be opened one at a time, and the following read out and recorded:

(a) the name of the Bidder;

(b) whether there is a modification or substitution;

(c) the presence of a bid security or Bid-Securing Declaration, if required; and

(d) any other details as the Employer may consider appropriate.

Only Technical Bids and alternative Technical Bids read out and recorded at bid opening shall be considered for evaluation. Unless otherwise specified in the BDS, all pages of the Letter of Technical Bid are to be initialed by at least three representatives of the Employer attending bid opening. No Bid shall be rejected at the opening of Technical Bids except for late bids, in accordance with ITB 23.1.

25.6 The Employer shall prepare a record of the opening of Technical Bids that shall include, as a minimum, the name of the Bidder and whether there is a withdrawal, substitution, or modification; alternative proposals; and the presence or absence of a bid security or Bid-Securing Declaration, if one was required. The Bidders' representatives who are present shall be requested to sign the record. The omission of a Bidder's signature on the record shall not invalidate the contents and effect of the record. A copy of the record shall be distributed to all Bidders who submitted Bids on time, and posted online when electronic bidding is permitted.

25.7 At the end of the evaluation of the Technical Bids, the Employer will invite bidders who have submitted substantially responsive Technical Bids and who have been determined as being qualified for award to attend the opening of the Price Bids. The date, time, and location of the opening of Price Bids will be advised in writing by the Employer. Bidders shall be given reasonable notice of the opening of Price Bids.

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25.8 The Employer will notify Bidders in writing who have been rejected on the grounds of their Technical Bids being substantially nonresponsive to the requirements of the Bidding Document and return their Price Bids unopened.

25.9 The Employer shall conduct the opening of Price Bids of all Bidders who submitted substantially responsive Technical Bids, in the presence of Bidders` representatives who choose to attend at the address, on the date, and time specified by the Employer. The Bidder's representatives who are present shall be requested to sign a register evidencing their attendance.

25.10 All envelopes containing Price Bids shall be opened one at a time and the following read out and recorded:

(a) the name of the Bidder;

(b) whether there is a modification or substitution;

(c) the Bid Prices, including any discounts and alternative offers; and

(d) any other details as the Employer may consider appropriate.

Only Price Bids discounts, and alternative offers read out and recorded during the opening of Price Bids shall be considered for evaluation. Unless otherwise specified in the BDS, all pages of the Letter of Price Bid and Bill of Quantities are to be initialed by at least three representatives of the Employer attending bid opening. No Bid shall be rejected at the opening of Price Bids.

25.11 The Employer shall prepare a record of the opening of Price Bids that shall include, as a minimum, the name of the Bidder, the Bid Price (per lot if applicable), any discounts, and alternative offers. The Bidders' representatives who are present shall be requested to sign the record. The omission of a Bidder's signature on the record shall not invalidate the contents and effect of the record. A copy of the record shall be distributed to all Bidders who submitted Bids on time, and posted online when electronic bidding is permitted.

E. Evaluation and Comparison of Bids

26. Confidentiality

26.1 Information relating to the examination, evaluation, comparison, and postqualification of Bids and recommendation of contract award, shall not be disclosed to Bidders or any other persons not officially concerned with such process until information on the Contract award is communicated to all Bidders.

26.2 Any attempt by a Bidder to influence the Employer in the evaluation of the Bids or Contract award decisions may result in the rejection of its Bid.

26.3 Notwithstanding ITB 26.2, from the time of bid opening to the time of Contract award, if any Bidder wishes to contact the Employer on any matter related to the bidding process, it may do so in writing.

27. Clarification of Bids

27.1 To assist in the examination, evaluation, and comparison of the Technical and Price Bids, the Employer may, at its discretion, ask any Bidder for a clarification of its Bid. Any clarification submitted by a Bidder that is not in response to a request by the Employer shall not be considered. The Employer's request for clarification and the response

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shall be in writing. No change in the substance of the Technical Bid or prices in the Price Bid shall be sought, offered, or permitted, except to confirm the correction of arithmetic errors discovered by the Employer in the evaluation of the Price Bids, in accordance with ITB 34.

27.2 If a Bidder does not provide clarifications of its Bid by the date and time set in the Employer's request for clarification, its Bid may be rejected.

28. Deviations, Reservations, and Omissions

28.1 During the evaluation of Bids, the following definitions apply:

(a) "Deviation" is a departure from the requirements specified in the Bidding Document;

(b) "Reservation" is the setting of limiting conditions or withholding from complete acceptance of the requirements specified in the Bidding Document; and

(c) "Omission" is the failure to submit part or all of the information or documentation required in the Bidding Document.

29. Examination of Technical Bids

29.1 The Employer shall examine the Technical Bid to confirm that all documents and technical documentation requested in ITB 11.2 have been provided, and to determine the completeness of each document submitted.

29.2 The Employer shall confirm that the following documents and information have been provided in the Technical Bid. If any of these documents or information is missing, the offer shall be rejected.

(a) Letter of Technical Bid;

(b) written confirmation of authorization to commit the Bidder;

(c) Bid Security or Bid-Securing Declaration, if applicable; and

(d) Technical Proposal in accordance with ITB 16.

30. Responsiveness of Technical Bid

30.1 The Employer's determination of a Bid's responsiveness is to be based on the contents of the bid itself, as defined in ITB11.

30.2 A substantially responsive Technical Bid is one that meets the requirements of the Bidding Document without material deviation, reservation, or omission. A material deviation, reservation, or omission is one that,

(a) if accepted, would:

(i) affect in any substantial way the scope, quality, or performance of the Works specified in the Contract; or

(ii) limit in any substantial way, inconsistent with the Bidding Document, the Employer's rights or the Bidder's obligations under the proposed Contract; or

(b) if rectified, would unfairly affect the competitive position of other Bidders presenting substantially responsive Bids.

30.3 The Employer shall examine the technical aspects of the Bid submitted in accordance with ITB 16, Technical Proposal, in particular, to confirm that all requirements of Section 6 (Employer's Requirements) have been met without any material deviation, reservation, or omission.

30.4 If a Bid is not substantially responsive to the requirements of the Bidding Document, it shall be rejected by the Employer and may not

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subsequently be made responsive by correction of the material deviation, reservation, or omission.

31. Nonmaterial Nonconformities

31.1 Provided that a Bid is substantially responsive, the Employer may waive any nonconformities in the Bid that do not constitute a material deviation, reservation, or omission.

31.2 Provided that a Technical Bid is substantially responsive, the Employer may request that the Bidder submit the necessary information or documentation, within a reasonable period of time, to rectify nonmaterial nonconformities in the Technical Bid related to documentation requirements. Requesting information or documentation on such nonconformities shall not be related to any aspect of the Price Bid. Failure of the Bidder to comply with the request may result in the rejection of its Bid.

31.3 Provided that a Technical Bid is substantially responsive, the Employer shall rectify quantifiable nonmaterial nonconformities related to the Bid Price. To this effect, the Bid Price shall be adjusted, for comparison purposes only, to reflect the price of a missing or non-conforming item or component. The adjustment shall be made using the method indicated in Section 3 (Evaluation and Qualification Criteria).

32. Qualification of the Bidder

32.1 The Employer shall determine to its satisfaction during the evaluation of Technical Bids whether Bidders meet the qualifying criteria specified in Section 3 (Evaluation and Qualification Criteria).

32.2 The determination shall be based upon an examination of the documentary evidence of the Bidder's qualifications submitted by the Bidder, pursuant to ITB 17.1. Unless permitted in the BDS, the determination shall not take into consideration the qualifications of other firms such as the Bidder's subsidiaries, parent entities, affiliates, Subcontractors (other than Specialist Subcontractors if permitted in ITB 33.2 of the Bidding document), or any other firm(s) different from the Bidder.

32.3 An affirmative determination shall be a prerequisite for the opening and evaluation of a Bidder's Price Bid. The Employer reserves the right to reject the bid of any bidder found to be in circumstances described in GCC 15.2(e). A negative determination shall result into the disqualification of the Bid, in which event the Employer shall return the unopened Price Bid to the Bidder.

33. Subcontractors

33.1 Unless otherwise stated in the BDS, the Employer does not intend for the contractor to execute any specific elements of the Works through nominated subcontractors.

33.2 If subcontractors are proposed for any of the key activities listed in Section 3 (Evaluation and Qualification) Criteria 2.4.2, they shall be considered as "Specialist Subcontractors" and shall meet qualification requirements for the relevant key activities.

34. Correction of Arithmetical Errors

34.1 During the evaluation of Price Bids, the Employer shall correct arithmetical errors on the following basis:

(a) If there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail and the total price shall be corrected, unless in the opinion of the Employer there is an obvious misplacement of the

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decimal point in the unit price, in which case the total price as quoted shall govern and the unit price shall be corrected.

(b) If there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected.

(c) If there is a discrepancy between the bid price in the Summary of Bill of Quantities and the bid amount in item (c) of the Letter of Price Bid, the bid price in the Summary of Bill of Quantities will prevail and the bid amount in item (c) of the Letter of Price Bid will be corrected.

(d) If there is a discrepancy between words and figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject to (a), (b) and (c) above.

34.2 If the Bidder that submitted the lowest evaluated bid does not accept the correction of errors, its Bid shall be disqualified and its bid security may be forfeited or its Bid-Securing Declaration executed.

35. Conversion to Single Currency

35.1 For evaluation and comparison purposes, the currency(ies) of the Bid shall be converted into a single currency as specified in the BDS.

36. Domestic Preference

36.1 Unless otherwise specified in the BDS, domestic preference shall not apply.

37. Evaluation and Comparison of Price Bids

37.1 The Employer shall use the criteria and methodologies listed in this Clause. No other evaluation criteria or methodologies shall be permitted.

37.2 To evaluate the Price Bid, the Employer shall consider the following:

(a) the bid price, excluding Provisional Sums and the provision, if any, for contingencies in the Summary Bill of Quantities, but including Daywork items, where priced competitively;

(b) price adjustment for correction of arithmetic errors in accordance with ITB 34.1;

(c) price adjustment due to discounts offered in accordance with ITB 14.4;

(d) converting the amount resulting from applying (a) to (c) above, if relevant, to a single currency in accordance with ITB 35;

(e) adjustment for nonmaterial nonconformities in accordance with ITB 31.3;

(f) assessment whether the bid is abnormally low in accordance with ITB 38; and

(g) application of all the evaluation factors indicated in Section 3 (Evaluation and Qualification Criteria).

37.3 The estimated effect of the price adjustment provisions of the Conditions of Contract, applied over the period of execution of the Contract, shall not be taken into account in bid evaluation.

37.4 If this Bidding Document allows Bidders to quote separate prices for different contracts, and the award to a single Bidder of multiple contracts, the methodology to determine the lowest evaluated price of the contract combinations, including any discounts offered in the Letter of Price Bid, is specified in Section 3 (Evaluation and Qualification Criteria).

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37.5 The Employer shall compare all substantially responsive Bids to determine the lowest evaluated Bid price, in accordance with ITB 37.2.

38. Abnormally Low bids

38.1 An abnormally low bid is one where the bid price, in combination with other elements of the bid, appears to be so low that it raises concerns as to the capability of the Bidder to perform the contract for the offered bid price.

38.2 When the offered bid price appears to be abnormally low, the Employer shall undertake a three-step review process as follows:

(a) identify abnormally low costs and unit rates by comparing them with the engineer's estimates, other substantially responsive bids, or recently awarded similar contracts;

(b) clarify and analyze the bidder's resource inputs and pricing, including overheads, contingencies and profit margins; and

(c) decide whether to accept or reject the bid.

38.3 With regard to ITB 38.2 (b) above, the Employer will seek a written explanation from the bidder of the reasons for the offered bid price, including a detailed analysis of costs and unit prices, by reference to the scope, proposed methodology, schedule, and allocation of risks and responsibilities. This may also include information regarding the economy of the manufacturing process; the services to be provided, or the construction method to be used; the technical solutions to be adopted; and any exceptionally favorable conditions available to the bidder for the works, equipment or services proposed.

38.4 After examining the explanation given and the detailed price analyses presented by the bidder, the Employer may:

(a) accept the bid, if the evidence provided satisfactorily accounts for the low bid price and costs, in which case the bid is not considered abnormally low;

(b) accept the bid, but require that the amount of the performance security be increased at the expense of the bidder to a level sufficient to protect the Employer against financial loss. The amount of the performance security shall generally be not more than 20% of the contract price; or

(c) reject the bid if the evidence provided does not satisfactorily account for the low bid price, and make a similar determination for the next ranked bid, if required.

39. Unbalanced or Front-Loaded Bids

39.1 If the Bid, which results in the lowest evaluated Bid Price, is seriously unbalanced or front-loaded in the opinion of the Employer, the Employer may require the Bidder to produce detailed price analyses for any or all items of the Bill of Quantities, to demonstrate the internal consistency of those prices with the construction methods and schedule proposed, as well as the pricing and sources of materials, equipment and labor.

39.2 After the evaluation of the information and detailed price analyses presented by the Bidder, the Employer may as appropriate:

(a) accept the Bid; or

(b) accept the Bid, but require that the total amount of the Performance Security be increased at the expense of the Bidder to a level sufficient to protect the Employer against financial loss in the event of default of the successful Bidder under the Contract subject to ITB 45.2; or

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(c) reject the Bid and make a similar determination for the next ranked bid.

40. Employer's Right to Accept Any Bid, and to Reject Any or All Bids

40.1 The Employer reserves the right to accept or reject any Bid, and to annul the bidding process and reject all Bids at any time prior to contract award, without thereby incurring any liability to Bidders. In case of annulment, all Bids submitted and specifically, bid securities, shall be promptly returned to the Bidders.

41. Notice of Intention for Award of Contract

41.1 If Standstill provisions apply as specified in the BDS, the standstill period shall be defined in the BDS to specify the duration subsequent to notification of intention for award of contract (before making the actual contract award) within which any unsuccessful bidder can challenge the proposed award.

F. Award of Contract

42. Award Criteria

42.1 The Employer shall award the Contract to the Bidder whose offer has been determined in line with ITB 37 to ITB 39 above to be the lowest evaluated Bid and is substantially responsive to the Bidding Document, provided further that the Bidder is determined to be qualified to perform the Contract satisfactorily.

43. Notification of Award

43.1 Prior to the expiration of the period of bid validity and upon expiry of the standstill period specified in ITB 41.1, or upon satisfactory resolution of a complaint filed within standstill period, if applicable, the Employer shall transmit the Notification of Award using the form included in Section 9 (Contract Forms) to the successful Bidder, in writing, that its Bid has been accepted.

43.2 Unless standstill period applies, upon notification of award, unsuccessful Bidders may request in writing to the Employer for a debriefing seeking explanations on the grounds on which their Bids were not selected. The Employer shall promptly respond in writing and/or in a debriefing meeting to any unsuccessful Bidder who, after publication of contract award, requests a debriefing.

43.3 Until a formal contract is prepared and executed, the notification of award shall constitute a binding Contract.

43.4 Within 2 weeks of the award of contract or expiry of the standstill period, where such period applies, or, if a complaint has been filed within the standstill period, upon receipt of ADB's confirmation of satisfactory resolution of the complaint, the borrower shall publish in an English language newspaper or widely known and freely accessible website the results identifying the bid and lot or package numbers, as applicable and the following information:

(a) name of each Bidder who submitted a Bid;

(b) bid prices as read out at bid opening;

(c) name and evaluated prices of each Bid that was evaluated;

(d) name of Bidders whose bids were rejected and the reasons for their rejection; and

(e) name of the winning Bidder, and the price it offered, as well as the duration and summary scope of the contract awarded.

44. Signing of Contract

44.1 Promptly after notification, the Employer shall send the successful Bidder the Contract Agreement.

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44.2 Within 28 days of receipt of the Contract Agreement, the successful Bidder shall sign, date, and return it to the Employer.

45. Performance Security

45.1 Within 28 days of the receipt of notification of award from the Employer, the successful Bidder shall furnish the performance security in accordance with the conditions of contract, subject to ITB 38 and ITB 39, using for that purpose the Performance Security Form included in Section 9 (Contract Forms), or another form acceptable to the Employer. If the institution issuing the performance security is located outside the country of the employer, it shall have a correspondent financial institution located in the country of the employer to make it enforceable.

45.2 Failure of the successful Bidder to submit the abovementioned Performance Security or to sign the Contract Agreement shall constitute sufficient grounds for the annulment of the award and forfeiture of the bid security or execution of the Bid-Securing Declaration. In that event, the Employer may award the Contract to the next lowest evaluated Bidder whose offer is substantially responsive and is determined by the Employer to be qualified to perform the Contract satisfactorily.

45.3 The above provision shall also apply to the furnishing of a domestic preference security if so required.

46. Bidding-Related Complaints

46.1 The procedures for dealing with Bidding-Related Complaints arising out of this bidding process are specified in the BDS.

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Section 2 - Bid Data Sheet

A. General

ITB 1.1	The number of the Invitation for Bids (IFB) is: SMPHIP/2019-01
ITB 1.1	**The Employer is:** Ministry of Physical Infrastructure and Transport, Department of Roads, Project Directorate (ADB), Kathmandu, Nepal **The Authorized Representative is**: Project Director The Project Directorate (ADB) **The Employer's Site Representative is**: Project Manager **Mugling-Anbukhaireni-Pokhara Road**
ITB 1.1	The name of the open competitive bidding (OCB) is Upgrading of Muglin-Pokhara Road (Section 01) from Km 8+250 to Km 49+700 with two phases viz. Phase 1: Upgrading Works - Upgrading from 2- lanes to 4-lanes and service lanes, structures, Bridges, etc. including Defect Notification Period and Phase 2: Performance Based Maintenance Works - PBM maintenance works consisting of all activities to be carried out to achieve and keep the road assets as defined in the Specifications on that upgraded road section. The identification number of the OCB is: **SMPHIP/OCB/MAP/02** The number and identification of lots comprising this OCB are "2(two)" with the following Contract identification numbers: Contract ID No.: SMPHIP/OCB/MAP/01 Contract ID No.: SMPHIP/OCB/MAP/02
ITB 1.1	The Works under the Contract will consist of: **Phase 1: Upgrading Works** Upgrading of existing road from 2-Lanes to 4 Lanes and Service Lanes, Structures, Bridges, etc. including Defect Notification Period. **Phase 2: Performance Based Maintenance Works** 1.Maintenance Works consisting of all activities to be carried out by the Contractor to achieve and keep the road asset as defined in the Performance Based Maintenance Specifications, and all activities related to their management. 2.Emergency Works consisting of activities needed to reinstate any road assets which have been abnormally damaged as a result of natural or manmade phenomena such as storms, flooding, earthquakes, major accidents, etc. and which are not covered under monthly lump sum rates of maintenance works.
ITB 2.1	The Borrower is: **Nepal**
ITB 2.1	The name of the Project is **SASEC Mugling Pokhara Highway Improvement Phase I Project (SMPHIP)**

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B. Contents of Bidding Documents

ITB 7.1	For **clarification purposes** only, the Employer's address is: Attention : **The Project Director** Project Directorate (ADB), Department of Roads Bishalnagar, Kathmandu Tel No.: +977 1 4437492/4437493 Fax. No.: +977 1 4437488 E-mail: pdadb@wlink.com.np
ITB 7.4	A Pre-Bid meeting shall take place. It will be at the following date, time and place: **Date** : 24 November 2019 **Time** : 13:00 Hours (Nepal Standard Time) **Place: Project** Directorate (ADB). Bishalnagar, Kathmandu A site visit conducted by the Employer **will not** be organized.

C. Preparation of Bids

ITB 10.1	The language of the Bid Is **English.**
ITB 11.2 (g)	The Bidder shall submit with its Technical Bid the following additional documents: ***In case of Foreign Bidder in Single entity/joint Venture:*** *The foreign bidders shall submit all notarized document and shall be in English. the notarial certificate shall be authenticated by the Nepal based Embassy of the bidder's country or the Embassy of Nepal (consular office)of the bidder's home country.*
ITB 11.3 (d)	The Bidder shall submit with its Price Bid the following additional documents: **None**
ITB 12.1	The units and rates in figures entered into the Bill of Quantities and Day work Schedule should be typewritten or if written by hand, must be in print form. Bill of Quantities and Day work Schedule not presented accordingly may be considered nonresponsive.
ITB 13.1	Alternative Bids **shall not** be permitted.
ITB 13.2	Alternative times for completion **shall not** be permitted.
ITB 13.4	Alternative technical solutions shall be permitted for the following parts of the Works: **Not Applicable**
ITB 14.5	The prices quoted by the Bidder **shall** be adjustable "The formula for adjusting the prices and explanatory details are specified in the GCC Clause 13.8. Bidder shall fill out the Tables of Adjustment Data in Section 4 (Bidding Forms)"
ITB 15.1	The unit rates and the prices shall be quoted by the Bidder entirely in: **Nepalese Rupees (NRs.)**
ITB 15.4	The rates of exchange shall be the selling rates 28 days prior to the deadline for submission of bids published by: **Nepal Rastra Bank, Kathmandu, Nepal**
ITB 18.1	The bid validity period shall be **150 days.**

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ITB 19.1	The Bidder shall furnish a bid security in the amount of **NRs. 188 Million** or its equivalent in freely convertible foreign currency.
ITB 19.2	The ineligibility period will be: **Not Applicable**
ITB 19.4	Subject to the succeeding, any bid not accompanied by an irrevocable and callable bid security shall be rejected by the Employer as nonresponsive. However, if a bidder submits a bid security that (i) deviates in form, amount, and/or period of validity, or (ii) does not provide sufficient identification of the Bidder (including, without limitation, failure to indicate the name of the Joint Venture or, where the Joint Venture has not yet been constituted, the names of the all future Joint Venture Partners), the Employer shall request the Bidder to submit a compliant bid security within **Fourteen (14) days** of receiving such a request. Failure to provide a compliant bid security within the prescribed period of receiving such a request shall cause the rejection of the Bid.
ITB 20.1	In addition to the original of the bid, the number of copies is: One (1) In addition to this, the bidders are requested to submit a soft copy (CD) of duly filled BOQ to facilitate the evaluation process. However, the soft copy of BOQ shall not form part of the bid. In case of any discrepancy between the Hard Copy and the Soft Copy of BOQ, the Hard Copy shall prevail.
ITB 20.2	The written confirmation of authorization to sign on behalf of the Bidder shall consist of: An organizational document, board resolution or its equivalent, or power of attorney specifying the representative's authority to sign the Bid on behalf of, and to legally bind, the Bidder. If the Bidder is an intended or an existing joint venture, the power of attorney should be signed by all partners and specify the authority of the named representative of the joint venture to sign on behalf of, and legally bind, the intended or existing joint venture. If the joint venture has not yet been formed, also include evidence from all proposed joint venture partners of their intent to enter into a joint venture in the event of a contract award in accordance with ITB 11.4.
ITB 20.2	The Bidder shall submit an acceptable authorization within **Fourteen (14) days.**

D. Submission and Opening of Bids

ITB 21.1	Bidders **shall not** have the option of submitting their bids electronically.
ITB 22.1	For **bid submission purposes** only, the Employer's address is: Project Directorate (ADB) Department of Roads Bishalnagar, Kathmandu Attention: The Project Director **The deadline for bid submission is:** **Date**: 19 December 2019 **Time:** 12:00 hours (Nepal Standard Time)
ITB 25.1	The opening of the Technical Bid shall take place at: Project Directorate (ADB) Department of Roads Bishalnagar, Kathmandu **Date**: ***19 December 2019***

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	Time: Immediately after the deadline for submission of bids **Electronic bid opening procedure shall be as follows: Not Applicable"**
ITB 25.5	The letter of Technical Bid shall be initialed by **Three (3) representatives** of the Employer attending Bid opening.
ITB 25.10	The letter of Price Bid and Bill of Quantities shall be initialed by **Three (3)** representatives of the Employer attending Bid opening.

E. Evaluation and Comparison of Bids

ITB 32.2	Qualifications of other firms such as the Bidder's subsidiaries, parent entities, affiliates, subcontractors **shall not** be permitted except Specialist Subcontractor in Seciton 3, Evaluation and Qualification Criteria 2.4.2, Construction Experience in Key Activities.
ITB 33.1	The Employer **does not intend** for the contractor to execute any specific elements of the Works through nominated subcontractors.
ITB 33.2	Bidders may propose Subcontracting up to 40% of the Accepted Contract Amount. The proposed Subcontractor shall meet, on a pro rata basis, the following criteria as specified in Section 3 Evaluation and Qualification Criteria: (i) Average Annual Construction Turnover; (ii) Financial Resources; (iii) Construction Experience in Contract of Similar Size and Nature that is similar to the proposed subcontract;
ITB 35.1	The currency that shall be used for bid evaluation and comparison purposes to convert all bid prices expressed in various currencies into a single currency is: **Nepalese Rupees** The source of the selling exchange rate shall be: **Nepal Rastra Bank, Kathmandu, Nepal** The date for the selling exchange rate shall be: **28 days prior to the deadline for submission of bids.**
ITB 36.1	Domestic preference **shall** apply. **The application methodology shall be as stipulated in Section 3 (Evaluation and Qualification Criteria).**
ITB 41.1	The Standstill period shall apply. The duration of standstill period will be Seven (7) days from the date of notice of Intention for award of contract. The Employer shall, at the start of the Standstill period, notify in writing each bidder that submitted a bid, of its intention to award a contract to the successful bidder at the end of Standstill period. The notification (using the form included in Section 9 (Contract Forms) shall include the following information: (a) the name of each Bidder who submitted the Bid; (b) the bid prices as read out at bid opening; (c) the name and evaluated prices of each bid that was evaluated; (d) the name of bidders whose bids were rejected and the reasons for their rejection; (e) the name of the winning bidder, and the price it offered , as well as the duration and summary scope of the contract awarded; and (f) a statement of the reason(s) the bid of the unsuccessful bidder to whom the notification is addressed was unsuccessful, unless the price information under (e) of this paragraph already reveals the reason.

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G. Award of Contracts

ITB 46.1	The procedures for Bidding-related Complaints are referenced in the "**Procurement Regulations for ADB Borrowers (Appendix 7).**" The Bidder should submit its complaint following these procedures, in writing, to: For the attention: **The Project Director** Title/position: Project Directorate (ADB), Employer: Project Directorate (ADB), Department of Roads Bishalnagar, Kathmandu **Email address: pdadb@wlink.com.np** Fax number: +977 1 4437488

For Reference Only

Section 3 - Evaluation and Qualification Criteria

- Without Prequalification -

This Section contains all the criteria that the Employer shall use to evaluate bids and qualify Bidders. In accordance with ITB 32 and ITB 36, no other methods, criteria and factors shall be used. The Bidder shall provide all the information requested in the forms included in Section 4 (Bidding Forms).

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1. Evaluation

In addition to the criteria listed in ITB 37.2 (a) – (f), other relevant factors are as follows:

1.1 Adequacy of Technical Proposal

Evaluation of the Bidder's Technical Proposal will include an assessment of the Bidder's technical capacity to mobilize key equipment and personnel for the contract consistent with its proposal regarding work methods, scheduling, and material sourcing in sufficient detail and fully in accordance with the requirements stipulated in Section 6 (Employer's Requirements).

Non-compliance with equipment and personnel requirements described in Section6 (Employer's Requirements) shall not normally be a ground for bid rejection and such non-compliance will be subject to clarification during bid evaluation and rectification prior to contract award.

1.2 Completion Time

An alternative Completion Time, if permitted under ITB 13.2, will be evaluated as follows:

Not Applicable

1.3 Technical Alternatives

Technical alternatives, if permitted under ITB 13.4, will be evaluated as follows:

Not Applicable

1.4 Specialist Subcontractors

Only the specific experience of Specialist Subcontractors for key activities specified in criterion 2.4.2 Construction Experience in Key Activities will be considered. The experience in contacts of similar size and nature and financial resources of the Specialist Subcontractors shall not be added to those of the Bidder for purposes of qualification of the Bidder.

1.5 Quantifiable Nonconformities and Omissions

Subject to ITB 14.2 and ITB 37.2, the evaluated cost of quantifiable nonconformities including omissions, is determined as follows:

"Pursuant to ITB 31.3, the cost of all quantifiable nonmaterial nonconformities shall be evaluated, including omissions in Daywork where competitively priced but excluding omission of prices in the Bill of Quantities. The Employer will make its own assessment of the cost of any nonmaterial nonconformities and omissions for the purpose of ensuring fair comparison of Bids."

1.6 Domestic Preference

If a margin of preference is provided for under ITB 36.1, the following procedure shall apply:

1.6.1 In comparing domestic bids with foreign bids, a margin of preference will be granted to eligible domestic contractors, as defined below, in accordance with the following provisions:

(a) For application of domestic preference, all responsive bids will first be classified under the following two categories:

(i) Category I: Bids offered by Domestic Contractors and Joint Ventures eligible for the preference in accordance with the criteria set forth in Subclause 1.6.2 below; and

(ii) Category II: Bids offered by other Contractors.

The Employer will review each bid to confirm the appropriateness of, or to modify as necessary, the category to which the Bid was assigned by the Bidder in preparing it.

(b) The lowest evaluated Bid of each category will then be determined by comparing all

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evaluated Bids in each category among themselves.

(c) Such lowest evaluated Bids will next be compared with each other and if, as a result of this comparison, a Bid from Category I is found to be the lowest, it will be selected for the award of contract.

(d) If, however, as a result of the comparison under (c) above, the lowest Bid is found to be from Category II, it will be further compared with the lowest evaluated Bid from Category I. For the purpose of this further comparison only an upward adjustment will be made to the lowest evaluated bid price of Category II by adding an amount equal to seven and one-half per cent (7½%) of the bid price. If, after such comparison, the Category I Bid is determined to be the lowest, it will be selected for the award of contract; if not, the lowest evaluated Bid from Category II will be selected.

1.6.2 Domestic Contractors and Joint Ventures between a Domestic Contractor(s) and its foreign partner(s) shall meet the following minimum criteria for eligibility of the Domestic Preference Scheme:

(a) Domestic Contractor(s):

(i) firms are incorporated or constituted in Nepal; and "For the purpose of defining the domestic preference , a foreign firm having its branch office or liaison office registered in Nepal shall not be considered as incorporated in Nepal."

(ii) firms have majority ownership by nationals of Nepal; and

(iii) firms will not subcontract to foreign contractors more than forty percent (40%) of the Accepted Contract Amount.

(b) A Joint Venture between a Domestic Contractor(s) and its foreign partner(s) will be eligible for the preference only if:

(i) the Domestic Partner(s) are individually eligible for the preference according to the criteria stated above;

(ii) the Domestic Partner(s) would not qualify for the Works on technical or financial grounds without the foreign participation; and

(iii) the Domestic Partner(s) will, under the arrangements proposed, carry out at least fifty percent (50%) of the Works measured in terms of value.

1.6.3 Bidders applying for the preference shall provide all evidence, including details of ownership, necessary to prove that they are qualified for the preference according to the criteria set forth in paragraph 1.6.2 above.

1.6.4 If the Contract is awarded to a Bidder who has received the preference pursuant to the foregoing provisions, such Contractor shall not subcontract to Foreign Contractors more than forty percent (40%) of the Accepted Contract Amount.

1.6.5 A Joint Venture that is awarded the Contract as a result of the application of the above domestic preference provisions, shall furnish the Employer, together with the Performance Security, a "Domestic Preference Security" to guarantee that the profit and loss distribution and work-sharing arrangements with which the joint venture satisfied the criteria of Subclause 1.6.2 (b) above will not be modified throughout the execution of the Contract. The domestic preference security shall be in the form of an unconditional on-demand bank guarantee or standby letter of credit acceptable to the Employer, for an amount in a convertible currency equivalent to the difference between the Joint Venture's bid price and the bid price of the lowest foreign bid. The domestic preference security shall be issued either (a) by a bank located in the country of the Employer, or (b) directly by a foreign bank acceptable to Employer. The domestic preference security shall be valid until the Contractor has substantially completed the Works and a Taking-Over Certificate has been issued by the Engineer in accordance with the provisions of GCC 10 and such security shall be returned to the Contractor together with the Taking - Over Certificate.

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1.7 Other Criteria

Add any other relevant criteria to take into account in bid evaluation and specify the evaluation methodologies:

Not Applicable

1.8 Multiple Contracts

Works are grouped in multiple contracts and pursuant to ITB 37.4, the Employer shall evaluate and compare Bids on the basis of a contract, or a combination of contracts, or as a total of contracts in order to arrive at the least-cost combination for the Employer by taking into account discounts offered by Bidders in case of award of multiple contracts.

If a Bidder as defined in ITB 4.1 submits several successful (lowest evaluated substantially responsive) bids, the evaluation will also include an assessment of the Bidder's capacity to meet the following aggregated requirements as presented in the bid:

- Average annual construction turnover,
- Financial resources,
- Equipment to be allocated, and
- Personnel to be fielded.

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2. Qualification

2.1 Eligibility

Criteria	Compliance Requirements				Documents
Requirement	Single Entity	Joint Venture			Submission Requirements
		All Partners Combined	Each Partner	One Partner	
2.1.1 Nationality					
Nationality in accordance with ITB Sub clause 4.2.	must meet requirement	must meet requirement	must meet requirement	not applicable	Forms ELI - 1; ELI - 2 with attachments
2.1.2 Conflict of Interest					
No conflicts of interest in accordance with ITB Sub clause 4.3.	must meet requirement	must meet requirement	must meet requirement	not applicable	Letter of Technical Bid
2.1.3 ADB Eligibility					
Not having been declared ineligible by ADB, as described in ITB Sub clause 4.4.	must meet requirement	must meet requirement	must meet requirement	not applicable	Letter of Technical Bid
2.1.4 Government-Owned Entity					
Bidder required to meet conditions of ITB Sub clause 4.5.	must meet requirement	must meet requirement	must meet requirement	not applicable	Forms ELI - 1; ELI - 2 with attachments
2.1.5 United Nations Eligibility					
Not having been excluded by an act of compliance with a United Nations Security Council resolution in accordance with ITB Sub clause 4.8	must meet requirement	must meet requirement	must meet requirement	not applicable	Letter of Technical Bid

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2.2 Historical Contract Non-Performance

2.2.1 History of Non-Performing Contracts

Criteria	Compliance Requirements				Documents
Requirement	Single Entity	Joint Venture			Submission Requirements
		All Partners Combined	Each Partner	One Partner	
Non-performance of a contract [a] did not occur as a result of contractor default since 1st January 2013.	Must meet requirement	Must meet requirement	Must meet requirement [b]	N/A	Form CON-1

2.2.2 Suspension Based on Execution of Bid-Securing Declaration

Criteria	Compliance Requirements				Documents
Requirement	Single Entity	Joint Venture			Submission Requirements
		All Partners Combined	Each Partner	One Partner	
Not under suspension based on execution of a Bid-Securing Declaration pursuant to ITB 4.6.	must meet requirement	must meet requirement	must meet requirement	not applicable	Letter of Technical Bid

2.2.3 Pending Litigation and Arbitration

Pending litigation and arbitration criterion **shall not** apply.

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[a] *Nonperformance, as decided by the Employer, shall include all contracts where (i) nonperformance was not challenged by the contractor, including through referral to the dispute resolution mechanism under the respective contract; and (ii) contracts that were so challenged but fully settled against the contractor. Nonperformance shall not include contracts where the Employer's decision was overruled by the dispute resolution mechanism. Nonperformance must be based on all information on fully settled disputes or litigation, i.e. dispute or litigation that has been resolved in accordance with the dispute resolution mechanism under the respective contract and where all appeal instances available to the Bidder have been exhausted.*

[b] *This requirement also applies to contracts executed by the Bidder as Joint Venture member.*

2.3 Financial Situation

2.3.1 Historical Financial Performance

Criteria	Compliance Requirements				Documents
Requirement	Single Entity	Joint Venture			Submission Requirements
		All Partners Combined	Each Partner	One Partner	
Submission of audited financial statements or, if not required by the law of the Bidder's country, other financial statements acceptable to the Employer, for the last **Five (5) years** to demonstrate the current soundness of the Bidder's financial position. As a minimum, (i) the Bidder's net worth for the last year calculated as the difference between total assets and total liabilities should be positive, and (ii) the Bidder's working capital for the last year calculated as the difference between current assets and current liabilities should be positive.	must meet requirement	not applicable	must meet requirement	not applicable	Form FIN - 1 with attachments

For Reference Only

2.3.2 Average Annual Construction Turnover

Criteria	Compliance Requirements				Documents
Requirement	Single Entity	Joint Venture			Submission Requirements
		All Partners Combined	Each Partner	One Partner	
Minimum average annual construction turnover of **NRs. 5,700 Million** calculated as total certified payments received for contracts in progress or completed, within the last **Five (5) years.**	must meet requirement	must meet requirement	must meet 25% of the requirement	must meet 40% of the requirement	Form FIN - 2

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2.3.3 Financial Resources

Criteria	Compliance Requirements				Documents
Requirement	Single Entity	Joint Venture			Submission Requirements
		All Partners Combined	Each Partner	One Partner	
For Single Entities: The Bidder must demonstrate that its financial resources defined in FIN - 3, less its financial obligations for its current contract commitments defined in FIN - 4, meet or exceed the total requirement for the Subject Contract of NRs. **953 Million**	must meet requirement	not applicable	not applicable	not applicable	Form FIN – 3 and Form FIN – 4
For Joint Ventures: (1) One partner must demonstrate that its financial resources defined in FIN - 3, less its financial obligations for its own current contract commitments defined in FIN - 4, meet or exceed its required share of NRs. **382 Million.** From the total requirement for the Subject Contract. AND	not applicable	not applicable	not applicable	must meet requirement	Form FIN – 3 and Form FIN – 4
(2) Each partner must demonstrate that its financial resources defined in FIN - 3, less its financial obligations for its own current contract commitments defined in FIN - 4, meet or exceed its required share of NRs. **239 Million** from the total requirement for the Subject Contract. AND	not applicable	not applicable	must meet requirement	not applicable	Form FIN – 3 and Form FIN – 4
(3) The joint venture must demonstrate that the combined financial resources of all partners defined in FIN - 3, less all the partners' total financial obligations for the current contract commitments defined in FIN - 4, meet or exceed the total requirement for the Subject Contract of NRs. **953 Million**	not applicable	must meet requirement	not applicable	not applicable	Form FIN – 3 and Form FIN – 4

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2.4 Construction Experience

2.4.1 Contracts of Similar Size and Nature

Criteria	Compliance Requirements				Documents
Requirement	Single Entity	Joint Venture			Submission Requirements
		All Partners Combined	Each Partner	One Partner	
Participation as a contractor, JV partner, or subcontractor, in at least two contracts that have been successfully or substantially completed within the last Five (5) years and that are similar to the proposed works, where the value of the Bidder's participation under each contract exceeds NRs **6860 Million**. The similarity of the Bidder's participation shall be based on construction of at least one road with **20 km length of four (4) lanes or more in each contract.**	must meet requirement	must meet requirement as follows i) Either one partner must meet requirement or ii) Any two partners must each demonstrate that one (1) successfully or substantially completed contract of similar size and nature	Must meet requirement as follows: Participation in at least one contract that has been successfully or substantially completed within the last five years and that is similar to the proposed works where the value of the Bidder's participation exceeds **NRs.1700** Million or its equivalent.	not applicable	Form EXP - 1

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2.4.2 Construction Experience in Key Activities

May be complied with by the Bidder or by Specialist Subcontractor. In case of a Joint Venture Bidder, at least one of the partners must have experience in key activities if the Bidder itself will carry out the relevant key activity. In case if Specialist Subcontractors are proposed by the Bidder for key activities, each Specialist Subcontract must have experience in related key activity as a single entity.

If the key activity is to be undertaken by a Specialist Subcontractor, the Employer shall require evidence of the subcontracting agreement from the Bidder.

Criteria	Compliance Requirements		Documents
Requirement	**Single Entity or its Specialist Subcontractor**	**Joint Venture or its Specialist Subcontractor**	**Submission Requirements**
For the above or other contracts executed during the period stipulated in 2.4.1 above, a minimum construction experience in the following key activities:	must meet requirement	must meet requirement	Form EXP - 2
(a) Construction of roads with Asphalt concrete works of **70,000 cu m** completed within the last **Five (5)** years in not more than three Contract.	must meet requirement	must meet requirement	
(b) Construction of Two (2) bridges having length of at least 50 m each with Pre-stressed Concrete (PSC) superstructure completed within the last **Five (5)** years.	must meet requirement	must meet requirement	

For Reference Only

Section 4 - Bidding Forms

- Without Prequalification -

This Section contains the forms to be completed by the Bidder and submitted as part of its Bid.

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Letter of Technical Bid

-Note-

The bidder must accomplish the Letter of Technical Bid on its letterhead clearly showing the bidder's complete name and address.

Date: .....

OCB No.: .....

Invitation for Bid No.: .....

To: .....

We, the undersigned, declare that:

(a) We have examined and have no reservations to the Bidding Documents, including Addenda issued in accordance with Instructions to Bidders (ITB) 8.

(b) We offer to execute in conformity with the Bidding Documents the following Works:

[.....insertnarrative.....]

(c) Our Bid consisting of the Technical Bid and the Price Bid shall be valid for a period of [*. . .....insert bid validity period as specified in ITB 18.1 of the BDS . ...*] days from the date fixed for the bid submission deadline in accordance with the Bidding Documents, and it shall remain binding upon us and may be accepted at any time before the expiration of that period.

(d) Our firm, including any Subcontractors or Suppliers for any part of the Contract, have nationalities from eligible countries in accordance with ITB 4.2.

(e) We, including any Subcontractors or Suppliers for any part of the contract, do not have any conflict of interest in accordance with ITB 4.3.

(f) We are not participating, as a Bidder, either individually or as partner in a joint venture, in more than one Bid in this bidding process in accordance with ITB 4.3(e), other than alternative offers submitted in accordance with ITB 13.

(g) Our firm, joint venture partners, associates, parent company, its affiliates or subsidiaries, including any Subcontractors or Suppliers for any part of the contract, are not subject to, or not controlled by any entity or individual that is subject to, a temporary suspension or a debarment imposed by the Asian Development Bank or a debarment imposed by the Asian Development Bank in accordance with the Agreement for Mutual Enforcement of Debarment Decisions between the Asian Development Bank and other development banks.[1]

(h) Our firm, joint venture partners, associates, parent company, affiliates or subsidiaries, including any Subcontractors or Suppliers for any part of the Contract, are not, or have never been, temporarily suspended, debarred, declared ineligible, or blacklisted by the employer's country, any international organization, and other donor agency.

[1] These institutions include African Development Bank, European Bank for Reconstruction and Development (EBRD), Inter-American Development Bank (IADB), and the World Bank Group. According to paragraph 9 of the Agreement, other international financial institutions may join upon the consent of all Participating Institutions and signature of a Letter of Adherence by the international financial institution substantially in the form provided (Annex B to the Agreement). Upon adherence, such international financial institution shall become a Participating Institution for purposes of the Agreement. Bidders are advised to check www.adb.org/integrity for updates.

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If so debarred, declared ineligible, temporarily suspended, or blacklisted, please state details (as applicable to each joint venture partner/associate/parent company /affiliate/ subsidiaries/ subcontractors/ suppliers):

(i) Name of Institution: _____

(ii) Period of debarment, ineligibility, or blacklisting (start and end date): _____

(iii) Reason for the debarment, ineligibility, or blacklisting: _____

(i) Our firm's, joint venture partners', associates', parent company's affiliates' or subsidiaries', including any Subcontractors or Suppliers key officers and directors have not been [charged or convicted] of any criminal offense (including felonies and misdemeanors) or infractions/violations of ordinance which carry the penalty of imprisonment.

If so charged or convicted, please state details:

(i) Nature of the offense/violation: _____

(ii) Court/Area of jurisdiction: _____

(iii) Resolution (i.e. dismissed; settled; convicted/duration of penalty): _____

(iv) Other relevant details:

(j) We understand that it is our obligation to notify ADB should our firm, joint venture partners, associates, parent company, affiliates or subsidiaries, including any Subcontractors or Suppliers, be temporarily suspended, debarred or become ineligible to work with ADB or any other MDBs, the employer's country, international organizations, and other donor agencies, or any of our key officers and directors be charged or convicted of any criminal offense or infractions/violations of ordinance which carry the penalty of imprisonment.

(k) Our firm, joint venture partners, associates, parent company, affiliates or subsidiaries, including any subcontractors or suppliers, are not from a country which is prohibited to export goods to or receive any payments from the employer's country by an act of compliance with a decision of the United Nations Security Council taken under Chapter VII of the Charter of the United Nations.

(l) [We are not a government-owned enterprise] / [We are a government-owned enterprise but meet the requirements of ITB 4.5].[2]

(m) We have not been suspended nor declared ineligible by the Employer based on execution of a Bid-Securing Declaration in accordance with ITB 4.6.

(n) We agree to permit ADB or its representative to inspect our accounts and records and other documents relating to the bid submission and to have them audited by auditors appointed by ADB.

(o) If our Bid is accepted, we commit to mobilizing key equipment and personnel in accordance with the requirements set forth in Section 6 (Employer's Requirements) and our technical proposal, or as otherwise agreed with the Employer.

(p) We understand that any misrepresentation that knowingly or recklessly misleads, or attempts to mislead may lead to the automatic rejection of the Bid or cancellation of the contract, if awarded, and may result in remedial actions, in accordance with ADB's Anticorruption Policy (1998 as amended to date) and Integrity Principles and Guidelines (2015, as amended from time to time).

Name .....

In the capacity of .....

Signed .....

Duly authorized to sign the Bid for and on behalf of .....

Date .....

[2] Use one of the two options as appropriate.

For Reference Only

Letter of Price Bid

-Note-

The bidder must accomplish the Letter of Price Bid on its letterhead clearly showing the bidder's complete name and address.

Date: .....

OCB No.: .....

Invitation for Bid No.: .....

To: [. . .*insert complete name of the employer* . . .]

We, the undersigned, declare that:

(a) We have examined and have no reservations to the Bidding Documents, including Addenda issued in accordance with Instructions to Bidders (ITB) 8.

(b) We offer to execute in conformity with the Bidding Documents and the Technical Bid submitted for the following Works. [. . .*insert narrative* . . .]

(c) The total price of our Bid, excluding any discounts offered in item (d) below isor, when left blank, is the Bid Price indicated in the summary of Bill of Quantities

[*amount of foreign currency in words*], [*amount in figures*], and [*amount of local currency in words*], [*amount in figures*]

(d) The discounts offered and the methodology for their application are: [. . .*insert discounts and methodology for their application if any* . . .]

(e) Our Bid shall be valid for a period of [. . .*insert bid validity period as specified in ITB 18.1 of the BDS* . . .] days from the date fixed for the bid submission deadline in accordance with the Bidding Documents, and it shall remain binding upon us and may be accepted at any time before the expiration of that period.

(f) If our Bid is accepted, we commit to obtain a performance security in accordance with the Bidding Documents.

(g) We have paid, or will pay the following commissions, gratuities, or fees with respect to the bidding process or execution of the Contract.[3]

Name of Recipient	Address	Reason	Amount
.....	.....	.....	.....
.....	.....	.....	.....

(h) We understand that this bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal contract is prepared and executed.

[3]If none has been paid or is to be paid, indicate "None"

For Reference Only

(i) We understand that you are not bound to accept the lowest evaluated bid or any other bid that you may receive.

(j) We agree to permit ADB or its representative to inspect our accounts and records and other documents relating to the bid submission and to have them audited by auditors appointed by ADB.

Name .....

In the capacity of .....

Signed .....

Duly authorized to sign the Bid for and on behalf of .....

Date .....

For Reference Only

Bid Security
Bank Guarantee

..... Bank's name, and address of issuing branch or office[4] *.....*

Beneficiary: *.....Name and address of the employer .....*

Date:.....

Bid Security No.: .....

We have been informed that . . . . . *name of the bidder. . . . .* (hereinafter called "the Bidder") has submitted to you its bid dated . . . . . (hereinafter called "the Bid") for the execution of . . . . . *name of contract* . . . . . under Invitation for Bids No. . . . . ("the IFB").

Furthermore, we understand that, according to your conditions, bids must be supported by a bid guarantee.

At the request of the Bidder, we . . . . . *name of bank. . . . .* hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of . . . . . *.amount in words* . . . . . (. . . . . *.amount in figures* . . . . .)upon receipt by us of your first demand in writing accompanied by a written statement stating that the Bidder is in breach of its obligation(s) under the bid conditions, because the Bidder

(a) has withdrawn its Bid during the period of bid validity specified by the Bidder in the Letters of Technical and Price Bid; or

(b) does not accept the correction of errors in accordance with the Instructions to Bidders (hereinafter "the ITB"); or

(c) having been notified of the acceptance of its Bid by the Employer during the period of bid validity, (i) fails or refuses to execute the Contract Agreement, or (ii) fails or refuses to furnish the performance security, in accordance with the ITB, or (iii) fails or refuses to furnish a domestic preference security, if required.

This guarantee will expire (a) if the Bidder is the successful Bidder, upon our receipt of copies of the Contract Agreement signed by the Bidder and the Performance Security issued to you upon the instruction of the Bidder; or (b) if the Bidder is not the successful Bidder, upon the earlier of (i) our receipt of a copy of your notification to the Bidder of the name of the successful Bidder, or (ii) 28 days after the expiration of the Bidder's bid.

Consequently, any demand for payment under this guarantee must be received by us at the office on or before that date.

This guarantee is subject to the Uniform Rules for Demand Guarantees, ICC Publication No. 458.[5]

. . . . . *.Authorized signature(s) and bank's seal (where appropriate)* . . . . . .

For Reference Only

[4] All italicized text is for use in preparing this form and shall be deleted from the final document.

[5] Or 758 as applicable.

Technical Proposal

The Bidder shall submit Technical Proposal separately for each Phase 1: Upgrading Works and Phase 2: Performance Based Maintenance Works in the forms and sheets as attached in the Bidding Forms in the following pages.

Phase 1: Upgrading Works

Personnel

The bidder shall propose for deployment full complement of staff necessary for the successful execution of the works.

Equipment

The bidder shall provide required construction equipment and ensure their maintenance for efficient and continuous work progress. Bidder will also provide proper work shop and other maintenance facilities at site.

Site Organization

The bidder is required to submit proposed site organization structure (organogram) showing the management, supervisory and quality control units indicating their lines of communication and responsibility shown in an organogram.

Method Statement

The bidder shall state all major works, site camp facilities (sanitary, water supply, telecommunication, inspection vehicles etc.), road alignment, earth work, pavement work, drainage structure, bridges & culverts works etc. The bidder is required to describe works how to start and complete different sections of works.

Mobilization Schedule

The bidder shall mobilize personnel, equipment, deployment of work force, collection of construction materials and prepare a mobilization bar chart. Likewise, the bidder will provide site camp, stack yard etc. at different working places for efficient execution of works.

Construction Schedule

The bidder shall submit Schedule using MS Project or equivalent project management software showing sequence of works for items in Bill of Quantities (BOQ) together with program and progress of works.

Phase 2: Performance Based Maintenance Works

Personnel

The bidder shall propose for deployment full complement of staff necessary for the successful execution of the performance based maintenance works and services.

Equipment

The bidder shall provide required equipment for the performance based maintenance works and ensure their maintenance for efficient and continuous work process. Bidder will also provide proper work shop and other maintenance.

For Reference Only

Site Organization (If different from Phase 1)

. The bidder is required to submit proposed site organization structure (organogram) showing the management supervisory and quality control units indicating their lines of communication and responsibility shown in as organogram.

Method Statement

The bidder shall state how he will execute the performance based maintenance works and shall submit a draft Program of Performance and a proposal for the Daily Inspections of Operational Service Levels.

For Reference Only

Personnel

Form PER – 1: Proposed Personnel

Bidder should provide the details of the proposed personnel and their experience record in the relevant Information Forms below for each candidate:

The Bidder shall provide separately for each Phase 1: Upgrading Works and Phase 2: Performance Based Maintenance Works

1.	**Title of position***
	Name
2.	**Title of position***
	Name
3.	**Title of position***
	Name
4.	**Title of position***
	Name
5.	**Title of position***
	Name
6.	**Title of position***
	Name
etc.	**Title of position***
	Name

-- Note --

** As listed in Section 6 (Employer's Requirements).*

For Reference Only

Form PER – 2: Resumé of Proposed Personnel **(For both Phase 1 and Phase 2)**

The Bidder shall provide all the information requested below. Use one form for each position.

Position		
Personnel information	**Name**	**Date of birth**
	Professional qualifications	
Present employment	**Name of employer**	
	Address of employer	
	Telephone	**Contact (manager / personnel officer)**
	Fax	**E-mail**
	Job title	**Years with present employer**

Summarize professional experience in reverse chronological order. Indicate particular technical and managerial experience relevant to the project.

From	To	Company/Project/Position/Relevant Technical and Management Experience

For Reference Only

Equipment

Form EQU: Equipment (Bidder shall provide the details of equipment for both Phases 1 and 2)

The Bidder shall provide adequate information and details to demonstrate clearly that it has the capability to meet the equipment requirements indicated in Section 6 (Employer's Requirements), using the Forms below. A separate Form shall be prepared for each item of equipment listed, or for alternative equipment proposed by the Bidder.

Item of Equipment		
Equipment Information	**Name of manufacturer**	**Model and power rating**
	Capacity	**Year of manufacture**
Current Status	**Current location**	
	Details of current commitments	
Source	**Indicate source of the equipment** ☐ **Owned** ☐ **Rented** ☐ **Leased** ☐ **Specially manufactured**	

Omit the following information for equipment owned by the Bidder.

Owner	**Name of owner**	
	Address of owner	
	Telephone	**Contact name and title**
	Fax	**Telex**
Agreements	**Details of rental / lease / manufacture agreements specific to the project**	

For Reference Only

Site Organization

For Reference Only

Method Statement

For Reference Only

Mobilization Schedule

For Reference Only

Construction Schedule

For Reference Only

Bidders Qualification

To establish its qualifications to perform the contract in accordance with Section 3 (Evaluation and Qualification Criteria) the Bidder shall provide the information requested in the corresponding Information Sheets included here under.

For Reference Only

Form ELI - 1: Bidder's Information Sheet

Bidder's Information	
Bidder's legal name	
In case of a Joint Venture, legal name of each partner	
Bidder's country of constitution	
Bidder's year of constitution	
Bidder's legal address in country of constitution	
Bidder's authorized representative (name, address, telephone number(s), fax number(s), e-mail address)	

Attached are copies of the following documents.

- ❑ 1. In case of a single entity, articles of incorporation or constitution of the legal entity named above, in accordance with ITB 4.1 and ITB 4.2.
- ❑ 2. Authorization to represent the firm or Joint Venture named above, in accordance with ITB 20.2.
- ❑ 3. In case of a Joint Venture, a letter of intent to form a Joint Venture or Joint Venture agreement, in accordance with ITB 4.1.
- ❑ 4. In case of a government-owned enterprise, any additional documents not covered under 1 above required to comply with ITB 4.5.

For Reference Only

Form ELI - 2: Joint Venture Information Sheet

Each member of the Joint Venture and Specialist Subcontractor must fill out this form separately.

Joint Venture / Specialist Subcontractor Information	
Bidder's legal name	
Joint Venture Partner's or Specialist Subcontractor's legal name	
Joint Venture Partner's or Specialist Subcontractor's country of constitution	
Joint Venture Partner's or Specialist Subcontractor's year of constitution	
Joint Venture Partner's or Specialist Subcontractor's legal address in country of constitution	
Joint Venture Partner's or Specialist Subcontractor's authorized representative information (name, address, telephone number(s), fax number(s), e-mail address)	

Attached are copies of the following documents.

- ❑ 1. Articles of incorporation or constitution of the legal entity named above, in accordance with ITB 4.1 and ITB 4.2.
- ❑ 2. Authorization to represent the firm named above, in accordance with ITB 20.2.
- ❑ 3. In the case of a government-owned enterprise, documents establishing legal and financial autonomy and compliance with commercial law, in accordance with ITB 4.5.

For Reference Only

Form CON - 1: Historical Contract Non-Performance

Each Bidder must fill out this form in accordance under Criterion 2.2.1 and 2.2.3 of Section 3 (Evaluation and Qualification Criteria) to describe any history of non-performing contracts and pending litigation or arbitration formally commenced against it.

In case of a Joint Venture, each Joint Venture Partner must fill out this form separately and provide the Joint Venture Partner's name below:

Joint Venture Partner: _____

Table 1: History of Non-Performing Contracts

Choose one of the following:

❑ No non-performing contracts.

❑ Below is a description of non-performing contracts involving the Bidder (or each Joint Venture member if Bidder is a Joint Venture).

Year	Description	Amount of non-performed portion of contract ($ equivalent)	Total Contract Amount ($ equivalent)
[insert year]	Contract Identification: *[indicate complete contract name/ number, and any other identification]* Name of Employer: *[insert full name]* Address of Employer: *[insert street/city/country]* Reason(s) for nonperformance: *[indicate main reason(s)]*	*[insert amount]*	*[insert amount]*

For Reference Only

Form FIN - 1: Historical Financial Performance

Each Bidder must fill out this form.

In case of a Joint Venture, each Joint Venture Partner must fill out this form separately and provide the Joint Venture Partner's name below:

Joint Venture Partner: _____

Financial Data for Previous …… Years [$ Equivalent]				
Year 1:	**Year 2:**	**Year 3:**	**Year 4:**	**Year 5:**

Information from Balance Sheet

Total Assets (TA)					
Total Liabilities (TL)					
Net Worth = TA – TL					
Current Assets (CA)					
Current Liabilities (CL)					
Working Capital = CA - CL					

Most Recent Working Capital		To be obtained for most recent year and carried forward to FIN - 3 Line 1; in case of Joint Ventures, to the corresponding Joint Venture Partner's FIN – 3.

Information from Income Statement

Total Revenues					
Profits Before Taxes					
Profits After Taxes					

❑ Attached are copies of financial statements (balance sheets including all related notes and income statements) for the last _____ years, as indicated above, complying with the following conditions:

- Unless otherwise required by Section 3 of the Bidding Document, all such documents reflect the financial situation of the legal entity or entities comprising the Bidder and not the Bidder's parent companies, subsidiaries, or affiliates.
- Historical financial statements must be audited by a certified accountant.
- Historical financial statements must be complete, including all notes to the financial statements.

Historical financial statements must correspond to accounting periods already completed and audited (no statements for partial periods shall be requested or accepted).

For Reference Only

Form FIN - 2: Average Annual Construction Turnover

Each Bidder must fill out this form**.**

The information supplied should be the Annual Turnover of the Bidder or each member of a Joint Venture in terms of the amounts billed to clients for each year for work in progress or completed, converted to US dollars at the rate of exchange at the end of the period reported.

In case of a Joint Venture, each Joint Venture Partner must fill out this form separately and provide the Joint Venture Partner's name below:

Joint Venture Partner: _____

Annual Turnover Data for the Last ……. Years (Construction only)			
Year	**Amount Currency**	**Exchange Rate**	**$ Equivalent**
	Average Annual Construction Turnover		

For Reference Only

Form FIN – 3: Availability of Financial Resources

Bidders must demonstrate sufficient financial resources, usually comprising of Working Capital supplemented by credit line statements or overdraft facilities and others to meet the Bidder's financial requirements for

(a) its current contract commitments, and

(b) the subject contract.

In case of a Joint Venture, each Joint Venture Partner must fill out this form separately and provide the Joint Venture Partner's name below:

Joint Venture Partner: _____

Financial Resources		
No.	**Source of financing**	**Amount ($ equivalent)**
1	Working Capital (to be taken from FIN - 1)	
2	Credit Line[a]	
3	Other Financial Resources	
	Total Available Financial Resources	

[a] *To be substantiated by a letter from the bank issuing the line of credit.*

For Reference Only

Form FIN- 4: Financial Requirements for Current Contract Commitments

Bidders (or each Joint Venture partner) should provide information on their current commitments on all contracts that have been awarded, or for which a letter of intent or acceptance has been received, or for contracts approaching completion, but for which an unqualified, full completion certificate has yet to be issued.

In case of a Joint Venture, each Joint Venture Partner must fill out this form separately and provide the Joint Venture Partner's name below:

Joint Venture Partner: _____

Current Contract Commitments						
No.	**Name of Contract**	**Employer's Contact (Address, Tel, Fax)**	**Contract Completion Date**	**Outstanding Contract Value (X)[a]**	**Remaining Contract Period in months (Y)[b]**	**Monthly Financial Resources Requirement (X / Y)**
1						
2						
3						
4						
Total Monthly Financial Requirement for Current Contract Commitments						**$** . . . . .

[a] *Remaining outstanding contract values to be calculated from 28 days prior to the bid submission deadline ($ equivalent based on the foreign exchange rate as of the same date).*

[b] *Remaining contract period to be calculated from 28 days prior to bid submission deadline.*

For Reference Only

Form FIN - 5: Self-Assessment Tool for Bidder's Compliance to Financial Resources (Criterion 2.3.3 of Section 3)

This form requires the same information submitted in Forms FIN - 3 and FIN - 4. All conditions of "Available Financial Resources Net of CCC ≥ Requirement for the Subject Contract" must be satisfied to qualify.

Form FIN - 5A: For Single Entities

For Single Entities: (A)	Total Available Financial Resources from FIN – 3 (B)	Total Monthly Financial Requirement for Current Contract Commitments (CCC) from FIN – 4 (C)	Available Financial Resources Net ofCCC D = (B - C)	Requirement for the Subject Contract (E)	Results: Yes or No [*D must be greater than or equal to E*] (F)
_____ (Name of Bidder)					

Form FIN - 5B: For Joint Ventures

For Joint Ventures: (A)	Total Available Financial Resources from FIN – 3 (B)	Total Monthly Financial Requirement for Current Contract Commitments (CCC) from FIN – 4 (C)	Available Financial Resources Net ofCCC D = (B - C)	Requirement for the Subject Contract (E)	Results: Yes or No [*D must be greater than or equal to E*] (F)
One Partner:					
_____ (Name of Partner)					
Each Partner:					
_____ (Name of Partner 1)					
_____ (Name of Partner 2)					
_____ (Name of Partner 3)					
All partners combined	∑ D = Sum of available financial resources net of current contract commitments for all partners		∑ D = _____		

- Note -

Form FIN – 5 is made available for use by the bidder as a self-assessment tool, and by the employer as an evaluation work sheet, to determine compliance with the financial resources requirement as stated in 2.3.3. Failure to submit Form FIN - 5 by the Bidder shall not lead to bid rejection.

For Reference Only

Form EXP – 1: Contracts of Similar Size and Nature

Fill out one (1) form per contract.

The exchange rate to be used to calculate the value of the contract for conversion to a specific currency shall be the selling rate of borrower's national bank on the date of the contract.

Contract of Similar Size and Nature		
Contract No . . . . . **of**	**Contract Identification**	
Award Date		**Completion Date**
Total Contract Amount	NRs. or Its Equivalent	
If partner in a Joint Venture or subcontractor, specify participation of total contract amount	**Percent of Total**	**Amount**
Employer's name **Address** **Telephone number** **Fax number** **E-mail**		
Description of the Similarity in Accordance with Criterion 2.4.1 of Section 3 (Evaluation and Qualification Criteria)		
(a) **Two (2)** Contracts with similar nature valued over **NRs. 6860 Million** or its equivalent in each contract within the last **Five (5)** years. The similarity of the Bidder's participation shall be based on construction of at least **one road with 20 km length of four (4) lanes or more in each contract.**		

For Reference Only

Form EXP - 2: Construction Experience in Key Activities

Fill out one (1) form per contract.

Each Bidder must fill out this form.

In case of a Joint Venture, at least one of the Joint Venture Partners who will comply with the requirements must fill out this form and provide the Joint Venture Partner's name below:

Joint Venture Partner: _____

If complied by Specialist Subcontractor, the Specialist Subcontractor must fill out this form and provide the Specialist Subcontractor's name below:

Specialist Subcontractor: _____

Contract with Similar Key Activities		
Contract No . . . . . **of**	**Contract Identification**	
Award Date		**Completion Date**
Total Contract Amount		NRs. or Its Equivalent
If partner in a Joint Venture or subcontractor, specify participation of total contract amount	**Percent of Total**	**Amount**
Employer's name **Address** **Telephone number** **Fax number** **E-mail**		
Description of the Key Activities in Accordance with Criterion 2.4.2 of Section 3 (Evaluation and Qualification Criteria)		
(a) Construction of road with Asphalt concrete works of **70,000 cu m** completed within the last **Five (5)** years in not more than three Contract.		
(b) Construction of Two (2) bridges having **length of at least 50m each with Pre-stressed Concrete (PSC) superstructure completed within the last Five (5) years.**		

For Reference Only

Schedules

Schedule of Payment Currencies

For .....*insert name of Section of the Works* .....

Separate tables may be required if the various sections of the Works (or of the Bill of Quantities) will have substantially different foreign and local currency requirements. In such a case, the Employer should prepare separate tables for each Section of the Works.

	A	B	C	D
Name of Payment Currency	**Amount of Currency**	**Rate of Exchange to Local Currency**	**Local Currency Equivalent C = A x B**	**Percentage of Net Bid Price (NBP) 100xC / NBP**
Local Currency		**1.00**		
Foreign Currency #1				
Foreign Currency #2				
Foreign Currency #3				
Net Bid Price				**100.00**
Provisional Sums Expressed in Local Currency		**1.00**		
BID PRICE				

- Note -

The rates of exchange shall be the selling rates 28 days prior to the deadline for submission of bids published by the source specified in BDS 15.

For Reference Only

Tables of Adjustment Data

Table A - Local Currency

Index Code	Index Description	Source of Index	Base Value and Date	Bidder's Local Currency Amount	% Range of Weighting	Bidder's Proposed Weighting
A	Nonadjustable	-	-	-	15	
B	Labour	National Salary and Wage Index : Construction Labourer published by Nepal Rastra Bank			10 - 20	
C	Diesel	Nepal Oil Corporation			10 - 20	
D	Bitumen	Nepal Bitumen & Barrel Udyog			10 - 20	
E	Cement	Udayapur Cement Udhyog, Nepal			5 - 15	
F	Reinforcement Bar	Ex-factory rate of Steel factory, Nepal			5 - 15	
G	Other	National Wholesale Price Index: Overall Index published by Nepal Rastra Bank			15 - 25	
			Total		100%	1.00

Table B - Foreign Currency

Name of Currency:

If the Bidder wishes to quote in more than one foreign currency, this table should be repeated for each foreign currency.

Index Code	Index Description	Source of Index	Base Value and Date	Bidder's Currency in Type/Amount	Equivalent in FC1	Bidder's Proposed Weighting
A	Nonadjustable	--	--	--	--	0.15
B						
C						
D						
E						
F						
G						
				Total		**1.00**

- Note -

As per GCC 1.1.3.1, "Base Date" means the date 28 days prior to the latest date for submission of the bid.

Tables of Adjustment Data shall only be included if prices are to be quoted as adjustable prices in accordance with ITB 14.5.

For Reference Only

Bill of Quantities

A. Preamble

1. The Bill of Quantities shall be read in conjunction with the Instruction to Bidders, Bid Data Sheet, General and Particular Conditions of Contract, Standard Specifications and Special Provisions, and Drawings.

2. The quantities given in the Bill of Quantities are estimated and provisional, and are given to provide a common basis for bidding. The basis of payment will be the actual quantities of work ordered and carried out as measured by the Contractor and verified by the Engineer and valued at the rates and prices bid in the priced Bill of Quantities, where applicable, and otherwise at such rates and prices as the Engineer may fix within the terms of the Contract.

3. The rates and prices bid in the priced Bill of Quantities shall, except as otherwise provided under the Contract, include all constructional equipment, labor, supervision, materials, erection, maintenance, insurance, profit, taxes, and duties, together with all general risks, liabilities, and obligations set out or implied in the Contract.

4. A rate or price shall be entered against each item in the priced Bill of Quantities, whether quantities are stated or not. The cost of items against which the Contractor has failed to enter a rate or price shall be deemed covered by other rates and prices entered in the Bill of Quantities. The units and rates in figures entered into the Bill of Quantities should be typewritten or if written by hand, must be in print form. Bill of Quantities not presented accordingly may be considered nonresponsive.

5. The whole cost of complying with the provisions of the Contract shall be included in the items provided in the priced Bill of Quantities, and where no items are provided the cost shall be deemed to be distributed among the rates and prices entered for the related Items of Work.

6. General directions and descriptions of work and materials are not necessarily repeated or summarized in the Bill of Quantities. References to the relevant sections of the Contract documentation shall be made before entering prices against each item in the priced Bill of Quantities.

7. Provisional Sums included and so designated in the Bill of Quantities shall be expended in whole or in part at the direction and discretion of the Engineer in accordance with the Conditions of Contract.

8. The method of measurement of completed work for payment shall be in accordance with the Specifications (see Part II: Employer's Requirement, Section 6B and 6C of these documents).

9. Arithmetic errors will be corrected by the Employer as follows:

   (a) If there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail and the total price shall be corrected, unless in the opinion of the Employer there is an obvious misplacement of the decimal point in the unit price, in which case the total price as quoted shall govern and the unit price shall be corrected.

   (b) If there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected.

   (c) If there is a discrepancy between the bid price in the Summary of Bill of Quantities and the bid amount in item (c) of the Letter of Bid, the bid price in the Summary of Bill of Quantities will prevail and the bid amount in item (c) of the Letter of Bid will be corrected.

   (d) If there is a discrepancy between words and figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject to (a), (b), and (c) above.

For Reference Only

10. Bidders shall price the Bill of Quantities in Nepalese Rupees (NRs.) only and shall indicate in the "Schedule of Payment Currencies" the percentage expected for payment in foreign currency or currencies.

11. Payment for Performance Based Maintenance (PBM) Works and Services measured in kilometre-month shall include the cost of all the activities that is required to be carried out by the Contractor as per the Specifications during performance based maintenance period except determined under Emergency Works, subject only to any reduction as provided in the relevant Section of the Specifications.

B. Dayworks Schedule

General

1. Work shall not be executed on a Daywork basis except by written order of the Engineer. Bidders shall enter basic rates for Daywork items in the Schedules, which rates shall apply to any quantity of Daywork ordered by the Engineer. Nominal quantities have been indicated against each item of Daywork, and the extended total for Daywork shall be carried forward as a Provisional Sum to the Summary Total Bid Amount. Unless otherwise adjusted, payments for Daywork shall be subject to price adjustment in accordance with the provisions in the Conditions of Contract.

Daywork Labour

2. In calculating payments due to the Contractor for the execution of Daywork, the hours for labor will be reckoned from the time of arrival of the labor at the job site to execute the particular item of Daywork to the time of return to the original place of departure, but excluding meal breaks and rest periods. Only the time of classes of labor directly doing work ordered by the Engineer and for which they are competent to perform will be measured. The time of gangers (charge hands) actually doing work with the gangs will also be measured but not the time of foremen or other supervisory personnel.

3. The Contractor shall be entitled to payment in respect of the total time that labor is employed on Daywork, calculated at the basis rates entered by him in the Schedule of Daywork Rates: 1. Labor. The rates for labor shall be deemed to cover all costs to the Contractor, including (but not limited to) the amount of wages paid to such labor, transportation time, overtime, subsistence allowances, and any sums paid to or on behalf of such labor for social benefits in accordance with (Country of Borrower) law, as well as Contractor's profit; overheads; superintendence; liabilities and insurance and allowance to labor; timekeeping and clerical and office work; the use of consumable stores water, lighting, and power; the use and repair of stagings, scaffolding workshops and stores portable power tools; manual plant and tools; supervision by the Contractor's staff, foremen, and other supervisory personnel; and charges incidental to the foregoing. The rates shall be stated in the Nepalese Rupees (NRs.) but the payments will be made on currency proportions as indicated in the "Schedule of Payment Currencies".

Daywork Material

4. The Contractor shall be entitled to payment in respect of materials used for Daywork (except for materials for which the cost is included in the percentage addition to labor costs as detailed heretofore), at the rates entered by him in the Schedule of Daywork Rates: 2. Materials and shall be deemed to include overhead charges and profit as follows;

   (a) the rates for materials shall be calculated on the basis of the invoiced price, freight, insurance, handling expenses, damage, losses, etc., and shall provide for delivery to store for stockpiling at the Site. The rates shall be stated in the Nepalese Rupees (NRs.) but the payments will be made on currency proportions as indicated in the "Schedule of Payment Currencies".

   (b) the cost of hauling materials for use on work ordered to be carried out as Daywork from the store or stockpile on the Site to the place where it is to be used shall also be deemed included in the same rate.

For Reference Only

Daywork Equipment

5. The Contractor shall be entitled to payments in respect of Contractor's Equipment already on Site and employed on Daywork at the basic rental rates entered by him in the Schedule of Daywork Rates: 3. Contractor's Equipment. The said rates shall be deemed to include due and complete allowance for depreciation, interest, indemnity and insurance, repairs, maintenance, supplies, fuel, lubricants, and other consumables, and all overhead profit and administrative costs related to the use of such equipment. The cost of drivers, operators, and assistants shall also be included in the rate of the equipment and no separate payment shall be made for it.

6. In calculating the payment due to the Contractor's Equipment employed on Daywork, only the actual number of working hours will be eligible for payment, except that where applicable and agreed with the Engineer, the traveling time from the part of the Site where the Construction Plant was located when ordered by the Engineer to be employed on Daywork and the time for return journey thereto shall be included for payment.

7. The basic rental rates for Contractor's Equipment employed on Daywork shall be stated in Nepalese Rupees (NRs.) but the payments will be made on currency proportions as indicated in the "Schedule of Payment Currencies".

Units of Measurement

The following units of measurement and abbreviations are used:

Unit	Abbreviation	Unit	Abbreviation
a) cubic meter	m^3 or cu m	b) millimeter	mm
c) hectare	ha	d) month	mon
e) hour	h	f) number	nr
g) kilogram	kg	h) square meter	m^2 or sq m
i) kilometer	km	j) kilometer month	km-mon
k) lump sum	sum	l) person day	per day
m) meter	m	n) week	wk
o) metric ton (1,000 kg)	t	p) square millimeter	mm^2 or sq mm
q) litre	lt	r) person month	per mon
s) vehicle Month	veh - mon	t) provisional sum	ps

For Reference Only

C. Work Items (Bill of Quantities)

For Reference Only

SASEC Mugling-Pokhara Highway Improvement Phase I Project

Improvement of Mugling - Anbukhaireni- Phokhara Road (Section-02)
Contract Length: Km 49+700 to Km 88+583
Contract No: SMPHIP/OCB/MAP-02

Summary of Bill of Quantities

Part / Bill No.	Description	Amount (NRs.)	Remarks
A	**GENERAL**		
	SUB-TOTAL OF PART A:		
B	**ROAD WORKS**		
B1	Site Clearance		
B2	Earthworks		
B3	Pavement Works		
B4	Structures		
B5	Road Furniture and Traffic Safety Measures		
B6	Environmental Mitigation Works and Bioengineering		
	SUB-TOTAL OF PART B:		
C	**MAJOR BRIDGE WORKS**		
C1	General Items		
C2	Foundation Works		
C3	Sub-structure Works		
C4	Super-structure Works		
C5	River Training and Protection Works		
C6	Pile Tests		
	SUB-TOTAL OF PART C:		
D	**MINOR BRIDGE WORKS**		
D1	General Items		
D2	Foundation Works		

For Reference Only

SASEC Mugling-Pokhara Highway Improvement Phase I Project

Improvement of Mugling - Anbukhaireni- Phokhara Road (Section-02)
Contract Length: Km 49+700 to Km 88+583
Contract No: SMPHIP/OCB/MAP-02

Summary of Bill of Quantities

Part / Bill No.	Description	Amount (NRs.)	Remarks
D3	Sub-structure Works		
D4	Super-structure Works		
D5	River Training and Protection Works		
	SUB-TOTAL OF PART D:		
E	**PERFORMANCE BASED WORKS AND SERVICES**		
E1	Performance based works and services including all activities as per specification except emergency work		
	SUB-TOTAL OF PART E:		
F	**SCHEDULE OF DAYWORKS**		
	SUB-TOTAL OF PART F:		
G	**PROVISIONAL SUM**	754,554,000.00	
	SUB-TOTAL OF PART G:	**754,554,000.00**	
A	**Total Bid Price with Provisional Sum [Part A to Part G]**		
B	Discount, If any		
C	**Total Bid Price after Discount with provisional Sum**		
D	VAT @ 13% of (C)		
E	**Total Bid Price With Provisional Sum and VAT [C+D]**		

For Reference Only

SASEC Mugling-Pokhara Highway Improvement Phase I Project

Improvement of Mugling - Anbukhaireni- Phokhara Road (Section-02)

Contract Length: Km 49+700 to Km 88+583

Contract No: SMPHIP/OCB/MAP-02

Bill of Quantities

Item No.	Spec. Clause Ref.	Item Description	Unit	Quantity	Unit Rate (NRs.)		Total Amount (NRs.)
					In Figures	In Words	
PART A: GENERAL							
A1.01	119	**Insurance of works, plant, material and contractor's equipment and third party property and persons under CAR policy**					
a.		Insurance cover for works, plant, material and the Contractor's Equipment	sum	1.00			
b.		Insurance cover for third party property and persons	sum	1.00			
A1.02	101	**Employer's office at site**					
a.		Construction of office building including electrical, plumbing and sanitary works all complete as per the Drawings and the Specifications. The building shall remain the property of the Employer upon completion of the contract.	sum	1.00			
b.		Maintaining and operating the Employer's office at site, including consumables etc., all complete.	mon	48.00			
c.		Providing furniture and equipment at the Employer's office at site, etc., all complete. The furniture and equipment shall remain the property of the Employer upon completion of the contract.	sum	1.00			
A1.03	101	**Employer's accommodation at site**					
a.		Construction of accommodation building (RCC Structure, two stories) including electrical, plumbing and sanitary works all complete as per the Drawings and Specifications. The building shall remain the property of the Employer upon completion of the contract.	sum	1.00			
b.		Maintaining and operating the Employer's accommodation at site, including consumables etc., all complete.	mon	48.00			
c.		Providing furniture and equipment at the Employer's accommodation at site, etc., all complete. The furniture and equipment shall remain the property of the Employer upon completion of the contract.	sum	1.00			
A1.04	101	**Supplying, maintaining and operating the vehicle for the Employer's use at site. The vehicles shall remain the property of the Contractor upon completion of the contract.**					
a.		Type 1 vehicle for the Employer's use at site.	veh-mon	48.00			
b.		Type 2 vehicle for the Employer's use at site.	veh-mon	48.00			

For Reference Only

SASEC Mugling-Pokhara Highway Improvement Phase I Project

Improvement of Mugling - Anbukhaireni- Phokhara Road (Section-02)

Contract Length: Km 49+700 to Km 88+583

Contract No: SMPHIP/OCB/MAP-02

Bill of Quantities

Item No.	Spec. Clause Ref.	Item Description	Unit	Quantity	Unit Rate (NRs.)		Total Amount (NRs.)
					In Figures	In Words	
c.		Type 3 vehicle (Motorbike) for the Employer's use at site.	veh-mon	48.00			
A1.05	101	**Contractor's material testing laboratory at site**					
a.		Providing laboratory space, maintaining and operating, etc of the material testing laboratory at site, all complete.	mon	36.00			
b.		Providing furniture and equipment at the material testing laboratory at site, all complete. The furniture and equipment of the lab shall remain the property of the Contractor upon completion of the contract.	sum	1.00			
A1.06	107	**Maintenance of road**					
a.		Routine/Regular Maintenance of road during construction and defect liability/notification period	km-mon	1,867.00			
b.		Recurrent/Responsive maintenance of the road during construction period.	km-mon	1,400.00			
A1.07	108	Provision and installation of project notice board	nr	2.00			
A1.08	111	Prepare and supply video documentary of the site before, during and after the site works.	nr	1.00			
A1.09	102	Compliance with traffic management provisions, including construction and maintenance of temporary road and bridge diversions, access roads to bridge construction sites, etc all complete covering entire construction period.	sum	1.00			
		Total of Part A - Carried to Summary :					
PART B: ROAD WORKS							
BILL 1 Site Clearance							
B1.01	201	Clearing and grubbing , all complete	sq m	833,490.00			
B1.02	201	Felling trees of girth more than 300 mm (the girth measured at a height of 1 m above the ground level) including cutting of trunks and branches, removing the roots, stacking serviceable material, disposal of unserviceable material and back filling the depressions/pits, all complete	nr	8,252.00			
B1.03	202	Dismantling the structures including stockpiling of the reusable materials and disposal of unusable materials, all complete. The Contractor may use the dismantled materials upon the approval of engineer.					

For Reference Only

SASEC Mugling-Pokhara Highway Improvement Phase I Project

Improvement of Mugling - Anbukhaireni- Phokhara Road (Section-02)

Contract Length: Km 49+700 to Km 88+583

Contract No: SMPHIP/OCB/MAP-02

Bill of Quantities

Item No.	Spec. Clause Ref.	Item Description	Unit	Quantity	Unit Rate (NRs.)		Total Amount (NRs.)
					In Figures	In Words	
a.		Stone masonry in cement sand mortar	cu m	27,366.00			
b.		Gabion masonry	cu m	7,330.00			
d.		Concrete (plain and reinforced)	cu m	1,917.00			
e.		Dry stone masonry	cu m	0.00			
f.		RCC Pipe culverts	m	240.00			
B1.04	201	Clearance of Landslides, debris from culverts and side drains including haulage and disposal , all complete.	Cum.	150,000.00			
		Total of Bill B1 - Carried to Summary :					
Bill 2 Earthwork							
B2.01	900	Roadway excavation including side drain with haulage and disposal in approved safe tipping sites, in common material including Hard Rock, all complete	cu m	1,150,362.00			
B2.02	900,1003	Formation of embankment including necessary haulage of materials including watering, compacting in a layer not exceeding of 150mm compacted depth as per the specification, all complete	cu m	384,118.00			
B2.03	900	Excavation for structures (Cross drainage, Retaining & off-road structures), in common material including Hard Rock, all complete	cu m	157,950.00			
B2.04	900	Backfilling to structures, foundation pits etc. with suitable material including compaction, all complete.	cu m	57,412.00			
		Total of Bill B2 - Carried to Summary :					
Bill 3 Pavement Works							
B3.01		**Sub-grade**					
a.	1003	Scarifying, removing of existing bituminous pavement layer including safe disposal.	sq m	402,754.00			
b.	1003	Preparation of sub-grade to design grade and camber including watering and compaction in all types of soil, all complete.	sq m	1,193,746.00			

For Reference Only

SASEC Mugling-Pokhara Highway Improvement Phase I Project

Improvement of Mugling - Anbukhaireni- Phokhara Road (Section-02)

Contract Length: Km 49+700 to Km 88+583

Contract No: SMPHIP/OCB/MAP-02

Bill of Quantities

Item No.	Spec. Clause Ref.	Item Description	Unit	Quantity	Unit Rate (NRs.)		Total Amount (NRs.)
					In Figures	In Words	
	1201	Supply, place and compact capping layer, as per specification, all complete.	cu m	297,985.00			
B3.02		**Sub-base and Base**					
a.	1201	Supply, place and compact granular sub-base as per specification, all complete.	cu m	352,247.00			
b.	1202	Supply, place and compact crushed stone Base (CSB) as per specification, all complete.	cu m	177,421.00			
B3.03		**Prime Coat**					
a.	1302	Providing and spraying bituminous Prime Coat including cleaning the road surface using wire, brushes, broom etc.	lt	1,131,516.00			
b.	1302	Provide and spread sand blinding over newly primed surface, all complete	sq m	113,152.00			
B3.04		**Bituminous Works**					
a.	1303	Providing and spraying bituminous Tack coat including cleaning the road surface using wire, brushes, broom etc.	lt	564,071.00			
a.	1307, 1308	Provide, prepare including laying, levelling and compaction of Asphalt Concrete (Binder Course) as per the approved design using VG 30 bitumen.	cu m	53,789.00			
b.	1307, 1308	Provide, prepare including laying, levelling and compaction of Asphalt Concrete (Wearing Course) as per the approved design using VG 30 bitumen.	cu m	46,618.00			
c.	1307, 1308	Rate per kilogram for over or under usage of bitumen in Asphalt Concrete, quantity to be in accordance with actual bitumen usage (Job mix formula).	rate only				
		Total of Bill B3 - Carried to Summary :					
Bill 4 Structures							
B4.01	2000	Provide and place **M10/40** grade concrete including compaction, curing, testing etc, all complete.	cu m	12,717.00			
B4.02	2000	Provide and place **M15/40** grade concrete including compaction, curing, testing etc, all complete.	cu m	15,720.00			

For Reference Only

SASEC Mugling-Pokhara Highway Improvement Phase I Project

Improvement of Mugling - Anbukhaireni- Phokhara Road (Section-02)

Contract Length: Km 49+700 to Km 88+583

Contract No: SMPHIP/OCB/MAP-02

Bill of Quantities

Item No.	Spec. Clause Ref.	Item Description	Unit	Quantity	Unit Rate (NRs.)		Total Amount (NRs.)
					In Figures	In Words	
B4,03	2000	Provide and place **M20/20** grade concrete including compaction, curing, testing etc, all complete.	cu m	16,578.00			
B4.04	2000	Provide and place **M25/20** grade concrete including compaction, curing, testing etc, all complete.	cu m	2,595.00			
B4.04A	2000	Provide and place **M 35/20** grade concrete including compaction, curing, testing etc, all complete.	cu m	5,702.00			
B4.05	2019	Plum concrete works with M15/20 grade concrete and plum stones for structures including scaffolding, placing, compaction and curing etc, all complete. Class F2 finish form work shall be paid separately.	cu m	27,645.00			
B4.06	2000	Providing and laying Reinforcement bar including cutting, bending, binding, fixing in position, all complete.	t	2,350.00			
B4.07	2400	Supply and assembly of machine made mechanically selvedged gabion and mattresses produced from double twisted heavy coated GI wire, of hexagonal mesh size 100 mm x 120 mm, with mesh wire 3 mm, selvedge wire 3.9 mm, lacing wire 2.4 mm and stone filling in gabion including transport and fixing of gabion in position, all complete.	cu m	14,738.00			
B4.08	2600	Providing and laying random rubble stone masonry in cement sand mortar MM5 for structure work including scaffolding, curing, preparation of mortar, pointing etc., all complete.	cu m	33,716.00			
B4.09	700	Providing and laying RCC pipes (Class NP3) with or without collars, jointed with stiff mixture of cement mortar (1 cement : 2 sand), all complete.					
a)		600mm diameter (internal)	m	923.00			
B4.10	2404	Providing and laying HDPE Pipe of 160 mm dia (pressure 4 kg/cm2) for drainage outlet, subsoil drain etc. including perforation and jointing, all complete.	m	37,184.00			
B4.11	1800	Providing, preparing and installing formwork including necessary supports and removing after completion for works in any type of structure (Class F2 Finish).	sq m	150,699.00			
B4.12	2400/ 3110	Supply and place geotextile as per design drawings.	sq m	149,447.00			
B4.13		Providing, laying and placing in line and level of precast RCC covered drain as per the drawing and specification, all complete.					

For Reference Only

SASEC Mugling-Pokhara Highway Improvement Phase I Project

Improvement of Mugling - Anbukhaireni- Phokhara Road (Section-02)

Contract Length: Km 49+700 to Km 88+583

Contract No: SMPHIP/OCB/MAP-02

Bill of Quantities

Item No.	Spec. Clause Ref.	Item Description	Unit	Quantity	Unit Rate (NRs.)		Total Amount (NRs.)
					In Figures	In Words	
a.	1407	Type M2	m	1,386.00			
B4.14	1406	Supply and placing of precast RCC cover slab as per the drawing and instruction by the Engineer, all complete.					
a.		Type A	nr	2,500.00			
b.		Type B	nr	2,500.00			
B4.15	3110	Providing and laying graded filter material including compaction.	cu m	23,734.00			
B4.16	2400	Providing and laying of 300 mm thick grouted stone pitching works in protection works with stones and cement sand mortar (1:3) including curing, all complete	sq m	2,536.00			
B4.17	2400	Supply and place dry stone packing/soling, all complete	cu m	471.00			
B4.18	3103	Supply and place compressible joint filler.	sq m	500.00			
B4.19	2708	Epoxy bonding of new concrete to old concrete.	sq m	1,000.00			
B4.20	3109	Providing and laying PVC pipe of 90 mm dia (pressure 2.5 kg / cm2) for weep holes as instructed by the Engineer.	m	21,880.00			
		Total of Bill B4 - Carried to Summary :					
Bill 5 Road Furniture and Traffic Safety Measures							
B5.01	1501	Supply and erect Traffic Signs in place including required size of steel tubes, steel plates, cement concrete, painting, writing and supporting steel angles, nuts and bolts etc. all complete, as per Drawings.					
a.		Single post	nr	445.00			
b.		Double or more posts	nr	30.00			

For Reference Only

SASEC Mugling-Pokhara Highway Improvement Phase I Project

Improvement of Mugling - Anbukhaireni- Phokhara Road (Section-02)

Contract Length: Km 49+700 to Km 88+583

Contract No: SMPHIP/OCB/MAP-02

Bill of Quantities

Item No.	Spec. Clause Ref.	Item Description	Unit	Quantity	Unit Rate (NRs.)		Total Amount (NRs.)
					In Figures	In Words	
B5.02	1503	Supply and place Road Marker (RCC Kilometer post) including excavation, concrete back filling, painting and writing etc. all complete as per Drawings.					
a.		Standard Kilometer stone.	nr	30.00			
b.		Standard 5th Kilometer stone.	nr	8.00			
B5.03	1504	Supply and fix in place precast RCC delineator post with reflective paint including foundation preparation, concrete back filling, painting and erection etc., all complete as per drawings	nr	2,286.00			
B5.04	1401	Supply and fix in place precast concrete Kerb Stone with M20/20 concrete grade including foundation preparation, back filling, painting and erection etc., all complete as per Drawings.	m	116,293.00			
B5.06	1502	Road Marking with hot applied thermoplastic compound with reflectorising glass beads on bituminous surface as specified in Traffic Sign Manual and as per the drawings.	sq m	49,563.00			
B5.07	1513	Providing, laying and construction of rumble strip at locations including painting as per drawings and specification etc., all complete.	m	5,472.00			
B5.07	1505	Provide and erect "W" metal beam crash barrier comprising of 3 mm thick corrugated sheet metal beam rail, 700 mm above road/ground level, fixed on ISMC series channel vertical post, 150 mm x 75 mm x 5 mm spaced at 2 m c/c, 1.8 m high of which 1.1 m shall be below ground/road level. All steel parts and fitment shall be galvanised by hot dip process	m	76,813.00			
B5.08	3111	Providing and laying 100 mm thick interlocking concrete block with line type audio tactile blocks (500 mm wide strip) using stone dust/sand bed on 75 mm thick compacted granular sub base in a footpath including stone dust filled in between the blocks etc., all complete as per the drawings and specification	sq m	77,053.00			
B5.09	3105 (5)	Providing and installing of 75mm - Φ GI pipe railing and precast RCC railing post inlcuding foundation excavation and peparation, concrete back filling, painting and errection etc., all complete as per specification and drawing.	m	38,526.00			
B5.11	1512	Supply, fabrication and installation of Solar Steet Light as per the specifcation and drawings etc., all complete at locations as directed by the Engineer.	nr	336.00			
		Total of Bill B5 - Carried to Summary :					
Bill 6 Environmental Mitigation Works and Bio-engineering							
B6.01	109	Provision of safety clothing and equipment, first aid / medical facilities and other safety measure for labor and Contractor's employees including Consultant's and Employer's personnel and visitors.	Mon	36.00			

For Reference Only

SASEC Mugling-Pokhara Highway Improvement Phase I Project

Improvement of Mugling - Anbukhaireni- Phokhara Road (Section-02)

Contract Length: Km 49+700 to Km 88+583

Contract No: SMPHIP/OCB/MAP-02

Bill of Quantities

Item No.	Spec. Clause Ref.	Item Description	Unit	Quantity	Unit Rate (NRs.)		Total Amount (NRs.)
					In Figures	In Words	
B6.02	3112	Supply, fabricate and construct passenger shades according to the drawings, all complete at locations as instructed by the Engineer.	nr.	38.00			
B6.03		**Bio-engineering works**					
a.	2800	Slope preparation for bio-engineering works.	sq m	58,665.00			
b.	2800	Supply and planting rooted grass slips at spacing of 100 mm in row and 250 mm spacing between two rows.	sq m	52,797.00			
c.	2800	Planting single node culm cutting of grass on fill slopes < 45 and embankment slopes in plain areas etc. all complete.	m	7,334.25			
d.	2800	Supply and planting tree with tree guards in the place as specified by engineer.	nr	5,867.00			
e.	2800	Brush layering.	m	7,334.25			
f.	2800	Supply, preparation and planting of live cuttings of selected species fascines of minimum 1 m length to 0.5 m and pegs spaced at 5 cm centres within rows.	m	5,867.00			
g.	2800	Supply, Preparation and planting of live cuttings of selected species paliside of minimum 1 m length to 0.5 m into and pegs spaced at 5 cm centres within rows, with 5-20 cm between rows.	m	2,934.50			
h.	2800	Supply and broadcasting grass seeds @ 25 gms / m2.	sq m	187,720.00			
i.	2800	Supply and laying grass turfing on the various slope with cutting, watering and transportation etc. including in median	sq m	34,550.00			
j.	2800	Supply and planting large bamboos.	No	169.00			
k.	2800	Construct live check-dams	Rm	434.00			

For Reference Only

SASEC Mugling-Pokhara Highway Improvement Phase I Project

Improvement of Mugling - Anbukhaireni- Phokhara Road (Section-02)

Contract Length: Km 49+700 to Km 88+583

Contract No: SMPHIP/OCB/MAP-02

Bill of Quantities

Item No.	Spec. Clause Ref.	Item Description	Unit	Quantity	Unit Rate (NRs.)		Total Amount (NRs.)
					In Figures	In Words	
l.	2800	Provide and Laying of 200 mm thick of dry stone rip rap.	Sq m	3,219.00			
m.	2800	Supply and planting Median Shrubs	nr	16,205.00			
		Total of Bill B6 - Carried to Summary :					
		Total of Part B - Carried to Summary:					
PART C: MAJOR BRIDGE WORKS							
C1		**General Items**					
C1.01		Diversion of river flow for excavation and other works including dewatering and construction of coffer dam	nr	4.00			
C1.02	1501	Supplying and placing of bridge name plate, as specified by the DOR traffic sign manual	nr	8.00			
C1.03		Site clearance works for all bridge construction works including cutting bushes and removing (before and after Completion of works) and preparation of site for casting precast girder	Sum	1.00			
		Total of Bill C1 - Carried to Summary :					
C2		**Foundation Works**					
C2.01	900	Excavation for foundation for abutments and piers in all types of soil and Rock including dewatering etc, all complete	cu m	7,983.00			
C2.02	1612	Boring for cast-in-situ RCC pile of specified diameter Excluding reinforcing bar and concrete using Bentonite as per specification and drawing etc. all complete.					
a.		For Pile, 1.0m dia.	m	165.00			
C2.03	2000	Providing and placing machine mixed cement concrete M10/40 for leveling course including compaction, curing, testing etc. all complete as per specification and drawing.	cu m	135.00			
C2.04	2000/ 1600	Providing and placing machine mixed cement concrete (Mix from Batching Plant) M30/20 for footings/piles including compaction, curing, testing etc. all complete as per specification and drawing.	cu m	1,138.00			

For Reference Only

SASEC Mugling-Pokhara Highway Improvement Phase I Project

Improvement of Mugling - Anbukhaireni- Phokhara Road (Section-02)

Contract Length: Km 49+700 to Km 88+583

Contract No: SMPHIP/OCB/MAP-02

Bill of Quantities

Item No.	Spec. Clause Ref.	Item Description	Unit	Quantity	Unit Rate (NRs.)		Total Amount (NRs.)
					In Figures	In Words	
C2.05	2000	Providing and placing machine mixed cement concrete (Mix from Batching Plant) M35/20 for pier,piles caps including compaction, curing, testing etc. all complete as per specification and drawing.	cu m	1,926.00			
C2.06	2000	Providing and laying Reinforcing Steel Bar including cutting, bending, fixing in position etc. all complete as per specification and drawing.	t	252.74			
C2.07	1800	Providing, Preparing and Installing Form Work (F1 Finish) including necessary supports and removing after completion all complete as per specification and drawing	sq m	1,028.00			
C2.08	701	Providing and Installation of 32mm dia HDPE Pipe (6kg/m2) for pressure grouting in the pile including all necessary fittings, all complete as shown in drawings.	m	175.00			
C2.09	2709	Pressure grouting works (6kg/m2 pressure) with cement -admixes material in pile including other set-up as necessary to perform the work as per specification. (for max of 0.06m3 of grouting material or 100kg.of cement)	nr	10.00			
C2.10	2709	Rate per kg for under or over use of grouting material (cement -admixes) in pile based on actual consumption	kg.				
		Total of Bill C2 - Carried to Summary :					
C3		**Sub-Structure Works**					
C3.01	2000	Providing and placing machine mixed cement concrete (Mix from Batching Plant) M30/20 for the abutment, wing wall, approach slabs and stoppers etc. including compaction, curing, testing etc. all complete.	cu m	1,115.00			
C3.02	2000	Providing and placing machine mixed cement concrete (Mix from Batching Plant) M35/20 for pier and pier cap etc. including compaction, curing, testing etc. all complete.	cu m	1,190.00			
C3.03	1800	Providing, preparing and installation of Formworks (F2 finish) for vertical surface of substructures including necessary supports and removing after completion, all complete.	sq m	3,752.00			
C3.04	2000	Providing and laying reinforcing Steel Bar including cutting, bending, binding, fixing in position etc. all complete as shown in drawing.	t	259.28			
C3.05	2400, 3110	Providing , laying and fixing of geotextile (filter fabrics).	sq m	56.00			
C3.06	3110	Backfilling with graded filter materials in layer with necessary watering and compaction, all complate.	cu m	421.00			
C3.07	3109	Provide and installation of Weep Hole with 100mm HDEP pipe in abutment, all complete	m	778.00			

For Reference Only

SASEC Mugling-Pokhara Highway Improvement Phase I Project

Improvement of Mugling - Anbukhaireni- Phokhara Road (Section-02)

Contract Length: Km 49+700 to Km 88+583

Contract No: SMPHIP/OCB/MAP-02

Bill of Quantities

Item No.	Spec. Clause Ref.	Item Description	Unit	Quantity	Unit Rate (NRs.)		Total Amount (NRs.)
					In Figures	In Words	
C3.08	2100A	Providing and installation of 26mm Dia anchorage cable as per drawing and specification	m	224.00			
		Total of Bill C3 - Carried to Summary :					
C4		**Super-Structure Works**					
C4.01	2100	Providing and placing machine mixed cement concrete (Mix from Batching Plant) M50/20 for prestressed girder including compaction, curing, testing etc. all complete as per specification and drawing.	cu m	134.00			
C4.02	2100	Providing and placing machine mixed cement concrete (Mix from Batching Plant) M45/20 for prestressed girder including compaction, curing, testing etc. all complete as per specification and drawing	cu m	425.00			
C4.03	2000	Providing and placing machine mixed cement concrete (Mix from Batching Plant) M30/20 for Girder, deck slab etc. including compaction, curing, testing etc. and necessary lead all complete	cu m	730.00			
C4.04	2000	Providing and placing machine mixed cement concrete (Mix from Batching Plant) M30/10 for wearing course in deck slab, etc. including compaction, curing, testing etc. and necessary lead all complete.	cu m	116.00			
C4.05	2000	Providing and placing machine mixed cement concrete (Mix from Batching Plant) M30/20 for cross girders and crash barriers etc. including compaction, curing, testing etc. all complete.	cu m	133.00			
C4.06	1800	Providing, preparing and installing formworks (F3 finish) for precast prestressing girder and removing after completion, all complete.	sq m	3,164.00			
C4.07	1800	Providing, preparing and installation of Formworks (F2 finish) for slab, girders and other super-structures works and removing after completion (false work included), all complete.	sq m	5,847.00			
C4.08	2000	Providing and laying reinforcement including cutting, bending, binding, fixing in position, all complete.	t	145.14			
C4.09	2100	Providing and installing prestressing tendons including prestressing, anchoring etc. all complete as per specification and drawing.	t	36.11			
C4.10	2100	Providing and installing corrugated HDPE sheaths with necessary supports including removal of extractable ones and grouting of ducts etc. complete as per specification and drawing.	m	3,861.65			
C4.11	2100	Providing and installing anchorage assembly in position etc. complete as per specification and drawing.	nr	250.00			
C4.12	2100	Lifting and Placing in position precast and post tensioned concrete girders with suitable equipment including erection, shifting and removal of the erecting equipment & its accessories, all complete as shown in drawing.	nr	25.00			

For Reference Only

SASEC Mugling-Pokhara Highway Improvement Phase I Project

Improvement of Mugling - Anbukhaireni- Phokhara Road (Section-02)

Contract Length: Km 49+700 to Km 88+583

Contract No: SMPHIP/OCB/MAP-02

Bill of Quantities

Item No.	Spec. Clause Ref.	Item Description	Unit	Quantity	Unit Rate (NRs.)		Total Amount (NRs.)
					In Figures	In Words	
C4.13	1900	Providing and installing elastomeric expansion joints as shown in the drawings and specifications including all necessary axillary and incidental works etc. all complete.	m	131.20			
C4.14	1900	Providing and installing elastomeric bearing including design of the bearings with provided data and necessary axillary and incidental works etc. all complete.	nr	80.00			
C4.15	3105	Providing and fixing in position GI pipes including fixing in position in handrail and crash barrier as shown in drawing, all complete					
a.		50mm dia GI pipes	m	441.00			
b.		75mm dia GI pipes	m	716.00			
c.		100mm dia GI pipes	m	139.00			
C4.16	3105	Providing and fixing in position Galvanised Steel Plate including steel bolts for pedestrian handrails and crash barriers rails as shown in the drawings, all complete	kg.	452.00			
C4.17	3107	Providing and fixing in position GI drainage spout including GI pipe as shown in the drawings, all complete	nr	138.00			
C4.18	3108	Providing and fixing in position Bracket for Utility as shown in the drawings, all complete	nr	69.00			
C4.19	1502	Prepare and apply reflectorized enamel paint Zebra type, black & yellow on Crash barriers in two coats in addition to one base coat as per DoR Traffic Sign Manual	sq m	343.00			
		Total of Bill C4 - Carried to Summary :					
C5		**River Training and Protection Works**					
C5.01	900	Foundation Excavation in all types of soil and Rock including shoring, dewatering, all complete	cu m	2,628.00			
C5.02	2600	Providing and laying Random Rubble Stone Masonry works in cement sand mortar MM5 C/M including scaffolding, curing, preparing cement mortar, pointing etc., all complete.	cu m	1,218.00			

For Reference Only

SASEC Mugling-Pokhara Highway Improvement Phase I Project

Improvement of Mugling - Anbukhaireni- Phokhara Road (Section-02)

Contract Length: Km 49+700 to Km 88+583

Contract No: SMPHIP/OCB/MAP-02

Bill of Quantities

Item No.	Spec. Clause Ref.	Item Description	Unit	Quantity	Unit Rate (NRs.)		Total Amount (NRs.)
					In Figures	In Words	
C5.03	2000	Providing and placing machine mixed cement concrete M10 for leveling course in CRRM including compaction, curing, testing etc. all complete as per specification and drawing.	cu m	79.00			
C5.04	2400	Supply and assemble of Machine Made mechanically salvaged Gabion and Mattresses produced from double twisted heavy coated GI wire, of hexagonal mesh size 100 mm x 120 mm, with mesh wire 3mm, selvedge wire 3.9mm, lacing wire 2.4mm and stone filling in gabions including transport and fixing of gabions in position, all complete.	cu m	1,960.00			
C5.05	2400	Providing and laying of 300 mm thick grouted stone pitching works in protection works with stones and cement sand mortar (1:3) including curing, all complete	cu m	630.00			
C5.06	2400, 3110	Providing, laying and fixing of geotextile (filter fabrics), all complete.	sq m	1,423.00			
C5.07	3110	Backfilling with graded filter materials in layer with necessary watering and compaction as shown in drawing, all complete.	cu m	254.00			
C5.08	3109	Provide and laying PVC pipe of 90mm dia (pressure 2.5 kg/cm2) for weep holes as instructed by the Engineer, all complete	m	950.00			
		Total of Bill C5 - Carried to Summary :					
C6		**Pile Tests**					
C6.01	1600	Pile load test in each bridge including construction of Test Piles with method specified by the Engineer	No	1.00			
C6.02	1600	Conducting PDA test on working piles including analysis and reporting per bridge all complete as instructed by the Engineer	No	2.00			
C6.03	1600	Pile Integrity Test, analysis and reporting using low strain waves as per ASTM D5882 with one report per bridge as directed by the Engineer, all complete.	No	10.00			
		Total of Bill C6 - Carried to Summary :					
		Total of Part C - Carried to Summary:					
PART D: MINOR BRIDGE WORKS							
D1		**General Items**					
D1.01	1501	Supplying and placing of bridge name plate, as specified by the DOR traffic sign manual	nr	16.00			

For Reference Only

SASEC Mugling-Pokhara Highway Improvement Phase I Project

Improvement of Mugling - Anbukhaireni- Phokhara Road (Section-02)

Contract Length: Km 49+700 to Km 88+583

Contract No: SMPHIP/OCB/MAP-02

Bill of Quantities

Item No.	Spec. Clause Ref.	Item Description	Unit	Quantity	Unit Rate (NRs.)		Total Amount (NRs.)
					In Figures	In Words	
D1.02	3201	Review of design of foundation including soil investigation, hydrological study, all complete.	nr	8.00			
D1.03		Dismantling of Existing RCC Bridge of all type including superstructure, substructure, foundation and all ancillary structures of the Bridge, all complete	nr	8.00			
		Total of Bill D1 - Carried to Summary :					
D2		**Foundation Works**					
D2.01	900	Excavation for foundation for abutments and piers in all types of soil and Rock including dewatering etc, all complete	cu m	5,477.66			
D2.02	2000	Providing and placing machine mixed cement concrete M15/40 for leveling course including compaction, curing, testing etc. all complete as per specification and drawing.	cu m	133.00			
D2.03	2000	Providing and placing machine mixed cement concrete (Batch Mix) M30/20 for footings for abutment including compaction, curing, testing etc. all complete as per specification and drawing.	cu m	1,498.13			
D2.04	2000	Providing and laying Reinforcing Steel Bar including cutting, bending, fixing in position etc. all complete as per specification and drawing.	t	70.06			
D2.05	1800	Providing, Preparing and Installing Form Work (F1 Finish) including necessary supports and removing after completion all complete as per specification and drawing	sq m	731.20			
		Total of Bill D2 - Carried to Summary :					
D3		**Sub-Structure Works**					
D3.01	2000	Providing and placing machine mixed cement concrete (Batch Mix) M30/20 for the abutment, approach slabs and stoppers etc. including compaction, curing, testing etc. all complete	cu m	1,425.55			
D3.02	1800	Providing, preparing and installation of Formworks (F2 finish) for vertical surface of substructures including necessary supports and removing after completion, all complete	sq m	3,011.81			
D3.03	2000	Providing and laying reinforcing Steel Bar including cutting, bending, binding, fixing in position etc. all complete as shown in drawing.	t	97.24			
D3.04	2400, 3110	Providing , laying and fixing of geotextile (filter fabrics)	sq m	1,000.00			
D3.05	3110	Backfilling with graded filter materials in layer with necessary watering and compaction, all complete	cu m	706.08			

For Reference Only

SASEC Mugling-Pokhara Highway Improvement Phase I Project

Improvement of Mugling - Anbukhaireni- Phokhara Road (Section-02)

Contract Length: Km 49+700 to Km 88+583

Contract No: SMPHIP/OCB/MAP-02

Bill of Quantities

Item No.	Spec. Clause Ref.	Item Description	Unit	Quantity	Unit Rate (NRs.)		Total Amount (NRs.)
					In Figures	In Words	
D3.06	3109	Provide and installation of Weep Hole with 100mm HDEP pipe in abutment, all complete	m	715.10			
		Total of Bill D3 - Carried to Summary :					
D4		**Super-Structure Works**					
D4.01	2000	Providing and placing machine mixed cement concrete (Batch Mix) M30/20 for the superstructure deck slab, etc. including compaction, curing, testing etc. and necessary lead all complete.	cu m	318.36			
D4.02	2000	Providing and placing machine mixed cement concrete (Batch Mix) M30/10 for wearing course in deck slab, etc. including compaction, curing, testing etc. and necessary lead all complete	cu m	70.14			
D4.03	2000	Providing and placing machine mixed cement concrete (Batch Mix) M30/20 for slab, girders and crash barriers etc. including compaction, curing, testing etc. all complete	cu m	358.12			
D4.04	1800	Providing, preparing and installation of Formworks (F2 finish) for slab, girders and other super-structures works and removing after completion (false work included), all complete.	sq m	3,401.62			
D4.05	2000	Providing and laying reinforcing steel bar including cutting, bending, binding, fixing in position, all complete	t	90.77			
D4.06	1900	Providing and installing the elastomeric expansion joints as shown in the drawings and specifications including all necessary axillary and incidental works etc. all complete	m	87.20			
D4.07	1900	Providing and installing elastomeric bearing including design of the bearings with provided data and necessary axillary and incidental works etc. all complete	nr	40.00			
D4.08	1900	Providing and placing Rubber Strip Bearing (19mm thick) as shown in drawing, all complete	sq m	26.66			
D4.09	3103	Supply and place compressible joint filler.	sq m	2.14			
D4.1	701	Providing and placing 38mm dia PVC pipe for dowel bar as shown in drawing, all complete	m	22.40			
D4.11	3105	Providing and fixing in position GI pipes including fixing in position in handrail and crash barrier as shown in drawing, all complete					
a.		50mm dia GI pipes	m	350.96			

For Reference Only

SASEC Mugling-Pokhara Highway Improvement Phase I Project

Improvement of Mugling - Anbukhaireni- Phokhara Road (Section-02)

Contract Length: Km 49+700 to Km 88+583

Contract No: SMPHIP/OCB/MAP-02

Bill of Quantities

Item No.	Spec. Clause Ref.	Item Description	Unit	Quantity	Unit Rate (NRs.)		Total Amount (NRs.)
					In Figures	In Words	
b.		75mm dia GI pipes	m	189.28			
c.		100mm dia GI pipes	m	47.00			
D4.12	3105	Providing and fixing in position Galvanised Steel Plate including steel bolts for pedestrian handrails and crash barriers rails as shown in the drawings, all complete	kg	148.66			
D4.13	3107	Providing and fixing in position GI drainage spout including GI pipe as shown in the drawings, all complete	nr	72.00			
D4.14	3108	Providing and fixing in position Bracket for Utility as shown in the drawings, all complete	nr	36.00			
D4.15	1502	Prepare and apply reflectorized enamel paint Zebra type, black & yellow on Crash barriers in two coats in addition to one base coat as per DoR Traffic Sign Manual	sq m	192.08			
		Total of Bill D4 - Carried to Summary :					
D5		**River Training and Protection Works**					
D5.01	900	Foundation Excavation in all types of soil including shoring, dewatering, all complete	cu m	299.70			
D5.02	2600	Providing and laying Random Rubble Stone Masonry works in cement sand mortar MM5 C/M including scaffolding, curing, preparing cement mortar, pointing etc., all complete	cu m	373.42			
D5.03	2000	Providing and placing machine mixed cement concrete M10 for leveling course in CRRM including compaction, curing, testing etc. all complete as per specification and drawing.	cu m	16.84			
D5.04	2400	Supply and assemble of Machine Made mechanically salvaged Gabion and Mattresses produced from double twisted heavy coated GI wire, of hexagonal mesh size 100 mm x 120 mm, with mesh wire 3mm, selvedge wire 3.9mm, lacing wire 2.4mm and stone filling in gabions including transport and fixing of gabions in position, all complete.	cu m	1,764.00			
D5.05	2400, 3110	Providing, laying and fixing of geotextile (filter fabrics), all complete	sq m	376.08			
D5.06	3110	Backfilling with graded filter materials in layer with necessary watering and compaction as shown in drawing, all complete	cu m	52.62			

For Reference Only

SASEC Mugling-Pokhara Highway Improvement Phase I Project

Improvement of Mugling - Anbukhaireni- Phokhara Road (Section-02)

Contract Length: Km 49+700 to Km 88+583

Contract No: SMPHIP/OCB/MAP-02

Bill of Quantities

Item No.	Spec. Clause Ref.	Item Description	Unit	Quantity	Unit Rate (NRs.)		Total Amount (NRs.)
					In Figures	In Words	
D5.07	3109	Provide and laying PVC pipe of 90mm dia (pressure 2.5 kg/cm2) for weep holes as instructed by the Engineer, all complete	m	570.00			
		Total of Bill D5 - Carried to Summary :					
		Total of Part D - Carried to Summary:					
PART E: PERFERMANCE BASED MAINTENANCE WORKS AND SERVICES							
E1	3300	Performance based maintenance works and services including all activities as per specification except emergency work.	km-mon	2,333.00			
		Total of Part E - Carried to Summary:					
PART F: SCHEDULE OF DAYWORKS DURING CONSTRUCTION WORKS AND PBM WORKS AND SERVICES							
F8.01		**Labour**					
a)		Skilled labour (Mason, Carpenter, mechanics etc.)	per-day	500.00			
b)		Unskilled labour (Including Unskilled, helpers, assistant operators etc.)	per-day	1,000.00			
F8.02		**Equipment**					
a.		Tipper/truck > 5 Cu m capacity	h	800.00			
b.		Loader > 2.5 Cum. Capacity	h	800.00			
c.		Excavator >0.75 Cum. Capacity	h	800.00			
d.		Motor grader (> 135 HP)	h	800.00			
e.		Vibratory roller (> above 10 ton capacity)	h	800.00			
f.		Plate Vibrator	h	800.00			
F8.03		**Material**					

For Reference Only

SASEC Mugling-Pokhara Highway Improvement Phase I Project

Improvement of Mugling - Anbukhaireni- Phokhara Road (Section-02)

Contract Length: Km 49+700 to Km 88+583

Contract No: SMPHIP/OCB/MAP-02

Bill of Quantities

Item No.	Spec. Clause Ref.	Item Description	Unit	Quantity	Unit Rate (NRs.)		Total Amount (NRs.)
					In Figures	In Words	
a.	700	Concrete NP3 Pipe 450mm Diameter	m	250.00			
b.	700	Concrete NP3 Pipe 600mm Diameter	m	200.00			
c.	700	Concrete NP3 Pipe 900mm Diameter	m	100.00			
d.	600	Stone	cu m	100.00			
e.	600	Cement	t	10.00			
f.	600	Sand	cu m	50.00			
g.	600	Aggregate	cu m	75.00			
h.	2400	Supply of machine made mechanically selvedged gabion crates of various sizes including binding wire, all complete	sq m	1,000.00			
		Total of Part F - Carried to Summary :					
PART G: PROVISIONAL SUM							
G1.01	103	Relocation of services.	ps	1.00	467,150,000.00	Four hundred sixty seven million One hundred fifty thousand Rupees	
G2.02		Environmental monitoring, enhancement, mitigation works, environment awareness campaign as instructed by the Engineer	ps	1.00	10,000,000.00	Ten Million Rupees	
G3.03		Compensatory Tree Plantation	ps	1.00	34,039,500.00	Thirty Four Million Thirty Nine Thousand Five Hundred Rupees	
G4.04		Social compliance and safe guards as instructed by the Engineer	ps	1.00	34,039,500.00	Thirty Four Million Thirty Nine Thousand Five Hundred Rupees	

For Reference Only

SASEC Mugling-Pokhara Highway Improvement Phase I Project

Improvement of Mugling - Anbukhaireni- Phokhara Road (Section-02)

Contract Length: Km 49+700 to Km 88+583

Contract No: SMPHIP/OCB/MAP-02

Bill of Quantities

Item No.	Spec. Clause Ref.	Item Description	Unit	Quantity	Unit Rate (NRs.)		Total Amount (NRs.)
					In Figures	In Words	
G5.05		Additional testing of material or works as required by the Engineer.	ps	1.00	1,000,000.00	One Million Rupees	
G6.06		Emergency fund for PBM Works and Services	ps	1.00	58,325,000.00	Fifty Eight Million Three Hundred Twenty Five Thousand Rupees	
G7.07		Provision of Street lights and other traffic safety measures	ps	1.00	150,000,000.00	One Hundred Fifty Million Rupees	
		Total of G			**754,554,000.00**		
		Total from part A to part G					
		VAT 13%					
		Total including VAT					

For Reference Only

Section 5 - Eligible Countries

This Section contains the list of eligible countries.

Regional Members

1.	AFG	Afghanistan	26.	MON	Mongolia
2.	ARM	Armenia	27.	MYA	Myanmar
3.	AUS	Australia	28.	NAU	Nauru
4.	AZE	Azerbaijan	29.	NEP	Nepal
5.	BAN	Bangladesh	30.	NZL	New Zealand
6.	BHU	Bhutan	31.	NU	Niue
7.	BRU	Brunei Darussalam	32.	PAK	Pakistan
8.	CAM	Cambodia	33.	PAL	Palau
9.	PRC	China, People's Republic of	34.	PNG	Papua New Guinea
10.	COO	Cook Islands	35.	PHI	Philippines
11.	FIJ	Fiji	36.	SAM	Samoa
12.	GEO	Georgia	37.	SIN	Singapore
13.	HKG	Hong Kong, China	38.	SOL	Solomon Islands
14.	IND	India	39.	SRI	Sri Lanka
15.	INO	Indonesia	40.	TAP	Taipei,China
16.	JPN	Japan	41.	TAJ	Tajikistan
17.	KAZ	Kazakhstan	42.	THA	Thailand
18.	KIR	Kiribati	43.	TIM	Timor-Leste
19.	KOR	Korea, Republic of	44.	TON	Tonga
20.	KGZ	Kyrgyz Republic	45.	TKM	Turkmenistan
21.	LAO	Lao PDR	46.	TUV	Tuvalu
22.	MAL	Malaysia	47.	UZB	Uzbekistan
23.	MLD	Maldives	48.	VAN	Vanuatu
24.	RMI	Marshall Islands	49	VIE	Viet Nam
25.	FSM	Micronesia, Federated States of			

Non-regional Members

1.	AUT	Austria	11.	NET	The Netherlands
2.	BEL	Belgium	12.	NOR	Norway
3.	CA	Canada	13.	POR	Portugal
4.	DEN	Denmark	14.	SPA	Spain
5.	FIN	Finland	15.	SWE	Sweden
6.	FRA	France	16.	SWI	Switzerland
7.	GER	Germany	17.	TUR	Turkey
8.	IRE	Ireland	18.	UKG	United Kingdom
9.	ITA	Italy	19.	USA	United States
10.	LUX	Luxembourg			

For Reference Only

Government of Nepal
Ministry of Physical Infrastructure and Transport
Department of Roads
Project Directorate (ADB)
Kathmandu, Nepal

SASEC Mugling Pokhara Highway Improvement Phase I Project (SMPHIP)
(ADB Loan No. 52097-002)

Mugling-Anbukhaireni-Pokhara Road (Section – 2) (From 49+700 to km 88+583)

Contract No. SMPHIP/OCB/MAP/02

Phase 1: Upgrading Works
(Upgrading of existing road from 2-Lanes to 4 Lanes and Service Lanes, Structures, Bridges, etc. including Defect Notification Period)

Phase 2: Performance Based Maintenance Works
(Maintenance works consisting of all activities to be carried out to achieve and keep the road assets as defined in the PBM Specifications)

Bidding Document

Part II Employer's Requirements

Section6A	Summary of Description of Works
Section6B	Standard Specifications
Section6C	Special Provisions to Standard Specifications
Section6D	Drawings (In Separate Volume)
Section6E	Personnel Requirements
Section6F	Equipment Requirements

November 2019

For Reference Only

Preface

This Bidding Document for the Procurement of Works (Single Stage – Two Envelope) has been prepared by the Government of Nepal, Ministry of Physical Infrastructure and Transport, Department of Roads, Project Directorate (ADB) and is based on the Standard Bidding Document issued by the Asian Development Bank dated June 2018.

ADB's SBD Works has the structure and the provisions of the Master Procurement Document entitled "Bidding Documents for the Procurement of Works", prepared by multilateral development banks and other public international financial institutions, except where ADB-specific considerations have required a change.

For Reference Only

Table of Contents - Summary Description

PART I BIDDINGPROCEDURES

Section 1 - Instructions to Bidders (ITB) ---------- 1-1
This Section specifies the procedures to be followed by Bidders in the preparation and submission of their Bids. Information is also provided on the submission, opening, and evaluation of bids and on the award of contract.

Section 2 - Bid Data Sheet (BDS) ---------- 2-1
This Section consists of provisions that are specific to each procurement and supplement the information or requirements included in Section 1 - Instructions to Bidders.

Section 3 - Evaluation and Qualification Criteria (EQC) ---------- 3-1
This Section contains the criteria to determine the lowest evaluated bid and the qualifications of the Bidder to perform the contract.

Section 4 – Bidding Forms (BDF) ---------- 4-1
This Section contains the forms which are to be completed by the Bidder and submitted as part of his Bid.

Section 5 – Eligible Countries (ELC) ---------- 5-1
This Section contains the list of eligible countries.

PART II EMPLOYERS REQUIREMENTS

Section 6 - Employer's Requirements (ERQ) ---------- 6-1
This Section contains the Specifications, Drawings, and Supplementary Information that describe the Works to be procured, Personnel Requirements, and Equipment Requirements.

Section 6A – Summary of Description of Works
This Section contains the summary list of main works to be executed under the contract. Specification, Special provisions and, the Drawings, that describe the Works to be procured.

Section 6B – Standard Specifications
This document has been issued under the authority of the Government of Nepal, Ministry of Physical Planning and Works, Department of Roads (July 2001), it can be purchased from the Central Road Laboratory, Kupandole, Lalitpur.

Section 6C – Special Provisions
This section contains amendments, supplements, etc. to the standard specifications to suit the specific requirements of the project, including sections regarding Minor Bridges and PBM works.

Section 6D – Drawings
The drawings are presented in a separate volume.

Section 6E – Personnel Requirements
This section provides the information on Personnel Requirements.

Section 6F – Equipment Requirements
This section provides the information on Equipment Requirements.

PARTIII CONDITIONS OF CONTRACT AND CONTRACTFORMS

Section 7 - General Conditions of Contract (GCC) ---------- 7-1
This Section contains the general clauses that govern the Contract. These General Conditions shall be the Conditions of Contract for Construction, Multilateral Development Bank Harmonized Edition, prepared by the Fédération Internationale des Ingénieurs- Conseil (FIDIC June 2010 MDB version). These Conditions are subject to the variations and additions set out in Section 8 (Particular Conditions of Contract).

Section 8 - Particular Conditions of Contract (PCC) ---------- 8-1
This Section contains provisions which are specific to each contract and which modify or supplement the GCC. Whenever there is a conflict, the provisions herein shall prevail over those in the GCC.

Section 9 – Contract Forms (COF) ---------- 9-1
This Section contains forms, which, once completed, will form part of the Contract. The forms for Performance Security and Advance Payment Security, when required, shall only be completed by the successful Bidder after contract award.

For Reference Only

Part II - Employers Requirements

This Section contains the Summary of Description of Works, Specifications and Drawings that describe the Works to be procured.

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Section 6A: Summary of Description of Works

Mugling-Pokhara Road is a National Highway (H-04) under strategic road networks of Nepal and lies in Tanahu and Kaski districts (state no 4) of Nepal.

The road starts from Abukhaireni (Km 8+250) of Tanahu District (km 0+000 considered at Mugling Bridge) district and ends at Seti River (Km 88+583) of Kaski district. The road has been split into two (2) sections for procurement of works, (i) Section - 1 from Km 8+250 to Km 49+700 and (ii) Section - 2 from Km 49+701 to Km 88+583.

The Works under this Contract consist of Phase 1: Upgrading Works; with Upgrading of existing road from 2-Lanes to 4 Lanes and Service Lanes, Structures and Construction of Bridges, etc. including Defect Notification Period and Phase 2: Performance Based Maintenance Works; with Maintenance works consisting of all activities to be carried out to achieve and keep the road assets as defined in the PBM Specifications on upgraded 4-Lane Mugling-Pokhara Road.

The Detail Drawings related to the improvement works have been included as Section 6D and provided in a separate volume. The estimated quantities of individual work items are contained in the Bill of Quantities. Description of works, materials, and workmanship, methods of testing and requirement and criteria for acceptance of Works etc. are detailed in the Standard Specifications and Special Provisions to the Standard Specifications in Sections 6B and 6C respectively.

The Summary Description of the main works, however, is as follows:

i) Traffic management provisions during construction including the construction of diversions roads and bridges;
ii) Roadway excavation and formation of embankment for widening of road section and for geometric improvement of road;
iii) Construction of side drains, retaining structures;
iv) Construction of cross-drainage structures;
v) Construction of sub-base, base and bituminous pavement;
vi) Supply, erection and installation of road safety measures,
vii) Construction of bridges and their elements;
viii) Dismantling of existing RCC bridges;
ix) Performance based maintenance works to achieve and keep the road assets as defined in the PBM Specifications, etc.

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Section 6B: Standard Specifications

Standard Specifications for this contract shall be the "Standard Specifications for Road and Bridge Works" issued under the authority of the Government of Nepal, Ministry of Physical Planning and Works, Department of Roads (Ashad, 2058 / July, 2001)

The Standard Specifications may be purchased from the Departments of Roads, Central Road Laboratory, Kupondole, Lalitpur.

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Section 6C: Special Provisions to the Standard Specifications

The Standard Specifications for Road and Bridge Works issued by the Government of Nepal, Ministry of Physical Infrastructure and Transport, Department of Roads together with these Special Provisions shall be used to specify the construction of the Works.

The Special Provisions contained herein shall be read in conjunction with the Standard Specifications and shall supplement, replace or supersede the Standard Specifications as appropriate. Where there is any ambiguity or discrepancy between the Standard Specifications and the Special Provisions; the Special Provisions shall have preference and shall govern.

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Section 100 - General

Delete Clause 101 in its entirety and substitute with the following:

101 Office, Accommodation, Vehicles, Survey Equipment and Site Laboratory

101.01 Provision of Office and Accommodation with Furnishing/ Equipment, Operation and Maintenance

A. General Requirements

The Contractor shall provide office and accommodation with the furniture, furnishing, equipment, consumables, operation and maintenance for the Employer and his staff as described below.

Office shall be with the facilities as shown in Appendix - 2 and the accommodation shall be with the facilities as shown in Appendix - 3. The office and accommodation provisions shall include the construction of new buildings on the land provided by the Employer within the DOR premises at Tanahu/Kaski district with the facilities and maintenance. It also includes the clearance of site, access roads, parking facilities and other necessary appurtenances such as power mains connection, water supply mains, drainage systems, fences, utilities, area development etc.

After providing the office and accommodation with the facilities the Contractor shall also maintain.

B. Sole Use of Office and Accommodation

The office and accommodation facilities shall be for the sole use of the Employer.

C. Land for Offices and Accommodation

The Contractor shall construct the office and accommodation buildings on the land provided by the Employer within the Kaski/Tanahu district. The office and accommodation buildings, equipment and furniture etc will remain the property of the Employer at completion of the contract.

D. Services

The Contractor shall arrange for the connection of water mains, drainage and sewerage and electricity mains to the office and accommodation which facilities shall be functional at all times. The Contractor shall ensure that these facilities of adequate power, supply of potable water and sewage disposal etc. conform in full to the requirements mentioned in the Conditions of Contract and in this Specification. A standby generator, with fuel, of appropriate capacity shall be provided to each office and accommodation for use during periods of load shedding and power failure.

Telephone services including at least one direct line shall be provided for each office and accommodation.

E. Office and Accommodation Buildings

Office Building Structure:

The Contractor shall construct complete RCC framed structure office building that is acceptable to the Employer. Room requirements for the Office shall be with the floor area of minimum 450 sq m with minimum sixteen (16) rooms plus two (2) meeting halls, 2 pantries and minimum six (6) toilet bathrooms. The walls of the office building shall be of Brick Masonry of thickness 230 mm with cement plaster works on inside and outside.

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Roofs shall be constructed of RCC slab. The whole structure shall comply with local regulations regarding earthquake resistance and shall in any case incorporate a continuous system of reinforced concrete columns and beams. External wall surfaces shall be finished with two coats of weather resistant paint. Internal wall surfaces shall be finished with two coats of plastic emulsion.

The contractor shall prepare the drawing of the buildings and get approval from the engineer as well as from the concerned government authorities before commencement of the building. The contractor shall pay all the taxes/duties for the approval of drawings from the government authorities.

Accommodation Building Structure:

The Accommodation building shall be constructed in RCC framed structure with brick masonry walls. The walls shall be of minimum thickness 230 mm with cement plaster works on inside and outside.

Roofs shall be constructed of RCC slab. The whole structure shall comply with local regulations regarding earthquake resistance and shall in any case incorporate a continuous system of reinforced concrete columns and beams. External wall surfaces shall be finished with two coats of weather resistant paint. Internal wall surfaces shall be finished with two coats of plastic emulsion. The building shall be of two stories. Room requirements for Accommodation shall be with floor area of approximately 300 sq m total in two and half stories with the provisions of three (3) rooms plus kitchen, dining and two (2) toilet bathroom in each floor.

The contractor shall prepare the drawing of the buildings and get approval from the engineer as well as from the concerned government authorities before commencement of the building. The contractor shall pay all the taxes/duties for the approval of drawings from the government authorities for both Accommodation and Office Buildings.

Ancillary Works:

The buildings shall be constructed on concrete foundations with concrete floor slab. Concrete floor slabs shall have continuous damp-proof course material below the slab. The foundation area shall be built up as necessary to ensure that the level of the underside of the floor slab is at least 300 mm above surrounding ground level and at least 300 mm over the highest recorded flood level.

Internal headroom shall be 3.4 m throughout. The building shall be surrounded with a covered concrete verandah or walkway on all sides having a covered width not less than 1 m and set at a level 100 mm below the interior floor level.

Rooms shall open off a central or main corridor having a width of at least 1.30 m throughout and opening onto front and back doors. All rooms shall have secure lockable doors onto the main corridor and shall have windows opening to the outside secured with burglar proof grills.

Floors shall be covered with linoleum / PVC tiles/flooring carpet throughout. All wood work shall be sanded smooth and finished with one coat primer, two coats of oil based undercoat and one coat of oil based top coat. Door and windows shall be of approved hardwood or else as approved by the Engineer and the Employer.

Other Requirements:

All structural and layout drawings shall be approved by the Engineer before construction commences. All paints and floor finishes shall be approved by the Engineer before painting or flooring work commences.

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Covered parking space for minimum six (6) vehicles shall be provided for the Employer's vehicles and this covered area shall be connected to the office building by a covered concrete walkway having a minimum covered width of 1.5 m.

Brick wall of minimum 230 mm thick and plaster on it (height of wall minimum 2 meter or as directed by the engineer) shall be constructed to cover the whole compound. And the whole compound shall be fenced and gated with chain link fence at least 1.5 m in height above the wall

Each room shall be provided with sufficient power outlet sand light fittings. Additional table lamps shall be provided as required. External lighting shall be provided to give adequate illumination of the whole area surrounding the buildings and covered parking spaces.

The contractor shall provide servant's quarter and guard house within the premises. Each servant's quarter and guard house shall have RCC Structure and 2 rooms and Toilet/Bathroom with necessary fittings separately.

Each toilet shall be fitted with a wash basin with running water (Both hot and cold). All toilets shall be of western type.

The construction and finishing of the office and accommodation buildings including fittings, furnishings and equipment shall be completed within 20 weeks from the date of the Engineer's Notice to Commence the Works.

Typical drawings of the office and accommodation buildings shall be provided to the Contractor. The Contractor shall require preparing and submitting the working drawings for the Engineer's approval before starting the construction works.

Office and Accommodation buildings along with the facilities in accordance with this Clause shall become the property of the Employer on the completion of the Contract.

F. Provision of Temporary Office and Accommodation Facilities

The Contractor shall provide temporary office and accommodation facilities along with the furniture/furnishing, equipment, consumables, operation and maintenance etc for the period from the date of the Notice to Commence the Works until the completion of the permanent office and accommodation facilities.

If the Contractor fails to provide the temporary and permanent office and accommodation facilities within the stipulated time the Employer will arrange suitable office and accommodation for his use and the full costs of doing so will be deducted by the Employer from any monies due to the Contractor.

No separate payment shall be made for the provision of the temporary office and accommodation facilities. The Contractor shall include his cost for the provision of temporary office and accommodation facilities within the price quoted for the permanent office and accommodation facilities in the respective items of the Bill of Quantities.

G. Furnishings and Equipment

The fittings, furnishings and equipment to be provided in office and accommodation are described in the Appendices - 2 and Appendix - 3 respectively, and shall become the property of the Employer on completion of the Works.

H. Maintain and Run Office and Accommodation and Provision of Supplies

The Contractor shall maintain the buildings and the contents thereof supplied under the Contract in good working order. The Contractor shall be responsible for supplying all power, water and telephone services to the office and accommodation, and shall meet all costs for

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these services, except for the cost of any overseas calls. A standby generator of specified capacity is required at both office and accommodation to provide a continuous supply of power during the period of load shedding and power failure.

The Maintenance of the Employer's office and accommodation shall include daily cleaning to the satisfaction of the Employer and including the manpower and materials required for. The Contractor shall maintain all grounds and gardens that surround the building to the satisfaction of the Employer.

The Contractor shall maintain in good condition, provide services regularly and repair or replace all items of furniture, fittings and equipment supplied and installed in the buildings as required.

The Contractor shall provide adequate security to guards from registered security company and secure the buildings on a 24 hours per day basis.

The Contractor shall provide stationery for the Employer as required and duly requisitioned by personnel authorized by the Employer. Stationery shall include all consumable office items and shall include paper, writing materials, printing materials (e.g. printer cartridges, printer ribbons, copier toner etc.) and all general office requisites. Likewise the Contractor shall supply all other consumables for office and accommodation as required and provisioned in the Contract.

A wireless internet facility shall be provided at both office and accommodation in order to facilitate the transmission of project data and information.

I. Measurement

Construction of office building including electrical, plumbing and sanitary works all complete as per the Drawings and the Specifications and to the satisfaction of the Employer shall be measured as a Lump Sum item as provisioned in the respective items in the Bill of Quantities.

Maintaining and operating the Employer's/Engineer's office and Employer's accommodation at site including supply of consumables etc., all complete as per the Specifications and to the satisfaction of the Employer shall be measured on a monthly basis as provisioned in the in the respective items of the Bill of Quantities.

Provision of furniture, furnishings and equipment, etc for the office and accommodation of the Employer as detailed in these Specifications and to the satisfaction of the Employer shall be measured on a Lump Sum basis as provisioned in the respective items of the Bill of Quantities.

The measurement of all the items described above shall commence from the date of the Employer's occupation of the permanent office and accommodation facilities. No separate measurement shall be made for temporary provisions

J. Payment

Payment of the construction of office building (Pre-Fab Structure, Single Story) and accommodation building (RCC Structure, two stories) including electrical, plumbing and sanitary works all complete shall be made against the respective items of the Bill of Quantities upon the completion of the Works to the satisfaction of the Engineer and the Employer.

Payment for maintaining and operating the Employer's office and accommodation at site including supply of consumables etc., all complete shall be made against the respective items of the Bill of Quantities.

Payment for the provision of furniture, furnishings and equipment, etc for the office and accommodation of the Employer shall be made against the respective items of the Bill of

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Quantities upon the supply and installation of these facilities to the satisfaction of the Engineer and the Employer.

The payment shall represent full and final payment for the contract items and the Contractor shall not be entitled to any further compensation. The Contractor shall provide such facilities during the extended time period as long as the Employer may require.

In the event the Contractor fails to maintain, repair or replace any defective or inadequate office, or equipment item, the Employer shall effect such maintenance, repairs or replacement and shall deduct the cost from any monies due to the Contractor.

The rate quoted by the Contractor for the lump sum pay items shall deem to cover the full contract period including any Extensions of Time (EOT). No additional payment shall be made for the period of any Extension of Time (EoT) for such items.

101.02 Vehicles for the Employer

A. General Requirements

TheContractorshallprovidenewplain-colouredmotorvehicleasdescribedintheAppendix-4forthe exclusive use of the Employer, for any purpose in connection with the Works. The Contractor shall obtain approval from the Employer before supplying the vehicle. The vehicle shall be licensed and insured for use on the public highway with comprehensive insurance cover for any qualified driver, together with any authorised passengers and the carriage of goods or samples.

The Contractor shall provide a competent and qualified driver holding a valid driver's license having an experience of minimum 5 years as a driver of similar vehicle types. The Contractor shall provide fuel, oil and maintenance in conformity with the vehicle manufacture's recommendations.

The Contractor shall provide a suitable replacement for any vehicle that is out of service for more than 24 hours. Vehicles shall be provided and maintained in accordance with the above for as long as they are required by the Employer. Vehicles shall be reverted to the Contractor when no longer required by the Employer.

B. Measurement

Provisions of the vehicles for the Employer shall be measured as the number of months the vehicles are provided and maintained. Measurement shall be made during the total period the vehicle is in use by the Employer. Vehicle not provided for the full 24 hour day will be measured for payment on pro- rata basis of the actual hours available out of the 24 hour day.

C. Payment

Payment for vehicles shall be made at the unit price per vehicle month for each vehicle as contained in the Bill of Quantities. Payment shall include the supply of the vehicle and driver, fuel, oil, insurance, license, maintenance, spares, repairs and all other running and maintenance costs.

101.03 Provision of Site Laboratory

A. General Requirements

The Contractor shall provide, operate and maintain an adequately equipped site Laboratory complete with all utilities, services apparatus and fittings as set out in Appendix - 6 and Appendix - 7 to undertake the required testing to ensure the quality of the materials and the works. The Contractor shall also supply and provide, at the laboratory the standards listed and set out in Appendix - 1. The laboratory space including lab office and lab

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arrangement shall be with plinth area of approximately 120 sq m with two (2) rooms plus one additional large hall, outside covered veranda and toilet bathroom.

The Site Laboratory shall be located within 500 m of the site and the lab building may be located at the rented building or newly constructed on rented land. The laboratory shall be available up to the end of the project.

The complete laboratory facilities shall include the provision of land, site grading, access roads, covered parking facilities for vehicles, construction of building and all necessary appurtenance such as electricity, drainage systems, fences and utilities etc.

The contractor shall supply furniture, fittings, equipment, vehicle, manpower and materials to provide fully functional site laboratory.

The site laboratory shall be ready to use within 10 weeks from the date of the Engineer's notice to commence the Works. Alternative arrangement for testing shall be made by the date of commencement of works.

The Contractor shall be fully responsible for the equipment including:-

- Maintaining, calibrating and servicing equipment as required.
- Repairing all defects including accidental damage as required.
- Replacing any lost or stolen items.
- Effecting insurance of the equipment against damage or loss.
- The tests which cannot be performed at site shall be carried out off the site at renowned laboratory acceptable to the Engineer.

The site lab shall be made available for testing as long as it is required including any period after the Completion of construction during which it is required for final measurement purposes.

At the completion of the project, the furniture and equipment shall be the property of the Contractor.

B. Measurement

Providing laboratory space, maintaining and operating the material testing laboratory at site, etc., all complete, shall be measured on monthly basis as provided in the Bill of Quantities. It includes establishing the site laboratory which includes construction/renting of lab building, required consumables, maintenance and operation of the site laboratory and supply of laboratory personnel and staff at laboratory for day to day works and testing etc.

Providing furniture and equipment etc., all complete for the material testing laboratory at site shall be measured on Lump Sum basis as provided in the Bill of Quantities. It includes supply and fixing of a complete set of equipment, furniture and other requisite items, etc, detailed in the Appendices.

C. Payment

Payment for providing laboratory space, maintaining and operating the material testing laboratory at site, etc. all complete shall be made against the respective item of the Bill of Quantities.

Payment for providing furniture and equipment etc., all complete for the material testing laboratory at site shall be made in the respective Lump Sum item as provisioned in the Bill of Quantities. The Lump sum payment shall be made in two installments. First installment

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of 70% of item rate shall be made upon the completion of supply and installation of the equipment and furniture to the satisfaction of the Engineer. The remaining second 30% of the item rate shall be made upon the completion of 75% of the Works.

Payment shall represent full and final payment for the Contract Items and the Contractor shall not be entitled to any further compensation. The Contractor shall provide such facilities during the extended time period as long as the Employer may require.

In the event the Contractor fails to maintain, repair or replace any equipment item, the Employer shall carryout such maintenance, repairs or replacement and the Employer shall deduct the cost from any monies due to the Contractor.

The rate quoted by the Contractor for the lump sum pay items shall deem to cover the full contract period including any Extensions of Time (EOT). No additional payment shall be made for the period of any Extension of Time (EoT) for such items.

101.04 Survey Equipment

A. General Requirements

The Contractor shall be equipped with the minimum survey equipment as detailed in Appendix - 5.

These equipment shall be in the possession of the Contractor at Site within 10 weeks from the date of Engineer's notice to commence the Works. The Contractor shall at all-times be responsible for:

- Maintaining, calibrating and servicing equipment as required.
- Repairing all defects including accidental damage as required.
- Replacing any lost or stolen items.
- Effecting insurance of the equipment against damage or loss.

The Contractor shall maintain the survey equipment at site for as long as it is required including any period after the Completion of Works during which it is required for final measurement purposes.

The Contractor shall ensure that the Engineer and his staff have full access to this equipment at all times during the course of the execution of works.

B. Measurement and Payment

No separate measurement and payment shall be made for the provision of survey equipment and the costs associated with the provision of the survey equipment shall be considered to be included in the rates for other items of the works.

102 Accommodation of Traffic

Delete Clause 102 in its entirety and substitute with the following:

Change heading of Clause 102 Accommodation of Traffic to Clause 102 Traffic Management Provisions as follows:

102 Traffic Management Provisions

(1) Scope

This Clause covers the requirements to be met by the Contractor in relation to traffic management provisions at construction sites which include management of regular traffic on existing road or proposed temporary works (diversions), management of construction

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traffic and traffic control and guidance schemes in order to ensure safe and reasonably efficient operation of vehicular and pedestrian traffic along the subject road corridors.

The passage over or through the Works shall be used by the public or the agents of the Employer or by public traffic or by vehicles of the Employer, whether connected with the Contract or not and that shall not constitute use or occupation by the Employer. So the Contractor shall make proper traffic management provisions at construction sites to open the traffic during construction and provide the alternate route for traffic in case of closure of a particular section.

(2) Preparation of Traffic Management Plan

The Contractor shall prepare Traffic Management Plan (TMP) based on the guidelines provided by the Engineer and submit it to the Engineer for approval prior to the commencement of construction. The Plan shall show the means and methods of operation and control of existing as well as its construction traffic during the construction works. The means and methods of managing traffic shall be suitable and adequate for ensuring safety of all road users as well as Contractor's own workers and to the satisfaction of the Engineer. The Traffic Management Plan shall include but not be limited to the following.

i. Traffic control equipment the Contractor proposes to use for the Works;
ii. Traffic control signage including location and sign descriptions;
iii. How and when the Contractor proposes to use traffic control flagmen;
iv. Traffic control means during non-working periods; and
v. Traffic control means and devices for night and off-peak periods.
vi. Lane closure plan, where the Contractor intends to close the road partially;
vii. Traffic diversion plan, where the Contractor proposes to close the road fully.

The general traffic management requirements will be as given below.

(3) General Traffic Management Requirements

The following conditions shall apply in regard to traffic management:

a) The Contractor shall keep existing roads open to traffic during the performance of the Works, provided that when approved by the Engineer the Contractor may bypass traffic over a detour. The Contractor shall at all times keep roads and footpaths, affected by his operations, free from soil and material spillage.

b) In order to facilitate better traffic management as well as least convenience to road users, the construction works shall be divided in to stretches of less than 5 km each and the contractor shall prepare work schedule for construction works on each stretch such that no construction works shall be carried out in adjoining stretches and submit it for engineer's approval. Construction works shall not be carried out in adjoining stretches without prior written instruction of the engineer.

c) The Contractor shall keep the length of the construction areas in such condition that traffic will be accommodated safely. Traffic control devices and services shall be provided and maintained both inside and outside the Project limits as needed to facilitate traffic guidance should this be necessary.

d) Prior to the start of construction operations, the Contractor shall erect such signs, barricades, and other traffic control devices as may be required by the plans, specifications or as directed by the Engineer. Traffic control devices shall be operated only when they are needed and only those devices that apply to conditions actually in existence shall be operable. The Contractor shall obtain prior approval from the competent authority (Traffic Police) of the plans and specification of the proposed traffic management works before the commencement of work

e) Temporary fences shall be placed to provide a visual barrier between the work area and adjacent traffic or buildings and at locations directed by the Engineer.

f) Any devices provided under this Clause that are lost, stolen, destroyed, or deemed unacceptable while their use is required on the Project shall be replaced by the Contractor without additional compensation.

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g) During non-working hours and following completion of a particular construction operation, all warning signs, except those necessary for the safety of the public, shall be removed or entirely covered with either metal or plywood sheeting so that the sign panel will not be visible.

h) The contractor shall keep retro-reflective sheeting on signs, barricades, and other devices. The Contractor shall also promptly correct stretches, rips, and tears in the sheeting. Retro- reflective sheeting shall have a maintained retro-reflection.

i) Night time operations, if any approved by the Engineer, shall be illuminated by a lighting system approved by the Engineer. The lighting system shall be positioned and operated to preclude glare. Incandescent lights will not be permitted.

j) The Contractor shall take necessary care at all times during the execution of the works to ensure the existing convenience and safety of residents along and adjacent to the road, and any public highway or other facility that may be affected by the Works. Street lighting shall be relocated as necessary to maintain the same standard of lighting during the course of the works until new lighting facilities are brought into operation.

k) The Contractor shall thoroughly acquaint himself with existing traffic conditions and understand the importance of maintaining traffic safety and the avoidance of excessive traffic delay. The Contractor shall co-operate with the pertinent agencies regarding traffic control and all details will be subject to the Engineer's approval.

l) The Contractor shall be responsible for investigating and establishing the requirements for traffic control and safety in all work areas and shall submit all details to the Engineer.

m) The Contractor's requirements shall include, but not be limited to, construction of detours, diversion roads, temporary bridges and approach roads, of traffic control devices and services for the control and protection of traffic through areas of construction.

n) Any failure of the Contractor to meet these requirements will entitle the Employer to carry out such works as he deems to be necessary and to charge the Contractor with the full cost there of plus ten percent of such cost, which sum will be deducted from any money due or which may become due to the Contractor under the Contract.

o) Road Damage: Contractor will be responsible for all road damage that may occur from the transporting of his materials and equipment to and from the Works and will be responsible for coordinating with all concerned agencies for implementing all necessary repairs and/or restorations. The Contractor shall be required to repair to the satisfaction of the Engineer and at no cost to the Employer any damage that he causes to the road.

p) When construction under traffic is permitted, the Contractor shall arrange its construction program so that traffic flow is maintained through the Works in accordance with the requirements as laid out by Traffic Police or as approved by the Engineer.

q) Vehicular access points to and from the site shall be in accordance with the requirements of the best practice design standards, guides and manuals approved by the Engineer. Acceleration and deceleration lanes and tapers shall comply with the traffic volume, speed and sight distance warrants specified in the standards and guides or as approved by the Engineer. Cross section widths for acceleration and deceleration lanes shall be a minimum of 3.2 m. The contractor shall provide traffic controllers at all entry and exit points.

(4) Temporary Road Works Requirements for Traffic Management

The following conditions shall apply in regard to temporary works:

a) The Contractor shall furnish, maintain, and remove on completion of the work for which they are required, all temporary roads and road works such as sleeper tracks and staging over roads, access and service roads, temporary crossings of bridges over streams or unstable ground, and shall make them suitable in every respect for carrying materials for the work, for providing access for traffic for himself or others, or for any other purpose. Such temporary road works shall be constructed to the satisfaction of the Engineer, but the Contractor shall nevertheless be responsible for any damage done to or caused by such temporary road works.

b) Before constructing temporary road works, the Contractor shall make all necessary

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arrangements, including payment if required, with the public authorities or landowners concerned, for the use of the land and shall obtain the approval of the Engineer. Such approval will be dependent on the Engineer being satisfied with the Contractor's proposals for items such as signing, lighting and riding quality of the temporary road together with the proposed maintenance arrangements. Such approval will not, however, relieve the Contractor of his responsibilities under the Contract. Upon completion of the works the Contractor shall clean up and restore the land to the satisfaction of the Engineer.

c) The Contractor, when required by the Engineer, shall submit for the Engineer's approval drawings giving full details of temporary roads. Such details shall include alignment, profile, pavement construction, signing, lighting and the duration of the temporary road.

d) The Contractor shall make all arrangements necessary to permit the passage of materials and employees.

e) In cases where it is necessary or required by the Engineer, the Contractor shall construct and maintain temporary traffic ramps, and furnish all labour and materials required.

(5) Scope of Traffic Management Plan

The Traffic Management Plan submitted by the contractor shall

a) Provide details of the consultative process proposed to ensure consultation with and notification to the community, business, road users and other stakeholders in advance of alterations to existing traffic conditions. The Contractor's proposed inputs into the communication process shall ensure the timely notification of the Traffic Police, relevant departments, travelling public, emergency services, adjacent landowners and businesses of impending changes to traffic conditions. This process shall take cognizance of any Department's requirements with respect to public notifications

b) Describe traffic arrangements which provide for any necessary sequencing of the work under the Contract while minimising disruption and confusion to road users, local traffic, emergency vehicles, pedestrians and cyclists;

c) Where required, describe how the construction work area shall be physically and visually isolated from road users;

d) Provide details of how local access to communities and adjacent private properties and businesses will be maintained;

e) Provide details of arrangements to be made for detouring traffic;

f) Provide details of all road closures and/or restrictions required to undertake the work under the Contract;

g) Detail provisions to maintain the specified number of traffic lanes in each direction at the minimum nominated operating speed between the hours stated elsewhere in the contract or as approved by the Engineer.

h) Provide for participation of a senior member of the Contractor's site personnel on any traffic coordination committee convened by the Department or its designated representative;

i) Include the names and contact details of the representatives nominated by the Contractor and notified to the Engineer. The Contractor shall nominate a minimum of two representatives with the authority to address traffic management issues one of whom shall be available at all times outside of the Contractor's normal working hours. The Contractor shall notify the Engineer and Department or its designated representative of the name, address and telephone number of the nominated persons. Such persons, when requested by the Engineer shall coordinate and expedite immediate repairs to and maintenance of such part of the work under the Contract as may be considered necessary by the Engineer and shall carry out such work to the satisfaction of the Engineer.

j) If a nominated person leaves the employment of the Contractor during the period of the Contract, the Contractor shall immediately nominate another person and provide the full details of that person.

k) Include the name of the Nominated Traffic Officer;

l) Include a schedule of Traffic Guidance Schemes giving a general description of the

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relevant traffic arrangements and the date when the Traffic Guidance Scheme will be submitted.

m) Provide details of the Contractor's organisational structure for traffic management issues including a list of the duties and responsibilities of each position nominated in that structure.

(6) Traffic Control

The following conditions shall apply in regard to traffic control:

a) In order to facilitate traffic through or around the Works, or where ever ordered by the Engineer, the Contractor shall erect and maintain at prescribed points on the work and at the approaches to the work, traffic signs, lights, flares, barricades, rubber cones with traffic lamps and other facilities as necessary or required by the Engineer for the proper direction and control of traffic.

b) As necessary for proper control of traffic or when/where directed by the Engineer, the Contractor shall furnish and station competent flagmen whose sole duties shall consist of directing the movement of traffic through or around the work.

c) The Contractor shall furnish and erect, within or in the vicinity of the project area, such warning and guide signs as may be necessary or ordered by the Engineer.

d) In order to minimize disruption to traffic flows the Contractor shall enclose the Site with temporary fence to provide a visual barrier between his work and adjacent traffic. The temporary fence shall be two meters high and the movement of men, materials and plant into and out of the barrier area shall be controlled by flagmen (traffic controller).

(7) Number of Lanes for Traffic Control

In so far as possible, the existing number of traffic lanes shall be maintained insofar as possible during the work and if diversions are provided these must be of the same traffic capacity as the original road. Notwithstanding the above, the Engineer may give approval to reductions in traffic capacity if the Contractor can show that these will not cause excessive delay to traffic. If such approval is given, the Engineer may specify the hours during the day when the reduction in capacity may be applied and it should be anticipated that these hours may not include the peak period for the traffic movement under consideration.

The Contractor shall cooperate with the pertinent agencies regarding traffic control and all details will be subject to the Engineer's approval.

(8) Half-Width Construction

The following conditions shall apply to half-width construction:

a) Where, in the opinion of the Engineer, a detour is not feasible, construction on existing public roads shall be undertaken only over half of the full width of the roadway. The length of such half-width construction shall be kept as short as possible.

b) Where half-width construction is necessary, work on culverts commenced in the dry season must be completed and the embankments adjacent to them must be reinstated so that at least half the full width shall be available for use by the public throughout the next rainy season.

c) Where single-lane traffic becomes necessary over a particular length of the works or over the approaches thereto, the Contractor, in maintaining through traffic, shall provide a single lane at least three and a half meters wide on the roadway or embankment to be kept open to traffic.

The Contractor shall so conduct his operations as to offer the least possible obstruction, inconvenience, and delay to traffic and shall be responsible for the adequate control of the traffic using such lengths of single lane.

(9) Extraordinary Traffic

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The Contractor shall be responsible for carrying out any necessary investigations and the obtaining of approvals, licenses, escorts and any other necessary facilities in order to enable his extraordinary traffic to be moved on the roads in the Project Area.

(10) Vertical Clearance

In general any temporary works placed over roads or diversions used by public traffic should maintain a vertical clearance of at least 4.5 meters. Where required by the Engineer the Contractor shall erect and maintain suitable approved check-gates, fitted with warning signs indicating the vertical clearance.

(11) Materials for Traffic Control Devices

Materials for traffic control devices shall conform to the requirements set forth below:

a) Unless otherwise specified in the contract, sign panels, barricades, cones, vertical panels, and flagger paddles shall have retro-reflective sheeting meeting requirements for retro-reflective material as specified by the Engineer.
b) Sign Panels shall be orange with black legend unless otherwise required.
c) Sign Posts shall be fabricated from untreated softwood, metal, or other materials acceptable to the Engineer. Signs shall be capable of remaining in position during normal traffic flow and wind conditions.
d) Barricades shall be constructed of wood, metal or plastic.
e) Cones shall be a minimum of 75 centimeters in height with a broadened base and shall be capable of withstanding impact without damage to the cones or vehicles. All cones shall be orange/white colored and highly visible both in daylight and darkness. Cones shall be capable of remaining bright and in position during normal traffic flow and adverse weather conditions in the area where they are used. Lamps for cones shall be suitable for purpose.
f) Temporary fencing shall be fabricated in panels with timber framework and galvanized metal panels. The panel face towards the traffic shall be painted.
g) Vertical panels shall be constructed of wood, metal or plastic
h) Warning lights shall be Type A (low intensity flashing), Type B (high intensity flashing), or Type C (steady burn) as approved by the Engineer.

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(12) Preparation of Traffic Guidance Scheme

The Traffic Guidance Scheme shall be prepared by suitably qualified and experienced persons and shall be submitted by the Nominated Traffic Officer to the Engineer for a direction as to its suitability, at least 21 days prior to the date of the proposed traffic rearrangement.

Where any change to existing traffic arrangements is proposed or where construction conflicts with normal traffic movements, the Contractor shall prepare a Traffic Guidance Scheme which clearly details the revised traffic arrangements at all locations affected by the change or conflict. Planning of Traffic Guidance Schemes shall be undertaken in accordance with best practice road works traffic management manual or guide as approved by the Engineer.

The Traffic Guidance Scheme shall show proposed temporary signing and other traffic control device layouts (including temporary barriers, temporary pavement marking and temporary islands) to a suitable scale and be fully dimensioned and shall generally agree with the construction sequence and other requirements shown elsewhere in the Contract. The Traffic Guidance Scheme shall also state the period for which these are to be in place (time and date) and the person who is responsible for installing, maintaining and removing them. Site access arrangements shall form part of the Traffic Guidance Scheme.

Where the Traffic Guidance Scheme includes changes to regulatory signs or devices, the Contractor shall seek prior approval from the Engineer of such regulatory signs certified by the Nominated Traffic Officer with the Traffic Guidance Scheme.

The Contractor and the Engineer shall cooperate to ensure that the Traffic Guidance Scheme receives the Department's direction with respect to suitability at least 14 days prior to the proposed traffic rearrangement. Failure to comply with this requirement may result in deferring the date for traffic rearrangement so as to ensure sufficient time for public notification is maintained. Such deferment shall not be a cause for an extension of time under the Contract.

No traffic rearrangements shall be carried out until 14 days after the Engineer has advised the Contractor that the relevant Traffic Guidance Scheme has been deemed suitable by the Engineer. Engineer may direct the Contractor to consult with Area Traffic Police Officer and seek approval of the traffic guidance scheme from the officer.

(13) Implementation of Traffic Management Plan

The Contractor shall implement the Traffic Management Plan in accordance with the schedule included in the Plan. The Contractor shall provide details of the Traffic Management Plan or any changes to that Plan to any bodies nominated by the Engineer. The Contractor shall monitor the continued effectiveness of the Traffic Management Plan during the Contract and shall revise and update the Plan where necessary.

(14) Implementation of Traffic Guidance Scheme

The Contractor shall implement only those traffic management arrangements that have been deemed suitable by the Engineer. Should the Contractor wish to depart from such arrangements, an amended Traffic Guidance Scheme shall be submitted to the Engineer for determination of suitability prior to implementation of any new arrangements.

Prior to any change to existing traffic arrangements, the Contractor shall ensure that the traffic management arrangements conform to the Traffic Guidance Scheme.

In a daily basis, the Contractor shall ensure that all applicable traffic redirection and/or warning measures and safety requirements are implemented prior to proceeding with any relevant work under the Contract.

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The Contractor shall monitor the effectiveness of the Traffic Guidance Scheme and revise it in response to incidents and/or traffic disruptions. Details of a Traffic Guidance Scheme shall be provided on request to any other body nominated by the Engineer.

(15) Measurement and Payment

Compliance with Traffic Management Provisions (preparation and implementation of traffic management plan, traffic guidance schemes and traffic control scheme, traffic Marshals etc), including construction and maintenance of temporary road diversion works either in full new land length or using existing roads, irrespective of the length and extent of traffic control measures in such diversions; construction and maintenance of temporary bridge diversions; construction of access roads to bridge construction site; etc. shall be measured and paid on Lump Sum basis as provided in the Bill of Quantities. The contract lump sum rate shall be the full and final compensation for the activities to be carried out by the Contractor as per Clause112.

The payment of this lump sum item shall be made in four (4) installments. The first installment of 25% of the item rate shall be paid after the completion of 25% of the Contract Works, the second installment of 25% of the item rate shall be paid after the completion of 50% of the Contract Works, the third installment of 25% of the item rate shall be paid after the completion of 75% of the Contract Works and the final installment of 25% of the item rate shall be paid after the completion of the Contract Works.

The rate quoted by the Contractor for this lump sum item shall deem to cover the full contract period including any Extensions of Time (EOT). No additional payment shall be made for the period of Extension of Time (EoT).

104 Survey and Setting Out

Add the following to Sub-clause (6)

"If at any time the Contractor believes that there exists a discrepancy between the location of the works as defined by the setting out and the apparent location of the works as shown in the plans he shall immediately inform the Engineer and request clarification."

Delete Sub-clause (7) and substitute the following:

"Some survey data of the project site is held by the Engineer and this survey data will be made available to the Contractor in digital format. But the existing profile and cross sections shall be checked against the survey data by the Contractor and, should any changes be found necessary in the Survey Traverse Points and Bench Marks, after the procedures required in Sub-clauses (1) & (2) above, the existing data set shall be amended accordingly. Should the Engineer consider that design modifications of the centreline and/or gradient are required or if the Contractor find that the existing survey data set is in adequate or in accurate in any area of the Works, the Engineer shall issue detailed Instructions to the Contractor and the Contractor shall perform the necessary modifications in the field, as required, and modify the cross sections accordingly.

The final survey data set so obtained in combination with the final horizontal and vertical alignment of the road shall form the basis for the measurements and payments. Measurement shall be based on a Digital Terrain Model generated from the agreed survey data set with the final designed road horizontal and vertical alignment and road cross-section, including any widening and super-elevation, applied. The model will be used to generate cross-sections complete with cut and fill data at intervals not exceeding 10 metres in hill areas and 20 metres in Terai areas and other alignment change points as instructed by the Engineer. Measurement of volumes and areas of earthworks and pavement related items, with the Engineer's approval, shall be derived from these cross-sections.

The software currently used for the preparation of survey and design data is SW-Roads

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developed by Softwel (P) Ltd. of Kathmandu Nepal. Should the Contractor wish to use alternative software he may propose this to the Engineer. He will be required to demonstrate that his proposed alternative is at least as accurate as and is functionally equivalent in all respects to SW-Roads. Should the Engineer agree to the use of alternative software, the Contractor shall be entirely responsible for the adaptation, under the supervision of the Engineer, of all input data to the alternative software requirements and for the training of the Engineer's personnel in the use of the alternative software. In the event that alternative software is approved the Contractor shall supply the Engineer with two, fully licensed, copies of the alternative for the exclusive use of the Engineer."

If required a complete set of Software shall be provided by the Contractor at his own cost for the use of the Engineer in carrying out the checking and approval of the cross sections and quantities.

Delete paragraph (c) of Sub-clause (9) in its entirety.

Add the following at the end of the Clause 104

"The joint survey, including the preparation of the drawings, calculation of the quantities and obtaining the approval from the Engineer shall be carried out by the Contractor within sixty (60) days from the commencement Date."

106 Diversion Bridges

Delete Clause 106 in its entirety and substitute with the following:

Change heading of Clause 106 Diversion Bridges to Clause 106 Construction and Maintenance of Temporary Diversion Bridges as follows:

106 Construction and Maintenance of Temporary Diversion Bridges

Temporary diversion bridges shall be provided by the Contractor at the location of the construction of minor bridges, where the existing bridges are dismantled and new bridges are required to be constructed as shown on the Drawings or instructed by the Engineer. The Contractor is required to prepare Design, Drawing and Specifications of the temporary diversion bridges. He shall submit his proposal accompanied with sufficient ground and hydraulic information to enable the Engineer to decide on the stability of the structures. The temporary diversion bridge shall be double lane crossing with the all provisions of safety arrangements facilitating free flow of two way traffic during day and night throughout the period till the new constructed bridge is opened for the use. The diversion bridge may consist of series of pipe culvert, Belly Bridge, slab culvert etc. as per the site conditions and acceptable to the Engineer.

TheContractorshallmaintainthetemporarybridgesinaconditionsatisfactorytotheEngineersol ong as required until the completion of the construction of bridges at the river location.

On completion of the construction of bridges, the Contractor shall obtain the approval of the Engineer before removing the temporary bridges. The materials arising from the removal of the temporary diversion bridges shall become the property of the Contractor.

No separate payment shall be made for the construction and maintenance of diversion bridges for the required period. The cost shall deem to be included in the item of compliance with traffic management provisions.

107 Maintenance of the Road

Delete the fourth paragraph of Sub-clause Clause 107 (1) and substitute:

The Contractor shall perform the maintenance works as often as required to keep the carriageway, shoulders, adjoining structures and roadside slopes stable all in proper

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working order to the satisfaction of the Engineer. The Contractor shall strictly adhere to the stipulations of the latest publication of the document **"Road Maintenance Manual"** published by the Department of Roads.

The contractor shall mobilize one loader (>3 cu.m) at Abukhaireni during the monsoon season (June to September of each year) for the removal of slides that may occur. Also, the contractor shall keep the road pavement "Pot Holes free" during the entire construction period.

In the Road stretches where works supervisors and length workers are being engaged by the Department of Roads for the routine maintenance of the Road, the Contractor shall have to engage them under the same terms and conditions regarding the wages and other facilities. However, if their performance of the works is not to the satisfaction, the Contractor will have the option to replace them.

(2) Measurement and Payment

Delete the wording of Sub-clause (2) in its entirety and substitute:

"Maintenance of the existing road during both the construction period and Defect Notification Period shall be paid at the contract unit rate per km-month commencing on the date for the commencement of the works and terminating at the end of the Defect Notification period including any extension of time granted pursuant to the relevant Clause of the Conditions of Contract.

In the event the Contractor fails to perform such maintenance, the Employer shall effect such maintenance works and cost incurred shall be deducted from any payment due under this Contract Item or from any other monies due to the Contractor.

108 Notice Board

Delete the first sentence and replace with the following:

The Contractor shall erect where directed by the Engineer signboards in accordance with Appendix - 8: Project Signboard which shall be protected and maintained up to the end of Defect Notification Period.

Add the following:

Project signboards shall be measured as the number of signboards, satisfactorily provided, installed, maintained throughout the Contract period and subsequently removed.

Payment shall be made at the stated unit rate per signboard. The price shall be full compensation for all materials and labour required to perform the work described.

109 Environmental Protection Works

Delete the second paragraph and substitute:

The Contractor shall take all precautions for safeguarding the environment during the course of construction of the works. He shall abide by all prevailing laws, rules and regulations governing pollution and environmental protection. In particular, the Contractor shall fully comply with the environmental protection mitigation measures specified in the latest version of the project's specific Initial Environmental Examination or Environmental Management Action Plan, as provided by the Engineer. If any activity of the Contractor may cause damage to the environment in ways not envisaged under project-specific documents, then he shall comply with the measures specified in the latest publication of **"Environmental Management Guidelines"** published by the Department of Roads.

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Delete the third paragraph and substitute:

The Contractor shall prohibit employees from any use of explosives, poaching of wildlife and cutting of trees or branches. The Contractor shall be responsible for the action of his employees.

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(1) Borrow/Quarry Sites

In the first set of bullet points, delete the words "they may be environmentally unsuitable" in point (iii) and substitute:

"they may lead to general environmental or instability problems or may be environmentally unsuitable in any other way"
At the end of Sub-clause (1) add the following:

"Twenty percent (20%) of all payments due to the Contractor in respect of the construction of embankment using borrow material or which are due under any other item of the Bills of Quantities in respect of material won from borrow pits, gravel pits or quarries shall be withheld until the sites of the borrow pits, gravel pits or quarries to which such payments relate have been completely reinstated to the full satisfaction of the Engineer and in accordance with the Specification provisions."

(2) Disposal of Spoil and Construction Waste

Insert additional paragraph to Sub-clause 109 (2) Disposal of Spoil and Construction Waste, between existing first and second paragraphs

Under no circumstances whatsoever shall the Contractor allow spoil from any excavation or cut to fall or be pushed down the slope below. In any situation where this occurs by accident or on purpose, the Contractor shall, at his own cost, remove the debris to a location approved by the Engineer and make good the affected area through appropriate structures and re-vegetation as specified by the Engineer and following guidelines published in the Department of Roads' manual **"Roadside Bio- Engineering"**. Failure in compliance with the Engineer's instruction in respect of spoil disposal will lead to a reduction or with-holding of payment.

Add an additional paragraph after the existing second paragraph

Any construction waste that includes bitumen products, unused cement, fuel, oil or plastics shall be disposed of in a Government-approved or municipal landfill site. If this is not practical then it may be disposed of by burial in a specially excavated pit at a site approved by the Engineer. Land compensation shall be paid by the Contractor for the area occupied by the pit as if for permanent construction. If the land is owned by the Government, then the Contractor must obtain written permission from the appropriate authority for its use in this manner, and must pay any royalties due. The pit shall be located at least 100 metres from any seasonal or permanent water course or spring. A hole shall be excavated below ground level so that, when the original surface profile is regained through backfilling, the disposed waste is covered by at least two metres of soil. Following the closure of the waste disposal site, the Contractor shall provide any structures necessary to prevent erosion and shall re-vegetate the topsoil with appropriate plants.

(3) Provision and Maintenance of Camps, Offices, Stores, Equipment Yards and Workshops

Replace the first paragraph of the Sub-clause 109 (3) with the following:

The Contractor shall provide and maintain such accommodation and amenities as necessary for all his staff and labour, employed for the purposes of or in connection with the Contract, including all fencing, water supply(both for drinking and other purposes), electricity supply, sanitation, cookhouses and other requirements in connection with such accommodation or amenities. On completion of the Contract, unless otherwise agreed with the Employer, all the temporary camps/housing provided by the Contractor shall be removed and the site(s) reinstated to its (their) original condition, all to the approval of the Engineer.

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All accommodation facilities of whatsoever nature provided by the Contractor shall be provided with adequate sewage and wastewater collection and treatment facilities to a design and of a capacity approved by the Engineer. Under no circumstances shall untreated sewage or wastewater be discharged to the natural environment.

(6) Provision of Safety Clothing and Equipment

Insert new Sub-clause 109 (6)
The Contractor shall provide all labourers, supervisors and site staff with suitable basic safety clothing manufactured to an appropriate ISO standard. This shall include but not necessarily be limited to safety helmets and boots. Gloves shall be issued when any form of hazardous material such as cement and bitumen is being handled, and when there is a risk of hand injury, for example when using hammers and chisels. Eye goggles shall be issued when there is a risk of eye injury, such as when using hammers. Breathing masks shall be issued when there are dusty or smoky conditions.

Additional safety equipment is to be provided by the Contractor to all workers and supervising staff in certain sites. In sites with moving traffic or machinery, fluorescent or brightly coloured waistcoats shall be issued. Where workers are required to venture on to slopes steeper than 40 degrees, safety belt, safety clamps, harnesses and safety ropes shall be provided.

All workers and supervisory staff when on any site shall wear the basic safety clothing specified. Where additional safety equipment is required by nature of the site, then all workers and supervisory staff when on any part of that site shall use the additional equipment in addition to the basic safety clothing specified.

The Contractor shall provide a set of safety clothing to all members of the Consultant's supervising staff and keep adequate stock for personnel visiting the project.

In hot weather the Contractor shall provide appropriate lightweight safety equipment, such as cotton gloves in place of rubber gloves and canvas boots in place of rubber boots.

The Contractor shall be responsible for ensuring that all his employees and the employees of any Subcontractor and any visitor to the site comply with the Engineer's requirement to use safety clothing and equipment at all times. Failure in compliance with the Engineer's instruction in respect of safety clothing and equipment may lead to a suspension of works and a reduction or with-holding of payment until the Contractor complies.

***(7)* Provision of First Aid/Medical Facilities**

Renumber existing Sub-clause 109 (6) to 109 (7)

Add the following after last paragraph

The Contractor shall provide information to his workers on methods of avoiding sexually transmitted diseases and infection by HIV/AIDS.

(8) Crushing Plants

Renumber existing Sub-clause 109 (7) to 109 (8)

(9) Hot Mix Plants and Batching Plants

Renumber existing Sub-clause 109 (8) to 109 (9)

(10) Hazardous Materials

Delete entire existing Sub-clause 109 (9) Hazardous Materials (all three paragraphs) and substitute Sub-clause 109 (10) Hazardous Materials

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Hazardous materials are defined as cement, lime, bitumen and emulsion, paint, fuels, oils, acid of the battery, pesticides and herbicides. The Contractor may not store hazardous materials within 100 metres of seasonal or permanent water courses or springs. They must be housed in secure weather- proof buildings and protected against attacks by vermin and accidental contact by children. Contaminated runoff from storage areas shall be captured in ditches or ponds with an oil trap at the outlet. Water Quality monitoring shall be carried out as per EMP.

Any worker handling hazardous materials must be appropriately equipped as described in Sub-clause 109 (6) above.
Any hazardous material requiring disposal must be handled as described in Sub-clause 109 (2) above.

Explosives, detonators, blasting powder and fuses are also classed as hazardous materials. The Contractor may only bring explosives on to the site with the specific written permission of the Engineer. In this event, the Contractor is responsible for alerting the appropriate security forces and ensuring that all Government regulations are fully met concerning the transport, storage and use of explosives and associated equipment.

If the Engineer instructs the use of explosives, only controlled methods shall be used as described in Clause 904 Explosives and Blasting.

(11) Air Pollution

Insert new Clause 109 (11)

The Contractor shall avoid creating any high concentration of airborne dust or smoke within 100 metres of a house or other occupied building, or in situations likely to affect people, animals, crops or natural vegetation.

Dust from moving construction plant and road traffic shall be controlled by the regular spraying of water on to road surfaces in Terai and valley bottom sites. In the hill sites, dust control may also be carried out, in addition to regular spraying of water, by the use of speed bumps to restrict traffic speeds to 30 km/h in open ground and 15 km/h within 100 metres of any occupied building. The Contractor is responsible for all water spraying and the erection and maintenance of adequate speed bumps. The Engineer may instruct additional measures at his discretion.

Where earthwork excavations cause dust to blow into areas where it causes a nuisance, the Contractor is responsible for altering the schedule of works to minimise the nuisance. This may involve restricting the timing of work to certain hours of the day or completing works and restoring a dust-free surface as rapidly as possible. The Engineer may instruct additional measures at his discretion. Air quality monitoring shall be carried out as per EMP.

(12) Noise Pollution

Insert new Clause 109 (12)

The Contractor shall take every precaution to control excessive noise resulting in disruption to the local population and to wildlife. All static plant shall be located at least 100 metres from occupied buildings and at least 800 metres from sites deemed by the Engineer to have sensitive wildlife. The Engineer may require the construction of baffles or bunds around noisy plant in order to reduce the pollution caused.

The Contractor shall ensure that no employee plays loud music in any residential camp at any time. Noise level monitoring shall be carried out as per EMP.

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(13) Special Provisions for Sensitive Ecology

Add new Clause 109 (13)

In addition to the provisions of other Clauses, the Engineer may require the Contractor to undertake special provisions to protect any plant or animal deemed to be environmentally sensitive or otherwise worthy of unusual protection.

(14) **Reinstatement of Environment**

Renumber existing Clause 109 (10) to 109(14)

Add between existing two paragraphs:

The Contractor shall reinstate the environment of areas polluted by the use or spillage of hazardous materials as defined in Sub-clause 109 (10). All such materials and polluted soil will be removed to a safe disposal site as described in Sub-clause 109 (2) Disposal of Spoil and Construction Waste. The site will then be restored and re-vegetated as described above. This provision applies in particular to all areas affected by bitumen.

(15) Measurement and Payment

Renumber existing Clause 109 (11) to 109 (15) Measurement and Payment

Delete the paragraph and substitute with the following:

No separate measurement and payment shall be made for the works described in this Clause except for (a) provision of safety clothing & equipment and first aid/medical facilities and (b) disposal of surplus cut material at environmentally safe tipping sites.

The payment for the provision of safety clothing and equipment and first aid/medical facilities shall be in the unit of month as quoted in BOQ upon providing and maintaining those facilities to the satisfaction of the Engineer. In the event that the Contractor fails to enforce these provisions then monthly payment will not be made for such period until the requirements are met. If the Contractor does not provide them in time as per the Specifications, the Employer may procure by quotation from other sources and deduct from the Contractor's payment as per the quoted price including logistics and transportation costs, if any, for supply at site.

The payment for the disposal of surplus cut material at tipping sites shall be in the unit of cu.m.- km for haulage beyond 1 km to the environmentally safe tipping sites approved by the Engineer and satisfying the provisions of 109 (2). The payment for disposal of spoil shall be made in two instalments. First instalment 70% of the unit rate quoted in the BOQ shall be made after disposal to the site approved by the Engineer. The second instalment of remaining 30% of the unit rate quoted in BOQ shall be made after making good the affected area through appropriate minor structures and re- vegetation as per 109 (2) and to the satisfaction of the Engineer.

The above mentioned payments shall be the full and the final compensation to the contractor as per Clause 112 to complete the works in accordance with these specifications. In the event of failure to implement the above the Engineer may withhold an appropriate sum (as estimated by him) from the Contractor's payment until such time as the work has been carried out to the satisfaction of the Engineer.

111 Supply of Video Cassettes

Add the following at the end of Sub-Clause 111(1)

The video films shall be taken at the locations as instructed by the Engineer and they shall be taken prior to the actual construction, during construction and after the completion of

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the construction works. The films shall be to the full satisfaction of the Engineer.

112 Notes about Measurement and Payment

In Sub-clause (1) Measurement, delete the whole of the second paragraph and substitute:

The tolerances given in these Specifications are for the evaluation of the accuracy to which work shall be constructed and for determining whether work should be accepted or rejected. The measurement of work done shall be based on the actual measured quantity of acceptable work executed except that, where the actual quantity is greater than the quantity which would have resulted from adherence to the precise designed or instructed dimensions and/or levels then the payable quantity shall be limited to the quantity determined on the basis of calculation using the designed or instructed dimensions and/or levels.

113 National Standards

Add the following:

The Contractor shall provide and / or make available the Standards as shown in the Appendices as and when requested. There shall be no separate payment for the provision of such standards and payment shall be deemed to be included in the Contractor's rates for the provision of the Laboratory. In the event of the failure of the Contractor to provide documents for the required standards the Engineer may purchase the document and deduct the cost from the payment due to the Contractor for the provision of the Laboratory.

Add the following New Clauses after Clause 116 "Programme":

117 Contractor's Establishment on Site

Office, Equipment Yard, workshops, stores etc.

It is the Contractor's responsibility to acquire land for the siting of all his offices, accommodation, stores, testing facilities, equipment yards and workshops and for all temporary works and for the reinstatement of such land on completion of the Contract to the satisfaction of the owners and of the Engineer. The Contractor shall obtain the approval of the Engineer for the siting of offices, accommodation, stores, testing facilities, equipment yards and workshops before such land is acquired and he shall indemnify the Employer against all claims and charges in respect of the occupation, use and reinstatement of the land.

The Contractor is solely responsible for the satisfactory accommodation of all his employees and for complying with all regulations and requirements in this respect.

118 Legal Relations and Responsibility to the Public

The Contractor shall take the steps necessary to comply with the terms of the Conditions of Contract, particularly in respect of the insurances and indemnities required, and he shall comply with all regulations of statutory authorities.

119 Provision of Insurances and Securities

The Contractor shall provide all necessary Insurances, Guarantees and Securities as are required and detailed in the Conditions of Contract, Bill of Quantities or this Specification.

Measurement and payment for Insurances under the Contractor's All Risks (CAR) policy shall be made on Lump Sum basis as provided in the Bill of Quantities in the following sub-headings of the Bill of Quantities:

For Reference Only

(a) Insurance cover for Works, Plant and Materials and the Contractor's Equipment
(b) Insurance cover for third party property and persons.

The lump sum price for Insurance under the Contractor's All Risks (CAR) policy includes all expenditures expected in providing and maintaining from Date of Commencement until the end of the Defect Notification Period an insurance of Works, Plant and Materials, the Contractor's Equipment, third party properties and personal injury or death as prescribed in the Contract document, including expenditures resulting from administration work, dealing with and reporting of claims, stamps duties, taxes, etc.

The Contractor shall also require providing insurance of his personnel, employees and labours as prescribed in the Contract document. No separate payment shall be made for the insurance of his personnel, employees and labours and are deemed included in other items of the Bill of Quantities.

No separate payment shall be made for Bank Guarantees and Securities that are required as per the Contract. The costing of such Guarantees and Securities are deemed included in other items of the Bill of Quantities.

In case of any damages to the works for which payment has been made by the Employer, it is the Contractor's obligation to reconstruct the same and claim for the payment from the insurance companies. No payment for the reconstruction of the damaged works shall be made by the Employer.

Measurement of the lump sum payment for item of the Insurance for Contractors All Risk Policy (CAR) shall be made to the Contractor under the relevant items in the Bill of Quantities upon the submission of the acceptable Performance Bond and the insurance policies with the proof of payment of insurance premiums to the insurance company from the date of commencement to the end of Defect Notification Period and after approval by the Engineer.

The payment of the quoted lump sum amount for the provision of insurance shall be made after the Contractor submits and obtains approval from the Engineer of the required insurance policies for the period covering from the date of Commencement to the end of Defect Notification Period and the submission of the proof of the payment of premiums for that period.

The payment shall be made in two installments. First installment 70% of the unit rate quoted in the BOQ shall be made after the approval of the insurance policies by the Engineer. The second installment of remaining 30% of the unit rate quoted in BOQ shall be made at the Completion of the Contract.

The rate quoted by the Contractor for these lump sum items shall deem to cover the full contract period including any Extensions of Time (EOT) as well as Defect Notification Period. No additional payment shall be made for the period of any Extension of Time (EoT).

120 Extension of Time due to Abnormal Rainfall

Extension of time due to exceptionally adverse climatic conditions as referred to in the relevant Clause of the General Conditions of Contract shall be considered only in respect of the number of days lost during each month which are in excess of the number of working days on which delays might reasonably be expected having due regard to the time of year. The Contractor shall, therefore, make due allowance in his rates for the loss of the following number of working days for each month due to the effects of rainfall as detailed below:

For Reference Only

Month	Number of Days	Remarks
January	4	
February	4	
March	4	
April	6	
May	12	
June	20	
July	25	
August	25	
September	15	
October	5	
November	4	
December	4	

The number of days considered for Extension of Time shall be based on the full number of "rain days" occurring during the month less the number of days required to be allowed for the month as detailed above. "Rain days" shall be defined as those days on which the rainfall during the full 24 hour day exceeds 10mm and on which the Contractor is prevented from working on site for the furtherance of the major Works due solely to conditions caused by inclement weather.

The total number of days for extension of time shall be calculated on a month by month basis. Carrying over of days "not used" from one month to the next is not permitted.

For the proper application of this Clause the Contractor shall establish rain gauging stations to a design and using automatic equipment approved by the Engineer. Such stations shall be spaced along the site at intervals not exceeding 10kilometres. In the event of failure to establish suchapprovedraingaugingstationsno"raindays"willbemeasuredandnorequestsforExtensionofTime on the basis of inclement weather will be considered.

121 Labour Standards

The Contractor shall abide by international standards in his treatment of workers. There shall be no discrimination between individuals on the basis of race, sex, caste or belief.

(1) Rates of Wages

The Contractor shall pay rates of wages not less favourable than those approved by the Government for the various classes of labour engaged in the same district. All payments shall be in cash unless employees request, in writing, payment by cheque or other negotiable financial instrument. Payment in kind or through trade goods of any sort is prohibited. Food rations, accommodation, or any other allowances will be over and above cash wages complying with the minimum levels described. Men and women shall receive equal rates of pay for the particular grade of work, trade or skill for which they are employed.

(2) Payment of Wages

The Contractor shall pay his employees promptly and regularly at intervals of no more than two weeks, and all employees shall be paid in full and up to date before the issue of the

For Reference Only

Engineer's Maintenance Certificate.

(3) Records

The Contractor shall keep proper records of the days, dates and hours worked by every employee engaged on the contract, their gender, the class of work in which employed, whether as a casual or permanent employee, and the wages (and allowances if any), paid. These records shall be made available at any time for inspection by the Engineer or the Engineer's representative or any authorised representative of the Government.

(4) Default of Payment of Wages

In the event of default in payment of wages to petty contractors, local labour groups or any worker employed on the contract, by the Contractor or his Subcontractor, and, if a claim with satisfactory proof thereof is received by the Engineer, then the Employer may make the payment upon recommendation by the Engineer of such a claim out of the monies at any time payable under the contract, and the amount so paid shall be deemed payments to the Contractor under the Contract.

122 Safety Provisions

(1) Scope

This Clause covers the requirements to be met by the Contractor in relation to the safety provisions at construction sites which include workplace health and safety of the workers, all road users (drivers, passengers, pedestrians) and members of the community along the road corridors.

(2) Emergency Response Plan

An emergency response plan to deal with accidents and emergencies, including environmental/public health emergencies associated with hazardous material spills and similar events, shall be prepared for the approval of the Engineer.

(3) First Aid Base

A fully equipped first aid base shall be climatically controlled to maintain the temperature of the inside of the building at 20 degrees Celsius. Arrangements for emergency medical services shall be made to the satisfaction of the Engineer.

(4) On-Site Safety Publicity

The Contractor shall ensure that safety, rescue and industrial health matters are given a high degree of publicity to all persons regularly or occasionally on the site. Posters, in Nepali and English, drawing attention to site safety, rescue and industrial health regulations shall be made or obtained from the appropriate sources and shall be displayed prominently in relevant areas of the site.

(5) Safety Training Program

A Safety Training Program is required and shall consist of:

(a) Initial Safety Induction Courses: All workmen shall be required to attend a safety induction course within their first week onsite.
(b) Periodic Safety Training Courses: Periodic safety course shall be conducted not less than once every six months. All Contractor employees will be required to participate in relevant training courses appropriate to the nature, scale and duration of the contract works. Training courses for all workmen on the Site and at all levels of supervision and management,
(c) Safety Meetings: Regular Safety meetings will be conducted on a monthly basis and

For Reference Only

shall require attendance by the Engineer and safety representatives of Contractors unless otherwise agreed by the Engineer. The minutes of all safety meetings will be taken and sent to the Engineer within seven (7) days of the meeting.

(d) Safety Inspections: The Contractor shall regularly inspect, test and maintain all safety equipment, scaffolds, guardrails, working platforms, hoists, ladders and other means of access, lifting, lighting, signing and guarding equipment. Lights and signs shall be kept clear of obstructions and legible to read. Equipment which is damaged, dirty, incorrectly positioned or not in working order, shall be repaired or replaced immediately.

(6) Safety Equipment and Clothing

Safety equipment, materials and protective clothing are required to be available on the site at all times and measures for the effective enforcement of proper utilization and necessary replacement of such equipment and clothing, and all construction plant and equipment used on or around the site shall be fitted with appropriate safety devices. These shall include but not be limited to:

- Effective safety catches for crane hooks and other lifting devices;
- Functioning automatic warning devices and, where applicable, an up-to-date test certificate, for cranes and hoists;
- Functioning beeping devices in all trucks and other equipment while reversing as well as operating flashing lights attached to all equipment while in motion.

(7) Requirements for Contractors' Safety Plans

The Contractor will be supplied with copies of the Environmental Management Plan (EMP) prepared by the Engineer. Provisions shall be incorporated by the contractor into all sub-contracts to ensure the compliance with the EMP at all tiers of the sub-contracting. All subcontractors shall be required to appoint a safety representative who shall be available on the site throughout the operational period of the respective sub-contract unless the Engineer's approval to the contrary is given in writing. In the event of the Engineer's approval being given, the safety representative, without prejudice to his other duties and responsibilities, shall ensure, as far as is practically possible, that employees of subcontractors are conversant with appropriate parts of the EMP.

(8) Temporary Evacuations

In the event that temporary evacuations are required due to safety or other considerations appropriate compensation will be provided to all workers.

(9) Measurement and Payment

Unless specified in the contract, no separate payment shall be made for compliance with these Safety Provisions and the costs for compliance shall be deemed to be included in the rates of the relevant Bill of Quantity items.

123 Shop Drawings of Intersections

(1) Scope

This Section covers the requirements to be met by the Contractor in relation to the survey, design, detailed layout of civil works, traffic signs and road marking of the intersections along the contract road corridors. The scope also includes the preparation of construction works traffic management plans which include management of regular traffic on existing main and side roads and management of construction traffic and traffic control and guidance schemes in order to ensure safe and acceptable level of vehicular and pedestrian traffic operation around the subject intersection and adjoin sections of roads.
A set of typical layout plans of various types of intersections are included in the drawings.

For Reference Only

The scope of this Section is to customize these typical designs to each site and produce shop drawings (plans, profile, cross sections, details, layout of traffic signs, road markings) and submit it to the Engineer for approval prior to the construction of intersection related works commence.

(2) Land Survey

The contractor shall carry out detailed topographical survey of the intersection sites showing all manmade and physical features. The survey will cover enough area required to determine all necessary elements that may have effect in the design of intersections. The survey map will also show all overhead, at grade and underground utility services and both permanent and temporary roads/ walkways.

Thesurveyplanshallbeproducedat1:500scalewithcontourintervalof0.5morasinstructedbyth e Engineer. Where manmade drains exist, invert levels will be shown and drainage line shown clearly on the plan.

(3) Traffic Survey

Before the commencement of construction, Contractor shall undertake 12 hours (commencing 06:00 hrs and ending 18:00 hrs) turning movement traffic counts at all intersections identified in the plans in the manner prescribed by the Engineer. Traffic counts shall be done by pedestrians, cycles/rickshaws, motorcycles, three wheeler, cars (sedan, jeep, micro bus), buses (mini and conventional) and all kinds of trucks (mini tippers, conventional trucks) and reported for the period ending each 15min.

Turning movement diagrams shall be plotted by the contractor separately for the AM and PM peak hours. Where peak hours are not distinct, contractor shall seek advice from the Engineer and turning movement diagrams for hours ending specified period shall be presented together with the tabular data of turning movements. Engineer may supply to the contractor samples of the Traffic Count Table and Diagrams for guidance. Two sets of tables and diagrams (one with type of vehicles and other with Equivalent Passenger Car Units (for vehicles) shall be produced and submitted to the Engineer for reference, record and approval.

(4) Drawings

Using the type designs of the intersections (three way median open, three way median closed, four way median open, four way median closed at sections with and without service roads for four laning sections), the contractor shall prepare shop drawings of each intersection and submit to the Engineer for review and approval. Shop drawings of four way or three way intersections with Basic Right (BAR) Turn or Basic Left (BAL) Turn or both treatments to be constructed along two lane sections of road without service roads shall also be prepared by the contractor and submitted to the Engineer for review and approval.

Shop drawings shall be prepared using appropriate CAD software. Hand sketches shall not be accepted. Four colour copies shall be submitted to the Engineer for review and approval at least 21 days prior to the date the contractor wish to commence work at the intersection site. The contractor shall not be allowed to execute any works at intersections without getting approval from the Engineer.

Shop drawings shall include but are not limited to

- Layout Plans (1:500 or larger as directed) showing all lines and levels as required to enable lay out of the intersection at site accurately
- At least nine cross sections (for three way intersections) and twelve cross sections (for four way intersections);
- Traffic Signs and road marking layout plans (separate to the lay out plans showing civil works/ electrical works);

For Reference Only

- Profile / Longitudinal section of each leg (for a length of 40 m for each leg of side roads and 200 m along each leg from the centre of intersections);
- Any other details requested by the Engineer; and
- Traffic Management Plan as per the provision of Section102

A set of drawings together with the traffic count tables and turning movement diagrams shall be signed and sent back to the Contractor for use in the construction site within one week of the receipt of the same from the contractor. All shop drawings shall be to the satisfaction of Engineer.

(5) Measurement and Payment

No separate measurement and payment for the activities required and the preparation of shop drawings at intersections shall be made. The cost for the required activities and preparation of shop drawings of intersections shall be deemed to be completely covered by the respective items of work relevant to the construction of intersections.

124 Diversion of River Flow at Major Bridge Construction Site

This Clause covers the diversion of river flow, pumping of water and construction of coffer dams and other activities including the machines and accessories necessary only at those sites where the major bridges are constructed. It shall also include the reinstatement of the original flow of the river after the completion of the bridge construction works.

The diversion of river flow at major bridge construction site shall be measured in number (nr) as a lump sum item for each construction site of major bridge. The quantity measured in number (nr) as a lump sum item shall cover all the activities required for the diversion of river flow, pumping of water and construction of coffer dams, reinstatement of the original flow of the river after the completion of the bridge construction works and other activities including the machines and accessories necessary only at those sites where the major bridges are constructed.

The diversion of river flow at major bridge construction site shall be paid at its respective contract unit rate which shall be full and the final compensation to the Contractor as per Clause 112 and for the cost of all activities involved for satisfactory completion of this item.

For Reference Only

Section 200 – Site Clearance

201 Clearing and Grubbing
(3) Execution of Work

(a) Cutting of Trees

Delete the last line of third paragraph and replace with the following

Cutting of such trees shall be carried out by the contractor and the timber and woods stored at designated locations as instructed by the Engineer. No extra cost shall be paid for the transportation of timber to the designated location. The contractor shall make all necessary measures to prevent theft/loss of the timber of woods as directed by the Engineer.

(5) Payment

At the end of this Sub-clause add the following:

No payment shall be made for clearing and grubbing carried out at the sites for quarries or borrows pits, Contractor's facilities, Employer's facilities or any other area other than those areas specifically directed to be cleared and grubbed by the Engineer for the execution of the permanent works.

At the end of Clause 201 add the following additional Sub-clause:

(6) Clearing of Landslides and Debris

When instructed by the Engineer, the Contractor shall remove all debris from landslides as soon as possible after receiving instruction. The first priority will be the removal of material to maintain safe vehicular access for the public and the second to remove material in order to continue construction of the Works. The Engineer shall determine the amount of material to be removed and/or any further work which may be required to stabilise the landslide.

Where a landslide has occurred in an area where the Contractor has commenced but not completed excavation works of any nature and such excavation works have, in the opinion of the Engineer, been the direct or indirect cause of the landslide, then the responsibility for clearing and stabilising the landslide shall rest entirely with the Contractor. Elsewhere the volume of material directed to be removed shall be measured in cubic meter.

The Contractor shall remove all debris from causeways, culverts and side drains as per the instruction of Engineer.

Landslides and debris removed as per this Specification shall be measured in cubic meter. Debris clearance from causeways, culverts and side drains shall be measured for one time only at the starting of the Contract. Afterwards, debris clearance shall be covered by the Routine Maintenance.

Payment for clearing of landslides and debris shall be paid at their respective contract unit rates which shall be full and final compensation to the Contractor as per Clause 112. No payment shall be made for the clearing of landslides and debris of less than 20 cubic metres nor for the first 20 cubic metres in any one occurrence.

202 Dismantling Culverts, Bridges, Other Structures and Pavements

(1) Scope

At the end of this Sub-clause add:

The Engineer shall designate all materials arising from dismantling as:

For Reference Only

(a) Scrap to be disposed of by the Contractor, or
(b) Salvageable material to be reused in the Works, or
(c) Salvageable material to be retained by the Employer

(2) General Para (d)

In the third line after the Words "reconstructed work" delete the comma and insert the words "and which"

For Reference Only

(6) Measurement

Delete "(i) Dismantling brick/stone masonry/concrete (plain and reinforced)" and substitute:

(i) Dismantling brick and stone masonry

Add

(x) Dismantling concrete (plain and reinforced) *cu.m*

Delete "(iv) Dismantling timber structures *cu.m" and substitute:*

(iv)Dismantling timber structures lump sum

Delete "(viii) Dismantling pipe culverts *no." and substitute:*

(viii) Dismantling pipe culverts m.

(7) Payment

At the end of this paragraph add the following words:

This payment shall include for all costs of disposing of scrap materials, for all costs of reusing salvageable materials designated for reuse in the works and for all costs of transporting and stacking salvageable materials to be retained by the Employer in locations directed by the Engineer.

All scrap materials shall be disposed of in an environmentally sound manner approved by the Engineer which shall ensure that the existing environment is maintained free of all forms of contamination, including visual contamination, arising from the disposal of such materials.

Add New Sub-clause (8) as follows:

(8) Use of Construction Material from Dismantling of Existing Structures

It is envisaged that some reusable construction materials might be obtained from the dismantling of the existing structures in the project road. The Contractor shall be permitted using those construction materials if they meet the standards provisioned in these Specifications. The Contractor is advised to assess the suitability and quote his price accordingly taking into consideration of using those re- usable materials from the dismantled structures.

Add New Clause 203 "Clearing and Grubbing at Major Bridge Construction Site" as follows:

203 Clearing and Grubbing at Major Bridge Construction Site

This Clause covers the clearing and grubbing necessary for the sites where the elements of major bridges are constructed and/or fabricated. This shall be as per the Clause 201.

The clearing and grubbing at major bridge construction site shall be measured in number (nr) as a lump sum item for each construction site of major bridge. The quantity measured in number (nr) as a lump sum item shall cover all the activities required in clearing and grubbing the construction and/or fabrication sites either in the river or outside river for all the required elements of the bridge, except for the cutting and related activities of the trees of girth above 300 mm. It shall also include the clearance and reinstatement of the site to the original condition after the completion of bridge construction works.

The clearing and grubbing at major bridge construction site shall be paid at its respective contract unit rate which shall be full and the final compensation to the Contractor as per

For Reference Only

Clause 112 and for the cost of all activities involved for satisfactory completion of this item.

For Reference Only

Section 500 – Quality Control

502 Contractor Responsible for the Quality of the Works

Delete the final two sentences of the second paragraph and substitute with the following:

This laboratory shall be for the use of the Engineer and his staff as well as for that of the Contractor. The Engineer shall at all times have free access to the laboratory, the equipment and all records of testing carried out and shall have the use of the Contractor's laboratory staff as he may require for carrying out of additional testing for the purposes of control, verification and acceptance. The laboratory facilities to be provided and the list of equipment to be purchased shall be approved by the Engineer. In designing the facilities and compiling the list of equipment the Contractor shall have due regard to the details of facilities and list of equipment given in the Appendices to these Special provisions. The details given in the Appendices are indicative of minimum requirements. In equipping the laboratory the Contractor shall make assure in meeting the need of conducting all tests required by the Specifications in regard of the works or materials itemised or implied in the drawings and the Bills of Quantities. Notwithstanding the list of equipment, furniture and other requirements in the Appendices, the Contractor shall remain responsible for the supply of all equipment of whatsoever nature and in whatsoever quantity required for carrying out all types of tests in the frequencies specified in the Specifications.

505 Testing Procedure and Set of Tests

Delete the final words of the second paragraph commencing "as per the prevalent accepted ….." and substitute with:

"In accordance with National Specifications stipulated by the Engineer. If no National Specifications acceptable to the Engineer exist then tests shall be carried out in accordance with the directions of the Engineer."

507 Site Trials or Trials Sections

(3) Production of Materials and Crushing Plant

In the second line of the first paragraph of this Sub-clause; after the words "to be processed using…." Insert the following:

"the initial material collection procedures,"

510 Recapitulative Schedule of Tests

Add the following after the second paragraph of the Sub-clause ending with the words "main types of works".

"The testing frequencies set forth are desirable minimums and the Engineer shall have the full authority to carry out additional tests as frequently as he may deem necessary to satisfy himself that the material and works comply with these Specifications".

511 Laboratory

*Delete this Clause and refer to **Clause 101.03** above.*

For Reference Only

Section 600 – Materials and Testing of Materials

603 Sources of Materials

Add the following at the end of the last paragraph of this Clause:

"These provisions regarding delivery and haulage shall not apply to any material salvaged from the site of the works and the Contractor shall be entirely responsible for all haulage and costs of haulage of such salvaged material."

604 Inspection and Acceptance of Materials

Delete the second and third paragraphs of this Clause and substitute with the following:

"A preliminary inspection of the materials may be made at the source for the convenience and accommodation of the Contractor, but neither the presence of the Engineer nor the subsequent testing of work or materials by the Engineer shall relieve the Contractor of his responsibility for furnishing work and materials complying with these Specifications.

The representative of the Engineer shall have free entry at all times to those parts of any plant which concern production of any materials for incorporation into the Works and the Contractor shall ensure that any order for materials which he places includes the necessary provisions to ensure that such free entry is available."

613 Stone, Aggregate, Sand and Fillers

Amend Table 6.5: Tests Procedures Applicable to Stone Aggregate and Fillers as follows:

Renumber iii) Flakiness Index to read iii) a. Flakiness Test

Add iii) b. Flat and Elongated Particles for AC ASTMD4791

Add		
xxi)	Fine Aggregate Angularity	AASHTO T 304 Method A
xxii)	Standard Test Method for Determining the Percentage of Fractured Particles in Coarse Aggregates(CAFF)	ASTM D5823

618 Bituminous Binders

(1) Sampling and Samples

Change heading (1) Sampling and Samples to (1) Sampling, Samples and Bitumen Grade

(1) Sampling, Samples and Bitumen Grade

Add after the first line of the first paragraph to read:

Sampling of Viscosity Grade Bitumen VG 10, 20, 30 or 40 as applicable shall be in accordance to IS 1201.

Add at the end of second paragraph the following:

The bitumen grade for preparing cut backs for priming, tack coat and surface dressing works shall be with 80/100 penetration grade. Similarly, the bitumen for all Asphalt Concrete works shall be with 60/70 penetration grade or VG 30 or VG 40 as indicated in the Bill of Quantities or as instructed by the Engineer.

For Reference Only

(2) Standard Methods of Testing

(a) Straight-run Bitumen

Add the following words after the end of the opening sentence:

"and any other tests required to confirm compliance with the requirements of Table 6.14."

(3) Requirements

(a) Straight-run Bitumen

Delete Table 6.14 and replace with the Table and notes below:

Table 6.14: Specification for Straight run Bitumen

	Grade			60-70	80-100	180-200
	Mandatory Properties		**Test Method**			
1	Penetration at 25 deg C in mm/10 range		AASHTO T49	60-70	80-100	180-200
2a	Softening Point deg C range		AASHTO T53	49-53.5	46-52.5	38-42.5
2b	Softening Point deg C range		ASTM D36	44-54	41-51	33-42
3a	Either Wax Content (DIN Method)		prEN12606	<2.2%	<2.2%	<2.2%
3b	or Dynamic Viscosity at 60 deg CPa.s minimum			145	90	30
4	Flash Point (Cleveland) deg C		AASHTOT48	>230	>230	>220
5	Solubility in trichloroethylene % minimum		AASHTOT44	99%	99%	99%
	Retained Properties after RTFOT		AASHTOT240			
	6	Penetration minimum % of original	AASHTO T49	50%	46%	37%
	7	Softening point deg C	AASHTOT53	44-54	41-51	33-42
	Optional Properties					
1a	Either Dynamic Viscosity at 135 deg C Pa.s minimum			0.295	0.23	0.135
1b 2	or Kinematic Viscosity at 135 deg C mm^2/s minimum			295	230	135
	Ductility at 25deg C (5 cm/minute) minimum cm.		AASHTO T51	100	100	100
	Retained Properties after RTFOT					
	4	Increase in Softening Point deg C maximum	AASHTO T53	9	9	11
	5	Ductility at 25deg C (5 cm/minute) minimum cm.	AASHTO T 51	50	70	100
	6	Change of mass % maximum +/-		0.50%	0.80%	0.80%

Notes: 1. Softening Point is specified using the AASHTO method. This does not stir the heating medium during the test and results in softening point temperatures approximately 1.5 deg C higher than would result from using IP, EN or BS tests where stirring takes place

2. No test method is given for viscosity. Kinematic viscosity at 60 and 135 deg C can, in theory, be measured using Capillary viscometers, AASHTO test method T201. However, in practice only T 202 (dynamic viscosity by vacuum capillary) is suitable for penetration grade bitumen at 60 degC.

3. More conveniently, dynamic viscosity can be measured using a rotating spindle type mechanical viscometer; e.g. Brookfield viscometer.

4. Note that for bitumen acceptance purposes dynamic and kinematic viscosity may be equated. 1Pa.s = 1000mm2/s

For Reference Only

Add the Table 6.14 (a) after Table 6.14 and its notes for Viscosity Grade (VG) paving bitumen:

Table 6.14(b): Specification for Viscosity Grade Paving Bitumen

S No.	Characteristics	Paving Grades				Method of Test
		VG 10	VG 20	VG 30	VG 40	Ref to
(1)	(2)	(3)	(4)	(5)	(6)	(7)
i)	Penetration at 25°C, 100 g, 5 s, 0.1 mm, Min	80	60	45	35	NS: 221:2047 (Part III)/ IS: 1203
ii)	Absolute viscosity at 60°C, Poises	800-1200	1600-2400	2400-3600	3200-4800	NS: 237:2050 (Part VIII)/ IS: 1206 -2
iii)	Kinematic viscosity at 135°C, cSt, Min	250	300	350	400	NS:237:2050 (Part VIII)/IS :1206-3
iv)	Flash point (Cleveland open cup), °C, Min	220	220	220	220	NS: 237:2049 (Part VII)/ IS: 1448-69
v)	Solubility in trichloroethylene, percent, Min	99	99	99	99	NS: 221:2047 (Part IV)/IS: 1216
vi)	Softening point (R&B), °C, Min	40	45	47	50	NS / IS: 1205.
vii)	Tests on residue from rolling thin film oven test:	Mass loss less than 1%	Mass loss less than 1%	Mass loss less than 1%	Mass loss less than 1%	AASHTO T 51
a)	Viscosity ratio at 60°C, Max	4	4	4	4	NS: 221:2046 (Part II)/ IS: 1206-2
b)	Ductility at 25°C, cm, Min	75	50	40	25	NS: 221:2046 (Part I)/ IS: 1208

For Reference Only

Section 700 – Pipe Drains, Pipe Culverts and Concrete Channels

702 Concrete Channeling

In the heading of this Clause after the word "Concrete" add the words "and Stone Masonry"

In Sub-clause (1) Scope after the word "concrete" add the words "and stone masonry"

At the end of Sub-clause (2) Materials add the following additional paragraph:

"Channels may also be constructed of masonry where directed or shown on the drawings. Masonry channels shall be fitted with precast concrete cover slabs where directed or shown on the drawings."

In Sub-clause (3) Construction (a) Excavation and Bedding after the word "concrete" in the penultimate line add the words "or stone masonry".

At the end of Sub-clause (3) Construction add the following additional item:

(d) Stone Masonry Channels

"Stone masonry channels shall be constructed in accordance with the lines levels and dimensions for the various types of channel shown on the drawings.

They shall be constructed throughout of Random Rubble Stone Masonry set in sand cement mortar having a minimum strength of 5.0 MPa and the stone/mortar matrix shall be complete and solid throughout the whole of the structure.

The joints in the exposed faces of the channels shall be carefully pointed up to provide a neat, well- sealed surface.

Where the channel type requires the provision of a reinforced concrete cover slab these shall be manufactured in an approved casting yard in accordance with the details in the drawings or as directed by the Engineer. The upper surfaces of the channel walls where these are required to carry cover slabs shall be carefully dressed and mortared to provide a smooth, strong, accurate bearing surface."

At the end of Sub-clause (5) Measurement add the following sentence:

"Excavation for channels at or near the road edge shall be classified as general roadway excavation and shall be paid as either excavation to spoil or as formation of embankment as appropriate. In the event that channels are directed to be constructed more than 5 meters from the back of the shoulder, excavation for channels shall be paid as excavation for structures."

For Reference Only

Section 900 – Earthworks

902 Definitions and General Requirements

Delete the final sentence of Sub-clause (8). At the end of the first sentence of Sub-clause (8) add the following:

"The surveyed points thus obtained shall be used to correct or augment the existing survey data referred to in Clause 104 above."

903 Classification of Excavated Materials

This Clause shall be read as follows:

The classification of the excavated material shall be made in three categories and they are:

- Common Material:- The materials described in Clause 903(1), 903(2) and 903(3) shall be considered as Common Materials
- Hard Rock;- Material as described in Clause903(4)
- Hard Rock (Blasting Prohibited): Material as described in Clause 903(5).

907 Excavation for Foundation

The title can be read as to "Excavation for

Structure" Add at the end of Sub-Clause (1):

The materials are classified as follows to excavation for structures:

i. Common Material

Common material shall comprise all excavation that is not classified as Hard Rock.

ii Hard Rock

Hard Rock material shall consist of excavation of material that in the opinion of the Engineer requires drilling and blasting with explosives for its removal or continuous chipping with pneumatic tools. The removal of any existing structures above existing ground level whose stone sizes are greater than one quarter of a cubic meter or are constructed of plain or reinforced concrete shall be considered as Hard Rock and paid for as such.

909 Forming of Embankment and Other Areas of Fill

Add the following additional Sub-clause:

"(11) All materials which are deposited in place prior to compaction shall be evenly spread over the whole of the designated area for the layer concerned and in such quantity that the thickness of any one layer, when measured after compaction, shall comply with the requirements specified.

Any new layer less than 75 mm in compacted thickness shall be bonded to the previous layer by scarifying the previous layer to a depth not less than 25 mm or to such greater depth so that the total compacted thickness of the new layer plus the scarified portion of the previous layer will not be less than 100 mm."

917 Measurement

Delete the first, second and third sentences of first paragraph of Sub-clause (4) and

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substitute the following:
Lead and lift of excavated materials for disposal within 1 km length and any lift shall not be measured for payment. They are deemed to be included in the quoted rates for earthworks operations, but lead beyond 1 km shall be measured and paid at quoted rate for haul of cubic meter irrespective of haulage distance."

Delete the Second and third paragraphs of Sub-clause 4.

918 Payment

At the end of Sub-clause (1) add the following:

The payment for earthwork excavation shall be made in two (2) instalments. First instalment 60% of the unit rate quoted in the Bill of Quantities shall be made after carrying out excavation works. The second instalment of remaining 40% of the unit rate quoted in the Bill of Quantities shall be made after haulage of the material at the locations approved by the Engineer.

Add new Clause 919 "Catchwater Drains" as follows:

919 Catchwater Drains

"Where directed by the Engineer the Contractor shall excavate catchwater drains to intercept water flowing towards the road alignment and divert it to the nearest watercourse or culvert.
Catchwater drains shall be of the size directed.
Unless directed to the contrary catchwater drains shall be unlined.
Where instructed by the engineer catchwater drains shall be lined with dry stone masonry or with mortared stone masonry as directed.
Where catchwater drains fall outside the limits of the general works of cut and fill i.e. beyond 5 m from the back of shoulders they shall be paid for as excavation for structure at the unit rate per cu.m. of including the volume required to be excavated for any lining, under the relevant item in the Bill of Quantities.
Where catchwater drains are directed to be lined the lining shall be paid for as dry stone masonry or mortared stone masonry as appropriate under the items for such work in the bills of quantities."

Add new Clause 920 "Excavation of Existing Road" as follows:

920 Excavation of Existing Road

"Excavation of existing road shall be carried out in accordance with these Specifications. Payment shall be for the volume excavated paid under a single item and shall include all costs of setting aside re-useable material and of disposing of surplus material. Costs of reusing material set aside as sub- base or capping layer shall be deemed to be included in the rates for those items."

For Reference Only

Section 1000 – Subgrades

1002 Definitions

(3) Capping Layer

Delete the definition and replace with:

Capping layers (also known as selected fill or selected or improved subgrade) are layers of specified materials laid and compacted generally over weaker materials either to aid the passage of construction traffic or to improve the condition of the layer immediately below the subbase or base layer. Such improvements may be made through the addition of imported material or by the mechanical or chemical stabilisation of the existing material.

1003 Preparation and Surface Treatment of Formation

In the opening paragraph delete the words of the first sentence following "the sub-base or…." to the end of the sentence and replace with "any embankment or pavement layer".

Add the following immediately after the opening paragraph:

"Preparation of formation shall also apply to the preparation of the base of embankment and shall include scarification, spreading and compaction of material across the full width of the layer or area. Such preparation shall not be measured twice at any one location.

If instructed by the Engineer, any processing of in-situ material that meets the Specification for subgrade will include scarification to a depth not less than 150 mm or to a depth as agreed with the Engineer, watering, shaping and compaction of the material. Measurement and payment for this processing shall be for the cubic metre of material so processed in accordance with the provisions in this sub-section. In this case the measurement for preparation of formation shall be deemed to be included in the rate for the provision of the layer concerned and no separate payment for preparation of formation will be made."

(1) Formation of Loose Untreated Materials

In the first sentence delete the words "particles larger than 60 mm" and replace with "particles larger than 75 mm".

Add the following after the first paragraph:

The Contractor shall arrange the provision of materials for embankment construction such that out of the suitable material, better quality materials are reserved for the subgrade and lesser quality materials are used in other embankment layers.

In the second paragraph delete the words "in the layers of 150 mm compacted depth" and replace with

"in layers not exceeding 200 mm compacted depth. Greater thicknesses of layer may be compacted provided the contractor can demonstrate that the required compaction throughout the whole layer may be obtained with the proposed equipment.

Add after first sentence in the second paragraph ending with words "150 mm compacted depth" the following:

Where the new formation is to abut an existing embankment as part of road widening, the Contractor shall ensure that any new layer of fill shall be benched into the old embankment for formation in a manner that comply with Clause 912 of these Specifications.

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At the end of Clause 1003 add the following additional Sub-clauses:

(7) Widening to Embankment and Use of Existing Pavement Material

Widening of the road embankment, where required, shall proceed from the formation in the following manner:

a) Scarify the existing sub-grade up to a depth of 300 mm and recompact it as described in Sub- clause 1003(1).
b) If the sub-grade is very weak, the sub-grade shall be strengthened by capping layer (Clause 1004) or by blending the scarified sub-grade material with granular material pursuant to Clause 1002 (5) Mechanical Stabilization as per the instruction of the Engineer.
c) The mechanical stabilization with granular material shall be to ensure a minimum CBR of5.

No separate payment shall be made for works carried out under Sub-clause 1003 (7) (a). Measurement for the subgrade layer shall be in accordance with the relevant Clauses of the Specification. Providing and laying of capping layer shall be measured and paid as per Clause 1004.

Providing, blending and laying of granular material for mechanical stabilization of sub-grade pursuant toSub-clause1003 (7) (b) and (c) will be measured in cubicmeter and paid for granular material only.

The contractor may use existing pavement material for the construction of the road pavement layers providing the material so used meets the required Specification for the layer in which the material is used. When this material is used it shall be spread across the full width of the layer. No separate measurement or payment shall be made for this operation.

(8) Scarifying Existing Pavement Surface, Adding Sub-base Material, Re-profiling and Compacting

The Contractor shall scarify the existing pavement surface with appropriate equipment and re-profile and compact it pursuant to preceding Sub-clause (7) using scarified sub-base and base material. The compacted layer shall meet the standard of Clause 1201 and brought up it to the line and level of the Sub-base surface as shown in the Drawings or as instructed by the Engineer. The resulting surface shall then be watered if required to bring the moisture content close to the optimum and thoroughly compacted to achieve the density specified in Clause 1201.

Scarification of the existing pavement surface shall be measured and paid in square meters. The supply and addition of new material of sub-base standard including re-profiling and compaction shall be measured separately in cubic meters of material and paid under the respective BoQ item of sub- base course.

The work shall be paid at the unit rate entered in the contract which shall be full and final compensation for making arrangements for traffic, carrying out the work in only a part of the roadway width, leaving the rest of the width for the passage of traffic whenever directed and all labours, equipment and incidentals required to complete the work as per the Specifications.

1004 Capping Layer

Delete the first sentence and replace with:

Where shown on the drawings a Capping (Selected Sub Grade - SSG) Layer (either type 1 or type 2) shall be placed at, or on, the top of the subgrade to a thickness as indicated

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on the drawings. The materials for this layer may be either from cut or from borrow pits or may be in-situ material if this material meets the Specification, or may be in-situ material mechanically stabilised to meet the Specification. The Contractor shall demonstrate that in-situ materials, treated or otherwise, are suitable for the purpose. Any use of in-situ material shall be subject to the Engineer's approval.

If instructed by the Engineer any processing of in-situ material that meets the Specification for the capping layer will include scarification to a depth not less than the specified thickness of capping layer or to a depth as agreed with the Engineer, watering, shaping and compaction of the material.

Measurementandpaymentforthisprocessingshallbeforthecubicmetreofmaterialsoprocesse din accordance with the provisions in this sub-section. In this case no separate payment for preparation of formation will be made.

(2) Material Requirements

Delete the contents and replace with the following requirements:

Material and Testing Requirements for Capping Layers

Test No.	Parameter	Capping Layer	
		Type 1	**Type 2**
1	**Maximum Size of Particles**	75 mm	100 mm
2	**% Passing 0.075mm sieve**	≤ 15%	≤ 15%
3	**Plasticity Index**	≤ 12%	≤ 6%
4	**Uniformity Coefficient**	-	≥ 5
5	**CBR at 95% MDD (4 day soaked)**	≥ 15%	≥ 30%
6	**Swell**	≤ 1%	≤ 1%
7	**In-situ CBR measured by DCP**	≥ 16%	≥ 32%
8	**Field Dry Density**	≥ 70% of Rel. Density	≥ 70% of Rel. Density

The minimum frequency of testing shall be as follows:

- For test numbers 1to6 everychangeofsourceandevery2000m^{2}ofeachpavement layer constructed
- For test numbers 7&8 every 500 m^2 of each layer constructed.

1005 Mechanical Stabilisation

(1) General

Delete the first and second paragraphs and replace with:

The extent of mechanical stabilisation shall be at the Contractor's discretion

(2) Material Requirement

(a) Stabiliser

Delete and replace with:

The Contractor is at liberty to mechanically stabilise any material, whether in-situ or imported, to provide any pavement layer material, provided that the resulting material is in conformity with the Specification.

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The type and amount of stabiliser used shall be such that when mixed with the in-situ or imported material the specified requirements for the layer material are achieved.

(b) Stabilised Material Requirements

Delete this sub-section:

(3) Amount of Stabiliser to be added

Delete this sub-section

1007 Measurement

In Sub-clause (1) in the second line delete the words "taking cross sections at intervals of 10 metres" and substitute:

"generating cross sections from the original and augmented survey data and digital terrain model at intervals of 20 metres in Terai roads and 10 metres in hill roads and other alignment change points as instructed by the Engineer. "

In the same sentence delete the words "in the original position before the work starts and after its completion"

Delete the whole of Sub-clause (4) after the opening sentence.

In the opening sentence replace the word "exclusive" and replace with "inclusive"

For Reference Only

Section 1100 – Road Works Overall Requirements

1101 Horizontal Alignments, Surface Levels and Surface regularity of Pavement Courses

Add the following:

(3) (e) Remedial Work

When upon examination by the Engineer any part of the Works or any plant fails to conform to the Specification requirements, or is at any stage before final acceptance damaged so that it no longer conforms to the requirements of the Specifications, the Engineer shall instruct its complete removal and replacement, at the Contractor's expense, with satisfactory work, plant or material. In special cases the Engineer may instruct the Contractor to apply remedial measures in order to make good any such defects or damage.

The actual remedial measures taken shall be entirely at the Contractor's own cost but subject to the Engineer's approval regarding the details thereof.

In particular remedial measures shall ensure that the final product is in full compliance with the Specifications, shall not endanger or damage any other part of the Works and shall be carefully controlled and submitted to the Engineer for examination when completed or at any intermediate stage as may be required.

For the guidance of the Contractor an indication about what may be required in the more common cases of defects or damage is given below, but the Engineer will in no way be bound to approve of or adhere to the measures indicated, as the actual remedial measures will be dictated by the circumstances of each particular case.

Earthworks

i) Where a cut slope has been over-excavated, reinstatement by backfilling will not normally be permitted and the entire slope may need to be re-trimmed to obtain a uniform slope
ii) Where the floor of a cutting has been over excavated it will normally require backfilling and re- compaction with approved material of higher quality then the cut material. All necessary measures shall be taken to drain ground water that may accumulate in backfilled sections.
iii) Excess widths of fills will need to be trimmed to the design profile.
iv) Where erosion has occurred on the surface of cuts or fills, the damage shall be made good by backfilling with suitable material and re-trimming. In more serious cases the slope may have to be cut back and backfilled after benching and compacted to the required standard of compaction with suitable small equipment followed by re-trimming.

Local Defects in Pavement Layers

i) Where remedial measures are taken to make good localised defects the length and width of the area to be repaired by equipment shall be such as to accommodate the full width of the equipment used and of a reasonable length to ensure effective repair.

ii) The depth to which material will have to be removed will depend on the defect and the type of material. Gravel layers will need to be broken up to a depth of at least 75mm and crushed stone will usually need breaking up over its full depth. Asphalt material will normally require removal for its full depth.

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1104 Care of Works

Add the following at the end:

(4) The provision of temporary drainage works such as drains, open channels, banks etc. and the furnishing and operation of temporary pumps and such other equipment as may be necessary to adequately drain, protect and de-water the Works and Temporary Works. This will be in addition to any permanent drainage works specified and installed, and in addition to any temporary drainage works specifically paid for separately.

(5) Care shall be exercised not to allow material in borrow pits to become excessively wet, to keep all completed layers properly drained, to avoid dumps of material on completed layer work that shall inhibit surface drainage or form wet spots under and around dumps, and to protect all parts of the Works against erosion by floods an drain.

(6) Fill and cut slopes shall be promptly repaired whenever damaged by surface water.

(7) Excavations for pipe drains, culverts, service ducts and similar structures shall be adequately protected against possible ingress of water during rainstorms.

(8) The Contractor shall inform the Engineer of damage or defects to any work before repair or maintenance and the Engineer shall instruct the extent and method of repair. The previously constructed layer shall be thoroughly cleaned of all foreign material and the Contractor shall request its inspection by the Engineer before construction of the following layer or application of a prime coat, surfacing or surface treatment. In the case of all bituminous work in particular the existing layer shall be thoroughly broomed and all dung, clay, and other deleterious material completely removed. Where necessary the surface shall be sprayed with water before, during and after brooming to remove all foreign material.

For Reference Only

Section 1200 – Subbase, Base, Hard Shoulder and Gravel Wearing Course

1201 Mechanically Stable Subbase

(1) Scope

Add at the end "crushed or otherwise".

Add an additional paragraph at the end as follows:

The scope of works includes:

(a) construction of new sub base in one or two layers as instructed by the Engineer over carriageway and shoulder in accordance with the stipulations laid down in Clause 1003 and relevant Sub Clauses
(b) construction of sub base layer over shoulders or as shown in the drawing or as instructed by the Engineer utilizing the sub base and base material from the existing pavement in accordance with the stipulations laid down in Clause 1003 and relevant Sub Clauses.

(3) Material Requirement

(a) Gravel

Add to the first paragraph:

"The specific grading requirement shall be controlled before and after the material has been transported, stockpiled, mixed, spread and compacted".

(5) Laying and Compacting

Add the following at the beginning:

The sub-base shall be constructed after checking that the underlying layer conforms to the specified requirements and has been approved by the Engineer. Immediately before placing the material, the underlying layer shall be checked by the Contractor for any damage or deficiencies, which shall be made good as instructed by the Engineer.

Add the following at the end:

The Contractor shall protect and maintain the subbase at his own expense. Maintenance shall include the immediate repair of any damage or defects which may occur and shall be repeated as often as is necessary to keep the subbase continuously intact. Repairs shall be done in such a manner that will ensure restoration to an even and uniform surface and may involve scarifying, watering and re-compacting.

(9) Testing

Replace the title with;

(9) Quality Control Testing

Replace Table 12.2 with:

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Table 12.2: Frequency of Testing and Requirements for Mechanically Stable Subbase

Test No.	Parameter/ Test	Materials	
		Gravel	Sands
1	Gradation	As Table 12.1	As 1201 (3) (b)
2	Plasticity Index (PI)	< 6%	> 5% < 12%
3	MDD & OMC	As per ASTM D1557-70 or its IS equivalent	
4	CBR @ (Field) Dry Density (4 day soak)	≥ 30%	≥ 30%
5	(Field) Dry Density and Field OMC	≥ 95% MDD ≥ 75% of Rel. Density Field OMC within ± 10% of OMC as per Test No.3	≥ 95% MDD ≥ 75% of Rel. Density
Construction Tolerances			
Surface Levels		One test (full width) every 20 metres	
Thickness		One test (full width) every 20 metres	
Width		One Test every 200 metres	

The minimum frequency of testing shall be as follows;

- For Test Nos. 1to3 every change of source and every 1,000 m^2 of constructed pavement layer
- For TestNos.4 every change of source and every 2,000 m^2 of constructed pavement layer
- For TestNo.5 every 500 m^2 of constructed pavement layer

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1202 Graded Crushed Stone Base and Subbase

(1) Scope and Definition

Delete the third paragraph "The class of ....Bill of Quantities" entirely.

(3) Material Requirement

Amend Table 12.3 to read as follows:

Table 12.3: Physical Requirement of Graded Crushed Stone

Tests	Base
LAA Max%	< 35%
AIV%	< 25%
FI% Max.	25%
CBR Min.%	80% at 98% of IS 2720
CR%	>80%
PI Max	NP

Amend Table 12.4 to read as follows:

Table 12.4: Grading Envelope for Graded Crushed Stone

Sieve Size (mm) or equivalent	Percentage Passing by Weight
37.5	100
28	84 - 94
20	72 - 84
10	51 - 67
4.75	36 - 53
1.18	18 - 33
0.30	11 - 21
0.075	8 - 12

(7) Laying and Compacting

Add the following at the beginning:

Where the base course is laid over the prepared subbase, the surface shall be brushed free of dust and extraneous matter and, when instructed by the Engineer, watered before laying the base course.

Where the base course is laid over an existing bituminous pavement, the surface shall be lightly scarified and/or punctured to permit drainage through the surface where the surface shape is not adequately crowned in the opinion of the Engineer, and cleaned of any scarified material before laying the base course. During this operation the Contractor shall not damage the underlying pavement layer. Any damage to the existing underlying layer which results due to careless scarification shall be rectified forthwith by the Contractor to the approval of the Engineer at the Contractor's own cost.

Delete the third paragraph and replace with:

The aggregate shall be spread uniformly and without segregation over the prepared surface of an underlying layer which complies with the specified requirements for the layer concerned, or over the surfacing of an existing pavement, and in quantities sufficient to ensure that after compaction the completed layer will comply with all requirements of layer thickness, levels, cross section and density.

Aggregate shall be spread such that the minimum thickness of each layer after compaction

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shall be not less than 100 mm. The maximum thickness will depend on the type of compaction equipment used and on the specified layer thickness but shall not normally exceed 200 mm compacted thickness unless otherwise agreed or instructed by the Engineer.

In order to minimise segregation, the material shall be kept wet during transport and spreading. The dumps of material shall be spread out to a flat-surfaced layer with a thickness suitable for mixing. There after the required amount of water shall be added and the material thoroughly mixed with a motor grader or other suitable approved means until a uniform homogeneous mixture is achieved. The required amount of water and moisture content shall be determined by carrying outfield trials but shall normally be within 2% of the predetermined optimum moisture content at the time of compaction. The material deposited on the prepared existing surface may be spread and shaped by any method which will not cause the segregation of coarse and fine particles. The Contractor shall ensure that joints in consecutive pavement layers do not coincide. All areas of segregated coarse and fine material shall be corrected by re-mixing or removing and replacing with well graded material to the approval of the Engineer. The base material shall be compacted using approved vibratory compaction equipment whose vibrators shall function correctly in accordance with the manufacturer's instructions.

After mixing the material shall be graded to achieve the specified thickness with due allowance made for decrease in thickness due to compaction such that after compaction the surface of the aggregate base is within the specified level tolerance. The material shall then be thoroughly compacted by means of approved equipment so that the specified density is obtained throughout the whole layer.

The rolling shall be carried out by a series of over lapping longitudinal passes working from the edge towards the centre, except on super elevated sections where the rolling shall proceed from the lower edge to the higher edge.

The finally compacted layer shall be firm and stable with a closely knit mosaic like surface texture of exposed aggregate free from surface laminations, portions exhibiting segregation of the fine and coarse aggregates, corrugations or other defects that may be detrimental to the performance of the layer. The surface shall be brushed to ensure a surface free from excess fines and loose aggregate.

Where, in the opinion of the Engineer, the completed surface of the base is unacceptable, the surface shall be rectified in a manner approved by the Engineer.

The Contractor shall protect and maintain the completed base layer at his own expense until the surfacing is applied. Maintenance shall include the immediate repair of any damage or defects which may occur and shall be repeated as often as is necessary to keep the layer continuously intact and in good condition. Repairs shall be done in such a manner that will ensure restoration to an even and uniform surface. Traffic shall not be allowed directly on any unprimed base layer unless instructed or authorized by the Engineer.

The completed base shall be primed as soon as possible after approval from the Engineer.

Replace:

(10) Testing

with:

(10) Quality Control Testing

Replace Table 12.5 with:

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Table 12.5: Frequency of Testing and Requirements for Crushed Stone Base

Test No.	Parameter/ Test	Materials
		Crushed Stone Base
1	Gradation	As Table 12.4
2	Plasticity Index (PI)	NP
3	MDD and OMC	
4	Flakiness Index	< 25%
5	Aggregate Impact Value	< 25%
6	Los Angeles Abrasion	< 35%
7	CBR @ (Field) Dry Density (4 day soak)	≥ 80%
8	Sodium Sulphate Soundness	< 12%
9	(Field) Dry Density	≥ 98% MDD > 82% of Rel. Density
Construction Tolerances As per Clause 1100		
	Surface Levels	One test (full width) every 20 metres
	Thickness	One test every 20 metres
	Width	One test every 20 metres
	Smoothness	One test every 80 m2

The minimum frequency of testing shall be as follows:

- For test Nos.1to6 everychangeofsourceandevery1,000m^{2}ofcompletedpavement layer
- For test Nos.7 to 8 everychangeofsourceandevery5,000m^{2}ofcompletedpavement layer
- For test No.9 every 500 m^2 of completed pavement layer

(11) Measurement

Delete the paragraph and replace with:

The graded crushed stone base shall be measured by the cubic meters of material placed, compacted and accepted. Measurement shall be based on the cross section of the base shown in the drawings and the actual length measured horizontally along the centreline of the surface of the road, or in case of edge widening, along the centreline of the widened section.

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Section 1300 – Bituminous Surface and Base Course

1301 General Requirements

(6) Cutting back of Bitumen

Add the following at the end:

In general the preparation of cutback bitumen for prime coat shall be carried out in accordance with Transport Research Laboratory TRRL Research Report RR140 "Preparation of Cutback Bitumens" (by Hitch and Steward) or relevant IS referred to in the Specifications.

(7) Adhesion Agent

Read (7) Adhesion Agent as Adhesion/Anti-Stripping Additive

Delete the existing paragraph and replace with the following:

Under normal circumstances anti stripping additive will not be required and shall not be used to correct poor aggregate/binder adhesion arising from the Contractor's failure to meet the requirements of the Specification. However, prior to the commencement of the surface dressing, the Contractor shall carry out tests under the supervision of the Engineer to determine the adhesion qualities of the aggregate and binder to be used. These tests will include, but not be limited to, the Immersion Tray Test described in Appendix 3 of TRRL-ORN 3. If, in the opinion, of the Engineer, the tests and trials indicate the need, the Engineer may instruct the use of a proprietary adhesion / anti stripping additive as admixture to the binder or to be applied to the binder film. Its rate of application shall be in accordance to the manufacturer specifications unless otherwise instructed by the Engineer and is generally prescribed as a percentage by weight of binder content added to the cut back prior to spraying.

The additive used shall be INDOSTRIP-NR-60, Addibit L101 or equivalent. Manufacturer's certificate for each batch/lot shall be submitted to the Engineer for his information. The Engineer may prescribe some additional periodic tests such as "under water coating tests", "stripping value for passive adhesive", "thermal stability" or "solubility in high speed diesel", etc. to confirm that the Adhesive additive being used performs as claimed by the manufacturer.

The anti stripping additive shall meet the following requirements:

Description	Test Method	Requirements
Appearance	Visual	Dark Brown Liquid
Specific Gravity at 27^0 C	IS:1448	0.85 ± 0.1
Pour Point	IS:1448	Max 42
Flash Point	IS:1448	> 150^0 C
Moisture Content	IS:1448	1.0% Max
Solubility in Diesel Oil in the Ratio 2:98 at 50^0 C	IS:6241	Completely soluble
Stripping Value with Bitumen Containing 1%	IS:6241	No Stripping
Under Water Coating Test	IS:6241	95% Min
Thermal Stability at 163^0 C	IS:6241	Stable

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(10) Measurement and Payment

Add the following at the end of the first sentence:

"unless specified in the Bill of Quantities".

1302 Prime Coat and Tack Coat

(2) Materials

Delete the first paragraph and replace with:

The prime coat shall consist of medium curing cutback bitumen (25% to 45% cutback) from a source approved by the Engineer. Medium curing cutback bitumen MC-30, MC-70 or MC-250 shall comply with the documents referred to in Clause 1301 (6). Cutback binder shall comprise 80/100 penetration grade bitumen blended with kerosene.

The application rate of cutback bitumen and the net bitumen content of cut back shall be established and approved by the Engineer after field trials. These field trials shall be carried out by the Contractor as instructed by and under the supervision of the Engineer and the cost there of shall be deemed to be included in the prime coat rates. The object of the trials is to achieve the optimum penetration of prime coat and the minimum rate of spread at which this penetration can be achieved.

Pending field trials, the rate of application for surface priming shall be one liter per square meter (1 lit/ m^2).

Delete the fourth paragraph and replace with:

The blinding layer, if any, shall be crushed rock or river sand having a grading within the limits of the table below. The aggregate shall be clean, hard and free from excessive dust. It shall contain no clay, loam or other deleterious material.

Grading Envelope for Blinding Material/Sand for Prime Coat:

Sieve size (mm)	Percentage Passing (by mass)
4.75	100
2.36	80 - 100
1.18	60 - 95
0.6	30 - 80
0.3	20 - 55
0.075	10 - 30

When, in the opinion of the Engineer, blinding to the primed surface is required, blinding aggregate shall be spread evenly over the full width of the primed surface such that no bituminous prime material will be picked up by passing traffic. No traffic shall be allowed to pass until the primed surface has been adequately covered to prevent pick-up from vehicles. Any removal of prime caused by traffic passing shall be remedied to the satisfaction of the Engineer. In general, priming shall be carried out in half widths and the Contractor shall ensure that traffic is kept off the prime until it has adequately cured, after which it shall, where practicable, be trafficked as described below. Blinding for uncured prime coat will only be used where the Engineer agrees that this is a necessary or unavoidable measure.

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Payment for blinding material shall be for the square metre of blinding applied as agreed and/or instructed by the Engineer.

Tack Coat application shall be with either 80/100 penetration grade bitumen or with MC-30 or MC 70 cut back bitumen. Kerosene shall be added to bitumen to make the cut back. Pending field trials, the rate of application of tack coat shall be 0.5 lit/m^2.

(4) Spraying of Prime Coat and Tack Coat

Add the following:

Spray record sheets containing details of ambient temperature, spraying temperature, areas sprayed and quantities of materials used shall be submitted by the Contractor on a daily basis for approval by the Engineer.

Following the prime coat application, the primed, un-blinded surface shall be allowed to cure for a minimum 24 hours, or for a time as agreed with the Engineer, without being disturbed so as to allow the prime coat to fully penetrate the surface unless full penetration and curing has taken place in the opinion of the Engineer in a shorter period. If after this period the prime coat has not sufficiently cured to permit trafficking without being picked up, and the Contractor wishes to open the section to traffic, the Engineer shall either instruct that the area be left for a further period until the prime coat has fully penetrated and aired to allow traffic to pass or shall permit the Contractor to place mineral aggregate for blinding, at his own cost, applied at a rate and in the places instructed to blot up the excess bitumen. Where the Engineer agrees that blinding is necessary in limited areas to permit the unavoidable movement of traffic, at locations such as road junctions, the Contractor shall place mineral aggregate for blinding applied at a rate and in the places agreed and shall be paid for this work at the rate in the Bills of Quantities.

As soon as the primed surface has cured sufficiently or sufficient mineral aggregate for blinding has been applied to allow traffic to pass over the road without the prime coat being picked up, the road shall, where practicable, be opened to public traffic for a period of 14 days or less if agreed by the Engineer. During this period the primed area under traffic shall be maintained and all damage caused by traffic shall be repaired as instructed by the Engineer at no extra cost. Thereafter the contractor shall maintain the primed surface and shall protect the surface until the application of surfacing by taking suitable precautions including for example supplying and spreading a protective layer of sand at no extra cost.

(7) Testing

Add the following at the beginning:

Samples of the bituminous material that the Contractor proposes to use, together with a statement as to their source and character shall be submitted and approved before use of such material. The Contractor shall require the manufacturer or producer of the material to furnish material subject to this and all other pertinent requirements. Only satisfactory materials, so demonstrated by service tests, shall be acceptable.

The Contractor shall furnish vendor's certified test reports for each consignment of bituminous material supplied. The reports shall be delivered to the Engineer before permission is granted for use of the material. The furnishing of the vendor's reports shall not be interpreted as basis for final acceptance. All such test reports shall be subject to verification by testing samples of materials received.

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1303 Surface Dressing

(1) Scope and Definitions

Add the following:

Surface Dressing shall be the process of spraying the surface to be dressed with bituminous binder, covering the binder with natural or crushed stone cover aggregate and rolling the resulting surface. The Contractor shall familiarise himself with the contents of the UK Transport & Road Research Laboratory Overseas Road Note 3 - "A Guide to Surface Dressing in Tropical and Sub-Tropical Countries" - hereinafter referred to as TRRL-ORN 3. Much of the Specification for Seal Coat Treatment is based on TRRL-ORN 3, including the design of the surface dressing and knowledge of the principles of the Surface Dressing Process is essential to the Contractor.

The requirement for a single or double surface dressing shall be specified on the Drawings or as instructed by the Engineer.

(2) Materials

(a) Binder

Add the following:

The bitumen binder shall consist of 80/100 Penetration grade bitumen or MC 3000 or MC 800cutback bitumen with or without additives such as INDOSTRIP-NR-60, Addibit L101 or as specified in the relevant item of the Bill of Quantities.

Cutback bitumen binder shall comprise penetration grade 80/100 bitumen and cutter which shall be kerosene prepared on Site. The type and proportion of cutter if required shall be instructed by the Engineer on Site, in the range 1% to 10% after design of the surface dressing in accordance with the procedures set out in Chapter 5 of TRRL-ORN 3. The preparation of cutback bitumen shall be carried out in accordance with TRRL Research Report RR104 "Preparation of Cutback Bitumen" (Hitch and Stewart).

Approval of the source of supply of bitumen shall be obtained from the Engineer prior to delivery of the material. The Engineer will require test certificates to confirm compliance with the specified requirements and may require samples for independent testing prior to issue of such approval. No bituminous material other than that represented by samples and test certificates submitted shall be used by the Contractor except with the written consent of the Engineer and the material shall comply in all respects with the requirements herein. Blending of bituminous materials from different refineries shall not be permitted without the knowledge and approval of the Engineer.

Problems have been experienced with bitumen in some parts of Asia that relate to bitumen chemistry, in particular to undesirably high paraffin wax contents. Some penetration grade bitumens may comply with standard Specification requirements but perform badly in service due to high paraffin wax content or some other compositional factor. Bitumen proposed for use shall be tested at source to establish the following:

- Viscosity characteristics at 60 and 135 degrees centigrade
- Rolling Thin Film Oven Test (RTFOT results indicate the resistance of bitumen to hardening under the influence of heat and air)
- Paraffin wax content (DIN test procedure)

(b) Chippings

(i) Hardness, Soundness and Cleanliness

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Delete the first and second paragraph and replace with:

Cover aggregate specified in the relevant items of the Bill of Quantities shall be obtained from a source approved by the Engineer and shall be natural screened gravel clean and free from adhering dust, achieved by washing and drying, or any other detrimental substance that could impair the adhesion of bitumen and shall conform to the requirements of Table 13.5 as follows.

Table 13.5: Physical Requirement of Chippings

Properties of Chipping	Acceptable Range or Criteria
LAA. Max	35
AIV Max	27
Flakiness Index Max	25

(ii) Grading

Delete Table 13.6: Grading Requirements of Chippings and replace with the table below.

Table 13.6: Grading Requirements of Chippings

Sieve Size mm	Percentage Passing by Weight			
	Nominal size			
	20 mm	14 mm	10 mm	6 mm
25	100			
20	85 - 100	100		
14	0 - 25	85 - 100	100	
10	0 - 7	0 - 25	85 - 100	100
6.3		0 - 7	0 - 20	85 - 100
4.75			0 - 10	
4.0				0 - 20
2.80	0 - 2	0 - 2	0 - 2	0 - 10
0.075	0 - 1.0	0 - 1.0	0 - 1.0	0 - 1.0

The nominal size of the chippings shall be as specified in the relevant item in the Bill of Quantities.

(4) Crushing, Screening, Washing and Stockpiling Chippings

Add the following:

Stockpiling of aggregates will be permitted only at locations approved by the Engineer. A separate stockpile shall be made for each nominal size of aggregate at each location.

The site of the stockpile shall be cleared of all vegetation and debris, graded and drained, and where the Engineer deems it necessary, the area shall be surfaced with a 100 mm compacted layer of approved material to prevent contamination of the lower layer of cover aggregate.

Unless otherwise approved by the Engineer each stockpile shall be built at least two metes high by tipping in layers not more than one metre deep over the whole area of the stockpile. The Contractor shall supply planking or other material required in connection with movement of vehicles over and about the stockpiles.

The bottom 50 mm layer of cover aggregate or any contaminated aggregate shall not be

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used in the work.

Stockpiles shall be kept dry from rainfall or ingress of water by covering with approved waterproof membranes and maintaining ground drainage to avoid seepage of ground water into stockpile.

(6) Construction Equipment for Pavement Works

(a) Bitumen Distributors

Delete this sub-section and replace with:

Operation

Distributors shall be of constant volume or preferably constant pressure type, self-propelled, equipped with pneumatic tyres and have a minimum binder capacity of 4,000 litres and each machine shall require the approval in writing of the Engineer for use in constructing the Works.

Approval will depend on fulfilling the following requirements:

Distributors shall be equipped with low range speedometer (fifth wheel) in good working condition, so located to be visible to the driver to enable him to maintain accurately the constant speed for spraying binder at the uniform specified rate. They shall be fitted with either a calibrated pressure gauge which accurately records the pressure of the bitumen at the spray bar for constant pressure distributors, or a binder pump delivery meter for constant volume distributors. Binder pumps shall be capable of maintaining constant pressure or constant volume during spray runs.

Distributors shall be fitted with burners in combination with a circulating pump capable of maintaining the bitumen without overheating within the specified temperature range and an accurately calibrated thermometer for indicating the spraying temperature of the bitumen.

The spray bar shall be capable of applying bitumen binder to a minimum width of 2.30 meters with provision for application of lesser widths by closing jets. The spray bar shall have the capability of being raised and lowered to specified heights above the road and of being adjusted so that it is parallel with the road surface. The distributors shall be so designed to allow the circulation of hot binder through the spray bar when not spraying.

Spray bars shall be fitted with either slotted spray jets or preferably whirling spray jets, whose essential features are the ability to spray binder uniformly at the specified rate of spray, such that the speed of the distributor can be matched by the following chipping spreader during its normal chip spreading operation. If whirling spray jets are fitted the spray bar shall be protected by a hood to reduce wind interference. Distributors shall be fitted with hand-lances with nozzle spray attachments for spraying small, inaccessible areas and to correct deficiencies in the spray rate.

Prior to surface dressing operations, distributors shall be checked for leakages from spray jets and any other sources and these shall be eliminated. Distributors shall then be calibrated by a method approved by the Engineer and under his supervision, to establish uniformity of lateral spray of bitumen to within ±10% permitted variation at any point on the surface from the mean spray rate. This calibration includes setting the spray bar height above the surface to be sprayed, in accordance with the manufacturer's instructions, so as to ensure that the designed overlap of jets is achieved. All spray jets shall be functioning so that each jet requirement has been achieved. Calibration shall be undertaken in accordance with the manufacturer's instructions or in accordance with TRRL-ORN 3 - Section 6.3 Distributor Speed Control and Calibration - to establish the relationship between spray rate and road speed for constant pressure distributor sand in addition,

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bitumen pump delivery rate and spray bar width for constant volume distributors. The distributors shall be capable of achieving a mean spray rate measured by the TRRL-ORN 3 Method B, which shall not vary by more than ±5% from the specified spray rate.

Safety and Maintenance

Bitumen heating, pumping and spraying operations shall be entrusted only to personnel who have been adequately trained and who are competent in the use of the equipment. Unauthorised personnel shall not be allowed to remain in the vicinity during the above operations. Authorised personnel shall be provided with, and be required to wear, suitable protective clothing, i.e. overalls, heat-proof gloves, boots, helmets and goggles.

Special care is needed when changing the type of binder being used in the distributor. When changing from hot binders to bitumen emulsions, all residual binder in the tank and spraying system shall be drained completely and the spraying system flushed using diesel. When changing from emulsions to hot binders, all emulsion shall be drained/flushed from the distributor in order to avoid foaming when hot binder is loaded. When it is necessary to load hot binder after using the distributor for spraying cutback bitumen, the cutback bitumen shall be drained completely and the manhole left open for some time to allow solvent vapour to escape.

The spray bar shall be emptied of binder by blowing with air, or by diesel flushing when spraying is suspended for lengthy periods and at the end of each day's work.

The binder shall be introduced into the distributor at a temperature equal to or just above the spraying temperature after preheating in separate tanks fitted with burners and circulating pumps for this purpose. The capacity of the decanters/preheating tank shall be sufficient to preheat the binder required for the full day's work.

The distributor burners shall be used only to make relatively small adjustments to the binder temperature and shall not be used to raise the binder from ambient to spraying temperature. Under no circumstances shall distributor burners be operated during the spraying operation, or when the level of binder in the tank is less than 150 mm over the top of the flues, or when the distributor is moving. The need for end of day maintenance of the distributor is emphasised to reduce fire risk and to ensure its adequate performance when next used for binder application.

Maintenance of all equipment for the surface dressing operation shall be under the control of a competent senior mechanic, approved by the Engineer and fully experienced in the maintenance of all equipment and in the calibration of the bitumen distributor.

The Contractor shall provide all necessary traffic control equipment and shall inform the engineer at least 14 days before commencing the surface dressing Work, of his detailed arrangements for traffic control. After review the Engineer will inform the Contractor in writing of his approval, subject to any modifications to the Contractor's arrangements which he requires for traffic and convenience of the public.

(8) Application of Surface Dressing

Delete and replace with:

Application of Binder

The specified bitumen binder, cut back if instructed by the Engineer, its application rate and spraying temperature shall be instructed by the Engineer on Site after design of the surface dressing, in accordance with the procedures set out in Chapter 5 of TRRL-ORN 3. The range of spraying temperature for binders is given in TRRL-ORN 3, and is normally within the range 140°C to 200°C.

The Contractor shall present his detailed programme and arrangements and methods for

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the planning and execution of the surface dressing process to the Engineer for approval at least 28 days before he intends to commence this Work. The Contractor's authorised representative shall be responsible for preparation of the programmes and arrangements and the Contractor shall not commence surface dressing until the Engineer has approved his programme.

The Contractor shall base his programme on TRRL-ORN 3 - Section 7. The Surface Dressing Process, Sub-Section 7.1 Planning and 7.2 The Surface Dressing Operation - by selecting the activities appropriate to his particular Work Programme. The Contractor shall appoint a surface dressing overseer approved by the Engineer who shall be fully competent to organise and implement the surface dressing operation with experience in operating all essential equipment.

All operations associated with the surface dressing process shall be described in the Contractor's arrangements and shall include but not be limited to:

- method of bitumen supply, decanting, cutting back where required, heating and storing, transfer to distributor including lists of equipment and capacities;
- location and method of production of cover aggregates and pre-coating with type and output of equipment, including crushers where appropriate; and.
- method of performing the surface dressing process including type and capacity/weight of all main and ancillary items of equipment along with workforce details.

The Contractor shall provide, one day in advance, his following day's surface dressing Work Programme, including his expected spray lengths and widths for each run with details of the quantity of cover aggregate available in approved chip spreaders standing by at the commencement of the spray run. Spraying shall not commence until sufficient cover aggregate is in this position to cover the area programmed for spraying.

The distributor shall be filled with preheated bitumen binder on the same day, shortly before start of binder application. The distributor spray bar and jets shall be preheated by circulating hot binder and the jets operated for at least 10 seconds for testing. This operation shall be carried out before each spray run, off-road onto trays, or at a location where no environmental damage will be created. Jets shall be inspected by the Engineer for shape, direction, blockage or any other defects which shall be corrected before spraying is permitted. At the end of each spray run the distributor shall be driven off- road to avoid binder drippage on the pavement surface. Binder drippage from any location which may contaminate the road surface shall be sufficient for the Engineer to order removal of the offending source from the roadway until repairs are completed.

As emergency/temporary measures, drip protection of the pavement surface shall be provided by use of buckets/trays etc. These shall be available for use at all times, along with equipment for removal of binder spillages on the pavement surface, to the approval of the Engineer.

The Contractor shall carry out a trial section of surface dressing at a location instructed by the Engineer to demonstrate to the Engineer that his surface dressing operation is capable of constructing the surface dressing in accordance with the Specification. The trial length shall be minimum 200 meters using full spray bar width with full width application of cover aggregate. If the trial section of surface dressing complies with the Specification, the Contractor shall receive payment for the Work in accordance with the Contract as if it were Permanent Work. If the trial section of surface dressing fails to comply with the Specification, the Contractor shall carry out further trials until his surface dressing operation complies with the Specification. No payment will be made for trial sections that do not comply with the Specification.

When the Engineer is satisfied that the Contractor is capable of constructing surface

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dressing that complies with the Specification after trial section or sections, the Contractor will receive permission to commence surface dressing as permanent Work on the road pavement.

Application of binder shall only be undertaken when the surface is dry or slightly damp, but in no circumstances when wet. If in the opinion of the Engineer rainfall is likely before the application of binder or cover aggregate or the temperature or the pavement surface has time to fall below the specified minimum temperature of 15°C, the Engineer will instruct the Contractor to delay surface dressing work until weather conditions are satisfactory. Areas damaged by rainfall shall be rectified by the Contractor without additional payment, in a manner instructed by the Engineer.

If in the opinion of the Engineer the ambient temperature is too cold for surface dressing, the Contractor shall delay this operation until the temperature increases to the specified minimum level of 15°C.

Building paper or other approved protective material shall be used at the start and finish of each spray run of sufficient width (not less than 600mm) to enable the distributor to reach its calibrated road speed with spray jets open before discharging binder onto the pavement under treatment. Ends of previous surface treatment runs shall be trimmed back to clean, straight transverse edges and these shall form the start point for subsequent runs, with completed work suitably protected as described above. Spray runs will be limited to 300 metres length initially until the Contractor demonstrates his ability to plan and execute longer lengths. Spray widths shall be calculated allowing for 150mm longitudinal overlap with adjoining passes and for the width that the following chipping spreader is able to cover. Longitudinal sprayed butt joints will not be permitted. The Contractor shall submit his spray width and length proposals to the Engineer for approval.

During spraying all passing traffic shall be stopped. If spray jets block, or the chipping spreader stops, or any other event occurs which may affect the surface treatment process, then the spray bar operator immediately shall stop spraying. When the defective equipment or operation is rectified, spraying may restart with the Engineer's approval.

The distributor shall be dipped and the binder temperature recorded before and after each spray run and spray length and width recorded on approved Record Sheets. The hot application rate shall be calculated and recorded and checked against the specified rate. The calculated actual rate shall not vary by more than ±5% from the specified rate. The actual quantity of binder sprayed corrected to 15.6°C shall be calculated.

At least eight clean pre-weighed metal spray trays shall be available for sampling the spray rate for each spray run, to be used in accordance with TRRL-ORN 3 - Section 6.3 Method B - if so instructed by the Engineer.

To ensure that the spray runs are parallel with the road pavement the road centreline or edge line shall be marked every 25 metres and a string line laid out for the distributor driver to follow with the guide bar attached to his side of the cab.

Where a second surface dressing is specified, the first surface dressing shall be left open to traffic for a minimum period of 21 days and preferably a longer period before applying the second surface dressing unless special approval is obtained from the Engineer for a shorter period. Surplus chippings shall be removed by firm hand-brooming or power-brooming before applying the second surface dressing.

The spraying widths shall be so selected that the centreline joint of the second surface dressing is offset from that in the first surface dressing by a minimum 300 mm.

Hand-pouring pots or hand-lances shall be used to touch up carefully any parts of the first surface missed by the distributor/chipping spreader, or for the treatment of areas in which

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the distributor cannot operate and in this case only, chippings may be applied by an approved manual method.

Areas damaged by excess bitumen or spillages of diesel or other deleterious material shall be repaired by careful cutting out and removal followed by careful hand-poured or hand-lance application of binder and chipping in a manner approved by the Engineer.

The second surface dressing shall be undertaken when the first surface has been approved by the Engineer after all surplus chippings are removed, repairs carried out and the surface thoroughly cleaned as specified. The procedures to be followed are those specified for Surface Dressing in this Specification.

Application of Cover Aggregate

The cover aggregate shall be applied at the rate instructed by the Engineer on Site in square metres of coverage per cubic metre of loose aggregate after design of the surface dressing, in accordance with procedures set out in Chapter 5 of TRRL-ORN 3.

The cover aggregate shall be applied immediately after the binder is applied and with the approval of the Engineer may be applied slightly damp if not pre-coated to depress dust and help adhesion. Aggregate applied to sprayed bitumen emulsion shall, however, be dry.

The cover aggregate shall be applied using approved mechanical spreaders, which shall be tailgate mounted on tipper trucks, pushed spreaders or self-propelled spreaders, specifically manufactured for the purpose and they shall preferably be metered. They shall be capable of uniformly spreading cover aggregate at the instructed rate such that they can deliver the rate specified whilst travelling at the same speed as the binder distributors during spraying.

The bitumen binder surface shall be covered with cover aggregate closely packed in one layer so that adjacent chippings are touching and no bitumen binder is left uncovered.

A sufficient number of loaded spreaders shall be available at the start of binder application to provide cover aggregate over the whole area programmed for spraying. The Contractor shall not commence spraying unless sufficient loaded spreaders are in place. Aggregate spreading by manual methods will not be permitted except in circumstances where:

- mechanical spreaders cannot operate effectively or safely;
- additional aggregate (back-up work) is required;
- breakdown of mechanical spreaders occurs during the spreading operations before stoppage of spraying;
- minor surface repairs are instructed.

The spreader shall follow the distributor at an interval not exceeding 10m for hot binder work and not exceeding 5m when using bitumen emulsion binder. A back-up vehicle or other approved means shall be constantly in attendance during surface dressing, from which additional aggregate may be hand-applied to ensure complete and rapid coverage.

Where an adjoining pass of the distributor is required, no aggregate shall be applied to the binder over a 150 - 200 mm strip so as to permit subsequent overlap.

Under no circumstances will general brooming of the chipped surface be permitted. Aggregate spillage shall be removed with care and excess aggregates may be brushed off carefully after a minimum of 3 days under traffic, after approval of the Engineer.

The cover aggregate shall be rolled with pneumatic multi - tyred power rollers. Pneumatic - tyred rollers shall have a wheel load in the 1000-2000kg range. Tyre pressures and sizes shall be in accordance with the manufacture's recommendations and shall be the same on

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each axle and tyres shall be smooth and in good condition to provide uniform rolling of chippings. The roller shall follow directly behind the spreader and shall continue to roll at a speed of approximately 8-10kph, so as to provide minimum 6 passes over the entire treated area. Each pass shall overlap the previous pass by minimum half width of roller rolling shall be continued until all cover aggregate particles are firmly bedded. Tyres shall be in good condition and be kept clean and smooth to avoid pick-up of bitumen and chippings.

(13) Measurement

Delete paragraphs 4 including (a) and (b) and 5 starting with "Chippings of each……" and ending with "…….to rectify at his own cost." And Replace with the following:

"Chippings of each nominal size shall be measured in square meter. The application of the chippings shall be to cover fully the sprayed binder surface to the satisfaction of the Engineer. Any additional quantity of chippings to meet the specified quality of works shall be supplied and applied by the Contractor at his own cost to the satisfaction of the Engineer."

Add at the end following:

Anti-stripping additive shall be measured in kilogram, which shall be the actual mass of the additive used as instructed by the Engineer.

(14) Payment

Add at the end following:

The Anti-stripping additive shall be paid as per the unit contract unit rate which shall be full and final compensation for the cost incurred in compliance with the stipulations of Clause 1301 and 1303 of these Specifications.

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1307 General requirements for Asphalt concrete, Sand Asphalt, Emulsion Aggregate Mix and Cold asphalt

(2) Construction Plant (b) Mixing Plant

Add at the end of the second paragraph:

The Contractor shall also ensure that the number and capacity of the plant are or is compatible to the interim or final milestones for completion of AC works set elsewhere in the Contract. The minimum capacity of any plant shall, however, not be less than 100 tons per hour.

(3) Preparation of Surface

Delete the third paragraph and substitute:

"Tack coat shall be provided wherever new asphaltic concrete is laid over existing pavement and wherever a first course of new asphaltic concrete has been exposed to traffic or left to weather to such an extent that the Engineer considers it necessary to provide tack coat in the interests of satisfactory adhesion between the courses. In general tack coat will be required wherever a period of more than 14 days is allowed between successive courses; this period may be substantially reduced if the surface of the underlying course is exposed to excessive traffic. Provision of tack coat will not be the subject of any separate payment and is considered to be included in the rate of asphaltic concrete."

(4) Design and Working Mixes

Add at the end of the first paragraph after the word Specification

as follows: "as outlined in Clause 1308 (4)".

Delete third paragraph and replace with:

The minimum and maximum lift thickness for wearing course shall be 3 to 5 times the nominal size of aggregates and 4 to 5 times the nominal size of aggregates for binder course unless otherwise approved by the Engineer.

Delete 4thparagraph entirely and replace it with the following:

The Contractor shall carry out mix design in the laboratory for the wearing and binder course of asphalt concrete in order to propose the proportion of each constituent of the initial mixes to be used for site trials to be carried out in accordance with Sub clause 1307 (5). The procedure for conducting such mix design shall be in accordance to the MS-2, MS-4 of Asphalt Institute or Superpave Volumetric Design. Important steps starting with assembly to testing of mix design samples are broadly outlined below;

a. conduct sieve analysis of various aggregate gradation and blend the aggregate to arrive at the desired aggregate design blend for use in the asphalt mixture. The following additional information may be required for the above, depending on the procedure followed:
   - bulk specific gravity of each aggregate
   - chosen unit weight of each aggregate
   - rodded unit weight of each aggregate
   - blend by volume of the coarse aggregate
   - blend by volume of fine aggregate
   - amount of 0.075mm down material desired in the combined blend if mineral fillers or bag house fines are used

b. prepare trial mixes for various aggregate blends to determine the optimum bitumen

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content to obtain the minimum stability and flow without crossing the threshold limits on contents of air voids set between 3% to5%.

c. get approval from the Engineer of the selected trial mix for site trial.

(5) Site Trials

Delete the first paragraph and replace it with the following:

Site trials shall be carried out in the presence of the Engineer at a location approved by him. These trials shall be carried out after the approval of the Contractor's laboratory mix design.

The Contractor shall produce trial batches with an aggregate blend approximating the laboratory mix design. When the Contractor is satisfied that his Plant is producing a consistent mix, he shall propose laying a trial area for the Engineer's approval to establish that the properties of the mix produced by the Plant are within the limits laid down in Clause 1308 and elsewhere in these Specifications and that his other asphalt finishing equipment is capable of laying the mix to the specified thickness without dragging or other imperfections and that the compaction plant is capable of compacting the mix uniformly to the required density.

The required density from the field trials, assessed by a minimum of three (3) cores of 150 mm shall not be less than 99% density of Marshall Specimens made from the same mix. At least six (6) sample Marshall Specimens shall be made and tested to satisfy the Engineer that the requirements of Clause 1308 have been complied with.

Samples for Marshall Specimens during field trials shall be taken from the vehicle conveying the asphalt concrete mix from the Plant to the job site. Remaining sample mix after producing the six Marshall specimens shall be quartered and analyzed for gradation, and binder content as per AASHTO T 164.

Temperature of the bitumen at the time of mixing shall range between 130^0 to 160ºC while that of the aggregate shall be between 130^0 to 155ºC. In no instances shall the difference of temperature between the binder and aggregate exceed 15ºC.

Similarly, the temperature of the asphalt concrete mix when placed in a position for laying shall be within ±10ºC of specified mixing temperature and shall be such that the kinematic viscosity of the asphalt cement is 280±20 centistokes just prior to initial break down rolling.

The Contractor will be allowed to proceed with the construction of permanent asphalt concrete pavement works only after the trial section has been satisfactorily laid and finished in accordance with these Specifications to the full satisfaction of the Engineer.

Delete the second, fifth including (a) to (h), sixth and seventh paragraphs of (5)

Site Trials. Add before the deleted seventh paragraph of (5) Site Trials:

When the Engineer is satisfied with the outcome from the site trials, the Contractor shall supply to the Engineer with the mix proportions, batch weight, aggregate grading and Marsh all Properties as tested. Thereafter, the mix shall be known as the Approved Job Mix and subsequent Plant mixes produced shall conform to the Approved Job Mix within the following tolerances:

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Properties	Binder Course	Wearing Course
Aggregate Retained on a No.4 Sieve	±5%	±4%
Aggregate passing a 4.75 mm sieve but retained on 0.180 mm sieve	±4%	±3%
Aggregate passing a 0.180 mm sieve but retained on 0.075 mm sieve	±2%	±1.5%
Aggregate passing a 0.075 mm sieve	±1.5%	±1.5%
Binder Content	±0.25%	±0.25%
For Air Void in Total Mix in the range of 3% -5%	±1%	±1%
Voids Filled with Binder	±5%	±5%
Voids in Mineral Aggregates 13%-15% for	±1.0%	±1.0%
Binder Course and 14%-16% for Wearing Course		

Any variation to the limits in the Approved Job Mix lasting more than one (1) day shall be addressed by suspending the works, investigating and adjusting or making modifications by checking all aggregate, Plant and material. Mixing and other construction activities shall commence only after mixes produced comply with these requirements.

If there is change in the supply or source of the aggregates or if variations in quality or grading of aggregate or bitumen become necessary for reasons outside the control of the Contractor, the Contractor shall readjust or redesign the Approved Job Mix as may be necessary to satisfy the Engineer that the Plant can consistently produce mixes within tolerances as specified above. Thereafter the adjusted or new mix shall become the Approved Job Mix.

(13) Tolerances

Delete second paragraph including (a) Bitumen Content and (b) Aggregate entirely and replace it with the following:

Tolerance for bitumen content, aggregate gradation and void contents shall be as outlined in 1307 (5) and relevant sub clauses of 1308.

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1308 Asphalt concrete

(3) Materials

(a) Penetration Grade Bitumen

Delete the text and substitute with:

"Bitumen shall be 60/70 penetration grade or VG 30 or VG 40 as specified in Section 600 and as indicated in the Bill of Quantities or as instructed by the Engineer."

(b) Aggregates

Modify Table 13.17 to read

Table 13.17: Requirement of Coarse Aggregates

Coarse Aggregate (retained on 4.75 mm sieve)	
LAA Max	35 max. for both Wearing and Binder Course
ACV Max	25 max. for both Wearing and Binder Course
SSS Max	12% max
Flakiness Index Max	25 max for both Wearing and Binder Course
Coarse Aggregate Fractured Face (ASTM D 5821)	Wearing Course: 85% to 95% / 80% to 90% for one and two fractured faces Binder Course: Minimum 80% / Minimum 75% for one and two fractured faces
Clay Content (AASHTO 176)	Minimum Sand Equivalency Value of 45%
Flat and Long Elongation Particles (ASTM D479)	Max 45%
Fine Aggregate Angularity Requirement (AASHTO 304 Method A)	Minimum 45%

The coarse aggregate shall have an affinity for bitumen when coated and shall pass the stripping test in accordance with AASHTO T-182.

Modify second line of the last paragraph to read:

It shall.....having a Los Angles Abrasion of not more than 40 for the binder course and 35 for the wearing course."

(c) Mineral Filler

Delete the whole paragraph and replace it with the following:

Filler shall consist of fine alakali material such as cement, crushed limestone, rock dust and shall exclude clay minerals, chlorides, sulphates and other deleterious material. At the time of use, it shall be dry and free flowing without agglomerations. Filler shall conform to the requirement of AASHTO M17 and shall have the following grading:

Sieve Size (mm)	Percent Passing by Weight
0.600	100
0.300	95-100
0.150	90-100
0.075	75-100

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(4) Grading Requirement

Modify Table 13.18 to read as follows:

Table 13.18: Provisional Grading Requirements for Binder Course and Wearing Course

Sieve Size (mm)	Percentage Passing	
	Binder Course*	Wearing Course**
25	100	-
19	95-100	
12.5	65-85	95-100
9.5	30-65	70-95
4.75	38-46	55-70
2.36	28-42	39-55
1.18	-	30-45
0.3	7-21	15-30
0.075	2-8	3-7

*Note: * For Binder Course, max. % passing 4.75 mm sieve should not exceed 46%*
*** For wearing course, the minimum fraction passing 2.36 mm sieve should not be less than 39%.*

(5) Requirements for Asphalt Concrete

Modify Table 13.19 to read as follows:

Table 13.19: Requirements for Asphalt Concrete

Parameter	Binder Course	Wearing Course
Number of blows at each end	75	75
Marshall Stability (kN)	7	7
Flow Value (mm)	2-4	2-4
Air Voids in total mix (%)	3-5	3-5
Bitumen Content by Mass of Total Mix	Minimum 5%	Minimum 5.5%

Add the following at the end of the last paragraph:

The bitumen content for the job mix shall be determined on the basis of laboratory Marshall Tests, using the procedure described in the Asphalt Institute publication MS-2 or as in Superpave system of mix design considering the following:

i. maximum density
ii. maximum stability
iii. mid specification air voids
iv. mid specification voids filled with bitumen
v. the flow value and voids in the mineral aggregates corresponds to the optimum asphalt cement content which shall be checked for compliance with these Specifications

Compression tests before and after immersion in accordance with AASHTO T 165 shall be carried out on both binder and wearing course mixes. The resulting % of retained strength shall be as below:

For Reference Only

Binder Course	Wearing Course
not less than 65%	not less than 75%

(7) Compaction

In the second paragraph delete the reference to "(50 blows)" and replace with "(75 blows)"

(8) Testing (b) Process Control

In Table 13.20 in the minimum number of tests for Quality of Binder delete the words "in addition, one set of tests for each 50,000 liters or part of it of supply of binder" and substitute:

"In addition, one set of tests for each tanker load of bitumen delivered to site; in the event that bitumen is delivered to the site in drums additional tests shall be made at the frequency stipulated by the Engineer but not less than one set per 10tons of bitumen"

(9) Measurement

At the end of the paragraph add:

"However, in no circumstances shall the volume of asphalt certified for payment exceed the volume calculated as the actual volume laid and accepted for payment on the basis of actual measurements of length, width and thickness made in the field."

(11) Adjustment in Contract Unit Rate

Delete the whole of the text of this item and substitute:

"The rate of asphalt concrete will not be adjusted. The rate given for asphalt concrete in the Bills of Quantities shall be the rate using the percentage of bitumen specified in the Bills. When the actual percentage used has been determined the additional bitumen required or the amount of bitumen saved shall be calculated in kilograms and either paid to the Contractor or credited back to the Employer as appropriate through the Bill item provided for this purpose. The provision of a mechanism for payment for under or over usage shall not in any way alter or reduce the Contractor's responsibility to produce asphaltic material with the correct bitumen content in accordance with these Specifications."

For Reference Only

Section 1400 – Kerbs and Footpaths

Add new "Clause 1406: Precast Concrete Property Access Slabs" after "Clause 1405: Cycle Tracks" as follows:

1406 Precast Concrete Property Access Slabs

The Contractor shall provide and install precast concrete slabs in accordance with the detail shown in the drawings to permit access across lined and unlined side drains wherever directed by the Engineer.

The materials and workmanship used in the fabrication of these slabs shall be entirely in accordance with the requirements of the relevant Clauses of this Specification governing concrete, reinforcement and formwork. Formwork for the slabs shall be such as to provide a class F2 finish throughout.

The measurement of precast concrete property access slabs shall be in numbers of each type of slab fabricated, transported and placed in accordance with the Drawings and these Specifications.

The quantities measured as provided above shall be paid at the respective contract unit rates for each type of slab. The contract unit rates shall be the full and the final compensation to the Contractor for installation where and as directed and shall include for fabrication of the slabs including the concrete of specified grade, reinforcement and form works, transport to the location for installation, any necessary trimming and bedding and placing of the slabs in their final position.

Add new "Clause 1407: Precast Reinforced Cement Concrete (RCC) Covered Drain" after "Clause 1406: Precast Concrete Property Access Slabs" as follows:

1407 Precast Reinforced Cement Concrete (RCC) Covered Drain

The Contractor shall provide and install precast Reinforced Cement Concrete (RCC) covered drains in accordance with the details shown in the drawings along the road side wherever directed by the Engineer.

The materials and workmanship used in the fabrication of RCC covered drain shall be entirely in accordance with the requirements of the relevant Clauses of this Specification governing concrete, reinforcement and formwork. Formwork for works shall be such as to provide a class F3 finish throughout.

The measurement of precast Reinforced Cement Concrete (RCC) covered drains shall be in meter of each type of RCC covered drain fabricated, transported and placed in accordance with the Drawings and these Specifications.

The quantities measured shall be paid at the respective contract unit rates for each type of Reinforced Cement Concrete (RCC) covered drains. The contract unit rates shall be the full and final compensation to the Contractor for installation where and as directed and shall include for fabrication of the Reinforced Cement Concrete (RCC) covered drains including the concrete of specified grade, reinforcement and form works, transport to the location for installation, any necessary trimming, bedding and placing in their final position, use of cement sand mortar at joints etc to meet the requirements of the drawings and these Specifications and to the satisfaction of the Engineer.

For Reference Only

Section 1500 – Traffic Signs, Road Marking, Road Marker Stones and Delineators

1501 Permanent Traffic Signs

(11) Payment

Add the following additional paragraph at the end of this Sub-clause:

"The Bills of Quantities provide for two classes of sign for payment purposes:

i) Single post
ii) Double or more posts

All signs supported by a single post shall be classed as "single post"

"All signs supported by two or more posts shall be classified as "double post or more posts".

1502 Road Markings

Change the heading to read **"1502 A: Road Markings using Road Paint"**

At the end of Clause 1502A insert the following new Clause:

1502 B: Road Markings Using Thermoplastic Road Marking Material

(1) Scope

This Clause covers the provision of permanent road markings using reflectorised thermoplastic road marking material.

(2) Material

a) General

The material to be used for road marking and striping shall be a reflectorised thermoplastic type of material specifically produced for the purpose. The material shall be applied to the pavement in a molten state by mechanical means.

Upon cooling to normal pavement temperature, it shall produce an adherent reflectorised stripe of specified thickness and width capable of resisting deformation by traffic.

b) Thermoplastic Material

Thermoplastic material shall be a high quality, elastic type with mix-in of 20% by weight of reflecting beads. The beads shall be ballotini, or similar approved and shall be reasonably spherical and free from flaws and of a size suitable for this type of Reflectorisation. Ballotini shall comply with the requirements of BS 6088 Class A.

The raw thermoplastic material shall be composed of the pigment, the reflecting beads and the filler uniformly dispersed in the resin. It may be supplied in bags, ready mixed as powder, which shall be heated and stirred prior to application in accordance with the manufacturer's recommendations.
Thermoplastic Road Marking Material shall comply with the requirements of BS 3262.

c) Colour

The thermoplastic material shall be available in yellow and white colour.

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(i) White

The colour of white markings shall match the colour No.00E55 of BS 4800.Pigment shall be Titanium Dioxide complying with Bs1851.

(ii) Yellow

The colour of yellow markings shall match the colour No. 08E51 of BS 4800.

d) Test Certificates

The Contractor shall submit, for each consignment of thermoplastic material delivered to site, the Manufacturer's certificate to show that the materials comply in all respects with the relevant product Specifications.

(3) Application of Thermoplastic Road Markings

(a) Weather Limitations

Road marking material shall not be applied to a damp surface or when the relative humidity exceeds 80%, or at temperature slower than 10°C, or when in the opinion of the Engineer, wind strength is such that it may adversely affect the application operations.

(b) Mechanical Equipment for Application

The equipment shall consist of a suitable apparatus to clean the road surface, a melting pot of minimum 250 litre capacity, an automatic, self-propelled thermoplastic laying machine and all additional hand operated equipment necessary to complete the work.

The laying machine shall be capable of laying road markings of different widths in the range of 50-500 mm.

(c) Surface Preparation

Trafficmarkingsshallbeappliedtobituminoussurfacesonlyaftersufficienttimehaselapsedtoen sure that damage will not be caused to the surface by volatile substances evaporating from the bituminous surfacing. In no case shall traffic paint markings be applied until at least 48 hours after the completion of the bituminous surfacing or any longer period required by the Engineer.

Before the material is applied, the surface shall be clean and dry and completely free from soil, grease, oil, acid or any other material which will be detrimental to the bond between the marking material and the surface. The portions of the surface where the marking is to be applied shall be properly cleaned by means of watering, brooming or compressed air if required.

Where road markings are to be applied on a concrete pavement, all laitance and loose curing
compoundshallberemoved.Particularcareshallbetakentoexposeasurfaceoffreshconcreteo nall areas where road studs are to be fixed.

(d) Setting Out of Road Markings

The lines, symbols, figures or marks shall be set out by means of paint spots of the same colour as that of the proposed final lines and marks. These spot marks shall be at such intervals as will ensure that the traffic markings can be accurately applied, and in no case shall they be more than 1.5 m from each other. Normally, spots of approximately 10 mm in diameter should be sufficient.

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The dimensions and positions of traffic marking shall be as shown on the Drawings or as specified in the national regulations for traffic signs and markings.

After spotting, the positions of the proposed road marking such as dotted lines and starting and finishing points of barrier lines are to be indicated on the road. These pre-markings must be approved by the Engineer prior to the commencement of any marking operations.

The positions and outlines of special markings are to be produced in chalk on the finished road and must be approved by the Engineer before they are applied. The use of approved templates will be permissible on condition that the positioning of the marking is approved by the Engineer before application is commenced.

The position of road studs shall be marked out on the road and shall be approved by the Engineer before they are fixed in position.

The Contractor shall be responsible for all setting out of road marking as agreed with the Engineer.

(4) Construction Requirement

The road marking material shall be applied as figures, signs, letters, symbols, broken or unbroken lines or other marks, as shown on the Drawings or directed by the Engineer.

Where the marking material is applied by means of a machine, it shall be applied in one layer. Before the road marking machine is used on the permanent works, the satisfactory working of the machine shall be demonstrated on a suitable site which is not part of the permanent works. Adjustment to the machine shall be followed by further testing. Only when the machine has been correctly adjusted and approved by the Engineer may the machine be used on the permanent work. The operator shall be experienced in the use of the machine. The rate of application shall be checked and adjusted if necessary before application on a large scale is commenced and thereafter daily.

Where two or three lines are required next to each other, the lines shall be applied simultaneously by the same machine. The marking material shall be treated before application, in accordance with the manufacturer's instructions.

Thermoplastic road marking material shall be applied at a nominal rate of 5 kg/m² on asphalt concrete and 6 kg/m² on surface dressing.

Road marking shall be completed before a particular section is opened to traffic. Each layer of marking shall be continuous over the whole area being marked.

Continuous lines of thermoplastic material shall be broken by a 100 mm gap for every 10 m continuous line.

(5) Protection

After the application, the traffic markings shall be protected against damage by traffic or other causes. The Contractor is responsible for the erection, placing and removal of all warning boards, flags, cones, barricades and other protection measures which may be necessary.

(6) Tolerances

Road traffic markings shall be applied with an accuracy complying with the tolerances given below:

(a) Width

The width of lines and other markings shall not deviate from the specified width by more than 5%.

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(b) Position

The position of lines, letters, figures, arrows, retro-reflective road studs and other markings shall not deviate from the true position specified by more than 20 mm.

(c) Alignment of Markings

The alignment of any edge of a longitudinal line shall not deviate from the true alignment by more than 10 mm in 15 m.

(d) Broken Lines

The length of segments of broken longitudinal lines shall not deviate from the specified length by more than 150 mm.

In broken lines, the length of segments and the gap between segments shall be as indicated on the Drawings or as directed by the Engineer. Lines and curves, whether broken or unbroken, shall not consist of chords but shall follow the correct radius.

(7) Faulty Workmanship or Materials

If any materials not complying with the requirements are delivered to the Site or used in the Works, or if any sub-standard work is carried out, such material or work shall be removed, replaced or repaired as required by the Engineer, at the Contractor's own cost. Rejected traffic markings and paint or marking material that has been splashed or has dripped onto the surfacing, kerbs, structures or other such surfaces shall be removed by the Contractor at his own cost, in such a way that the markings or spilt paint will not show up again later and the under lying bituminous surfacing is not damaged in anyway.

(8) Measurement and Payment

Road marking lines shall be measured by the square meter. The rates for road marking lines shall include for the cost of a priming coat of approved material complying with the manufacturers Specifications if instructed, thermoplastic material including application, ballotini, stencils, setting out, temporary signs, barriers, all traffic control and making good.

1503 Road Marker Stones

(3) Construction (b) Placing and Painting of Marker Stones

Insert the following additional paragraph at the end of this Sub-clause:

The concrete bedding for marker stones shall have a minimum volume below ground level of 0.25 cu.m. for 5th kilometer marker stones and of 0.125 cu.m. for standard marker stones. In addition, the actual volume of concrete used shall be sufficient to ensure the secured and permanent bedding of the marker stones in position to the satisfaction of the Engineer having due regard to the soil and slope conditions and to the size of the initial excavation. Excavation for foundation pits for marker stones shall be wholly backfilled with concrete including the backfilling of any over excavation which may have taken place.

1504 Delineator Posts

(4) Erection and Painting

Delete last sentence of first paragraph and substitute with

"Delineator Posts shall be bedded into ground with concrete foundation of grade M10/40 as shown on the drawings".

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Delete last word "element" of the last paragraph and substitute with "paint"

Add new Clause "1505 Metal Beam Crash Barrier" after Clause "1504 Delineator Posts"

1505 Metal Beam Crash Barrier

(1) General

This work shall consist of furnishing and erection of metal beam crash barrier of dimensions and at locations as shown on the drawing(s) or as directed by the Engineer.

Metal beam crash barrier shall generally be located on approaches to bridge structures at locations where embankment height is more than 3 metres and at horizontal curves.

(2) Materials

The design materials to be used and the location of metal beam crash barrier shall confirm to relevant drawings or as otherwise directed by the Engineer.

Metal beam is a "W" profiled corrugated beam in single or double row and single or double faced as specified in the drawing made out of cold roll forming from steel strip of 3 mm thick using steel of Fe 410 grade or ST 42 grade confirming to IS:5986 with hot dip galvanized 550 gm per square meter.

The beam after forming shall have formed width of 312 mm and depth of 83 mm and shall have punched holes for fixing as specified in drawings.

The metal crash barrier posts &spacer shall consist 'C' channel section made out of 5 mm thick sheet by cold roll forming process of steel confirming to ST 42 grade with hot dip galvanised 550 gm per square meter.

All bolt, nuts and washers as specified in drawings shall confirm to IS: 1367 & IS: 1364 unless otherwise specified and are hot dip galvanized 550 gm per square meter.

The Guard rail reflector shall be made of material and placed in position as shown in drawings. It shall be hot dip galvanized 550 gm per square meter.

Beams to be erected on a radius of 50 m or less shall be shop curved to the appropriate curvature of the installation.

The mechanical properties of the base metal for Beam shall confirm to the following requirements:

i) Yield point, minimum 345MPa

ii) Tensile strength, minimum 483 MPa and

iii) Elongation, in 50 mm, minimum 12percent

Test specimens for mechanical properties and coating shall be prepared and tested as specified in relevant IS codes.

Steel beam elements and terminal sections shall be galvanized (zinc coated, 0.55 kg per square meter, minimum single spot) unless otherwise specified. The galvanizing on all other steel parts shall confirm to the relevant IS Specifications. All fittings (bolts, nuts, washers) shall conform to the IS; 1367 and IS: 1364. All galvanizing shall be done after fabrication.

Concrete for bedding and anchor assembly shall confirm to section 2000 of these Specifications. The size of the concrete foundation block for embedding guard posts and

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grade of concrete shall be as shown in the drawing.

(3) Construction Operations

1505.3.1. The line and grade of railing shall be true to that shown on the plans. The railing shall be carefully adjusted prior to fixing in place, to ensure proper matching at abutting joints and correct alignment and camber throughout their length. Holes for field connections shall be drilled with the railing in place in the structure at proper grade and alignment.

1505.3.2. Unless otherwise specified on the drawing, railing steel posts shall be given one shop coat of paint (primer) and three coats of paint on structural steel after erection, if the sections are not galvanized. Any part of assembly below ground shall be painted with three coats of red lead paint.

Splices and end connections shall be of the type and designs specified or shown on the plans and shall be of such strength as to develop full design strength of the rail elements.

(4) Installation of Posts

The guard posts shall be embedded in the concrete footing of size and grade of concrete along with the depth of the embedment of post or as indicated in the drawing.

Posts and the end section for metal beam guardrails on bridges shall be bolted to the structure as detailed on the plans. The anchor bolts shall be set to proper location and elevation with templates and carefully checked.

(5) Erection

All guardrail anchors shall be set and attachments made and placed as indicated on the plans or as directed by the Engineer.

All bolts or clips used for fastening the guardrail or fittings to the posts shall be drawn up tightly. Each bolt shall have sufficient length to extend at least 6 mm through and beyond the full nut, except where such extensions might interfere with or endanger traffic in which case the bolts shall be cut off flush with the nut.

All railings shall be erected, drawn and adjusted so that the longitudinal tension will be uniform throughout the entire length of the rail. The guard rail reflector shall be bolted replacing splice washer at every 10th posts interval.

(6) Tolerance

The posts shall be vertical with a tolerance not exceeding 6 mm in a length of 3 metre. The railing barrier shall be erected true to line and grade.

(7) Measurement

Metal beam railing barriers (single or double row) as shown on the drawings or as instructed by the engineer will be measured by linear metre of completed length and accepted in place.

No separate measurement for payment shall be made for Terminals/Anchors of various types required for work and the delineator to replace washer as specified in drawing .The cost of these elements will be deemed to be included in the rate quoted by the Contractor. Furnishing and placing anchor bolts and/or devices for guardrail posts on bridges shall be considered incidental to the construction and the costs thereof shall be included in the price for other items of construction.

No measurement for payment will be made for excavation and concreting performed in

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connection with this construction.

(8) Payment

Payment shall be made as per the contract unit rate and shall include full compensation for furnishing of labour, materials, tools, equipment and incidental costs necessary for doing all the work involved in connection with the metal beam railing barrier complete in place in all respects as per these Specifications and drawings.

Add new Clause "1506 Reflective Pavement Markers (Road Studs)" after Clause "1505 Metal Beam Crash Barrier"

1506 Reflective Pavement Markers (Road Studs)

(1) General

Reflective pavement marker (RPM) or road stud is a device, which is bonded to or anchored within the road surface for lane marking & delineation for night time visibility. It reflects incident light in directions close to the direction from which it came.

(2) Definition

Description of terms specific to this standard is as follows:

Coefficient of luminous intensity (CIL) or specific intensity: The ratio of luminous intensity of the retro reflector in the direction of observation to illuminance at the retro reflector on a plane perpendicular to the direction of the incident light expressed in terms of millicadelas per incident lux (mcd/ lx).

Horizontal entrance angle: The angle in the horizontal plane between the direction of incident light & the normal to the leading edge of the marker.

Observation angle: The angle at the reflector between the illumination axis & the observation axis.

Retro-reflection: Reflection in which the radiation is returned in direction close to the direction from which it came, this property being maintained over wide variations of the direction of incident radiation.

Head: That part of the road stud, which is above the road surface when the road stud is fixed in position in the road.

Upper Surface: That part of the external surface of the road stud which is visible when the road stud is fixed in position in the road.

Anchorage: That parts of a road stud that is below the road surface when the road stud is fixed in position in the road.

(3) Material

Plastic body of RPM/road stud shall be moulded from ASA (Acrylic Strene Acrylonitrite) or HIPS (High- Impact Polystyrene) or ABS or any other suitable material approved by the Engineer in charge. The marker shall support a load of 13635 kg tested in accordance with ASTMD4280.

Reflective panels shall consist of number of lenses containing single or duel prismatic cube capable of providing total internal reflection of the light entering the lens face. Lenses shall be moulded of methyl methecrylate conforming to ASTM D788 or equivalent.

(4) Design

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The slope or retro reflecting surface shall preferably be 35 ±5 degree to base.
The area of each retro reflecting surface shall not be less than 13.0 sq cm.

(5) Optical performance

(a) Unidirectional

Each reflector or combination of reflectors on each face of the stud shall have a CIL not less than that given in table below.

Minimum CIL value for stud

Entrance angle	Observation angle	CIL in mcd/ lx
		White
0o U 5o L&R	0.3o	220
0oU 10o L&R	0.5o	120

Note: - The entrance angle of 0o U corresponds to the normal aspects of the reflectors when the reflecting road stud is installed in horizontal road surface.

(b) Tests

Co-efficient of luminance intensity can be measured by procedure described in ASTM E809 "Practice For Measuring Photometric Characteristics" or as recommended in BS: 873 Part IV – 1973.

Under test conditions, a stud shall not be considered to fail the photometric requirements if the measured CIL at any one position of measurement is less than the values specified in table provided that

(i) The value is not less than 80% of the specified minimum, and

(ii) The average of the left & right measurements for the specific angle is greater than the specified minimum.

(6) Fixing of reflective markers

(a) Requirements

The enveloping profile of the head of the stud shall be smooth & the studs shall not present any sharp edges to traffic.

The reflecting portions of the stud shall be free from crevices or ledges where dirt might accumulate. All road studs shall be legibly marked with the name, trade mark or other means of identification of the manufacturer.

Marker height shall not exceed 20mm.
Marker width shall not exceed 130mm & shall not be less than 100mm.
The base of the marker shall be flat within 1.3mm. If the bottom of the marker is configured, the outer most faces of the configuration shall not deviate more than 1.3mm from a flat surface.

(b) Placement

The reflective marker shall be fixed to the road surface using the adhesives & the procedures recommended by the manufacturer. No nails shall be used to affix the marker as nails are hazardous for the roads.

Regardless of the type of adhesive used, the markers shall not be fixed if the pavement is

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not surface dry & on new asphalt concrete surfacing until the surfacing has been open to traffic for a period of not less than 14 days.

The portions of the highway surface, to which the marker is to be bonded by the adhesive, shall be free of dirt, curing compound, grease, oil, moisture, loose or unsound layers, paint & any other material which would adversely affect the bond of adhesives.

Use a wire brush, if necessary to loosen & remove dirt, then brush or blow clean.

The adhesive shall be placed uniformly on the cleaned pavement surface or on the bottom of the marker in a quantity sufficient to result in complete coverage of the area of contact of the marker with no voids present and a slight excess after the marker has been lightly pressed in place.

For epoxy installations, excess adhesive around the edge of the marker excess adhesive on the pavement and adhesive on the exposed surfaces of the markers shall be immediately removed. Soft rags moistened with mineral spirits or kerosene may be used if necessary to remove adhesive from exposed faces of pavement markers.

(7) Measurement

The measurement of reflective road markers shall be in numbers of markers supplied and fixed.

(8) Payment

Payment made at the contract unit rate for reflective road markers shall be payment in full compensation for furnishing all labour, material, tools, equipment including all incidental costs necessary for carrying out the work at site conforming to the specifications as per approved drawings or as directed by the Engineer.

Add new Clause "1507 Gabion Safety Barrier" after Clause "1506 Reflective Pavement Markers (Road Studs)"

1507 Gabion Safety Barrier

(1) General

This work shall consist of furnishing and erection of stone filled wire crates (Machine Made Gabion) to function as barrier of dimensions and at locations as shown on the drawing (s) or as directed by the Engineer in the same way as the Gabions as described under Clause 2401.

The measurement and payment shall also be as per the same clause.

Add new Clause "1508 Stone Masonry Safety Barrier" after Clause "1507 Gabion Safety Barriers"

1508 Stone Masonry Safety Barrier

(1) General

This work shall consist of furnishing and erection of random rubble stone masonry walls to function as barrier of dimensions and at locations as shown on the drawing (s) or as directed by the Engineer in the same way as the Masonry for Structures as described under Clause 2600.

The measurement and payment shall also be as per the same clause.

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Add new Clause "1509 Plum Concrete Safety Barrier" after Clause "1508 Stone Masonry Safety Barrier"

1509 Plum Concrete Safety Barrier

(1) General

This work shall consist of furnishing and erection of plum concrete walls to function as barrier of dimensions and at locations as shown on the drawing (s) or as directed by the Engineer in the same way as the plum concrete as described under Clause 2019.

The measurement and payment shall also be as per the same clause.

Add new Clause "1510 Confidence Blocks" after Clause "1509 Plum Concrete Safety Barrier"

1510 Confidence Blocks

(1) General

This work shall consist of furnishing and erection of confidence blocks with the respective materials on the respective types of structures to function as barrier of dimensions and at locations as shown on the drawing (s) or as directed by the Engineer in the same way as the type of structures as described under the respective Clauses of the Specifications.

The measurement and payment shall also be as per the respective Clause of the Specifications.

Add new Clause "1511 Precast New Jersey Barriers" after Clause "1510 Confidence Blocks"

1511 Precast New Jersey Barriers

(1) Scope

This Section covers the requirements to be met by the Contractor in relation to the materials, fabrication, transportation and installation of Precast New Jersey (NJ) Barriers along the roads. The purpose of NJ barriers is to reduce the risk of an out-of-control vehicle crossing the main road and colliding with the traffic on service roads or vice versa. These can also be used for barricading construction site from moving traffic during road construction to increase the safety of road workers. NJ Barriers also reduce the risk of a vehicle deflecting back into the traffic stream after colliding with the barriers by allowing the errant vehicles decelerate within tolerable limits and by directing traffic in a prescribed manner.

(2) Applicable Standards

RCC NJ barriers shall comply with the requirements of ASTM 825: Standard Specification for Precast Concrete Barriers or its equivalent IS or NS (where available). If required by the Engineer, the contractor shall demonstrate the functioning of crash barriers employing the standard procedure for safety performance evaluation recommended by the Manual for Assessing Safety Hardware (MASH), previous (NCHRP – 350).

Concrete strength shall be tested in accordance with ASTM C39 or equivalent and average strength values for daily testing shall be equal to or greater than the specified design strength. Cross-sectional and longitudinal dimensions, locations and positioning of anchoring devices and reinforcement shall be acceptable to the Engineer.

Two cubes for each 20 cum of concrete or a minimum of 2 cubes per day's production

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shall be tested in accordance with ASTM C31 or equivalent procedure. These cubes shall have compression strength required for M25 Grade concrete.

(3) Materials

Cement, aggregates, admixtures and steel reinforcement shall conform to applicable ASTM Specifications or to the relevant Clauses of the Specifications as applicable for the materials used for other similar RCC structures in Clause 2000 of these Specifications.

(4) Manufacture

Concrete mixture shall be proportioned and mixed to meet the minimum strength level and cured as per the methods outlined in Section 7 of the ASTM C 825 specification. Formwork used shall be sufficiently rigid to maintain dimensional parameters. All casting surfaces shall be of smooth and tidy finishes free from honeycombs, porous materials or cement sand plasters. Concrete design strength shall be for M25 in 28 days. Air entrainment shall have air content of 5 ½ +/- 1% as measured by ASTM test method C 173 or C 231 or equivalent applicable standards.

Concrete surfaces shall be finished at the option of the manufacturer (contractor) but these should be comparable to the steel form finish and be uniform for all sections in the contract lot.

Steel Reinforcement shall be provided as shown in the drawing or as designated by the Engineer. Reinforcement shall be designed by the producer or contractor (as the case may be) and be sufficient to permit handling delivery and placement of sections without damage. Minimum concrete cover is 50 mm, except for end sections where cover may be less. See applicable project or ASTM specifications for specific details.

Barriers shall be assembled as a cage with sufficient mat and bar to maintain shape during casting. Reinforcement design for the ends of barrier sections should be in accordance with the publication "Concrete Median Barrier Research," Volume 2, Research Report, prepared by the Southwest Research Institute for the FHA, to prevent fracture at the joints. Laps, welds and splicing shall be acceptable to the Engineer and develop full strength of reinforcement.

Cross sectional dimensions shall not vary from design by more than 6 mm. Vertical centerline shall not be out of plumb by more than 6 mm. Longitudinal dimensions shall not vary from design by more than 6 mm in 3 m long barriers and not exceed 20 mm per section.

(5) Handling and Transport

Unless otherwise specified, the minimum length of each barrier section will be 3 m long. For straight sections, Engineer may ask the contractor to provide NJ barriers of 6 m long or more (up to 10 m).

Lifting devices (hooks etc) shall not be cast into the side surfaces of the barriers. Anchorage to prevent lateral movement of the barrier shall consist of dowels and keyway joints on interlocking devices shall be as specified by the Engineer. Location of anchoring shall be as specified by the Engineer.

(6) Measurement and Payment

Erection of NJ barriers shall be measured by the linear meter in place and paid under the Bill of Quantity Item. The rate shall include for the manufacture / supply / transportation of new precast barriers (loading, handling, unloading, excavation, foundation preparation

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(sand pad, leveling, concreting), preparation of surface, laying in the position, fixing correctly to the lines and levels as per drawings or as directed by the Engineer. No separate payment for concrete or reinforcing steel or formworks etc shall be paid. Any barriers that have edges broken, concrete chipped away during transportation shall not be paid not plastering would be allowed to make surface look good.

Add new Clause "1512 Solar Street Lighting System" after Clause "1511 Precast New Jersey Barriers"

1512 Solar Street Lighting Systems

(1) Definition

A standalone solar photovoltaic (SPV) street lighting system (SLS) is an outdoor lighting unit used for illuminating a street or an open area. It consists of photovoltaic (PV) module(s), compact fluorescent lamp (CFL), lead acid battery, control electronics, inter-connecting wires/cables, module mounting Pole including hardware and battery box. The CFL is fixed inside a luminaire which is mounted on the pole. The PV module is placed at the top of the pole at an angle to maximize incident solar radiation, and a battery is placed in a box attached to the pole. The module is mounted facing south, so that it receives solar radiation throughout the day, without any shadow falling on it. Electricity generated by the PV module will charge the battery during the day time. This system operates from dusk to dawn.

(2) Scope

This section covers the requirements to be met by the Contractor in relation to the materials, fabrication, installation, testing and commissioning of solar street lighting systems. The street light system consists of the specificatied electrical hardware, mast arm poles, and footing which includes excavation, breaking of concrete or any other hard surface such as road pavement, concreting, erecting poles to lines and levels and curing the concrete and re-instatement of the surface to its original condition and disposal of excess spoil materials: on an all complete net basis.

The solar street lighting system shall be provided along the sections of road passing through built up areas, on areas of high pedestrian activity and at all pedestrian zebra crossings and intersections as shown in the drawings or as directed by the Engineer. Electric poles along the bridges shall be anchored as shown in the bridge drawings or as directed by the Engineer. The Contractor shall be required to submit shop drawings of the anchorage details for Engineer's approval.

(3) Specifications of the Solar Street Lighting System

(A) Duty Cycle

The system should automatically switch ON at dusk, operate throughout the night and automatically switch OFF at dawn.

(B) PV Modules(s)

(a) Both crystalline and thin film technology modules are allowed in the system. The PV module should have a certificate of testing conforming to IEC 61215 Edition II / BIS 14286 or IEC 61646 for crystalline and thin film PV modules respectively. The certificate should be from an NABL or IECQ accredited Laboratory.

(b) The power output of the module(s) under STC should be a minimum of 74 Wp. Either two modules of minimum 37 Wp output each or one module of 74 Wp output should be used. In case of thin film technology PV modules, the specified values refer to the stabilized power output after the initial degradation. The module efficiency should not

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be less than12%.

(c) The operating voltage corresponding to the power output mentioned above should be 16.4 ± 0.2V.

(d) The open circuit voltage of the PV modules under STC should be at least 21.0Volts.

(e) The terminal box on the module should have a provision for opening for replacing the cable, if required.

(f) Each PV module must use a RF identification tag (RFID), which must contain the following information:

(i) Name of the manufacturer of PV Module.

(ii) Model or Type Number

(iii) Serial Number

(iv) Month and year of the manufacture

(v) I-V curve for the module

(vi) Peak Wattage of the module at 16.4volts

(vii) Im, Vm and FF for the module

(viii) Unique Serial No and Model No of the module Until March 2013, the RFID can be inside or outside the module laminate, but must be able to withstand harsh environmental conditions.

(g) A distinctive serial number starting with NSM will be engraved on the frame of the module. The distinctive number starting NSM will also be screen printed on the tedlar sheet of the module.

(C) Battery

(i) Lead Acid, tubular positive plate flooded electrolyte or Gel or VRLA Type.

(ii) The battery will have a minimum rating of 12V, 75 Ah (at C/10 discharge rate).

(iii) 75 % of the rated capacity of the battery should be between fully charged and load cut off conditions.

(D) Lamp

(i) The lamp should be 11 Watt compact fluorescent lamp (CFL) with 4 pins along with proper pre- heating circuit.

(ii) The light output from the lamps should be around 900±5 % lumens (for 11 WCFL).

(iii) The lamp should be housed in an assembly suitable for outdoor use, with a reflector on its back.

(iv) No blackening or reduction in the lumen output by more than 10%, should be observed after 1000 ON/OFF cycles (two minutes ON followed by four minutes OFF is one cycle).

(E) Electronics

(i) The inverter should be of quasi sine wave/ sine wave type, with frequency in the range of 20 - 30 KHz. Half-wave operation is not acceptable.

(ii) The total electronic efficiency should be not less than 85%.

(iii) The idle current consumption should not be more than 10mA.

(iv) The PV module itself should be used to sense the ambient light level for switching ON and OFF the lamp.

(F) Electronic Protections

(i) Adequate protection is to be incorporated under no load conditions e.g. when the lamp is removed and the system is switched ON.

(ii) The system should have protection against battery overcharge and deep discharge conditions.

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(iii) Fuses should be provided to protect against short circuit conditions.

(iv) Protection for reverse flow of current through the PV module(s) should be provided.

(v) Electronics should have temperature compensation for proper charging of the battery throughout the year.

(G) Mechanical Hardware

(i) A metallic frame structure (with corrosion resistance paint) is to be fixed on the pole to hold the SPV module(s). The frame structure should have provision to adjust its angle of inclination to the horizontal between 0 and 45, so that the module(s) can be oriented at the specified tilt angle.

(ii) The pole should be made of mild steel pipe with a height 6m above the ground level, after grouting and final installation. The pole should have the provision to hold the weather proof lamp housing. It should be painted with a corrosion resistant paint.

All poles will be of slip base type. This type of special purpose Street Lighting Pole addresses the universal problem of high-speed road accidents (over 60km/h) involving roadside collisions with light poles. These poles shall comply with Australian Standards 1158.1.3 or equivalent Indian Standards. Slip Base Poles differ in design which features the two base plates bolted together with the facility of freely coming apart if a crash occurs. This separation lessens resistance and mitigates the overall effects of the impact (and subsequent damage to the vehicle or injury to its occupants).

All poles shall be tapered round of specified diameter and consist of standard base-plate mounted with either in-ground section or connection spool on rag bolts, bolts, slip washer and rectangular washers. All poles shall be hot dip galvanized to Australian Standards 4680:2006 or equivalent Indian Standards and shall be either powder coated or painted as approved by the Engineer. The slip base poles shall be in a single and double outreach arm arrangement, curved or straight as approved by the Engineer. Poles shall have security or tamper proof screws for access door covers.

(iii) A vented, acid proof and corrosion resistant painted metallic box for outdoor use should be provided for housing the battery with a provision of lock and key.

(H) Other Features

(i) The system should be provided with 2 LED indicators: a green light to indicate charging in progress and a red LED to indicate deep discharge condition of the battery.

(ii) There will be a Name Plate on the system, which will give: (a) Name of the Manufacturer or Distinctive Logo. (b) Serial Number.

(iii) Components and parts used in the solar street lighting systems should conform to the latest BIS specifications, wherever such specifications are available and applicable.

(iv) The PV module(s) will be warranted for a minimum period of 25 years from the date of supply and the street lighting system (including the battery) will be warranted for a period of two years from the date of supply. PV modules used in Solar Street Lighting System must be warranted for their output peak watt capacity, which should not be less than 90% at the end of Twelve (12) years and 80% at the end of Twenty five (25) years. The Warranty Card to be supplied with the system must contain the details of the system.

(v) Necessary lengths of wires/cables and fuses should be provided.

(vi) An Operation, Instruction and Maintenance Manual, in English should be provided with the Solar Street Lighting System. The following minimum details must be provided in the Manual: basic principles of photovoltaics; a small write-up (with a block diagram) on the Solar Street Lighting System – describing its components (PV module, battery, electronics and luminaire) and their expected performance; a section on charging and significance of indicators; together with clear instructions about erection of poles and mounting of PV module (s) and lamp housing assembly on the pole.

(5) Measurement and Payment

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The solar street lighting system including all the PV modules, battery, lamp, electronics and electronics protection, mechanical hardware including solar light pole and other features for the complete functioning of the solar street lighting system shall be measured in number (n) and paid as per contract price on lump sum basis. The contract price and/or rates shall be the full and the final compensation to the Contractor as per Clause 112.

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Section 1600 – Piling for Structures

1612 Bored and Cast In-situ Piles

(5) Construction Methods

(c) Tolerances

Replace "100" and "1:100" in 1st and 3rd line of the Paragraph by "75" and "1:50" respectively.

Add "(d) Setting out Piles" after "(c) Tolerances" as follow:

(d) Setting out Piles

Marker pins for the pile positions shall be set out and installed by the Contractor. Immediately prior to installation of the piles, the pile positions shall be checked by the Engineer. The position and verticality/alignment of any auger, tool, casing and/or liner shall be checked by the Contractor immediately prior to installation. For piles with casings and/or liners, the Contractor shall check the position of the casing or liner during and immediately after placing.

Any checks by the Engineer shall not relieve the Contractor of his responsibility.

Add "(e) Length and Diameter of Piles" after "(d) Setting out Piles" as follow:

(e) Length and Diameter of Piles

The length of pile and its diameter are shown on drawings. The final length shall be decided by the Engineer on the basis of study of the results of initial load test on piles and on the basis of actually boring data observed on site for individual pile. Test piles shall be installed as directed by the Engineer at selected locations at each bridge site.

For uncased piles the minimum diameter of the boring shall be ± 25 mm the diameter shown in the drawings. When casing is used, the inside diameter of the casing shall be not less than the pile diameter shown in the Drawings.

(10) Removal of Obstruction

Delete both paragraphs entirely and replace with the following paragraph:

Where boulder/rock or other obstruction render, it's difficult to bore the pile. Excavation operation inside pile casing as directed by Engineer shall be carried out to remove obstructions. No additional payment shall be made for removal of such obstructions.

Add new Sub-clause (17) Telltale Rod as follows:

(17) Telltale Rod

At least 3 telltale rod arrangements shall be extended in each test pile. Each telltale shall be placed as indicated on the Drawing or to each quarter length of pile or extend to depths instructed by Engineer.

The installation of Telltale rod arrangement shall generally be those recommended in ASTM D1143_07.

1614 Pile Tests

(1) Test Piles

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Add the following at the end of the Sub-clause 1614 (1):

The boring and cast in-situ test RCC pile of 1 m diameter and 16.50 m length includes reinforcement steel bar, M25/40 grade concrete, providing and installation of anchorage rods, telltale setup and grouting, using Bentonite as per these Specifications and as shown in the drawings etc. all complete. It shall be measured and paid in number (nr).

(2) Loading Tests

Delete the entire content of (b) in second paragraph and replace with the following:

(b) The test load shall be applied in the increments as specified or approved by the Engineer. These shall generally be those recommended in ASTMD1143_07.

Add the following additional pay item at the end of the Sub-clause 1614 (2):

Static Load Test i.e. Ultimate Pile Load test on Pilot Pile for Test for test load not exceeding three
(3) times the maximum design load, which shall be paid in number against the rate quoted in the Bill of Quantities. The payment shall also include the costing of design and providing of steel girders and all other necessary arrangements to conduct this test.

Location and placing of the test piles shall be determined by the Engineer who shall instruct the Contractor accordingly.

After carrying out the above mentioned test on test piles, the Contractor may be required to review of the design of the piles and revise accordingly as per the test results as instructed by the Engineer.

(3) Other Requirements of Loading Tests

Delete entire write ups from (d) to (h) and replace with the following paragraph at the end:

"In general, all pile loads and settlement shall be measured as per the provisions of ASTM D1143_07".

Add "(4) Pile Integrity Tests" after "(3) Other Requirements of Loading Tests" as follow:

(4) Pile Integrity Tests

(a) General

Pile Integrity Testing (PIT) shall conform to the provisions of the relevant ASTM Specifications as follows:

- impulse response method conforming to ASTM C1740
- sonic echo, frequency response or transient dynamic steady state vibration method conforming to ASTM D5882

Other methods may be considered by the Engineer subject to satisfactory evidence of performance.

(b) Test Equipment

Provide a pile integrity tester (PIT) with the following minimum requirements:

- The analogue to digital resolution shall be at least 24bytes,
- The sampling frequency shall be at least 25,000Hz.

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- Data shall be stored such that additional processing or further wave analysis is possible.
  - Data shall be displayed in the field for evaluations of preliminary data quality and interpretation.
  - The equipment shall allow attachment of a motion sensing device capable of measuring acceleration, velocity or displacement due to the impact of the pile top with a hand held hammer.

(c) Specialist Subcontractor

The field testing shall be performed by a specialist nominated Sub-contractor with a minimum of five years' experience in the field of pile integrity testing and interpretation of results pertaining to bored cast in place large diameter piles.

(d) Test Preparation

For cast in place piles, integrity testing shall not be performed until the concrete has cured for a minimum of 28 days and the head trimmed down to cut-off level, unless otherwise approved by the Engineer. The pile head shall be free from water, dirt or other debris. The concrete at the pile top surface must be relatively smooth and provide sufficient space for attaching the motion sensing device and for the hammer impact area.

(e) Result Presentation

The testing subcontractor shall present a report within 7 days after performing the field test to provide the final test results and integrity evaluation direct to the Engineer. For each pile tested, the averaged, amplified velocity versus time record shall be included in the report, with a table summarizing results and conclusions. Additional plots and analyses may be required by the Engineer

(f) Acceptance and Rejection

Shafts with no significant deviations from locations above the pile toe, will be accepted. Where no clear toe deviation is apparent, the test engineer shall state to which shaft depth the test appears to be conclusive. Where deviations from locations with significant reductions in pile area or pile material strength or stiffness above the pile toe are observed, the pile has a serious defect. If the record is complex, the results may be deemed inconclusive and the Engineer shall determine what course of action is to be followed. The Contractor shall inform the Engineer of any anomalous results within 12 hours. The decision to reject and replace any defective shaft is at the sole discretion of the Engineer.

(g) Measurement

Pile Integrity Tests shall be measured in number. The Number means a set of tests conducted in one pile as per the provisions of ASTM D 5882.

(g) Payment

Payment for Pile Integrity Test shall be full compensation for testing, analyzing and reporting using low strain waves as per ASTM D 5882 or equivalent standard or as directed by the Engineer, all complete.

1616 Measurement

Add at the end of the first sentence as follow:

", except concrete and reinforcement bar for working piles".

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1617 Payment

Add the following at the end:

The rate shall also include the cost of undertaking 'confirmatory sub-soil investigation' as per Clause 1619, boring equipment, standard penetration testing, split spoon sampling, boring, excavation, concreting, inspection and control, cutting off, welding, coupling and all related tools, rigs, cranes, jets, frames, leads, labour, barge mounted platform/island of adequate sizes and other incidental equipment and work necessary to complete the work.

Add new Clause "1618 High Strain Dynamic Testing (HSDT) of Piles" after Clause "1617 Payment"

1618 High Strain Dynamic Testing (HSDT) of Piles

(1) PDA Test –Foundation Piles

In addition to load tests described in 1614 above the Contractor shall carry out the following High Strain Dynamic Test (popularly known as Pile Dynamic Analyser or PDA) on;

1. Foundation piles on which load test will be carried out,
2. One third of working piles randomly selected by the Engineer.

(2) Specification

a) The purpose of high strain dynamic testing shall be to obtain pile capacities for bridge foundation piles with a higher confidence level than obtainable with a static load test. This shall be achieved by correlating dynamic tests with static load tests on pilot piles.

b) The equipment for dynamic testing shall be 'Pile Dynamic Analyser'(PDA) or similar approved equipment conforming to the requirements of ASTMD-4945.

c) Ram weight, height of fall, cushioning (wood + steel plate) to prevent damage to pile head shall all be in accordance with standard documented international practice.

d) This work shall be carried out by a specialist sub-contractor who shall employ a professionally qualified engineer with a minimum of 5 years of experience in pile dynamic testing using PDA or similar equipment. He shall be in charge of testing and interpretation of results. He shall present himself at least by video contact for interview prior to being engaged.

(3) Number of Test Piles

Dynamic pile testing shall be carried out on one working pile as selected by the Engineer and pilot test pile. However, the Engineer may reconsider the total number of piles to be tested depending on the quality of results.

(4) Test Report

On completion of all field work, the specialist engineer shall prepare a final report covering all aspect of pile load-settlement behavior including ultimate tip resistance and ultimate shaft resistance. This final report shall incorporate results of the PDA monitoring, and results of all CAPWAP computer analyses. The results of CAPWAP analysts shall be compared to the PDA results and correlations shall be drawn between the CAPWAP results and the PDA field monitoring results.

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(5) Measurement

High Strain Dynamic Test (popularly known as Pile Dynamic Analyser) shall be measured in number.

(6) Payment

Payment for High Strain Dynamic Test shall be full compensation for Pile Instrumentation, Accelerometer, Strain transducer, Pile Driver Analyser, Impact Pile Driving Hammer, labour, transportation, professionals, recording and reporting including all incidentals necessary to complete the test.

Add new Clause "1619 Ground Conditions" after Clause "1618 High Strain Dynamic Testing (HSDT) of Piles"

1619 Ground Conditions

No responsibility is accepted by the Engineer or the Employer for any opinions or conclusions given in any factual or interpretative Site Investigation Reports. The Contractor shall report immediately to the Engineer any circumstances which indicates that in the Contractor's opinion the ground conditions differ substantially from those reported in or which could have been inferred from the site investigation reports, geotechnical design report, or from pilot pile test results or from trial boreholes SPT values and tests.

The Contractor shall drill one borehole at each pier and abutment to the design depth of the piles at that location. The bore log shall be provided to the Engineer within three days of the completion of each borehole for his assessment of the consistency of the subsurface conditions with those used for design. No separate payment will be made for such boreholes.

The pile lengths shown on the Drawings are design lengths. Final pile lengths will be determined in the field by the Contractor and approved by the Engineer after considering the pilot pile load test results. If the results vary significantly the Engineer may order confirmatory subsoil investigation.

(1) Confirmatory Sub Soil Investigation

(a) Boreholes

Confirmatory boring and sub soil investigation during construction shall be carried out by the Contractor,

(b) Boring

Boring shall be carried out in accordance with the provisions of AASHTO T-86 or ASTM D 420 and ASTM D 1452 as agreed with the Engineer. Field identification and logging of soil samples shall be made in accordance with the Unified Soil Classification System (USCS).

Before taking any undisturbed samples or making any in-situ test, the lining shall be carried down to the bottom of the borehole at the test depth.

Augers of proper size shall be used in very soft to soft clays and silts to avoid suction, the use of shell shall only be restricted to moderately stiff to very stiff and hard clays and also in sandy strata below water table. The use of a chisel will be

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permitted only in boulder or rock formation or through local obstructions etc.

Uncased boreholes may be permitted only up to a depth where, the sides of the hole can stand unsupported. In case side fall or squeezing is noticed, steps shall be taken immediately to stabilize the sides of the borehole by casing pipes as directed by the Engineer. Use of betonites slurry of 5% concentration may be permitted to stabilize the borehole.

No water shall be added while boring through cohesive soils and cohesion- less soils above the water table. While boring through cohesion- less soil below the water table, the water level in the casing shall always be maintained at or above the water table.

The cuttings brought up by the auger, shell or the split-spoon or undisturbed sampler shall be carefully examined and the soil description duly recorded after performing field identification tests.

After completion of the boring at any borehole, a bore log shall be prepared in an approved standard template in consultation with the Engineer and submitted to the Engineer in triplicate. After observing the position of the water table after 24 hours, backfilling of the borehole shall be carried out with approved materials and i n a manner as directed by the Engineer.

(c) Standard Penetration Test (SPT)

SPT tests will be carried out at in accordance with the procedure in AASHTO T-206 or ASTM D-1586 at 1.5 m interval or at every identifiable change of strata, whichever is earlier.

The driving of split-spoon shall be recorded for every 150 mm of penetration until the total penetration is 450 mm.

Boring shall be terminated when a combined 100 blow count (from SPT) is recorded for 300 mm of penetration or less in the borehole. Other conditions for termination of SPT and subsequently, the borehole are as follows:

i. 50 blows produce less than 150 mm advance
ii. 10 successive blows produce no advance

When termination conditions are met, the borehole log shall show the number of recorded blows for the amount of penetration e.g. 70/100 (or 50/100) will indicate that 70 (or 50) blows resulted in a penetration of 100 mm.

N-values as observed in the field shall be reported in the bore logs without any correction for overburden and water table.

(d) Disturbed Samples

Disturbed samples shall be taken from borehole cuttings and split-spoon for visual classification tests at the site. The samples shall be taken at 1.5 m intervals or at every identifiable change of strata, whichever is met earlier to give a reliable record of the variations in the conditions of the soils. Disturbed samples shall be sent to the laboratory in air-tight plastic container with proper labelling for the purpose of record and laboratory testing.

(e) Undisturbed Samples

Undisturbed samples (75 mm diameter) shall be collected in good quality thin walled seamless Shelby Tubes conforming to the ASTM D-1587/AASHTO T-207 from cohesive

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soil strata. No SPT shall be conducted immediately before collection of an undisturbed sample.

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Undisturbed samples shall be taken from the boreholes at following intervals or at every identifiable change of strata if met with earlier.

0.00 m to 15 m @ 1.5 m
interval 15 m and above @
3.0 m interval

The size of the thin walled sampler should be such that a sample having a minimum size of 75 mm diameter and 450 mm length can be recovered. The sampler shall be pushed straight by jacking in soft to firm deposit and no hammering shall be allowed. Use of thick wall samplers may be permitted in case of deposits having very high consistency, subject to the approval of the Engineer. Recovery ratio shall be observed and reported in the boreholes, for every sample. The top and bottom of a sample must be indicated clearly on the sample tube to facilitate laboratory testing in proper orientation.

(f) Handling and Labeling of Samples

The following conditions of handling and protection of undisturbed samples shall be undertaken on undisturbed sample.

a) Immediately after being taken from the borehole pit, the ends of the sample shall be cut and removed to a depth of about 25 mm (or more in the top to cover any obviously disturbed soil). Several layers of molten wax should then be applied to each end to give a plug about 25 mm thick. If the sample is very porous a layer of waxed paper should first be placed over the ends of the sample.

   Any space left between the end of the samples tube and the top of the wax should be tightly packed with saw dust or other suitable material, and a close fitting lid or screwed cap shall be placed on each end of the sample tube.

   The lids should, if necessary, be held in position by adhesive tape.

b) A label bearing the number of the sample, borehole number, depth of sample, date etc., shall be placed inside the container just under the lid. It shall be placed at the top of the sample, In addition, the number of the sample shall be painted on the outside of the container, and the top or bottom of the sample shall be indicated.

c) Undisturbed soil sample tubes shall be placed in a stout wooden box, and packed with moist saw dust, paper, etc. to prevent damage during transit to the laboratory.

(g) Dispatch of Samples

Samples shall be dispatched to the laboratory as soon as possible after being obtained and shall not be allowed to accumulate on site. If it appears to the Engineer that there is a danger of samples deteriorating through further storage, the contractor shall dispatch such samples as soon as directed by the Engineer.

(h) Groundwater Table Measurement

Groundwater table shall be measured 24 hours after drilling and shall be recorded in the bore log.

(i) Laboratory Tests

Laboratory tests shall be carried out as per relevant AASHTO or ASTM specifications, the results of all tests shall be submitted in the template approved by the Engineer.

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(j) Reports and Records

On completion of each borehole, three copies of each bore log shall be submitted to the Engineer, together with one copy of the list of disturbed and undisturbed samples taken from the borehole.

The bore log shall show:

i) Ground level at borehole referred to the reduced level;
ii) Co-ordinates of the bore hole location;
iii) A detailed description of each stratum ;
iv) The position, type and identification of each sample and SPT value;
v) Location of samples in bore log;
vi) Any other site test results available;
vii) The levels at which each separate ground water level is first encountered and at which it comes to rest (standing water level).

The Engineer shall select the samples and type of test to be conducted.

On completion of all field and laboratory testing, three copies of all the results shall be submitted to the Engineer in hard and digital format.

(k) Measurement and Payment

There shall be no separate payment to the Contractor for the subsoil boring and testing. The cost for these investigations and related works is covered under payment under the relevant Clause of these Specifications.

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Section 1900 – Bearings and Expansion Joints

Add New Clause 1903 "Rubber Strip Bearing" as follows:

1903 Rubber Strip Bearing

This Sub-clause covers the work in connection with the furnishing and fixing of rubber strip bearings in position for the minor slab bridge in accordance with the details shown on the Drawing to the requirements of these Specifications or as directed by the Engineer.

The thickness of the rubber strip bearing shall be as shown in the Drawings or as mentioned in the Bill of Quantities. The quality of the rubber strip bearing shall meet the requirements as detailed in the ORN 9 "Design of small bridges" or as instructed by the Engineer.

The rubber strip bearing shall be measured and paid in square meter in the respective unit rate of Bill of Quantities.

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Section 2000 – Concrete for Structures

2004 The Design of Concrete Mixes

Add before Sub clause (1):

All necessary labour, materials, equipment, etc., for sampling, preparing test cubes, curing, crushing of cubes, etc. shall be provided by the contractor. The cube-crushing machine to be provided by the contractor, in accordance with this special provision, shall be approved by the engineer and shall be duly calibrated by an independent inspector/ agency approved by the engineer.

The machine shall be recalibrated at one (1) year intervals or more frequently if instructed by the Engineer, all at the Contractor's expense.

TestingofothermaterialsandconcretemaybearrangedbytheEngineerinanapprovedindependent laboratory at the cost of the Contractor in case the equipment is not operational or test facility does not exist at site.

As a confirmatory test, the Contractor shall carry out the third party lab test on his own cost upon the request of the Engineer.

Add after Sub-Clause: 5(a)

The test cubes prepared during the trial mixes shall be designated preliminary test cubes and as such shall comply with Clause 2004 Sub-Clause 5(a) of the Standard Specifications.

The engineer shall require the contractor to make trial mixes and preliminary test cube at least 40 days before the start of concreting.

2006 Transportation of Concrete

In the last paragraph delete from the end of first sentence "…shall not be longer than the initial setting time of the concrete" and substitute:

".. shall not be longer than 45 minutes. At the discretion of the Engineer, when the ambient air temperature is below 30 degrees Centigrade and conditions are suitable this period may be increased to 90 minutes but in no case shall it be longer than the initial setting time of the concrete."

2007 Placing of Concrete

(3) Placing Procedures

In the first sentence delete "…as nearly as possible in its final position." and substitute with:

"…as nearly as possible to and in no case more than 3 metres from its final position."

Add to the 7th Paragraph as a final sentence.

"In no case shall concrete be discharged from such devices at a height of more than 1.5 metres above its place of final disposition."

2011 Concreting in Hot Weather

(2) Concrete Placing in Hot Weather

Insert as Final Paragraph:

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Concrete shall not be placed when the ambient air temperature exceeds 40 Degrees Celsius unless the Contractor submits a proposal for special precautions and receives written approval from the Engineer."

2012 Construction Joint

Add after Clause 2012

The surface of the concrete against which fresh concrete is to be placed is to be maintained in a damp condition for 24 hours before placing the fresh concrete.

2014 Reinforcement

Add after Sub-Clause (1)

Reinforcement bars shall be of high yield strength deformed (HYSD) type (Grade Designation Fe415) and/or Thermo Mechanically Treated, having specified minimum 0.2 percent proof stress of 500 MPa, conforming to IS:1139 or IS:1786 or equivalent or shall be as specified on the Drawings, or as instructed by the Engineer.

Add after Sub-Clause (4)

Prior to pouring the concrete all reinforcement placed in position shall be checked and approved by the Engineer

2017 Measurement

(4) Reinforcement

Delete "All types of reinforcement shall be measured in metric tonnes in the given ranges:" together with the three bullet ranges and substitute:

"All types of reinforcement shall be measured in metric tonnes irrespective of bar diameter"

2018 Payment

(2) Admixtures, Workability and Hardening Agent

Delete entire paragraph and replace with:

No separate payment shall be made for these agents and all costs in connection with these agents shall be considered included in the respective items of work provided in the Bills of Quantities.

(5) Payment for Sub-standard Works

Delete all paragraphs

Add new Clause 2019 "Plum Concrete" as follows:

2019 Plum Concrete

(1) Scope

This covers the works related to the construction of scour protection, works required to fill scour holes, works required to repair the existing structures, works required to construction the foundation base or to the works related to the construct of retaining structures etc as specified or directed.

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(2) Materials

Stones/rocks shall be hard, dense, unlaminated natural stone, not liable to deterioration in water and of general quality of soundness and abrasion resistance prescribed for concrete aggregates. Broken rocks shall be of regular "cubical" shape and shall not be flaky. Flat or needle shaped rocks shall not be accepted unless the thickness of the individual piece exceeds 1/3 of their length. The specific gravity of the stone/rock shall be not less than 2.50 and when immersed in water for 24 hours, it shall not absorb water more than 5 percent of its dry weight tested in accordance with IS: 1124. The size of the stone/rock shall not be larger than 200 mm measured in any direction.

Concrete to be used in plum concrete shall be as specified in Section 2000.

(3) Construction

Composition of the plumb concrete shall be 60 to 70 % M15/20 concrete and 40 to 30 % of stones by volume or as directed by Engineer. The place to be filled up with the plum concrete shall be cleaned and chipped for adhesion with the concrete. Following completion of form work a layer of concrete minimum 100 mm thick shall be laid upon which clean and moist stones shall be placed at a distance of min 100 mm measured from face to face in any direction. The distance between the outer edge of the concrete mass and the nearest face of the stone to the edge shall not be less than 100 mm.

Then another layer of concrete having thickness not less than 100 mm measured from the top of the stone to the top surface of the layer shall be laid and compacted.

In case the proportion of concrete to stones is to be changed, the clear space between stones shall be adjusted as directed by the Engineer.

After compaction, again stones shall be placed on the layer as described above and the process shall be continued until the top layer of the concrete is completed. The placing of stones shall be staggered both in horizontal and vertical directions

(4) Tests and Standards of Acceptance

Stones shall be tested for specific gravity and water absorption test. The test result shall meet the requirements as specified in these Specifications.

Concrete shall be tested as specified in section 2000.

(5) Measurement

Plum concrete work shall be measured in cubic meter to the lines and levels shown on the drawing or as directed by the Engineer. Formworks (Class F2 finish) shall be measured in sq. m. separately and paid. Struts, bracing supports etc. shall not be measured separately. They are deemed included in the measurement of formwork.

(6) Payment

Payment will be made as per contract unit rate of the item which shall be the full and the final compensation to the Contractor as per Clause 112 to complete the works as per these Specifications.

For Reference Only

Section 2100 – Pre-stressed Concrete

2102 General

In first paragraph in first sentence, replace "IRC:18-1985" by "IRC:18-2000".

2103 Cement and Concrete Classes for Prestressed Concrete Structures

In second paragraph, replace "M45/20" by "M50/20" or "M50/40".

2113 Measurement

Delete the third paragraph and replace with the following:

"Provision of ducts/sheaths shall be measured in meter which shall be inclusive of removal of extractable formers and then grouting in ducts."

Insert new Clause 2115 "Lifting and Placing of Precast Girders" as follows"

2115 Lifting and Placing of Precast Girders

(1) Description

The Work shall consist of:

1) Lifting or launching of the precast post-tensioned girders from the precast yard;
2) Transportation if required;
3) Installation of the girders at the designated space on the substructure;
4) Securing the girders in place for further operations with necessary false work or bracings.

(2) Submittals

The Contractor shall submit the following to the Engineer, in accordance with this Specification, for his approval:

(a) A Girder Transportation Plan, if required, identifying the loading and transportation procedures, including the proposed route, schedule and traffic control procedures.
(b) A Girder Erection Plan comprised of a schedule and detailed procedure clearly illustrating the method and sequence by which the Contractor proposes to unload and erect the precast prestressed concrete girders.

The Girder Erection Plan shall include detailed notes and Shop Drawings, as necessary to describe the following:

i) Access to undertake work, including earth berms, work bridges, and/or platforms;
ii) Type and capacity of equipment;
iii) Sequence of operation, including position of cranes, trucks with girders, and traffic accommodation for all stages of unloading and erection;
iv) Detailed crane position on the ground, particularly adjacent to substructure elements, such as piers and abutments;
v) Details of temporary supports, falsework and bracings, including proposed methods to be used to ensure structure stability during further construction activities.

(3) Compliance

The Contractor shall strictly adhere to the following instructions:

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(a) Duringanyoperationoftransportationorerectionthegirdersshallbeliftedonlybytheliftingloops provided at both ends. In the absence of such loops the girders shall be lifted by holding at both ends, the position of grip or support being at the designated position of bearing centerline. Lifting the girder by any kind of grip or support towards the mid-span is strictly prohibited.

(b) The re-bars projecting outside the girder concrete surface, such as shear connector bars at the top or the dowel bars at the positions of cross girders or diaphragms, or any other bar provided for the purpose of further construction shall not be used for any operation of lifting, transportation or securing the girder in place. All such bars shall be kept in the shape shown in the drawings.

(c) Any kind of support, fulcrum or underpinning at any position towards the mid-span from the designated position of bearing centerline is strictly prohibited during storage, lifting, transportation or installation of the precast girders.

(4) Measurement and Payment

Unless specified otherwise in the contract, the item of lifting, transportation and installation of the girders shall be considered one job per girder and shall be measured and paid in number per girder. All the incidental costs including the submittals shall be considered included in the quoted rate.

For Reference Only

Section 2400 – Miscellaneous Structures

2401 Gabions

(1) Scope

Delete "This Clause covers the furnishing of materials and construction of gabion works…" and substitute:

"This Clause covers the furnishing of materials, reuse of salvaged materials and construction of gabion works…"

(2) Materials

(b) Gabions

Delete Table 24.2 and Add:

Gabion Mesh Type shall be 100 x 120 mm (hexagonal), thickness of mesh wire shall be 3 mm, thickness of binding and connecting wire shall be 2.4 mm, and thickness of selvedge wire shall be 3.9 mm. Gabion boxes and mattresses shall be machine made.

(3) Construction of Gabions

(a) General Requirements

Add as additional last paragraph:

"Where salvaged materials are to be used they shall meet the requirements of this Specification and are subject to written approval of the Engineer."

(4) Test and standard of Acceptance
Delete clause (c) and (d)

(5) Measurement

Replace all by following:

The Gabion and Gabion Mattresses shall be measured in cubic meters all in place which includes all materials, making of gabion boxes, placing of gabion boxes in position, filling of stones and tying with binding wires and tension wires as specified.

(6) Payment

Replace all by following:

The quantity of the gabion masonry work measured as provided above shall be paid at the contract unit price per cubic meter.

The contract unit price for gabion masonry work will be considered full and final compensation to the Contractor for all expenditure incurred in providing and placing machine made gabion wire mesh boxes and mattresses, including binding wires, selvedge wire and tension wires. It also considers stone filling in gabions including fixing of gabions in position, tying with binding wires and tension wires and preparation of the bottom foundation to the lines and in levels shown on the drawings or as directed by the Engineer and in accordance with the Drawings and the Specifications.

The payment for gabion masonry work shall be made in two (2) installments. First installment 80% of the unit rate quoted in the BOQ shall be made after the construction of

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gabion masonry structures. The second installment 20% of the unit rate quoted in the BOQ shall be made after carrying out the backfilling of the structures as per the Specifications and to the satisfaction of the Engineer along with the payment of the backfill works.

2406 Scour Protection and River Training Works

(3) Rip Rap

(b) Tests and standards of acceptance

Delete Fourth sentence onwards

(5) Pitching/Revetment on Slopes

(a) Dry stone Pitching

(ii) Tests and standards of acceptance

Delete the second and third paragraphs

(c) Gabion Pitching

(ii) Test and standards of Acceptance

Delete the second paragraph and replace with the provisions of 2401(4) above

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Section 2600 – Masonry for Structures

2603 Construction

(1) General

Add the words "levelled, compacted" after the word "cleaned" in the first sentence of fourth paragraph.

2610 Test and Standard of Acceptance

Delete the second and third paragraphs

2611 Measurement

Delete the 2nd sentence and add:

"Pointing shall not be measured separately".

2612 Payment

Delete the 1st sentence and replace by:

The stone masonry shall be paid at the contract unit price which shall be full and the final compensation to the Contractor as per Clause 112. The cost of the pointing shall be deemed to be included in the cost of the stone masonry.

Add the following paragraph after the first paragraph.

The payment for stone masonry works shall be made in two (2) instalments. First instalment 80% of the unit rate quoted in the BOQ shall be made after the construction of stone masonry structures. The second instalment 20% of the unit rate quoted in the BOQ shall be made after carrying out the backfilling of the structures as per the Specifications and to the satisfaction of the Engineer along with the payment of the backfill works.

For Reference Only

Section 2700 – Repair of RCC Structures

2709 Cement Grouting

Add Sub-clause (7) Measurement and Payment after Sub-clause (6) Testing as follow:

(7) Measurement and Payment

The cement (pressure) grouting with admixtures shall be measured and paid in number (nr) for each pile which shall include adding of admixtures, and other set ups as necessary for performing the works as per the specifications.

The measurement in number (nr) for each pile shall have the limits for 0.06 m3 of grouting material including admixtures or 100 kg of cement quantity. Any under or over use of specified limit of grouting material shall be deducted or paid separately in kilogram of cement-admixture.

For Reference Only

Section 2800 – Bio-Engineering Works

2802 Provision of Seeds

(2) Tree and Shrub Seed Collection

Delete Clause 2802 (2) (f) and substitute:

(f) Seeds shall only be collected when fully ripe. Seeds collected early shall not be accepted. The Contractor shall be held liable if the germination rate of seeds is lower than the rates given for each species in manuals and information bulletins published by the Geo- Environmental Unit of the Department of Roads or the Ministry of Forests and Soil Conservation.

2803 Provision of Plant Cuttings

(2) Provision of Hardwood Cuttings

Delete Clause 2803 (2) (g) and substitute:

(g) Hardwood cuttings are to be 20 to 40 mm in diameter and 300 to 500 mm long for palisades, vegetated stone-pitched walls and for pegging jute netting; 450 to 600 mm for brush layers; and a minimum of 1000 mm long for fascines. These sizes should not be exceeded unless specified or approved by the Engineer.

Delete Clause 2803 (2) (h) and substitute:

(h) For live check dams, all cuttings are to be 2000 mm in length; the cuttings for cross pieces should be 20to50 mm in diameter and the truncheon cuttings for the vertical elements should be 30 to 80 mm in diameter: truncheon cuttings are made from the species listed in Clause (i) below. These sizes should not be exceeded unless specified or approved by the Engineer.

Delete Clause 2803 (2) (j) and substitute:

(j) Once cuttings have been made, they shall be wrapped in wet hessian jute immediately. At all times, cuttings shall be kept moist and as cool as possible, and shall be wrapped in wet hessian between all operations such as taking from the parent plant, trimming and planting. Under any circumstances, all cuttings shall be planted the same day that they are made.

Provision of Bamboo Cuttings

Delete Table 28.2: Types of bamboo cuttings and substitute:

Table 28.2: Types of Bamboo Cuttings

Local name	Botanical name	Best propagation	Details
Choya /tama bans	Dendrocalamus hamiltonii	Rhizome cuttings / Single node culm	Rhizome cuttings: culm 2500-3000 mm length, leave all branches; rhizome 300-500mm. Single node culm cuttings: 1 node and 150mm of culm each side, straight and fine cut, main branch should be 200-300 mm long.

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Dhanu bans	Bambusa balcooa	Rhizome cuttings / Single node culm	Rhizome cuttings: culm 2500-3000 mm length, leave all branches; rhizome 300-500mm. Single node culm cuttings: 1 node and 150mm of culm each side, straight and fine cut, main branch should be 200-300 mm long.
Kalo bans	Dendrocalamus hookeri	Rhizome cuttings / Single node culm	Rhizome cuttings: culm 2500-3000 mm length, leave all branches; rhizome 300-500 mm. Single node culm cuttings: 1 node and150mm of culm each side, straight and fine cut, main branch should be 200-300 mm long.
Mal bans	Bambusa nutans (subsp. cupulata)	Rhizome cuttings	Rhizomecuttings:culm2500-3000mmlength, leaveallbranches;rhizome300-500mm.
Nibha/ghopi/ lyas bans	Ampelocalamus patellaris	Rhizome cuttings	Rhizomecuttings:culm2500-3000mmlength, leaveallbranches;rhizome300-500mm.
Padang bans	Himalayacalamus hookerianus	Rhizome cuttings	Rhizomecuttings:culm1500-2000mmlength, leavehigherbranches;rhizome200-300mm.
Tharu bans	Bambusa nutans (subsp. nutans)	Rhizome cuttings	Rhizomecuttings:culm2500-3000mmlength, leaveallbranches;rhizome300-500mm.
Titenigalo bans	Drepanostachyu m intermedium	Rhizome cuttings	Rhizomecuttings:culm1500-2000mmlength, leavehigherbranches;rhizome200-300mm.

2804 Nursery Construction

Delete Table 28.3: Construction details of nursery beds and substitute:

Table 28.3: Construction Details of Nursery Beds

Bed type	Bed size	Details of construction
Beds for grass seeds, grass slips and tree stool cuttings	1000-1200 mm wide × 250 mm high	50mmofwashedgravelplacedabovetheground;then 50mmof1:1mixofsievedsoilandcompost;andtopped with 150 mm of 3:1 mix of sieved forest topsoil and washed sand
Seed beds for tree seedlings	1000 mm wide × 170 mm high	50mmofwashedgravelplacedabovetheground; then 50 mm of unsieved forest soil; 50 mm of 1:3 mix of sieved forest soil and washed sand; and topped with 20 mm of washed, sieved and sterilized sand.
Stand out beds for polypots seedling	1000 mm wide × 150 mm high	50mmlayerofgravelplacedabovecompactedground . A flat stone or brick surround.
Beds for the propagation of bamboo culm cuttings	1000 mm wide × 300 mm high	Ground below the bed is dug to a depth of 300 mm. Bedismadewith100mmofun-sieved soil (lower) and 200 mm of sieved soil (upper). A bund 100 mm high is formed around the edge.

(2) Construction of NurseryBeds

Delete Clause 2804 (2)(d) and substitute:-

(d) Soil beds shall be constructed to hold grass seeds, grasses being propagated by vegetative means and trees tool cuttings. These can be of any practical length but shall be flat and of 1200 mm base width and 1000 mm of top width on compacted and cambered ground. They shall rise to a height of 250 mm above the surrounding ground. They shall be made up as follows: 50 mm of washed gravel is placed above

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the ground; then 50 mm of 1:1 mix of sieved soil and compost; and the bed is topped with 150 mm of 3:1 mix of fertile, loamy forest topsoil and washed sand. All sieving should be done with a mesh size of 2 mm or smaller.

2805 Nursery Operation and Management

Delete Clauses (b) and replace with:

(f) Measurement and Payment: The basis of measurement shall be the actual numbers of plants counted, certified and accepted by the Engineer. Quantities measured as above shall be deemed to be included in the other respective items in the Bill of Quantities. So no separate payment will be made this operation and management.

2806 Final Slope Preparation for Bio-Engineering

(2) Final preparation of fill Slopes for Bio-Engineering

Add, between Clauses (b) and (c) the following:

If backfilling is required behind a retaining structure, the trimmed material shall be compacted at intervals as the operation proceeds. This will require halting the trimming. The debris shall be redistributed and compacted as backfill. Compaction shall be carried out in level layers approximately 100 – 150 mm thick, laid back into the slope at about 5°. In dry conditions, water shall be added while compacting the material.

2807 Site Planting and Sowing

(2) Direct Seed Sowing of Shrubs and Trees on Site

Delete 2807 (2) (g) and substitute:

(g) In some cases the Engineer will instruct that seed shall be broadcast on to the slope. In this case, seeding shall be started at the top of the site, working down slope as evenly as possible so that the whole site is lightly covered. This shall be instructed where the site is still active and only warrants minimum expenditure, or where the site is naturally rough, providing plenty of niches in which the seed can catch. Quantities of seed shall depend on the type of seed involved but are generally half that of the quantities used in the nursery. With utis (*Alnusnepalensis*) seed it should be at a rate of 1 gramme of seed per square metre.

Delete 2807 (2) (h) and substitute:

(h) Measurement and Payment: Work shall be measured in square metres on the basis of the actualareaofsurfaceoverwhichseedshavebeensown.Thepaymentshallbethefullandthe final compensation to the Contractor for making arrangements for traffic control, providing seeds, all labour, tools, equipment, safety harness and incidentals to complete the work as specified herein. If the seeds are supplied through a separate contract, costs for the supply of the same shall not be included herein. However, if the Contractor is responsible for the supply and storage of seeds no separate payment shall be made for these items.

(3) Site Planting of Grass Slips and Cuttings

Delete 2807 (3) (e) and substitute:

(e) All grass slips, whether supplied to the Contractor from a nursery (if so provided in the Contract) or otherwise obtained by the Contractor, shall be prepared for planting by the Contractor as given below. The Contractor shall transport them from the source wrapped in hessian jute. At all times, plants shall be kept moist and as cool

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as possible, and should be wrapped in wet hessian between all operations such as extraction from the bed, pruning and planting. Under any circumstances, all plants shall be planted in the same day that they are lifted from the nursery or other source.

(6) Brush Layering, Palisades and Fascines

Delete 2807 (6) (d) and substitute:

(d) If the instruction to the Contractor includes the provision of cuttings, then the Engineer shall specify the species and expected sources, and the Contractor must then obtain the cuttings required. This shall be done in the manner described in Sub-clause 2803 (2), wherein the size of thecuttingsshallbe20-40mm in diameter and of length 300-500 mm for palisades, 450-600 mm for brush layering, and a minimum of 1000 mm for fascines.

Delete 2807 (6) (e) and substitute:

(e) Cuttingsofthefollowingspecies,ifspecifiedfortruncheons,shallbeaminimumof2000m min length:chuletro(*Brassaiopsishainla*),dabdabe(*Garugapinnata*),kavro(*Ficuslacor*),phaledo (*Erythrina species*) and Gliricidia sepium.

Delete 2807 (6) (k) (iv) and substitute:

(k) (iv) Cuttings shall then be laid along each trench, so that they lie horizontally along the trench. There shall normally be eight cuttings together, although where material is short a minimum of four cuttings is permissible at the Engineer's discretion. They shall be overlapped so that no two ends coincide. Under no circumstances shall buds be damaged. The cuttings shall then be tied using jute or coir (coconut fibre) string at 500 mm intervals to form a bundle, as the fascine is created, it thereby forms a continuous bundle right across the slope.

2810 Site Protection

Add Clause 2810 (4) as follows:

(4) Fabrication and Placement of Steel Tree Guards

The Contractor shall provide steel tree guards as shown on the Drawings in place of the bamboo tree guards as specified in the Clause 2810 (2). No bamboo tree guards shall be accepted.

The steel tree guards shall be placed in line with the provisions detailed in the Clause 2810 (3).

No separate payment shall be made for the fabrication and placement of steel tree guards. All the associated cost is deemed to be included in the relevant item of tree and/or shrub plantation.

2811 Site Aftercare and Maintenance

Delete Clause 2811 (12) and substitute:

(12) Measurement and Payment

"No separate payment will be made for site aftercare and maintenance and all the associated cost is deemed to be included in the relevant item rate".

Add new Clause 2812 "Turfing" as follows:

For Reference Only

2812 Turfing

Grass turfs shall be harvested, delivered and planted within 36 hours, unless otherwise authorized by the Engineer. Grass turfs shall be free from noxious weeds and diseases and shall contain a minimum of 30 mm of soil. The turfs shall be of a variety of grass approved by the Engineer. The grass shall either have been grown specifically for turf purposes, mown regularly and maintained to provide an approved quality of uniformity or shall be from some other source approved by the Engineer. It shall be harvested by special machines which ensure an even depth of cut with sufficient root material and soil.

Areas to be grassed by turfing shall be given a layer of topsoil at least 75 mm thick unless, due to the presence of suitable sub-soil, the Engineer orders that the topsoil be omitted. The areas to be turfed shall be thoroughly watered beforehand so that they are wet to a depth of at least 150 mm when turfing is done. The surface shall be made slightly rough to ensure a good penetration of roots into the soil. Turfs shall be protected against drying out and shall be kept moist from the time of harvesting until finally placed.

The first row of turfs shall, where it is possible, be laid in a straight line and, if on a slope, starting at the bottom of the slope. The turfs shall be butted tightly against each other, care being taken not to stretch or overlap turfs. Where a good fit cannot be obtained, the intervening space shall be filled with topsoil. The next row shall be placed in the same manner tightly against the bottom row with the joints staggered and so on until the full area is covered with turfs. On steep slopes, when instructed by the Engineer, the turfs shall be held in position by sufficient wooden stakes approximately 300 mm long by 20 mm in diameter.

The Contractor shall water the turfs directly after placing to prevent undue drying out. As turfing is completed, each section shall be lightly rolled and thoroughly watered.

All turfed and planted areas shall be adequately watered at frequent and regular intervals in order to ensure proper germination of seeds and growth of grass until the grass has established an acceptable cover and thereafter until the beginning of the maintenance period of the grass. The amount and frequency of watering shall be subject to the Engineer's approval.

The Contractor shall further mow the grass on all areas that have been grassed whenever so instructed by the Engineer, until the end of the maintenance period. All grass cuttings shall be collected and disposed of if so directed by the Engineer. Weeds shall be controlled by means of pulling, cutting or any other approved means. Any bare patches where the grass has been damaged or has dried up, shall be cultivated, planted, turfed or seeded at the Contractor's expense until an acceptable healthy cover has been established.

All grassed areas shall have acceptable cover as defined below at both the beginning and the end of the maintenance period.

In the case of turfing, acceptable cover shall mean that the full area shall be covered with live, healthy grass without bare patches at any time not less than three months after turfing.

"The maintenance period of grass shall commence when an acceptable cover as defined above has been established and shall be one year or until the end of the defects liability period, whichever is the later.

Payment for Turfing shall be by the square metre instructed to be turfed and successfully turfed to provide acceptable cover as defined above. Payment shall include the full costs of all works required to establish and maintain acceptable cover and to comply with the Specification requirements.

Add new Clause 2813 "Site Planting of Bamboo" as follows:

For Reference Only

2813 Site Planting of Bamboo

(a) The planting of bamboo is intended to replace or restore something of the natural vegetation on the slope to be treated. The Contractor is required to carry out the planting of seedlings to the Engineer's specific instructions.

(b) The spacing of plants will be determined according to individual site conditions. However, it will normally be at two meters across a slope and five meters up and down the slope.

(c) Select a suitable culm of the parent clump and dig out the rhizome carefully. Cut off the clump about two meters above the ground level. Cut the rhizome where it branches from the main plant, taking great care not to damage buds and small roots.

(d) Wrap the root ball in damp Hessian and transport the cuttings to site for planting on the same day

(e) Dig a hole (at least five times the size of the cutting rhizomes) and plant the rhizome either upright or at right angles to the slope. Carefully backfill the hole and firm the soil as much as possible.

(f) The Contractor is required to supervise all field operations very closely. The planting of bamboo is a delicate business and should be approached in the same way as the planting of horticultural seedlings. The Contractor should employ experienced agricultural or forestry labourers for this work.

(g) Measurement and Payment:

The measurement shall be made in number of plants planted, counted and accepted by the engineer at site. The quantities measured shall be paid at the unit rates shown in the Bill of Quantities.

Add new Clause 2814 "Live Check Dam Construction" as follows:

2814 Live Check Dam Construction

(a) The cuttings should be at least 2000 mm long and 50-80 mm in diameter made from woody material that is 6 to 30 months old. The contractor is to collect the cuttings from local area and transport them from there wrapped in hessian jute. At all times, cuttings are to be kept moist and as cool as possible. Under any circumstances, all plants supplied must be planted the same day.

(b) Cuttings of the following species, if specified, should be a minimum of 2000 mm in length: dabdabe (*Garugapinnata*), kavro (*Ficuslacor*), phaledo (*Erythrinaspp*) and *Gliricidiasepium*.

(c) Spacing between check dams depends on the steepness of the gully slope and the profile of the floor. Live check dams should normally be at intervals of between three and five metres. Within check dams, cuttings should be about 30 to 50 mm apart.

(d) Live check dams should be constructed as given below, unless specified differently.

  (i) Make a hole deep and big enough to insert vertical hardwood cuttings of the largest size available. Use a crowbar if necessary to extend the hole.

  (ii) Insert the vertical cuttings by carefully pushing them into the hole and firming the soil around them. Try not to damage the bark. They should protrude about 300 mm above the ground surface.

  (iii) Place long hardwood cuttings on the uphill side of the vertical stakes.

  (iv) Backfill around the check dam and compact the soil.

(e) Measurement and Payment: The measurement shall be measured separately as per the accepted final product in linear metre. The quantities measured shall be paid at the unit rates shown in the Bill of Quantities.

For Reference Only

Add new Clause 2815 "Measurement and Payment" as follows:

2815 Measurement and Payment

All the bioengineering items shall be measured in the respective units of the items of works specified in the Bill of Quantities (BoQ).

The payment of all the bio-engineering work items shall be made in two installments. First installment of 50% of the unit rate quoted in the BoQ shall be made after the completion of the works as per the Specifications and satisfaction to the Engineer. The second installment 50% of the unit rate quoted in the BoQ shall be made at the end of Defect Liability/Notification Period after carrying out the aftercare and maintenance of the bioengineering works that deem to be covered within the quoted rate, and acceptable to the Engineer.

Add new Clause 2816 "Priority on Bioengineering Works" as follows:

2816 Priority on Bio-engineering Works

The bioengineering works are very important to stabilize the side slopes. The Contractor shall require prioritizing the bioengineering works and stabilizing the side slopes before carrying out the bituminous works at the locations as instructed by the Engineer. In case of the bituminous works are carried out by the Contractor without carrying out the bioengineering works, and hence the bituminous works are damaged due to the slope failure in the absence of the bioengineering works, it is the responsibility of the Contractor to repair the bituminous works at his own cost. In no case, the Works shall be considered as completed unless the Contractor completes the bioengineering works to the satisfaction of the Engineer.

For Reference Only

Section 3100 – Miscellaneous Works

3105 Railings

(5) GI Pipe Railing with RCC Posts

(a) GI Pipe

Add at the end of the second paragraph as follows:

"The diameter of GI Pipe shall be as shown in the Drawings and/or as mentioned in the Bill of Quantities."

(b) RCC Posts

Add at the end of the second paragraph as follows:

"The size of the RCC poles shall be as shown in the Drawings."

Insert new Sub-clause (5a) "GI Pipe Railing" as follows:

(5a) GI Pipe for Railing

GI pipe shall comply with NS: 199/2046 (Heavy Duty). The diameter of GI Pipe shall be as shown in the Drawings and/or as mentioned in the Bill of Quantities.

All GI pipes shall be free from abrasions, rough or sharp edges, and shall not be kinked, twisted or bent. Any pipe which does not meet the requirements of the field Specifications shall be replaced at the Contractor's expense.

(6) Measurement

Delete the whole content of (6) Measurement and replace with the followings:

(a) Measurement for GI Pipe Railing with RCC Posts

GI Pipe Railing with RCC Post shall be measured in linear meter for complete railing set including GI pipes and RCC posts installed and accepted. Railing shall include both horizontal and vertical members, posts including bolts, nuts, fittings, etc as shown in the Drawings. It also includes the excavation for the foundation of the RCC post, preparation of the foundation and backfilling with the concrete of grade as shown in the Drawings to the satisfaction of the Engineer.

(b) Measurement for GI Pipe for Railing

GI Pipe for Railing shall be measured in linear meter installed and accepted. The works shall also include complete fixing with the respective elements including bolts, nuts, fittings, etc. as shown in the Drawings to the satisfaction of the Engineer.

3106 Approach Slabs

(1) General

Delete "..M20/40." and substitute with:

"..M25/20."

(2) Measurement

For Reference Only

Delete existing sentence and substitute:
"Approach slabs shall be measured as per the respective items in Section 2000 - Concrete for Structures".

3107 Drainage Spouts

(5) Measurement

Delete the entire content and modify as follows:

The drainage spouts shall be measured in number for the complete set including the materials, fabrication, and placement and finishing and the pipes for drainage spouts as shown in the Drawings and to the satisfaction of the Engineer.

(6) Payment

Delete the entire content and modify as follows:

The drainage spouts shall be paid at the contract unit price as mentioned in the Bill of Quantities. Such cost shall include all the cost for the complete set including the materials, fabrication, and placement and finishing and the pipes for drainage spouts as shown in the Drawings and to the satisfaction of the Engineer.

3108 Utility Facilities

(3) Measurement

Delete the entire content and modify as follows:

The galvanized steel bracket under utility facilities shall be measured in number (nr) for the complete set including procurement of materials, fabrication, installation and completion as shown in the Drawings and to the satisfaction of the Engineer.

(4) Payment

Delete the entire content and modify as follows:

The galvanized steel bracket under utility facilities shall be paid at the contract unit price as mentioned in the Bill of Quantities. The payment shall include all the cost for the complete set including procurement of materials, fabrication, installation and completion as shown in the Drawings and to the satisfaction of the Engineer.

3109 Weep Holes

(2) Measurement

Modify the 1st sentence of this Sub-Clause as follows:

Where instructed by the Engineer and placed in the works, pipes for weep holes shall be measured in linear meter.

(3) Payment

"Modify the 1st sentence of this Sub-Clause as follows:

Pipes for weep holes shall be paid at the contract unit price shown in the Bill of Quantities.

Add new Clause 3111 "Interlocking Concrete Block" after Clause "3110 Pervious Material" as follow:

For Reference Only

3111 Interlocking Concrete Block

(1) General

Interlocking Concrete Block Pavements shall be used in footpaths for the pedestrians or as per the instruction of the Engineer. Laying of the blocks shall be done, precisely at the indicated level and profile. The blocks shall be laid to the pattern as shown in the drawings or as directed by the Engineer. The blocks shall be laid as tight as possible to each other. The maximum joint width shall be limited to 4 mm. Fine angular sand as per specification shall be brushed into the joints, and thereafter compaction shall be done with a vibrating plate compactor on a clean surface.

(2) Design Parameters

(a) Block Thickness

The thickness of interlocking blocks shall be 60 mm. The blocks shall be constructed with M 20/20 grade concrete. All blocks should be of the same thickness, with a maximum allowable tolerance limit of
±3 mm.

(b) Sand Bedding and Jointing

A layer of stone dust /fine sand bedding is provided between block pavement and compacted base with granular sub-base material to provide a cushion between the hard base and the paving blocks and to correct the permitted surface unevenness of sub-base.

The stone dust /fine sand bed should not be too thick lest it would be difficult to control the surface level of the blocks. A layer thickness of 20 to 40 mm is found to be satisfactory. The stone dust /fine sand used should be free from plastic clay and should be angular type.

Joints between blocks are filled by stone dust /fine sand. Normally, the bottom 20 to 30 mm of the joint gets filled with bedding sand, whereas, the remainder space has to be filled with jointing sand by brooming it from the top. The joints are normally 2 to 4 mm wide.

(c) Base Construction

This layer is the important structural layer of a block pavement. The material used for base construction consists of granular sub-base material meeting the standard of Clause 1201 of 75 mm thickness.

(3) Construction

(a) General

The construction of interlocking concrete block involves preparation of sub-grade and sub-base layers, bedding sand and finally the laying of blocks. The block paving can be done entirely by manual labour. However, for efficient construction work, the work force has to be properly trained for this specialized job.

(b) Preparation of Sub-grade

Sub-grade should be compacted in layers of 150 mm to 200 mm thickness as per the use of compaction equipment. The prepared sub-grade should be graded and trimmed to a tolerance of ± 20 mm of the design level.

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(c) Sub-base Course

The granular sub-base course shall be constructed following the section 1201 of this Specification.

(d) Placing and Screeding of Bedding Sand

The thickness of the sand bed after compaction should be in the range of 20 - 40 mm, whereas, in the loose form it can be 25 to 50 mm. Bedding sand should not be used to fill-up local depressions on the surface of a sub-base layer. The depressions should be repaired in advance before placing sand. Sand to be used should be uniformly in loose condition and should have uniform moisture content. Best moisture content is between 6 to 8 percent.

The processed sand is spread to the required thickness. The sand is subsequently compacted with plate vibrators weighing 0.6 tonnes or more.

(e) Laying of Blocks

Blocks can be laid generally by manual labour.

As far as possible, laying should proceed in one direction only, along the entire width of the area to be paved.

While locating the starting line, the following should be considered:

- In case of irregular shaped edge restraints or strip, it is better to start from straight sting line.
- Influence of alignment of edge restraints on achieving and maintaining laying bond.

(4) Measurement and Payment

The measurement and payment of the interlocking concrete block shall be made in Square meter. Payment made at the contract unit rate for interlocking concrete block shall be payment in full compensation for furnishing all labour, material, tools, equipment including all incidental costs necessary for carrying out the works of sub-grade preparation, sub-base layer, stone dust/fine sand laying, supply and laying of concrete blocks etc at site conforming to the Specifications as per approved drawings or as directed by the Engineer.

Add new Clause 3112 "Passenger Shade" after Clause 3111 "Interlocking Concrete Block" as follow:

3112 Passenger Shades

TheContractorshallprocurematerialsandfabricatethepassengershadesasshownontheDrawings. The location of the passenger shades at site shall be determined and instructed by the Engineer. The placement, erection and the finishing of the passenger shades shall be to the satisfaction of the Engineer. The passenger shades shall be measured and paid in number as specified in the Bill of Quantities for the procurement of material, general requirements, fabrication, placement and finishing of the whole unit of the passenger shade as shown on the drawings and to the satisfaction of the Engineer. The payment shall be full and final to the Contractor to complete the work as per these specifications and the Drawings.

Add new Clause 3113 "High Density Poly-Ethylene (HDPE) Pipe" after Clause 3112 "Passenger Shade" as follow:

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3113 High Density Poly-Ethylene (HDPE) Pipe

The pipes to be used for sub-surface drain, grouting purpose etc. if specified in the Bill of Quantities shall be made of high density polyethylene and shall comply with series II as specified by NS40/2040. Jointing of pipes shall be done by fine-cutting and heating following with equipment complying with the prescription of the HDPE pipe manufacturer. Pipes may be jointed with angles to fit the requirements of the terrain, but angles shall not exceed the maximum specified by the manufacturer. The joints shall be water tight and develop the same strength as unjointed HDPE material. The method of jointing shall be approved by the Engineer prior to starting the works.

For sub-surface drain purpose, pipes shall be provided with holes of minimum 5 mm diameter. The pipes shall be perforated by drilling minimum 50 holes per meter length on the upper half of the pipe in a staggered pattern uniformly distributed. The Engineer might adjust these specifications according to the site conditions.

The measurement and payment of HDPE pipe shall be made in meter (m) including jointing, fitting etc. all complete. The contract unit rate shall be the full and the final compensation to the Contractor as per Clause 112 to complete the works as per these Specifications.

Add new Clause 3114 "Galvanized Steel Base Plate" after Clause 3113 "High Density Poly-Ethylene (HDPE) Pipe" as follow:

3114 Galvanized Steel Base Plate

The galvanized steel base plate shall be used in fixing the pedestrian handrails and crash barriers railings in the bridges as shown in the drawings. Materials, fabrication, transportation, installation and painting for base plate shall conform to the requirements of Section 2200.

All complete steel base plate elements, bolts, nuts, hardware and other steel fittings shall be galvanised or painted with an approved paint as specified in the Contract. If galvanized, all elements of the base plate shall be free from abrasions, rough or sharp edges, and shall not be kinked, twisted or bent.

Galvanising shall be carried out as per Clause 2209. Damaged galvanised surfaces, edges of holes and ends of base plate cut after galvanising shall be cleaned and re-galvanised.

The galvanized steel base plate shall be measured and paid in Kilogram (kg) for the complete works as shown in the drawings and specified in these specifications.

Add new Clause 3115 "Reflectorized Enamel Painting Works" after Clause 3114 "Galvanized Steel Base Plate" as follow:

3115 Reflectorized Enamel Painting Works

This Clause covers the enamel painting works of safety and/or warning barrier with black or yellow paint as indicated on the Drawing or instructed by the Engineer.

The colour, width and layout of the painting on safety and/or warning barrier shall be in accordance with the Traffic Signs Manual (latest publication), Department of Roads.

Paint shall comply with the requirements of NS 408/054 or BS 6044 (1987) or as specified in the Contract. If specified in the contract, the paint may also be reflectorised paint, in which case the paint shall be reflectorised by the addition of reflecting beads (ballotini).

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The ballotini shall comply with BS 6088:1981 (1993).

The paint shall be delivered to the site in sealed containers bearing the name of the manufacturer and the type of paint.

The viscosity of the paint shall be such that it can be applied without thinning. Under no circumstance thinning shall be allowed.

The paint shall not be applied to damp surfaces or when the relative humidity exceeds 80%, or at temperatures lower than 10o C, or when, in the opinion of the Engineer, wind strength is such that it may adversely affect the painting operations.

Before the paint is applied, the surface shall be clean and dry and completely free form any soil grease, oil, acid or any other material which shall be detrimental to the bond between the paint and the surface. The portions of the surface where the paint is to be applied shall be properly cleaned by means of watering, brooming or compressed air.

If any material not complying with the requirement is delivered on the site or used in the works, or if any sub-standard work is carried out, such material or work shall be removed, replaced or repaired as required by the Engineer at the Contractor's own cost. Rejected paint which has been splashed or dripped on the surfacing, kerbs, structures or other such surfaces, shall be removed by the Contractor at his own cost, in such a way that the marking or split paint shall not show up again later. After the application of paint, it shall be protected against damage by traffic or other causes. The Contractor is responsible at his own cost for the correction of the painting works damaged by the external means.

The painting works shall be measured and paid in square meter for completed works. The quantities measured as provided above shall be full and the final compensation to the Contractor as per Clause 112 for carrying out the work as specified in these Specifications.

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*Add new **"Section 3200 – Special Provisions for Minor Bridges"** after **"Section 3100 – Miscellaneous Works"***

Section 3200 – Special Provisions for Minor Bridges

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3201 Review of Foundation Design of Minor Bridges

The minor bridges included in the Contract are of type designed. The Contractor shall check, prepare and propose suitability of the foundation of the minor bridges after carrying out hydrological and geotechnical investigations referring the drawings issued.

The foundation design verification of the minor bridges including the required investigations and reporting shall be measured in number (nr) and paid as per contract price on a lump sum basis. The measured number for foundation verification/design of the minor bridges shall cover one set of bridges that includes two (2) bridges in each direction at a river location. The contract price and/or rates shall be the full and the final compensation to the Contractor as per Clause 112.

3202 Dismantling of the Existing Bridges and Clearance of Site

The Contractor shall dismantle the existing bridges completely including the superstructure, substructure, foundation and ancillary structures of the bridge so that the construction site is made clear for new construction. The job also includes the clearance of sites, stockpiling of the reusable materials and disposal of the unusable materials at environmentally safe tipping sites to the satisfaction of the Engineer before the start of the construction of new minor bridges.

The dismantling of existing bridges including clearance of sites shall be measured in number (nr) and paid as per contract price on lump sum basis for the complete job as described above in this Specification to the satisfaction of the Engineer. The contract price and/or rates shall be the full and the final compensation to the Contractor as per Clause 112.

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*Add new **"Section 3300 – Performance Based Maintenance Works"** after **"Section 3200 – Special provisions for Minor Bridges"***

Section 3300 – Performance Based Maintenance Works

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3301 Overview of Performance Based Maintenance

(1) Description

This Section 3300 Performance Based Maintenance Works and Services describes the works and services to be undertaken during Phase 2: Performance Based Maintenance Works.

The objective of performance based maintenance works and services is to ensure that the good physical condition of the road asset under contract over the entire period of the contract.

In traditional road maintenance contracts, the Contractor is responsible for the execution of works which are normally defined by the Engineer, and the Contractor is paid on the basis of unit prices for different work items and quantities of works executed. In Performance Based Maintenance contracts, the Contractor is responsible to identify, plan and carry out the Works and Services to achieve and maintain the Service Levels (Management Service Levels and Operational Service Levels) specified in Section 3300. He will not receive instructions by the Employer and/or Engineer of what to do when, where and how as in traditional maintenance contracts, except for Emergency Works or Day Works.

The role of the Engineer, on behalf of the Employer, is to enforce the contract by verifying compliance with the agreed Service Levels and with all applicable legislation and regulations.

The Contractor will receive a Monthly Lump Sum Fee for the Performance Based Maintenance Works and Services. Payment reductions will be applied if the Contractor fails to comply with the Service Levels in any given month. Emergency Works are paid on unit price basis.

(2) Required Services

Two groups of services are required: Management Services and Operational Services.

The management services include providing the information the Employer requires to manage the road asset during the Maintenance Phase of the Contract and to facilitate either the next tendering process or handover to the Employer, such as:

- Information on how the Contractor assures the quality of his services, manages the health and safety of his staff, manages emergencies, and manages traffic at the worksite
- Contractor's work programs
- Regular progress reports
- Inventory updates and other data sharing requirements
- Maintenance history
- Management of enquiries from third parties (public, police, etc.)

The operational services include the activities needed to maintain the satisfactory condition of the road assets, to assure their durability, as well as to satisfy the road users riding comfort requirement. These include, interalia:

- Road and lane width
- Road roughness
- Control of potholes and cracking
- Drainage off the pavement
- Rutting
- Visibility of road signs and markings
- Response times to rectify defects that compromise the safety of road users
- Vegetation control
- Edge break
- Depression
- Raveling

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- Shoulder condition

(3) Contractor's Responsibilities

Besides the timely provision of management information to the Employer, the Contractor shall be responsible for defining, optimizing and carrying out in a timely manner the works which are needed to ensure the roads remain at or above the Operational Service Levels defined in the Contract. In doing this, the Contractor shall comply with local legislation, the Specifications, environmental and social regulations.

The Contractor shall set up a Performance Monitoring Unit to observe road conditions and plan the various works needed to ensure the roads meet the defined Operational Service Levels. The Performance Monitoring Unit will provide the Contractor with information on the Contractor's compliance with the Operational Service Levels, and data required to define and plan all works. Under the maintenance works and services, the Employer will not issue instructions to the Contractor regarding the types and volumes of works to be carried out but instead, the Contractor will decide what to do where, when, and how.

(4) Definitions

In addition to the terms defined in the Conditions of Contract, the following words and expressions shall have the meanings stated.

- "Day" means calendar day
- "Emergency Work" means the works that are defined under Clause3306.
- "End Date of Phase 2: Performance Based Maintenance Works" means the date on which the maintenance works were completed in accordance with the Contract as stated in the Taking- Over Certificate issued for Phase 2: Performance Based Maintenance Works.
- "GPS" means Global Positioning System.
- "Management Service Levels" means Service Levels associated with the Management Services.
- "Maintenance Unit" means the Contractor crew dedicated to execute the maintenance works. This Unit shall also act as the initial response unit in case of any emergency.
- "Maintenance Works" means all Works and Services required to comply with the Service Levels. This includes replacements of road assets, if necessary.
- "MSL" means Management Service Levels.
- "Performance Monitoring Unit" means the Contractor's dedicated personnel tasked among other things to evaluate and report on the condition of the road as well as plan the necessary maintenance and rectification works.
- "Monthly Lump Sum" means the monthly rate per Kilometer of road payable to the Contractor for completed Maintenance Works, subject to reductions as provided in the Contract.
- "Operational Service Level" means the level of usability of the road and its various assets as established by the prescribed allowable non-conformances, beyond which the road is considered as non-complying and requiring rectification works to be executed.
- "OSL" means Operational Service Level.

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- "Phase 1" means the period for which the upgrading works of the road is to be executed by the Contractor under Phase 1: Upgrading Works.
- "Phase 2" means the period for which the performance based maintenance works and services to be executed by the Contractor under Phase 2: Performance Based Maintenance Works.

- "PRP" means Payment Reduction Point.

- "Payment Reduction Point Value" means the monetary value of one PRP.

- Rainy Season" means generally the time between June 15 and September15.

- "Road Assets" means all road related assets, including road furniture, within the right of way of the Mugling– Pokhara Road Road belonging to the Department of Roads.

- "SL" means Service Level, a generic abbreviation for both OSL and MSL.

- "Commencement Date of Phase 2" means the day immediately following the conclusion of the Defects Notification Period of the Phase 1: Upgrading Works.

- "Works" means Works and Services

- "Work Order" means an order issued by the Employer in response to the Contractor's proposal for the execution of works under Emergency Repair Works, which details the works required as well as the agreed time and cost.

3302 General

(1) Project Site

The project site is Mugling-Pokhara Road.

Maintenance is to be provided for the road and all associated items for the full width of the road right of way and for any ancillary works outside the right of way such as drainage inlets and outlets, slope and structure protection works etc. The area to be maintained includes the first 10 m length of the side/approach roads.

(2) Scope of Services

In accordance with GCC Clause 7, the Works to be provided by the Contractor include all managerial, administrative and physical activities that the Contractor needs to carryout, to comply with the Service Levels specified herein, or with any other requirements of the Contract. In particular, they include physical activities associated with the following road-related assets and items:

(i) Paved areas of roads, parking areas, lay-bys, shoulders, footways and the like;

(ii) Unpaved shoulders, medians and verges;

(iii) Signs, road markings and road safety furniture;

(iv) Road lighting and associated facilities;

(v) Bridges, culverts, earth retaining structures and other structures;

(vi) Drainage ditches, pipes, manholes and related items;

(vii) Slopes of cuttings and embankments;

(viii) Landscaped areas; and

(ix) Other road assets, which have been constructed or installed during Phase1.

Management services include processes and procedures such as:

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(a) assure the quality of the services;

(b) manage the health and safety of the Contractor's personnel;

(c) protect the environment;

(d) manage emergencies;

(e) manage traffic at work sites, and

(f) collect, manage and report on data specifically required by the Contract and in addition necessary for the effective management of the services

(g) Daily inspection patrols.

(3) Performance Criteria and Service Levels

The required condition of road assets is achieved by satisfying performance criteria designed to limit the presence of defects such as potholes and cracking in the pavement. Performance criteria are defined by Service Levels, which are the specified threshold for each of the performance criteria; for example, it may be specified that there shall be no pothole in excess of 150 mm in diameter or 50 mm deep and no crack shall be wider than 5 mm. The defined Service Levels are the accepted minimum thresholds for the quality levels of the road assets for which the Contractor is responsible.

Service Levels are specified in two categories:

(a) Management Service Levels relating to the various management processes and procedures of the Contractor that deliver the Operational Service Levels, ensure good governance of the asset during the term of the Contract, provide information that the Employer concerning the delivery of the Works and facilitate the next tender round. They address matters such as:

  (i) Information on how the Contractor assures the quality of his services, manages the health and safety of his staff, protects the environment, manages emergencies, and manages traffic at worksites;

  (ii) Contractor's work programmes;

  (iii) Regular progress reports;

  (iv) Recording of network and inventory updates;

  (v) Recording of maintenance history; and

  (vi) Management of enquiries from third parties (public, police etc)

(b) Operational Service Levels that are measures of the condition of the assets to assure their durability, to provide road user services and to ensure safe operation and comfort, such as:

  (i) Timely response to rectify defects that compromise the safety of road users;

  (ii) Repair of potholes and cracking;

  (iii) Repair of Rutting;

  (iv) Maintenance of drainage systems;

  (v) Keeping road signs and markings clean, visible and in good condition;

  (vi) Keep lighting equipment suitably visible and in good condition;

  (vii) Vegetation control;

  (viii) Maintenance of structures; and

  (ix) Safety Inspection Patrol

For each performance criterion, a Service Level (SL) is specified. Throughout the contract period, if the Contractor fails to comply with an SL, reductions will be made from amounts due to the Contractor. The fundamental concept associated with such reductions is the Payment Reduction Point (PRP). Each SL breach attracts PRPs, which are accumulated

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and combined with the value of the individual PRP to evaluate the total reduction applicable.

(4) Monitoring of Performance

Under the terms of the contract, the Contractor shall also be responsible for the continuous monitoring and control of road conditions and Service Levels for the road or road sections included in the contract. This shall be necessary not only to fulfill the contract requirements, but the activity shall also provide the Contractor with the information needed to be able (i) to know the degree of his own compliance with Service Level requirements, and (ii) to define and plan, in a timely fashion, all physical interventions required to ensure that service quality indicators never fall below the indicated thresholds. The Contractor shall not receive instructions from the Employer concerning the type and volume of road maintenance works to be carried out. Instead, all initiative rests with the Contractor who shall do whatever is necessary and efficient to achieve the quality levels required.

Some emergency works are to be foreseen. Those are meant to remedy unexpected damage which occurs as a result of extraordinary natural phenomena, and which affect the normal use of the road network, or the safety and security of the users. For emergency works, the contract limits the responsibility of the Contractor, establishing that the Employer will approve execution of services and separate remuneration based on specific amounts proposed by the Contractor for each case, on the basis of volume of works estimated at each time and on unit prices included in the bid and in the contract.

3303 Management Services

Management Services are the various management processes and procedures of the Contractor that deliver the Operational Service Levels, ensure good stewardship of the road asset during the term of the Contract, provide information that the Employer requires concerning the delivery of the Services and facilitate the next tender round.

(1) Functions of Contractor's Key Personnel

During the Maintenance Phase of the Works, the Contractor's key personnel shall include but not be limited to the following key personnel whose duties are outlined below:

- Contractor's representative / Contract Manager shall act and represent the Contractor during the Phase 2 of the Contract. His duties and responsibilities include those discussed in Sub- Clause 4.3 of the General Conditions of Contract.
- Performance Manager shall be responsible for the Performance Monitoring Unit and for the development and monitoring of the Program of Performance.
- Maintenance Engineer shall instruct and supervise the works undertaken on the site based on the requirements of the Contract.
- Performance Based Road Maintenance Expert (part time) to coach and train the staff of the contractor and subcontractors in the planning, execution and monitoring of the performance based maintenance works.

(2) Performance Monitoring Unit

The Contractor shall establish a Performance Monitoring Unit staffed by qualified personnel, who shall verify continuously the Contractor's degree of compliance with the required Operational Service Levels. The Performance Monitoring Unit shall also be responsible for undertaking the quality control testing required for all Works.

The Performance Monitoring Unit shall maintain, at all times, a detailed and complete knowledge of the condition of the road sections included in the Contract and shall provide the Contractor with all the information needed in order to efficiently manage and maintain

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the roads. The Performance Monitoring Unit shall carry out, together with the Employer, the formal and scheduled inspections of Operational Service Levels.

(3) Facilities for the Employer

The facilities provided to the Employer under the Construction Phase of the Contract such as offices, accommodations, laboratory, vehicles, supplies, consumables, telephone services, internet services, utilities and the like shall not be required.

(4) Communication System

In accordance with Clause GCC 1.3, the Contractor shall provide and maintain in operation for the duration of the Contract a communications system or systems that ensure that both written (letter, fax or E-mail) and oral (voice) communications can be established at all times:

(i) between the Contract Manager and his senior field staff;

(ii) between the Employer/Engineer and the Contract Manager;

(iii) between the public telephone system and the Contract Manager;

(iv) between the public telephone system and the Employer/Engineer;

The equipment to be provided and maintained includes the equipment located at the Employer's and/or Engineer's office.

The equipment may comprise cellular mobile phones, satellite phones, radio equipment, tele-facsimile equipment and computers with broad band internet access linked by local area network and/or similar. The Communications System shall provide for "24/7/365" (i.e 24 hours per day, every day of the year) communication with security and redundancy provisions that are fully fit for purpose.

(5) Site Regulations

In accordance with GCC Clause 4, the Contractor shall prepare Site Regulations setting out the rules to be observed in the execution of the Contract at the Site and shall comply therewith. Such Site regulations shall include, but shall not be limited to:

(a) Security;

(b) Gate control;

(c) Safety;

(d) Traffic control;

(e) Accident and Emergency response;

(f) Dealing with third party enquiries and complaints;

(g) Sanitation;

(h) Medical care; and

(i) Fire prevention.

The Site Regulations shall comply with the relevant laws and regulations of Nepal.

(6) Specifications and Work Methods

The Maintenance Works shall be executed in accordance with the Specifications and the Special Provisions for Performance Based Maintenance Works and/or any applicable Standards stated in the Specifications.

In case of conflict between the Specifications and Work Procedures defined in Phase 1 and the Service Levels or specifications of Phase2, the Service Levels and Work Procedures of Phase2 shall take precedence. If an ambiguity or discrepancy is found in the documents, the Engineer shall issue any necessary clarification or instruction.

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With the prior written approval of the Employer, the Contractor may introduce new materials and work methods as long as they provide a better quality of work.

Under no circumstances shall the Contractor be entitled to any additional payment or relief from payment reduction due to the inadequacy of the materials and work procedures that he has proposed and employed in the Works and Services, notwithstanding any consent by the Employer to their use.

(7) Program of Performance

The Contractor shall develop, implement and maintain a Programme of Performance, which shall set out in detail the management processes, procedures and controls that he will employ to deliver the Services and Works. The Programme of Performance shall comprise the following components:

a) Operational Plan

The Operational Plan shall describe how the Contractor will undertake the Works to achieve the Service Levels, including but not limited to the following matters:

(a) Organisational structure for management and delivery of the Services;

(b) Locations and coverage of depots and storage facilities;

(c) Numbers, classification and deployment of equipment and personnel;

(d) Provisions for procurement and storage of materials;

(e) Procedures for Safety Inspections and Service Level Inspections;

(f) Procedures for Structural Inspections;

(g) Procedures for routine maintenance and repair works;

(h) Procedures for incident response and emergency works;

(i) Procedures for response to third party enquiries, reports and complaints.

(j) Procedures for data collection, recording and storage.

b) Contractor's Quality Assurance Plan

The purpose of the Contractor's Quality Assurance Plan is to integrate the requirements of the Contract and the Contractor's quality assurance systems to deliver the Services.

The Quality Assurance Plan describes the methods and procedures, which the Contractor will apply for the execution of the Contract, including how the Contractor will:

(a) identify the quality requirements specific to the Contract;

(b) plan and execute the Services and Works to satisfy those requirements;

(c) inspect and/or test work and materials to ensure compliance with the quality requirements;

(d) record and monitor the results as evidence of compliance;

(e) audit the Quality Assurance processes and procedures to ensure compliance; and

(f) ensure that prompt action is taken to correct non-compliance.

The Quality Assurance Plan shall comply with the principles of ISO 9001:2008 or any revision thereof. It shall clearly describe the systems, procedures and methods that will be used to deliver and monitor compliance of the Services.

c) Health and Safety Management Plan

The purpose of the Health and Safety Management Plan is to foster a responsible attitude towards occupational health and safety and to comply with the provisions of the Law of

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Nepal.

Because of the nature of the Services, the Contractor may occasionally be exposed to hazardous situations, which could involve risk of various degrees of harm, to the Contractor's personnel and/or the public.

Situations will arise when it is not practical to eliminate or isolate significant hazards. In these situations, the Contractor must mitigate hazards by ensuring planned protection systems (e.g. equipment, clothing) are available and used. The Contractor's personnel and all sub-contractors must comply with the Health and Safety Management Plan at all times.

The Health and Safety Management Plan shall, when implemented in accordance with the plan requirements:

(a) Ensure the systematic identification of existing and new hazards on work site(s) and at depots, storage facilities, in offices or wherever activities are undertaken;

(b) Ensure the mitigation of significant hazards, where elimination and isolation are impractical;

(c) Ensure the provision and use of appropriate protective measures;

(d) Include emergency procedures for dealing with accidental spillage, pollution or imminent danger;

(e) Ensure regular review and assessment of each hazard identified and monitor own staff and subcontractor's exposure to these hazards;

(f) Ensure reporting and recording of work site safety incidents so health and safety problems can be addressed quickly and regularly. It is a requirement of this Contract that any such incident be advised promptly to the Engineer;

(g) Comply with all other health and safety aspects requirements of Nepalese law and regulations.

d) Environmental Management Plan

The purpose of the Environmental Management Plan is to foster a responsible attitude towards occupational health and safety and to comply with the provisions of the Law of Nepal. The Environmental Management Plan shall comply with the principles of ISO 14001:2008 or any revision thereof.

Because of the nature of the Services, the Contractor's operations have the potential to cause adverse environmental impacts. Situations will arise when it is not practical to avoid such impacts. In these situations, the impacts must be mitigated by planned actions and protection measures, which must be employed.

The Contractor's personnel and all sub-contractors shall comply with the Environmental Management Plan at all times.

The Environmental Management Plan shall, when implemented be in accordance with the plan requirements:

a) The means by which the environmental management systems will be supervised, monitored andauditedtoensurecompliancewiththeprinciplesandobjectivesoftheEMPatalltimes;

b) Records to be prepared and maintained by Environmental Management staff and communication procedures to be followed so that the Employer and others associated with the Works (e.g. sub-Contractors) are kept fully informed on matters relating to the EMP and applicable regulations throughout the Contract period;

c) Proposals to ensure that maintenance methods do not compromise the Contractor's commitment to the EMP and compliance with all relevant statutory regulations;

d) An organizational structure showing the appointed environmental management staff and the responsibilities of environmental protection participants;

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e) The names, addresses, telephone and fax numbers of all participants;

f) The criteria used for the appointment of the principal staff;

g) The proposed interactions and communications procedures between the Contractor's personnel and the environmental protection staff, including proposals for the communications facilities to be provided. In particular, the establishment of a regular communications and reporting system;

h) Thefrequency,coverageandintentofenvironmentalmanagementmeetingstogetherwithe rationale for attendance;

i) Frequency, coverage and intent of regular environmental reports;

j) Methods proposed for promoting awareness of environmental protection issues among all personnel directly or indirectly associated with the maintenance works;

k) Provisions for storage of liquid, toxic and dust creating materials;

l) Waste control and management;

m) Materials handling;

n) Erosion prevention;

o) The powers vested in the environmental management staff that would enable them to take urgent, appropriate and direct action to prevent or correct environmental impacts;

p) The means by which environmental management matters will be communicated to Sub- Contractors to ensure effective compliance by subcontractors.

Further details of the Environmental Management are described in Appendix B of Phase 2.

e) Risk Management Plan

The Purpose of the Risk Management Plan is to ensure that uncertain events that may have adverse impacts on the integrity and condition of the road assets or on the Operational Service Levels are identified, analysed and placed under a proactive management regime. The Risk Management Plan shall, as a minimum, include:

(a) establishment of a risk register, in which all foreseeable adverse events are identified and assigned values of probability and consequence of occurrence;

(b) analysis of risks in which the impact of potential combinations of events is considered across a range of scenarios;

(c) identification of risk management strategies involving avoidance and mitigation of risks together with management strategies for residual risks;

(d) assignment of responsibility for risks to the organisations or individuals best able to manage them;

(e) a process for the regular review and updating of the risk register and the risk management plan.

f) Emergency Procedures and Contingency Plan

The Emergency Procedures and Contingency Plan shall establish the roles, practices and procedures to be followed during and following the occurrence of natural phenomena with imponderable consequences, such as strong storms, flooding and earthquakes. The Emergency Procedures and Contingency Plan shall be developed by the Contractor and agreed with the Engineer and any other stakeholders the Engineer may identify.

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The purpose of the Emergency Procedures and Contingency Plan is to ensure the safety of the Contractor's personnel and road users in the case of emergency and/or road closure. It should include:

(a) an effective communication and event recording system;

(b) the names, 24-hour contact telephone numbers and specific duties of the Contractor's personnel nominated to respond to an emergency event;

(c) the contact telephone numbers of other parties who need to be notified in cases of emergency events, e.g. police;

(d) detailed response procedures for all potential emergency events;

(e) possible detour routes in the event of road closure.

g) Traffic Management Plan

The Traffic Management Plan establishes the practices for traffic management at work sites and shall comply with the relevant rules and regulations in Nepal. The Traffic Management Plan must be developed by the Contractor and agreed with the Engineer.

The objectives of the Traffic Management Plan are to:

(a) Clearly define and document the responsibilities and chain of command for the development, implementation and management of traffic control measures and systems,

(b) establish the minimum requirements for temporary traffic control,

(c) establish the minimum geometric, cross section and surfacing standards for temporary works,

(d) provide appropriate transitions and enable safe and efficient traffic flow into, through and out of work sites,

(e) protect the Contractor's personnel at all times,

(f) protect the Road and related assets and the Contractor's resources at all times, and

(g) meet the operational requirements for the Road.

The Traffic Management Plan must include at least the following:

(i) a documented process for preparation, review and approval of the Traffic Management Plan;

(ii) a document tracking and control system to ensure that only the latest operative copy of the Traffic Management Plan is in circulation;

(iii) 24-hour contact telephone numbers for Contractor, Engineer, Employer, emergency services and other stakeholders; and

(iv) layout diagrams, method statements, etc. for implementation of traffic control while undertaking each aspect of the Services (including site specific layout diagrams and method statements if the Services require traffic control measures not covered by standard codes of practice.

h) Road Management Database

Data about the conditions of the road assets being maintained under this Contract are required for current and future reference. The Contractor shall prepare and maintain a road management database of accuracy and completeness appropriate to the uses for which it is intended, which shall be kept current at all times. The Contractor shall supply all information necessary to prepare and maintain this data. The following information is to be collected and updated:

- Road and bridge inventory and treatment history
- Road condition and section rating

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- Traffic and classification details
- Maintenance history

The Contractor shall undertake whatever actions may be necessary including detailed road condition surveys to obtain the above data and all information required to maintain the road management database.

The Contractor shall provide hard and electronic copies of the updated road management database and all relevant information to the Employer. Report and subsequent updates shall be submitted every three months thereafter together with the relevant monthly progress report.

8) Daily Inspections

The Contractor shall undertake Inspections of all lengths of road in both directions for which he is responsible on at least a daily basis to ensure the continuous safe operation of the roads and the compliance of all road related assets with the Operational Service Levels.

The procedures for Inspections shall be described in detail in the Contractor's Operational

Plan. The Daily Inspection shall as a minimum record the following information:

(i) Date and time of inspection at start and end of each of each day and the route covered

(ii) Weather

(iii) Route of inspection

(iv) Summary of general operating conditions

(v) Recording of all non-compliances with Operational Service Levels detected

(vi) Incidents, hazards and defects discovered and actions taken

(vii) Record of interactions with:

a. Police

b. Engineer's staff

c. Official bodies

d. Members of the public

9) Inspection of Structures

All bridges and all culverts with span or diameter in excess of two (2) metres together with all earth retaining structures with a height in excess of two (2) metres and other significant structures shall be visually inspected at least once in each calendar month to ensure that they are in a safe operating condition.

This inspection shall record:

(a) Vehicular damage to structures;

(b) Scour of foundations in watercourses and erosion of protective structures such as revetments, gabions and the like;

(c) Settlement of foundations, movement or rotation of abutments, wing walls and earth retaining structures;

(d) Significant corrosion of steel reinforcement in reinforced concrete members causing spalling of concrete;

(e) New or worsened deflection or cracking of reinforced concrete members;

(f) Corrosion of structural steelwork with significant loss of metal.

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(g) Anything else that impairs the safe operating condition of the bridge.

Where defects appear to be worsening rapidly, the Contractor shall inform the Engineer without delay and shall take appropriate measures to ensure the safety of road users and employees.

Any non-compliance with the Operational Service Levels discovered during any inspection shall be recorded. The record of each defect shall include an accurate positional reference, description and dimensions of the defect and a photograph taken with a digital camera and bearing a date and time stamp. The record of each inspection shall be recorded. Upon completion of remedial works for each defect or group of defects, the record of works together with a further date and time stamped photograph shall be recorded as well and included in the Monthly Report.

10) Routine Maintenance Unit

The Contractor shall provide on a daily basis a minimum of one Routine Maintenance Unit (RMU) comprising of personnel and equipment required to undertake the carrying out of the Routine Maintenance Works. The Contractor may increase the number of RMUs as he may deem necessary to meet the requirements of the Works.

Each RMU shall have the following minimum resources:

- 1 No. Foreman
- 1 No. Light/Heavy vehicle driver
- 1 No. double cabin pick-up with identification (contractor's name, Employees' name, road name, and emergency contact phone no.)
- 1 Set Operational flashing amber lights fitted to the RMU truck
- 5 No. Maintenance workers
- 2 No. Mobile phones
- 1 No. Jack
- 1 No. Compressor
- 1 No. Vibrating plate compactor
- 1 No.Chain saw
- 1 m^3 Cold storable bituminous premix and 0.5 m^3 of sand
- 2 No. "Half Road Closed" Signs
- 2 No. "Roadwork Ahead" Signs
- 12 No. 300 mm plastic 'high visibility' colored traffic cones
- 200 kg drum of bitumen
- 1 No. Bituminous spray pump
- 1 No. 200 litre drum of clean water
- 2 No. Rakes
- 2 No. Long handle shovels
- 2 No. Long handle heavy duty brooms
- 2 No. Picks
- 8 No. Reflectorized safety jackets for the RMU crew

The RMU shall be available to work for a minimum of 8 daylight hours per day from Sunday to Friday inclusive. The starting and finishing times are to be agreed with the Employer.

The RMU shall also be the "Initial Emergency Response Unit" and shall have the following capabilities in case of an emergency:

- Haul a half cubic meter of sand (or other suitable granular material depending on the nature of the requirement)
- Provide an after-hours response with a minimum of a two-person crew
- Mobilize emergency kits such as temporary warning signs, flashing lights, barriers, safety clothing, shovels, brooms, etc.

The RMU shall carry at all times mobile phones to contact police, fire, ambulance, and hospital or medical center to obtain help in the event of accidents or any emergency

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encountered.

A listing of all emergency contact phone numbers shall be circulated by the Contractor to all relevant officers, including the Contractor's staff and the Employer within 14 days from the Commencement Date of Phase 2.

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11) Reporting

a) Inception Report

Within 28 days after the Commencement Date of Phase 2, the Contractor shall submit an inception report to the Employer. The report shall include the following:

- Initial condition survey
- Video survey
- Roughness survey
- Initial road management database
- Detailed maintenance program for the first 3months
- Information regarding environmental, safety and social issues and other information as may be necessary

The Contractor's initial condition survey of the roads, structures and other appurtenances shall be attended by the Engineer. The detailed results of the survey shall be recorded by the Contractor and submitted to the Engineer for confirmation.

The initial condition survey will establish a baseline of road conditions at the time of commencement of the Phase 2. The video survey shall be undertaken during daylight hours from the passenger's seat of a slow moving vehicle with the camera aligned towards the center of the road. Video shall also be taken of all bridges, major culverts and any other major structures to show the conditions of each structure from all angles. The Contractor shall complete and formally submit to the Engineer two copies of the video record on DVD.

The roughness data is required to establish the actual roughness condition of the road at the time of commencement of the Phase 2. Roughness shall be measured using a method and equipment approved by the Engineer.

The environmental, safety and social surveys shall establish the issues existing prior to the commencement of Phase 2.

The Employer shall confirm the accuracy of the initial condition survey within 21 days of his receipt of the inception report. The Engineer's opinion on the condition of any road asset or any item shall be final.

Interim Payment Certificates will not be released until such time as the inception report is approved by the Employer.

b) Daily Report to be submitted to the Employer

The Contractor shall prepare and submit daily reports to the Engineer on all inspections, incidents, non-compliance with Operational Service Levels detected, remedial actions taken and other works executed by the Contractor. The format and the information to be supplied shall have to be approved by the Engineer.

The information provided in the daily reports shall be summarized by the Contractor and included in the relevant sections of his Monthly Reports.

c) Monthly Reports

TheMonthlyReportshallbesubmittedbytheContractortotheEngineereachmonthnolaterthant he seventh calendar day of the following month; except for the reports under (b) and (c) below, which shall be submitted on the last working day of the respective month; shall comprise the following components:

(a) Narrative Report, describing Services and Works undertaken during the period, problems and issues arising and measures taken to deal with them.

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(b) Contractor's Monthly Operational Service Level Inspection Report

(c) Monthly Evaluation Form for Compliance with Operational Service Levels

(d) Memorandum of Non- Compliance with Operational Service Levels – based on the Monthly Formal Inspections

(e) Memorandum of Non-Compliance with Operational Service Levels – based on Informal Inspections

(f) Report on all Maintenance Works and Services

(g) Report on any Emergency Works or other Works instructed by the Engineer due to defects to be repaired under the Defects Notification Period liabilities.

(h) Report on the compliance with the Contractor's Quality Assurance Plan, Health and safety Management Plan, Environmental Management Plan, Risk Management Plan, Emergency Procedures and Contingency Plan, and Traffic Management Plan.

(i) ReportonTestingundertakeninaccordancewiththeContractor'sQualityAssurancePlanor as required by the Engineer. Tests shall be undertaken in accordance with the specifications and appropriate standards and the detailed test results shall be submitted to the Engineer in the respective month.

(j) Structural Inspection Reports on inspections undertaken. First inspection reports shall be provided within two (2) calendar months of the Commencement Date of Phase2.

(k) Summary of Incident Reports shall be submitted for each month (or a nil return).

(l) Updated Monthly Work Programme, detailing the location, timing and extent of all works the Contractor proposes to complete during the next month.

(m) Any other information as the Engineer may require from time to time.

d) Incident Reports

Every occurrence of an Emergency that requires "Emergency Works" as defined in Section 3306 Emergency Works below shall be reported to the Engineer as described below:

(i) Landslides, defined as movement of earth or rocks encroaching on any carriageway or shoulder or blocking any drainage system or watercourse; reported without delay and in any event within one (1) hour of discovery.

(ii) Flooding, defined as large volumes of water occupying all or parts of the roadway, shoulders and adjoining areas; reported without delay and in any event within one(1)hour of discovery.

(iii) Any other event where the Contractor proposes to request issue by the Employer of an Emergency Work Order; reported without delay and in any event within one (1) hour of discovery.

(iv) Road Accidents involving injury to people, significant vehicular damage and/or damage to the roadsurface,structuresorroadfurniture;withoutdelayandinanyeventwithintwenty-four (24) hours of discovery.

(v) Other Damage, including vandalism, theft, damage of highway furniture and structures; reported weekly.

Incident reports shall include:

(a) The precise location, timing and extent of the incident, supported by maps/plans and date/time stamped digital photographs;

(b) A brief narrative description of the circumstances.

(c) Where applicable, the names of the people and/or organizations responsible for

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causing the damage. This information is required so that the Employer may seek recovery of the costs associated with repairing the damage.

Copies of incident reports shall be included in the monthly reports.

e) Handover Report

No later than two (2) months prior to the Date of Completion of the Contract the Contractor shall submit the Handover Report in draft to the Engineer. The purpose of the Handover Report is to provide a smooth transition to the next contract and ensure that the next Contractor is aware of any outstanding issues.

The Report shall:

(a) Summarize any unresolved issues,

(b) Include the most recent complete set of data on the Road and related assets included in the Contract; and

(c) Provide the following details:

i. The current and up-to-date Programme of Performance including all sections and particularly the updated risk register;

ii. A schedule of outstanding defects and liabilities;

iii. Any unresolved issues, especially those that may impact on the next Contractor;

iv. Details of any sensitive issues;

v. Any on-going special monitoring/maintenance needs.

The final Handover report shall be submitted no later than 14 days prior to the Date of Completion of Phase 2.

12) Management Service Levels

Table 33.1 lists Management Service Levels (MSL), which relate to the overall management of the Works along with the corresponding Submission Dates and resulting PRPs for each MSL.

The Management Services cease on the Date of Completion of the Contract. If any requirements are unfulfilled at that time, the Employer and/or Engineer may procure their completion and recover the cost thereof from amounts due to the Contractor.

The Management Service Level Number (see MSL No column in Table 1) comprises a section reference to one of the sections above followed by a count within that section.

Table 33.1 – Required Submission Dates and Payment Reduction Points for Management Service Levels

Management Services	MSL No	Action	Submission Dates	Payment Reduction Point
Key Personnel	1	Key Personnel appointed, approved by the Employer and on the site	At the Commencement Date of Phase 2	10 per day
Performance Monitoring Unit	2	Performance Monitoring Unit fully established	At the Commencement Date of Phase 2	10 per day
Communications System	4 (1)	Details of Contractor's proposed Communications System submitted in draft	At the Commencement Date of Phase 2	4 per day

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Management Services	MSL No	Action	Submission Dates	Payment Reduction Point
	4 (2)	Engineer either issues a notification of "no objection" to the proposal or notifies Contractor that the Communications System is unsatisfactory, stating the specific areas of concern	Within 14 days after submission of the Draft	N/A
	4 (3)	Contractor submits revised details	Within a further 7 days of Engineer's notification	4 per day
	4 (4)	Communications System complete and fully operational	Within 60 days after the Commencement Date of Phase 2	4 Payment Reduction Points per day during which any significant element is inoperable for the entire day. (For the avoidance of doubt, a "significant element" is a communicatio n medium, such as telephone or internet, for which there is no redundancy or equivalent alternate system in operation)
Site Regulations.	5 (1)	Draft Site Regulations submitted to the Employer, and copied to the Engineer, for approval, which shall not be unreasonably withheld.	At the Commencement Date of Phase 2	4 per day
	5 (2)	Engineer either issues a notification of approval of the draft Site Regulations or notifies the Contractor that they are not approved, stating the specific reasons for rejection.	Within 14 days after submission of draft Site Regulations	N/A
	5 (3)	Contractor submits revised draft Site Regulations	Within a further 7 days of Engineer's notification	4 per day

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Management Services	MSL No	Action	Submission Dates	Payment Reduction Point
	5 (4)	Contractor implements Site Regulations and remedies breaches forthwith	N/A	2 Payment Reduction Points during the first week, 4payment reduction points during the second week and 1 payment reduction point per day thereafter until the deficiency is remedied
Programme of Performance	7 (1)	Contractor's Programme of Performance submitted in draft	At the Commencement Date of Phase 2	4 per day
	7 (2)	Engineer either issues a notification of "no objection" to the Plan or notifies the Contractor that his Programme of Performance fails to comply with the Contract, stating the specific areas of "non-compliance"	Within 14 days after submission of Programme of Performance	N/A
	7 (3)	Contractor submits a revised Program of Performance	Within a further 7 days of Engineer's notification	4 per day

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Management Services	MSL No	Action	Submission Dates	Payment Reduction Point
	7 (4)	Contractor implements Programme of Performance	Continuous	5 Payment Reduction Points for each material breach of the Programme of Performance per day during which the breach persists (For avoidance of doubt, a material breach is a neglect or disregard of any element of the Programme of Performance notified in writing to the Contractor by the Engineer)
	7 (5)	Contractor updates Road Management Data Base	Every three months together with the relevant Monthly Report	1 per day
	7 (6)	Contractor updates Programme of Performance annually or upon the occurrence of any material change to any of the constituent processes and procedures or upon the reasonable request of the Engineer and submits to Engineer	Within 14 days of each anniversary of the Commencement Date of Phase 2 or upon the occurrence of any material change to any of the constituent processes and procedures or upon the reasonable request of the Engineer	4 per day
Daily Safety Inspections	8	Contractor undertakes Safety Inspections on at least a daily basis to ensure the continuous safe operation of the roads	During each calendar day	5 Payment Reduction Points for each instance of failure to undertake an inspection in whole or in part

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Management Services	MSL No	Action	Submission Dates	Payment Reduction Point
Inspection of Structures	9 (1)	Contractor inspects all bridges and all culverts with span or diameter in excess of three (3) meters together with all earth retaining structures with a length in excess of 3 m and other significant structures at least	As per Operational Plan	As per Programme of Performance
		once in each month to ensure that they are in a safe operating condition		
	9 (2)	Contractor records any non-compliance with the Operational Service Levels discovered during any inspection and submits report to Engineer	Within 24 hours of completion of inspection	2 per day
Inception Report	11a	Submission of Inception Report	28 days after the Commencement Date of Phase 2	2 per day
Daily Reports	11b	Submission of Daily Report	By the end of the following day	2 per day
Monthly Report	11c	Contractor submits the Monthly Report to the Engineer	No later than the 7th calendar day of the following month (starting with the report on the first month after the Commencement Date of Phase 2)	3 per day
Incident reports	11d	(i) Landslides, defined as movement of earth or rocks encroaching on any carriageway or shoulder or blocking any drainage system or watercourse; reported without delay. (ii) Flooding, defined as large volumes of water occupying all or parts of the roadway, shoulders and adjoining areas; reported without delay. (iii) Any other event where the Contractor proposes to request issue by the Employer of an Emergency Work Order; reported without delay.	Within one hour of discovery	5 per hour

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Management Services	MSL No	Action	Submission Dates	Payment Reduction Point
		(iv) Road Accidents involving injury to people, significant vehicular damage and/or damage to the road surface, structures or road furniture without delay.	Within twenty-four (24) hours of discovery.	2 per day
Handover Report	11e (1)	Contractor submits draft Handover Report to the Engineer.	No later than two months prior to the Date of Completion of the Contract	10 per day
	11e (2)	Engineer either accepts the report or notifies the Contractor of any inaccuracies or other inadequacy of the report.	Within 14 days after submission of the Handover Report	N/A
	11b (3)	Contractor submits final Handover Report, in which the comments of the Engineer are addressed and the report updated with any changes in the information contained in therein.	One day prior to the Completion of the Contract	15 per day

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3304 Operational Services

The operational services include the activities needed to maintain the satisfactory condition of the road assets, to assure their durability, as well as to satisfy the road users riding comfort requirement. This includes basically routine maintenance works but could include resurfacing, asphalt concrete overlays and replacement of road side assets such as road signs, crash barriers or other road related assets. These requirements are defined through Operational Service Levels, which the contractor needs to comply with during the entire Phase2.

There are 3 Categories of Operational Service Levels:

a) Operational Service Levels Category A: They are the ones that are considered very important and need to be rectified within a short period of between 1 hour and 48hours.
b) Operational Service Levels Category B: They are considered less important. Although the Contractor is required to frequently control that these OSL are complied with, they will attract Payment Reduction Points only if they are not complied and detected during the Joint Monthly Inspection.
c) Operational Service Levels Category C: They are controlled only once per year.

For each of the 3 Categories of Operational Service Levels the OLS number, the Item, the Operational Service Level, the Count Unit and the Payment Reduction Points are specified. For the Categories A and C, the Rectification Periods are specified as well.

The Count Unit defines the unit for the application of the Payment Reduction Points, which is either per item, per event, per 1 km of double lane roadway, per 100 m of shoulder, etc. The Count Unit of 1 km of double lane roadway means between two adjacent kilometer posts. The Count Unit per 100 m of double lane roadway refers to 1/10 of a kilometer, whereby the kilometer is divided into 10 sections of 100 m.

For each Item defined in the Tables 33.2 to 33.3, the Payment Reduction Points shall be applied when one or more Operational Service Levels are not complied with. Payment Reduction Points shall be applied for each Item only once, even if several OSL are not complied with for the same Item.

For any section of a four lane highway, "double lane roadway" means the two lanes on each side of the medium.

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(1) Operational Service Levels Category A

Note: The detection and measurement of Operational Service Level shall be achieved by visual inspections using the appropriate measuring tools such as a ruler, tape measure, 3.5 m spirit level straight edge (unless indicated differently in the respective OSL), measuring wheel, odometer of a vehicle, reflectometer or equipment for compaction testing and for coring.

Table 33.2: Operational Service Level for Category A

OLS No.	Item	Operational Service Level	Count Unit	Payment Reductions Points	Rectification Period
A.1	Lane Closure	Maximum number of closed lanes at any given time: 1 lane Maximum length of closed lane: 300m Minimum distance between closed lane sections: 500 m Minimum advance notice: 24 hours	Per event	3	12 hours
A.2	Potholes, including de-laminations on paved surfaces	Maximum diameter: 150 mm or equivalent surface area and /or Maximum depth: 30 mm Not more than 3 potholes in 1 km of double lane roadway. During the rainy season temporary patching of potholes is allowed. These potholes shall be patched permanently latest during the following dry season.	Per item	3	48 hours
A.3	Slides up to 50 m^3	No slide of slope material on the road blocking any lane or shoulder **Notes:** Clearing of slides up to 50 m^3 shall be part of Maintenance Works. Clearing of slides over 50 m^3 shall be part of Emergency Works	Per event	4	On roadway: 24 hours On shoulders: 48 hours
A.4	Oil spills on pavements	No oil spills more than 50 cm^3 shall be allowed	Per event	5	6 hours
A.5	Other Obstructions on paved roadway and shoulder, unpaved shoulders and roadway (e.g.: rocks, tree branches, animal carcasses, abandoned vehicles, etc.)	No obstruction posing a potential traffic or safety hazard shall be allowed. Maximum volume of obstruction that is not posing a traffic or safety hazard: 150 cm^3 Maximum quantity of debris that does not pose a traffic or safety hazard: 1 kg per 5 m^2 pavement surface	Per 100 m of double lane highway	4	4 hours if hazardous 48 hours if not hazardous
A.6	Culverts, inlets, outlets, Drainage pipes	Not more than 25% of flow area or cross section is blocked during rainy season	Per structure	4	24 hours

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OLS No.	Item	Operational Service Level	Count Unit	Payment Reductions Points	Rectification Period
A.7	Ditches	Not more than 25% of flow area or cross section is blocked during rainy season	Per 50 m of ditch	4	24 hours
A.8	Catch basis	Not more than 25% of sedimentation	Per structure	4	24 hours
A.9	Regulatory and Warning signs	Missing sign Sign obscured by vegetation (sight distance of a driver of 100 m on the roadway)	Per sign	4	24 hours
A 10	Temporary signs and safety devices for works	Missing sign or safety device Signs and safety devices not removed after termination of works	Per work place	4	24 hours
A.11	Waterways	During rainy season: Free flow of water under bridge and up to 50 m upstream and downstream shall not be obstructed by more than 15% of the cross section of riverbed up to design clearance under bridge as per original design	Per bridge	4	48 hours

(2) Operational Service Levels Category B

Note: Count unit of 1 km means between two adjacent kilometer posts. The detection and measurement of Operational Service shall be achieved by visual inspections using the appropriate measuring tools such as a ruler, tape measure, 3.5 m spirit level straight edge (unless indicated differently in the respective OSL), measuring wheel, odometer of a vehicle, reflectometer or equipment for compaction testing and for coring.

Table 33.3.1: Operational Service Levels for Bituminous/Asphalt Concrete Pavement

OLS No.	Item	Operational Service Level	Count Unit	Payment Reduction Points
B.1.1	Cross fall of pavement of double lane roadway	Maximum tolerance: +0% and -0.5% for road sections repaired by Contractor	Per 100 m of double lane roadway	30
B.1.2	Patches	Shape: Rectangular and parallel to road centerline. Circular patches less than 100 mm diameter are allowable Maximum level tolerance with surrounding pavement: +/-10 mm including seals Materials: Equal or better than the surrounding pavement No unsealed cracks wider than 3 mm Temporary patching is allowed during rainy season, but permanent patching is required during the following dry season	Per patch	1
B.1.3	Linear Cracks	Maximum width of unsealed cracks: 5 mm of more than 10 m aggregated length Sealant height tolerance: +/- 5 mm of adjacent pavement surface of more than 5 m aggregated length	Per 100 m of double lane roadway	2
B.1.4	Multiple cracks	Maximum cracked area of 20 m^2 and maximum	Per 1 km of	2

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OLS No.	Item	Operational Service Level	Count Unit	Payment Reduction Points
	(alligator cracking)	width of unsealed cracks: 3 mm Sealant height tolerance: +/- 10 mm of adjacent pavement The "cracked area" is equivalent to the rectangular area fully enclosing the cracks, where the outermost crack is at least 100 mm inside the rectangle	double lane roadway	
B.1.5	Depression, Rutting, Corrugation	Maximum depth of 20 mm for an aggregated length of more than 50 m. Depth measured with a 1.2 m straight edge	Per 1 km of double lane roadway	2
B.1.6	Heaves and Shoves	Maximum height: 25 mm measured with 1.2 m spirit level straight edge centered on the heave and adjusted parallel to the pavement surface	Per item	1
B.1.7	Surface drain defects	Ponding of water: Maximum depth of 20 mm at any point and surface area of more than 1 m^2	Per 100 m of double lane roadway	3
B.1.8	Raveling	Less than an aggregated surface area of 15 m^2 Raveling is defined as a loss of binder of more than 5 mm in depth or loss of surface material of more than 10 mm in depth.	Per 100 m of double lane roadway	3
B.1.9	Edge damage	Maximum length from the edge of the paved roadway towards the centerline of the roadway of 150 mm and an aggregated length along the road edge of maximum of 2m Edge damage of pavement with sealed shoulders shall be treated like potholes, see items A.2 and B.1.2above	Per 1 km of double lane roadway	3
B.1.10	Edge drop off	Pavement edge shall not be lower than the adjacent paved shoulder and not higher than 20 mm at any point Maximum height difference between pavement and adjacent paved road surfaces at junctions: +/- 30 mm for an aggregated length of 3 m Pavement edge shall not be lower than the adjacent unpaved shoulder and not higher than 50 mm for an aggregated length of 10 m Maximum height difference between pavement and adjacent unpaved paved road surfaces at junctions: +/- 20 mm for an aggregated length of 1 m	Per 1 km of double lane roadway	2
B.1.11	Flushing, bleeding or Glazing	Within horizontal curves, approach to curves or intersections, and within an intersection: Maximum aggregated surface area 10 m^2 In other road sections: Maximum aggregated surface area 100 m^2	Per 1 km of double lane roadway	4

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OLS No.	Item	Operational Service Level	Count Unit	Payment Reduction Points
B.1.12	Surface dressing, overlays	Shape: Rectangular and parallel to the road center line Maximum level tolerance with surrounding pavement: – 0 mm and +15 mm Materials: Equal or better than the surrounding pavement Applications of surface dressings or overlays require the prior approval of the Engineer. Pavements have to be repaired and inspected by the Project Manager prior to applying surface dressings or overlays.	Per 1 km of double lane roadway	4
B.1.13	Pavement Width	Road width after completing upgrading works to be maintained with a tolerance of + / - 50 mm For edge damage see B.1.11 above	Per 1 km of double lane roadway	3

Table 33.3.2: Operational Service Levels for Unsealed Roads Crossing at Intersections

Note: Unsealed roads crossing the main roadway at intersections shall comply with the following Operational Service Levels up to a distance of 10 meters (both ways) from the edge of the main roadway.

OLS No.	Item	Operational Service Level	Count Unit	Payment Reduction Points
B.2.1	Surface defects	Maximum diameter: 250 mm or equivalent surface area and Maximum depth: 50 mm	Per item	1

Table 33.3.3: Operational Service Levels for Sealed Shoulders

OLS No.	Item	Operational Service Level	Count Unit	Payment Reduction Points
B.3.1	Width	Maximum tolerance: +200 mm / -50 mm of design width	Per 1 km of shoulder	10
B.3.2	Cross fall	Maximum tolerance: +0% and -2% for shoulders repaired by Contractor	Per 1 km of shoulder	5
B.3.3	Potholes	Not more than 5 potholes smaller than 150 mm	Per 1 km of shoulder	2
B.3.4	Patches	Shape: Rectangular and parallel to road centerline. Circular patches less than 100 mm in diameter or equivalent surface area are allowable Maximum level tolerance with surrounding shoulder: -10mm and +20 mm including seals Materials: Equal or better than the surrounding shoulder No unsealed cracks wider than 3 mm For repairs of the base of more than 5 m² compaction data shall be supplied.	Per item	1
B.3.5	D5:	Maximum width of unsealed cracks: 5 mm	Per 100 m of	2

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OLS No.	Item	Operational Service Level	Count Unit	Payment Reduction Points
	Linear Cracks	Maximum width of unsealed cracks: 3 mm for an aggregated length of 10 m Sealant height tolerance: +/- 10 mm of adjacent shoulder surface	shoulder	
B.3.6	Multiple cracks (alligator cracking)	Maximum width of unsealed cracks of 3 mm for an aggregated surface area of more than 15m^2 Sealant height tolerance: +/- 10 mm of adjacent shoulder The "cracked area" is equivalent to the rectangular area fully enclosing the cracks, where the outermost crack is at least 100 mm inside the rectangle.	Per 100 m of shoulder	2
B.3.7	Depressions	Maximum depth of 25 mm for an aggregated length of 10 m Measurement of depth with a 1.2 straight edge	Per 100 m of shoulder	1
B.3.8	Heaves and Shoves	Maximum height or depth of 35 mm measured with a 1.2 m spirit straight edge centered on the heave and adjusted parallel to the shoulder surface	Per item	1
B.3.9	Surface drain defects	Ponding of water: Maximum depth of 30 mm and maximum surface area of 2 m^2	Per 100 m of shoulder	2
B.3.10	Edge damage	Maximum length from the edge of the paved shoulder towards the centerline of the road: 150 mm and an aggregated length along the road edge of 3 m	Per 100 m of shoulder	2
B.3.11	Edge drop off	Shoulder shall not be higher than 60 mm for an aggregates length of 10 m than the adjacent surface on the outer edge	Per 100 m of shoulder	1
B.3.12	Vegetation	No vegetation growing on the sealed shoulders	Per 100 m of shoulder	1

Table 33.3.4: Operational Service Levels for Unsealed Shoulders

OLS No.	Item	Operational Service Level	Count Unit	Payment Reduction Points
B.4.1	Width	Maximum tolerance: +200 mm / -50mm of design width	Per 100 m of shoulder	2
B.4.2	Cross fall	Maximum tolerance: +0% and -2% for shoulders repaired by Contractor	Per 100 m of shoulder	2
B.4.3	Potholes	There shall be no pothole bigger than 350 mm in diameter or equivalent surface area and deeper than 30 mm There shall be not more than 10 potholes bigger than 200 mm in diameter and more than 30 mm deep in any continuous 1 km of shoulder	Per 1 km of shoulder	2
B.4.4	Patches	Patches shall be of the same material as the surrounding road surface material, properly compacted and in level with the adjacent road surface within a tolerance of +/- 30 mm	Per 1 km of shoulder	1

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OLS No.	Item	Operational Service Level	Count Unit	Payment Reduction Points
B.4.5	Ruts or corrugations	Maximum depth of 60 mm for an aggregated length of 50 m in any 1 km of shoulder Maximum depth measured with a 1.2 m straight edge	Per 1 km of shoulder	2
B.4.6	Surface drain defects	There shall be no ponding of water more than 40mm deep with an area of more than 1 m² within a distance of 1.5 m of the edge of the pavement	Per 100 m of shoulder	2
B.4.7	Vegetation (e.g.: grass, weeds, plants)	Maximum height of 200 mm for an aggregated surface area of 100 m^2	Per 1 km of shoulder	2

Table 33.3.5: Operational Service Levels for Drainage System, Slope Protection Structures

OLS No.	Item	Operational Service Level	Count Unit	Payment Reduction Points
B.5.1	Slopes of drainage system	There shall be no negative slope	Per 100 m of dual lane roadway	2
B.5.2	Uncovered ditches and drains with or without lining	Maximum area of obstructed cross-section at any point: 15% during the non-rainy season Maximum width of cracks in lined channels: 15mm Maximum diameter of holes: 40 mm Maximum area of damaged lining: 10% per 5 m length	Per 50 m of ditches and drains	2
B.5:3	Covered Drains	No major damage that may pose safety hazards to pedestrians or vehicles or allow water to leave the channel. Maximum area of obstructed drainage cross-section: 15% during the non-rainy season Maximum damaged surface area of each cover: 10% Maximum space between covers: 40 mm Maximum area of obstructed cover openings: 20% (excluding covers sealed with asphalt or concrete) Maximum level tolerance with adjacent covers: +/- 20 mm Maximum level tolerance with adjacent pavement: +15 mm and -20 mm	Per 50 m of covered drains	2
B.5.4	Culverts and headwalls	Culverts shall be structurally sound and firmly contained by surrounding soil or material with no major damage to allow water to seep through the wall of any culvert Maximum area of obstructed culvert cross-section of 15% during the dry season	Per culvert or headwall	2

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OLS No.	Item	Operational Service Level	Count Unit	Payment Reduction Points
		Headwalls shall be structurally sound and firmly contained by surrounding soil or material with no major damage		
B.5.6	Manholes, inlets, outlets, drainage pipes, and catch basins	Manholes, inlets, outlets, drainage pipes, and catch and sedimentation basins shall be structurally sound and firmly contained by surrounding soil or material with no major damage to allow water to seep through the structure Maximum sedimentation: 20% during the non-rainy season Maximum area of obstructed cross section: 15% during the non-rainy season Less than 30% of the cross-section shall be obstructed up to 2 m in front of any manhole, inlet and catch basin.	Per item	1
B.5.7	Manhole cover, grates	Maximum level tolerance with surrounding surfaces: +/- 10 mm Less than 20% of the flow area is obstructed	Per item	1
B.5.8	Kerbs and gutters	Maximum surface damage: 10% of any 10 m length	Per 100 m length per item	1
	Debris racks	Debris racks shall be structurally sound and less than 30%obstructed		
B.5.9	Slopes and cuts	Slope protections and gabions in place and functional Maximum cross sectional dimension of erosion gullies: 200 mm x 200 mm for more than 10m	Per 100 m of slope measured parallel to the centerline of the roadway	1
B.5.10	Retaining walls, cut-off walls and similar structures	Structurally sound and not more than 100 mm displaced from the original place and firmly contained by surrounding soil or material Maximum surface damage: 5% of any surface area of 1m2 Maximum width of cracks on concrete structures: 5 mm Maximum width of cracks on non-concrete structures: 10 mm Maximum numbers of blocked weep holes: 10% per structure	Per item	1

Table 33.3.6: Operational Service Levels for Road Signs, Pavement Markings and other Safety Devices

OLS No.	Item	Operational Service Level	Count Unit	Payment Reduction Points
B.6.1	Regulatory, Warning, Information	All signs as per Drawings are in place Uniform intensity, clean, legible, and	Per item	2

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OLS No.	Item	Operational Service Level	Count Unit	Payment Reduction Points
	Signs and Hazard markers	structurally sound Minimum visibility distance at day and night (with low beam headlights) 150 m or if in doubt more than 70% of the required original retro reflectivity Maximum bending of sign face from original position: 30mm Post must be in place, structurally intact and properly connected to the foundation with less than 5% of its surface corroded Maximum inclination of posts from the vertical: 5%		
B.6.2	Road Markings	All markings as per Drawings are in place Uniform color and intensity, legible and firmly attached to pavement Minimum visibility distance at night: 150 m with low beam headlights Maximum length of damaged or missing edge or centerline markings: 15 m Maximum area of damaged or faded sign markings or markings of pedestrian crossings: 20% Maximum misalignment: 30 mm	Per 100 m of double lane roadway	2
B.6.3	Raised pavement markers or reflective pavement studs	Maximum missing/damaged markers: 5 Maximum number missing/damaged markers in curves:1 Minimum visibility distance at night:150 m with low beam headlights The reflective area of markers is higher than the pavement level	Per 100 m of double lane roadway	2
B.6.4	Kilometer posts	Present, properly painted, clean, legible, and firmly founded on the ground Maximum inclination from vertical: 8 degrees	Per item	1
B.6.5	Drainage markers, bollards or similar structures	All structures as per drawings are in place Properly painted, clean, 90% free of corrosion or damages Maximum inclination from vertical: 8 degrees	Per item	1
B.6.6	Kerb stones, traffic islands	Maximum surface damage of any kerbstone:10% Kerb stones and traffic islands shall not pose potential hazard to pedestrians	Per 1 km of double lane roadway	1
B.6.7	Concrete barriers	All structures as per drawings are in place Properly painted, clean and structurally sound	Per 1 km of double lane roadway	1

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OLS No.	Item	Operational Service Level	Count Unit	Payment Reduction Points
		Maximum misalignment: 100 mm Maximum damages: 5% of the surface area of any 1 m of barrier		
B.6.8	Guard rails and safety or crash barriers of metal	Guard rails and safety or crash barriers are in place Not more than 3 reflectors are missing or not functional Properly painted where required and free of severe corrosion Structurally sound with all fixing bolts present and secure Maximum misalignment: 100 mm of the original horizontal or vertical position	Per item and per 50 m length	2
B.6.10	Highway lighting	Lightning columns must be present, functional and more than 95% free from damage and corrosion Electrical installations must be electrically safe and functional	Per 1 km of double lane roadway	2

Table 33.3.7: Operational Service Levels for Vegetation and Litter Control

OLS No.	Item	Operational Service Level	Count Unit	Payment Reduction Points
B.7.1	Vegetation (Grass, weeds, plants)	Vegetation height shall be between 50 mm and 600 mm within 50 cm of the outer edges of drainage ditches or the outer edge of the shoulders or embankments. For grass and weeds there shall be not more than 20 m^2 deviations from the above-mentioned heights in any continuous 100 m of double lane road section. Vegetation height shall be between 30 mm and 300 mm around: • Edge marker posts • Signposts • Bridge end and culvert markers • Guardrails • Sight rails • Lighting Columns • Bridge abutments Vegetation height shall be less than 250 mm around or in: • Kilometer post • Drainage markers • Culvert ends • Culvert headwalls • Side drains • Culvert waterways • Surface water channels	Per 1 km of the centerline of the double lane roadway	3

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OLS No.	Item	Operational Service Level	Count Unit	Payment Reduction Points
		□ Kerb and channel □ Lined channels □ All sealed surfaces □ Bridge decks. Vegetation height shall be between 30 mm and 200 mm on: □ Medians □ Traffic islands □ Verges AND There shall be not more than 30 m^2 deviations from the above-mentioned heights in any continuous 100 m of double lane road section. Vegetation shall not hinder the free flow of water.		
B.7.2	Trees, limbs, shrubs and creepers located within the right-of-way	There shall be not shrubs or trees encroaching into the Vegetation Free Zone from the side or top. The Vegetation Free Zone is the area up to 5 m above the roadway and shoulders, and 3 m above a zone of 2 m lateral clearance besides shoulders. Vegetation shall not obscure any road signs or markers or limit sight distance on the inside of curves by more than 50 m. There shall be no dead or leaning trees or other vegetation within the right-of-way Approval of the Employer is required to remove trees with stem diameter more than 100mm	Per 1 km of the centerline ofthe double lane roadway	2
B.7.3	Litter	Maximum number of litter items greater than a fist size in any 1 km of double lane road: 50 pieces in the right of way outside built-up areas	Per 1 km of the centerline ofthe double lane roadway	15
B.7.4	Structures made by third parties	No structures like billboards of third parties within the right of way unless authorized by the Employer.	Per 1 km of the centerline of the double lane roadway	

Table 33.3.8: Operational Service Levels for Bridges

OLS No.	Item	Operational Service Level	Count Unit	Payment Reduction Points
B.8.1	Approach to bridges	Maximum level tolerance between bridge deck and approaches: +/- 25 mm measured from the end of deck up to 1.5m into the approaches	Per bridge	2
B.8.2	Structures	Less than 10% of each the structural element shall show corrosion or missing paint The color of the paint shall be uniform and of the same intensity	Per bridge	3
B.8.3	Expansion joints	More than 95% of each expansion joint shall be clean, without major damage, and	Per bridge	2

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OLS No.	Item	Operational Service Level	Count Unit	Payment Reduction Points
		shall not pose any hazard to vehicles		
B.8.4	Drains	More than 80% of drains of each bridge shall be more than 80% open	Per bridge	3
B.8.5	Railings	Less than 10% of the surfaces of the railings shall show corrosion or missing paint Paint shall be of uniform color and of same intensity	Per bridge	1
B.8.6	Scouring around bridge piles and erosion retaining walls	Erosion around bridge abutments and piers and on retaining walls (gabions, pitch, concrete) shall be less than 5% of the respective surface areas Cracks shall be less than 30 mm wide for pitch walls and less than 10 mm for concrete walls	Per bridge	2
B.8.7	Waterways	Free flow of water under bridge and up to 50 m upstream and downstream shall not be obstructed by more than 15 % of the cross section of riverbed up to design clearance under bridge as per original design	Per bridge	3

(3) Operational Service Levels Category C

Table33.4 Pavement Roughness Survey

OLS No.	Item	Operational Service Level	Count Unit	Payment Reduction Points	Rectification Period
C.1.1	Roughness of pavement of highway	Lane-wise average IRI of the entire contract road length less than 3 m/km	Entire Contract Road Length	1,000	3 months
C.1.2	Roughness of pavement of highway	Average IRI of any continuous one lane kilometre less than 4 m/km	1 km lane	100	3 months

(4) Pavement Roughness

The indicator to be used to determine the road roughness will be the International Roughness Index (IRI), whose measure unit is expressed in meters per kilometre (m/km).

An equipment meeting the Class III: Response Type Road Roughness Measuring System (RTRRMS) precision shall be used to measure the IRI. The measure of roughness shall be made in a continuous manner in the wheel-tracks of each lane of the carriageway. The equipment shall be calibrated/validated in accordance with the manufacturer's recommendations and from observation during previous use.

The IRI shall be measured at the end of Phase 1: Upgrading Works, at the beginning of Phase 2 and in 12 months' interval thereafter. The final measurement of IRI will be done 3 months before the end of Phase 2. The measurement shall be made in the presence of the Employer's and/or Engineer's Representative.

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(5) Verification of Operational Service Levels

a) Service Level Inspections by the Contractor

Under the terms of the contract, the Contractor is required to inspect all roads and road assets that have to be maintained under this contract with sufficient frequency to ensure that they always comply with the Operational Service Levels (OSLs). The contractor shall therefore develop and implement a regime of inspections, sufficient to comply with this requirement, and shall document this inspection regime in his Operational Plan.

Any non-compliance with the OSLs discovered during any inspection shall be recorded.

The record of each defect shall comprise:

(i) Its location reference (GPS position);

(ii) Attributes of the defect;

(iii) As appropriate, further textual notes;

(iv) A photograph taken with a digital camera and bearing a date and time stamp. The

same procedure applies to the repair of each defect.

The record of each inspection shall be recorded and shall be included in the Monthly Reports.

The contractor shall submit the Contractor's Monthly Operational Service Level Inspection Report and the Monthly Evaluation Form for Compliance with Operational Service Levels to the Engineer on the last working day of the respective month. The format of these tables shall be submitted by the Contractor for the Employer's approval within 15 days after the Commencement Date of Phase 2.

For all non-compliances with Operational Service Levels detected by the Contractor during a month and that are rectified during the same month, no payment reductions will be made with the exception of Operational Service Levels of the Category A. In this case Payment Reduction Points will be applied if the contractor does not rectify the non-compliance within the rectification period defined in Table 33.2

The Contractor shall conduct night inspections at least every month at the end of the month to ensure that when driving at night the road is safe and signs are readily visible at night.

b) Inspections by the Engineer

The Engineer may carry out inspections at anytime and anywhere on the roads included in the contract in order to assure that:

- the Contractor is complying with the Operational Service Levels of the Category A,
- the Contractor has reported the compliance with the Operational Service Levels correctly, and
- the Works are executed in accordance with the Contract provisions.

c) Joint Monthly Inspections by the Engineer and the Contractor

Joint Monthly Inspections are carried out by the Contractor (through his Performance Monitoring Unit) under the supervision of the Engineer. The main purpose of the Joint Monthly Inspections is to enable the Employer to verify the information given by the Contractor in his Monthly Evaluation Form for Compliance with Operational Service Levels.

Starting on the first working day of each month the Contractor and the Engineer shall jointly inspect at least 50% of the road length to check the correctness of the Contractor's Monthly Operational Service Level Inspection Report of the previous month. The selection of road sections to be inspected shall be decided by the Engineer. Any additional non-compliance detected during the joint monthly inspection will be recorded. If the Engineer finds more

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than 20% additional number of non- compliances during this inspection than have been recorded by the Contractor in his Monthly Operational Service Level Inspection Report for the inspected road sections, the Payment Reduction Points for all non-compliances detected by the Engineer will be multiplied by a factor of four for the respective month.

In every 3 months, the Joint Monthly Inspection shall include an inspection by night.

As a result of the joint monthly inspection a Memorandum of Non-Compliance with Operational Service Levels shall be issued and signed by the Contractor and the Employer. Based on the Memorandum of Non-Compliance with Operational Service Levels, the Employer will, within 21 days, review and correct as necessary the Contractor's monthly statement and issue the corresponding Interim Payment Certificate to the Contractor in accordance with the General Conditions of Contract.

3305 Payments

1) Basis of Payments

All works and services performed in Phase 2 are deemed to be covered and paid for by the Monthly Lump Sum per kilometer indicated in the Bill of Quantities. Only Day works and Emergency Works shall be paid on unit price bases as specified in the Bill of Quantities.

The works and services shall cover all costs associated with Contract obligations during Phase 2, which are not specifically provided for elsewhere, including (but without being limited to) the provision of insurances, security, implementing quality plan requirements, all social, environmental, safety and traffic management requirements, conducting various inspections, surveys, etc.

2) Payment Reductions

In accordance with these Specifications, payment reductions are applied in case of non-compliance with Operational Service Level requirements.

Where the Contractor fails to comply with Management Service Levels or Operational Service Level, the Employer shall deduct moneys from payments due under the Contract. Payment Reduction Points are specified for each non-compliance with Service Levels.

For the Management Service Levels Payment Reduction Points shall be applied when the Contractor does not comply with the Management Service Levels defined in Table 33.1 above.

For Operational Service Levels Category A, the Payment Reductions Points shall be applied when the Engineer detects the non-compliance and communicates the non-compliance to the Contractor. After receipt by the Contractor of the communication of the Engineer concerning the non-compliance, the time starts for the Contractor to rectify the respective non-compliance within the Rectification Period in Table 33.2. Payment Reduction Points shall be applied if the Contractor does not rectify the non- compliance within the Rectification Period. For each additional Rectification Period in which the Contractor does not rectify the non-compliance further Payment Reduction Points shall be applied until the non-compliance has been rectified. If the same non-compliance is not rectified within one month after the date of the first detection, the Employer may contract a third party to rectify the non- compliance at the cost of the Contractor. The same procedure shall be applied if the Contractor detects a non-compliance, except that no Payment Reduction Points shall be applied for the detection of the non-compliance.

For the Operational Service Levels Category B, the Payment Reduction Points shall be applied for any non-compliance of OSL detected by the Contractor at the end of the month or the Joint Monthly Inspection. If any non-compliance has not been rectified before the next Joint Monthly Inspection, the non-compliance will be counted. In addition, 1 Payment Reduction Point shall be applied for each calendar day the non-compliance is not rectified.

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If the same non-compliance is still not rectified until the following Joint Monthly Inspection, the Employer may contract a third party to rectify the non- compliance at the cost of the Contractor.

For the Operational Service Levels Category C, The Payment Reduction Points shall be applied when the Contractor does not rectify the non-compliance within the Rectification Period. For any further period of one month, in which the non-compliance is not rectified, the Payment Reductions Points shall be applied again, until the non-compliance is rectified. If the same non-compliance is still not rectified within 6 months of the first detection, the Employer may contract a third party to rectify the non-compliance at the cost of the Contractor.

3306 Emergency Works

(1) Description of Emergency Works

The Contract includes Dayworks and Provisional Sum for Emergency Works to be executed during Phase 2 of the Contract. Emergency Works are designed to repair damage to the roads caused directly by natural or manmade phenomena with consequences occurring either in the area of the roads or elsewhere, but with a direct impact on the roads. Such phenomena may include: tropical depression, rainfall and winds of extraordinary intensity and/or duration, major landslides within or outside the right-of-way, floods with water levels above normal maximum flood levels, earthquake, major accidents or similar events causing considerable damage to the road.

Damage requiring repair by Emergency Works can be generally described as for example:

(i) complete destruction of a culvert or other similar structure,
(ii) road washouts or other damage equivalent to more than 50 m^3 of material on a road section of 500 meters length,
(iii) submersion of road along more than 100 meters length provided that the submersion is, in the opinion of the Employer, not the result of deficiencies in the drainage system or of insufficient maintenance of drainage structures, among others.

Eligible damage does not include "normal" damage, such as trees falling on the road, minor erosion of the road and embankments, and minor damage caused by traffic accidents, which shall be made good by the Contractor as part of the Works. Providing full support to the police and road users and arranging of signing and clean-up of the site or similar works as necessary are part of Works.

(2) Obligations of Contractor during Emergencies

During execution of Emergency Works the Contractor shall ensure that Operational Service Levels on the road are maintained. In particular, the Contractor shall ensure the normal use of the road including those sections affected by emergencies.

The Contractor shall take the measures necessary to reopen the road to traffic at the earliest possible time and maintain the road open during Emergency Works, without being entitled to any separate compensation for those measures. If necessary, the Contractor shall provide temporary detour roads as approved by the Employer.

(3) Minor Works

Minor works that are below the thresholds indicated in the following Table 33.5 shall be carried out by the Contractor as part of the normal PBM Works, and a Work Order is not required. The Contractor shall inform the Employer of the damage and the rectification works undertaken.

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Table 33.5: Thresholds of Some Activities for the Normal PBM Works

Activity	Unit	Maximum quantity per event to be rectified under normal PBM Works
Slides of material	m^3	50
Asphalt concrete	m^3	7
Sub-base course	m^3	25
Base course	m^3	15
Concrete (of any type)	m^3	5
Stone masonry	m^3	10
Gabion masonry	m^3	15
Embankment	m^3	50

(4) Procedure for Requesting Emergency Works

When damage falling under Emergency Works results in a reduction of any of the Operational Service Levels specified in this Contract, the Contractor shall make a formal request to the Employer to allow him to carry out Emergency Works to rectify that damage.

In such a case, the Contractor shall (i) immediately inform the Employer of his intention to do so by telephone, SMS or other means, (ii) document the circumstances of the event and the damage caused through photographs, video and other suitable means, (iii) prepare a written request stating the type of works he intends to carry out, their exact location, the estimated quantities and costs, the time required to complete the works and any other information as the Contractor may deem necessary. The request for Emergency Works shall be made immediately after the Contractor becomes aware of the existence of the damage.

Within 48 hours after receipt of the request, the Employer shall evaluate the request based on a site visit, and issue a Work Order to carry out the Emergency Works. The Work Order shall specify the type of works, their estimated quantities, estimated valuation, and the time allowed for their execution.

(5) Operational Service Levels

The Emergency Works shall comply with the requirements of the Specifications and/or applicable Standards and be subject to the Employer's approval. There is no individual Operational Service Level requirement for these works.

The Emergency Works are intended to assist the Contractor in bringing the road up to the required Operational Service Levels within the time frame allowed by the Employer in the corresponding Work Order.

Failure to bring the road to the required Operational Service Levels within the stated time frame shall result in deductions of the Monthly Payments to be decided by the Employer. The payment deductions shall not be higher than 15% of the amount for the Emergency Works.

The Contractor shall correct all non-conformances relating to Emergency Works as specified in the Work Order prior to the Time for Completion of Phase 2. If any section of the road does not meet the Operational Service Levels at the Time for Completion due to uncompleted Emergency Works, Liquidated Damages shall apply.

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If the maximum amount of Liquidated Damages has been exhausted and the non-conformance on road has not been rectified, the cost of remaining rectifications shall be recovered from Retentions, Performance Security, any/or any other monies due or that may become due to the Contractor.

(6) Measurement and Payment

The quantities of completed Emergency Works shall be measured net on drawings or measured at Site, whichever is more appropriate as determined and approved by the Employer. Where required by the Employer, the Contractor shall verify both quantity and quality of the completed works.

Valuation of the completed Emergency Works shall be as established in the corresponding Work Order issued by the Employer for the particular work using appropriate BOQ Unit Rates and Prices or Dayworks Rates, if appropriate.

For the emergency works the budget is allocated in the Dayworks and/or the provisional sums, as appropriate for the payment of the works. The payment for emergency works shall be made at existing Bill of Quantities (BoQ) rates or at appropriate Dayworks rates for each corresponding BoQ pay items with the CPA (Change in Price Adgustment) Such payments shall not be subject to additional overhead as per GCC Clause 13.5 (b) (ii) because of the fact that the BoQ and Dayworks rates quoted by the Contractor are with his overhead.

3307 Appendices for Phase 2

Appendix A: Additional Technical Specifications

(a) Patching of Potholes/Delaminating

(i) General

This covers the repair of the potholes, delaminating and the damaged bituminous surface. The area to be repaired shall be located by the Contractor and marked out in square or rectangular shape, 30 mm beyond the extent of the damaged area, and then it shall be excavated with suitable equipment. The edges shall be cut vertically down to the required depth where the lower layer is suitable without any loose material. If the existing road base is damaged, it shall be also excavated to a depth required and removed as directed by the Engineer. The surface of the excavated area shall be thoroughly cleaned with compressed air to remove all dust and loose particles. The patching then shall be carried out as detailed below. On completion, the patch shall have the tolerances of -0 mm/+10 mm, under a straight edge laid across it.

(ii) Shallow Potholes and Delaminating

Shallow patching shall consist of repairs to the bituminous surface to a depth not exceeding 40 mm.

The area to be repaired shall be excavated and prepared as described in (i) above. The cleaned surface shall be primed with MC 30 cutback bitumen. The sides shall also be tacked / primed with cut back bitumen using brush. The excavated area shall, then, be filled with asphalt premix material. The premix shall have a net bitumen content of 5% to 6% by weight or as per design mix. It shall be compacted with approved mechanical tampers/vibratory roller. After compaction, the surface of the patched area shall be true to the lines and levels of the surrounding existing surface (no "skin patches" are allowable). All loose and/or surplus materials on the surface shall be removed.

Potholes of less than 80 mm in diameter or equivalent surface area do not need to be marked out in square or rectangular shape. They may be filled with asphalt premix after careful cleaning with compressed air to remove all dust and loose particles.

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(iii) Deep Patching

Deep patching shall consist of repairs to the bituminous surface to a depth exceeding 40 mm.

The area to be repaired shall be excavated and prepared as described in (i) above. The excavation shall be filled with base course material with each layer not exceeding 75 mm in thickness and duly compacted up to the existing crust thickness less 40 mm. The surface of the compacted base after thoroughly cleaned with compressed air to remove all dust and loose particles shall be primed with MC 30 cutback bitumen and the sides shall also be tacked/primed with cut back bitumen using brush. The top 40 mm portion above the repaired pothole shall be filled with asphalt premix material. The premix shall have a net bitumen content of 5% to 6% by weight or as per design mix. It of the patched area shall be true to the lines and levels of the surrounding existing surface (no "skin patches" are allowable). All loose and/or surplus materials on the surface shall be removed.

(b) Bituminous Surface Edge Repair

Where loss of bituminous surfacing exists at the edge without damaging the base, edge repair shall be performed as described for shallow patching.

Where damage of the edge extends into the base/subbase, the edge repair shall generally be carried out as specified for deep patching. Excavation shall be to a minimum width of 750 mm covering not less than 200 mm of the carriageway and not loose less than 500 mm of the shoulder.

The excavated area shall be filled with base material to a level 40 mm of below the existing level of the road and compacted as mentioned in deep patching. The surface of compacted base and sides of the excavated area shall be primed/tacked with MC 30 cut back the area shall be filled with asphalt premix material and compacted as specified for the patching. The final surface shall match with the adjacent surface in line and levels.

(c) Repair of Failed Sections

The depth of all dig outs to repair failed sections shall be a minimum 400 mm and all excavated material shall be removed from the site. Where full depth excavation is required, the limit of excavation shall be 25 mm below the existing sub-grade level.

Work shall include the supply, placement and compaction of base course material and the construction of a surfacing layer of 40 mm asphalt premix material, including prime/tack coat.

(d) Removal of Landslide Material

Material from major land slips or other debris or unsuitable material shall be removed and carted to a spoil site approved by the Employer. Work shall include clearing all debris and material from the site, loading, cartage to spoil and disposal.

Appendix B Environmental Management

(a) General

The Contractor shall be solely responsible for any remedial or mitigation measures required by the environment-related effects of any of his maintenance activities. The Contractor shall demonstrate compliance with all environmental stipulations for this project in his Environmental Management Plan (EMP). In case of an environmental problem, the Contractor shall immediately notify the Employer and seek advice on his proposed corrective action. Among the situations that may arise are complaints or legal actions by

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third parties on matters such as environmental damage to property and natural resources, ground subsidence, interruption of groundwater flow and surface or groundwater contamination.

The Contractor shall conform to the Environmental Management Plan, which was prepared by the Employer for this Contract. The Contractor shall take all measures and precautions to avoid any nuisance or disturbance arising from the execution of project activities. This shall, wherever possible, be achieved by suppression of the nuisance at source rather than abatement of the nuisance once generated.

The Contractor is encouraged to recruit local skilled and unskilled labour to increase direct benefits in the project area and to minimize potential environmental issues related to construction camps, disease transmission and cultural disputes. Specific requirements in this regard are noted below. In conformance with the Specifications of which this environmental specification is a part, the Employer may withhold payments and/or stop work in the event of serious or repeated violations of the conditions stipulated herein.

(b) Compliance with Environmental Laws and Regulations

The Contractor shall conform to the Government of Nepal's laws for the protection of the environment and other relevant legislation in force, or in the absence of these, with Asian Development Bank requirements.

The Contractor shall comply with all current environmental laws and regulations of the country, be they national or local, relating to (but not limited to) the following:

- Dust
- Noise
- Vibration
- Air pollution
- Water contamination
- Solid waste disposal
- Liquid waste disposal
- Occupational health andsafety
- Sanitary conditions (water supply, sewerage,etc.).

(c) Avoidance of Nuisance

The Contractor shall be responsible for ensuring that no earth, rock or debris is deposited on public or private rights-of-way as a result of operations, including any deposits arising from the movement of plant or vehicles. The Contractor shall ensure that vehicles exiting the Site of the works do not carry excessive material on the tires.

All water and waste products arising from the site operation shall be collected and removed from the site via a suitably designed temporary drainage system. They shall be disposed of at a location and in a manner that will not cause pollution problems or other nuisance.

The Contractor shall construct, maintain, remove and reinstate as necessary, temporary drainage works and take all precautions needed to avoid damage by flooding and silt transport in the works. He shall also provide adequate precautions to ensure that no spoil or debris of any kind is allowed to be pushed, washed down or deposited on land adjacent to the site.

In the event that any spoil or debris from maintenance works is deposited on adjacent land or washed into the area, then all such materials shall be immediately removed and the affected land restored to its natural state by the Contractor, to the satisfaction of the Employer.

(d) Air Quality

For Reference Only

The Contractor shall not install any furnaces, boilers or other similar plant or equipment using fuel that may produce air pollutants without prior written consent from the Employer.

The Contractor shall not burn debris or other materials on the Site.

The Contractor shall implement dust suppression measures that shall include:

- Effective water sprays shall be used during the delivery and handling of all raw sand and aggregate and other similar materials, when dust is likely to be created and to dampen them during dry, windy weather.
- The Contractor shall require that all vehicles, while parked on the site have their engines turned off.
- The Contractor shall check all equipment and machinery on the site at least once per week and make any necessary corrections or repairs to ensure compliance with safety and air pollution requirements.
- The Contractor shall ensure that vehicles are properly cleaned (bodies and tires free from sand and mud) prior to allowing them to leave the Site.
- The Contractor shall provide necessary cleaning facilities on site and ensure that no water or debris from such cleaning operations is deposited off-site.
- The Contractor shall ensure that trucks used for transporting materials to and from the site are covered with canvas tarpaulins or other type of cover acceptable to the Employer, properly secured to prevent debris and/or materials falling from, or being blown off the vehicle(s).

(e) Water Quality Management

The Contractor shall ensure that no tools or machinery are washed in any water source or areas that drain into a watercourse, canals or channel.

The Contractor shall ensure that all temporary maintenance facilities are located at least 50 m away from any water body.

The Contractor shall check weekly that all equipment is prevented from dripping oil and other lubricants and to ensure that all lubrication and repair operations are carried out only in approved maintenance areas.

(f) Noise and Vibration Control

The Contractor shall consider noise and vibration as an environmental constraint in planning and executing maintenance works.

Noise Control:

The Contractor shall at his own expense, take all appropriate measures to ensure that work carried out by the Contractor, whether on or off the Site, will not cause any unnecessary or excessive noise that may disturb local residents.

Night time work will require the prior written approval of the Employer.

Vibration Control:

The Contractor shall take all necessary measures to ensure that machinery used in the Works will not cause any excessive vibration that may cause damages to any building or structure.

For Reference Only

The Contractor shall be responsible for repairing any damage caused by vibrations generated from or by the use of any equipment, plant and machinery.

(g) Environmental Reports

The Contractor shall submit regular environmental reports to the Employer as a requirement of the EMP. A summary report shall be submitted as part of the Monthly Progress Report. Reports shall comprehensively address all relevant aspects of environmental management.

(h) Environmental Inspections

All project locations including maintenance work sites, plant and equipment areas, staff offices, camps and accommodations that are directly or indirectly associated with the Contract shall be regularly inspected for compliance with the requirements of the EMP and related statutory regulations.

For Reference Only

Appendices

Appendix1: List of Standards

Appendix2: Office and Furniture / Equipment for the Employer

Appendix3: Accommodation and Furniture / Equipment for the Employer

Appendix4: Vehicles for the Employer

Appendix5: Survey Instruments Required at site

Appendix6: Site Laboratory

Appendix7: Laboratory Equipment

Appendix8: Project Signboard

For Reference Only

Appendix 1: List of Standards

The Contractor shall provide for the use of the Engineer, in accordance with the Specifications, copies of the latest editions of the following Standards, Publications and Codes of Practice; or copies of manuals containing details of these Standards:-

TRL ORN 3: A guide to surface dressing in topical and sub-tropical countries

TRLORN18: A guide to the pavement evaluation and maintenance of bitumen – surfaced roads in tropical and sub-tropical countries

TRLORN31: A guide to the structural design of bitumen – surfaced roads in tropical and sub- tropical countries.

TRLRR104: Preparation of cut-back bitumen.

NEPAL STANDARDS (NS)

NS163-2045(1988)	Method of Test for adhesion of galvanising of Gabion Wire
NS169-2045(1988)	Requirements for mild steel wire (for Gabions)

INDIAN STANDARDS (IS)

IS: 73– 1992	Paving Bitumen Specification
IS: 217-1988	Cutback Bitumen-Specification
IS: 1124-1974	Method of Test for water absorption, apparent specific gravity and porosity of natural building stones
IS: 1597–1992	Code of Practice for construction of stonemasonry Part 1 Rubble stone masonry Part 2 Ashlar masonry
IS: 2116–1980	Sand for masonry mortars
IS: 2250-1981	Method of Test for cement mortar
IS: 2386-1963	Method of Test for Aggregates Parts 1-6
IS: 2720	Method of Test for Soils Parts 1-5, 7, 8, 10, 14, 16, 22, 28, 29, 37& 40

BRITISH STANDARDS (BS)

BS: 812-1975	Testing Aggregates Part 1: Methods for determination of particle size and shape. Part 2: Methods for determination of physical properties
BS: 1377	Methods of test for soil for civil engineering purposes
BS: 1881	Methods of testing concrete Parts 5,101-122,124,125,127,129,201-207 & 209

AMERICAN PUBLICATIONS & STANDARDS (ASTM/AASHTO).

AASHTO	Part I: Standard Specification for Materials Part II: Method of Sampling and Testing

All standards provided shall remain the property of the Contractor on completion of the contract.

OTHER PUBLICATIONS

In addition, the Contractor is to be familiar with and be able to provide, in part or in full or photocopies where possible, to the Engineer on a temporary basis the latest editions of the following Standards

For Reference Only

And /or Publications, which are mentioned in the most relevant Sections of the Standard Specifications for Road and Bridge Works, when so requested.

NEPAL STANDARDS (NS)

NS: 1 –2035(1978)	Specification for Burnt Clay Bricks
NS: 40-2040(1983)	Specification for High Density Polythene Pipes
NS: 80-2042(1985)	Specification for Reinforced Concrete Pipes
NS: 84-2042(1985)	Specification for Reinforcing Steel
NS: 112-2042(1985)	Specification for Enamel and Non-reflectorised Paint
NS: 163-2045(1988)	Specification for Smooth Wire
NS: 168-2045(1988)	Specification for Barbed Wire
NS: 190-2045(1988)	Specification for Primer Paint
NS: 191-2045(1988)	Specification for Reinforcing Steel
NS: 199-2046(1989)	Specification for Galvanised Iron (GI) Pipe
NS: 408-2054(1997)	Specification for Road Marking Paint

Other relevant NS documents as required by these Specifications.

INDIAN PUBLICATIONS & STANDARDS

IS: 277-1992	Galvanised Steel Sheets (Plain and Corrugated)
IS: 432-1982	Mild steel and medium tensile steel bars and hard-drawn steel wire for concrete reinforcement
IS456-2000	Code of Practice for plain and reinforced concrete
IS: 1079	Steel plate
IS: 1161	Steel tubes
IS: 1566-1985	Steel mesh fabric (for concrete reinforcement)
IS: 1786-1985	High strength deformed steel bars and wires for concrete reinforcement
IS: 2062-1999	Steel for general structural purpose
IS: 2062-1986	Method of Test for galvanized hardware
IS: 2386	Method of Test for Aggregates Parts 7 & 8
IS2629-1985	Hot-Dip Galvanising of Iron and Steel
IS: 4031	Method of Test for Cement Parts 2, 3, 5& 6
IS: 5758:1992	Pre-cast concrete kerbs, channels, edgings and quadrants

Indian Roads Congress (IRC)

Specifications for Road and Bridge Works (Fourth Revision) 2001

IRC:89	Stone for Pitching/ Revetment on Slopes (Clause5.5.5.1)

Other relevant IS and IRC documents as required by these Specifications.

BRITISH PUBLICATIONS & STANDARDS

BS: 12	Specification for Portland cement Requirements for composition, strength, physical and chemical properties of four strength classes.
BS: 63	Specification for Single-Sized aggregate for general purposes.
BS: 812	Testing Aggregates Methods for determination of soluble Chloride Content. Part 117
BS: 1707	Specification for hot binder distributors for road surface dressings
BS: 3049	Pedestrian guard rails (metal)
BS: 3148	Methods of test for water for making concrete (including notes on the suitability of water)
BS: 5075	Specification for concrete admixtures/workability agents
BS: 6044	Road Paint

For Reference Only

BS: 6088	Reflecting beads (Ballotini)
BS: 6906	Method Of Testing Geotextiles Part 1 - Determination of tensile properties using wide width strips Part 3 - Determination of water flow normal to the plane of geotextile under a constant head. Part 4 - Determination of puncture resistance (CBR puncture test) Part 6 - Determination of resistance to perforation (Cone drop test)
BS: 7263	Part 1:1990 Pre-cast concrete kerbs, channels, edgings and quadrants

Other relevant BS documents as required by these Specifications.

AMERICAN PUBLICATIONS & STANDARDS (Including ASTM/AASHTO)

ASTM: D5	Bitumen Penetration of bitumen/(asphalt)
ASTM:D6/D1754	Loss on heating of bitumen/ (asphalt)
ASTM:D36	Softening point of bitumen/ (asphalt)
ASTM:D92	Flash and fire points of bitumen/(asphalt)
ASTM:D113	Ductility of bitumen/(asphalt)
ASTM: D2026	Standard specification for cutback asphalt (Slow curing type)
ASTM: D2027	Standard specification for cutback asphalt (Medium curing type)
ASTM: D2028	Standard specification for cutback asphalt (Rapid curing type)
ASTM: D4694	Standard specification for Pavement Falling Weight Deflectometer(FWD)
ASTM:E950	Standard specification for Road roughness

Other relevant ASTM documents as required by these Specifications.

Asphalt Institute

Manual SeriesNo.2 (MS-2)-Asphalt concrete hot mix manual
Manual Series No.4 (MS-4) - The Asphalt Handbook
Manual Series No.14 (MS-14) - Asphalt cold mix manual

Other relevant Asphalt Institute documents as required by these Specifications.

For Reference Only

Appendix 2: Office and Furniture/ Equipment for the Employer

Office for the Employer

Each room shall be fitted with sufficient fluorescent light fittings, ceiling fans with regulators and electric outlets. The Contractor shall provide one outside telephone line; with necessary extensions for use in the office. The Contractor shall supply and keep replenished all consumable items.

Furniture and Equipment for the Employer's Office

The furniture and equipment to be supplied and installed in the offices shall be new, and of acceptable quality. The furniture may be steel, aluminium, wood or combination of these. The Contractor should forward details of the items he intends to supply and obtain prior approval from the Engineer.

The Contractor shall provide, install and maintain the furniture and equipment detailed in the table below to the satisfaction of the Employer until the Completion of the Contract.

At Contract Completion the Furniture and Office equipment shall become the property of the Employer.

Furniture and Equipment for the Office of the Employer/Engineer

S. No.	Item	Description	Unit	Quantity
1.	Executive table	750 mm x 1500 mm with two drawer on either side	No	3+3
2.	Clerk table	750 mm x 1250 mm with two drawer on either side	No	4+6
3.	Typist/secretary table	750 mm x 1250 mm with two drawer on one side	No	1+2
4.	Computer table	Purpose made	No	3+6
5.	Conference Table	1250 mm x 3000 mm	No.	1+1
6.	Cushion Chairs		No.	4+4
7.	Arm Chairs with cushion		No.	10+20
8.	Typist Chairs with cushion		No.	1+2
9.	Swivel Chairs		No.	3+6
10.	Steel Almirah	2.0 m high x 1.0 m wide x 0.35m deep with shelves and two doors	No.	3+6
11.	Steel Filling Cabinet	With four drawers	No.	3+6
12.	Book Shelves	1 m x 2 m x 0.3 m 3 shelves	No.	3+6
13.	Gas Heater with cylinders	3 Kw	No.	3+0
14.	Electric Heater	3 Kw	No.	3+3
15.	Office Safe	0.125 cum. Secured to the building	No.	1+0
16.	Bulletin Board	1.2 m x 2.4 m		1+2
17.	White Magic Board	1.5 m x 1.0 m	No.	1+3
18.	Telephone System EPABX	One independent outside line	No.	1+1
19.	Cell Phone	Flagship cell phones with at least 8 GB RAM Complete Set with SIM	No.	3+0

For Reference Only

S. No.	Item	Description	Unit	Quantity
20.	Facsimile Machine		No.	1+0
21.	3 in 1 Printer, photocopier and scanner	A4 LaserJet Printer or equivalent complete with connecting cables, softwareetc	No.	2+0
22.	Stapler	No 56 size heavy duty	No.	1+0
23.	Punch	2 holes heavy duty	No.	2+0
24.	Pencil Sharpener	Table Type	No.	4+0
25.	Camera	Automatic Digital Camera with 10 x Zoom, UV filter, power flash and carrying case with extra 32 GB memory stick	No.	3+0
26.	Scientific Calculator		No.	3+0
27.	Commercial Calculator		No.	2+0
28.	Office Bag		No.	4+0
29.	Rain Coats		No.	4+0
30.	All in one Personal Computers	-Intel i7 processor -Windows 10 Operating System -16 GB DDR 4 RAM, -1 TB Harddrive -minimum 27 inch QHD Touchscreen display	No	4+0
31.	Flat Bed Scanner with ADF	Cannon Scan DR-F120 or equivalent	No.	1+0
32.	Laptop (Ultrabook)	Processor:-Core i7 or above, Display :- 15" QHD Diagonal Bright view Widescreen Display, Memory:- 8 GB or above, SDD-1 TB or above,	No.	2+0
33.	External hard drive	1 TB Capacity	No.	2+0
34.	Color Printer	A3 size, HP color, LaserJet 2600 or equivalent	No.	1+0
35.	UPS	500 VA, Uninterrupted Power Supply for the above computer equipment	No.	4+0
36.	Switch and Server	Network Hub, Lintec Fe 2400 R	No.	1+1
37.	Networking for 6 nos		No.	1+2
38.	Air Conditioner	1.0 ton capacity	No.	16
39.	Electric Fan		No.	4+6
40.	Fire Extinguisher		No.	2+4
41.	First Aid Box		No.	1+2
42.	Filing Trays		No.	4+0
43.	Stationery	Provision of Consumable Items	No.	As required for employer
44.	Waste Paper Basket		No.	4+0
45.	Refrigerator	8 cu.ft Capacity	No.	1+0
46.	Gas Hub	With two gas rings complete with two gas cylinders	No.	1+1

For Reference Only

S. No.	Item	Description	Unit	Quantity
47.	Cooking Utensils	Complete Sets	No.	1+0
48.	Sink Unit Double Basin	With cold water taps and waste water outlet	No.	1+0
49.	Crockery	Complete set for 12 persons	No.	1+0
50.	Cutlery	Complete set for 12 persons	No.	1+0
51.	Tea Service	Complete set for 24 persons	No.	1+0
52.	Electric Kettle	2 Liter capacity	No.	1+0
53.	Emergency Lantern	Rechargeable	No.	4+0
54.	Doormats	Complete Set	No.	1
55.	Curtains	Complete Set	No.	1
56.	Cleaning Equipment Toilets	Complete Set	No.	1
57.	Cleaning Equipment Kitchen	Complete Set	No.	1
58.	Micro oven	Complete Set	No.	1+0
59.	Multi-media projector	Complete Set with screen and stand	No.	1+0
60.	Diesel Generator/Solar	Sound Proof min 15 KVA	No.	1+1

Note: The consumables required for smooth running and maintaining the Office shall be supplied by the Contractor as per the requirement, and to the satisfaction, of the Employer and the Engineer.

For Reference Only

Appendix 3: Accommodation and Furniture / Equipment for the Employer

The Contractor shall provide, install and maintain the furniture, equipment and fittings as shown in the following table to the satisfaction of the Employer. The items shall be new and subject to the approval of the Employer.

The Contractor shall provide, install and maintain the furniture and equipment detailed in the table below to the satisfaction of the Employer until the Contract Completion.

At Contract Completion the Furniture and equipment shall become the property of the Employer.

Furniture and Equipment for the Accommodation of the Employer

S. No.	Item	Description	Unit	Quantity
A	***Verandah***			
1.	Verandah Table	2.0 m X 1.0 m	No	1
2.	Veranda Chair		No	8
B	***Living / Dining Room***			
3.	Lounge Suite	1 No. 3 seater, 2 No. 1 seater,1 No. coffee table and 2 Nos.side tables.	No	2
4.	Dining Table	Formica Topped 2.0 m x 1.2 m	No	1
5.	Dining Room Chairs	Cushioned	No	6
6.	Book case	1.0 m x 2.0 m x 0.35 m x 3 shelves	No	2
7.	Occasional table		No	2
8.	Air Condition	1.0 Ton Capacity	No	4
C	***Study Room***			
9.	Writing Desk	1.5 m x 0.75 m	No	1
10.	Chairs		No	2
11.	Book case	1.0 m x 2.0 m x 0.35 m x 3 shelves	No	1
12.	All in one Personal Computers	-Intel i7 processor -Windows 10 Operating System -16 GB DDR 4 RAM, -1 TB Harddrive -minimum 27 inch QHD Touchscreen display	No	1
13.	Computer Table	Purpose made	No	1
14.	Steel Almirah	2.0m high x 1.0m wide x 0.35m deep with shelves and two doors	No	1
15.	Steel Filling Cabinet	With four drawers	No	1
D	***Bed Rooms***			
16.	Beds (double)	With mattress, four pillows and blanket.	No	2
17.	Beds (single)	With mattress, two pillows and blanket.	No	10
18.	Bedside Cabinet		No	12
19.	Wardrobe with fittings	2 m high, 1.0 m wide, with shelves and two doors	No	8

For Reference Only

S. No.	Item	Description	Unit	Quantity
20.	Bedside Lamp		No	12
21.	Mattress covers		No	36
22.	Pillow Cases		No	84
23.	Mosquito Nets	Double bed and single bed	No	12
24.	Waste paper basket		No	8
25.	Air Condition	1.0 Ton Capacity	No	6
26.	Television	Minimum 40 inch full HD, Smart LED TV.	No	2
E	***Pantry***			
27.	Store shelves set		No	1
28.	Electric Iron and ironing board		No	4
29.	Pantry Cupboards set		No	1
30.	Glass Cabinet		No	2
31.	Refrigerator	8 cu.ft Capacity	No	2
32.	Ro Water Purifier	Minimum 15 L/hr purification capacity	No	2
33	Sink Unit with draining board	with cold water taps and waste water outlet	No	2
F	***Kitchen***			
34.	Kitchen Cupboards set		No	2
35.	Kitchen Table		No	2
36.	Chairs		No	4
37.	Sink Unit with draining board	with cold water taps and waste water outlet	No	2
38.	Electric or Gas Cooker	with 3 – Heater Rings , ~~Grill and Oven complete~~ (with two gas cylinders if gas).	No	2
39.	Electric Kettle	2 – litre capacity.	No	2
40.	Microwave Oven	Complete Set	No	2
41.	Cooking Utensils	Complete set for 12 persons	No	2
42.	Crockery	Complete set for 12 persons	No	2
43.	Cutlery	Complete set for 12 persons	No	2
44.	Tea Service	Complete set for 18 persons	No	2
45	Plate Rack		No	4
46	Washing Machines	-Front loading fully automatic washing machine with at least 5 kg capacity.	No	1
G	***Watch Person Accommodation***		No	
47.	Bed	Single with mattress, two pillows and blanket.	No	2
48.	Wardrobe with fittings	2 m high, 1.0 m wide, 0.35 m deep, with shelves and two doors	No	2
49.	Armless Chairs		No	4
50.	Occasional Table		No	1
51.	Mattress covers		No	2
52.	Pillow Cases		No	4
53	Mosquito Nets		No	2

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S. No.	Item	Description	Unit	Quantity
H	***General***			
54.	Rugs/blankets		No	6
55.	Doormats		No	6
56.	Curtains	Complete Set	No	1
57.	Cleaning Equipment Toilet	Complete Set	No	1
58.	Cleaning Equipment Kitchen	Complete Set	No	1
59.	Cleaning Equipment General	Complete Set	No	1
60.	Diesel Generator/Solar	Minimum 10 KVA complete set	No	1
61.	Air cooler	Minimum 100 liters capacity	No.	1

Note: The consumables required for smooth running and maintaining the Accommodation shall be supplied by the Contractor as per the requirement, and to the satisfaction, of the Employer and the Engineer.

For Reference Only

Appendix 4: Vehicle for the Employer

The type of vehicles the Contractor is required to provide for the exclusive use of the Employer and his staff shall be in accordance with the Specification and Bill of Quantities and shall be as shown below:

Vehicle Type 1

New, or nearly new (not more than one year old), five door Station Wagon (including one rear door) with a diesel engine of at least 2.5 litre capacity, four wheel drive, a minimum ground clearance (unladen) of 200 mm, Air Conditioner, seat cover with wooden beads, seat belts, locking fuel cap, spare wheel, power window, central locking, tool kit, tow rope, jump leads, fire extinguisher and first aid kit.

Vehicle Type 2

New, or nearly new (not more than one year old), "Double Cab" Pick-Up with a diesel engine of at least 2.5 litre capacity, four wheel drive, a minimum ground clearance (unladen) of 200 mm, Air Conditioner, seat cover with wooden beads, seat belts, locking fuel cap, spare wheel, power window, central locking, tool kit, tow rope, jump leads, fire extinguisher and first aid kit.

"Nearly new" means less than one (1) year old and with less than 30,000 km travelled and in general good condition.

All vehicles shall be of current manufacture and shall be registered in the name of the Contractor and shall have a guarantee/warranty for a minimum period of one year. It is assumed that the average running distance is 5,000 km per month for vehicles Type - 1 and Type - 2.

Vehicles will revert to the Contractor when no longer required by the Employer.

Vehicle Type 3

New motorcycle with minimum 150 cc and 4 –stroke engine, with accessories like helmet with visor, leg guard, gloves, jacket, utility box raincoat and boot.

All motorcycles shall be of current manufacture and shall be registered in the name of the Contractor
andshallhaveaguarantee/warrantyforaminimumperiodofoneyear.Itisassumedthattheaverage running distance is 3,000 km per month for motorcycles.

Motorcycles will revert to the Contractor when no longer required by the Employer.

For Reference Only

Appendix 5: Survey Instrument Required at Site

The Contractor shall provide and maintain the following survey instruments and equipment until Contract Completion or as instructed by the Engineer. The items shall be new or nearly new and subject to the approval of the Engineer.

At Contract Completion the survey instruments and equipment shall become the property of the Contractor.

The survey instruments shall also be for the use of the Engineer's Representative until Contract Completion.

The Contractor shall supply immediately replacement for damaged/lost items and be responsible for insurance against theft.

Survey Equipment Required at Site

S. No	Description	Quantity
1	Total Station with Standard Accessories and Aluminum Tripod	1 Set
2	Single Prism with Tribrach Complete Set	2 Set
3	3 mtr. 3 Section Aluminum Ranging Rod	2 Set
4	GPS	2 Set
5	Auto Level with Tripod	1 Set
6	5 mtr 5 Section Levelling Staff	2 Set
7	Clip on Bubble	2 Set
8	50 mtr Nylon Coated Steel Tape	1 Set
9	50 mtr Fiberglass Tape	1 Set
10	30 mtr Fiberglass Tape	1 Set
11	5 mtr Steel Tape	5 Set
12	Field Books	As required
13	Other miscellaneous accessories	As required

The above equipment are minimum numbers required. Depending upon the actual requirements at site, the Contractor shall arrange for other and/or additional survey equipment as instructed by the Engineer.

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Appendix 6: Site Laboratory

1. Scope

The Contractor shall provide and maintain an adequately equipped site laboratory complete with all manpower, utility services, apparatus, furniture and fittings to undertake the required testing to assure the quality of the materials and the works.

Site Laboratory shall be fully equipped with a complete set of equipment as indicated in Appendix – 7. The Contractor is responsible for the cost of undertaking all testing necessary for Quality Assurance purposes. Tests which cannot be carried out in Site Laboratory shall be undertaken by an outside laboratory acceptable to the Engineer. The Contractor shall be responsible for providing the vehicles required carrying out day to day (regular) process control testing and collecting the samples to be tested in Site Laboratory at his own cost.

The Site Laboratory shall be located within 500 m of the site and the laboratory building may be located at the rented building or newly constructed on rented land or constructed on land on lease whatsoever shall be available up to the end of the project.

The working table with shelves for storing the equipment, heavy duty working table, and other racks shall be provided by the Contractor at the laboratory as per the instruction of the Engineer. The Contractor shall supply desktop computer and A-4 size printer at laboratory for sole use of the laboratory. First aid kit box, fire extinguisher and other safety appliances shall also be provided at the laboratory by the Contractor.

In order to operate the site laboratory the Contractor shall deploy at least the following:

- Generator 20 KVA minimum
- Pickup truck
- Quality Control Engineer – 1No
- Laboratory technician – 1No
- Laboratory helpers – 6 Nos (minimum but shall supply additional numbers as required)
- Office boy – 1No
- Security guards (day and night)

2. Description

The Site laboratory shall be newly constructed or rented and furbished to be a laboratory and provided with amenities including water supply, electric supply etc. as indicated below:

- The laboratory shall be provided with 240 volt, 50 HZ electricity. Lighting and sufficient electrical outlets shall be provided to the satisfaction and approval of the Engineer.
- A continuous supply of water with a minimum of two sinks with faucets shall be provided.
- The floor of the building shall be concrete suitably sealed and adequate to support operating test equipment without vibration and undue noise.
- A minimum of 10 metres of work benches, 900 mm high by 750 mm wide, shall be provided. The work benches shall have tops covered with approved plastic laminate or equivalent shall contain adjustable shelves and drawers and shall be constructed of concrete / 19 mm plywood. A minimum of 6 metres of cupboards shall be constructed approximately 600 mm above the workbenches. These cupboards shall have a minimum of two 450 mm high shelves approximately 300 mm deep. All cupboards shall be provided with doors.
- A minimum of four exhaust fans, three ceiling fans with regulators and three opening windows with blinds.
- The laboratory shall be provided with double entrance doors wide enough to unload materials from site vehicles into the laboratory. A minimum clear opening of 2

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metres shall be provided.

The laboratory shall be operated strictly under the supervision of the Consultant's Material Engineer. The manpower supplied by the contractor for the operation of the site laboratory shall work to the satisfaction of the Consultant's Material Engineer and they will use the facilities detailed above together with the Consultant's Material Engineer. The Contractor shall provide additional office space/accommodation for his other staff in addition to the designated laboratory to the Engineer. The Contractor's other staff shall strictly be prohibited in using the laboratory space for their office/accommodation.

Prior to the construction of the laboratory, the Contractor shall obtain written approval from the Engineer for the proposed construction and arrangement of the laboratory.

Office for Material Engineer

Each room shall be fitted with two 40 watt fluorescent light fittings, ceiling fans with regulators. The laboratories shall have at least five 5A and two 15A electric outlets. The Material Engineer's office shall have minimum required furniture and equipment for the operation of the day to day office works.

The Contractor shall provide the facility for communications between the Consultant's staff and the Contractor's staff.

The Contractor shall supply and keep replenished all consumable items.

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Appendix 7: Laboratory Equipment

The following items of laboratory equipment shall be provided in the laboratory, as a minimum, however, this does not relieve the Contractor of his responsibility to equip the laboratory with all equipment needed to perform the full range of tests required by the Specifications:

S. No.	Particulars	Quantity
	General	
1	Oven 18" x 18" x 18" Aluminum Chamber	1
2	Platform balance 300 kg	1
3	Electronic Balance Model CH30R11 Capacity 30 kg x 5 gm preferably OHAUS or equivalent	1
4	Electronic Balance Model CT6000 Capacity 6010 gm x 0.5 gm preferably OHAUS or equivalent	1
5	Electronic Balance Model NDB110 Capacity 2100 gm x 0.1 gm preferably OHAUS or equivalent	1
6	Water bath serological 2 rack solar	1
7	Mercury Thermometer 250^0C	2
8	Dial Thermometer 400^0C	2
9	Mercury Thermometer 50^0C	2
	Glassware: containers and small tools including;	
10	Wet and Dry Thermometer	1
11	Spatulas 200 mm	2
12	GI Wire Zinc coating and diameter test	1
13	**GI Tray**	
	300 mm x 300 mm x 75 mm	6
	400 mm x 400 mm x 75 mm	6
	600 mm x 600 mm x 75 mm	6
14	Aluminum Moisture Container 75 mm x 50 mm	50
15	Rubber Mallet	1
16	Aggregate Steel Scoop (690 mm x 300 mm x 100 mm)	1
17	Aluminum Scoop (125 mm x 200mm x 75 mm)	1
18	Gauging Trowel	2
19	S.S Bowl 2 Lit	2
20	***Volumetric Flasks***	
	1000 ml	2
	500 ml	2
	250 ml	2
21	***Measuring Cylinders***	
	1000 ml	2

For Reference Only

S. No.	Particulars	Quantity
	500 ml	2
	250 ml	2
22	***Beakers***	
	1000 ml	2
	500 ml	2
	250 ml	3
23	Evaporating Disc 100 mm	3
24	Vernier Caliper 150 mm	1
25	Steel Ruler 300 mm	1
26	Pairs of heat resistant Asbestos hand gloves	2
27	Set of sampling tools all materials	1
28	Set of crowbar, pick, spade and 5 kg hammer, GI Tray	2
29	Gunny bags and plastic bags	50
30	GI Sieve 450 mm dia Size; 75, 69, 50, 37.5, 31.5, 25, 20, 14, 16, 12.5, 9.5, 6.3, 4.75, Lid and pan set of 15 pcs	1
31	Brass Sieve 200 mm dia Size; 4, 2.8, 2.36, 2, 1.18mm, 600, 425, 300, 150, 75 mic, Lid and pan set of 12 pcs	1
32	Dynamic Cone Penetrometer equipment complete with 2 extra cones and 2 extension rods (set)	1
33	Water Testing kit (set)	1
34	Organic Content testing kit (set)	1
	Soil and Aggregate	
35	Sample Splitters (Riffle boxes) 50 mm	1
36	Liquid limit device with grooving tools and counter	1
37	Glass Plate 400mm x 600 mm x 6 mm	2
38	Specific Gravity Bottle 100 ml	1
39	Compaction Mould 100 mm, 150 mm and Rammer 2.5 kg and 4 kg	1
40	Sand Pouring Apparatus 200 mm (sand replacement test)	2
41	Sand Pouring Apparatus 100 mm (sand replacement test)	1
42	Core Cutter Apparatus	1
43	Aggregate Impact Value Test Apparatus	1
44	Los Angeles Abrasion Test Apparatus	1
45	Flakiness	1
46	Elongation Test Gauge	1
47	Standard Measure 30 lit, 15 lit and 3 lit	1
48	Tamping Rod	1
	CBR Apparatus	1

For Reference Only

S.No.	Particulars	Quantity
49	CBR Load Frame – 1	
	Dial Gauge (0.01 - 0.25 mm) – 5	
	Annular Weight 2.5 kg – 3	
	Central Hole Weight 2.5 kg – 3	
	CBR Mould 150 mm – 9	
	Perforated Plate Brass – 9	
	Space Disc – 9	
	Penetration Piston – 1	
	Tripod – 9	
	Rammer 2.6 kg – 3	
	Rammer 4.89 kg – 3	
50	Unconfined Compression Test Apparatus (5 Tonne Capacity plus 5 kN, 10 kN and 20 kN Proving Rings)	1
	Bitumen and Bituminous Mixes	
51	Penetrometer with standard needle automatic	1
52	Viscometer	1
53	Standard spray trays	12
54	Centrifuge Type land operated bitumen extractor 500 ml	1
55	3 m straight edge	1
56	Camber board and spirit level	2
	Cement and Cement Concrete / Mortar	
57	Vicat Apparatus	1
58	Slump Test Apparatus	1
59	Concrete Cube Mould 150 mm	18
60	Mortar Cube Mould 75 mm	42
61	Compression Strength Testing Machine 200 tonne capacity	1
62	Compression Strength Testing Machine 50 tonne capacity	1
63	Sand equivalent test set, complete with graduate plastic cylinder, manual or mechanical shaker and stock solution	1
64	Curing tank for test cubes (2 m x 2 m x 0.75 m) with controlled heating facilities	1
65	Light weight hammer test	1

The site laboratory equipment and furniture shall become the property of the Contractor when no longer required by the Engineer unless stated to the contrary elsewhere in the contract.

For Reference Only

Appendix 8: Project Signboard

The Contractor shall provide and erect at the beginning and end of each section of Project road a signboard approx. 2.50 m wide by 1.80 m high with the wording in Nepali or English.

Final details to be agreed with the Engineer (see drawing).

The board is to be made of galvanised steel; the lettering and border are to be in black on yellow background. The lower edge of the board shall be at approx. 1.20 m above adjacent ground and shall be mounted on suitable posts with struts on concrete foundations. The paint to be used shall be sunshine resistant paint.

The Contractor will be responsible for the repair and maintenance of the signboards up to the completion of all construction works.

The Engineer will direct the location and placing of the signboards.

GOVERNMENT OF NEPAL
MINISTRY OF PHYSICAL INFRASTRUCTURE AND TRANSPORT
DEPARTMENT OF ROADS
PROJECT DIRECTORATE (ADB)

SASEC Mugling Pokhara Highway
Improvement Phase I Project (SMPHIP)

ASIAN DEVELOPMENT BANK
ADB Loan No. 52097-002

Muglin-Anbukhaireni- Pokhara ROAD (SECTION – 2)

CONTRACT NO. : **SMPHIP/OCB/MP/01**
CHAINAGE : **Km 49+700 to Km 88+583**

CONTRACTOR : **xxxxxxxxxxxxxxxxxxxx**

: **xxxxxxxxxxxxxxxxxxxxxxxx**

CONSULTANTS : **xxxxxxxxxxxxxxxxxxxxxxxxxxx**

: **xxxxxxxxxxxxxxxxxxxxxxxx**

For Reference Only

Section 6D – Drawings

Provided as Section 6D in a separate volume.

For Reference Only

Section 6E – Personnel Requirements: Phase1

Phase 1: Upgrading Works

Using Form PER-1 and PER-2 in Section 4 (Bidding Forms), the Bidder must demonstrate that it has Personnel who meet the following requirements:

S. No.	Position	Required Nos.	Minimum Qualification	Total Similar Work Experience [years]	Experience in Similar Position[years]
1	Contract Manager / Contractor's Representative[1]	1	Bachelor's degree in Civil Engineering	20	5
2	Site Engineer	3	Bachelor's degree in Civil Engineering	10	5
3	Quality Control Engineer	2	Bachelor's degree in Civil Engineering	10	5
4	Environment Safeguard/ Safety Engineer	1	Bachelor's degree in Civil / Environment Engineering	7	3
5	Sub Engineers	6	Diploma in Civil Engineering or equivalent	7	3
6	Senior Laboratory Technician	4	Senior Lab Technician or Sub-engineer	7	3

The Bidder shall provide details of the proposed personnel and their experience records in the relevant Information Forms included in Section 4 (Bidding Forms).

All submitted curriculum Vitae should be duly signed by the concerned person.

1 Note:

(i) In case of joint venture, the partner who meets the major requirement of experience in Contracts of Similar Size and Nature shall be present at the Work Site throughout the contract duration; and

(ii) The Contract Manager / Contractor's Representative shall require being the Senior Employee from the Bidder and working with the firm for at least one year prior to the bid submission deadline.

For Reference Only

Section 6E – Personnel Requirements: Phase 2

Phase 2: Performance Based Maintenance Works

Using Form PER-1 and PER-2 in Section 4 (Bidding Forms), the Bidder must demonstrate that it has Personnel who meet the following requirements:

S. No.	Position	Required Nos.	Minimum Qualification	Total Similar Work Experience [years]	Experience in Similar Position[years]
1	Contract Manager / Contractor's Representative	1	Bachelor's degree in Civil Engineering	10	5
2	Performance Manager	1	Bachelor's degree in Civil Engineering	5	2
3	Maintenance Engineer	1	Bachelor's degree in Civil Engineering	5	2
4	Sub Engineers	2	Diploma in Civil Engineering or equivalent	3	2
5**	Performance Based Road Maintenance Expert (part time)	1			

The Bidder shall provide details of the proposed personnel and their experience records in the relevant Information Forms included in Section 4 (Bidding Forms).

All submitted curriculum Vitae should be duly signed by the concerned person.

** The successful bidder shall deploy a Performance Based Road Maintenance Expert (part time), who has extensive experience in PBM Works to coach and train the staff of the contractor and subcontractors in the planning, execution and monitoring of the performance based maintenance works.

For Reference Only

Section 6F – Equipment Requirements: Phase1

Phase 1: Upgrading Works

Using Form EQU in Section 4 (Bidding Forms), the Bidder must demonstrate that it has the key equipment listed below:

S. No.	Equipment Type and Characteristics	Minimum Number Required
1	Excavator (> 0.50 m3)	4
2	Loader (> 1.5 m3)	3
3	Motor Grader (> 100 HP)	3
4	Two Stage Stone Crusher Plant (production > 60 cu m per Hr)	3
5	Water Bowser (> 5,000 litres)	4
6	Bitumen Distributor (> 4,000 litres)	3
7	Pneumatic Roller (> 8 Ton)	3
8	Steel Roller (> 8 Ton)	2
9	Tipper Truck (> 5 cu m)	16
10	Vibrating Roller (> 10 Ton at static condition)	3
11	Concrete Batch Plant (> 50 m3/hour)	2
12	Concrete Mixer Truck: (> 6 m3)	8
13	Asphalt Plant (> 100 tonne/hour)	2
14	Asphalt Paver with Electronic Sensor (> 3.0 m)	2
15	Tandem Roller (> 8 tonne)	2
16	Crane (> 50 tonne)	1
17	Cone Crusher Plant (production > 60 cu m per Hr)	2

The Bidder shall provide further details of proposed items of equipment using the relevant Form in Section 4 (Bidding Forms).

Ownership attestation documentation for each item of equipment and, where, relevant, the original leasing agreements should be attached.

Resources committed by the Bidder should be physically mobilised at site throughout the contract period.

All equipment to be proposed for this project shall not be over 15 years from its production date.

For Reference Only

Section 6F – Equipment Requirements: Phase2

Phase 2: Performance Based Maintenance Works

Using Form EQU in Section 4 (Bidding Forms), the Bidder must demonstrate that it has the key equipment listed below:

S. No.	Equipment Type and Characteristics	Minimum Number Required
1	Excavator (> 0.50 m3)	1
2	Water Bowser (> 5,000 litres)	1
3	Bitumen Distributor (> 2,000 litres)	1
4	Tipper Truck (> 5 cu m)	3
5	Vibrating Roller (> 10 Ton at static condition)	1
6	Tandem Roller (> 8 tonne)	1
7	Mini Asphalt Plant	1
8	Concrete Mixer Portable (1 bag)	1
9	Portable Air Compressor	1
10	Rammer Compactor	1
11	Generator Set	1
12	Flood Lights set	1
13	Truck Mounted Crane (> 20 tonne)	1

The Bidder shall provide further details of proposed items of equipment using the relevant Form in Section 4 (Bidding Forms).

Ownership attestation documentation for each item of equipment and, where, relevant, the original leasing agreements should be attached.

Resources committed by Bidder should be physically mobilized at site throughout the contract period.

For Reference Only

Government of Nepal
Ministry of Physical Infrastructure and Transport
Department of Roads
Project Directorate (ADB)
Kathmandu, Nepal

SASEC Mugling Pokhara Highway Improvement Phase I Project(SMPHIP)
(ADB Project No. 52097-002)

Mugling-Anbukhaireni-Pokhara Road
(Section – 2) From Km 49+700 to km 88+583

Contract No. SMPHIP/OCB/MAP/02

Phase 1: Upgrading Works
(Upgrading of existing road from 2-Lanes to 4 Lanes and Service Lanes, Structures, Bridges, etc. including Defect Notification Period)

Phase 2: Performance Based Maintenance Works
(Maintenance works consisting of all activities to be carried out to achieve and keep the road assets as defined in the PBM Specifications)

Bidding Document

Part III Conditions of Contract

Section 7 General Conditions of Contract
Section 8 Particular Conditions of Contract
Section 9 Contract Forms

November, 2019

For Reference Only

Preface

This Bidding Document for the Procurement of Works (Single Stage – Two Envelope) has been prepared by the Government of Nepal, Ministry of Physical Infrastructure and Transport, Department of Roads, Project Directorate (ADB) and is based on the Standard Bidding Document for the Procurement of Works (SBD Works) issued by the Asian Development Bank dated May 2018.

ADB's SBD Works has the structure and the provisions of the Master Procurement Document entitled "Bidding Documents for the Procurement of Works", prepared by multilateral development banks and other public international financial institutions, except where ADB-specific considerations have required a change.

For Reference Only

Table of Contents - Summary Description

PART I BIDDING PROCEDURES

Section 1 - Instructions to Bidders (ITB) ---------- 1-1
This Section specifies the procedures to be followed by Bidders in the preparation and submission of their Bids. Information is also provided on the submission, opening, and evaluation of bids and on the award of contract.

Section 2 - Bid Data Sheet (BDS) ---------- 2-1
This Section consists of provisions that are specific to each procurement and supplement the information or requirements included in Section 1 - Instructions to Bidders.

Section 3 - Evaluation and Qualification Criteria (EQC) ---------- 3-1
This Section contains the criteria to determine the lowest evaluated bid and the qualifications of the Bidder to perform the contract.

Section 4 - Bidding Forms (BDF) ---------- 4-1
This Section contains the forms which are to be completed by the Bidder and submitted as part of his Bid.

Section 5 - Eligible Countries (ELC) ---------- 5-1
This Section contains the list of eligible countries.

PART II EMPLOYERS REQUIREMENTS

Section 6 -Employer's Requirements (ERQ) ---------- 6-1
This Section contains the Specifications, Drawings, and Supplementary Information that describe the Works to be procured, Personnel Requirements, and Equipment Requirements.

Section 6A – Summary of Description of Works
This Section contains the summary list of main works to be executed under the contract. Specification, Special provisions and, the Drawings, that describe the Works to be procured.

Section 6B – Standard Specifications
This document has been issued under the authority of the Government of Nepal, Ministry of Physical Planning and Works, Department of Roads (July 2001), it can be purchased from the Central Road Laboratory, Kupandole, Lalitpur.

Section 6C – Special Provisions
This section contains amendments, supplements, etc. to the standard specifications to suit the specific requirements of the project, including sections regarding Minor Bridges and PBM works.

Section 6D – Drawings
The drawings are presented in a separate volume.

Section 6E – Personnel Requirements
This section provides the information on Personnel Requirements.

Section 6F – Equipment Requirements
This section provides the information on Equipment Requirements.

For Reference Only

PART III CONDITIONS OF CONTRACT AND CONTRACT FORMS

Section 7 - General Conditions of Contract (GCC) ---------- 7-1
This Section contains the general clauses that govern the Contract. These General Conditions shall be the Conditions of Contract for Construction, Multilateral Development Bank Harmonized Edition, prepared by the Fédération Internationale des Ingénieurs-Conseil (FIDIC June 2010 MDB version). These Conditions are subject to the variations and additions set out in Section 8 (Particular Conditions of Contract).

Section 8 - Particular Conditions of Contract (PCC) ---------- 8-1
This Section contains provisions which are specific to each contract and which modify or supplement the GCC. Whenever there is a conflict, the provisions herein shall prevail over those in the GCC.

Section 9 - Contract Forms (COF) ---------- 9-1
This Section contains forms, which, once completed, will form part of the Contract. The forms for Performance Security and Advance Payment Security, when required, shall only be completed by the successful Bidder after contract award.

For Reference Only

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APPENDIX – 3: RESETTLEMENT PLAN

APPENDIX – 4: GENDER EQUITY AND SOCIAL INCLUSION PLAN

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Section 7 - General Conditions of Contract

Project Directorate (ADB); Department of Roads,
Ministry of Physical Infrastructure and Transport

Mugling- Abhukhaireni-Pokhara (Section – 1)
(Km 49+700 to Km 88+583)

Contract No. SMPHIP/OCB/MAP/02

The Conditions of Contract comprise two parts, this Section 7 - General Conditions of Contract (GCC) and the following Section 8 - Particular Conditions of Contract (PCC).

The General Conditions that follow are Conditions of Contract for Construction for Building and Engineering Works Designed by the Employer, Multilateral Development Bank Harmonized Edition, prepared by the Fédération Internationale des Ingénieurs-Conseil, or FIDIC (FIDIC MDB Harmonized Construction Contract) available at FIDIC MDB June 2010. The FIDIC MDB Harmonized Construction Contract is exclusive for the use of ADB Borrowers and their project implementing agencies as provided under the License Agreement dated 09 June, 2005, between the ADB and FIDIC, and, consequently, no part of this publication may be reproduced, translated, adapted, stored in a retrieval system or communicated, in any form or by any means, whether mechanical, electronic, magnetic, photocopying, recording or otherwise, without prior permission in writing from FIDIC, except by the Employer identified in the contract and only for the exclusive purpose of preparing bidding documents for ADB financed contracts.

The standard text of the General Conditions chosen must be retained intact to facilitate its reading and interpretation by Bidders and its review by ADB. Any amendments and additions to the GCC, specific to the contract in hand, should be introduced in Section 8 (Particular Conditions of Contract), Part A (Contract Data) and Part B (Special Provisions). Clause numbers in the PCC correspond to those in the GCC. As per GCC 1.5 (Priority of Documents), the PCC takes precedence over the GCC.

Part A (Contract Data) of the PCC includes data to complement the GCC in a manner similar to the way in which the Bid Data Sheet (BDS) complements the Instructions to Bidders (ITB).

Part B (Specific Provisions) is to be used to introduce country- or project-specific provisions, if so required. Whoever drafts the Specific Provisions should be thoroughly familiar with the provisions of the GCC and with any specific requirements of the Contract. Legal advice is recommended when amending provisions or drafting new ones.

The Conditions of Contract have been prepared for an ad measurement (unit price or unit rate) type of contract and cannot be used for other types of contract.

For Reference Only

Section 8 - Particular Conditions of Contract

The following Particular Conditions of Contract (PCC) shall supplement the General Conditions of Contract (GCC). Whenever there is a conflict, the provisions herein shall prevail over those in the GCC.

Part A – Contract Data

Subject	Ref. GCC	Data
Employer's name and address	1.1.2.2 & 1.3	Ministry of Physical Infrastructure and Transport, Department of Roads, Project Directorate (ADB), Kathmandu, Nepal.
Engineer's name and address	1.1.2.4 & 1.3	To be Notified later.
Bank's name	1.1.2.11	Asian Development Bank (ADB)
Borrower's name	1.1.2.12	Nepal
Time for Completion	1.1.3.3	**Phase 1: Upgrading Works** 1,095 days from the commencement Date **Phase 2: Performance Based Maintenance Works** 1,825 days (This Phase will start at the end of the Defects Notification Period for Phase 1).
Defects Notification Period	1.1.3.7	**Phase 1: Upgrading Works** 365 days **Phase 2: Performance Based Maintenance Works** Not applicable
Sections	1.1.5.6	**Not Applicable**
Electronic transmission systems	1.3	Email, fax supplemented by original hard copy through post, courier or hand delivered.
Governing Law	1.4	The Law of Nepal
Ruling language	1.4	English
Language for communications	1.4	English
Time for access to the Site	2.1	14 days after the Commencement Date
Engineer's Duties and Authority	3.1(B)(ii)	A Variation having a value of more than 0.1%of the Accepted Contract Amount shall require approval of the Employer. Similarly, when the cumulative sum of Variations results in an increase of the Accepted Contract Amount by more than 2 %, any Variation thereafter shall require approval of the Employer.

For Reference Only

Subject	Ref. GCC	Data
Performance Security	4.2	The performance security will be in the form of an unconditional bank guarantee in the amount(s) of **Ten (10) percent** of the Accepted Contract Amount and denominated in the proportions of currencies mentioned in the schedule of currencies and issued by a reputable financial institution/bank. When additional performance security is required due to seriously unbalanced or front-loaded bid in accordance with ITB 36.5, the Employer shall specify the percentage of the performance security and the terms for its release. If the Performance Security is issued by a bank located outside Nepal, it shall be counter guaranteed by a commercial bank established in Nepal.
Normal working hours	6.5	**Phase 1: Upgrading Works** Normal working hours shall be as per labor act 2074 of Nepal. **Phase 2: Performance Based Maintenance Works** Normal working hours shall not be applicable. Daily Inspections and emergency response needs to be done on Saturdays and Public Holidays as well.
Contractor's Personnel	6.9	Following conditions shall apply (i) The Contract Manager/ Contractor's Representative shall require being the Senior Employee from the Bidder (or in case of JV, the partner who meets the major requirement of experience in Contracts of Similar Size and Nature) and working with the firm for at least one year prior to the bid submission deadline. (ii) The Contract Manager / Contractor's Representative shall be at the site location during the period of Upgrading Works. If the personnel is to be temporarily absent during the period, a suitable replacement shall be temporarily appointed, subject to the Engineer's prior consent. (iii) Failure to this requirement will lead to Notice to Correct as per Section 7, General Condition of Contract 15.1 and Termination by Employer as per 15.2

For Reference Only

Subject	Ref. GCC	Data
Respectful Work Environment	6.25	The following sentence shall apply: The Contractor shall ensure that its employees and sub-contractors observe the highest ethical standards and refrain from any form of bullying, discrimination, misconduct and harassment, including sexual harassment and shall, at all times, behave in a manner that creates an environment free of unethical behavior, bullying, misconduct and harassment, including sexual harassment. The Contractor shall take appropriate action against any employees or sub-contractors, including suspension or termination of employment or sub-contract, if any form of unethical or inappropriate behavior is identified. The Contractor shall conduct training programs for its employees and sub-contractors to raise awareness on and prevent any form of bullying, discrimination, misconduct and harassment including sexual harassment, and to promote a respectful work environment. The Contractor shall keep an up to date record of its employees and subcontractors who have attended and completed such training programs and provide such records to the Employer or the Engineer at their first written request.
Delay damages for the Works	8.7 & 14.15(b)	**Phase 1: Upgrading Works** **0.05 %** of the Contract Price for Phase 1: Upgrading Works per day, in the currencies and proportions in which the Contract Price is payable. **Phase 2: Performance Based Maintenance Works** Not Applicable
Maximum amount of delay damages	8.7	**Ten (10) percent** of the Contract Price.
Provisional Sums	13.5(b)(ii)	**Five (5) percent**
Adjustments for Changes in Cost	13.8	The Contract Price shall be adjustable during Contract Execution.

For Reference Only

Subject	Ref. GCC	Data
The Contract Price	14.1	*Delete the last sentence of the Sub-clause 14.1 and replace with the text below relating with the e*xemption on construction equipment*:* Notwithstanding the provisions in this document, the Contractor's construction equipment, including essential tools thereof, imported for the sole purpose of executing the contract on condition of re-export upon completion of the Works, shall be exempt from the payment of custom duties. However, the Contractor shall deposit the amount or provide a bank guarantee to the Government of Nepal, Customs Office equal to the amount of custom duties as per the prevailing laws, rules and regulations of Nepal for those imported equipment at the time of import. Such deposited amount shall be refunded, or the bank guarantee be cancelled by the Custom Office after re-export of those imported equipment. The construction equipment imported by the Contractor for the performance of the Works shall be taken out of the Country within 90 days after issuance of Taking-Over Certificate.
Total advance payment	14.2	**Fifteen (15) Percentage** of the Accepted Contract Amount less Provisional sum and VAT payable in the currencies and proportions in which the Accepted Contract Amount is payable. The total advance payment shall be made in Two (2) installments as follows: - First (1st) installment of 7.5% within 28 days after the submission of Advance Payment bank guarantee; - Second (2nd) installment of 7.5% after the completion of the Contractor's mobilization of all required resources to the Site and upon submission of bank guarantee as agreed in the Contract document and within 28 days of the date of certification by the Project Manager. The Advance Payment Guarantee shall be valid until the 90% time of Completion of the Phase 1: Upgrading Works. If the Advance Payment Guarantee is issued by a bank located outside Nepal, it shall be counter guaranteed by a commercial bank established in Nepal.

For Reference Only

Subject	Ref. GCC	Data
Repayment of advance payment	14.2(a)	Delete "exceeds thirty percent (30%) of the Accepted Contract Amount less Provisional Sums" in third line and replace with: "exceeds thirty percent (30%) of the Accepted Contract Amount less Provisional sum and VAT".
Repayment amortization of advance payment	14.2(b)	Amortization Rate shall be: **30%** *Delete "when 90 percent (90%) of the Accepted Contract Amount less Provisional Sums" in fifth and sixth lines and replace with:* "when 80 percent (80%) of the Accepted Contract Amount less Provisional Sum and VAT"
Percentage of Retention	14.3(c)	**Phase 1: Upgrading Works** Ten percent (10%) **Phase 2: Performance Based Maintenance Works** Not applicable
Limit of Retention Money	14.3 (c)	**Phase 1: Upgrading Works** Five Percent (5%) of the Accepted Contract Amount **Phase 2: Performance Based Maintenance Works** Not applicable
Plant and Materials	14.5(b)(i)	**Not Applicable**
	14.5(c)(i)	**Not Applicable**
Minimum Amount of Interim Payment Certificates	14.6	**Phase 1: Upgrading Works** One percent (1%) of the Accepted Contract Amount. **Phase 2: Performance Based Maintenance Works** Not Applicable
Termination by Employer	15.2	This sentence will apply as Subclause 15.2(g): (g) the Engineer gives two consecutive Notices to update the Program and accelerate the works to ensure compliance with Subclause 8.2 (Time for Completion) and the Contractor fails to update the Program and demonstrate acceleration of the works within a reasonable period of time determined by the Engineer;

For Reference Only

Subject	Ref. GCC	Data
Corrupt and Fraudulent Practices	15.6	The following sentence shall apply: [For contracts financed by the Asian Development Bank] For the purposes of this Subclause: ADB's Anticorruption Policy (1998, as amended to date) requires Borrowers (including beneficiaries of ADB- financed activity), as well as Contractors, Subcontractors, manufacturers, and Consultants under ADB-financed contracts, observe the highest standard of ethics during the procurement and execution of such contracts. In pursuance of this policy, ADB
		(a) defines, for the purposes of this provision, the terms set forth below as follows: (i) "corrupt practice" means the offering, giving, receiving, or soliciting, directly or indirectly, anything of value to influence improperly the actions of another party; (ii) "fraudulent practice" means any act or omission, including a misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain a financial or other benefit or to avoid an obligation; (iii) "coercive practice" means impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party; (iv) "collusive practice" means an arrangement between two or more parties designed to achieve an improper purpose, including influencing improperly the actions of another party; (v) "abuse" means theft, waste or improper use of assets related to ADB-related activity, either committed intentionally or through reckless disregard; (vi) "conflict of interest" means any situation in which a party has interests that could improperly influence that party's performance of official duties or responsibilities, contractual obligations, or compliance with applicable laws and regulations; (vii) "obstructive practice" means (a) deliberately destroying, falsifying,

For Reference Only

Subject	Ref. GCC	Data
		altering or concealing of evidence material to an ADB investigation, or deliberately making false statements to investigators, with the intent to impede an ADB investigation; (b) threatening, harassing or intimidating any party to prevent it from disclosing its knowledge of matters relevant to a Bank investigation or from pursuing the investigation; or (c) deliberate acts intended to impede the exercise of ADB's contractual rights of audit or inspection or access to information; and (viii) "integrity violation" is any act, as defined under ADB's Integrity Principles and Guidelines, which violates ADB's Anticorruption Policy, including (i) to (vii) above and the following: abuse, conflict of interest, violations of ADB sanctions, retaliation against whistleblowers or witnesses, and other violations of ADB's Anticorruption Policy, including failure to adhere to the highest ethical standard. (b) will reject a proposal for award if it determines that the Bidder recommended for award has, directly or through an agent, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices or other integrity violations in competing for the Contract; (c) will cancel the portion of the financing allocated to a contract if it determines at any time that representatives of the borrower or of a beneficiary of ADB-financing engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices or other integrity violations during the procurement or the execution of that contract, without the borrower having taken timely and appropriate action satisfactory to ADB to remedy the situation; and (d) will impose remedial actions on a firm or an individual, at any time, in accordance with ADB's Anticorruption Policy and Integrity Principles and Guidelines, including declaring ineligible, either indefinitely or for a stated period of time, to participate in ADB-financed, -administered, or -supported activities or to benefit from an ADB-financed, -administered, or -supported contract, financially or otherwise, if it at any time determines that the firm or individual has,

For Reference Only

Subject	Ref. GCC	Data
		directly or through an agent, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices or other integrity violations. All Bidders, consultants, contractors, suppliers and other third parties engaged or involved in ADB-related activities have a duty to cooperate fully in any screening or investigation when requested by ADB to do so. Such cooperation includes, but is not limited to, the following: (a) being available to be interviewed and replying fully and truthfully to all questions asked; (b) providing ADB with any items requested that are within the party's control including, but not limited to, documents and other physical objects; (c) upon written request by ADB, authorizing other related entities to release directly to ADB such information that is specifically and materially related, directly or indirectly, to the said entities or issues which are the subject of the investigation; (d) cooperating with all reasonable requests to search or physically inspect their person and/or work areas, including files, electronic databases, and personal property used on ADB activities, or that utilizes ADB's ICT resources or systems (including mobile phones, personal electronic devices, and electronic storage devices such as external disk drives); (e) cooperating in any testing requested by ADB, including but not limited to, fingerprint identification, handwriting analysis, and physical examination and analysis; and (f) preserving and protecting confidentiality of all information discussed with, and as required by, ADB. All Bidders, consultants, contractors and suppliers shall ensure that, in its contract with its sub-consultants, sub-contractors and other third parties engaged or involved in ADB-related activities, such sub-consultants, sub-contractors and other third parties similarly undertake the foregoing duty to cooperate fully in any screening or investigation when requested by ADB to do so.
Maximum total liability of the Contractor to the Employer	17.6	The product of **1.10** times the Accepted Contract Amount

For Reference Only

Subject	Ref. GCC	Data
Periods for submission of insurance:	18.1 (a)	a. evidence of insurance: **14 days**
	18.1 (b)	b. copies of relevant policies: **21 days**
Insurance of Contractor's Equipment	18.2 (b)	Contractor's Equipment shall be insured before mobilizing to the Site. The insurance shall be in the name of the legal owner of the Equipment. Insurance in the joint name of the Employer and the Contractor shall not be required for the insurance against loss or damage to the Contractor's Equipment.
Maximum amount of deductibles for insurance of the Employer's risks	18.2 (d)	NRs. 500,000.00 (Five hundred thousand only)
Minimum amount of third party insurance	18.3	NRs. Fifteen (15.00) Million with no limit on the number of occurrences.
Date by which the DB shall be appointed	20.2	28 days after the Commencement
The DB shall be comprised of	20.2	Three Members
Appointment (if not agreed) to be made by	20.3	"Executive Committee of FIDIC (International Federation of Consulting Engineers) World Trade Center II –Geneva Airport Box 311 29 route de Pres-Bois CH-1215 Geneva 115 Switzerland"
International arbitration shall be administered by	20.6 (a)	International arbitration shall be: (i) Administered by: Singapore International Arbitration Centre (SIAC). (ii) Conducted in accordance with the rules of: Singapore International Arbitration Centre (SIAC)
Place of Arbitration	20.6	Singapore

For Reference Only

Part B – Specific Provisions

Subject	Ref. GCC	Data
Definitions	**1.1**	
Specifications	**1.1.1.5**	The Specifications mean: **(a)** Standard Specifications issued under the authority of the Government of Nepal, Ministry of Physical Planning and Works, Department of Roads (July 2001) (b) Special Provisions to the Standard Specifications
Commencement Date	**1.1.3.2**	*At the end of the Sub-Clause add the followings paragraph.* **"**Commencement Date of the Phase 2: Performance Based Maintenance Works" means the day immediately following the conclusion of the Defects Notification Period of the Phase 1: Upgrading Works.
Time for Completion	**1.1.3.3**	At the end of the Sub-Clause add the followings paragraphs. "Time for Completion of the Phase 2: Performance Based Maintenance Works" means the time for completing the Phase 2: Performance Based Maintenance Works which will start at the end of the DNP for Phase 1."
Defects Notification Period	**1.1.3.7**	In the fifth line immediately after "calculated" delete the remaining texts and add "from the date on which the Phase 1: Upgrading Works is completed as certified under Sub-Clause 10.1 [Taking Over of the Works and Sections] and as stated in the Taking-Over Certificate of the Phase 1: Upgrading Works."
Additional Sub Clause:	**1.1.3**	Add the following Sub-clause to Clause 1.1.3 [Dates, Tests, Periods and Completion]
Accepted Contract Amount	**1.1.4.1**	Immediately after "execution" delete "and" and replace with "," and immediately after "completion" add "and performance based maintenance".
Works	**1.1.5.8**	*Delete the sentence and insert the following:* "Works" means the Permanent Works, the Temporary Works and Performance Based Maintenance Works.
Additional Sub Clauses:		*Add the following Sub-Clauses to Clause 1.1.5 [Works and Goods]*
Maintenance Phase Works	**1.1.5.9**	"Maintenance Phase Works" means the Phase 2: Performance Based Maintenance

For Reference Only

Subject	Ref. GCC	Data
		Works to be executed by the Contractor.
Construction Phase Works	**1.1.5.10**	"Construction Phase Works" means the Phase 1: Upgrading Works to be executed by the Contractor including Defect Notification Period.
Domestic Preference Security	**1.1.6.11**	*Add the following Sub-clause:* "Domestic preference Security" means an unconditional on demand bank guarantee for an amount in a convertible currency equivalent to the difference between the joint venture's bid price and the bid price of the lowest foreign bid.
Care and Supply of Documents	**1.8**	*Add the following text at the end of Sub-clause 1.8:* Irrespective of the above, the Contractor shall be responsible for the production of detailed construction drawings as may be necessitated by his work programme pursuant to Sub-Clause 8.3 and as the Engineer may deem necessary for the proper execution of the Works. The Contractor shall supply two copies of draft prints of all such detailed construction drawings for the Engineer's review and when approved by the Engineer shall supply six final prints together with a reproducible copy on computer disk or as may be otherwise approved by the Engineer.
Determination	**3.5**	*Add the end of the second paragraph, add the following:* "Each Party shall give effect to each agreement or determination, unless the either Party gives notice, to the Engineer with copies to the other Party, of his dissatisfaction with a determination within 14 days of receiving it. Either Party may then refer the dispute to the DB in accordance with Sub-Clause 20.4 [Obtaining Dispute Board's Decision]."
Contractor's General Obligations	**4.1**	In the fourth paragraph immediately after "construction" add "and maintenance" In the fifth paragraph delete "whenever required by the Engineer" and replace with "as part of his quality assurance obligations". *After the fifth paragraph, add the following paragraph:*

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		"The Contractor shall prepare and submit working drawings, shop drawings and schedules for all works to be constructed and maintained under the Contract and shall be fully responsible for the accuracy of these working drawings, shop drawings and schedules which shall be deemed to be Contractor's Documents in accordance with the Contract and be submitted in accordance with the provisions for the same. The working drawings, shop drawings and schedules shall be based on the Drawings and the actual site conditions as surveyed by the Contractor and agreed with the Engineer." *At the end of this Sub-Clause add the following paragraph:* "On or before completion of the Construction Phase Works, the Contractor shall arrange to furnish to the Engineer, as part of Contractor's Documents, "as-built" drawings of the permanent works of the construction phase works (not limited to works designed by the Contractor), in the quality and detail to be approved by the Engineer. The "as-built" drawings shall be prepared, and submitted for the Engineer's checking and acceptance, progressively with the progress of the construction phase works. The Taking-Over Certificate for the construction phase works shall not be issued by the Engineer until the "as-built" drawings of the permanent works of the construction phase works are submitted and accepted.

For Reference Only

Subject	Ref. GCC	Data
Performance Security	**4.2**	In the third paragraph immediately after "Certificate" add "for the Phase 1: Upgrading Works and Phase 2: Performance Based Maintenance Works". *Add the following paragraph after the sixth paragraph* The Contractor may prepare two separate performance securities: (i) One bearing the value of 5% of the Accepted Contract Amount with the validity period of 9.0 years and (ii) Other bearing the remaining 5% of the Accepted Contract Amount with the validity period of 4.0 years, hence totaling 10% of the Accepted Contract Amount. At the completion of the Defects Notification Period of the Phase 1: Upgrading Works, the Contractor may be released with the performance security of 5% of the Accepted Contract Amount with the validity period of 4.0 years. The remaining 5% Performance Security may be released during PBM phase in the manner described below: If the Contractor complies with the Operational Service Levels defined in Table 33.4 Pavement Roughness in Section 3300 of Part 2 Employers Requirements, the Performance Security may be reduced by one percent (1%) of the Accepted Contract Amount after the completion of each year of Phase 2. Performance Security of remaining two percent (2%) of the Accepted Contract Amount shall be retained until the Contractor has complied with all obligations of the Contract. Add the following text at the end of Sub-clause 4.2: A Joint Venture that is awarded the Contract as a result of the application of the domestic preference provisions, shall furnish the Employer, together with the Performance Security, a "Domestic Preference Security" to guarantee that the profit and loss distribution and work-sharing arrangements with which the joint venture satisfied the domestic preference criteria will not be modified throughout the execution of the Contract. The domestic preference security shall be

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Subject	Ref. GCC	Data
		in the form of an unconditional on-demand bank guarantee acceptable to the Employer, for an amount in a convertible currency equivalent to the difference between the Joint Venture's bid price and the bid price of the lowest foreign bid. The domestic preference security shall be issued either (a) by a bank located in Nepal, or (b) directly by a foreign bank acceptable to Employer. If the Domestic preference Security is issued by a bank located outside Nepal, it shall be counter guaranteed by a commercial bank established in Nepal. The domestic preference security shall be valid until the Contractor has substantially completed the Works and a Taking-Over Certificate has been issued by the Engineer in accordance with the provisions of GCC 10 and such security shall be returned to the Contractor together with the Taking - Over Certificate.
Contractor's Representative	**4.3**	*Add the following at the end of the sub-Clauses.* The Contract Manager / Contractor's Representative shall require being the Senior Employee from the Bidder and working with the firm for at least one year prior to the bid submission deadline. The Contract Manager / Contractor's Representative shall be at the work site during the contract duration.

For Reference Only

Subject	Ref. GCC	Data
Subcontractors	**4.4**	*Add the following at the end of the Sub-clause 4.4 :* Maximum percentage of Subcontracting permitted is: 40% of the Accepted Contract Amount. The proposed Subcontractor shall meet, on a pro rata basis, the following criteria as specified in Section 3 Evaluation and Qualification Criteria: (i) Average Annual Construction Turnover; (ii) Financial Resources; (iii) Construction Experience in Contract of Similar Size and Nature that is similar to the proposed subcontract; and (iv)Construction Experience in Key Activities, if the subcontractor is proposed for key activities. *Add new text to this Sub-clause 4.4, after item (d) as follows:* (e) In the event of approved subcontracting the Contractor shall ensure that Subcontractors do not further subcontract their contract; (f) The Contractor shall keep a log showing the following information on all Subcontractors, suppliers and transporters engaged in the Contract Works: (a) Name and address (b) Copy of Subcontracting agreement (c) Works and value of Subcontract (d) Commencement and completion dates (e) Copy of payments and Interim payments made to Subcontractor The Contractor shall submit a copy of the above log monthly to the Engineer's representative.
Co-operation	**4.6**	*Add new text to this Sub-clause 4.6 at the end as follows:* There may be other contractors working on the similar and/or adjacent road. The Contractor shall at all times allow the free passage of all traffic, including vehicles and equipment of other Contractors. The maintenance for the road or way shall be the responsibility of the Contractor.

For Reference Only

Subject	Ref. GCC	Data
Setting Out	**4.7**	*At the end of the second paragraph, add the following:* "For this purpose, before commencement of the work on the site, the Contractor shall carry out a check survey, in the presence of the Engineer, to verify the accuracy of the items of reference and submit the results of the verification survey to the Engineer for his acceptance."
Safety Procedures	**4.8**	*At the end of this Sub-Clause, add the following paragraph:* "Within twenty-eight (28) days of the Commencement Date, and before commencing any construction on Site, the Contractor shall provide a Site Safety Manual, which shall be subject to the Engineer's consent, specifically for the Site which shall establish all of the requirements for effecting and maintaining a safe working environment for Contractor's and Employer's Personnel and any other authorized personnel entering the Site in accordance with the Contractor's obligations. The Site Safety Manual shall include all of safety obligations of the Contractor including safe traffic management for all Site activities and personal protective equipment required for each working area. The Manual shall be revised as deemed necessary to suit with the changed site situation by the Contractor with the consent of the Engineer."
Unforeseeable Physical Conditions	**4.12**	*Add the following subparagraph at the end of GCC Sub- clause 4.12:* In addition to notice of any unforeseeable physical conditions, the Contractor shall provide the Engineer with a written notice of any unanticipated environmental, resettlement or indigenous people's risks or impacts that arise during construction, implementation or operation of the Project that were not considered in applicable IEE, EMP and RP; attached hereto as Appendix 1 through Appendix 4.

For Reference Only

Subject	Ref. GCC	Data
Rights of Way and Facilities	**4.13**	*Add the following paragraphs as first paragraphs of Sub- clause 4.13:* The Contractor shall ascertain the location of all access paths, watercourses, irrigation channels, sewers, drains, water pipes, electricity and telecommunication cables and other services, and structures etc. which may be encountered during the execution of the Works. He shall temporarily support or divert and subsequently reinstate all such services and structures as necessary and to the satisfaction of the Engineer. As soon as any such service or structure is encountered on, over, under, in or through the Site during the performance of the Contract, the Contractor shall make a record of the location and description of such service or structure and shall send the same forthwith to the Engineer. Where permanent diversion or support of such service or structure is rendered necessary as the unavoidable result of the execution and maintenance of the Works in accordance with the Contract, the Engineer after consultation with the Employer will instruct the Contractor as to the diversion or support to be provided and the Contractor shall be paid the costs thereof in accordance with Clause 13 hereof. *Add the following paragraphs at the end of Sub-clause 4.13:* The Contractor shall comply with (i) the measures and requirements set forth in the Resettlement Plan ("RP"), to the extent it concerns impacts on affected people during construction; and (ii) any corrective or preventive actions set out in safeguards monitoring reports that the Employer will prepare from time to time to monitor implementation of the RP. The Contractor shall allocate a budget at his own cost for compliance with these measures, requirements and actions

For Reference Only

Subject	Ref. GCC	Data
Avoidance of Interference	**4.14**	*After the first paragraph of this Sub-Clause, add the following paragraph:* "Without in any way limiting the Contractor's obligations and responsibilities under the Contract, because the Site or part thereof is used by the public, the Contractor shall programme and execute the Works to avoid inconvenience or disruption of the public. No work on any part of the Site used by the public shall be permitted until such time as alternate routes in the form of roads, diversions, footpaths, accesses and the like (whether permanent or temporary) have been provided by the Contractor, together with all necessary safety features and devices and appurtenant drainage, and the alternate route(s) have been deemed acceptable for public use by the Engineer."
Transport of Goods	**4.16**	*Add the following paragraph at the end of Sub-clause 4.16:* The Contractor shall agree with the Engineer and adequately record the condition of roads, agricultural land and other infrastructure prior to the start of transporting materials, goods and equipment, and construction.

For Reference Only

Subject	Ref. GCC	Data
Protection of the Environment	**4.18**	*Add the following paragraphs at the end of Sub-clause 4.18:* The Contractor shall, to the satisfaction of the Engineer, take all necessary precautions for the efficient protection of all surface and sub-surface watercourses against all kinds of pollution arising from the execution of the works. The Contractor shall ensure that at all locations where his labour force are living or working, other than labour living in their own homes, adequate facilities are provided to collect and treat all sewage and wastewater and to ensure that the outflows from such treatment facilities comply with recognized national or international standards for sewage treatment discharges. The Contractor shall ensure that fuel wood is not used as firewood and as a means of heating during the preparation or processing of any materials forming part of the Works. The Contractor shall take special precautions in connection with the establishment of storage facilities for diesel fuel, petrol, lubricants, bitumen and bituminous materials. Storage facilities shall not be placed in rock- fall prone areas. They shall have barriers and impervious surfaces preventing leakages of spilt material outside the storage area or into the underlying soils. The Contractor shall ensure that any cut or fill slopes are planted with grass or other approved plant cover as soon as possible to protect them from erosion. This planting shall follow the recommendations in the Nepali manual entitled “Vegetative Structures for Stabilizing Highway Slopes” (DoR), or the requirements of the Specification as directed by the Engineer. The water used in the construction shall not be allowed to affect water availability in the local communities. Where a scarcity of water is expected to arise, the Contractor shall explore and tap alternative sources of safe water. In case of interference with the water supply of a settlement, the Contractor is liable to provide the affected population with potable drinking water from alternative sources at no extra cost to the Contract or the local people.

For Reference Only

Subject	Ref. GCC	Data
		The Contractor shall also comply with all applicable national, regional, provincial and local environment laws and regulations. The Contractor shall (a) establish an operational system for managing environmental impacts, (b) carry out all of the monitoring and mitigation measures set forth in the EMP attached hereto as Appendix 2 and IEE, and (c) allocate the budget required to ensure that such measures are carried out. The Contractor shall submit quarterly reports on the carrying out of such measures to the Employer. The Contractor shall allocate a budget at his own cost for compliance with these measures, requirements and actions.

For Reference Only

Subject	Ref. GCC	Data
Progress Reports	**4.21**	In the sub-paragraph (g) just after "relations;" delete "and" At the end of sub-paragraph (h), delete "." and replace with ";", and add the following sub-paragraphs (i), (j), (k) and (l): (i) the status of all Variations; (j) details of all matters affecting, or likely to affect, the progress or cost of the Works and particulars of the preventative and remedial measures which have been, are being, or may be taken in respect of those matters; (k) any other particulars reasonably required by the Engineer and (l) monitoring of the obligations in Sub-Clauses 4.7, 4.13, 4.18, 6.4, 6.7, 6.20, 6.21, 6.23 and 6.24. (m) materials delivered to the Site and materials consumed in the Works; (n) plant and equipment on Site together with number of hours worked by and current condition of each item (o) (iii) all incidents affecting the safety and the health and welfare of persons and causing damage to property together with such other records as the Engineer may from time to time require to be kept and provided.
Labour Laws	**6.4**	Add at the end following sentence The Contractor shall comply with the Employer's applicable Labour Laws and regulations and incorporate applicable workplace occupational Safety norms.
Health and Safety	**6.7**	The Contractor shall disseminate, or engage appropriate service providers to disseminate, information on the risks of sexually transmitted diseases, including HIV/AIDS, to its employees engaged under the project and to members of the local communities surrounding the Project area, particularly women. The contractor shall provide appropriate facilities (latrines,etc) for workers at construction site.

For Reference Only

Subject	Ref. GCC	Data
Contractor's Employees	**6.26**	*Add new GCC Sub-clause 6.26:* To the maximum extent possible, the Contractor's unskilled labour shall be drawn from the area of influence of the road, defined as within 2 hours walk of the place of work. Every effort shall be made to establish a gender balance within the local labour force with the employment of 50% female labour. The Contractor is required to give preference for employment as unskilled labour to one member per household of those households identified as losing land or livelihood as a result of the land acquisition process. The Engineer may identify such people to the Contractor and he shall be required to offer them employment on the same terms and conditions as the rest of his local labour force.
Inspection	**7.3**	In sub-paragraph (b) delete "and construction" and replace with ", construction and performance based maintenance".
Programme	**8.3**	In sub-paragraph (a) immediately after "erection" insert ", performance based maintenance".
Taking Over of the Works and Sections	**10.1**	After the third paragraph, add the following paragraph: "Pursuant to sub-paragraph (a) above, any works related to road, traffic or public safety or which may affect the protection of the Works in any respect, as determined by the Engineer, shall not be deemed to be minor outstanding works or defects which will not substantially affect the use of the Works within the meaning of this Sub-Clause."
Taking Over Parts of the Works	**10.2**	*Add the following paragraph at the end of Sub-clause 10.2:* In the operation of this Sub-clause the passage over or through the Works by the public or the agents or servants of the Employer or by public traffic or by vehicles of the Employer, whether connected with the Contract or not, shall not constitute use or occupation by the Employer.

For Reference Only

Subject	Ref. GCC	Data
Interference with Tests on Completion	**10.3**	In the second paragraph immediately after "Period" add "of the Phase 1: Upgrading Works".
Completion of Outstanding Work and Remedying Defects	**11.1**	In sub-paragraph (a), after "Taking-Over Certificate" insert "for Phase 1: Upgrading Works".
Cost of Remedying Defects	**11.2**	Add the following at the end of Sub-clause 11.2: Upon the completion of construction, the Contractor shall fully reinstate pathways, other local infrastructure, and agricultural land to at least their pre-project condition as recorded by the Contractor in consonance with its obligation in Sub-clause 4.16.
Extension of Defects Notification Period	**11.3**	In the first paragraph immediately after "taking over" add "for Phase 1: Upgrading Works".
Performance Certificate	**11.9**	Delete the second paragraph and replace with the following: "Separate Performance Certificate shall be issued for Phase 1: Upgrading Works and Phase 2: Performance Based Maintenance Works. The Engineer shall issue Performance Certificate for Phase 1 within 28 days after the latest of the expiry dates of the Defect Notification Periods, or as soon thereafter as the Contractor has supplied all the Contractor's Documents and completed and tested all the Works, including remedying any defects. The Engineer shall issue Performance Certificate for Phase 2 after completing all the works specified in Special Provisions to the Standard Specifications for Performance Based Maintenance. A copy of the Performance Certificates shall be issued to the Employer."

For Reference Only

Subject	Ref. GCC	Data
Provisional Sums	**13.5 (b) (ii)**	*Add the following paragraphs at the end of (b) (ii) of Sub-clause 13.5:* For the emergency works as determined by the Engineer during Phase 2, the budget is allocated in the provisional sums for the payment of the works. The payment for emergency works shall be made at existing Bill of Quantities (BoQ) rates or at appropriate Dayworks rates for each corresponding BoQ pay items with the Adjustments for Changes in Cost in accordance with Sub-clause 13.8. Such payments shall not be subject to additional overhead because of the fact that the BoQ and Dayworks rates quoted by the Contractor are with his overhead.

For Reference Only

Subject	Ref. GCC	Data
Adjustments for Changes in Cost	**13.8**	**Phase 1: Upgrading Works** The Contract Price shall be adjustable during Contract Execution for Phase 1: Upgrading works. The formulae to be applied shall be as given in the GCC Clause 13.8 and the coefficients shall be as stated in the relevant table of adjustment data. **Phase 2: Performance Based Maintenance Works** The Contract Price shall be adjustable during Contract Execution for Phase 2: Performance Based Maintenance Works. In the manner described below. The amount certified in each payment certificate shall be adjusted by applying the formulae below $P_c=A_c+B_c\ I_{mc}/I_{oc}$ Where: P_c is the adjustment factor for the portion of the Contract Price Payable The non-adjustable and adjustable coefficients shall be as follows: A_c= 0.15 B_c= 0.85 The index (I) shall be National Salary and Wage Index: Construction Labourer published by Nepal Rastra Bank. I_{mc} is the index value prevailing at the end of the month being invoiced. I_{oc} is the index value prevailing 28 days before the commencement of the Phase 2" Performance based Maintenace Works.
The Contract Price	**14.1**	*Add the following paragraph at the end of Sub-clause 14.1:* The Contractor shall also pay royalties, tolls, value added tax and income tax. With respect to the income taxes including taxes on the Contractor's staff, personnel and labour, the Contractor shall perform such duties in regard to Tax Deductions at Source (TDS) thereof as may be applicable by the laws and regulations of Nepal.

For Reference Only

Subject	Ref. GCC	Data
Payment of Retention Money	**14.9**	In the first paragraph in the first and second sentence after "Taking-Over Certificate"" insert "for Phase 1: Upgrading Works". *Delete the second paragraph and replace with the following:* "Promptly after the expiry date of the Defects Notification Period of Phase 1: Upgrading Works, out of the 50% outstanding balance of the Retention money, the Engineer shall certify 25% of it for payment to the Contractor." In the fifth paragraph in the first sentence after "Taking- Over Certificate" and insert "for Phase 1: Upgrading Works". *Delete the sixth (last) paragraph of the Sub-clause 14.9.* *Add the following paragraph at the end of Sub-clause 14.9:* If the Contractor complies with the Operational Service Levels defined in Table 33.4 Pavement Roughness in Section 3300 of Part 2 Employers Requirements; the outstanding 25% of the Retention Money after the Defects notification Period of Phase 1: Upgrading Works shall be repaid to the Contractor in the following manner: At the end of each completed year of the Phase 2: Performance Based Maintenance Works by 5 % of the Retention Money at the end of each year, so that the Retention Money will be reduced to nil at the completion of 5 (five) years of Phase 2: Performance Based Maintenance Works.
Payment Reduction	**14.16** **(Additional Clause)**	Add additional Clause 14.16 "Payment Reduction" as below: Reduction of monthly payments for performance based maintenance works shall be applied in case of non- compliance with Service Levels by means of Payment Reduction Points (PRP), as indicated in the Section 3300 of Part 2: Employers Requirements. The value of each Payment Reduction Point (PRP) is NRs. 600.00 during the first full six (6) months of Phase 2 and NRs. 1,000.00 thereafter. The Payment Reduction Points are subject to price adjustment in a manner as described in Clause 13.8 for Phase 2 works.

For Reference Only

Subject	Ref. GCC	Data
Eligibility	**21**	*Add New GCC Clause 21 "Eligibility"*
	21.1	*Add new GCC Sub-clause 21.1 as follows:* The Contractor shall have the nationality of an ADB member country. The Contractor shall be deemed to have the nationality of a country if the Contractor is a citizen or is constituted, or incorporated, and operates in conformity with the provisions of the laws of that country. This criterion shall also apply to the determination of the nationality of proposed subcontractors or suppliers for any part of the Contract including related services.
	21.2	*Add new GCC Sub-clause 21.2 as follows:* The materials, equipment and services to be supplied under the Contract shall have their origin in eligible source countries and all expenditures under the Contract will be limited to such materials, equipment, and services. At the Employer's request, the Contractor may be required to provide evidence of the origin of materials, equipment and services.

For Reference Only

Appendix 1 – Initial Environmental Examination
(In separate Volume)

For Reference Only

Appendix 2 – Environmental Management Plan

For Reference Only

Appendix 3 – Resettlement Plan
(In separate Volume)

For Reference Only

Appendix 4 – GESI provision of the PAM

For Reference Only

Section 9 - Contract Forms

This Section contains forms which, once completed, will form part of the Contract. The forms for Performance Security and Advance Payment Security, when required, shall only be completed by the successful Bidder after contract award.

For Reference Only

Table of Forms

Notice of Intention for Award of Contract **9-2**
Notification of Award **9-3**
Contract Agreement **9-4**
Performance Security **9-6**
Advance Payment Security **9-7**

Notice of Intention for Award of Contract

---- on letterhead paper of the employer ----

. . . . . date of notification . . . . . .

To: . . . . . *name of the bidder* . . . . . .
Attention: . . . . . *insert name of the bidder's authorized representative* . . . . . .
Address: . . . . . *insert address of the bidder's authorized representative* . . . . . .
Telephone/Fax numbers: . . . . . *insert telephone/fax numbers of the bidder's authorized representative* . . . . . .
E-mail Address: . . . . . *insert e-mail address of the bidder's authorized representative* . . . . . .

This is to notify you of our intention to award the contract [. . . . . *insert name of the contract and identification number, as given in the Bid Data Sheet* . . . . .]. You have [. . . *insert number of days as specified in ITB 41.1 of the BDS* . . .] days , from the date of this notification to (i) request for a debriefing in relation to the evaluation of your Bid, and/or (ii) submit a bidding-related complaint in relation to the intention for award of contract, in accordance with the procedures specified in ITB 46.1.

The summary of the evaluation are as follows:

1. List of Bidders

Name of Bidder	Bid Price as read out at opening	Evaluated Bid Price

2. Reason/s why your Bid was unsuccessful

……
……
……

3. The successful Bidder

Name of Bidder:	
Address:	
Contract Price:	
Duration of Contract:	
Scope of the Contract Awarded:	
Amount Performance Security Required:	

Authorized Signature: ……

Name and Title of Signatory: ……

Name of Agency: ……

For Reference Only

Notification of Award

[on letterhead paper of the employer]

Letter of Acceptance

. . . . . *date*. . . . . .

To: . . . . . *Name and address of the contractor* . . . . . .

Subject: . . . . . *Notification of Award Contract No.* . . . . . .

This is to notify you that your Bid dated . . . . *date* . . . . for execution of the . . . . . *.name of the contract and identification number, as given in the Bid Data Sheet* . . . . . for the Accepted Contract Amount of the equivalent of . . . . . *.amount in words and figures and name of currency* . . . . . , as corrected and modified in accordance with the Instructions to Bidders is hereby accepted by our Agency.

You are requested to furnish the Performance Security within 28 days in accordance with the Conditions of Contract and any additional security required as a result of the evaluation of your bid, using for that purpose the Performance Security Form included in Section 9 (Contract Forms) of the Bidding Document.

Authorized Signature: .....

Name and Title of Signatory: .....

Name of Agency: .....

Attachment: Contract Agreement

For Reference Only

Contract Agreement

THIS AGREEMENT made the . . . . .day of . . . . . ., ..., between . . . . *.name of the employer. . . . .* . . . . (hereinafter "the Employer"), of the one part, and . . . . *.name of the contractor. . . .* .(hereinafter "the Contractor"), of the other part:

WHEREAS the Employer desires that the Works known as . . . . *.name of the contract. . . . .*should be executed by the Contractor, and has accepted a Bid by the Contractor for the execution and completion of these Works and the remedying of any defects therein.

The Employer and the Contractor agree as follows:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Contract documents referred to.
2. The following documents shall be deemed to form and be read and construed as part of this Agreement. This Agreement shall prevail over all other Contract documents.
   (a) the Contract Agreement,
   (b) the Letter of Acceptance,
   (c) the Letter of Technical Bid,
   (d) the Letter of Price Bid,
   (e) the Addenda Nos . . . . *.insert Addenda numbers if any*. . . . .
   (f) the Particular Conditions of Contract – Part A,
   (g) the Particular Conditions of Contract – Part B,
   (h) the List of Eligible Countries that was specified in Section 5 of the Bidding Document
   (i) the General Conditions of Contract,
   (j) the Specifications,
   (k) the Drawings,
   (l) the completed Schedules including Bill of Quantities, and
   (m) any other documents shall be added here. [1]
3. In consideration of the payments to be made by the Employer to the Contractor as indicated in this Agreement, the Contractor hereby covenants with the Employer to execute the Works and to remedy defects therein in conformity in all respects with the provisions of the Contract.
4. The Employer hereby covenants to pay the Contractor in consideration of the execution and completion of the Works and the remedying of defects therein, the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

[1] Tables of Adjustment Data may be added if the contract provides for price adjustment (see GCC 13.8).

For Reference Only

IN WITNESS whereof the parties hereto have caused this Agreement to be executed in accordance with the laws of . . . . *name of the borrowing country. . . .* on the day, month and year indicated above.

Signed by	Signed by.....
for and on behalf of the Employer in the presence of	for and on behalf the Contractor in the presence of
Witness, Name, Signature, Address, Date	Witness, Name, Signature, Address, Date

For Reference Only

Performance Security

.....Bank's name, and address of issuing branch or office.....

Beneficiary: *.....Name and address of the employer .....*

Date: .....

Performance Guarantee No.: .....

We have been informed that . . . . . *name of the contractor. . . . .* (hereinafter called "the Contractor") has entered into Contract No. . . . . *reference number of the contract. . . . .* dated . . . . . .with you, for the execution of . . . . . *name of contract and brief description of works. . . . .* (hereinafter called "the Contract").

Furthermore, we understand that, according to the conditions of the Contract, a performance guarantee is required.

At the request of the Contractor, we . . . . . *name of the bank. . . . .* hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of . . . . . *name of the currency and amount in words*[2] . . . . . (. . . . . *amount in figures. . . . .*) such sum being payable in the types and proportions of currencies in which the Contract Price is payable, upon receipt by us of your first demand in writing accompanied by a written statement stating that the Contractor is in breach of its obligation(s) under the Contract, without your needing to prove or to show grounds for your demand or the sum specified therein.

This guarantee shall expire, no later than the . . . . . Day of . . . . . , ... [3], and any demand for payment under it must be received by us at this office on or before that date.

This guarantee is subject to the Uniform Rules for Demand Guarantees, ICC Publication No. 458 (*or ICC Publication No. 758 as applicable*), except that subparagraph (ii) of Sub-article 20(a) is hereby excluded.[4]

. . . . . .

Signature(s) and seal of bank (where appropriate)

If the institution issuing the performance security is located outside the country of the employer, it shall have a correspondent financial institution located in the country of the employer to make it enforceable.

For Reference Only

[2] The guarantor shall insert an amount representing the percentage of the contract price specified in the contract and denominated either in the currency(ies) of the contract or a freely convertible currency acceptable to the employer.

[3] Insert the date 28 days after the expected completion date. The employer should note that in the event of an extension of the time for completion of the contract, the employer would need to request an extension of this guarantee from the guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee. In preparing this guarantee, the employer might consider adding the following text to the form, at the end of the penultimate paragraph: "The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed [6 months][1 year], in response to the Employer's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee."

[4] Or the same or similar to this clause specified in the Uniform Rules for Demand Guarantees, ICC Publication No. 758 where applicable.

Advance Payment Security

.....Bank's name, and address of issuing branch or office.....

Beneficiary: *.....Name and address of the employer .....*

Date: .....

Advance Payment Guarantee No.: .....

We have been informed that . . . . . *name of the contractor. . . . .* (hereinafter called "the Contractor") has entered into Contract No. . . . . *reference number of the contract. . . . .* dated . . . . . .with you, for the execution of . . . . . *name of contract and brief description of works. . . . .* (hereinafter called "the Contract").

Furthermore, we understand that, according to the Conditions of the Contract, an advance payment in the sum . . . . . *name of the currency and amount in words*[5]*. . . . . .* (. . . . . *amount in figures. . . . .*) is to be made against an advance payment guarantee.

At the request of the Contractor, we . . . . . *name of the bank. . . . .* hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of . . . . . *name of the currency and amount in words*[6]*. . . . . .* (. . . . . *amount in figures. . . . .*) upon receipt by us of your first demand in writing accompanied by a written statement stating that the Contractor is in breach of its obligation under the Contract because the Contractor:

(a) used the advance payment for purposes other than the costs of mobilization and cash flow support in respect of the Works; or

(b) has failed to repay the advance payment when it has become due and payable in accordance with the conditions of the Contract, specifying the amount payable by the Contractor.

It is a condition for any claim and payment under this guarantee to be made that the advance payment referred to above must have been received by the Contractor on its account number . . . . . *Contractor's account number. . . . .* at . . . . . *name and address of the bank. . . . .* .

The maximum amount of this guarantee shall be progressively reduced by the amount of the advance payment repaid by the Contractor as indicated in copies of interim statements or payment certificates which shall be presented to us. This guarantee shall expire, at the latest, upon our receipt of a copy of the interim payment certificate indicating that ninety percent (90%) of the Contract Price has been certified for payment, or on the . . . day of . . . . . , ...[7], whichever is earlier. Consequently, any demand for payment under this guarantee must be received by us at this office on or before that date.

This guarantee is subject to the Uniform Rules for Demand Guarantees, ICC Publication No. 458 (*or ICC Publication No. 758 as applicable*).

. . . . . .

Signature(s) and seal of bank (where appropriate)

Note to Bidder

If the institution issuing the advance payment security is located outside the country of the employer, it shall have a correspondent financial institution located in the country of the employer to make it enforceable.

[5] The guarantor shall insert an amount representing the amount of the advance payment denominated either in the currency(ies) of the advance payment as specified in the Contract, or in a freely convertible currency acceptable to the employer.

[6] Footnote 1.

[7] Insert the expected expiration date of the time for completion. The employer should note that in the event of an extension of the time for completion of the contract, the employer would need to request an extension of this guarantee from the guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee. In preparing this guarantee, the employer might consider adding the following text to the form, at the end of the penultimate paragraph: "The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed [6 months][1 year], in response to the Employer's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee."

For Reference Only

Government of Nepal
Ministry of Physical Infrastructure and Transport
Department of Roads
Project Directorate (ADB)
Kathmandu, Nepal

SASEC Mugling Pokhara Highway Improvement Phase I Project(SMPHIP)
(ADB Project No. 52097-002)

Mugling-Anbukhaireni-Pokhara Road (Section – 2) From Km 49+700 to km 88+583

Contract No. SMPHIP/OCB/MAP/02

Phase 1: Upgrading Works
(Upgrading of existing road from 2-Lanes to 4 Lanes and Service Lanes, Structures, Bridges, etc. including Defect Notification Period)

Phase 2: Performance Based Maintenance Works
(Maintenance works consisting of all activities to be carried out to achieve and keep the road assets as defined in the PBM Specifications)

Bidding Document

Part III Conditions of Contract

Appendix-1: Initial Environment Examination

November, 2019

For Reference Only

Government of Nepal

Ministry of Physical Infrastructure and Transport

Singha Durbar, Kathmandu, Nepal

INITIAL ENVIRONMENTAL EXAMINATION REPORT

for

UPGRADING OF

MUGLING – POKHARA ROAD

(Km 00+250 to Km 88+833)

(Tanahun, Kaski Districts)

Submitted to

Ministry of Physical Infrastructure and Transport

Singhdurbar, Kathmandu

Submitted by:
Geo-Environment and Social Unit
Department of Roads, Pulchowk, Lalitpur
Phone No: 977-1-5529075, 5005521,
Fax: 977-1-55291006
Email: gesu.dor@gmail.com,
gesunit@dor.gov.np

On behalf of
ADB Project Directorate
Bishalnagar, Kathmandu, Nepal

Prepared by:
MMM Group, Canada, In association with ITECO Nepal (P) Ltd., Total Management Services Pvt. Ltd. and Material Test Pvt. Ltd., PO Box 675, Kathmandu, Nepal
Ward No 34, Min Bhawan, KMC
Telephone: 4620054
Fax: +977-1-4620054
Email: mmm.tppf@gmail.com,
www.mmm.ca

June 2018

MMM GROUP

For Reference Only

For Reference Only

नेपाल सरकार
भौतिक पूर्वाधार तथा यातायात मन्त्रालय
सडक विभाग
योजना तथा डिजाईन महाशाखा
भू-वातावरण तथा सामाजिक शाखा

पोष्टबक्स: ५५२९५०६
फोन नं ५००५५२०
हाल: पाटन, ललितपुर
ई-मेल: gesunit@dor.gov.np
वेब साईट: www.dor.gov.np

चलानी नं-५८९/२.२.२/०७४/७५ मिति :-२०७५/०३/०८

श्री आयोजना निर्देशनालय (ए.डि.वी.),
विशालनगर, काठमाण्डौं ।

Revenue Receipt No. 2288 Date 06/3/198

विषय: प्रारम्भिक वातावरणीय परीक्षण (IEE) को प्रतिवेदन स्वीकृत भएको सम्बन्धमा ।

उपरोक्त सम्बन्धमा तहाँ आयोजना कार्यालबाट गराईएको Mugling-Pokhara Road, Tanahun, Kaski र Approach Road & Bridges in Kamala to Koshi Section of East-West Highway (Phase I), Saptari & Siraha को परिमार्जित IEE प्रतिवेदन श्री भौतिक पूर्वाधार तथा यातायात मन्त्रालय, वातावरण तथा सामाजिक शाखाको प.सं.०७४।०७५।२.३ च.नं.१२८४ र १२९९ मिति २०७५।०३।०६ को पत्रानुसार नेपाल सरकार (सचिवस्तर) को मिति २०७५।०२।३१ र २०७५।०३।०४ को निर्णयानुसार शर्त सहित स्वीकृत भएको व्यहोरा अनुरोध गरिन्छ ।

संलग्नः १. भौतिक पूर्वाधार तथा यातायात मन्त्रालयको पत्र छायाप्रति - २ प्रति
२.स्वीकृत IEE प्रतिवेदन - १/१ थान

२०७-३-६

शिवराज अधिकारी
ईकाई प्रमुख

For Reference Only

For Reference Only

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email : info@moppw.gov.r

नेपाल सरकार
भौतिक पूर्वाधार तथा यातायात मन्त्रालय
(वातावरण तथा सामाजिक शाखा)

फोन नं. ४२११८८०
४२११९३१
४२११६५५
फ्याक्स नं. ४२११७२०
सिंहदरबार, काठमाडौं,
नेपाल

पत्र सख्यां ०७४।०७५।२.३
चलानी न.: १२८४

मिति : २०७५/०३/०४

विषय: **प्रारम्भिक वातावरणीय परीक्षणको प्रतिवेदन स्वीकृति भएको सम्बन्धमा ।**

श्री सडक विभाग,
भू-वातावरण तथा सामाजिक शाखा,
पुल्चोक, ललितपुर ।

९०३७
०७५/२/५

प्रस्तुत विषयमा तहाँ विभागबाट स्वीकृतिको लागि पेश भै आएको **Mugling-Pokhara Road, Tanahun, Kaski** को प्रारम्भिक वातावरणीय परीक्षण (IEE) को परीमार्जित प्रतिवेदन नेपाल सरकार (सचिवस्तर) को मिति २०७५/०२/३१ को निर्णयानुसार तपशिल बमोजिमको शर्त सहित स्वीकृत भएको व्यहोरा अनुरोध छ ।

- प्रारम्भिक वातावरणीय परीक्षण (IEE) को परीमार्जित प्रतिवेदनमा लिखित निर्माण एवं संचालनका समयमा हाल पहिचान/आङ्कलन भएका प्रभावहरुका अलावा अन्य प्रभावहरु देखिएमा अनुकुल प्रभाव अधिकतम गर्ने तथा प्रतिकुल प्रभाव न्यून गर्ने उपायहरु गर्ने र सो को लागि एवं वातावरण व्यवस्थापन योजना अन्तर्गत उल्लिखित कार्यहरुको प्रभावकारी रुपमा कार्यान्वयन गर्न सो प्रतिवेदनमा उल्लिखित अनुमानित बजेट नपुग भएमा पनि बजेटको व्यवस्था गरी सम्पूर्ण कार्यहरु गर्नुपर्ने छ ।

- वातावरणीय अनुगमनको क्रममा वातावरण संरक्षणका उपायहरुको कार्यान्वयनको स्थिति र प्रस्ताव निर्माण तथा कार्यान्वयनको अवस्थामा देखिएका अन्य वातावरणीय प्रभावहरु एवं तिनको व्यवस्थापन गर्न गरिएको प्रयासहरु लगायत आयोजना कार्यान्वयन गर्दा सम्बन्धित निकायहरुको सहभागिता सुनिश्चित भएको तथा प्रस्ताव कार्यान्वयनको क्रममा अन्य प्रचलित कानून आकर्षित भएमा तिनको पूर्ण पालना भएको पक्ष समेत झल्किने गरी प्रस्ताव कार्यान्वयन अवधिभर प्रस्तावकले बार्षिक अनुगमन प्रतिवेदन तयार गरी यस मन्त्रालयलाई पठाउनु पर्नेछ ।

३।१८

(शोभा भण्डारी)
समाजशास्त्री

आयोजना निर्देशनालय (ADB)
लाइ जानकारी जमाउने।

For Reference Only

For Reference Only

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नेपाल सरकार
भौतिक पूर्वाधार तथा यातायात मन्त्रालय
(वातावरण तथा सामाजिक शाखा)

फोन नं. ४२११८८०
४२११९३१
४२११६५५
फ्याक्स नं. ४२११७२०
सिंहदरबार, काठमाडौं,
नेपाल

पत्र सख्यां ०७४।०७५।२.३
चलानी न.: १२९९

मिति : २०७५/०३/०६

विषय: **प्रारम्भिक वातावरणीय परीक्षणको प्रतिवेदन स्वीकृति भएको सम्बन्धमा ।**

श्री सडक विभाग,
भू-वातावरण तथा सामाजिक शाखा,
पुल्चोक, ललितपुर ।

१५४३
०७५।३।८

प्रस्तुत विषयमा तहाँ विभागबाट स्वीकृतिको लागि पेश भै आएको **Approach Road & Bridges in Kamala to Koshi Section of East-West Highway (Phase I), Saptari & Siraha** को प्रारम्भिक वातावरणीय परीक्षण (IEE) को परीमार्जित प्रतिवेदन नेपाल सरकार (सचिवस्तर) को मिति २०७५/०३/०४ को निर्णयानुसार तपशिल बमोजिमको शर्त सहित स्वीकृत भएको व्यहोरा अनुरोध छ ।

- प्रारम्भिक वातावरणीय परीक्षण (IEE) को परीमार्जित प्रतिवेदनमा लिखित निर्माण एवं संचालनका समयमा हाल पहिचान/आङ्कलन भएका प्रभावहरुका अलावा अन्य प्रभावहरु देखिएमा अनुकुल प्रभाव अधिकतम गर्ने तथा प्रतिकुल प्रभाव न्यून गर्ने उपायहरु गर्ने र सो को लागि एवं वातावरण व्यवस्थापन योजना अन्तर्गत उल्लेखित कार्यहरुको प्रभावकारी रुपमा कार्यान्वयन गर्ने सो प्रतिवेदनमा उल्लिखित अनुमानित बजेट नपुग भएमा पनि बजेटको व्यवस्था गरी सम्पूर्ण कार्यहरु गर्नुपर्ने छ ।

- वातावरणीय अनुगमनको क्रममा वातावरण संरक्षणका उपायहरुको कार्यान्वयनको स्थिति र प्रस्ताव निर्माण तथा कार्यान्वयनको अवस्थामा देखिएका अन्य वातावरणीय प्रभावहरु एवं तिनको व्यवस्थापन गर्न गरिएको प्रयासहरु लगायत आयोजना कार्यान्वयन गर्दा सम्बन्धित निकायहरुको सहभागिता सुनिश्चित भएको तथा प्रस्ताव कार्यान्वयनको क्रममा अन्य प्रचलित कानून आकर्षित भएमा तिनको पूर्ण पालना भएको पक्ष समेत झल्किने गरी प्रस्ताव कार्यान्वयन अवधिभर प्रस्तावकले बार्षिक अनुगमन प्रतिवेदन तयार गरी यस मन्त्रालयलाई पठाउनु पर्नेछ ।

२।७।१
३।६

(शोभा भण्डारी)
समाजशास्त्री

For Reference Only

For Reference Only

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कार्यकारी सारांश

पृष्ठभूमि:

प्रस्तावित मुग्लिङ्ग - पोखरा सडक स्तरोन्नति आयोजनाले हालको ९० कि.मि. लामो डबल लेनको मुग्लिङ्ग - पोखरा सडक को ८८.५८३ कि.मि. सडक खण्ड स्तरोन्नति गरी चार लेनको चौडा पिच सडक बनाउने योजना राखेको छ। यो मुग्लिङ्ग - पोखरा सडक खण्ड पृथ्वी राजमार्ग (१७४ कि.मि., नौबिसे-पोखरा) अन्तर्गतको सडक खण्ड हो । प्रस्तावित सडक स्तरोन्नति कार्यले त्यस सडक खण्डमा हुने ट्राफिक जाम, दुर्घटनालाई न्युन गर्ने तथा राम्रो, सजिलो र छिटो यातायातको सेवा दिन सक्षम हुनेछ। यसले नेपालको पश्चिमाञ्चल बिकास क्षेत्रलाई जोड्दै द्रुत गतिमा सो क्षेत्र को शहरीकरणका साथै आर्थिक विकासमा समेत मद्दत पुर्‍याउने छ।
प्रस्तावित सडक तनहुं जिल्लाको आँबुखैरेनी गाउँपालिका, बन्दीपुर गाउँपालिका, व्यास नगरपालिका, म्याग्दे गाउँपालिका र शुक्लगण्डकी नगरपालिका हरू र कास्की जिल्लाको पोखरा लेखनाथ महानगरपालिका (पुरानो संरचना अनुसार तनहुं जिल्लाको आँबु खैरेनी, बन्दीपुर, व्यास र शुक्लगण्डकी नगरपालिका हरू र घाँसीकुवा, जामुने भञ्ज्याङ्ग, मान्पाङ्ग र छाङ्ग गा.वि.स.हरू तथा कास्की जिल्लाको लेखनाथ नगरपालिका र पोखरा उप-महानगरपालिका) भएर जान्छ।

प्रस्तावक:

मुग्लिङ्ग - पोखरा सडक स्तरोन्नति आयोजनाको प्रस्तावक आयोजना निर्देशनालय-एडीबी, सडक विभाग, भौतिक पूर्वाधार तथा यातायात मन्त्रालय हो।

प्रारम्भिक वातावरणीय परीक्षण अध्ययनको सान्दर्भिकता

प्रस्तावित मुग्लिङ्ग - पोखरा सडक स्तरोन्नति आयोजना नेपाल सरकारको वातावरण संरक्षण ऐन, २०५३ तथा वातावरण संरक्षण नियमावली, २०५४ को नियम ३ सँग सम्बन्धित अनुसूची १(ई)(६) ले आकृष्ट गरे बमोजिम मूख्य सहायक सडक स्तरोन्नती कार्य गर्ने सँग सम्बन्धित भएकोले प्रस्तावको प्रारम्भिक वातावरणीय परीक्षण कार्य गर्नु आवश्यक भएकोले सो बमोजिमको यो प्रतिवेदन तयार गरीएको हो। प्रस्तावित सडक स्तरोन्नति आयोजना कार्यान्वयनको लागि ५ हेक्टर भन्दा कम (२.५० हेक्टर) वन क्षेत्रको रुख तथा वनस्पतीहरु हटाउनु पर्ने देखिन्छ साथै यो सडक खण्ड कुनै राष्ट्रिय निकुञ्ज, वन्यजन्तु आरक्ष, संरक्षित वा मध्यवर्ती क्षेत्रमा पर्दैन । यो प्रारम्भिक वातावरणीय परीक्षण प्रतिवेदन भौतिक पूर्वाधार तथा यातायात मन्त्रालयबाट वि.सं. २०७३/०१/०७ मा सचिव स्तर निर्णयबाट स्वीकृत गरिएको कार्यसूची अनुसार तयार पारिएको हो।

प्रारम्भिक वातावरणीय परीक्षण अध्ययनको उद्देश्य:

प्रारम्भिक वातावरणीय परीक्षण अध्ययनको मुख्य उद्देश्य प्रस्तावित आयोजना निर्माण तथा संचालन बाट उक्त क्षेत्रको भौतिक, जैविक, सामाजिक, आर्थिक तथा सांस्कृतिक वातावरणमा पर्न सक्ने प्रभावहरु पत्ता लगाई नकारात्मक प्रभावको न्यूनिकरण र सकारात्मक प्रभाव बढाउने उपायहरु बारे सुझाव दिनु, वातावरणीय अनुगमन योजना बनाई कार्यान्वयन गराउनु, तथा प्रस्तावित सडक आयोजनाको लागि प्रारम्भिक वातावरणीय परिक्षण गरे पुग्छ भन्ने कुराको यकिन गर्नु हो।

आयोजनाको संक्षिप्त विवरण

यस आयोजनाको कार्य क्षेत्र अन्तर्गत प्रस्तावित सडक स्तरोन्नति आयोजना आँबु खैरेनी गाउँपालिकाको त्रिशुलि पुलमा समुद्री सतह देखि २५७.२८९ मी. को उचाई बाट शुरु भएर पोखरा

For Reference Only

लेखनाथ महानगरपालिकाको सेतीपुलमा समुद्री सतहदेखि ८३५.७९५ मी. उचाइमा गएर टुङ्गिन्छ । वर्तमान आयोजना अन्तर्गत सडक खण्डको कूल लम्बाई ८८.५८३ कि.मी.हुनेछ । प्रस्तावित सडक स्तरोन्नति आयोजना नेपालको पश्चिमान्चल विकास क्षेत्र अन्तर्गत गण्डकी अञ्चल को तनहुं र कास्की जिल्ला मा पर्दछ । आँबु खैरेनी, सत्रसय फाँट, बिमल नगर, डुम्रेबजार, बन्दीपुर, घाँसीकुवा, दमौलि, जामुनेभञ्ज्याङ्ग, मान्पाङ्ग, छाङ्ग, कोत्रे, थर्पु, खैरेनीटार, दुलेगौंडा, सैनिक वस्ती, तालचोक, विजयपुर, अमरसिंहचोक आदी यस क्षेत्रका मूख्य बजारहरु हुन् ।

प्रस्तावित सडक, सडक विभागको निर्देशिका अनुसार राष्ट्रिय राजमार्ग (National Highway) अन्तर्गत बर्गीकृत गरिएको छ । जसलाई हालको २ लेन कालोपत्रे सडक बाट ४ लेन (कालोपत्र-AC) मा स्तरोन्नति गर्न प्रस्ताव गरिएको छ । यस आयोजनामा कुल ८८.५८३ कि.मि. सडक फराकिलो तथा मजबुत पार्ने, पुल पुलेसाहरु फेर्ने, सडक सुरक्षा सुधार सुधार्ने कार्यहरु पर्छन्। यस आयोजनाको कूल लागत करीब नेरु १५,६१४,४९२,६५०.०० (भ्याट सहित) रहने अनुमान गरिएको छ ।

अध्ययन प्रक्रिया

नोभेम्वर २०१६ (मङ्सीर/पुष २०७३) मा फिल्ड सर्वेक्षणवाट लिइएका तथ्याङ्क तथा अन्य उपलब्ध तथ्याङ्कहरुको साथै सामाजिक तथा प्राविधिक टोलीवाट पुनर्वास कार्यको सर्भेक्षणको लागि संकलन गरेका तथ्याङ्कहरु केलाएर प्रारम्भिक वातावरणीय परीक्षण प्रतिवेदन तयार गरी निष्कर्ष तथा सुझावहरु दिइएका छन् । सार्वजनिक छलफल प्रभावित नगरपालिका र गा.वि.स.का बस्तीहरुमा स्थानिय नेता, स्थानिय व्यक्ति, सामुदायिक वन उपभोक्ता समुह, शिक्षक हरु आदि संग गरिएको थियो ।

आयोजना क्षेत्रको वातावरणः

प्रस्तावित सडक खण्ड नेपालको पहाडी भेगमा अवस्थित छ र समुन्द्र सतहबाट करीब २५७.२८९ मी. (त्रिशुलि पुल) देखि ८३५.७९५ मी. (पोखरा सेती पुल) सम्मको उचाइमा फैलिएको छ । सडक अधिकांश खण्ड खेतियोग्य जमिन तथा बस्ति क्षेत्र भएर जान्छ । प्रस्तावित सडक उपोष्ण (Sub-tropical) जलवायू भएको क्षेत्रमा रहेको छ त्यसैले यस क्षेत्रमा बर्षामा गर्मी तथा हिंउदमा जाडो हुने गर्दछ । आयोजना क्षेत्रको तापक्रम अधिकतम र न्यूनतम क्रमश ३८ र ५ डिग्री सेल्सीयस (तनहुं) र ३२ र २.२ डिग्री सेल्सीयस (कास्की जिल्ला) रहेको छ भने औसत वार्षिक वर्षा १७६१ (तनहुं) र १७०१.७० मी. मी. (कास्की जिल्ला) रहेको छ ।

आयोजना क्षेत्रमा उपोष्ण प्रकारको वन पाइन्छ । प्रस्तावित सडक आयोजना क्षेत्रमा पाइने प्रमुख वनस्पतिमा चिलाउने, साल, सिसौं, कदम, जामुन, करम, खयर, खिररो, टांकी, अमला, चिउरी, डाले कटुस, काफल, महुवा, उतिस, रातो सिरीश, साज, तातेरी, मयल आदि पर्दछन् । आयोजना क्षेत्रमा प्रमुख रुपमा पाइने जंगली जनावरहरुमा बाँदर, बन बिरालो, ढेंडु, दुम्सी, फयाउरो, स्याल, चरी बाघ, लोखर्के आदि पर्दछन् । यसैगरी भँगेरा, हुचिल, काग, कालिज, कोइली, लुइचे, सारङ्ग, ढूकूर, पिउरा जस्ता चराहरु आयोजना क्षेत्रमा पाईन्छन् ।

यो सडक खण्डमा कुकुरगाडे, चिसोपानि पुरानोकोट, श्री भाँगे, कोक्च, लोहि पाखा, याम्पा, श्रीश्वारदी, श्री शिव पार्वती, श्री सुन्दरी, श्री बाराही, महिला मखुवा, लामिडाँडा, श्री सिमलचौर, बागेडाँडा, कायाचौर छहरेपाखा, राईपुर कोत्रे र प्रगतिशिल आदी गरी सत्र वटा (१७) सामुदायिक वनहरू पर्दछन् । आयोजना क्षेत्र कुनै पनि संरक्षित क्षेत्र या तिनका मध्यवर्ती क्षेत्रभित्र पर्दैन ।

यो सडक खण्डको प्रभावित क्षेत्र भित्र तनहुं जिल्लाको आँबुखैरेनी गाउँपालिका, बन्दीपुर गाउँपालिका, व्यास नगरपालिका, म्यारदे गाउँपालिका र शुक्लगण्डकी नगरपालिका हरू र कास्की जिल्लाको

For Reference Only

पोखरा लेखनाथ महानगरपालिका हरु पर्दछन् जहां जम्मा घरधुरी संख्या १,४६,३६३ र जनसंख्या ५,८५,०६९ रहेको छ र सरदर परिवार संख्या ४.०० छ। यहाँ वसोवास गर्ने विभिन्न जात जातिका मानिसहरुमा मुख्य गरी ब्राहमण, क्षेत्री, गुरुङ्ग, दमाई/ढोलि,नेवार,ठकुरी, तामाङ, मगर, सार्की, कामी आदी जातिहरु पर्दछन् ।

यहाँका बासिन्दाहरुको मुख्य पेसा कृषि र पशुपालन हो । पहाडी क्षेत्र भएकोले कृषि उब्जनीले मात्र पर्याप्त नहुने हुँदा यहाँका मानिसहरुको अन्य पेशामा सरकारी तथा अन्य संस्थामा नोकरी गर्ने र व्यापार तथा पर्यटन व्यवसाय गर्ने गर्दछन् तथा मुख्यतया कामको खोजीमा विदेशका विभिन्न ठाँउमा जाने गर्दछन् जुन् जीविकोपार्जनको मुख्य आधार हो ।

मुख्य वातावरणीय प्रभावहरु:

सकारात्मक प्रभावहरु:

स्तरोन्नति गरीएको सडक यातायातको सुविधाले स्थानिय बासिन्दाहरुको जीवनमा थुप्रै सकारात्मक प्रभाव पर्दछन् । सडक स्तरोन्नति निर्माण कार्य हुँदा स्थानीय वासिन्दाहरुले श्रमिकको रुपमा रोजगारीका (करीव १३००००० अदक्ष र ३००००० दक्ष श्रमिक) अवसरहरु प्राप्त गर्ने र प्राविधिक सीप तथा ज्ञान समेत प्राप्त गर्ने छन्।

अन्य सकारात्मक प्रभावहरुमा समयको वचत हुनुका साथै आय आर्जनका संभावनाहरु बढ्न जाने तथा बजार सम्मको पहुँच सजिलो भई व्यवसायका अवसरहरु बढनेछन् । यस्ता प्रत्यक्ष फाइदा दिने कार्यक्रमवाट त्यस क्षेत्रको आर्थिक गतिविधि बढनुको साथै अन्य रोजगारीका अवसरहरु श्रृजना हुने छन् ।

स्तरोन्नति भएको सडक यातायातले गर्दा ग्रामीण भेगवाट बजार क्षेत्र र बजार क्षेत्रवाट ग्रामीण भेगमा सेवा तथा सामानहरुको ओसार पसार छिटो, छरितो, सुलभ तथा सस्तो हुन जानेछ । बजारमा पहुँच भएको कारण कृषि उत्पादन बढाउन कृषकहरु उत्साही हुनेछन् । यस्ले गर्दा उत्पादकत्वमा वृद्धि भई अन्ततोगत्वा ग्रामीण भेगका बासिन्दाको जीवनस्तरमा सुधार हुन जाने छ । स्तरोन्नति भएको सडक संचालन हुँदा त्यस क्षेत्रमा पर्यटकको संख्यावृद्धि हुन जाने संभावना छ जसको फलस्वरुपव्यापार व्यवसायमा वृद्धि हुन जानेछ । त्यस क्षेत्रमा बजार लगायतका वस्तीमा व्यापार क्षेत्रको विकास भई यहाँका बासिन्दाहरुको जीवन स्तरमा सुधार हुन जानेछ । बजार क्षेत्रको विकासले गर्दा जग्गाको मूल्यमा समेत वृद्धि हुन जानेछ ।

सडक सुधारको कार्यबाट पेट्रोलियम पदार्थको बचावट र गाडीका पार्ट पुर्जाको पनि हिफाजत हुनेछ । यसबाटसडकको स्तरमा व्यापक बृद्धि भई धुलो र धुंवा निस्कन कम हुनगई आयोजना क्षेत्रका बासिन्दाहरुको स्वास्थ्यमा कम असर पर्छ ।

नकारात्मक प्रभावहरु :

सडक स्तरोन्नति/पुननिर्माण कार्य गर्दा भौतिक वातावरणमा पर्ने नकारात्मक प्रभावहरुमा भू-स्वामित्वको प्रयोगमा वदलाव, भिरालो जग्गामा पहिरो जाने, वायु तथा पानीमा प्रदुषण, खनेको माटो फालिंदा पर्ने प्रभावहरु मुख्य छन् ।
यस्तै प्रकार जैविक प्रभाव अन्तर्गत विभिन्न जातका गरी करिब ७५० वटा रुखहरु सामुदायिक वनक्षेत्रबाट र निजी जमीन/सडक किनारा बाट ६,००० रुखहरु काटिने छन् । सडक निर्माण क्रियाकलापबाट जीवजन्तुलाई असर पर्ने तथा सडक निर्माण कार्यमा खटिएका कामदारहरुले स्थानिय वनका जीवजन्तुलाई जिस्क्याउने तथा तिनको शिकार गर्नसक्ने सम्भावना रहन्छ ।

For Reference Only

सामाजिक तथा आर्थिक प्रभाव अन्तर्गत सडक खण्ड स्तरोन्नती गर्दा १.२२ हेक्टर जग्गा (१.२१६ हेक्टर निजी जमीन तथा ०.००४ हेक्टर सरकारी जग्गा) अधिग्रहण गर्नुपर्ने देखिन्छ भने बाँकी जमिनहरु करिब २.५० हे. बनक्षेत्र पर्दछ । सडक स्तरोन्नति/पुनर्निर्माण गर्दा कुल ८६० घरधुरिका ४१८८ जनसंख्या प्रभावित हुन जानेछन तथा ८०० घरधुरिको ८१७ वटा निजी संरचना (५१२ वटा घर, १५० वटा पसल, १३५ वटा घर/पसल तथा २० अन्य) लाइ हटाउनु पर्ने हुन्छ। यसका साथै श्रमिक तथा अन्य बासिन्दाहरुको स्वास्थ्यमा सडक निर्माण हुँदा प्रतिकुल असर पर्न जानेछ ।
यस आयोजना बाट अस्थायी तवरमा हुन सक्ने प्रतिकुल असरहरुमा उपभोग भइरहेको जनताकासुविधा तथा सेवाहरु केहि समयका लागि अवरुद्ध हुन सक्छन् जसमा बिद्युतका पोल तथा लाइनहरु, टेलिफोनका पोल तथा लाइन, पिउने पानीका पाइपहरु तथा ९ वटा नहरका पाइपहरु पर्न सक्छन । सडक निर्माणको दौरान ९५ वटा ट्रान्सफर्मर, ३९४९ वटा बिद्युतका पोलहरु, ३५९ वटा टेलिफोनको पोलहरु, ११ वटा टेलिफोन क्याबिनेट, तथा १३५ वटा सार्वजनिक धाराहरुमा असर पर्न जान्छ।

सडक संचालनको दौरान भौतिक वातावरणमा पर्ने नकारात्मक असरहरुमा भिरालोपनको स्थायित्व र यसको व्यवस्थापन, वायु तथा ध्वनि प्रदुषण तथा सडक सुरक्षाका समस्याहरु पर्दछन् । यसै प्रकार जैविक प्रभावमा वन्य श्रोत घट्नु, वन्यजन्तुहरुलाई अप्ठेरो पर्ने हुन् भने सामाजिक तथा आर्थिक प्रभावहरुमा नयाँ वस्ती र बजारको अव्यवस्थित विस्तार, सामाजिक व्यवहारमा परिवर्तन हुनु आदि पर्दछन् ।

सकारात्मक प्रभाव बढाउने तथा नकारात्मक प्रभाव न्यूनिकरणका उपायहरु:

यस सडक स्तरोन्नतिको निर्माण कार्य वाट सकारात्मक तथा नकारात्मक दुवै प्रकारका प्रभावहरु पर्ने देखिन्छन् । सकारात्मक प्रभाव बढाउने उपायहरु तथा नकारात्मक प्रभाव न्यूनिकरण गर्ने उपायहरुको प्रभावकारी कार्यान्वयनले गर्दा सकारात्मक प्रभाव वढ्न जानुका साथै नकारात्मक प्रभाव न्यून गर्न सकिने वा हटाउन सकिने छन्। प्रभावहरुको आँकलनको आधारमा सडक निर्माण तथा संचालन दुवै चरणमा सकारात्मक प्रभाव बढ्ने उपाय र नकारात्मक प्रभाव घटाउने उपायहरु उल्लेख गरिएका छन् ।

सकारात्मक प्रभाव बढाउने उपायहरु:

सडक निर्माणका क्रममा बढी से बढी (अधिकतम) महिला सहभागिता गराईने कार्यमा जोड दिइने छ। कामदार तथा प्रभावित क्षेत्रका बासिन्दाहरुको जीविकोपार्जन सुधार गर्नको लागि विभिन्न शीपमूलक तालिमहरु (आय आर्जन, मोवाइल मर्मत, डकर्मि तालिम तथा मोटरसाइकल मर्मत, इन्जिनियरिगं संरचनाको निर्माण तथा जैविक प्रविधिका कामहरु सम्बन्धी) दिईने छन् ।

नकारात्मक प्रभाव न्यूनिकरणका उपायहरु:

श्रममा आधारित, बाताबरणीय मैत्री तथा सहभागीता मूलक अवधारणा को अवलम्बन गरी वाताबरणमा पर्नेप्रभावहरुको न्यूनिकरण गरिने छ । यस अनुरुप खन्ने र पुर्ने माटोको आयतनमा सन्तुलन मिलाउनुको साथै खनीएका बस्तुहरुको पुनः प्रयोग तथा जैविक प्रविधि (वायो इन्जिनियरिगं को प्रयोग गरिने छ । भिरालो जग्गाको व्यवस्थापनको लागि पर्याप्त प्रावधानहरु सडक आयोजनाको डिजाईनमा राखिएका छन् । खानी संचालन (Quarries Operation) अस्थिर (कमजोर) क्षेत्रहरु, भूक्षय हुने क्षेत्रहरु, वन, बस्तीहरु तथा उर्वरा जमीनमा गरिने छैन।

For Reference Only

स्थानीय वासिन्दालाई आफ्नो निजी जग्गामा वृक्षारोपण गराउन प्रोत्साहन गराईने छ । यसै प्रकार, सामुदायिक वन लाई १८,७५० विरुवाहरु (अनुमानित लागत ने. रु २८,१२,५००.००) वृक्षारोपण गर्न/गराउन सहयोग दिइनेछ जसले गर्दा रुखहरुको क्षती लाई परिपूर्ति गर्न सकिने छ । यसै प्रकार करिव १५,५३० रुखहरु (अनुमानित लागत ने.रु. १७,७९९,११५.००) सडक किनारामा वृक्षारोपण गराइनेछ जसले गर्दा रुखहरुको क्षती लाई परिपूर्ति गर्न सकिने छ ।

वन्य जन्तु र चराहरुलाई कम मात्रामा अवरोध होस भन्नाको लागि वनको छेउछाउमा निर्माण कार्य गर्दा व्यवस्थित तरिकाले गरिने छ । सडकमा परेको जग्गा तथा अन्य संरचना, सम्पतीको प्राप्ती तथा क्षतिपूर्ति सम्वन्धि कुराहरु लाई समेट्न छुट्टै पुनर्वास योजना (Resettlement Plan) बनाइएको छ । जस अनुरुप घर तथा जग्गा अधिग्रहणका लागि करिव ने.रु. १,१३७,४१२, ६५९.६० रकमको व्यवस्था आयोजनाबाट गरिएको छ। कामदारहरु लाई कामको प्रकृति अनुसार सुरक्षाका साधनहरु (सेफ्टी हेल्मेट, मास्क, ईयर मफल्स) दिईने छ र कामदारको लागि खानेपानी को आपूर्ति तथा अस्थाई खाल्टे चर्पी हरु बनाइने छन् । साथै पानीको श्रोतूहरु मा खनिएको माटो फालिनेछैन । कामदारहरुको लागि औषधी तथा दुर्घटना बीमाको व्यवस्था गरिएको छ ।

सडक संचालनको अवस्थामा साना साना पहिरो तथा माटोका खसेका हिस्काहरुलाई तुरुन्तै उचित प्रविधिबाट सफा गरिने छ । ड्राइभरहरुलाई सचेत गराउन वन, स्कूल र आवास क्षेत्र तथा वन्यजन्तु हिंडडुल गर्ने संभावित क्षेत्रहरुमा हर्न बजाउन निषेध गरिएका साइनबोर्डहरु राखिने छन्। साथै संभावित दुर्घटना बाट जोगाउन उपयुक्त सडक सुरक्षाका उपायहरु अवलम्बन गरिनेछन् ।

वातावरणीय व्यवस्थापन योजना:

यस प्रतिवेदनमा वातावरण व्यवस्थापन योजना अन्तर्गत आयोजनाबाट पर्ने संभावित असरहरु, असरहरुको प्रभाव, न्यूनीकरण विधि, अनुगमन विधी तथा कार्यतालिका प्रस्तावित गरिएको छ । यसका साथै न्यूनीकरणका उपायहरुको तथा अनुगमन कार्यको कार्यान्वयन गर्ने जिम्मेवार निकायहरुको पनि पहिचान गरिएको छ । अनुगमनका लागि आवश्यक भौतिक, जैविक, सामाजिक-आर्थिक तथा साँस्कृतिक वातावरणका विभिन्न अनुगमन सुचकाङ्कहरुको पनि पहिचान गरिएको छ। यस स्तरोन्नती आयोजनाको वातावरणीय प्रभाव न्यूनिकरणका लागी आयोजनाबाट करिव ने.रु. ५७१,७०५,८९५.९० अनुमानित लागत रकमको व्यवस्था गरिएको छ ।

निष्कर्ष:

प्रस्तावित मुग्लिङ्ग - पोखरा सडक खण्डको स्तरोन्नती कार्यको प्रारम्भिक वातावरणीय परीक्षण प्रतिवेदनले सकारात्मक प्रभावहरु नकारात्मक प्रभावको तुलनामा वढी महत्वपूर्ण रहेको र लामो समयसम्म रहने र नकारात्मक प्रभावहरु न्यूनिकरण गर्न सकिने कुरा देखाउँछ । साथै सार्वजानिक छलफलमा उठेका सान्दर्भिक सुझावहरु लाई प्रतिवेदनमा समेटीएको छ । यो सडक आयोजनाको स्वीकृतिको लागि प्रारम्भिक वातावरणीय परीक्षण प्रर्याप्त रहेको छ । यस अध्ययन अतिरिक्त वातावरणीय प्रभाव मूल्याङ्कन (EIA) अध्ययन गर्न नपर्ने निष्कर्ष छ।

For Reference Only

Executive Summary

Background

The proposed Mugling – Pokhara road improvement project is intended to widen and upgrade the 88.583 km road section from existing 90 km long road section from double lane to four lane bituminous paved standard. The Mugling – Pokhara Road is a section of the Prithvi Highway (174-kilometre, Naubise - Pokhara). Proposed road improvement work will help to cater increasing traffic load and provide smooth, easy and quick access eliminating existing traffic congestion and reduction in road accidents.

The road alignment passes through Anbukhaireni Rural Municipality, Bandipur Rural Municipality, Vyas Municipality, Myagde Rural Municipality, Shukla Gandaki Municipality of Tanahu district and Pokhara Lekhnath Metropolitan City (Old Anbukhaireni Municipality, Ghansikuwa VDC, Bandipur Municipality, Vyas Municipality, Jamune Bhanjyang, Manpang, and Chhang VDCs, Shukla Gandaki Municipality of Tanahu district and Lekhnath municipality and Pokhara Sub-metropolitan city in Kaski district respectively).

Project Proponent

The proponent of the proposed Mugling – Pokhara road improvement project is Project Directorate, ADB under Department of Roads, Ministry of Physical Infrastructure and Transport.

Rationality of the IEE Study

Proposed Mugling-Pokhara road upgrading project requires an Initial Environmental Examination (IEE) as per GoN, Environment Protection Act (EPA 1997) and Environment Protection Rules (EPR'97) 3, schedule 1(D), (6), the improvement of the standard, rehabilitation and reconstruction of feeder roads requires IEE. Implementation of the proposal requires clear felling or removal of vegetation up to 5 hectares (2.50 ha) within the forest area and the road section does not fall under any national park, wildlife reserve, conservation area, including buffer zone area. This Initial Environmental Examination (IEE) has been prepared as per the Terms of Reference for IEE Study approved through secretary level decision by Ministry of Physical Infrastructure and Transport (MoPIT) on 2073/01/07 BS.

Objectives of the IEE Study

The main objective of this IEE Study is to identify the impacts of proposed project construction and operation on physical, biological, socio-economic and cultural environment of the sub-project area and propose enhancement and mitigation measures to augment beneficial impacts avoid or mitigate adverse impacts, prepare and implement environmental monitoring plan for the sub-project and make sure that IEE is sufficient or not for the proposed road sub-project.

Brief Description of the Project

Under the present project scope, the road section starts from the right bank of the Trishuli river in Anbukhaireni Rural Municipality (257.289 m amsl) and ends at Seti River Bridge of at about km 88.583 (835.795 m amsl) in Pokhara Lekhnath Metropolitan City. The total length of upgrading road section will be 88.583 km. Proposed road upgrading project lies in

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Tanahun and Kaski districts of Gandaki zone in western development region of Nepal. Abukhaireni, Bimalnagar, Dumre Bazar, Bandipur, Ghansikuwa, Damauli, Jamunebhanjyang, Kotre, Tharpu, Khairenitar, Dulegaunda, Sainikbasti, Talchok, Bijaypur, Amarsingh chok are major market centres of the project area.

The proposed road is classified as a National Highway as per DoR standard with a status of "all weather" and is being proposed for upgrading to "all weather" 4 lane Asphalt Concrete National Highway. Under the present project scope, total length of 88.583 km road will be widened and strengthened and new bridges will be constructed, culverts will be replaced and improvement in road safety measures will be done. The total project cost is estimated at about NRs 15,614,492,650.00.

Study Methodology

The findings and conclusions of the report are based on the analysis of the information collected from the field during the month of November 2016 AD by undertaking a walk-through environmental survey along the proposed alignment and secondary information supplemented by information collected by the social and technical teams working on the resettlement survey and detail survey. Public consultation was made with the local people, local leaders, CFUGs, teacher in the concerned affected areas.

Existing Environmental Condition

Physiographically, the proposed road section lies in mountainous/hilly region and lies between an altitude of 257.289 m amsl (Trishuli Bridge) and 835.795 m amsl (Pokhara Seti Bridge). Most of the road section passes through settlement and agriculture land. Climatologically, the project area lies in subtropical region. The average maximum and minimum temperature of Tanahun district is 38ºC and 5ºC respectively and average annual rainfall in the district is 1761 mm. Similarly, the average annual rainfall in Kaski district is 1701.70 mm and the average maximum and minimum temperatures of this district is 32°C and 2.2°C respectively (District Profile of Kaski, 2014).

The dominant forest and fodder species reported in the the road alignment are Chilaune *(Schima wallichi)*, Sal (*Shorea robusta*), Sissau (*Dalbergia sissoo*), Kadam *(Anthocephalus chinensis)*, Jamun *(Syzygium cumini)*, Karam (*Adina cordifolia)*, Uttis (*Alnus nepalensis)*, Khayar *(Acacia catechu),* Khirro *(Sapium insigne),* Tanki *(Bauhinia purpurea),* Amala *(Phyllanthus emblica),* Chiyuri *(Aesandra butyracea),* Dale Katus *(Castanopsis indica),* Kafal *(Myrica esculenta),* Kyamun *(Syzigium cerasoides),* Mahuwa *(Engelhardifia spicata),* Rato siris *(Albizia chinensis),* Saj *(Terminalia tomentosa),* Salla *(Pinus roxburgii),* Tateri *(Dillenia pentagana),* Mayal *(Pyrus pashia)* etc. Leopard cat (*Felis bengalensis*), Jungle cat (*Felis Chaus*), Jackal (*Canis aureus*), monkey (*Macaca assamensis*), langur monkey (*Presbytis entellus*), Squirrel (*Funambulus pennati*), squirrel (*Funalbalus sp.*), Fox (*Vulpes bengalensis*), hare (*Lupus migricollis*) and porcupine (*Hystrix hodgsoni*) etc are the wild animals reported in the proposed road area. Similarly, birds are Sparrow (*Passer domesticus*), Owl Bam (*Tyto alba*), Crow (*Corous macrorhynches*), Nepali Kaliz pheasant (*Lophura leucomelanos*), Cuckoo (*Eudynamus scolopacea*), Jungle Fowl (*Gallus gallus*), *Myna (Gracula religiosa),* Red Turtle Dove (*Streptopelia tranquebarica*), and Hill Patridge (*Arborophila hyperythra*) etc.

The road section traverses seventeen (17) community managed forests namely; Kukurgade, Chisopani Puranokot, Sri Bhange, Kokcha, Lohi Pakha, Yampa, Sri Shwagdi, Sri Shiva

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Parvati, Sri Sundari, Sri Barahi, Mahila Makhuwa, Lamidanda, Sri Simalchaur, Bagedanda, Kayachaur Chhaharepakha, Raipurkotre, and Pragatishil. The project area does not fall under any protected or buffer zone area.

The project affected area of the proposed road consists of Anbukhaireni Rural Municipality, Bandipur Rural Municipality, Vyas Municipality, Myagde Rural Municipality, Shukla Gandaki Municipality of Tanahu district and Pokhara Lekhnath Metropolitan City of Kaski district respectively with total population of 5,85,069 in 1,46,363 households with average HH size of 4.00. Diverse ethnic groups such as Brahmin, Gurung, Chhetri, Damai/Dholi, Newar, Thakuri, Tamang, Magar and occupational caste (Damai, Sarki, Kami) lives along the ZoI of road alignment.

The main occupation of the people of the project area is agriculture and livestock. Due to the mountainous terrain, agriculture farming is not enough for subsistence level. Therefore, people are carrying out other economic activities like employment as labour, working in government and non government organizations, business, tourism and cottage industries. A significant section of the economically active male population goes out to various foreign countries to obtain employment. Earnings of people going to foreign countries play significant role in the livelihood of the people.

Major Environmental Impacts

Beneficial Impacts

Road upgrading construction work will have multifold beneficial impacts on local people's life. Road upgrading work will generate employment opportunity to local people as construction labour (about 1300000 person days of unskilled and 300000 person days of skilled manpower) and gain technical knowledge and skills.

During operation phase of road, transportation of good and services to and from rural area to the market area will become faster, easy and cheaper. Farmers will be encouraged to increase agriculture production because of improved access to market. Agricultural production will increase and willensure better economic condition of the people living in the rural area.More tourists will visit this area due to easy accessibility. Flow of visitors due to road upgrading will contribute in the enhancement of economic activities of the area which will increase the living condition of the local people.The better road network will result in increased land price due to development of market area.

The upgrading of the road will reduce running costs of vehicles such as fuel economy, reduction in wear and tear of vehicle parts etc. Due to the improvement in road condition, there will be reduction in dust and gas emission resulting in less health impact on the people of project area.

Adverse Impacts

During the road construction, some of the adverse impacts on physical environment include change in landuse pattern, landslides in sloping land, air and water pollution and impacts from disposal of soil and earth material.

The biological impacts during upgrading works will be loss of 2.50 hectares (ha) of forest area, 750 trees within formation width close to adjoining community forests, 6,000 trees from the private land/road side and disturbance to wildlife and bird habitat. Also during

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construction of road there might be possible impacts on wildlife as workers might harass/hunt the wildlife in the nearby forests, however, such impacts are very minimum.

Socio-economic impacts during the upgrading works will be loss of 1.22 ha land (1.216 ha private and 0.004 ha government land). Road upgrading works will result in loss of 817 private structures (512 residential, 150 commercial, 135 residential/commercial and 20 others) belonging to 800 households, and exposure to health and safety problems during road construction. Altogether 4188 people from 860 households will be affected from the improvement of road.

Potential adverse temporary impacts due to the proposed project are temporary disruption of public utilities and existing services as electrical poles/line, telephone poles/line, water supply pipelines, existing cross-drainage structures including nine (9) irrigation pipe crossings. Also 95 transformers, 3949 electric poles, 359 telephone poles, 11 telephone cabinets and 135 public tap stands are likely to be affected during construction of road. Labours and local people are prone to adverse health effects and accidents relating to construction activities.

During operation phase, vehicular movement, monsoon rain, grazing of animals and cutting of trees on the unstable slopes might result in slope instability and hence erosion and landslides might occur. The flowing water on the side drain of the road might cause erosion of soil on adjacent agricultural land. Vehicular emissions will result in air and noise pollution. Because of easy accessibility to the forest areas will deplete forest resources and wildlife population. New settlement, bazaar area will be expanded and this may increase encroachment of the RoW.

Environemntal Enhancement and Mitigation Measures

Impacts from the proposed road project can be both beneficial as well as adverse. An effective implementation of benefit maximization measures and adverse impacts mitigation measures would optimize the benefits expected from the project and avoid/minimize the adverse impact from the project. Based on the impact assessment and identification, beneficial augmentation and adverse impact mitigation measures are presented for both construction phase as well as for operation phase of the road.

Enhancement Measures

During the road construction more emphasis will be given to women workers. Life skill training like, income generation activities (Mobile repairing, Mason's training, and Motorcycle repairing Training), construction of soft engineering structures and bio-engineering works for workers and project affected people will be conducted to improve their livelihood.

Adverse Impacts Mitigation Measures

Spoils should be safely disposed and managed with minimum environmental damage using LEP approach which includes balanced cut and fill volume, re-use of excavated materials and minimum quantity of earth works and adoption of bio-engineering techniques. Adequate slope stabilization measures will be provisioned in design for the stabilization of slopes. Unstable sites, erosion prone area, dense forest area, settlements, fertile farm land will be avoided for quarrying operation.

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Loss of trees will be compensated by encouraging local people to plant trees in their private land. Likewise, CFUGs will be supported for the compensatory plantation of 18750 trees (estimated cost is NRs. 28,12,500.00) in community forests and loss of trees from roadside will be compensated by planting of about 15530 roadside avenue trees (NRs. 17,799,115.00) during road upgrading. The construction activities near forest area will be appropriately managed so that there will be least disturbance to the wildlife and birds. A separate Resettlement Plan has been prepared to address land and property acquisition as well as compensation issues. Based on the Resettlement Plan, an approximate amount of NRs. 1,137,412,659.60 has been estimated for implementation of resettlement activities.

The workers will be provided with helmets, masks, muffles depending on the nature of the construction work. Drinking water facility and temporary pit latrine will be established and disposal of excavated materials in the water bodies will be avoided. Workers will be provided with medicines and group accidental insurance facility.

During operation stage, minor landslide and mass wasting will be immediately cleared and slope restored with appropriate technology. Vehicle emission standard and speed limit of the vehicles will be maintained. Appropriate sign boards will be erected informing drivers about prohibition of blowing horns in the forest areas, schools, settlements and potential areas for wildlife crossing. Appropriate road safety measures will be applied.

Environmental Management Plan

The Environmental Management Plan (EMP) delineates key issues likely to arise from project implementation, and proposes mitigation measures, including monitoring schedule and responsibility. The EMP also outlines environmental management roles and responsibilities, road design and construction management of different activities, sitesupervision, monitoring and reporting, records, and corrective measures, improvementproposals, and cost estimates for mitigation measures. The tentative cost for implementation of EMP is estimated at around NRs. 571,705,895.90

Conclusion

The IEE study of the proposed Mugling – Pokhara road upgrading project reveals that the benefits from the implementation of the proposed road project are more significant and long term in nature against the adverse impacts most of which could be mitigated or avoided. Therefore, this IEE is sufficient for approval of the proposed Project and an EIA level study is not required.

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ACRONYMS/ABBREVIATIONS

AADT	Average Annual Daily Traffic
AC	Asphalt Concrete
ADB	Asian Development Bank
AIDS	Acquired Immune Deficiency Syndrome
AP	Affected People
BOD	Biological Oxygen Demand
BS	Bikram Samvat
CBOs	Community Based Organization
CBS	Central Bureau of Statistics
CDC	Compensation Determination Committee
CFUG	Community Forest User Group
CITES	Convention on International Trade in Endangered Species of Wild Flora and Fauna
CO	Carbon Monoxide
COI	Corridor of Impact
DBST	Double Bituminous Surface Treatment
DCC	District Coordination Committee
DFID	Department for International Development, UK
DG	Diesel Generating
DHM	Department of Hydrology and Meteorology
DNPWC	Department of National Parks and Wildlife Conservation
DoF	Department of Forest
DoFRS	Department of Forest Research and Survey
DoR	Department of Roads
DSC	Design and Supervision Consultant
EA	Executing Agency
EAG	Environmental Assessment Guidelines
EIA	Environmental Impact Assessment
EMG	Environmental Management Guidelines
EMP	Environmental Management Plan
EPR	Environment Protection Rules
ES	Environmental Specialist
FIDIC	Federation Internationale des Ingenieurs Conseils
FS	Feasibility Study
GESU	Geo-Environment and Social Unit
GHG	Green House Gas
GSHAP	Global Seismic Hazard Assessment Project
IA	Implementing Agency

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IEE	Initial Environmental Examination
IP	Indigeneous People
IUCN	International Union for Conservation of Nature
KMC	Kathmandu Metropolitan City
LEP	Labor based, Environmental friendly and Participatory
LPG	Liquefied Petroleum Gas
MCT	Main Central Thrust
MoPE	Ministry of Population and Environment
MoSTE	Ministry of Science, Technology and Environment
MoPIT	Ministry of Physical Infrastructure and Transport
NAAQS	Nepal Ambient Air Quality Standard
NEP	Nepal
NGO	Non-Governmental Organization
NOx	Nitrogen Oxide
OD	Origin-Destination
PAFs	Project Affected Families
PD	Project Directorate
PPC	Project Preparatory Consultant
PPE	Personal Protective Equipment
PIP	Priority Investment Plan
PSA	Poverty and Social Assessment
RCC	Reinforced Cement Concrete
RoW	Right of Way
RSSDU	Road Sector Skills Development Unit
SASEC	South Asia Sub-regional Economic Co-operation
SC	Supervision Consultant
SDC	Social Development Consultant
SEMP	Site specific Environmental Management Plan
SPAFs	Severely Project Affected Families
SRN	Strategic Road Network
TMO	Transport Management Office
TPPF	Transport Project Preparation Facility – ADB
VAT	Value Added Tax
VDC	Village Development Committee
vpd	Vehicle Per Day
ZOI	Zone of Influence

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CHAPTER 1

1. NAME AND ADDRESS OF THE INSTITUTION PREPARING THE REPORT

1.1 Proponent

The Proponent is Project Directorate (ADB), Department of Roads (DoR) under Ministry of Physical Infrastructure and Transport (MoPIT).

The address of Proponent is:
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Department of Roads
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Telephone Number: +977-1-4437492, 4437493, 4414239; **Fax Number:** +977-1-4437488
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1.2 Consultant

The consultants of the Transport Project Preparatory Facility (TPPF), Project Preparatory Consultant (PPC – 2) are MMM Group Limited Canada in association with ITECO Nepal (P) Ltd., Total Management Services Nepal and Material Test Pvt Ltd.

The address of Consultant is:
Post Box 675, Kathmandu, Nepal
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CHAPTER 2

2. SUMMARY OF THE PROPOSAL

2.1 Objective of the Proposal

The objective of the proposal is to upgrade the existing Mugling–PokharaRoadSectionfollowing the design standards developed for national highway by the Department of Roads (DoR). The upgrading works will include widening of the Mugling – Pokhara Section (km 00+250 to km 88+833) to meet the four Lane Standard with Asphalt Concrete pavement as per the DoR standard.

2.2 Rationality of the IEE Study

Proposed Mugling-Pokhara road upgrading project requires an Initial Environmental Examination (IEE) as per GoN, Environment Protection Act (EPA 1997) and Environment Protection Rules (EPR'97) 3, schedule 1(D), (6), the improvement of the standard, rehabilitation and reconstruction of national highway requires IEE. Implementation of the proposal requires clear felling or removal of vegetation up to 5 hectares (2.50 ha) within the forest area and the road section does not fall under any national park, wildlife reserve, conservation area, including buffer zone area. Thus, the IEE Study of the Proposal is a respect to mandatory requirement as per this provision. The approval of the IEE Report by the authorized agency, MoPIT is required before commencing the upgrading work.

2.3 Objective of the IEE

The main objective of this IEE Study is to identify the impacts of proposed project implementation on physical, biological, socio-economic and cultural environment of the sub-project area and propose mitigation measures to avoid or mitigate such impacts.

The specific objectives of the proposed IEE study are:

- To collect baseline information on the physical, biological, socio-economic and cultural aspects of the project area;
- To identify the major beneficial and adverse impacts that may arise as a result of proposed work on physical, biological, socio-economic and cultural environment of the project area;
- To propose practical and site specific environmental mitigation and enhancement measures, prepare environmental monitoring plan for the project;
- To provide information to the decision makers regarding further action and about the environmental implications from the implementation of the proposed project;
- To allow project proponent, designers, implementing agencies, and funding agencies to address environmental issues in a timely and cost effective manner during the feasibility stage of the project;
- To provide an opportunity of public involvement in the planning stage of the project;
- To define the institutional framework required for the execution of monitoring and management programs; and
- To make sure that IEE is sufficient or not for the proposed project.

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2.4 Impacts on Land Use

During the implementation of project, 1.22 ha land (1.216 ha private and 0.004 ha government land) needs to be acquired.

Table 2.1: Project Affected Land

S. N.	Land Use Type	Area (ha)
1	Private	1.216
2	Government	0.004
3	Forest	2.50
	Total	**3.72**

Source: Resettlement Plan, 2017

2.5 Impacts on the Environment, Impact on Human Life, and Population Pressure

The predicted environmental and social impacts will be both beneficial and adverse. The impacts are described as below:

a. Beneficial Impacts

During the construction phase, the project activities will create employment opportunities to the poor, vulnerable and socially excluded people of the project area (approximately 250 skilled daily and 1100 unskilled daily for total project construction period of 42 months). The project provides construction work skills and technical know-how to the local workers.

During operation phase, an improved road access will bring an improvement of food security situation and overall economic and social stability. The road will also provide cheap, safe and fast transport of goods and services from rural areas to urban centres and vice versa. The farmers will be more encouraged to increase agricultural production due to market accessibility. This will contribute significantly to increase the productivity in rural areas and eventually improve the overall socio-economic condition of the people.

b. Adverse Impacts

- **During Construction Phase**

Physical and Cultural Impacts:

As the road is already in operation and there will be not much adverse impact on physical and cultural environments. However, in some places where the road width is insufficient, 817 private structures (512 residential, 150 commercial, 135 residential/commercial and 20 others) needs to be acquired. Other adverse impacts due to road upgrading work are slope instability due to fresh cuts, dumping of spoil and operation of quarry sites.

Biological Impacts:

As this is upgrading project, there are limited risks for significant impacts on forests, terrestrial and aquatic fauna and flora. About 6750 trees need to be cleared. Since the road is already in operation relaltively fewer disturbances will be occured to wildlife due to construction activities. Furthermore issues like killing and harassment of wildlife by labors could also occur during road construction.

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Socio-economic, Cultural and Religious Impacts:

The upgrading road will require additional 1.22 ha land (1.216 ha private and 0.004 ha government land) falling in the corridor of impact. 817 private structures of 800 households need to acquire within corridor of impact along the road corridor.

The issues that need to be addressed during construction activities are occupational/safetyrisks to the health of labours and the public in general, dust, pollution of water, poorsanitation, road and work site accidents, sexually transmittable diseases, spread of otherepidemic diseases, social conflicts and other pressures on the local communities.

Availability of money to local labor, and influx of labor from outside the area can lead to conflict situations such as increase in alcohol consumption, gambling, prostitution and girl trafficking. Such problems persist or even increase during the operation phase and need special attention.

- **During Operation Phase**

During operation phase, slopes along the road alignment and nearby areas may be destabilized due to rain, de-vegetation of the area, soil extraction and quarry operation on unstable slopes. Roadside drains will cause erosion of downhill agriculture land. Haphazard spoil disposal will cause damage to adjacent agriculture fields and settlement.

2.6 Damage to be suffered by local goods or objects

Altogether 817 private structures (512 residential, 150 commercial 135 residential/commercial and 20 others) will be affected due to the implementation of the proposed subproject. Similarly, about 95 transformers, 3086 electric poles, 359 telephone poles, 11 telephone cabinets and 135 public tap stands are likely to be affected during construction of road.

2.7 Review of Acts/Rules, Plans/Policies, Guidelines, Standards, and Conventions

In Nepal, various instruments are in place to ease the integration of environmentalaspects in development proposals. The study team has reviewed, but not limited to thefollowing legislative provisions and guidelines of Nepal.

2.7.1 Constitution

Constitution of Nepal

Article 25 (2) mentioned that the state shall acquire legal private property only for public interest, and Article 25 (3) mentioned that compensation shall be provided for such acquired property on the basis of compensation as prescribed by law. Article 30 (1) mentioned that every citizen has the right to live in a clean and healthy environment. Under state policy, Article 51 (f) clause (2) mentioned that state is to develop balanced, environment friendly, quality and sustainable physical infrastructures, while according priority to the regions lagging behind from development perspective, and clause (3) mentions that state is to enhance local public participation in the process of development works. Article 51 (g) explains about applying appropriate minimization or mitigation measures for negative impact on nature, environment or biodiversity.

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2.7.2 Acts and Rules

a. Environment Protection Act, 2053 BS (1996 AD)

The Environment Protection Act, 1996 and Environment Protection Regulation, 1997 contain several provisions to institutionalize the integration of environmental aspects in development projects including road sector, and empowers Ministry of Population and Environment to approve EIA report. Similarly, in case of IEE level study, line Ministry, which is Ministry of Physical Infrastructure and Transport for the proposed Project, is authorized to approve the Final IEE Report. Following are the highlights of the EPA, 1996.

- The Act recognizes the interdependence between development and the environment and shows the concerns for minimizing the impacts of environmental degradation on people, animal, and plant species and their physical surroundings.
- The Act obliges the proponent to undertake IEE and EIA of proposal, plans or projects which may cause changes in existing environmental condition and authorizes MoPE to clear all EIA and line ministry for IEE study.
- The Act empowers MoPE to prohibit the use of any matter, fuel, equipment or plant, which has adverse effects on the environment,
- The Act has provisions for polluters to compensate affected persons from polluting activities. It empowers government to provide additional incentives to any industry, occupation, technology or process, which has positive impacts on environmental conservation, has provision to establish an Environmental Protection Fund to be used for environmental protection, pollution control and heritage conservation, and it gives the government authority to declare specific area as environmentally protected area.

b. Environment Protection Rules, 2054 BS (1997 AD)

In the process of implementing EPA (1997) effectively the Environment Protection Rule (EPR) came into force in 1997 and was amended in 1999. The EPR contains elaborate provisions for the process to be followed during the preparation and approval of Subprojects requiring EIAs and IEEs including scoping documents, terms of reference, public consultations and hearings, and environmental monitoring and auditing. The environmental legislation empowers the concerned Ministry to monitor the environmental activities including mitigation measures and MoPE for environmental auditing. For IEE, the concerned Ministry, which is the Ministry of Physical Infrastructure and Transport in case of the proposed Subproject, is authorized to approve the Final IEE Report. The EPR also lists the types of development activities requiring IEE or EIA level Study. It also gives an outline of content of the terms of reference document, IEE and EIA report.

c. Forest Act, 2049 BS (1993 AD, Amended in 1998) and its Rules, 2051 BS (1995 AD)

The Forest Act, 1992 (amended in 1998) contains several provisions to ensure the development, conservation, management and sustainable use of forest resources. The Act categories the forest into five categories viz.; state managed forest, community forest, leasehold forest, private forest and religious forest.

The Act in general, prohibits the use of forest areas for development projects, but its Article 68 empowers GON to issue permission to use the required portion of forest for development

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with the assurance that it does not significantly affect the environment. Based on Forest Legislation, GON has legally protected thirteen plant species including Khair and Sal.

The Forest Rules 1995 (amendment, 1999) further elaborate legal measures for the conservation of forests and wildlife. Based on forest legislation, thirteen plant species are included in the level protection list. Of them, GoN has banned the felling, transportation and export of Champ (*Michelia champaca*), Khayer (*Acacia catechu*) and Sal (*Shorea robusta*). The Rule also stipulates that the entire expenses for cutting and transporting the forest products in a forest area to be used by the approved project shall be borne by the proponents of the project.

a. Local Government Operation Act, 2074 BS (2017 AD)

The Local Government Operation Act describes the criteria to divide a state into municipalities or rural municipalities and respective rights, duties and responsibilities in various development and conservation sectors. It clarifies the rights of municipalities/rural municipalities to form local laws, regulations and criteria for conservation of environment protected areas and species; for environmental pollution and hazard control; solid waste management etc.

b. Soil and Watershed Conservation Act, 2039 BS (1982 AD)

Soil and Watershed Conservation Act makes provision to control floods landslides (watershed conservation rules, 1985) the watershed conservation office is authority and district watershed conservation committee must implement watershed conservation practices and public participation for soil and land protection

c. Plant Protection Act, 2029 BS (1972 AD)

Plant Protection Act, 2029 BS was enacted in 1972 with the objective of preventing the introduction and control of the spread of destructive pests and diseases through the export or import of plants and plant products. Under section 3 of the Act, GoN by notification in the Gazette of Nepal may impose the prohibition/restrictions in the import of plant or plant product, transport from one district to another district of any plant or plant product.

d. Land Acquisition Act, 2034 BS (1977 AD)

The Land Acquisition Act (as amended 1993) guides the compulsory acquisition of land. GON can acquire land at any place and in any quantity by giving compensation pursuant to the Act for the land acquired for any public purpose(s) or for operation of any development project initiated by GoN institutions.

e. Labor Act, 2049 BS (1992 AD) and Labor Rules, 2051 BS (1994 AD)

Labor Act, 1992 (first amendment 1998) and Labor Rules, 1994 deals deal with manual labor. Clause 46 under Section 7 deals particularly with Construction industry. The Act defines working time as eight hours a day and a weekend leave. A half and hour break should be given as snack and tea break before continuous work of maximum five hours. Attendance Registry should be maintained properly. Clause 27 to 32 under Section 5 gives details for occupational health and safety requirement to be maintained for labors. Child labor (below 14 years) is prohibited, and between 14 to 16 years of age should be given proper training before putting them in work. It calls for insurance and safety management of labors. It also directs to establish camp near temporary working sites with drinking water,

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food, sanitation and residential facilities of numbers of labors are fifty or more in construction projects. The Labor Rule, 1994 guarantees equal wage for male and female. It also lists the percentage of compensation for different types of accidents during work at site.

f. Child-Related Act, 2050 BS (1993 AD) and Child Labour Act, 2058 BS (2001 AD)

The Child-Related Act 1993 and the Child Labour (abolition and regulation) Act, 2001 are the major acts related to child labour in Nepal. The Article 2 (Ka) of these acts refers"Child" to the children below 16 years of age. The Child Labour (Abolition and Regulation) Act is the most recent and revolutionary decision to overcome the child labour problem in Nepal. Article 3 clause 1 of the act states that any child below the age of 14 years prohibited for labour employment. However, clause 2 states that it is prohibited to engage children below 16 years in works in risk-prone sectors such as public transportation and construction related works. In other words, any employment of children below the age 16 is to be excluded from becoming contracted in any of the SRN subprojects' construction works. Children between 14 and 16 years of age may become engaged in other light and low-risk jobs such as roadside planting and drainage clearing.

g. Solid Waste Management Act, 2068 BS(2011 AD)

The Act is related for sustainable management of garbage and to minimize the negative impacts of garbage on environment and public health. Chapter-2 section 3 (1) of the Act outlines the responsibility toconstruct and operate the infrastructure or structure required for the collection, final disposal andprocessing of solid waste, including construction of any transfer station, landfill site, processingplant, compost plant, and bio-gas plant for the management of solid waste shall rest with the LocalBody. Likewise, the section 4 sub-section (2) of the act clearly defines the responsibility forprocessing and management of hazardous waste, medical waste, chemical waste or industrial wasteunder the prescribed standards shall rest with the person or institution that has generated the solidwaste. Similarly, according to sub-section (3) of section 4, if any industry or medicalinstitution requests for the management of solid waste remained after processing of hazardous waste, medical waste, chemical waste and industrial waste or other solid waste, or for using a SanitaryLandfill Site constructed by the Local Body, the Local Body may manage the solid waste or allowthe institution to use the Sanitary Landfill Site by levying fees as determined by the Local Body. TheLocal Body shall only transport solid waste that is discharged and collected after segregation atsource pursuant to Section 6 separately.

h. Explosive Material Act, 2018 BS(1961 AD)

If construction activities require the use of explosive, in accordance with the Explosive Material Act 2018 BS, prior approval of the Chief District Officer (CDO) is needed to purchase explosives. Any development projects intending to use explosives needs to obtain a license in accord with Article 4 of the Act, relating to procurement, storage, application and transportation of explosives.

i. Public Roads Act, 2031 BS (1974 AD)

The Department of Roads may temporarily acquire the land and other property adopting compensatory measures during the construction, rehabilitation and maintenance of the public roads according to the Act (Article 14 &15). The Act also empowers the DOR to operate quarries, borrow pits and other facilities during the road construction (Article 17). In sum the Act facilitates the acquisition of land and property for the extraction of construction

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materials and development of other facilities as well as to maintain greenery along the roadside with adoption of compensatory measures.

j. Motor Vehicle and Transportation Management Act, 2049 BS (1992 AD) and Rules, 2054 BS (1997 AD)

This act sets standard for vehicles emission and mechanical condition foe vehicle registration by the transport management office and the TMO can deny a permit based on environmental factor. Standard are set for petrol and diesel engine under the Nepal vehicle mass emission standard 1999.

k. Road Board Act, 2059 BS (2002 AD)

Roads Board Act, 2002 provides necessary provisions on repair and maintenance of roads, minimizing the expenditures to be incurred in repairing and maintaining the roads and making transparent and effective the repairing and maintaining works of the roads. The autonomous body of Roads Board was established to carry out routine, recurrent, periodic, and emergency repair and maintenance works of the road and to make an arrangement for imposition on and collection of tolls from the motor vehicles plying on the road.

l. Ancient Monument Protection Act, 2013 BS (1956 AD)

This act has the objective of protection and conservation of the ancient monuments, temples, arts, paintings, etc. of age older than 100 years. The Act empowers the government to declare any such artifacts, temples, etc. under protection category by giving pubic notification. The act stipulates that any such artifacts, temples etc. declared under protection lists should not be disturbed or removed from their places without the consent of the government.

m. Mines and Mineral Act, 2042 BS (1985 AD) with First Amendment, 2050 (1993) and Mines and Mineral Regulation, 2056 BS (1999 AD)

The Mines and Mineral Act, 2042 (1985) as amended in 2050 (1993) and the Mines and Mineral Regulation 2056 (1999) constitute the legal framework for operation, regulation and administration of the mineral development activities in Nepal.

The Act and Regulation give equal access and status to all qualified applicants. It is promulgated to operate, regulate, and administer exploration and mining of all minerals with exception of petroleum and natural gas. The regulations provide 2 stages of licensing system. Any person having the specific technical and financial capabilities to undertake mining operations can obtain:

i. Prospecting License for a mineral resource target where the grade and volume has not yet been determined, and

ii. Mining License in the case of a mineral deposit of which quality and volume has already been established by the department after certain stages of exploration.

A Mining license allows the license holder to conduct mineral exploitation works in an area not less than 0.25 sq. km and not more than 25 sq. km for an initial period of 10 to 30 years depending on the level of mineral works with a provision for an extension of an additional 1 to 10 years. A Mining license can also be issued to any eligible person for those mineral deposits identified by the exploration activity of DMG. In such a case, the direct expenses incurred by the department in the exploration of the project can be valued and converted

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into the share or they can be recovered from the qualified applicant as the Government desires to do so. A prospecting license allows the license holder to conduct exploration in an area not less than 0.25 sq. km. and not more than 250 sq. km. for an initial exploration period of 2 to 4 years with a provision for an extension of an additional 1 or 2 years. Exploration activities should be completed within 2 years for ordinary non-metallic minerals where as 4 years for metallic and valuable non-metallic minerals.

n. The Aquatic Animal Protection Act, 2028 BS (1961 AD)

This Act indicates an early recognition of the value of wetlands and aquatic animals. Section 3 of the Act renders punishable to any party introducing poisonous, noxious or explosive materials into a water source, or destroying any dam, bridge or water system with the intent of catching or killing aquatic life. Under Section 4 of the Act, Government is empowered to prohibit catching, killing and harming of certain kinds of aquatic animals by notification in Nepal Gazette.

o. Water Resources Act, 2049 BS (1992 AD)

Water Resources Act 1992 empowers GoN for the rational use of surface and underground water. This Act also empowers to save environment especially water, from the hazardous effects likely to be caused by chemicals, industrial waste etc. Section 18 empowers GoN to fix and maintain quality standards of water resources for various usages. Section 19 (1) empowers GoN to prescribe a tolerance limit for water resources. Section 19 (2) states that no one shall pollute water resource by way of using or putting any litter, industrial wastes, poison, chemical or toxicant to the effect that the pollution tolerance limit of the water resource as prescribed) is exceeded. Section 20 emphasizes on the need for avoiding or minimizing adverse impacts made on environment by way of soil erosion, flood, landslide or similar other causes.

2.7.3 Plans and Policies

a. National Transport Policy 2058 BS (2001 AD)

The National Transport Policy 2001, endorsed in the 9th plan, is focussed more on infrastructure development. It has made some key policy announcements for the promotion of clean vehicles. Among clean vehicles, it prioritises solar, electric or gas operated buses, trams or cars in core city areas. Restrictions on noisy and polluting vehicles and the establishment of special emission standards in core city areas are some of the very promising policy initiatives recommended. Another policy also suggested here - reduced customs tariff for a limited period for pollution free vehicles- would help launch and market clean vehicles.

b. Policy Document of DoR on Environmental Assessment in the Strategic Road Network, 2057 BS (2000 AD)

The purpose of the Policy Document is to explain, basically the DOR Engineers on what environmental assessment procedures involve and to propose a straightforward set of procedures which make it workable and useful. The document lists Screening, IEE, Scoping, EIA and Monitoring as the five main types of environmental assessment activities. The different phase when a particular type of EA is required is also listed in the document. The document lists the category of environmental adverse impacts, the problems and their

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general mitigation measures. The document then guides the various steps to be taken while carrying out an EA. Indicative environmental monitoring checklist is given in the document.

c. Twenty Year Road Plan, 2059-2079 BS (2002-2022 AD)

In 2002, DoR produced a 'National Transport Policy and 20 year Road Master Plan' (NTP) and in June 2004, produced a draft 'Master Plan for Strategic Road Network' (RMP). Whilst the NTP covers a variety of transport related issues, the RMP is mainly concerned with the development of the SRN. The 20-Year Road Plan has adopted five main objectives, for the development of the SRN. These are:

- strengthening political and administrative linkages;
- poverty alleviation;
- development and utilization of social, economic and cultural potentials;
- minimization of total transportation cost, and
- minimization of adverse effects on the environment.

d. Nepal Environmental Policy and Action Plan, 2049 BS(1993 AD)

Nepal Environmental Policy and Action Plan (NEPAP) were endorsed to further institutionalize environmental protection in the development processes. NEPAP recognize that a growing number of people are exposed to pollute from industrial enterprises. NEPAP identifies the following factorsas contributing to this process:

- Industrial plan inappropriately cited close to population centers
- Insufficient emphasis on fuel efficiency.
- Little, if any pollution abatementequipment used for reducing emission, and
- A total lack of industry pollution standards.

Hence, the NEPAP emphasized the need for mitigating adverse environmental impacts to address urban and industrial development, air and water pollution and infrastructures development.

e. Forest Sector Policy, 2057 BS (2000AD)

The Forest Sector Policy of Nepal such as the National Forestry Plan, 1976, Master Plan for the Forestry Sector, 1988, Periodic Five Year Plan and Forestry Sector Policy, 2000 have emphasized for people participation in the forestry management. Nepal's main forest management is based on people's participation and various management models are underway. Similarly, Forestry Sector Policy, 2000 stresses on conservation of biodiversity, ecosystem and protection of land degradation by soil erosion, landslide, floods desertification and other ecological disturbances. The Public participation in forest management is sought through community forestry, collaborative forest management, leasehold forestry etc. The mitigation measures such as plantation, NTFP programand other socialand community support programproposed by the project will implemented by mobilizing the local people which is in line with the Forest Sector Policy.

f. Forest Policy, 2071 BS (2014 AD)

The forest policy is attracted when a development project directly or indirectly impacts on the forest resources. The forest policy is directed, inter alias, to contribute food production through effective interaction between forestry and farming system, to protect land against degradation by soil erosion, landslide, and other effects of ecological disturbances, and to conserve ecosystem and genetic resources. However, the forest policy re-emphasizes to

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avoid forest destruction or tree cutting while constructing infrastructures during implementation of project other than forest sector. The policy has prioritized the protection of Siwalik, the geologically vulnerable area, with a view to ensure watershed conservation, and maintenance of water recharge. The policy also stresses conservation of endangered species. It has reiterated that forest area will not be used for any activities other than prescribed in Operational Forest Management Plan. The forest policy emphasizes the implementation of community and private forestry development programs, national parks and conservation areas management programs, soil and watershed conservation program, management and development of medicinal plants, and conservation of biological diversity.

g. Land Acquisition, Resettlement, and Rehabilitation Policy for Infrastructure Development Project, 2071 BS (2015 AD)

This policy has provided clear guidelines to screen, assess, and plan land acquisition and resettlement aspects in development projects. The policy has the following major guiding principles:

- Involuntary resettlement should be avoided where feasible or minimized, exploring all available alternative project design. Where it is not possible to avoid resettlement, resettlement activities should be conceived and executed as sustainable development programs, providing sufficient investment resources;
- Appropriate and adequate compensation for the loss of assets or income is a fundamental right of affected person;
- Physically displaced people must be relocated with facilities such as school, health post, drinking water, security etc.;
- Vulnerable groups such as Janajati/Adivasi, Dalits, landless, women, especially women-headed households, poverty groups and senior citizens are entitled to special benefit and assistance packages in addition to compensation and resettlement;
- Affected persons should be assisted to restore at least their pre-project income and livelihood sources. The absence of legal title to land should not be a bar for compensation, resettlement and rehabilitation assistance.

2.7.4 Guidelines/Manuals

The following guidelines were reviewed and applied during the preparation of the report.

a. Environnemental Management Guidelines, GESU/DoR, 2056 BS (1999 AD)

Environmental Management Guidelines, GESU/DOR, July 1999 have been prepared as part of the program undertaken jointly by GoN and the World Bank under the Road Maintenance and Rehabilitation Project. These Guidelines are formally approved by Minister level decision on Kartik 22, 2053 BS (1997). The Guidelines are the part of operational practices for all road maintenance, rehabilitation and construction activities under DOR. The guideline consists of environmental mitigation measures to be incorporated into DOR Subprojects, procedures for public participation, and socio-economic considerations. The environmental mitigation measures are broken down into twelve categories including (i) quarries; (II) borrow pits; (iii) spoil and construction waste disposal; (iv) work camp location and operation; (v) labour camp location and operation (vi) earthwork/slope stabilization (vii) use of bitumen (viii) stockpiling of materials (ix) explosive, combustible and toxic materials

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management (x) setting up and operation of stone crushing plants (xi) water management (xii) air and water pollution.

Implementation methods for undertaking mitigation measures for each of the activities are also given in the guideline. The Guideline suggests methods for determining how and when the public should be included in the environmental analysis. The guidelines also advise on socio-economic impacts and strategies for reducing or avoiding the potential negative impacts and for maximizing the beneficial impacts to local residents. The socio-economic impacts include important issues of land acquisition and compensation and other economic impacts with markets for agriculture production, agriculture inputs, nutrition, extraction of natural resources beyond replenishment, migration and influx of migrants, land speculation, illegal logging and mining, portering, etc. It also includes impacts on cultural heritage.

b. National Environmental Impact Assessment Guidelines, 2050 BS (1993 AD)

In order to integrate the environmental aspects in development projects and programs, the government has developed the National EIA Guidelines (1993). The guidelines provide guidance to project proponent on integrating environmental mitigation measures, particularly on the management of quarries, borrow pits, stockpiling of materials and spoil disposal, operation of the work camps, earthworks and slope stabilization, location of stone crushing plants, etc.

c. Working Procedure for the Use of National Forest Area for National Priority Project, 2017

Realizing the need to manage the provision in relation with giving approval to use forest area for operation of national priority projects, Government of Nepal has endorsed this "Working Procedures relating to use of National Forest Area for Projects of National Priority, 2017" under provisions stipulated in Clause 68 (1) of the Forest Act, 1992. This working procedure supersedes the previous "*Working Procedures relating to use of National Forest Area for other purposes, 2006*".

Section 3 (1) of this procedure requires Ministry (concerning to specific national priority project) to carry out feasibility study and alternatives of the project avoiding the national forest to the extent possible. However, as per the provision of Section 3 (2), if such study carried out in accordance with Section 3 (1) requires use of forest area, then the alternative requiring minimum forest area or clearance of minimum number of trees and vegetation shall be selected.

Section 4 (1) of the Procedures provisions need of preparation of an Initial Environmental Examination or an Environmental Impact Assessment Report relating to environmental impacts of such project which requires forest area for its implementation in accordance with the prevalent Environment Protection Act and Environment Protection Regulation. If the investigation carried out in accordance with Section 4 (2) reveals implementation of the project causes impacts on the environment, then the concerned Ministry shall prepare a report incorporating mitigation measures to minimize such impacts along with environmental management plans for the project. Section 4 (4) requires concerned Ministry to take approval from the Ministry of Forest prior approval of the IEE or EIA reports in accordance with prevalent law for the projects requiring national forest area.

Section 5 (1) describes the procedures to submit application for the use of national forest areas attaching necessary documents such as evidential reasons and rationality of

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requirement of national forest area, copy of relevant license, DPR and other technical documents, feasibility and alternative study report carried out as per Section 3 of the procedure and the reports prepared in accordance with Section 4 (1) or Section 4 (3) of the Procedure. Documents proving the project for which the national forest area is required is a national priority project as well as national forest area is required for such project must be attached along with the application.

Section 8 describes provisions relating to availing land area as a replacement for the land area to be used for the implementation of the project in accordance with the procedures and Section 9 describes provisions on possibility of availing monetary compensation (as per the rate determined by the Ministry of Forest) of the national forest area to be used if the project could not avail replacement land area.

Section 10 explains provisions relating to compensatory plantation and requires 25 saplings to be planted for loss of a tree. The proponent of project shall bear cost of land area equivalent to land area occupied by the physical infrastructures of the project and also cost of afforrestation in the area designated by the concerned District Forest Office as well as the cost of maintaining and protection of such afforestation areas for five years; after which such forest shall be handed over to the concerned DFO. If the project is unable to carry out afforestation by itself, then the project shall avail cost of afforestation and cost for maintaining and protection of afforested area to the concerned District Forest Office which shall carry out the afforestation and subsequent maintenance and protection of the afforested area.

As per Section 11, the project shall pay annual lease amount for temporary occupancy of national forest at the rate fixed for leasehold forests as per Schedule 20 of Forest Regulations, 1993 which shall be deposited in federal saving account.

Section 12 of the Procedure mandates the project to implement mitigation measures mentioned in IEE or EIA report of the project and the cost for such measures shall be borne by the project itself.

d. Forest Products Collection and Sales Distribution Guidelines, 2057 BS(2000 AD)

The guidelines clauses 3 to 10 have specified various procedure and formats for getting approvals for vegetation clearance, delineation of lands for vegetation clearance, evaluation of the wood volume etc, and government offices and officials responsible for the approval. These provisions have a direct relevance to the development of the projects and need compliance to these provisions.

e. Manual for Environmental and Social Aspect of Integrated Road Development, 2003 AD

The manual has been prepared by DoR under Road Maintenance and Development Project (RMDP). The Manual is designed to help integrate social and environmental considerations, including public involvement strategies, with technical road construction practices. It suggests stepwise process of addressing E&S issues alongside the technical, financial and others. The Manual is based on the experiences of Nepal, as well as incorporates the national (EPA, 1997; EPR, 1997) and international 'best practices'. It suggests process of environmental and social assessment process, roles and responsibilities of stakeholders at various stages of the project, advice on impact mitigation action plans, and process for involving the public.

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f. Guide to Road Slope Protection Works, 2003 AD

This guide provides the concept on road slope disaster management whose objectives are to maintain the traffic operation, to secure the traffic safety, to reduce the environment degradation and to minimize the traffic operation cost, slope protection works and option for road slope protection in details.

g. Statistics of Strategic Road Network (SSRN, 2011/2012)

The Department of Roads (DoR), Ministry of Physical Infrastructure and Transport have published Statistics of Strategic Road Network, which contains data and maps of road network till the year 2011 AD. This document is prepared based on Geographic Information System (GIS). It helps the performance of road sector projecting an overall growth of road network in the country.

h. Guidelines for Environmental Management in Road Sector, 1999 AD

Environmental Management Guidelines, GESU/DoR, July 1999 have been prepared as part of the program undertaken jointly by GoN and the World Bank under the Road Maintenance and Rehabilitation Project. These Guidelines are formally approved by Minister level decision on Kartik 22, 2053 BS (1997). The Guidelines are the part of operational practices for all road maintenance, rehabilitation and construction activities under DoR. The guideline consists of environmental mitigation measures to be incorporated into DOR Subprojects, procedures for public participation, and socioeconomic considerations.

The environmental mitigation measures are broken down into twelve categories including (i) quarries; (II) borrow pits; (iii) spoil and construction waste disposal; (iv) work camp location and operation; (v) labour camp location and operation (vi) earthwork/slope stabilization (vii) use of bitumen (viii) stockpiling of materials (ix) explosive, combustible and toxic materials management (x) setting up and operation of stone crushing plants (xi) water management (xii) air and water pollution.

Implementation methods for undertaking mitigation measures for each of the activities are also given in the guideline. The Guideline suggests methods for determining how and when the public should be included in the environmental analysis. The guidelines also advise on socioeconomic impacts and strategies for reducing or avoiding the potential negative impacts and for maximizing the beneficial impacts to local residents. The socioeconomic impacts include important issues of land acquisition and compensation and other economic impacts with markets for agriculture production, agriculture inputs, nutrition, extraction of natural resources beyond replenishment, migration and influx of migrants, land speculation, illegal logging and mining, portering, etc. It also includes impacts on cultural heritage.

i. Environmental and Social Management Framework, (A guide to Environmental and Social issues Associated with New Road Construction and Upgrading) MoPPW/GoN 2064 BS (2007 AD)

The Environmental and Social Management Framework report (ESMF) is prepared for the Department of Roads (DOR) to compile in an overview and guidance manner, various safeguard and compliance aspects of environmental and social issues related with the Sector Wide Road Program and the Priority Investment Plan Study for Nepal's Strategic Road Network (SRN) planning for 2007 to 2016. The Environmental and social Management Framework, 2007 is a guide to Environment and social issues associated with new road

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construction and upgrading. It suggests for the mechanism in line with the current legal and policy framework for integration of environmental and social recommendation in to project planning, design and implementation.

Other Guidelines and Manuals

The following guidelines were also reviewed and used as appropriate during the preparation of this report.

- Environment Directives, 2057 BS (2001 AD)
- Roadside Bio-engineering Manual, 2056 BS (1999 AD)
- Nepal Road Statistics 2006
- Policy Document of DoR on Environmental Assessment in the Strategic Road Network 2000

2.7.5 Standards

a. National Ambient Air Quality Standards, 2069 BS (2012 AD)

The National Ambient Air Quality Standards, 2012 enforced by GoN has set quality standards for sevenparameters: TSP, PM_{10}, sulphur dioxide, nitrogen oxide, carbon mono-oxide, lead and benzene for themaintenance of the ambient air quality. The project during its construction and operation will have tocomply the set standards for the ambient air quality.

b. National Noise Level Standards, 2067 BS (2012 AD)

Government of Nepal has formulated noise level standard for different area for day and night time. Department of Environment has been established under the Ministry of Population and Environment for monitoring the environmental condition.The National Noise Quality Standards, 2012 enforced by GoN has set quality standards for the maintenance of the ambient noise quality. The project during its construction and operation will have to comply the set standards for the ambient noise quality.

c. Nepal Vehicular Emission Standards, 2057 BS (2000 AD)

Nepal Vehicular Emission Standard, 2000 enforced for the vehicles operating on petrol, gas, anddiesel. The emission standards are very specific for two, three and four wheeler vehicles. The vehiclesused by the project should comply with the vehicular emission standards during the construction andoperation phase.

d. Nepal Road Standards, 2070 BS (2013 AD)

With the objectives of achieving consistency in road design and construction, NRS was first introduced by DOR in B.S. 2027 (1970 AD) and was revised in B.S 2045 (1988 AD). Minor revisions were made in B.S 2051 (1994 AD) and in 1997 AD to incorporate certain changes, which were relevant at the time of revisions. But those revisions were treated separately, not as an official version of the NRS-2027. Nepal Road Standards -2027(Second Revision 2070), in short called NRS-2070, shall apply to all Strategic Roads constructed within Nepal.

2.7.6 International Conventions and Treaties

a. Convention on Biological Diversity, 2049 BS (1992 AD)

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The Convention on Biological Diversity was signed by Nepal at Rio de Janeiro on June 12, 1992. The convention and particularly Article 14 provides a broad framework on the need for carrying out EIA to minimize adverse impacts of the projects and programs on biodiversity.

b. The Convention on International Trade in Endangered Species of Wild Fauna and Flora, (CITES), (1973 AD, amended 1979 AD)

Nepal became party to CITES in 1975. CITES has facilitated international co-operation to regulate international trade in endangered wild flora and fauna with the aim of reducing or eliminating trade in species whose numbers or conditions suggest that further removal from their natural habitat would lead to their extinction. The National Parks and Wildlife Conservation (NPWC) Act, 1973 regulates the trade of species listed in CITES appendices. The Government has designated the Natural History Museum (Tribhuvan University) and the Department of Plant Resources as the scientific authorities for wild fauna and wild flora respectively. Similarly, the Government has designated the Department of National Parks and Wildlife Conservation and the Department of Forest as the management authorities for wild fauna and flora respectively. The Convention urges Parties not to allow trade in specimens of species included in the CITES Appendices I, II and III except in accordance with the provisions of the Convention.

c. The Plant Protection Agreement for the South East Asia and the Pacific (as amended), 1956 AD

Formerly the Plant Protection Agreement for South-East Asia and Pacific Region was approved by the 23rd Session of the FAO Council in November 1955 and entered into force on 2 July 1956. Principally, it provides regional implementation of the International Plant Protection Convention (IPPC), the Agreement on the Application of Sanitary and Phytosanitary Measures, and the modern requirements for plant protection. and to strengthen the Asia and Pacific Plant Protection Commission.

d. Convention (No.169) Concerning Indigenous and Tribal Peoples in Independent Countries, 2046 BS (1989 AD)

Article 7 of the convention provides the right to the indigenous and tribal people to decide their own priorities for the process of development. However, for the national development plans and programs, it mandates consultation with them in the formulation of the plans and programs. Articles 12, 13, 14 and 15 safeguard rights of the indigenous people in the land and natural resources in territories traditionally occupied by them. In the event that the state retains the right of the natural resources in their territories, it mandates formulation of special provisions under the state legislation for their participation in the decision making process and resettlement process with full compensation of the resulting loss or injury (Article 16). As Nepal is signatory to the convention, it is obliged to comply with the provisions stipulated in the conventions, if the project is to impact the safeguard rights of the indigenous people.

e. United Nations Framework Convention on Climate Change (UNFCC), 2049 BS (1992 AD)

The Kyoto Protocol is an international agreement linked to the United Nations Framework Convention on Climate Change. The major feature of the Kyoto Protocol is that it sets binding targets for 37 industrialized countries and the European community for reducing greenhouse gas (GHG) emissions. This amounts to an average of five per cent against 1990 levels over the five-year period 2008-2012.

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CHAPTER 3

3. DESCRIPTION OF THE PROPOSAL

3.1 Type of Proposal

The proposal is of the service delivery type (Transportation service) for upgrading/widening of the national highway from present double lane road to four lane from Anbukhaireni (Trishuli Bridge) to Seti River Bridge (km 00+250 to 88+833) for a total 88.583 km. Salient features relating to this road upgrading works are presented in Table 3.1. List of new bridges proposed to be constructed during upgrading of road is presented in Annex 7.

3.2 Nature and type of goods to be delivered

The proposal includes civil works such as earthwork in filling, base, sub-base and wearing coat laying, shoulder slope protection, gabion works, and side drain improvement/extension, major/minor cross drainage works. The project after completion will result in a four lane/two lane, AC surface pavement road from Mugling to Pokhara. Proposed cross-section of road is given in the Figure 3.3.

Table 3.1: Salient Features of the Project Road

Name of the Project	Mugling – Pokhara Road Upgrading
Affected Municipalities/VDCs (Old)	Anbukhaireni Municipality, Ghansikuwa VDC, Bandipur Municipality, Byas Municipality, Jamune Bhanjyang, Manpang, and Chhang VDCs, Shukla Gandaki of Tanahu district and Lekhnath municipality and Pokhara Sub-metropolitan city in Kaski district respectively.
Affected Municipalities/Rural Municipality (New)	Anbukhaireni Rural Municipality, Bandipur Rural Municipality, Vyas Municipality, Myagde Rural Municipality, Shukla Gandaki Municipality of Tanahu district and Pokhara Lekhnath Metropolitan City of Kaski District
LOCATION	
Province	4
Districts	Tanahun and Kaski
Start Point	Mugling Bazar
End Point	Pokhara (Prithvi Chok)
GEOGRAPHICAL FEATURES	
Terrain	Mountainous
Altitude	Start Point: 257.289 m at Trishuli Bridge, Anbukhaireni (km 00+250), Anbukhaireni municipality End Point: 835.795 m, Seti River Bridge (km 88+583), Pokhara Lekhnath Metropolitan City
Climate	sub-tropical
Road Type	
Classification of road	National Highway, Class II
Length of Road	90.00 km
Design Length	88.583 km
Type of Pavement	Asphalt Concrete

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Standard of Pavement	Overseas Road Note 31 (RN 31) and/or AASHTO design method
Design Parameters	
Design Speed	80 km/hr
Right of Way	50 m (25 m either side from the centre of road)
Carriageway Width	7.0 m and 14 m with 1.0 and 2.5 m paved shoulder
Total Formation (Road Way) Width	Marsyangdi Hydropower Powerhouse - 7m, Forest Area - 9m, 12.50m, 18m, 23.00m, Settlement area - 18.5m, 23m, 42.50m, 46.20m
Existing/Predicted traffic load (AADT)	5,501 to 17,278 vpd in 2016 AD to the traffic level of 49,175 to 187,600 vpd by 2039 AD
Cross Drainage Structures	
Bridges	34 (Major - 8, Minor – 26)
Slab culvert	138
Pipe culvert 900 mm dia.	411
Irrigation pipe crossings	9
Side Drain	111020 m (65210 m on left side and 45810 m on right side)
Earthwork Quantity	
Cutting, m^3	3,145,246.00
Filling, m^3	886,543.00
Total Project Cost	NRs. 14,162,790,310.00 (including VAT)
EMP Cost	NRs. 573,779,110.50
Percent of the total project cost for EMP implementaion	4.05 %

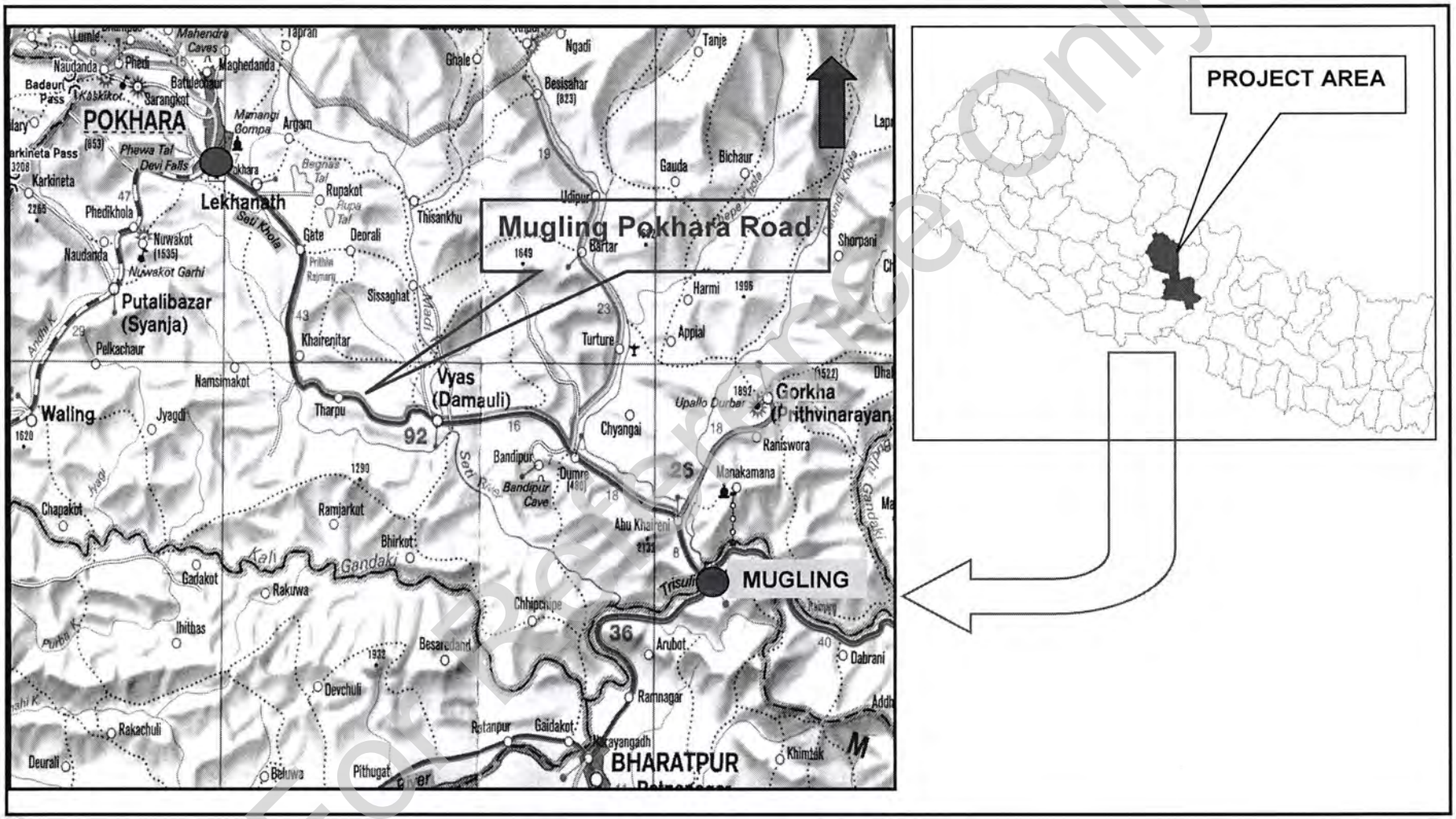
Source: Detail Design Report, Mugling – Pokhara Road, 2017

3.3 Proposal's Installed capacity and Number of hours to be operated per day or year

After the road is upgraded, it is expected that the volume of traffic in the proposed road section will increase from the current level of 5,501 to 17,278 vpd in 2016 AD to the traffic level of 49,175 to 187,600 vpd by 2039 AD (Source: Traffic Survey, 2016).The upgraded/improved road will be operated continuously and provide improved transportation service for a design year of 20 years.

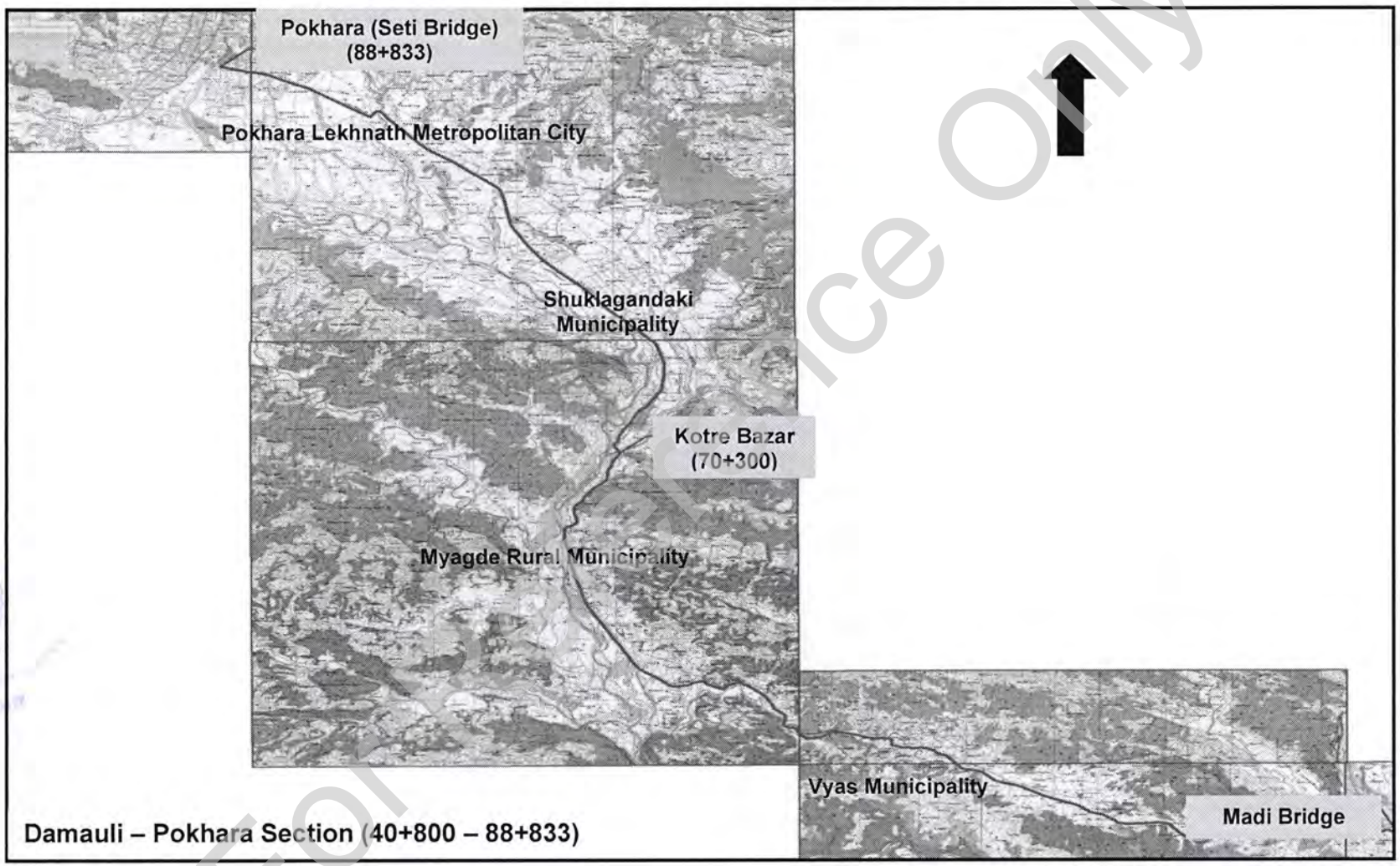
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Figure 3.1: Location Map of the Project Road in Tanahun and Kaski Districts

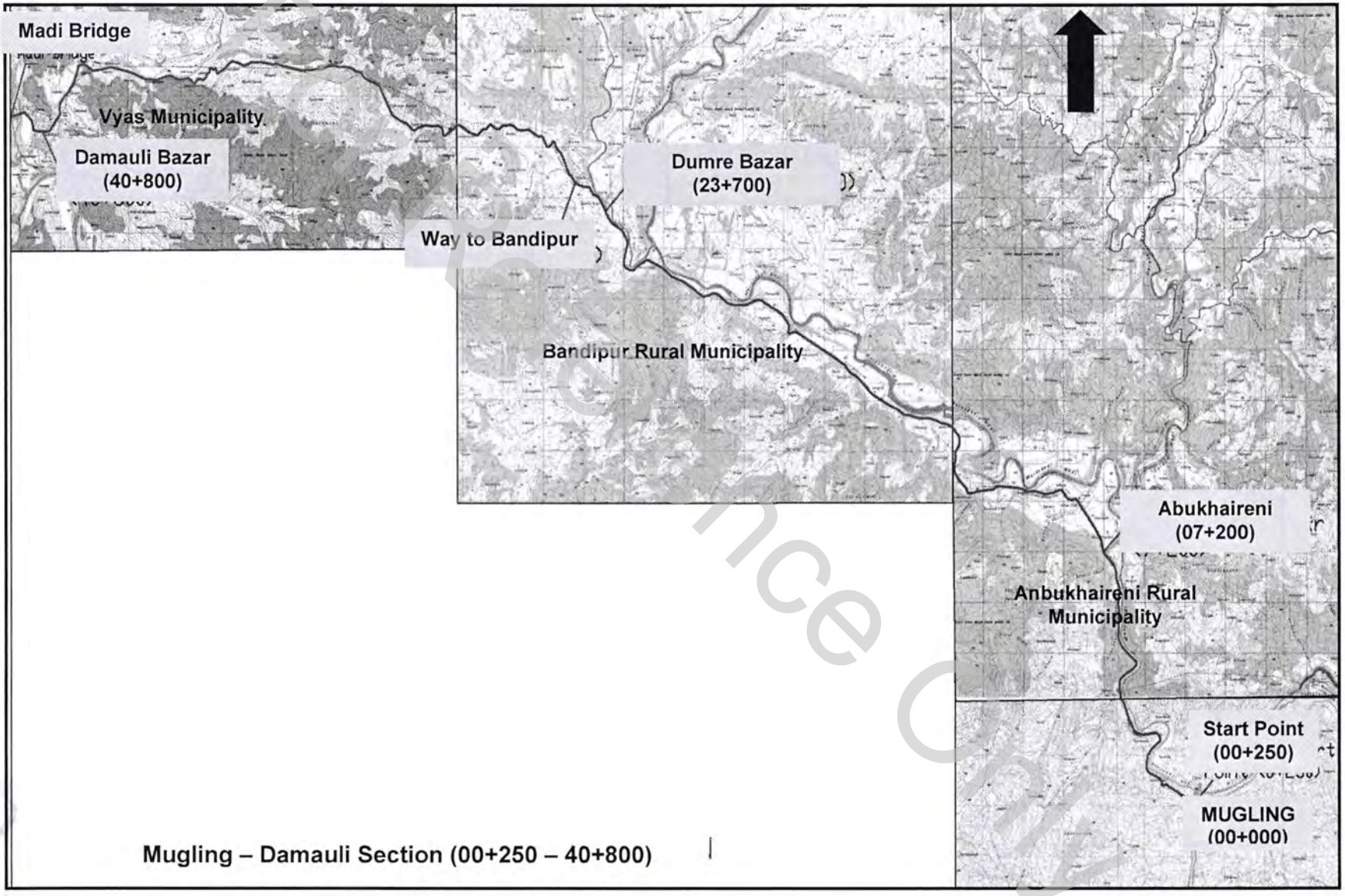


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Figure 3.2: Location of the Road Alignment in Topo Map

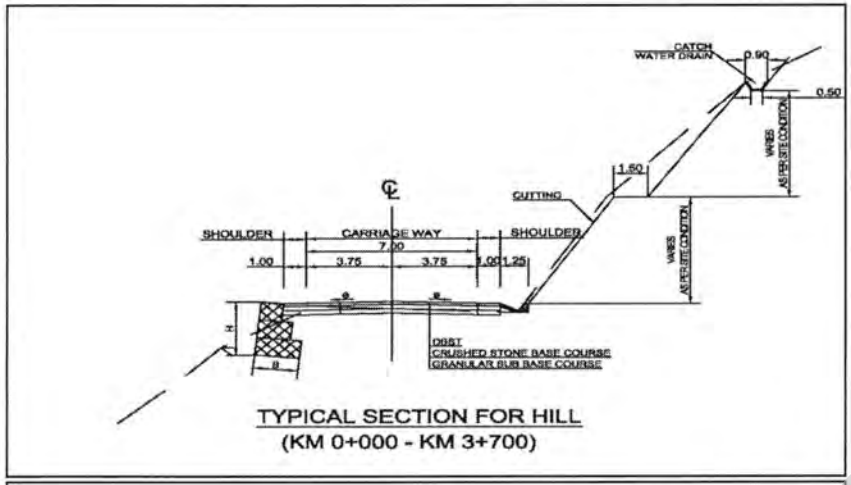


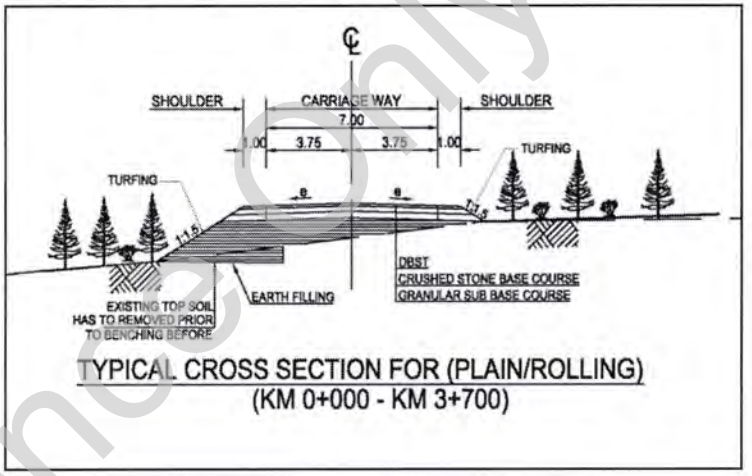
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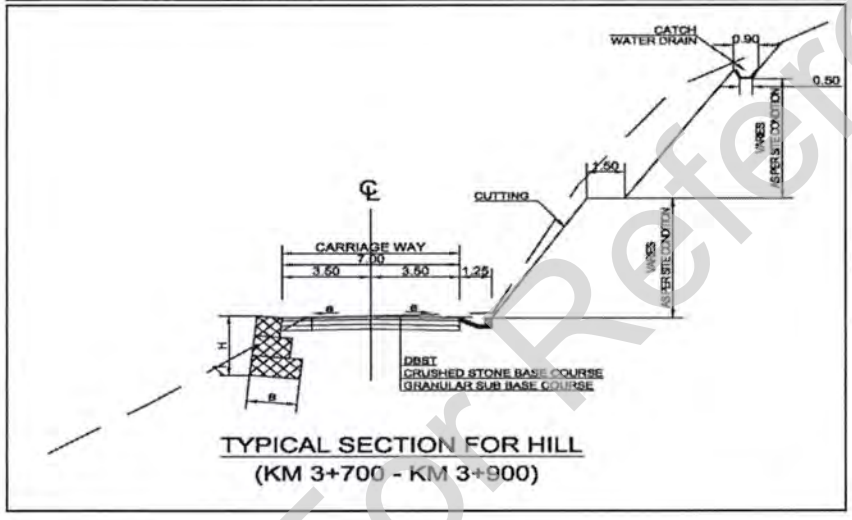


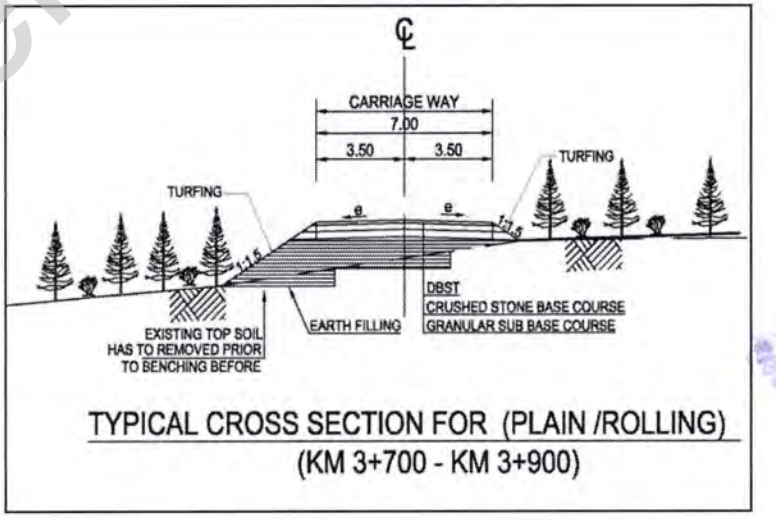
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Figure 3.3: Proposed Cross-sections of the Road

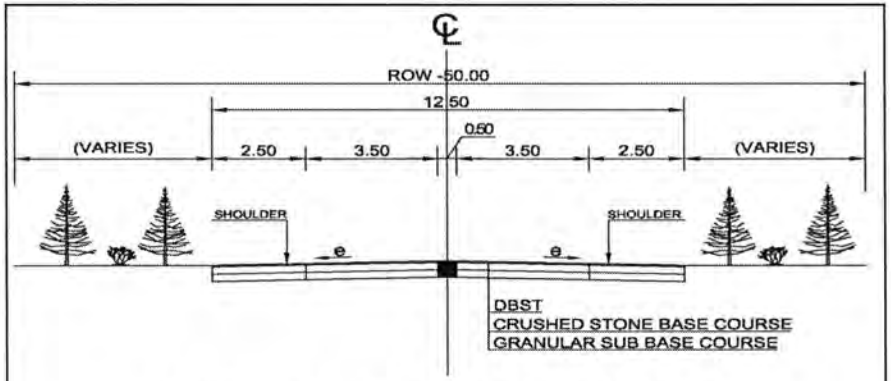




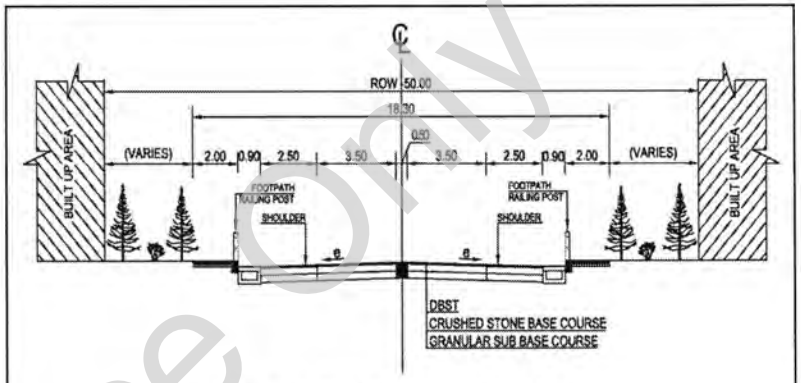




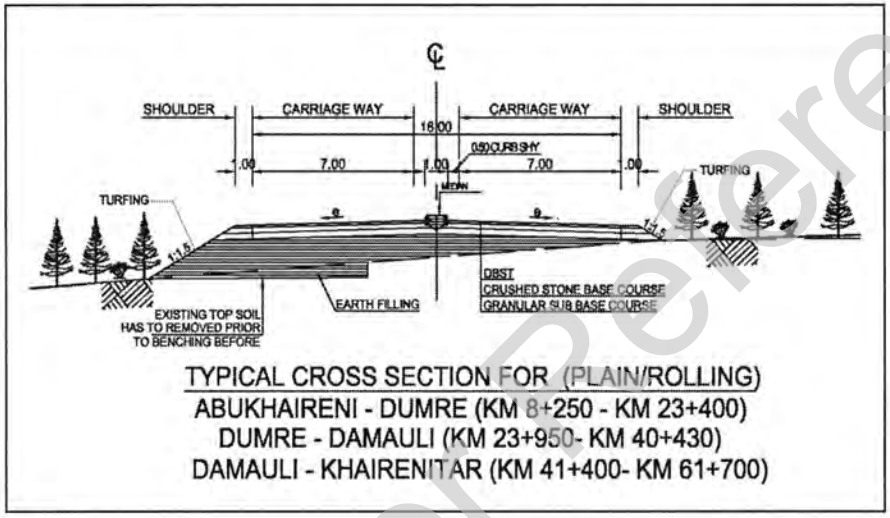
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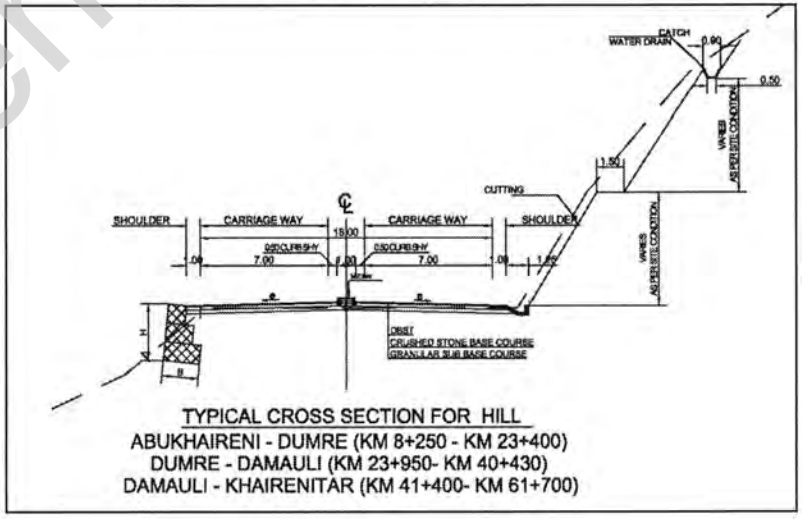
TYPICAL CROSS SECTION FOR
ABUKHAIRENI BAZAR (KM 3+900 - KM 6+770)



TYPICAL CROSS SECTION FOR
ABUKHAIRENI BAZAR (KM 6+770 - KM 8+250)

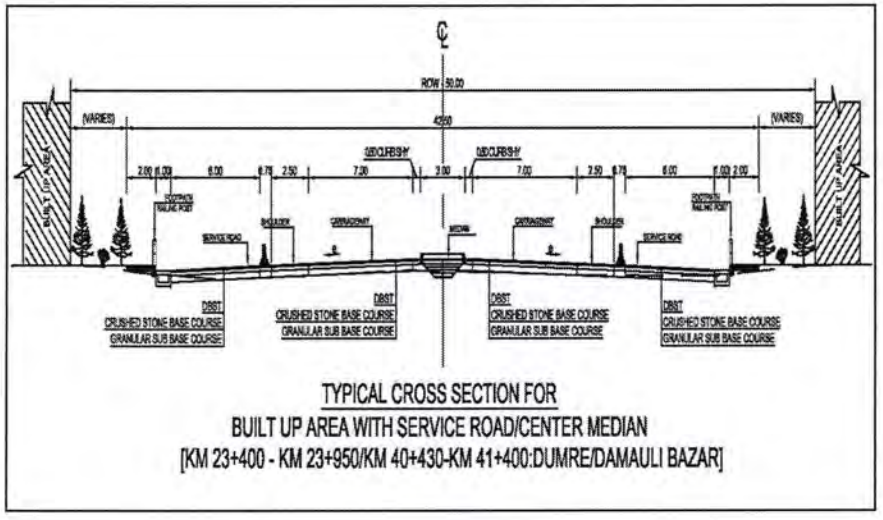


TYPICAL CROSS SECTION FOR (PLAIN/ROLLING)
ABUKHAIRENI - DUMRE (KM 8+250 - KM 23+400)
DUMRE - DAMAULI (KM 23+950- KM 40+430)
DAMAULI - KHAIRENITAR (KM 41+400- KM 61+700)

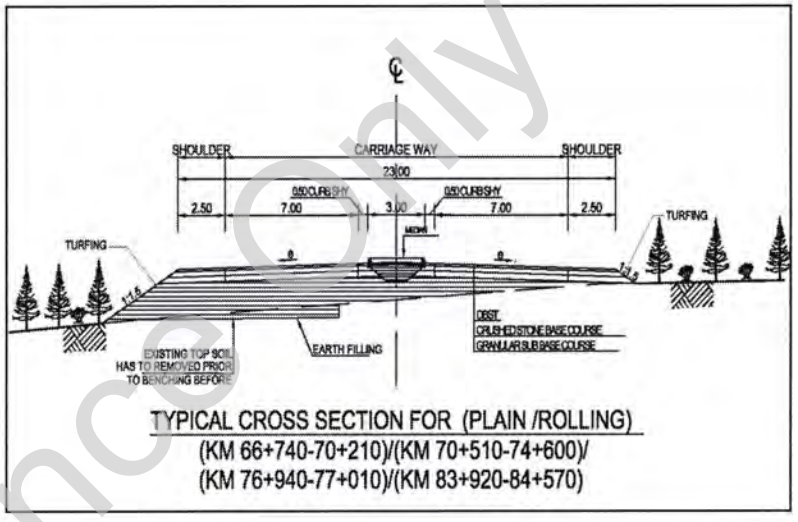


TYPICAL CROSS SECTION FOR HILL
ABUKHAIRENI - DUMRE (KM 8+250 - KM 23+400)
DUMRE - DAMAULI (KM 23+950- KM 40+430)
DAMAULI - KHAIRENITAR (KM 41+400- KM 61+700)

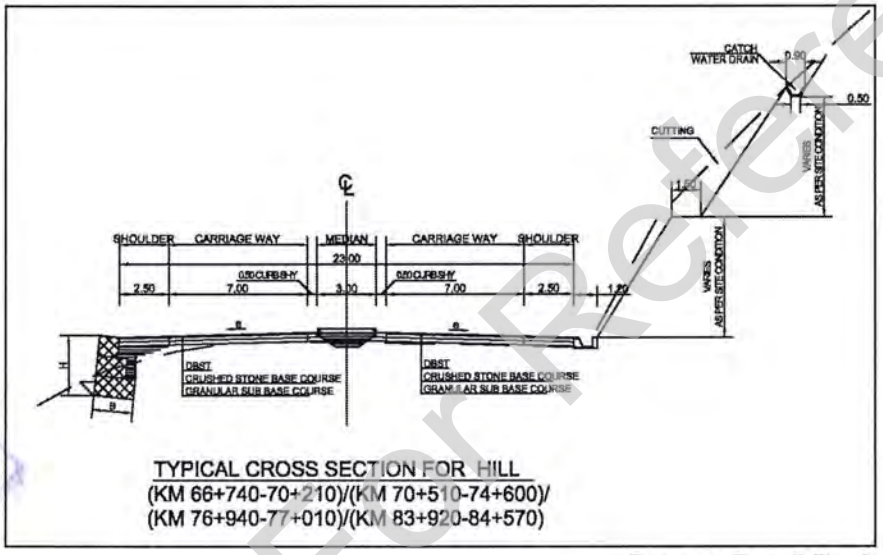
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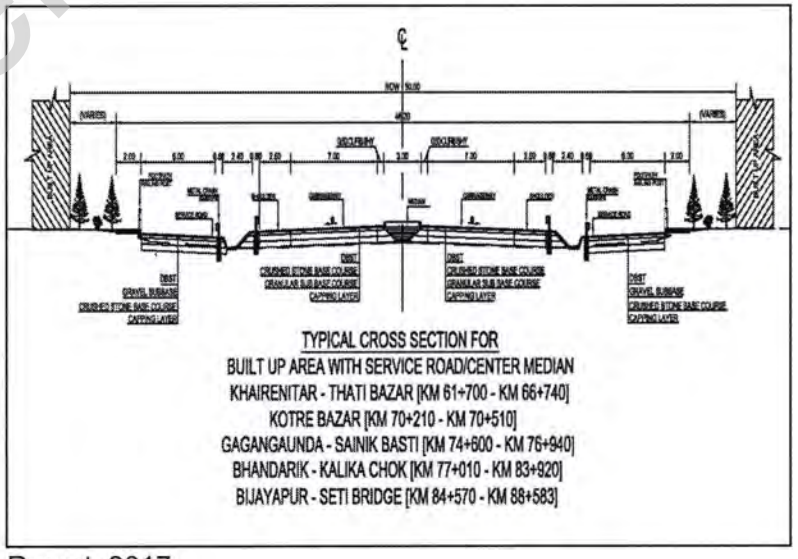
TYPICAL CROSS SECTION FOR
BUILT UP AREA WITH SERVICE ROAD/CENTER MEDIAN
[KM 23+400 - KM 23+950/KM 40+430-KM 41+400:DUMRE/DAMAULI BAZAR]



TYPICAL CROSS SECTION FOR (PLAIN /ROLLING)
(KM 66+740-70+210)/(KM 70+510-74+600)/
(KM 76+940-77+010)/(KM 83+920-84+570)



TYPICAL CROSS SECTION FOR HILL
(KM 66+740-70+210)/(KM 70+510-74+600)/
(KM 76+940-77+010)/(KM 83+920-84+570)



TYPICAL CROSS SECTION FOR
BUILT UP AREA WITH SERVICE ROAD/CENTER MEDIAN
KHAIRENITAR - THATI BAZAR [KM 61+700 - KM 66+740]
KOTRE BAZAR [KM 70+210 - KM 70+510]
GAGANGAUNDA - SAINIK BASTI [KM 74+600 - KM 76+940]
BHANDARIK - KALIKA CHOK [KM 77+010 - KM 83+920]
BIJAYAPUR - SETI BRIDGE [KM 84+570 - KM 88+583]

Source: Detail Design Report, 2017

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3.4 Materials to be used

The basic materials required for the road upgrading works are soil, gravel and crushed rock. Earth is used for embankment upgrading, gravel is used for sub-base upgrading, and crushed stones are used for base-course upgrading and for bituminous surfacing. The following is the estimated quantities of materials to be used in the planned project during construction period of 42 month.

Item Description	Unit	Quantity
Earthwork Excavation	cu.m.	3,145,246.00
Boulders for soling, random rubble masonry, dry rubble masonry and gabion boxes	cu.m.	56,403.00
Concrete class M10/40	cu.m.	30710.00
Concrete class M15/40	cu.m.	4143.00
Concrete class M20/20	cu. m.	50656.00
Concrete class M25/20	cu. m.	14239.00
Concrete class M15/20	cu.m.	64664.00
Common back fill material	cu.m.	32,787.00
Reinforced concrete pipe (NP3,60Ø)	RM	2914.00
Reinforcement steel	MT	3020.00
Formwork materials	sq.m.	154,726.00
Gravel materials for sub base	cu.m.	990531.00
Base materials	cu.m.	396263.00
Bitumen for DBST	lit	6940410.00

Source: Detail Design Report of Mugling-Pokhara Road, 2017

3.5 Emissions Resulting from Implementation of the Proposal

The project is an upgrading project and does not emit polluting substances, but during its construction phase, mainly noise, dust and smoke will be emitted. Noise will be emitted during the operation of heavy equipment such as crushers, tracked excavator, grader, loaders, trucks, concrete mixers, asphalt plant, etc. Dust and Smoke will be emitted while operating the crushers and bitumen mixing plants. These polluting sources will be stationed away from settlement areas to minimize dust, noise and smoke to human being.

(i) Solid

Solids are generated mainly during the earthwork excavation works. There will be estimated 2,006,150.00 cu. m. of materials to be dumped as spoil. As far as possible, such spoils/wastes will be re-used for construction purposes.

(ii) Liquid

Water is required for construction works and at campsites as well. There will be generation of wastewater from worker's campsites and offices.

(iii) Air/Dust Pollution

The dust level in the air is observed generally to be low, except during passing of occasional vehicles along the road. The road upgrading works will cause dust emission during

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construction phase. Major sources of air/dust pollution will be the excavation activity, as the fresh excavated materials could mix into the air as dust and particulate matter. The upgraded road will have sealed bituminous layer, and hence the dust emission will be controlled.

(iv) Gas

During the bitumen heating, various gases such as Carbon Monoxide, Sulphur dioxide will be released in the atmosphere which will affect the air quality of the project area.

(v) Noise

The expected noise level along the road is low (maximum 50 dBA) as the traffic is low during the dry season. During upgrading, the movement and operation of construction plant and equipment will increase noise level to some extent. However, by applying mitigation measures, the noise level is expected to be within acceptable level.

3.6 Energy to be used

(i) Type

Gasoline and electrical energy will be used during the construction phase of the project. The energy required for the construction works is mainly kerosene, diesel and petrol. Diesel will be used for transportation of materials.The electrical energy required will be produced from diesel engine electri generator. Kerosene will be used for bitumen heating. Use of firewood will be minimal as labors at rhe camp will be provided with kerosene or LPG for cooking and heating purpose. Vehicles will use diesel or petrol supplied by the contractor from outside the project area.

(ii) Sources

Petroleum products will be purchased from Nepal Oil Corporation through local dealers (Petrol Pumps). They can be purchased from Mugling, Abukhaireni, Dumre, Damauli, Khairenitar, Bijaypur, Pokhara etc.

(iii) Volume of Consumption

The energy that is used in the operation of construction equipment such as crushers, bitumen and concrete plants will be petroleum fuel. However, the large workforce in the work camps will have the tendency to use firewood, which needs to be prohibited and use of kerosene or gas encouraged.

3.7 Details on the technology

The technology used for the construction work will be both machine and labour based. Machine based method is mainly used for specialized works like use of vibrator for surface laying and compacting, use of distributor for laying and use of compactor for finishing bituminous seal etc. whereas labour is mainly employed for the manual work like earthwork, construction of side drain, bioengineering etc.

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3.8 Manpower Requirements

For total project construction period (42 months) work force required for the project works is estimated at approximately 300,000 md skilled (250 daily) and 1,300,000 md unskilled (1050 daily) laborers.

3.9 Resources required for the implementation of the proposal

The total construction cost needed for this project is approximately NRs 18.737 billion including VAT (as per Detail Design Report, 2018).

3.10 Construction planning, Construction schedule

The detailed design and preparation of bid documents for the road has been carried out under TPPF/PPC-2. A 42 month construction period is estimated followed by a 12-month defects liability period enabling the completed project road to be opened by 2021 AD.

Sources of boulders are identified to be Marsyangdi River basin (Ch. 09+000), Madi River Basin (Ch.42+000) and Seti River Basin (Ch.71+000, Kotre area Borrow pit). There is existing local crusher plant at Ch. 10+000 and Ch. 71+000 at Kotre area in the vicinity of road alignment, which can be used to procure construction materials.

Probable locations for campsite are identified at Ch. 02+200, 03+200, 09+500, 16+000, 24+100, 30+000, 35+000, 42+250, 48+000, 58+500, 67+400, 75+800, 77+500 and 83+000.

Probable waste disposal sites are identified at following locations: 2+100 – 2+700, 8+200, 16+350, 28+450, 32+800, 38+500, 41+100, 46+500, 58+000, 68+000, 71+000.

3.11 Project Area Delineation

Direct Impact Area (DIA)

This direct impact area includes all the areas where all the activities related to the road upgrading work will take place. This area shall be studied in greater detail regarding the impacts on physical, biological as well as socio-economic and cultural environment. The areas within the RoW of proposed road (25 m on either side from the centre line of the road) are referred as Corridor of impact (CoI) in this Report. The area, within which upgrading work is carried out, is referred as formation width (19 m).

It includes wards 1, 2, 3,4 of Anbukhaireni Rural Municipality, Bandipur Rural Municipality (Wards 1, 4, 5, 6), Byas Municipality (Wards 1, 2, 4, 5, 11, 12 and 13), Myagde Rural Municipality (Wards 1, 2, 3, 4, 6), Shukla Gandaki Municipality (Wards 1, 4, 5, 6, 7, and 8) of Tanahu district and Pokhara Lekhnath Metropolitan City (Wards 9, 10, 14, 26, 27, 29, 30, 32) in Kaski district respectively.

Indirect Impact Area (IIA)

The adjoining wards of concerned municipality, rural municipality and areas within 100 m from the centre line of road on either side are referred as Indirect Impact area (IIA) in this study excluding the area covered under DIA.

Zone of Influence (ZoI):

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The zone of influence of project road includes the adjoining rural municipalities to the project DIA municipality and affected rural municipalities.

3.12 Other necessary matters

Data requirement and study methodology

In order to meet the objectives of IEE, primary and secondary information were collected through field studies, and literature review. The primary data were collected employing the following techniques: PRA, focus group discussions, field observation, and walkthrough along the road alignment. Secondary information were collected from various documents, reports, maps, designs and cost estimates. The likely Impacts (both beneficial and adverse) were identified and/ predicted by adopting the simple checklists and matrix methods outlined in the environmental guidelines. Based on the likely impacts in terms of its magnitude, duration and extent, the appropriate mitigation measures have been designed. Similarly, Environmental Monitoring Plans have been prepared taking into consideration the types of impacts and suggested mitigation measures. Following approach and methodology were adopted during the IEE report preparation.

Methodology Adopted for IEE Study

Terms of Reference (ToR), submitted to the Geo-environment and Social Unit (GESU) of Department of Roads (DoR) for the IEE Study of Road upgrading, was approved by the Ministry of Physical Infrastructure and Transport (MoPIT) on 2073/01/07 BS. Based on approved ToR, IEE Study of the subproject Road has been conducted. The current Study has followed the procedures outlined in approved ToR. The major activities undertaken during the preparation of this report are as follows.

a. Desk Study

Collection of secondary information from the Detailed Engineering Survey, Inventory report of the road alignment, feasibility report of the proposed project, relevant maps, topo sheets were undertaken as a part of desk study. Semi-structured questionnaires and checklists for field verification on each component of environment were also developed during this stage.

b. Field Survey

A walkthrough survey along the proposed road alignment was carried out during November/December, 2016 to collect information on the physical, biological and socio-economic and cultural environment of subproject area.

(i) Physical Environment

Existing environmental constraints and potential impacts in the project area were studied through field surveys, complemented by secondary information from reports and interviews with some of government officials, schools and local people. Data on physical environment have been derived from available topographical map, site observation, and photographs, consultation with local communities and enquiring about the history of natural disasters like landslides and flooding in the area.

(ii) Biological Environment

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The information on composition, distribution patterns and characteristics of vegetation and forest types and sensitive habitat in the project area were assessed from direct field observations, transect walk survey, maps, interaction with forest user groups, and collection of information from district forest offices. A detailed survey was conducted in affected forests for the identification of species, analysis of vegetation and bio-diversity status. Trees losses were estimated by census survey. In general, possible impact on forest area, especially on road formation width including areas with drains and other structures) were discussed. By this way total number of trees and plants required to be felled were counted and totalled.

The volume of the affected tree species (timber, fodder and litter) were quantified together with the loss of forest. Tree species having more than 30 cm diameters at breast height (DBH) were counted and measured as tree. Tree species having DBH range between 10 cm – 30 cm were counted and measured as pole and rest were counted as seedling and saplings. Diameter at breast height (d) was measured at 1.3 meter from the ground level.

The data from tree measurements were quantitatively analyzed for basal area and to calculate the wood volume. Basal Area is the trunk cross-sectional area. The basal area of each of trees was calculated on the basis of diameter at breast height. These parameters were calculated by using following formulae:

Basal Area = $\Pi d^2/4$

Volume = Basal Area x Tree height x Form factor (0.50) [m^3]

(iii) Socioeconomic and Cultural Environment

Literature Review

Based on previous experiences and the review of relevant literature associated with IEE studies of various road projects, demographic tables were developed. To fill these tables, a desk study was conducted in the office. All the relevant information associated with socio-economic and cultural environment was reviewed. On the basis of the reviewed information, data gaps were identified and the following techniques were used to collect the remaining data.

Identification of PAFs and SPAFs

The land owners/structure owners of the project affected area have been identified. These identified families were considered as Project Affected Families (PAFs). In addition, the families losing their residence irrespective of their land holding size and other off farm income and the families losing more than 50% of land were identified as Severely Project Affected Families (SPAFs).

Data Collection Tools

After identification of PAFs, their baseline information was collected by using the following techniques: Households' Survey, Key Informant Survey, Public Consultation, Observation, and Photographs.

- **Households' Survey**

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A Socio-economic survey of project affected households (whose land and house will be permanently acquired) was carried out. The household questionnaire was applied by a trained team of enumerators to solicit information from project affected families. Households' survey was conducted for 496 project affected families losing land and structure. The questionnaire has been designed to cover demographic characteristics, basic health conditions, income and expenditure, water and sanitation related issues, attitude towards resettlement and expectations from the project etc.

- **Key Informant Survey**

Key informant survey was employed during the field visit to collect information on socio-economic and cultural activities. The VDC level checklist was designed to collect information on basic demographic and migration patterns, food sufficiency and cropping patterns, existence of user's group/committees, public facilities and infrastructure, labour force availability, existence of archaeological and religious sites etc.



Public Consultation Meeting



Enumerator with Female respondents at Mugling

- **Group Discussions**

Group discussions were organized in some of the project affected Rural municipality/Municipality/community forest users' groups to give special attention to issues concerning specific target groups such as women, children and farmers. Local people, political leaders, teachers and other intellectuals were also included in the discussion. Indigenous and tribal communities, dalit, women and other ethnic minorities were included in the discussion, which give opportunity for the people in the project area to voice their questions and concerns regarding the project and to provide in-depth information associated with their religion, culture, festivals, and etc.

- **Field Observation**

The field observation of the project site was made by the team of sociologist and support staff during December, 2015 AD to collect the baseline information of the project area during Poverty and Social Assessment study and during November/December, 2016 AD to identify the potential environmental impact and the pertinent issues. During the field visit, the team met local stakeholders. Meetings were mainly focused on issues likely to arise due to

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implementation of the project, existing environment condition of the project area and views/concerns of stakeholders.

c. Public Consultation

According to Rule 7 (1) of EPR, a 15 days Public Notice, seeking the written opinions from the concerned stakeholders and institutions on possible impacts from implementation of the Proposal, was published in ***Annapurna Post***, a national daily newspaper on 26th of Kartik 2073 BS. A team was mobilized in the field with copy of public notice along with cover letters to the concerned municipalities, VDCs, CFUGs, district level line agencies and other local stakeholders. Copy of the notice was displayed in the project sites and proof of deed (*Muchulkas*) was collected. Recommendation (consent) letters was collected from the affected municipalities, VDCs. In addition, recommendations and suggestions were collected from the affected municipalities, VDCs, CFUGs and concerned stakeholders (government bodies). Summary of the draft report was distributed to the concerned municipalities, VDCs and DDCs for public viewing and comments. The *Muchulkas* and recommendations letters are attached in Appendix-2.

d. Data Processing

The field data from each project affected VDCs were compiled edited and analyzed in head office using windows software like WORD and EXCEL. The analyzed data were then interpreted and discussed in appropriate sections of the IEE report.

e. Impact Identification, Evaluation and Prediction

A logical, simple and systematic approach has been adopted for impact identification, evaluation and prediction. The impact has been identified for physical, biological, socio-economic, and cultural environment of the project area. The following tools have been used for impact identification:

- VDC Checklist
- Households Questionnaire
- Table format for loss of land, crop production and property of the project affected families
- Expert's judgment

Topographic map of the road alignment has been used in predicting the impacts of the proposed upgrading by analyzing the effect of project activities on the resources like existing infrastructures, rivers/rivulets, settlements, private land, forest, etc present in the location. The expert's judgment using past experiences of similar type of projects have been used to predict impacts. Wherever possible, impact predictions have been done quantitatively.

Field inventories before project implementation provide the baseline condition of resources. The assessment of impacts is based on the baseline environmental conditions of the affected area with the project activities in relation to spatial and temporal aspects in terms of magnitude, extent and duration using various environmental prediction methods. The impact has been predicted over a specified period and within defined area. Consequences of environmental impacts were interpreted in terms of local, regional and national contexts. The significant positive and adverse environmental impacts associated with the project components have been identified considering the impact zone. The magnitude, extent and

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duration of the impacts which were categorized according to the National EIA Guidelines, 1993 are given below:

Magnitude of impacts

- Low Impact (L): If the value of the resources could be used with no or minimum inconvenience to the public
- Medium/Moderate Impact (M): If the value of the resources could be used with inconvenience to the public
- High Impact(H): If the value of the resources reduced far below publicly acceptable level

Extent Impacts

- Site Specific (S): The impact is limited within RoW then it is site specific one.
- Local (L): If the impact of the work extends to the adjoining wards and or within 100m up 300m from the transmission line or angle tower then it is termed as local.
- Regional (R): If the impact of the work extends to the entire district or further then it is termed regional.

Duration of the Impacts

- Short Term (ST): If the impacts last for 3 years after project initiation it is classified as short term. Construction phase impacts are mostly categorized under this category.
- Medium Term (MT): An impact that continues for more than 3 years but less than 20 years is considered as medium-term. The construction phase impacts which carry over for few years of operation falls under this category.
- Long Term (LT): An impact that lasts beyond 20 years is considered to be long term. The operation phase impacts are mostly categorized under this category.

f. Preparation of IEE Report

Based on the analysis of impacts and their nature, appropriate beneficial impacts augmentation measures and adverse impacts mitigation measures were prepared. Such measures were based on site-specific issues, past experience on similar projects, and expert judgments. Monitoring plan for the implementation of mitigation measures was prepared. This Report has been prepared in the format prescribed in EPR, Schedule 5 pertaining to Rule 7 of the EPR.

g. Time, Cost and Specialists Involved

Total time stipulated for the IEE study was twenty (20) weeks and the budget for the IEE study is a part of overall consulting services for Project Preparatory Consultant under Transport Project Preparatory Facility (TPPF).

Table 3.2: IEE Study Schedule

S. No.	Activities	Month				
		April 2016	Nov 2016	Dec 2017	Apr 2017	May 2017
1	Preparation, submission and approval of Terms of Reference					
2	Public Notice issuance					
3	Preliminary secondary data					

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	collection and field visit	
4	Data analysis and interpretation	
5	Preparation and submission of draft IEE report	
6	Draft report presentation and feedback collection	
7	Final report preparation, submission and approval	

Table 3.3: Study Team for IEE Study

S. No.	Name	Position
1.	Shiv Shanker Karki	Environmental Specialist
2.	Mahesh Kumar Thapa	Geotchnical Engineer
3.	Shiv Prasad Dhakal	Sociologist
4.	Chintamani Sharma	Resettlement Expert
5.	Utsav Subedi	Highway Engineer
6.	Anoj Lamichhane	Biologist

3.13 Detailed Particulars of the Area where the Project is to be implemented

3.13.1 Physical Environment

a. Road Alignment

Mugling – Pokhara Road section is a part of the Prithvi Highway (174-kilometre-long) highway connecting Naubise of Tribhuvan Highway, 26km from Kathmandu, the capital of Nepal, and Pokhara, a tourist city in the western part of Nepal. Mugling – Pokhara road section starts from Mugling Bazaar Chowk (00+000) at an elevation of 264.16 m amsl, passes through various small towns and settlements and it ends at Prthivi Chowk (90+000) of Pokhara city at an elevation of 842.70 m from amsl. From Mugling to Anbukhaireni at about km 8+000, the road passes through steep hilly terrain and at Km 4+100; there is power house of Marsyangdi HEP on left hand side of the road. After Anbukhaireni, the road alignment traverses through settlements and cultivated lands and crosses Dumre Bazaar (Ch. 25+000), Ghansi Kuwa at Ch. 36+980 in Ghansikuwa VDC of Tanahu district. Major settlement areas crossed by the road are Anbukhaireni, Bimalnagar, Dumre Bazaar, Damauli, Khairenitar, Kotre, Gagangaunda, Lekhnath Chowk, Taal Chowk, Amarsingh Chowk etc. and finally ends at Prithvi Chowk (Ch. 90+000). Under the present project scope, upgrading works will be carried out from Ch. 00+250 from the right bank of Trishuli River. The elevation of the road alignment is gradually ascending from the starting to the end point of the road. Elevation of the start point (right bank of Trishuli River) is 257.289 m and lowest point along the road alignment is at Ch. 02+150 with elevation of 250.378 m, the highest point being at the end point of the road with elevation of 842.71 m. Other than settlement areas, rest of the road alignment passes through intermixture of scattered settlements, opens land bearing built-up value, cultivated and open grazing lands and some patches of forest lands. Road alignment map is presented in Figure 3.3.

b. Topography and Soils

The Mugling - Pokhara road stretch passes through numerous terraces consisting of recent alluvial materials and along the moderate to gentle hill slope with a few exceptions where the

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road passes through rocky terrain consisting vertical rocky cliff. The hill slope is either covered with medium thick to thick residual to colluvial deposits or slope scree material, from Khairenitar onwards up to the Seti river bridge the alignment passes through Pokhara valley floor characterized by recent quaternary Pokhara Valley sediments consisting of slightly to moderately cemented silty/sandy gravel. The alignment from Mugling to Abukhaireni runs through moderate to steep hill slope consisting numerous terraces like Banitar, Bhawanitar and Aapchaur. The alignment after Abukhaireni Bazar passes through gentle sloped terrace like Pipal tar, Dhabtar, Dhakaitar, Eelkle Phat, Satrasaya Phat, Bimal Tar, Dumre. The terrace benches are up to 5 m high and consists of precarious exposure at places. The terraces are cultivated and are marked by built up area. After Dumre and crossing Nala Khola the alignment passes through places like Sumira, Nala, Banjare, Bel Bhanjyang, Pipalthok, and Chhirkane Bhanjyang marked by gentle to moderate sloped area consisting thick to medium thick residual to colluvial soil with brief exposure at places. The terrain is cultivated and with scattered settlement and rest are covered by vegetation. After Chhirkane Bhanjyang the alignment up to Deurali passes through rocky terrain with exposure consisting quartzitic rockmass. The hill slope is covered by medium dense vegetation. From Deurali on wards up to end of Tallaghare the alignment passes through moderate hill slope consisting numerous terrace and colluvial cone and with few to brief exposure at places. Afterwards the alignment passes through relatively flat lying area at Damauli Bazar up to the Madi River Bridge consisting of residual soil.

The Damauli-Pokhara road alignment starts from Madi River right abutment at Chapaghat, the alignment passes through rather gentle to moderate hill slope up to Khairenitar, Chapaghat, Tharpu, Manahari, Chhabise, Manpang, Pipal dada, Niure, Ritthepani, Kumle Khola are the area where the alignment passes through moderate to gentle hill slope and flat low lying are marked by numerous terreces consisting thick to moderately thick residual to colluvial soil. The hill slopes are covered by medium thick slope scree material. The colluvial cones marking the earlier but stable landslide are frequent. The area also consists of sparsly inhabited area. From Kumle Khola to Khaireni bazar the alignment passes through built up area consisting residual soil. Khairene bazar to the Chuninay muda the alignment pass through the valley floor consisting residual soil, from Chuninay muda to Lama Ahale the alignment passes through the hill slope with exposure of massive, fractured and jointed quartzitic rockmass. From Lama Ahale to Seti River left bank the alignment passes throught Pokhara valley floor marked by valley sediments consisting gravel, pebble, sand silty clay of semi-consolidated dense to medium dense soil.

c. Geology

The road alignment passes through Lesser Himalayan metasedimentary rock sequence characterized by low grade metamorphic rock to sedimentary rock belonging to Nuwakot and Kunchha Group. The Nuwakot Group consists of phyllites, sandstones, quartzites and calcareous sandstone along with limestone, dolomite and slates while Kunchha Group consists of phyllites, metasandstone, quartzites. The tographic depressions along the alignment is covered by very thick to thin sequence of quarternary deposits characterized either as alluvial (terraces at and around river valley) or colluvial deposits or residual soil (hill slope terraces). Apart from this some part of the alignment especially the alignment near Pokhara Valley passes through quaternary, slightly to moderately cemented fluvial/fluvioglacial gravels, conglomerates and lacustrine clay deposit of very thick to thick nature.

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The major rocky terrain includes the stretch between Mugling to Abu Khaireni (Ch. 00+000 to Ch. 7+200), Bimalnagar area (Ch 20+800 to Ch 21+250) and Chhirkeni Bhanjyang to GhansiKuwa (Ch 21+725 to Ch. 36+950). However, the stretch between Ghansikuwa to Damauli, Chapaghat to Jamune Bhanjyang, Niure to Ritthepani, area around Seretar, Chuhene Muda, Lama Ahale consists few to brief exposure of rocks.

d. Slope Instability

In general, the Mugling-Damauli-Pokhara road alignment lies in high to low to medium hazard of the total length less than 1% of the alignment passes through high hazard area and incluces the active rockfall/landslide in between Mugling-Abukhaireni, the slumping to road edge aroud Niure-Rithepani, the instability can be treated by slope trimming and construction of gabion to masonry wall and shotcreating at places. About 10% of the alignment passes through medium hard zone where uphill slope excavation during widening can induce slope failure involving colluvial, alluvial, residual and slope scree material. the alignment between Ch. 8+850 to Ch 9+975, Ch. 42+725 to Ch48+125, Ch 53+175 to Ch. 53+375, 59+700 to Ch60+900 and Ch 71+500 to Ch72+375 are identified as the terrain with possibility of instabilities.

e. Land Use

Approximately 45% of the road alignment passes through built up area, 9% through forest area consisting thin to medium thick slope scree material along with colluvial to residual deposits, 39% through rural and cultivated area consisting thick to medium thick silty clay, about 2% of the alignment passes through barren land including river, kholsi etc and 5% alignmnet passes through rocky area.

g. Meteorology and Climate

Physiographically, the proposed road project lies in mid-hills region. Climatologically, the project area lies in subtropical region. The average maximum and minimum temperature of Tanahun district is 38 °C and 5 °C respectively and average annual rainfall in the district is 1761 mm. Similarly, the average annual rainfall in Kaski district is 1701.70 mm and the average maximum and minimum temperatures of this district is 32°C and 2.2°C respectively (District Profile of Kaski, 2014).

h. Hydrology and Drainage

There are twenty (20) major streams across the road alignment as major water bodies. There are nine (9) irrigation crossings along the road alignment (Chainages: 27+060, 37+130, 37+725, 48+120, 48+160, 49+150, 52+400, 52+890, and 67+580). In addition, there are 197 RCC slab and 114 box culverts along the road alignment. No wetlands are found within the vicinity of the road. Table below shows the list of rivers/streams crossed by the Mugling - Pokhara Road.

Table 3.4: Rivers/Streams crossed by the Road Alignment

S. No.	River/Streams	Chainage(km)	S. No.	River/Streams	Chainage(km)
1	Unnamed stream	00+850	11	Buldi Khola	40+110
2	Unnamed stream	01+743	12	Madi Khola	41+725
3	Ruwa Khola	03+652	13	New Bridge	43+060
4	Khola near BM 86	08+153	14	Moto Brigde-1	51+062

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S. No.	River/Streams	Chainage(km)	S. No.	River/Streams	Chainage(km)
5	Khani Khola	11+060	15	Myagde Khola	55+051
6	Rodi Khola	13+060	16	Kumle Khola	60+570
7	Hudi Khola	15+503	17	Haledi Khola	66+550
8	Nala Khola	24+679	18	Kotre Khola	70+185
9	New Proposed Bridge	25+560	19	Bijayapur Khola	84+152
10	Buldi Khola	37+425	20	Seti River	88+290

Source: Field survey, 2016

Alltogether 34 new bridges (8 major, 26 minor) have been proposed under the present project scope as mentioned in the table 3.5 below.

Table 3.5: List of Bridges proposed

Major Bridges

S. No.	Location (Km)	Bridge Name	Proposed Type	Side	Proposed Length (m)	Span Arrangement (no. x span length)	Carriageway Width (m)	Footpath width (m)	Bridge Width (m)
1	0+838	Dharapani Khola Bridge	PSC I Girder	D/S, R/S	24.00	1 x 24	7.50	1.50 (B/S)	12.06
2	11+060	Khani khola	PSC I Girder	D/S, R/S	33.20	1 x 33.2	8.00	2.75 (O/S)	11.66
3	24+679	Nala khola	PSC I Girder	Existing CL	24.00	1 x 24	7.50	1.50 (O/S)	10.56
4	40+110	Buldi Khola	PSC I Girder	D/S, L/S	48.00	2 x 24	8.00	2.75 (O/S)	11.66
5	55+043	Magdi Khola	PSC I Girder	D/S, L/S	24.00	1 x 24	8.00	2.75 (O/S)	11.66
6	60+570	Kumle Khola	Pre-cast RCC T-Beam	D/S, L/S	48.00	3 x 16	8.00	2.75 (O/S)	11.66
7	70+195	Kotre Khola	Cast-in-site I Girder	D/S, L/S	35.00	1 x 35	8.00	2.75 (O/S)	11.66
8	84+160	Bijaypur Khola	PSC I Girder	U/S, R/S	65.20	16 + 33.2 + 16	8.00	2.75 (O/S)	11.66
NOTE:			*B/S: Both side*						
			O/S: One side						
			D/S: Down Stream						

Minor Bridges

S. No.	Location (km)	Bridge Name	Detail of Bridges				
			Type	Side	No of Span/Cell	Span Length/ opening (m)	Total Length (m)
1	1+700	Khowsing Khola	RCC Slab	U/S	1	14	14.00
2	4+950	Slab Bridge	RCC Slab	B/S			
3	5+100	Slab Bridge	RCC Slab	B/S			
4	5+160	Arch Bridge	Box Girder	U/S	1	12	12.00
5	6+665	Adheri Khola-1	RCC Slab	B/S			
6	8+040	Khahare Khola	RCC Slab	U/S	1	10	10.00

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7	12+860	Rodi Khola	RCBC	D/S	11	3	37.2
8	14+900	Sukhaurea Khola	RCC Slab	B/S			
9	15+600	Kundi Khola (Baradi)	Box Girder	D/S	1	16.2	16.20
10	15+910	Slab Bridge	RCC Slab	B/S			
11	17+300	Adheri Khola	RCC Slab	D/S	1	12	12.00
12	19+830	Boke Khola	RCC Slab	D/S	1	12	12.00
13	22+010	Badh Khola	RCC Slab	B/S			
14	22+255	Khahare Khola	RCC Slab	B/S			
15	28+370	Sathimure (Chaubise Khola)	RCC Slab	D/S	1	8	8.00
16	31+850	Slab Bridge	RCC Slab	D/S			
17	35+550	Slab Bridge	RCC Slab	D/S			
18	37+155	Muse Khola	Box Girder	D/S	1	12	12.00
19	48+975	Saatmure Khola	Box Girder	U/S	1	14	14.00
20	50+250	Thade Khola	Box Girder	U/S	1	12	12.00
21	51+062	Samdi Khola	RCC T-beam	U/S	1	17.2	17.20
22	53+840	Slab Bridge	RCC Slab	CL	1	8	8.00
23	58+395	Mul Khola	RCC Slab	CL	1	8	8.00
24	58+920	Phedi Khola	RCC Slab	D/S	1	12	12.00
25	66+550	Rudi Khola	Box Girder	U/S	1	15	15.00
26	67+250	Hadeli Khola	Box Girder	U/S	1	25	25.00
NOTE:	*B/S: Both side*						
	U/S: Up Stream						
	D/S: Down Stream						
	RCBC: RC Box Culvert						

Source: Detail Design Report, 2017

i. Source of Construction Materials

Environmentally acceptable and technically viable sources of boulders are identified to be Marsyangdi River basin (Ch. 09+000), Madi River Basin (Ch.42+000) and Seti River Basin (Ch.71+000, Kotre area Borrow pit). There is existing local crusher plant at Ch. 10+000 and Ch. 71+000 at Kotre area in the vicinity of road alignment, which can be used to procure construction materials.

Table 3.6: Probable Construction Materials Quarry Sites

S. N	Location/ Chainage	Approximate Extractable Quantity (m^3)	Required Quantity			Equipment used for materials extraction
			Crushed stone Aggregate (Base Course)	Natural Aggregate Material (Sub – Base)	Sand	
			Qty, m^3	Qty, m^3	Qty, m^3	
1	**Marsyangdi River Basin Ch. 9+000**	35,450.00	11344.00	12,408.00	8,863.00	Excavator, Bulldozer, Loader, Tipper, Trucks, Tractors, Shovel and Crusher Plant and Screen plant etc.

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S. N	Location/ Chainage	Approximate Extractable Quantity (m^3)	Required Quantity			Equipment used for materials extraction
			Crushed stone Aggregate (Base Course)	Natural Aggregate Material (Sub – Base)	Sand	
			Qty, m^3	Qty, m^3	Qty, m^3	
2	**Maadi River Basin Ch. 42+000**	373,750.00	93,438.00	186,875.00	48,587.00	Excavator, Bulldozer, Loader, Tipper, Trucks, Tractors, Shovel and Crusher Plant and Screen plant etc.
3	**Seti River Basin Ch. 71+000, Kotre area Borrow pit**	460,000 .00	230,000.00	92,000.00	115,000.00	Excavator, Bulldozer, Loader, Tipper, Trucks, Tractors, Shovel and Crusher Plant and Screen plant etc.

Source: Detail Design Report, Mugling-Pokhara Road, 2017

j. Air, Noise and Water Quality

The source of air pollution in the project area includes vehicular emission and dust pollution due to vehicular movement on unpaved shoulders / agricultural farming activities. Dust pollution, which varies from one to the other season, is the major contributor in deteriorating air quality in the project area. During unsaturated soil condition situation along with farming activities, dust particles rises and the air quality deteriorates. This is a seasonal effect and it neutralizes naturally during the monsoon period.The air, noise quality parameters of the Proposal area are observed to be of good quality despite the vehicles plying.

Table 3.7: Ambient Air Quality (µg/m^3)

City	$PM_{2.5}$	PM_{10}	CO	SO_2	NO_2
Abukhaireni	35.60	130.00	<0.5	<5	0.68
Damauli	37.90	150.00	<0.5	<5	0.19
Tharpu	26.20	65.60	<0.5	<5	0.12
Pokhara	38.20	115.00	<0.5	<5	0.65
NAAQS	40 (24 hr ave)	120 (24 hr ave)	8.11	70 (24 hr ave)	80 (24 hr ave)

Note: The baseline values are for 8-hour average concentrations.
Source: Field Survey, 2017

The PM_{10} concentration was found above the NAAQS limit of 120 µg/m^3 at Anbu Khaireni and Damauli however the observed concentration of PM_{10} at Pokhara and Tharpu was found below the NAAQS specified limit. Similarly, $PM_{2.5}$ Concentration in all four locations was detected marginally below the NAAQS limit. Other pollutants however were detected fairly below the National Standard Limit.

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Noise level measured along the project road along with the standards for noise under the World Bank Environmental Health and Safety (WB-EHS) Guidelines and national standards are also provided in the **Error! Reference source not found.**.

Table 3.8: Noise level recorded at different locations along the road alignment

Location	Noise Level dB (A)			GON Noise zones/ standard	WB Noise Zones/ standard
	Minimum	Maximum	Average		
Abukhaireni Bazaar	59.29	76.44	74.94	New residential area (62 dBA)	Residential (50 dbA)
Damauli	59.85	89.38	77.86	New residential area (62 dBA)	Residential (50 dBA)
Tharpu	49.70	66.00	63.85	Rural Area (None)	-
Pokhara Bazaar (End Point)	58.28	85.00	75.36	Commercial cum residential Area (72.75 dBA)	Commercial (70)

Source: Field Survey, 2017

Noise quality data presented in table 3.7 shows that the day-night average noise pressure levels of these locations were found to vary from 63.85 dBA to 77.86 dBA. The lowest noise pressure level was detected from the Tharpu area whereas the highest level of noise pressure was detected from Damauli area. Comparison of the observed noise quality data against the National Standard for Noise reveals that observed day-night average sound pressure levels in all locations but Tharpu was found above the day time sound pressure level of 65 dBA specified by the national standard for commercial areas. The detected pressure level at Tharpu was found marginally below than this standard limit. The day-night sound pressure levels observed from Pokhara and Damauli areas were found exceeding the standard limit set by national standard for day time industrial noise (75 dBA).

Water quality is observed to be good and people use springs, pipe/tap water and small streams for drinking purpose.

3.13.2 Biological Environment

According to information/data from the Department of Forest Research and Survey (DoFRS), 62,654 ha of Tanahu district and 55,000ha of area in Kaski district is covered by vegetation. It includes all types of vegetation without differentiating between dense and open/degraded forests. According to local informants, the forest vegetation cover in the district is in increasing trend upon handover of forests to Community Forest Users Groups (CFUGs). Recent data shows thatthere are 503 CFUGs in Tanahu district and 401 CFUGsin Kaski district. Based on this background information, the district including the project area has good coverage of forest vegetation compared to the national forest coverage (37%)[1].

a. Forest/Vegetation

The dominant forest types existing along the road corridor include Riverine forests, *schima* forests, *Alnus nepalensis* forests, and *shorea robusta* forests. These forests contain diverse types of plant species. They are used for timbers, fuel wood, fodder, litter, wild fruits, and other NTFPs purposes. Two species namely, *Shorea robusta* and *Acacia catechu* are protected plant species. The first one is high value timber and second one offers industrial value. *Shorea robusta* is banned for commercial felling, transportation and export including

[1]Department of Forest Research and Survey (DoFRS)

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their fruit/seed, leaf and twigs. Similarly, commercial felling, transportation and export include pod/seed, leaf, bark and wood for *Acacia catechu* are also banned.

The name of community forests users groups (CFUGs) along the road alignment area are presented in table 3.9 below. These forests are the sources of fuel-wood, fodder, litter, timber and other none timber forest products (NTFPs). Besides they offer habitat for wildlife.

Table 3.9: Community Forests (CF) Along Road Alignment

S. No.	Name of Community Forest	Chainage/Location	Location	District
1	Kukurgade CFUG	03+750 – 04+350	Aduwakharka, Anbukhaireni – 5	Tanahun
2	Chisopani Puranokot CFUG	05+175 – 06+900	Anbukhaireni – 6	
3	Sri Bhange CFUG	06+900 – 07+525	Bhange, Anbukhaireni – 7	
4	Yampa CFUG	19+075 – 19+450	Bandipur-8	
5	Lohi Pakha CFUG	20+075 – 21+275	Bandipur-6, 8	
6	Kokacha CFUG	21+275 – 22+225	Bimalnagar, Bandipur-6	
7	Sri Shiva Parvati CFUG	35+600 – 35+675	Ghansikuwa-5	
8	Sri Shwagdi CFUG	36+350 – 37+700	Golla, Ghansikuwa-5	
9	Sri Sundari CFUG	37+800 – 38+425	Musekhola, Vyas municipality–1	
10	Sri Barahi CFUG	44+675 – 45+100	Gunadi, Jamunne – 1	
11	Mahila Makhuwa CFUG	56+100 – 56+250	Chhabise, Manpang – 1,	
12	Lamidanda CFUG	56+650 – 58+250	Manpang – 2	
13	Sri Simalchaur CFUG	59+700 – 59+950	Khairenitar, Shuklagandaki Municipality – 9, 10, 11	
14	Bagedanda CFUG	68+325 – 69+250	Dulegaunda, Shuklagandaki Municipality – 3	
15	Kayachaur Chhaharepakha CFUG	69+250 – 70+045	Dulegaunda, Shuklagandaki Municipality – 7	
16	Raipurkotre CFUG	70+045 – 70+500	Kotre, Shuklagandaki Municipality – 1	
17	Pragatishil CFUG	71+375 – 71+725	Lekhnath Municipality – 13	Kaski

Source: IEE Study Field survey, 2017

The major tree species available along the road corridor vicinity area are given inTable 3.10 below.

Table 3.10: Major Tree Species available surrounding to the project area

Local name	Botanical Name	Family	Forest Act	IUCN	CITES
Chilaune	*Schima wallichi*	Theaceae			
Jamun	*Syzygium cumini*	Myrtaceae			
Kadam	*Anthocephalus chinensis (Lam.)A. Rich. Ex Walp*	Rubiaceae			
Karam	*Adina cordifolia (Wild. Ex Roxb.) Benth. & Hook. F. ex Brandis*	Rubiaceae			
Khayar	*Acacia catechu (L.f.) Wild*	Leguminosae	Protected	T	3
Khirro	*Sapium insigne (Royle) Benth. Ex Hook.f.*	Euphorbiaceae			
Sal	*Shorea robusta Gaertn.*	Dipterocarpaceae	Protected		
Tanki	*Bauhinia purpurea L.*	Leguminosae			

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Local name	Botanical Name	Family	Forest Act	IUCN	CITES
Amala	*Phyllanthus emblica*	Euphorbiaceae			
Chiyuri	*Aesandra butyracea*	Sapotaceae			
Dale Kutus	*Castanopsis indica*	Fagaceae			
Kafal	*Myrica esculenta*	Myricaceae			
Kyamun	*Syzigium cerasoides*	Myrtaceae			
Mahuwa	*Engelhardifia spicata*	Juglandaceae			
Uttis	*Alnus nepalensis*	Betulaceae			
Rato siris	*Albizia chinensis*	Leguminosae			
Saj	*Terminalia tomentosa*	Combretaceae			
Salla	*Pinus roxburgii*	Pinaceae			
Tateri	*Dillenia pentagana*	Dilleniaceae			
Mayal	*Pyrus pashia*	Rosaceae			

Source: IEE Study, Field survey, 2016

Roadside plantation (avenue trees) is also noted almost throughout the road alignment in urban areas. The major tree species recorded are: Kadam *(Anthocephalus chinensis)*, Bar *(Ficus bengalensis)*, Pipal *(Ficus religiosa)*, Sissau *(Dalbergia sisso)*, Neem *(Azadirachta indica)*, Siris *(Albizia sp)*, Jamun *(syzygium cumini)*, etc. 279 Bar and Pipal Chautari's with cemented platform (natural shaded resting place) were observed at various locations. The road side trees within the COI will be affected. The details of roadside trees with girth ranging from 0.5 m to 3 m and height from 3 m to 12m recorded within the COI are as follows:

Table 3.11: Detail of Roadside Trees

Tree Type	Quantity in Nos.
Lapsi (*Choerospondias axillaris*), Pipal *(Ficus religiosa)*, Bar *(Ficus bengalensis)*, Neem *(Azadirachta indica)*, Kavro *(Ficus lacor)*, Kadam *(Anthocephalus chinensis)*, Siris *(Albizia sp)*, Sissau *(Dalbergia sisso)*, Masala, Shami (*Ficus benjamina*), Ashok *(Saraca asoca)*, Simal, Bakaino, Sal, Rubber, and Mango *(magnifera indica)*, Palm trees, Tuni, Dhupi, , Rittha, Chilaune, Khayar, Katus(*Castanopsis indica)* Kaulo (*Persea odoratissima*), Khaniyu (*Ficus semicordata*), Khirro (*Sapium insigne*), Lakuri *(Fraxinus floribunda),* Naspati (*Pyrus communis*), Newaro *(Ficus auriculata),* Paiyun (*Prunus cerasoides),* Sallo (*Pinus roxburghii*), Suntala (*Citrus sps.*), Uttis (*Alnus nepalensis) etc.*	6000
Bamboo clumps	186 clumps
Chautari's with cemented platform (natural shaded resting place) with pipal *(Ficus religiosa)*, bar *(Ficus bengalensis)* as major tree species.	279

Source: Field survey, 2017

b. Terrestrial Wildlife

Diverse forest species along the road corridor offers home and migratory routes to different species of mammals. The project area covers wide range of commonly found faunal diversity also. The information on wildlife and avian fauna gathered from the local residents indicated that Leopard cat (*Felis bengalensis*), Jungle cat (*Felis Chaus*), Jackal (*Canis aureus*), Monkey (*Macaca Assamensis*), Langur monkey (*Presbytis entellus*), Squirrel (*Funambulus pennati*), Fox (*Vulpes bengalensis*), Hare (*Lupus migricollis*) and porcupine (*Hystrix*

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hodgsoni) etc.List of commonly found mammal species and their status are given in Table 3.12.

Table 3.12: Species of Mammals around the project area

Name			Family	CITES	IUCN	Forest Act
Local	English	Scientific				
Ban Biralo	Jungle cat	*Felis chaus*	Felidae	2	LR/lc	
Bandar	Monkey	*Macaca assamensis*	Cercopithecidae	2	VU	Protected
Dhedu	Langur Monkey	*Semnopithecus entellus* Syn. *Presbytis entellus*	Cercopithecidae	1	LR/nt	
Dumsi	Porcupine	*Hystrix hodgsoni*	Hystricidae			
Fayuro	Fox	*Vulpes bengalensis*	Canidae	3	DD	
Syal	Jackal	*Canis aureus*	Canidae	3		
Chari Bagh	Leopard cat	*Felis bengalensis*	Felidae	1	LR/nt	
Lokharke	Squirrel	*Funambulus pennati*	Sciuridae			
Kharayo	Indian hare	*Lepus nigricollis*	Leporidae			

Source: Field Survey, 2016, LR/LC= Lower Risk/Least Concern; VU= Vulnerable; nt= Near Threatened; DD=Data Deficient; and EN=Endangered

Similarly, major birds reported in the project area include Sparrow (Passer domesticus), Owl Bam (*Tyto alba*), Crow (*Corous macrorhynches*), Nepali Kaliz pheasant (*Lophura leucomelanos*), Cuckoo (*Eudynamus scolopacea*), Jungle Fowl (*Gallus gallus*), *Myna (Gracula religiosa),* Red Turtle Dove (*Streptopelia tranquebarica*), and Hill Patridge (*Arborophila hyperythra*) etc. The commonly found bird species are given in Table 3.13 below.

Table 3.13: Bird Species along the Road Corridor

Name			Family	CITES
Local	English	Scientific		
Bhangera	Sparrow	*Passer domesticus*	Passeridae	
Huchil	Owl Bam	*Tyto alba*	Tytonidae	2
Kag	Crow	*Corous macrorhynches*	Corvidae	
Kalij	Pheasant	*Lophura leucomelana*	Phasianidae	
Koili	Cuckoo	*Eudynamus scolopacea*	Cuculidae	
Luiche	Jungle Fowl	*Gallus gallus*	Phasianidae	
Sarung	Myna	*Gracula religiosa*	Sturnidae	3
Dhukur	Red Turtle Dove	*Streptopelia tranquebarica*	Columbidae	
Piura	Hill Patridge	*Arborophila hyperythra*	Phasianidae	

Source: IUCN, Nepal, (2005). Nepal`s Illustrated Biodiversity Primer

c. Aquatic Biology and Fisheries

The sub-project area contains few perennial rivers and streams viz. Seti, Madi, Marsyangdi khola, Most of other streams are perennial. The Seti and Marsyangdi, Madi Rivers are the major sources of habitat for different type of species of fishes. It offers habitat for cold water fishes. Inquiries were made with local people on availability of fish species into the streams, they were responded that other streams offer habitat for limited species of fishes. The commonly found species of fishes are given in Table 3.14 below.

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Table 3.14: Commonly found Species of Fishes along Road Corridor

River /Stream	Local Name	Scientific Name
Seti, Marsyangdi and Madi Rivers	Asala/ Chuche Asala	*Schizothorax progastus*
	Bam/Raj Bam	*Anguilla bengalensis*
	Buduna	*Gerraaun andalei*
	Buhari	*Wallago attao*
	Copper Mahseer	*Acrossocheilus hexagonolepsis*
	Kabre	*Glyptothorax trilineatus*
	Katle	*Acrossocheilus hexagonolepis*
	River stone carp	*Psilorhynchus sucatio*
	Sahar (Kalo, Pahelo) Ratar	*Tor tor, putitora*
	Tite (Stone Carp)	*Psilorhynchus pseudecheneis*

Source: Field Survey, 2016

d. Protected, Rare or Endangered Species

One protected wildlife species (mammals) is reported in the project corridor and rest of the existing species of mammals are commonly found species. Among the reported species, Monkey (*Macaca assamensis*) is protected and vulnerable species according to Forest Act, and IUCN respectively. Some of the species found in the project area are also listed in IUCN RED LIST, among them jungle cat and ghoral are categorised as having lower risk and of least concern; Langur monkey (*Semnopithecus entellus* Syn. *Presbytis entellus*), and Leopard cat (*Felis bengalensis*) are categorised as having lower risk and nearly threatened. Fox (*Vulpes bengalensis*) is categorised as data deficient.

e. Protected area

The project area does not contain any national park, wildlife reserve, conservation area, including buffer zone area, world heritage site and other protected areas. Langtang national Park is near to the proposed road alignment but outside the proposed upgrading work area.

3.13.3 Socio-Economic and Cultural Environment

a. Population status of project affected districts

According to the Census 2011 (CBS), total population of Tanahu and Kaski districts are 323,288 and 492,098 respectively. The average family size of project districts is 4.13 and 3.92 respectively. The population density per square kilometer is 209.11 persons per square kilometer in Tanahu and 243.98 persons per sq. km. in Kaski respectively.

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Table 3.15: Population Distribution by Project affected District

District	Total HHs	Total Population	Male (%)	Female (%)	Average HH Size	Population density	Area in Sq. km.
Tanahu	78,309	323,288	143,410	179,878	4.13	209.11	1546.00
Kaski	125,673	492,098	236,385	255,713	3.92	243.98	2017.00
Total	**203982**	**815386**	**379795**	**435591**	**4.00**	**228.85**	**3563.00**

Source: District Development Profile of Nepal, CBS, 2011

b. Population description of Project Affected Municipality/Rural Municipalities

According to 2011 census, total population of 2 municipalities, 3 rural municipalities and 1 Metropolitan City touched and traversed by the proposed upgrading road section is estimated at 596215 with 149433 households which accounts for 73.12 % of the project districts population. Gender-wise population distribution is estimated at 48.53% male and 51.47% female.

Table 3.16: Population Distribution by Project affected Municipality/Rural Municipality

Municipality/Rural Municipality	Total HHs	Population			Average HH Size
		Total	Male	Female	
Aanbukhaireni Rural Municipality	4,034	20,768	9,504	11,264	4.06
Bandipur Rural Municipality	3,056	20,013	9048	10965	4.07
Vyas Municipality	18,339	70,335	31,260	39,075	3.83
Myagde Rural Municipality	5,628	22,502	9,886	12,616	4.00
Shuklagandaki Municipality	9,676	48,456	21,292	27,164	3.96
Pokhara Lekhnath Metropolitan City	105,630	402,995	192,977	210,018	3.81
TOTAL	**146,363**	**585,069**	**273,967**	**311,102**	**4.00**

Source: District Development Profile of Nepal, CBS, 2011

c. Caste/Ethnicity and Language

The predominant ethnic groups residing along the road section is Brahmin, Chhetri,Gurung, Magar, Newar, and Dalits. The other major castes are Tamang, Thakuri, Kumal, Damai/Dholi, Gharti/Bhujel and Musalman. In the project affected municipality/VDCs, Brahmin – Hill is the largest ethnic population with 23.40% followed by Gurung (14.95%), Chhetri (14.92%), Magar (12.85%), Kami (7.15%), Newar (6.80%), Damai/Dholi (3.15%), Sarki (2.41%), Tamang (2.31%), Thakuri (1.65%) and others (10.41%) (Refer Annex 6).

In the project districts, languagewise, 75.92% of total population speaks Nepali and 9.95% of people speak Gurung. Magar language is spoken by 5.38% followed by Newari language with 3.04% and Tamang language (1.18%). Along with these languages there are also other languages having users less than 1% (Annex 6).

d. Literacy Rate and Education Level

Tanahun and Kaski districts have literacy rate of 74.83% and 82.38% respectively. In the project affected area, as per 2011 Census, about 83.37% of population aged 5 years and above can read and write (Annex 6).

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e. Health facilities

There are 2 hospitals along with other supporting health services organization in Tanahun district. The supporting center includes 9 different types of health services. Based on number, the major health services facilities in the district are vaccine center, Gaunghar clinic, and sub health post, contributing 50%, 36.2%, and 6.6%, respectively. The doctor to population ratio is observed as 1:76319 and Staff to Population ratio as 1:54514. (Annual report, DHO 12/13, Tanahun).

Similarly in Kaski district, there are 3 primary health center, 11 Ilaka health post, 20 sub-health post, 14 health post, 1 regional hospital, 1 eye hospital, 1 regional tuberculosis center, 1 leprosy hospital, 6 municipal health center, 2 teaching hospital, 8 private hospitals/nursing home, 40 private pathology clicic, 427 medical halls etc (Souce: HMIS, DHO, Kaski, 2013).

f. Sanitation Facility

In the project influence area 96.48 % of the households have toilet facilities. Those who have toilet mostly possess either pan or pit type toilet with flush system (Annex 6).

g. Drinking Water

In the project area, major source of drinking water is found to be from piped water (90.07%) supplied through community made water tanks. About 4.85 % of the households use well/spring for the purpose of drinking water and about 2.71 % of the household also use spout water as a source of drinking water. Other source of drinking water is river/stream. The use of underground water for drinking water is very insignificant (Annex 6).

h. Occupational Status

Households are found to depend on more than one occupation in all settlements. Major occupation of the households is trade & business which comprises 18.51% of the total household's members. Similarly, 10.07% are engaged in foreign employment whereas about 9% are service holders and about 10% population is unemployed. It is also to note that about 16.60% populations are housewife. Table 3.17 below presents the main occupation of the households in the project area.

Table 3.17: Occupation Status of the Households in Project Area

S. No.	Occupation	Sex			Percent (%)
		Male	Female	Total	
1	Agriculture	256	163	372	5.78
2	Service	373	205	578	8.98
3	Trade & Business	732	459	1191	18.51
4	Agriculture Labour	36	32	68	1.06
5	Non Agriculture Labour	57	20	77	1.20
6	Foreign Employment	520	128	648	10.07
7	Housewife	0	1021	1068	16.60
8	No job	376	308	684	10.63
9	Others	868	880	1748	27.17
	Total	**3218**	**2908**	**6434**	**100.00**

Source: Baseline Survey, September 2016

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3.13.4 Socio-economic Profile of Affected Households

a. Population information

Based on the household survey data, an estimated 4188 persons of 860 households will be affected from the implementation of the project. Out of 860 affected households 364 households are PAFs and 496 households are Severely Project Affected Families (SPAFs). The details of affected households and their population status are given below.

Table 3.18: Population information of affected households

Municipality/Rural Municipality	No. of HHs	Male	Female	Total
Abukhaireni Rural Municipality	142	347	344	691
Bandipur Rural Municipality	246	601	595	1196
Vyas Municipality	133	326	324	650
Myagde Rural Municipality	78	193	187	380
Shukla Gandaki Municipality	75	183	182	365
Pokhara Lekhnath Metropolitan City	186	456	450	906
Total	**860**	**2106**	**2082**	**4188**

Source: Household Survey, December 2016

b. Caste/Ethnicity

Out of 496 surveyed affected households, 306 are identified as indigenous including Gurung, Magar, Tamang, and Newar households, which are categorized as advanced IP. Other occupational caste group (Dalits) consists of 43 HHs. Others caste groups (Brahmin, Chhetri and Sanyasi) consists of 136 households and remaining 11 are from Muslim caste group.Table 3.19 provides the distribution of affected households by IPs and caste group categories.

Table 3.19: Caste/Ethnic Composition of the surveyed affected households

S. No.	Affected HHs Type	No. of Affected HHs	Percent (%)
1	Janajati/IPs including Advanced IP Gurung, Magar and Newar etc	306	61.69
2	Dalit	43	8.67
3	Brahmin/Chhetri & Sanyasi	136	27.42
4	Muslim	11	2.22
	Total	**496**	**100.00**

Source: Household Survey, December 2016

c. Literacy Status of Affected Population

The overall literacy status of surveyed affected household shows that about 7.74 % populations are illiterate and 11.99% are just able to read and write. The remaining 80.27 percent comprise of a mixed group of people with primary, lower secondary, secondary, and SLC level of education.**Table 3.20** shows the details of literacy status of surveyed affected population.

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Table 3.20: Literacy Status of Affected Population

S.N	Educational Status	No. of Population (< 5 years)	Percent (%)
1	Illiterate	175	7.74
2	Literate (can read and write)	271	11.99
3	Primary	360	15.93
4	Lower Secondary	304	13.45
5	Secondary	507	22.43
6	SLC	430	19.03
7	10+2 & Above	213	9.42
	Total	**2260**	**100.00**

Source: Household Survey, December 2016

d. Occupational Status of Affected Population

Among the total affected population about 28% are engaged in business followed by agriculture (11%), service holders (10%), foreign employment (12.74%), and others (3.87%) respectively.

Table 3.21: Occupational Status of Affected Population

S. NO.	Occupation	Surveyed households	
		Number of Population	Percent (%)
1	Agriculture own and lease	244	11.59
2	Agriculture Labor	82	3.87
3	Business	602	28.41
4	Private & government Services	219	10.34
5	Foreign employment	270	12.74
6	Student & others	702	33.13
	Total	**2119**	**100.00**

Source: Household Survey, December 2016

e. Food Sufficiency of Affected Households

Among the sampled households, 9.25% have not agriculture as main source of income. In this context, households were asked about the food sufficiency status from their own agricultural production. More than 27% of the households have food surplus and around 37% households have food sufficiency for the whole year. About 10% households indicated food sufficiency from 6 to 9 months. Another 11.64% reported the food sufficiency level to be in between 3 to 6 months. Table 3.22 gives the status of food sufficiency of the sampled households:

Table 3.22: Food Sufficiency Level

S.N	Food Sufficiency Months	No. of HHs	Percent (%)
1	No agriculture	120	9.25
1	12 months and above	355	27.37
2	9 to 12 months	481	37.09
3	6 to 9 months	134	10.33
4	3 to 6 months	151	11.64
5	Below 3 months	56	4.32
	Total	**1297**	**100.00**

Source: PSA Report, December 2016

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f. Average Annual Income and Poverty Status of Affected Households

Based on PSA report, 20 households (out of 496 households interviewed) were identified to be Below Poverty Level (BPL) in terms of their average annual household income as reported by them. Table 3.23 provides the breakdown of income levels of affected households as per the average annual income range.

Table 3.23: Average Annual Household Income

S. No.	Income Range	Affected households	
		In No.	In Percent
1	<50,000	6	1.21
2	50,000- 130,000	14	2.82
3	130,000 – 200,000	56	11.29
4	200,000 – 300,000	60	12.10
5	300,000-400,000	100	20.16
6	400,000 - 500,000	68	13.71
7	Above 500,000	192	38.71
	Total	**496**	**100.00**

Source: Household Survey, December 2016

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Chapter 4

4. IMPACT OF THE IMPLEMENTATION OF THE PROPOSAL ON THE ENVIRONMENT

The identification and assessment of impacts has been carried out by considering the proposed proposal activities in terms of construction and operation phases.

The impacts have been predicted in terms of their magnitude of significance (minor, moderate and high), extent (site specific, local and regional) and duration (short, medium and long term). Most of the identified impacts have been quantified to the extent possible. The possible impacts from the proposal during the construction and operation phases are presented in the succeeding sections.

4.1 Beneficial Impacts

4.1.1 Construction Phase

Following beneficial impacts are anticipated during construction phase:

i. Employment opportunities and income generation

The project offers a wide range of works for unskilled, skilled and semi-skilled labourers. Local people would generate substantial income from unskilled and semi-skilled job generated in the project. An estimated 13,00,000 man-days of unskilled workforce (1050 persons daily) and 3,00,000 man-days of skilled workforce (250 persons daily) will be required for the project throughout the construction period of 42 months. *The impact is direct, high magnitude, local and short term in nature.*

ii. Enterprise Development and Commercialization

During the road construction period, different types of commercial activities will emerge in order to meet the demand of labour groups, construction crew and project team. For meeting these needs, enterprises like food and tea shops, groceries, lodges and restaurants will be developed for serving large numbers of people. Demand on the local production like pulses, milk, meat, vegetables, fruits etc. will increase which may provide added impetus for local production and marketing. Such benefits may contribute to enterprise development which often continues to entrench beyond construction period. *This impact will be direct, of medium magnitude, local and long-term in nature.*

iii. Skills Enhancement

One of the strategies of the road project is to give much emphasis for the employment of local people who are living along the road corridor and are supposed to be affected by the road project. These strategies not only provides employment opportunities to the local poor people but also supports in transfer of skills and technical know-how while working in construction works and inject money in rural economy. These skills will benefit the locals in getting long-term employment opportunity in other road construction projects in future. *The impact is indirect, medium magnitude, local and long-term in nature.*

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iv. Enhancement of the Local Economy

Different types of commercial activities will come into operation during construction period, in order to meet the demand of construction work forces. There will be regularl demand for different types of food, beverage and other daily necessary items. To meet these demands, many local and outside people can operate a number of small shops and restaurants around the vicinity of the construction sites. Various farm based enterprises including wide range of agricultural and livestock products will also gain momentum as a result of increased demand by labours during construction period. This will increase local trade and business in the area and provides opportunities for new income generating activities as well. *The impact is indirect, medium magnitude, local and short term in nature.*

4.1.2 Operation Phase

A number of beneficial impacts of the Proposal are anticipated during the operation phase, some of them are as indicated below.

i. Improved access facility

An improved road access will bring in most if not all localities an improvement of food security situation, and will result in an overall economic and social stability. The journey will be comfortable and travel time will be saved. Similarly, the wear and tear of the vehicles will be less; and fuel consumption of the vehicles will also be less. At the same time, good and reliable road links will increase access to markets, jobs, education, and health services and reducing transport costs for both freight and passengers. In the long term, the road will provide safe and fast transport of goods and services from rural areas to urban centres and vice versa. This will bring about increase in productivity in rural areas and eventually improve the overall socio-economic condition of people living in or nearby road corridor. New market areas and settlements will develop, urbanization and industrialization will be possible, and all this will lead to the regional development of the area. *This will be direct, high magnitude, regional and long term impact.*

ii. Enhancement of Tourism

Project districts are famous for religious and adventure tourism. More pilgrims and tourists will visit this area due to easy accessibility. Flow of domestic as well as international tourists due to road improvement will contribute in the enhancement of economic activities of the area which will increase the living condition of the people in the project area.*This will be indirect, medium magnitude, regional and long term impact.*

iii. Enhancement of Quality of Life

As a by-product of increase in productivity and subsequent increase in income levels from micro enterprises and by the gradual development of additional facilities and services in the area due to better access, it is expected that there will be an overall improvement in the quality of life of rural people with reduction in travel time to social services, market areas and traveling to other parts of the country.

iv. Enhancement of social services

With the improved access to inputs and better transport services upon completion ofproposed road upgrading, other social services will also open up in the areasincluding education, health, communication, market, banking etc. With theseservices available and

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given its reliability assured, local stakeholders may look forand stick to locally available services rather than seeking it to elsewhere. *This impact is indirect, high magnitude, regional and long-term in nature.*

v. Women Empowerment

All the people will benefit from the road construction and upgrading. However, women in particular may benefit more from improved access to the market centres and various service providing agencies like health centres, banks, traininginstitutions, community development offices etc. Frequency of visit to such agencies will increase awareness level and empower the women. This impact is *indirect, medium magnitude, local to regional and long-term.*

vi. Increased economic activity with improved transport

After construction, the condition of the road will improve and transportation of commodities to and from the project area will be easier. For instance, farming communities will be easily accessed to evacuate farm produce (maize, bananas, cassava, beans, coffee, cotton and sugarcanes among others) will easily and quickly be transported to different destinations. More traders will prefer to buy directly from farmers compared to markets at trading centres hence creating "a pull effect" that will encourage farmers in the rural area to produce more for the market. *The impact is indirect, medium magnitude, local and long-term.*

4.2 Adverse Impacts

4.2.1 Physical Environment

A. Pre-Construction Phase Issues

Following activities will be carried out during pre-construction phase of the project:

(i) Relocation of utilities

Proposed road upgrading will cause disruption in the services of existing public utilities. These services includes: 95 transformer, 3949 electric poles (587 – 440V, 320 – 33 kVA, 3042 – 11 kVA & 440V); 359 telephone poles, 11 telephone cabinets and water supplying lines (135 Tapstand), and 9 irrigation pipe crossings by the road side, drainage structures (cross, side etc.). Proper co-ordination will be done with the relevant service providing authorities in advance and during shifting of utility services. Advance notice to the public about the times that the utility services will be disrupted will help the public to adjust to the situation before hand, thereby minimize the difficulties that they will face in the case of sudden disruption of these services.

(ii) Clearance of land

Establishment of materials processing plants, storage yards, vehicle parking lots, disposal sites and labour camps for temporary use will require additional lands within project affected areas. These activities can create social and environmental impacts such as conflicts between workforce and surrounding communities, soil erosion, impact on natural ecology due to removal of green cover vegetation and trees etc.

(iii) Location of storage yards, labor camps, and construction sites

There will be the need to identify and use (temporary basis) work sites and area or compound for storage of materials and equipment. The presence of camps, site offices and

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works yards/compounds within a rural community can cause an adverse impact through the increased disturbance, noise and waste generated by camps and work sites, especially if the sites are located close to settlement areas and houses. The temporary sites/compounds can also be the cause of conflict, especially if many workers are brought in from outside of the local area.

(iv) Procurement of equipment and machinery

Road upgrading works requires different type of equipment and machinery. The contractor needs to make necessary arrangement for the procurement of equipment and machineries during pre-construction phase.

(v) Identification and selection of material sources

It will be the construction contractor's responsibility to verify the suitability of all material sources and to obtain the approval of concerned local bodies. If additional quarries will be required after construction is started, then the construction contractor shall use the standard criteria to select new quarry sites, with written approval of concerned District Development Committee (DDC) or other concerned government agency. Probable sites for material sources have been identified as Marsyangdi River basin (Ch. 09+000), Madi River Basin (Ch.42+000), and Seti River Basin (Ch.71+000, Kotre area Borrow pit). There is existing local crusher plant at Ch. 10+000 and Ch. 71+000 at Kotre area in the vicinity of road alignment.

(vi) Identification of designated waste disposal locations

Unmanaged or improper disposal of spoil generated during road construction may cause blockage of natural drainage systems, loss of organic fertile top soil and farmlands, crops and forest, water logging. During pre-construction phase, identification of designated waste disposal locations needs to be done. Probable waste disposal sites are identified at following locations: 2+100 – 2+700, 8+200, 16+350, 28+450, 32+800, 38+500, 41+100, 46+500, 58+000, 68+000, 71+000.

(vii) Stockpiling of Construction Materials

It is general tendency of the contractors to stockpile the constructions materials like gravels, rock aggregates, bricks, cement, etc nearest to the site, which could be in agricultural land, forest land or other private property. Similarly, surrounding crops and ground vegetation may be damaged due to haphazard disposal of these materials.Construction material storage site pose adverse impact during construction stage. Appropriate sites for stockpiling of construction materials shall be selected during pre-construction phase by the contractor.

B. Construction Phase

(i) Earthworks/Slope Instability

Removal of vegetation and open cuts with exposed soil to rain will cause soil erosion as well as landslide. This can become a major source of silt that the monsoon runoff carries away. The stability of slopes along the road corridor depends upon slope angle, the material constituting the slope, rock discontinuities and hydrological conditions. There exist five locations at Ch. 8+850 to Ch. 9+975, Ch. 42+725 to Ch. 48+125, Ch. 53+175 to Ch. 53+375, 59+700 to Ch. 60+900 and Ch. 71+500 to Ch. 72+375 with possibility of instabilities. The degree of sliding increases during the road excavation and it may cause regular sliding

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during operational phase. *The impact will be direct, of low magnitude, site specific and short-term in nature.*

(ii) Loss of top soil

Loss of topsoil creates commonly long-term impacts along roads due to (i) site clearance and widening for road formation; (ii) development of borrow areas; (iii) temporary construction activities such as construction camps, material storage locations, diversion routes etc. Proposed upgradation work increases the paved surface and permanent loss of top soil under these civil construction activities. Excavation for forming the drains and borrowing also involves loss of top soil as well as scarifying the surface with construction machinery and equipment.Topsoil is a valuable resource for the revegetation of cut and fill banks. *Impact is predicted as direct, of low magnitude, site-specific and short term in nature.*

(iii) Change in land use

Minimum land acquisition (1.22 ha) is required for the implementation of proposal. In the upgrading road stretch, there will be onlynominal earthworks as the stretch requires pavement upgrading only. Whereas, only slight geometric improvements alongwith minor earthworks will be essential in compliance to road safety standards. The extent of the proposed road improvement is modest and will not extendbeyond the existing road corridor and therefore significant landscape impacts are notexpected from construction of the road. *These impacts will be of direct, site specific, low in magnitude, and long-term in nature.*

(iv) Disruption of public utilities

The existing public utilities and services located within the COI will be affected by the proposed road upgrading. These will require removal/relocation, extension, reinstatement, demolition and construction depending upon their function and necessities. The detail ofexisting utilities to be affected by the upgrading are as follows.

Table 4.1: Detail of Existing Utilities Affected

Description of Particulars	Total Number Affected	Extent of Damage
Transformers	95	Fully affected. Needs relocation
Electrical poles	3949 (587 – 440V, 320 – 33 kVA, 3042 – 11 kVA & 440V)	
Telephone Poles	359	
Telephone cabinets	11	
Cross-drainages (Bridges, Slab Culvert, Pipe Culvert, Irrigation Crossing)	9 irrigation pipe crossings (Chainages: 27+060, 37+130, 37+725, 48+120, 48+160, 49+150, 52+400, 52+890, and 67+580), 199 slab culverts, 114 pipe culverts and 8 major bridges (Ch. 0+838, 11+060, 24+679, 40+110, 55+043, 60+570, 70+195, 84+160), 26 minor bridges	Fully affected
Water Supply Tapstand with storage tank	135	Fully affected
Bus Bays/waiting sheds	105	Fully affected
Chautara	55	Fully affected

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Description of Particulars	Total Number Affected	Extent of Damage
Public Toilet	15	Fully affected
Temples	52	Partially affected
Petroleum dispenser, Boundary Wall etc.	29	Partially affected
Statue & Information Board etc.	5	Partially affected
Police check post, Entrance Gate, Traffic direction post etc.	18	Fully affected

Source: Field Survey, 2016

(v) Traffic hazard and road safety

Since the work is conducted on existing road passing through inhabited areas, the general public and traffic will come in close contact with the construction areas, and there is potential risk to public and as well as workers. Considerable vehicular traffic exists as the road forms one of the major links to neighboring districts. The upgrading of the road works will disrupt smooth flow of traffic with increase in chances of road accidents. Inadequate provisions of road safety measures such as road safety signals, appropriate diversions and lack of enforcement of traffic rules during construction and operation period may invite accidents. The road upgrading work of the proposed road will not affect/trigger slope stability problems creating havoc on traffic & general public movement. *The anticipated impact will be direct, of medium magnitude, local and long-term in nature.*

(vi) Impact due to establishment of construction camps

Contractor will establish camp if he bring labors from outside the area. Siting of camp will cause encroachment of agriculture land and alteration of drainage, solid waste and waste water problems. Impacts anticipated from construction camp establishment and operation include disposal of solid waste (organic waste, plastic and metal scrap, wastewater etc.), competition on public facilities (drinking water sources, health facilities, schools, etc.), impairment of aesthetic value of the landscape (loss of vegetation, compaction and contamination of soil and land), poor sanitation (unhygienic latrine, poor drainage facility), transmission of communicable diseases (sexually transmitted diseases, vector borne diseases, etc.), poor water supply, use of alcohols, gambling and conflict with local communities. Probable locations for campsite are identified at Ch. 02+200, 03+200, 09+500, 16+000, 24+100, 30+000, 35+000, 42+250, 48+000, 58+500, 67+400, 75+800, 77+500 and 83+000. *Impact will be direct, medium magnitude, site specific and short-term.*

(vii) Impact due to operation of borrow pits and quarries

Large amount of construction material such as the boulders, sand and aggregates material are required for pavement, retaining wall, breast wall, gabion wall and other structures. These materials wil be obtained from approved quarry sites (Refer Table 3.5). The extraction of materials from inappropriate places or in excessive amount can seriously damage the local environment. For example, quarrying from a high slope and fragile area can result slope instability, extraction of sand and gravel in excessive amount from river can cause riverbank cutting and erosion and changes in river regime. It may cause landslide, erosion or box cutting of agriculture land, impact on sensitive environmental areas etc. *Impacts from quarrying and borrowing will be of direct, medium magnitude, site-specific and long-term in nature.*

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(viii) Impact due to stockpiling of construction material and spoil/debris disposal

Construction material storage site pose adverse impact during construction phase. Erosion from stockpiled material will cause water pollution, land value degradation, loss of agricultural productivity, and nuisance. *This impact is direct, low in magnitude, site specific and short term in nature.*

Unmanaged disposal of spoil may cause blockage of natural drainage systems, loss of organic fertile top soil and farmlands, crops and forest, water logging. During site clearance, excavation in slope, foundation of structures will be generated huge debris. If this debris is not properly disposed significant negative impacts are anticipated on public health and safety and scenic beauty of the project area. During site clearance, excavation in slope, foundation of structures an estimated 2,258,703.00 cu. m. of spoil materials will be generated. *The impact is direct, medium magnitude, site specific and short term in nature.*

(ix) Impact due to stone crushing plant, hot mix plants

Stone crushing plants, hotmix plants are temporary work sites, occurring during construction and rehabilitation of roads. They are normally established in quarries and riverbeds from where the stones are derived. The operation of crushing plants and stone breaking by labour causes inconvenience to nearby settlements in terms of air and noise pollution. Siltation and pollution of surface water resulting from uncontrolled runoff from storage piles, and damage to the local crops and surface water are also potential impacts. Excessive noise and dust from the plant will create disturbance to nearby settlements, school, health posts etc. Crushing plant site is also a high risk area for accidents and injuries. Also, there will be continuous flow of heavy vehicles for carrying the materials to construction sites. If their path is along school and busy market area, there will always be potential risk of serious accidents. Probable locations for stone crushing plants are identified at Ch. 09+200, 42+100, 71+000). *Impacts will be direct, of high magnitude, site-specific and short-term in nature.*

(x) Impact on irrigation channels

There are nine (9) irrigation canal crossings along the road alignment (Chainages: 27+060, 37+130, 37+725, 48+120, 48+160, 49+150, 52+400, 52+890, and 67+580). Road upgrading work will impact these canal crossings. *Impact is predicted as direct, of medium magnitude, site-specific and short term in nature.*

(xi) Obstruction to natural drainage pattern

Potential blocking of river crossing and natural drainage from road construction especially during the construction of embankments, shoulders, re-construction/repairing of culverts etc is envisaged. This could create temporary inundation of areas closer to the above locations during rainy season. *Impact is direct, of low magnitude, site-specific and short term in nature.*

(xii) Air, Noise, vibration and Water Pollution

The ambient air quality has been monitored as part of baseline data collection in the month of May 2017. The PM_{10} concentration was found above the NAAQS limit of 120 µg/m^3 at Anbu Khaireni and Damauli however the observed concentration of PM_{10} at Pokhara and Tharpu was found below the NAAQS specified limit. Similarly, $PM_{2.5}$ Concentration in all four locations was detected marginally below the NAAQS limit. Other pollutants however were

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detected fairly below the National Standard Limit. Dust will be major problem during both the construction and operation of the road.

The lowest noise pressure level was detected from the Tharpu area whereas the highest level of noise pressure was detected from Damauli area. Comparison of the observed noise quality data against the National Standard for Noise reveals that observed day-night average sound pressure levels in all locations but Tharpu was found above the day time sound pressure level of 65 dBA specified by the national standard for commercial areas. The detected pressure level at Tharpu was found marginally below than this standard limit. The day-night sound pressure levels observed from Pokhara and Damauli areas were found exceeding the standard limit set by national standard for day time industrial noise (75 dBA). However, during construction, the increased construction activities may increase the noise level to some extent.

The water quality in the project area appears to be fairly clean and not polluted. During constructionthese waterbodies may get polluted by spoil and construction wastes. *The anticipated impacts on air, noise and water pollution will be direct, low magnitude, local and short term in nature.*

C. Post construction phase

i. Dismantling of camp site and Camp site restoration

Camp site results in change of land use due to setting up of construction campandwaste generation at the construction site. The contractor is required to properly remove all temporary structures built for operation of construction and workers camps. While doing so, the land will be brought back to original state. The impact is predicted to be direct, of medium magnitude, confined to construction area, and short-term.

ii. Clearing of water channels, side drains and culverts

During construction, water channels, side drains and culverts will be disturbed or filled with construction debris and silt. Contractor shall ensure that these will be cleared after the construction activities are over.

iii. Rehabilitation of borrow areas and quarry sites

Borrow areas safe closure is alsoanother concern once its operation is no longer required, and thus properly rehabilitated respecting local stakeholders concern. *The impact is direct, low magnitude, localand short term in nature*

D. Operation Phase

i. Impacts due to slope instability

During the operation phase, vulnerable slopes could be destabilized due to monsoon rain, inadequate drainage works, faulty construction and inadequate vegetative measures. The stability of slopes may also be affected by human activities in the road neighborhood such as animal grazing and tethered cattle along road edge. *The impact will be direct, medium magnitude, local and long term in nature.*

ii. Right of Way encroachment

Encroachment of RoW of National Roads can be taken place any time after completion of construction works and this practice is common all over the country; mainly for income

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generation activities. The permanent or temporary structures built by encroachers within existing reservation cause impact to the pavements and road side drains. They also obstruct maintenance activities of the roads, view range of travellers and impact to the movement of pedestrian. Parking of vehicles opposite to these locations for buying foods (vegetable, fruits), as well as for other services will increase accidental damage to vehicles and other road users. *The impact will be direct, medium magnitude, local and long term in nature.*

iii. Drainage and Water Management

During operation phase, sediments could block drain and culverts, improper disposal of debris or disposing garbage into side drain will create overflow of drains and alter surface runoff paths causing soil erosion and health hazards. This will also induce siltation in nearby stream which can trigger floods as well as affect aquatic flora and fauna. *Impacts will be indirect, of medium magnitude, local and long-term in nature.*

iv. Air and Noise Pollution

The source of air pollution in this area will be the exhaust from the vehicles using fossil fuels and vehicle fumes from any other fuel powered mechanical equipment. This will result in the degradation of air quality. It is common practice in Nepal for pressure horns to be used. This is likely to increase the noise level and it may affect human beings and livestock. *The impacts associated with this will be of direct nature, medium in magnitude, locally confined and long term in nature.*

4.2.2 Biological Environment

A. Pre-construction Phase Issues

i. Tree felling

Total of 750 trees within the Road formation width will be required to be felled from seventeen (17) community forests (see Annex 8). Similarly, about 6000 roadside trees need to be cleared within the road formation width. Hence prior clearance shall be taken from concerned department and ministry.

ii. Diversion of forest land

About 2.50 ha of forest land (within RoW) will be diverted to pavement surface in the project road.

iii. Loss of forest and vegetation

About 2.50 ha of forest area will be permanently lost and 6750 numbers of trees (750 from community forets and 6000 from road side) will be lost during the construction period including the clearing of bushes and shrubs.

B. Construction Phase

i. Clearing of forest land and trees, shrubs and herbs and habitat disturbance

The existing road has a width of about 6-10 m which will be extended to about 14 m to 46.50 m within a RoW of 50 m. It will be inevitable that during the widening of the proposed road, establishment of the campsite, opening up of borrow pit/quarry areas and construction of access routes to the borrow pit/quarry there will be need to clear all vegetation within the

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designed project area along the entire stretch of the proposed road. *The impact will be direct, medium magnitude, local and long term in nature.*

ii. Habitat Fragmentation or loss and Barrier to Wildlife Movement Corridor

A road with wider width and higher vertical alignment may cause a physical and psychological barrier for wildlife, and act as a barrier across their movement corridor. When a road intersects or blocks a wildlife corridor, the result is either cessation of use of the corridor because animals are reluctant to cross the road, and increase of mortality due to collisions with vehicles, or a delay in migration which may result in the weakening or disappearance of an entire generation of the population. The road traverses through approximately 12 km length of forest area. Probable corridor is at Ch. 3+750 – 7+525, 9+300 – 9+750, 20+250 – 21+100, 21+650 – 22+500, 28+350 – 29+350, 35+200 – 36+900, 43+600 – 45+100, 57+400 – 57+600, 59+800 – 60+500 and 71+000 – 71+725. Possible impacts on wildlife population due to the project construction will be minimal. Existing forests in the project area are fragmented in small patches and surrounded by human settlement. In general, the project area is not renowned for wildlife habitation. *The impact is indirect, low magnitude, local and short term in nature.*

iii. Use of forest product by construction workers and construction activities

Labor force and workforce unless their energy needs for their meal cooking is metfrom fossil fuel, may exert pressure on the local forests of the surrounding areas.T*he impact will be indirect, of low magnitude, local and short term in nature.*

iv. Damage of Aquatic Habitats

Erosion from poorly constructed and rehabilitated sites can lead to downstream siltation, ruining spawning beds for fish. Constrictions of flows at water crossing can make the current too fast for some species. Roads may also serve as barrier to movement of migratory aquatic species, especially where culverts are used. Disposal of excavated materials on water bodies may increase turbidity of water and result in reduction in dissolved oxygen content. During construction, more construction vehicles will be moving on the road section. So it is common to see the inappropriate driver practices connected with vehicle washing in streams and rivers which can cause local water pollution by leakage of fuel, lubricants and hydrocarbons that may not only affect the aesthetic value of the water body, but also put hazards on people and animals using these as drinking sources. *The impact will be of low magnitude and local and medium term in nature*

v. Disturbance of Biodiversity and Wildlife

Although the wildlife population is reported low in the project area, as and where the road crosses the natural forests harbouring various species ofwildlife – flora and fauna, it often becomes local people's good ground for hunting and poaching. Where the proposed road upgrading activities takes place, it again becomes contractors' and his labor forces' illegal hunting ground given they are let loose and no restriction is imposed on them during road upgrading. *The impact will be indirect, low magnitude, local, and of short term in nature.*

C. Operation Phase

i. Impacts on forest resources

The pressure on forest and forest resources during operation phase will result indirectly from the improved public/vehicular access to forest lands. Undesired cumulative and induced

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impacts may include accelerated logging, illegal extraction of timber and other forest products, incidental forest fires, and the introduction of invasive species (weeds, pests). *The impact will be indirect, of medium magnitude, local and medium term in nature.*

ii. Wildlife disturbance

Upon proposed road upgraded and open to public transportation and others, increased traffic flow may cause disturbance to wildlife and their movements on road stretch crossed by natural forests. This in combination with fast driving (especiallyduring night time) and or in combination with relentless horn honking over the stretch harbouring wildlife may pose further risks to their natural succession. These may have far-reaching consequences leading to its population decimation and at worst to its extinction. The project area has a sparse population of wildlife. *Impact is indirect, low magnitude, local, and long-term in nature.*

4.2.3 Socio-economic and Cultural Encironment

- **Construction Phase**

i. Land and Building Acquisition

There will be permanent acquisition of about 1.22 ha of land in addition to the existing road reservet. 817 private structures belonging to 800 households will be required to be acquired. Among the affected structures 512 are residential structures, 150 are commercial structures, 135 are residential cum commercial structures and 20 others etc. (Source: Resettlement Plan, 2017). *This impact is expected to be of high magnitude, local in extent and long term in duration.*

Table 4.2: Type of Affected Assets

Types of Affected Assets	Affected HHs	Affected Peoples	Land Area to be acquired (sq.m.)
Land only	60	292	12219.33 Sq.meter
Land with structures	62	302	
Structure only	738	3594	
Total	**860**	**4188**	

Source: Resettlement Plan, 2017

Table 4.3: Detail of Affected Structures

S. No.	Type of Affected Structures	Affected HHs (No.)	Affected structures (No.)	No. of APs
1	Residential Structures	510	512	2484
2	Commercial Structure	145	150	706
3	Residential cum commercial structure	125	135	609
4	Others	20	20	97
	Total	**800**	**817**	**3896**

Source: Resettlement Plan, 2017

ii. Stress on Public Utilities and Facilities

Influx of labor force exerts pressure and competes on existing essential services including telephone, water supply, solid waste management, health services, transportation, school

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etc if its magnitude is not upgraded to suit and cater additional needs. *This impact is indirect, low magnitude, short-term and local in nature.*

iii. Occupational Health and Safety, STDs and Nuisance from Construction Camps

As labor forces requires to undertake works especially in rock cutting, high slopecutting, hazardous materials handling, heavy equipment operations, bitumen works,tree felling, slope stabilization etc. they are exposed to various safety risks andhealth hazards if and when these works undertaken without adequate safetymeasures. Other potential impacts to health are respiratory, eye disease due toexposure to dust, emissions during pavement works especially in bitumen works. Health risk is also commonly associated with the poor labour camp conditions, use of unsafe water supply sources, poor sanitation conditions (lack of latrines andwashing facilities) also cause the risk of endemic diseases that includes dysentery, diarrhoea, cholera etc. Contagious diseases HIV/AIDS, STDs etc may surface up conspicuously and spreadover extensively as any one – local and in-migrant labor force infected with diseases– become sexually active. *Impact is direct, high magnitude, regional and long termin nature.*

iv. Social conflicts due to Influx of construction workers

The amount of money that enters into the project area during construction phase as wage payment may induce local inflation. Increased income of local labourers and construction crews of the contractor can lead to negative impacts such as spread of alcohol consumption and gambling. Influx of migrant workers also bears potential for Sexually Transmitted Diseases (STDs) such as HIV/AIDS. *These impacts leading possibly to social and cultural conflicts will be direct, low in magnitude, local and short-term in nature.*

v. Impact on ancient monuments, historical sites like "Ghansi Kuwa"

Proposed road upgrading work will impact a historical site at Ch. 36+870 called "Ghansi Kuwa" - also called Grass Cutter's well, built by Late Poet Bhanu Bhakta Acharya. Original well is located on the left side of the road. Original well will not be affected but the collection chamber on the right side of the road will be affected. *Impact is direct, medium magnitude, site-specific and short term in nature.*

vi. Impact on cultural, and religious sites

Acquisition of cultural or religious places is not likely to occur during the construction work.

- **Operation Phase**

i. Possible township development and likely environmental impacts along the road alignment

Settlements, shops, food stalls' etc., emergence along the road-side soon afterconstruction completion is common observation in Nepal. It surfaces up as theeconomic opportunities for the local people and to some in-migrant labor force. Thisleads to both appreciation in land value especially of those along and by the roadside and encroachment of public land by them, causing to becoming source of socialconflicts associated with road accidents – road blockage, delays etc. *Impact is indirect, low magnitude, local, and short-term in nature.*

ii. Social Conflicts

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Improvement of road conditions would result in increased number of persons using the road. There would be an increase in the number of trucks carrying goods and farm produce from various communities. This increase in the number of visitors in the area may influence the changes in the social behaviour. Truck drivers sleeping over in the communities are likely to solicit for sex with women and young girls in the communities hence increasing the risk of HIV /AIDS spread and teenage pregnancy cases. This will cause impact on social aspects including family breakdown and disease spread and ultimately affecting the traditional bonds, norms and functions of the community. *Impact is indirect, low magnitude, local, and short-term in nature.*

iii. Roadside safety issues

Fast driving temptation especially among the public transports drivers' following roadup gradation to smooth road surface, may cause road accidents. These accidentsare generally frequent occurring nature, which is associated with non-respect tospeed limit and safety signs posted on the road stretches. In absence of especiallyexceeding speed limit *Impact is indirect, high magnitude, local, and short-term innature.*

4.2.4 Chemical Environment

A. Pre-Construction Phase Issues

i. Use and storage of fuel, lubricants, oils, acids, and other chemicals for construction

Putting mechanical workshop, fuel depot etc. into operation at contractor's camp inorder to ensure upkeep of all vehicles, operating machines including heavy ones deployed in proposed road upgrading requires use of substantial quantity of lubricants, vehicles refueling etc., to keeping it in functional upkeep works; refueling etc. also generates some wastes and spillage. Acids used in battery recharging, other chemicals etc. used at workshop are another type of workshop wastes. Fossil fuel isalso required in operating crusher plant on road site where electric power supply is not available. Whilst its safe storage and usage is required and ensured, workshops wastes are potential source of environmental hazards unless it is handled correctly. *Impact is indirect, medium magnitude, local, and short-term in nature.*

B. Construction Phase

i. Use of fuel, lubricants, oils, acids, and other chemicals for construction

Storage and use of petrol, diesel, oil and lubricants including disposal of used oil, lubricants and solvents may invite explosion hazard, ground and surface water pollution resulting runoff from spills/leaks and improperly discarded used oil and lubricants. *The anticipated impact will be direct, of low magnitude, local and short term in nature.*

ii. Use and Storage of chemicals like bitumen etc.

The proposed project involves DBST pavement which will require safe storage and use of bitumen. Use of fuel wood to heat bitumen and release of bitumen into environment (runoff of bitumen into surface waters) are the potential impacts likely to occur if handled inappropriately. Bitumen, which is to be used in sealing of proposed road upgrading, is highly combustible and risky of fire hazards unless it is kept away from the fire igniting source as well as from the public insecurity. Hence its storage prior to usage in sealing works is of key concern during road sealing works, and need to be of adequately safe

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condition in storage. It causes severe burns if handlers skin get in touch with it, and is also severely toxic to naked eyes. *Impact is indirect, medium magnitude, site specific, and short-term in nature.*

C. Operation Phase

Effect on water quality

The practices connected with car/truck washing in streams and near wells and springs has the potential to cause local water pollution by leakage of fuel, lubricants and hydrocarbons that may not only affect the aesthetic value of water bodies but also have detrimental effects on the health of people and animals relying on these sources. *The impacts associated with this will be of low in magnitude, locally confined and long-term.*

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Chapter 5

5. ALTERNATIVE FOR IMPLEMENTATION OF THE PROPOSAL (ALTERNATIVE ANALYSIS)

Alternative analysis has been considered as an integral part of IEE study, which involves an examination of alternative ways of achieving objectives of the proposed subproject. The aim of alternative analysis is to arrive at a development option, which maximizes the benefits while minimizing the adverse impacts. The various alternatives to achieve the project objectives with minimum environmental degradation are discussed below:

5.1 Alternative Design and Construction Approach

There are two types of road design and construction methods. They are conventional andgreen road approach. In conventional method, heavy machineries and equipment, explosives, heavy concrete structures with the application of bituminous surfacing, sidedrains, bridges and culverts etc. are extensively involved. Green road approach which isnormally referred as a labour based, environmental friendly and participatory (LEP) focusesto conserve the delicate mountain ecology through the protection of vegetation cover asmeans of soil conservation. Under this approach, construction work is done manually fromthe local labour without using heavy machinery and explosives. Under green road approach, majority of the work will be performed manually.

The proposed road has been designed considering conventional approach with labour based to some extent. Due to this, Local people will be benefited by availability to work in the project and earning from it.

5.2 Alternative Alignment (Route)

As around 6.5 m bituminous pavement way is already existed along Mugling-Pokhara Road, due to high number of vehicles and recurrent traffic jam due to road width, the DoR has proposed this road for widening and upgrading. That is the reason; the analysis relating to alternate route with the consideration of environment, construction cost, serviceability etc. is not relevant. However, it is understood that the alignment has been made after thorough investigation in terms of geology, hydrology, socio-economic and topographic aspects. *This alternative is therefore not relevant.*

5.3 Time Schedule

The soil work or excavation activities of the project should be avoided during the monsoon period. The construction activities will be carried out during the day time only.During the rainy season, the upgrading work has to be stopped to allow the natural compaction of the road. Rehabilitation and upgrading work will be carried out during the remaining months. The upgrading work is more appropriate from October to June as the local people are more or less free from farming activities.

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5.4 Raw Materials (Resource) to be used

The physical resources consumed for the upgrading of the proposed road will mainly include boulders for gabions and stone for dry masonry wall, gabion boxes, aggregates of different sizes for sub-base, base course, surface dressing and concreting. Other local resources will be sand retrieved from local river beds and banks. Moreover, Reinforcement bars and cement will also be used in upgrading activities. The proposed upgrading will emphasize on the use of local materials as far as possible.

Alternatives to the selected materials will not be considered.

5.5 Others

No Action Option

If the proposal is not implemented, the people have to face the difficulties in access, peoplewill have to suffer from delay during traffic jam as people are facing traffic jam problem frequentlyalong this road. Since the adverse impact is of minimal nature in this road, the alternative isregarded as not viable. In addition, arrangements for better and safer travel of road users will be made. The surface improvements would improve the riding quality, allow fast movement, and safer journeys. Under the 'no action' alternative the current poor road condition will worsen and will further erode the quality of life in the project area.

Proposal alternatives

The people living in the project area require an efficient and safe mode of transportation to have the access to the market and other service centers. At the same time, there is need to conserve the physical, biological and socio-economic and cultural environment. As the road has not much adverse impacts on the environment due to road upgrading, and DoR has decided to upgrade the existing road, and this could be best option for better access. *Considering the project alternatives, the proposed upgrading work of the existing road from Mugling to Pokhara can be the best option to serve the purpose of transportation requirement.*

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Chapter 6

6. MEASURES TO REDUCE OR CONTROL THE IMPACT OF IMPLEMENTATION OF PROPOSAL ON THE ENVIRONMENT

An effective implementation of benefit augmentation measures and adverse impacts mitigation measures would optimize the benefits expected from the sub-project and avoid/minimize the adverse impacts from the project. Based on the impact assessment and identification, beneficial augmentation and adverse impact mitigation measures are presented in this chapter.

6.1 Benefit Augmentation Measures

6.1.1 Construction Phase

a. Employment opportunities and income generation

The project will give emphasis in obtaining labour from the road influence area. The project will employ local poor, vulnerable and socially excluded people (Janajati, Dalit) and women to the extent possible, without gender discrimination. Employ local people if, and where they are available and willing to work giving more emphasis to women, ethnic minority and dalit (occupational caste).

An income generation program for the vulnerable households has been prepared which will be an integral part of resettlement plan. The Livelihood Improvement Training will be provided for 360 persons from vulnerable households as well as the significantly affected households. The participants will be selected during the implementation of the Resettlement Plan through a needs assessment of the participants. An estimated budget of NRs. 6,480,000.00 has been allocated in Resttlement Plan. The Supervision Consultant's livelihood expert will select participants for training and it will be done in coordination with district level line agencies and other organizations of the project area.

b. Upgrading of local labor skills in road construction

During the road upgrading works, the local labourers will receive manifold skill training in construction techniques, small engineering structures and bio-engineering works. They also will receive additional knowledge in waste management, material handling and general application of environmental health and social precautionary measures. By augmenting their capacity, local people being involved in the Subproject will find it easier to find skilled manpower jobs in the future, thus securing their livelihood as an alternative/additional occupation to agriculture.

c. Local scale enterprises establishment and enhancement

The benefit augmentation measures will include providing support to local entrepreneurs, promotion of cooperatives and linkage with bank and other financial institutions.

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d. Enterprise development and commercialization

Different types of commercial activities will come into operation in order to meet thedemand of labour groups, construction crew and project team. In general, the enterprises willinclude food and tea shops, groceries, lodges and restaurants for serving large numbers ofpeople. The demand for local products such as pulses, vegetables, fruits, etc. will rise duringthe construction period which may provide added drive for local production and marketing.

This will contribute to the local economy and may help reduce peri-urban poverty. Suchbenefits may contribute to enterprise development which often continues to entrench beyondthe construction period.

e. Market for local commodities like local agricultural products

Proposed road upgrading need to develop key settlements established along the road as it being the ideal point for bringing out rural productions especially farm products. As its development, proposed upgrading where possible need to develop and establish road transport infrastructure e.g. shed house, as a 'buy' and 'sale' centre of rural productions.

6.1.2 Operation Phase

a. Improved access facility

The upgraded road provides the easy, comfortable and improved access to the people. This will enhance the economic status of people. The benefit agumentation measures will be proper maintenance of the road during DLP period and after DLP period. Proponent will undertake regular maintenance of the road.

b. Enhancement of tourism

Following the increased access and transport opportunities, other socio-economic development will follow including education, health, water supply, electricity, communication, market, and banking in the rural areas. Flow of tourists due to road construction will contribute in the enhancement of economic activities of the area which will increase the living condition of the local people. Development of lodges, restaurants and hotels for the tourists will be supported by the government agencies and private sectors.

c. Enhancement of quality of life

As a by-product of increase in productivity and subsequent increase in income levels from micro enterprises and by the gradual development of additional facilities and services in the area due to better access, it is expected that there will be an overall improvement in the quality of life of rural people with reduction in travel time to social services, market areas and traveling to other parts of the country.

d. Enhancement of social services

As a by-product of increase in productivity and subsequent increase in income levels from micro enterprises and by the gradual development of additional facilities and services in the area due to better access, it is expected that there will be an overall improvement in the quality of life of peri-urban people with reduction in travel time to social services, market

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areas and traveling to other parts of the country. DoR will maintain the road section through its regular maintenance program.

e. Women Empowerment

As the road construction activities requires large number of local people as skilled, semi-skilled and unskilled labours.The employment emphasis will be given to the women as a part of benefit augmentation measureimparted by the road project. While selecting participants for different training special consideration will be given to women and at least 30% of the total participants will be women.

f. Increased economic activity with improved transport

This beneficial impact could be augmented by increasing production of local productssuchascerealsandcashcropslikevegetablesandfruits. Periodic and routine maintenance of the road should be properly streamlined.

Adverse Impact Mitigation Measures

The mitigation measures adopted during construction phase are of preventive nature with two basic objectives: (i) avoiding costly mitigation, and (ii) increasing awareness among the stakeholders for environment protection while constructing and operating infrastructure services.

6.1.3 Physical Environment

(i) Pre-Construction Phase Issues

Following activities shall be carried out during pre-construction phase by the Contractor in co-ordination of executing agency and their representative after getting the letter to proceed with the work execution.

Table 6.1: Environmental Concerns during pre-construction phase

Sl. No.	Activity	Mitigation Measure/s
1.0	Relocation of utilities	• Identification of relocation sites in advance with the consent of authority • Scheduling the activity in consonance with the community usage pattern
2.0	Tree felling	• Compliance with Forest Act, 1993 if trees are on forest land and co-ordinate with District Forest Office (DFO) and CFUGs • Number of trees required to be felled down will be confirmed • Prior clearance will be taken from DFO • Compensatory plantation at a ratio of 1:25 for trees from community forests
3.0	Clearance of land	The following steps will be taken to minimize the associated impact with land clearing operations. • The land clearing operation should be undertaken as per the defined road alignment and community structure, utility and road furniture shifting plan. • The road land width will be clearly demarcated on the ground. • The utility and community structure shifting will be as per

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Sl. No.	Activity	Mitigation Measure/s
		plan and with consultations and concurrence of the community. • Tree felling will be limited to those, which could not be saved even by design measures. The tree will be cut with a permission of Department of Forest. The vegetable cover will be removed and disposed in consultation with community. • All public utilities will be shifted with a concurrence of respective agencies/authority and to the adjacent location approved by them. The top soils will be collected and preserved for reuse as a base for turfing of embankment slopes or development of barren areas along roadside. The top soil will be preserved at identified location with the provision of watering /grass development on the heap surface to prevent air pollution.
4.0	Diversion of forest land	• Only 2.50 ha forest land is required in the road. No loss of rare endangered or threatened species of flora is envisaged due to road side tree clearance. • The need for tree cutting has been restricted to toe line of the formation width and reduced to a total of 750 trees. • The mandatory compensatory plantation will be done on 1: 25 basis by the Department of Forest/DFO.
5.0	Location of storage yards, labor camps, and construction sites	• Location criteria to be adopted • Obtain clearances from local government bodies • Infrastructure arrangements to be as per guidelines
6.0	Procurement of equipment and machinery	• Machinery to be procured will be in conformance with noise and emission standards of GoN • Safety equipment for workerswill be procured
7.0	Identification and selection of material sources	• Consultations and arrangements at contractor-individual levels, documentation of agreement • Precautionary measures during siting of borrow areas and quarry areas • Avoidance of location of material sources in Natural Habitats
8.0	Identification of designated waste disposal locations	Site selection in conformance to criteria provided

(ii) Construction Phase

(a) Earthworks/Slope instability

Mitigation works will be required for successful clothing of damaged slopes, cut and fill slopes, slides etc, caused by the road upgrading works. Bioengineering works for slide prone slopes have been included in the Subproject design (Refer Annex 9). In addition, adequate drainage and cross drainage structures have been planned in the design in order to minimize road side scouring and erosion. The cost of bio-engineering and drainage and cross-drainage structures is included in the subproject design for implementation.

(b) Loss of top soil

Top soil will be saved by either stockpiling it adjacent to the proposed road formation batter sides, either immediately upslope or downslope of the extent of works, or by stripping it from the road section about to be excavated and re-spreading it immediately onto the previously completed adjacent section of road.

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The preferred method is topsoil stripping and re-spreading immediately. This has the advantages of only single handling the material and using topsoil when it is fresh, when soil fertility and seed viability have not been reduced by stockpiling. If topsoil is to be stockpiled, it will only be done above the excavation site to avoid mixing it with excavated sub-soil. Topsoil will only be re-spread on batters with a grade of 1:1 (V: H) or flatter. Topsoil spread on steeper batters will not stay on the place.

(c) Change in land use

Due to the construction of the proposed road, there will be change in land use mainly by the conversion of cultivated land and forest into the road permanently, and the degradation of road adjacent to the road corridors by disposing spoils and quarrying of materials. The changes in land use will have impact on loss of forest land (2.50 ha) and agricultural land (0.21 ha), which will directly reduce the agricultural production.

(d) Disruption of public utilities

The Subproject will coordinate with concerned authorities and local stakeholders for the removal/relocation, extension, reinstatement, demolition and construction of existing public utilities depending upon their function and necessities. During reinstatement and relocation of public utilities, coordination will be maintained with the concerned authority including their consent prior commencement of work. Cost estimate of approximately NRs. 406,022,000.00 is included in the project cost for reinstatement of public utilities.

(e) Traffic hazard and road safety

Provision of adequate road safety measures such as road safety signals, appropriate diversions, barricades and speed control measures at construction sites will be provided. Traffic guides with red flags, and security persons shall be employed to guide the traffic. A traffic management plan shall be prepared by the Contractor prior to start of construction at every stretch and get its approval from the Supervising Engineer prior to implementation of road upgrading works. Where possible, the road will be constructed in half width allowing traffic flow through other half not under construction so that traffic will at all time have free one way access. The length of the half width will be kept minimum with provision for traffic traveling in opposite direction to pass at frequent intervals. These will be maintained free of corrugation and potholes with adequate flagmen, signs barriers, lights and necessary staff to ensure free flow of traffic. The cost for road safety measures is included in the Subproject design for implementation.

(f) Impact due to establishment of construction camps

Following mitigation measures will be adopted:

- Efforts will be made to establish construction camp at such sites so as to utilise the existing houses/infrastructure as far as possible.
- The Contractor will be required to prepare detailed plan for construction camp including location (distance from settlements, drainage facility, outdoor facilities, and surrounding areas), housing facilities (site roads, drainage, waste management and other facilities) and need to get approval from the Supervision Consultant.
- Basic facilities such as fire precaution, lavatories and showers, potable water supply, clean eating area, lighting, safe access, air supply, LPG /kerosene, and others will be provided.

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- Appropriate facilities for women and children will be provided in the construction campsites.
- First aid facilities will be made available at camp sites. In addition to this, collaboration with loal level health/sub-health posts for major injury cases including a contingency plan for emergency cases will be prepared.
- The Contractor will be responsible to control open space defecation and pollution of stream sites and public places by workers.
- The Contractor will ensure that sufficient and good quality of food stuff at reasonable price including adequate and safe drinking water has been supplied to the workers.

(g) Impact due to operation of borrow pits and quarries

Quarry and borrow operation plan will be prepared and approved by Supervision Consultant; unstable sites, erosion prone area, forest area, settlements, fertile farm land will be avoided for quarry/borrow operation; quarry sites will be rehabilitated by providing appropriate civil engineering structures and bioengineering measures after the extraction is complete. Recommended quarry sites for construction materials are Marsyangdi River basin, Madi River Basin and Seti River basin. These sources are located along the road alignment (Ch.9+000, Ch.42+000, and Ch. 71+000).

Following mitigation measures will be adopted:

- Borrow pits and quarry sites will be selected avoiding protected and sensitive areas, nearby settlements, water sources, and in forest areas and fertile agriculture lands.
- Approval from authorities of government and land owners will be taken.
- Suitable size of borrow pits and quarry sites will be operated as per required volume of materials.
- Top soil will be stockpiled and preserved to spread during reinstatement of sites. In turn, preserved top soil will be spread and grasses seeding with long mulch and tree planting will be carried out as a part of bioengineering. Leguminous plant species will be planted in order to restore nitrogen in the soil.
- Contractor will prepare and submit for approval from Engineer a borrow pits and quarry sites restoration plan after completion of the work
- The Contractor will restore all haul roads used for transporting the material from the quarry to construction site to their original state. The rehabilitation of the quarry site will be completed as per the approved plan in case the Contractor has opened-up a new quarry for the project purpose.

(h) Impact due to stockpiling of construction material and spoil/debris disposal

Following mitigation measures will be applied.

Stockpiles:

- The land for storing the construction material will be far from the agriculture land and water bodies.
- Prior permission from the local stakeholder will be taken before commencing the stockpiling of the construction material

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- Construction materials will be covered with tarpaulin during stockpiling to prevent rain water and dust emission generated from the stockpiling site. It should be encircled with side barriers and covered so that incidence of mix up with deleterious materials is imminent.
- Stockpiles will be kept wet by sprinkling water or covered so that erosion by wind causing dust will not occur
- The construction materials will be placed in barren land as far as possible to protect the ground vegetation
- Haphazard disposal of construction materials will be strictly prohibited

Spoil/debris disposal:

- The Contractor will prepare a detailed Site specific Environmental Management Plan (SEMP) including suitable disposal locations for spoils/wastes and that will be approved by the Supervision Consultant.
- Locations for disposal will be selected with the consent of local community, VDC representatives, and the sites will be located at least 1 km away from the settlements, schools, hospitals, religious and cultural sites, water sources including other sensitive areas from environmental point of view. Probable waste disposal sites are identified at following locations: 2+100 – 2+700, 8+200, 16+350, 28+450, 32+800, 38+500, 41+100, 46+500, 58+000, 68+000, 71+000.
- The Contractor will use such spoils/wastes for construction purposes as far as possible.
- No spoils or waste is allowed to be disposed on the valley side of the road.
- An estimated budget of NRs. 47,432,763.00 has been allocated in project cost estimate for management of spoils in an environmentally safe manner.

(i) Impact due to stone crushing plant, hot mix plants

Crushers commonly cause problems associated with air and noise pollution. Much of such impacts can be controlled by sensible technical solutions (filters, canvas) and proper site selection criteria. Following mitigation measures will be adopted.

Preventive Measures:

- The selected site should avoid being in the main wind direction that would carry emissions to nearby human settlements or sensitive ecological habitats.
- Sites for Stone Crushing Plant should be located away from settlement, school, health posts/hospitals, drinking water sources and intakes, cultivable land and sensitive ecosystem areas including wildlife habitat. Probable locations for stone crushing plants are identified at Ch. 09+200, 42+100, 71+000.
- The Contractor must submit a plan indicating the exact plant location, construction schedule and an operation plan to obtain approval of the Engineer before locating and operating stone crushing plants.
- The plan should clearly mention in the technical specification the technical preventive measures to control dust, erosion protection, water pollution prevention and safety measures. These measures are compulsory to be adopted by the Contractor;
- The Contractor must exert all efforts to supervise this work site, especially to prevent children from approaching the plant.

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- Regular sprinkling of water shall be done during sieving of materials.

Mitigative Measures:

- Stone Crushing equipment should be fitted with approved dust control devices and operated in accordance with manufacturer's specifications;
- Stone Crushing Plant should be operated only during daytime. If necessary and if requested by locals based on rational reasons, timing of operation should be planned in consultation with local communities so as not to disturb local schools, health posts, markets, settlement areas etc.

Compensatory Measures:

- Compensation for land and crops damaged due to operation of crushing plant should be given by the Contractor to the affected landowners;
- The site should be cleaned and brought to original condition after closure and dismantling of the crusher.

(j) Impact on irrigation channels

In the project road design, provision has been made to replace nine (Chainages: 27+060, 37+130, 37+725, 48+120, 48+160, 49+150, 52+400, 52+890, and 67+580) 600 mm or lesser diameter irrigation pipes by 900 mm diameter hume pipes and extend all to the required extent.

(k) Obstruction to natural drainage pattern

The following mitigation measures will be adopted:

- Avoid road-side drain water to be discharged into farmland or environmentally sensitive locations. In order to prevent damages in downstream areas, construct additional drainage channels as needed.
- Do not divert water away from natural water-course unless it is absolutely necessary. In such cases, provisions must be included to allow by-pass for migrating fish.
- Avoid any blockage or diversion of natural channels due to (intended or incidental) disposal of spoil.

(l) Air, Noise, vibration and Water Pollution

Noise Pollution

The following mitigation measures will be adopted to minimize the noise pollution:

- Prohibition of using pressure horn by vehicles and equipment near the settlement and wildlife habitat areas
- Use of silencer in vehicles and crushing plants
- Establishment of crusher plant, batching plant etc. in area away from settlement, school and sensitive ecological areas.
- Provision of wearing ear muffles during working in noisy areas.

Air Pollution

The mitigation measures to be adopted by the Proponent will include following:

Prohibition of open storage and spillage of loose soil in and around constructionsite

- Covering of the stockpiled spoil with an erosion control materials

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- Covering of truckloads of material during transportation
- Sprinkling of water on working areas and road if dust pollution becomes nuisance
- Use of good quality of fuel
- Location of crusher plant away from settlement, school and sensitive ecological areas and they are fitted with air and noise control devices.

Water Pollution

The following mitigation measures will be adopted in order to minimize the impact

on surface water quality:

- Disposal of soil, sludge, and other wastes directly into water bodies will be avoided
- Prohibition of activities like washings – cloth, dish etc. near water bodies causing water bodies pollution, risking downstream users
- Prevention of soil slippage at toe of the stockpile areas by installing barriers at the perimeter
- Prohibition of urination and defecation in open areas and water bodies by construction workers with the installation of sanitation facilities.

(i) Post construction phase

a. Dismantling of camp site and camp site restoration

At the completion of construction, all construction camp facilities will be dismantled andremoved from the site. The site will be restored to a condition in no way inferior to thecondition prior to commencement of the works. Various activities to be carried out for siterestoration are:

- Oil and fuel contaminated soil will be removed and transported and buried in pre-approvedwaste disposal areas.
- Soak pits and septic tanks will be covered and effectively sealed off.
- The contractor will execute all works to restore the site and land cleared of all debris andwill hand over to the community/land owner or lesser in clean condition without anyencumbrance.
- Campsite is to be restored to its original condition as per the rehabilitation plan
- Restoration of top soil should be done
- Disposal of waste generated at camp sites will be done at designated locations

b. Clearing of water channels, side drains and culverts

The following mitigation measures will be adopted:

- The precincts of the water body have to be left clean and tidy with the completion of construction.
- Temporary structures constructed during construction will be removed before handing over to ensure free flow through the channels.
- Removal of debris and disposal will be done in designated location.

c. Rehabilitation of borrow areas

The Borrow Areas will be rehabilitated as follows:

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- Borrow pits will be backfilled with rejected construction wastes (unserviceable materials) compacted and will be given a turfing or vegetative cover on the surface. If this is not possible, then excavation slope should be smoothened and depression is filled in such a way that it looks more or less like the original ground surface.
- Borrow areas might be used for aquaculture in case landowner wants such development. In that case, such borrow area will be photographed after their post-use restoration and Environment Expert of Supervision Consultant will certify the post-use redevelopment.
- The Contractor will keep record of photographs of various stages i.e. before using materials form the location (pre-project), for the period borrowing activities (Construction Phase) and after rehabilitation (post development), to ascertain the pre and post borrowing status of the area.

(iv) Operation Phase

a. Impacts due to slope instability

The following mitigation measures will be adopted:

- Correction or maintenance of the slope protection measures and drainage works
- Minor landslide and mass wasting will be immediately cleared and slope restored with appropriate technology (bio-engineering)
- Rill and gully formations should be regularly monitored and immediately fixed at critical areas;
- Soil conservation will be promoted in the right of way and vulnerable areas beyond the road alignment
- Promotion/support/assistance to community forestry programs, not only in the right of way, but also beyond in erosion-prone lands;
- Soil amelioration methods in the right of way and beyond should be promoted;

b. Right of Way encroachment

Mitigation measures depend much on the local government ability for good land use planning and governance to discourage and/or remove such newly upcoming settlements along the road. Mitigation measures include:

- Establish public notes that specify the acquisition/property rights of the RoW, and that explain at the same time non-permissive uses of the RoW by non-entitled persons.
- Establish and propagate an effective land-use plan for the region; such land-use plan should clearly incorporate future visions for acquiring land for further road net expansion.
- Prepare good cadastral records that can easily be verified by land-use planners.
- Good demarcation of RoW, incorporating physical barriers and appropriate planting (through community forestry programs) of selected zones adjacent to the road.
- Incorporate physical barriers in zones of potential / prospected encroachment risks, e.g. by roadside plantation schemes;

For Reference Only

- Initiate, by engaging local NGOs/CBOs, community awareness and assistance programs to prevent undesired land-take and roadside squatter development.
- Put in place appropriate mechanisms for grievance resolution to settle disputes between new squatters and local communities.
- Exert all legal and socially acceptable means to evict illegal occupants of the RoW, but take in due consideration the needs and constraints of vulnerable and indigenous groups.
- Consider long-term solutions to avert undesired growth (e.g. expanding markets along road or in different axis) by planning for road bypasses in congested areas.

The DCC, Municipalities, Rural Municipalities should make local communities aware of the importance of the road RoW and must develop strategies for controlling new settlements along the road corridor and these efforts should help to establish planned settlements only.

c. Drainage and Water Management

Adequate lined drain and cross-drainage structures have been constructed in earlier road construction phase. However, additional side drains (111020 m), cross-drainage and outfall structures (Major Bridge = 8, Minor Bridge = 26, Slab Culvert = 138, Pipe culvert = 411, Irrigation crossing = 9) required will be constructed as per the design.

The following mitigation measures will be adopted:

- Maintenance of smooth discharge across culverts and cross drainages by cleaning and maintaining them regularly so that water logging on adjacent land due to road do not occur.
- Roadside drain water will not be discharged into farmland or environmentally sensitive locations.
- Regular cleaning of roadside channels to avoid any blockage of drainage.
- Regular maintenance for water management structures and preserving vegetative embanked slopes will be applied during maintenance and operation of the road.

d. Air and Noise Pollution

Following mitigation measures will be adopted to mitigate air pollution:

- Roadside plantation of pollution absorbent tree species *Eucalyptus species*, Azadirachta *indica*, *Jacarando mimosifolia*, *Melia azadirach, Albizzia procera*, *Grevelia robusta* etc) especially nearby settlements and other public places will help to reduce pollution due to dust.
- DoR will coordinate with relevant agencies on the implementation and enforce Nepal Vehicle Mass Emission Standard, 1999 and will stipulate vehicle owners to engage in proper and regular vehicle maintenance.
- Air pollution by dust will be controlled with provision of paved shoulders, especially in the sensitive/built up areas.
- DoR will partner with Development organizations (NGO, INGO and CBOs) to motivate the local communities to maintain greenery along the road apart from their houses by planting fodder, fuel wood and fruit trees including flowering plants.

Following mitigation measures will be adopted to mitigate noise pollution:

For Reference Only

- Effective traffic management and good riding conditions will be maintained to reduce the noise level throughout the stretch and speed limitation and honking restrictions will be enforced near sensitive locations such as hospitals, schools etc.,

6.1.4 Biological Environment

i. Pre-construction Phase Activities

a. Diversion of forest land

- Compliance with Forest Act
- Activity scheduling to avoid delays, confirmation to legal requirement

b. Loss of Forest and Vegetation

- Compliance with Forest Act in case trees are on forest land
- Prior clearance from Department of Forest; coordinate with district forest officer

ii. Construction Phase

a. Clearing of Forest land and trees, shrubs and herbs and Habitat Disturbance

The loss of trees can not be minimized; however, it can be compensated by the plantation. According to the Work Procedure for Providing the Forest Land for Other Use, 2063 of Government of Nepal, project has to carry out plantation (with protection for five years) equivalent to the forest area lost from the construction of the road or pay for the plantation and protection cost to the District Forest Offices. If the trees lost are having more than 10 cm diameter then 25 times more trees will be planted. For the plantation of 18750 saplings, total cost is estimated at NRs. 28,12,500.

Likewise 15530 number of road side avenue tree plantation including necessary protection is provisioned on both side of the proposed road alignment within the formation width including on the median at appropriate intervals, which forms good compensation to the likely clearance of small cluster of vegetation along the road corridor. Estimated cost for plantation of avenue trees is estimated around NRs. 18,229,116.00.

b. Habitat Fragmentation or loss and Barrier to Wildlife Movement Corridor

Necessary warning signs shall be installed at following locations (Ch. 4+200 – 6+400, 9+300 – 9+750, 20+250 – 21+100, 21+650 – 22+500, 28+350 – 29+350, 35+200 – 36+900, 43+600 – 45+100, 57+400 – 57+600, and 59+800 – 60+500).

c. Use of forest product by construction workers and construction activities

- The project management should instruct the project officials, labour force, contractors, consultants and other stakeholder not to indulge in such activities and abide by the forest act and its regulation.
- The Contractor documents must include provisions to restrict work forces with regard to forest product and wildlife collection and trade.
- The Contractor must prevent illegal cutting of forest wood by labour force should. He is also liable for penalties to violators.
- Equally, collection of non-timber forest products (e.g. bamboo, medicinal plants, mushrooms) by work staff must be prohibited and enforced.

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- The contract documents must include provisions to instruct contractor arrange alternate energy such as kerosene, LPG for labour by making provision in contract document.

d. Damage of Aquatic Habitats

- Culvert crossings should be designed with the needs of migratory aquatic species in mind;
- Baffles might be installed to slow the flow enough to allow fish and others to swim against the current and culvert bottoms should be set below the level of stream bed.

e. Disturbance of Biodiversity and Wildlife

- Efforts will be made to avoid disturbance to these animals to the extent possible.
- Every precaution will be taken to minimise noise and other human activities during construction within the corridor.
- Construction activities will be carried out during day time to prevent disturbance to wildlife.
- The project should closely coordinate with Forest Office, CFUGs and its outlets to control illegal poaching and trapping by the project stakeholders or other outside wildlife poachers, wildlife traders and timber smugglers.

iii. Operation Phase

a. Impacts on forest resources

The mitigation measures recommended are:

- Encourage and support local communities and authorities in controlling illegal harvesting of forest resources.
- CFUGs will be supported to conserve and manage their CFs according to operational plans;
- Encourage and support local community for controlling illegal harvesting of forest resources.

b. Wildlife Disturbance

The following mitigation measures will be adopted:

- Coordination with DFO and CFUGs to control the activities like illegal hunting and poaching of wild fauna, especially listed in CITES and IUCN red data book by enforcing acts and regulations strictly.

6.1.5 Socio-economic and Cultural Environment

i. Construction Phase

a. Land and Building Acquisition

The project will provide compensation for land and 817 private structures to be acquired before starting construction activities. But the project will provide material transportation assistance and one time relocation assistance to the affected 800 households. The estimated cost for the compensation of affected land and private structures is NRs. 145,982,644.00 and 866,614,222.73 respectively (Source: Resettlement Plan, Mugling-Pokhara Road, 2017).

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The compensation for the loss of residential/commercial structures will be as mentioned below:

- Cash compensation for loss of structures at replacement value to be fixed by CDC.;
- Two months local agricultural wage rate for rebuilding/ rehabilitation of structures.
- Transport allowance (one month for same village and two month for villagers outside village) to cover the cost of moving structures including loading/uploading of materials based on district rate;
- Owners will be allowed to take/reuse the salvaged materials for rebuilding structures.

b. Stress on Public Utilities and Facilities

Impact on existing social service facilities can be mitigated by:

- Improving the existing local services and facilities,
- Provide required facilities in the camp during the project construction, and
- Use of local people in construction activities to reduce the extra burden on existing resources.

c. Occupational Health and Safety, STDs and Nuisance from construction camps

- Make mandatory the use of helmets, safety belts, masks, gloves and boot by workers depending on nature of work.
- Necessary planning and safety approach will be made for rescue during emergency.
- The supervisor will have to check whether the provisions made in the plan are implemented according to plan.
- Workers will be provided with first aid and health facilities.
- There will be provision for group accidental insurance for the workers.
- First aid training will be provided to field staffs like overseer, social mobilizers and supervisors.
- Strict rule for non-complying safety condition such as payment withholding and/or termination of contract
- Respective provisions will be included in the contract document with contractor.

d. Pressure on Social Service Facilities

Impact on existing social service facilities can be mitigated by:

- Improving the existing local services and facilities,
- Provide required facilities in the camp during the project construction, and
- Use of local people in construction activities to reduce the extra burden on existing resources.

e. Social conflicts due to influx of construction workers

- Information signboards will be placed at required places and safety measures installed as precautionary measures.
- Strict rules and regulation will be maintained in the labour and work camp so that any engagement in alcoholic and other bad habits are restricted.

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f. Impact on ancient monuments, historical sites like "Ghansi Kuwa"

The impact on Ghansi Kuwa has been avoided by realigning the road section between Ch. 36+700 and Ch. 37+050. Beautification of original kuwa (well) will be done by the project.

ii. Operation Phase

a. Possible township development and likely environmental impacts along the road alignment

The mitigation measures are:

- Plantation of trees in the RoW so that it is not encroached;
- Awareness raising programme through local organizations about importance of RoW.
- Local government bodies shall regulate settlement growth with proper planning

b. Roadside safety Issues

In order to mitigate such incidents following safety measures and restriction on speed will be adopted.

- Required delineators, safety signs, road bumps etc. will be used as appropriate along the road.
- Road safety awareness programs will be conducted, including the propagation of educative material in local language(s).
- The material will be propagated in schools and be available at all VDCs.
- It is also recommended to place illustrated sign boards at accident-prone spots and bus bays.
- Footpaths should be placed at the town limits and settlement areas.

c. Social conflicts

- Awareness program for importance of RoW,
- Enforcement of law,
- Planning of land development, and
- Plantation of road side trees.

6.1.6 Chemical Environment

- **Construction Phase**

a. Use of fuel, lubricants, oil, acids and other chemicals for construction

- Chemicals such as oils, chemicals, paints, acids etc will be stored in leak proof container and disposed in pit safely after use.
- The vehicles will not be washed directly into the water bodies. The vehicles and equipment will be maintained from time to time to ensure any leakage from them.

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b. Use and storage of chemicals like bitumen etc.

Following mitigation measures will be adopted:

- Avoid heating of bitumen near water sources and disposal of bitumen in water bodies,
- Secure safe site for bitumen storage,
- The permission from the land owner will be obtained before commencing the storage activities.
- The bitumen storage will not be done on fertile land and nearby water bodies.
- If bitumen has spread over the land accidentally and in improper place then it will be cleared immediately.
- The bitumen will not be discharged into the drain structure while overlaying on the sub-base material.
- Bitumen related work will not be carried out during the rainy condition.

- **Operation Phase**

a. Effect on water quality

For control of water quality, the Municipality/VDCs along the roadside will control haphazard cleaning of vehicles and the leakage of fuels and lubricants into water channels. The effects of chemicals resulting from vehicle leakage can be minimized by preventing their draining into the adjacent water courses.

The washing of cars in rivers and water bodies should be strictly controlled (by traffic police and/or CBOs) and violators be penalized. In places where car washing habits have evolved, it is advised to erect signboards (illustrated and in local language) that explain the inherent risks for people utilizing the source for drinking and aquatic life, and also indicate penalties for violators.

b. Use of fuel, lubricants, oil, acids and other chemicals for construction and their storage

Chemicals such as oils, chemicals, paints, acids etc will be stored in leak proof container and disposed in pit safely after use.

The vehicles will not be washed directly into the water bodies. The vehicles and equipment will be maintained from time to time to ensure any leakage from them.

6.2 Issues raised by Public

Apart from the above mentioned impacts/issues, following issues were encountered during the study period and has been included in the report:

i. Minimum loss of forest area and resources

This issue has been considered during finalizing the design. So, road width has been limited to minimum formation width (9 m, 12.50m, 18m, 23 m in forest sections) so as to minimize the forest area loss.

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ii. Compensatory plantation for trees required to be cut

A budget of NRs. 28,12,500.00 has been allocated in the project's cost estimate for the compensatory plantation for trees lost from community forests.

iii. To consider the possible landslides, soil erosion issues into consideration

This issue has been taken care of in the design of project road. Adequate bio-engineering and civil engineering measures have been provided in the road design.

iv. Provide adequate compensation for private and public properties losses

To address this issue, adequate fund has been allocated in the Resettlemnet Plan.

v. To implement the project as soon as possible

The project is expected to be implemented very soon so as to complete the project by the end of 2021 AD.

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Chapter 7

7. MATTERS TO BE MONITORED WHILE IMPLEMENTING THE PROPOSAL/ENVIRONMENTAL MANAGEMENT ACTION PLAN (EMAP)

This Environmental Management Action Plan (EMAP) identifies key issues likely to arise from subproject implementation, and proposes mitigation measures, including monitoring schedule and responsibility. Taking into account these considerations, the EMAP guides the subproject management in such a way that the environmental protection measures are adequately implemented.

Environmental Management Action Plan has been incorporated into this IEE report as its key safeguarding tool against adverse impacts. EMAP amongst others also entails to augment:

- better road surface conditions upon completion of upgrading works
- improved and reliable road serviceability for the locals
- better social services – higher education, health services etc
- skill development opportunities for the locals and labors
- improved marketing outlets to rural agricultural productions

The EMAP as detailed in Table 7.3 will form a part of Bidding Document.

7.1 Environmental Management Roles and Responsibility

Responsibility for environmental management associated with the proposed road upgrading involves a number of roads building parties, each with specific responsibilities for particular activities. Main parties responsible for the implementation of environmental safeguards measures prior to -, during - and following - proposed road upgrading are:

- MoPIT
- DoR (including GESU)
- Asian Development Bank
- Design and Construction Supervision Consultant
- Contractor – construction / bio-engineering works

Within the roads sector, MoPIT has the overall responsibility for ensuring environmental safeguards being respected.

Department of Roads (DoR), as the main proponent, has the ultimate responsibility for the supervision of proposed road upgrading including environmental safeguards fully respected. Implementation of the project will be the responsibility of Project Director, DoR Project Directorate (ADB). Geo-Environment and Social Unit (GESU) of DoR undertakes responsibility of environmental monitoring for the proposed road upgrading activities.

Asian Development Bank (ADB) is responsible for overseeing DoR's project design, implementation management in accordance with their grant conditions including environmental safeguards adequately addressed, and respected it during proposed road upgrading works.

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Design consultant will prepare final detail design of proposed road upgrading, conduct necessary environmental study, and ensure EMAP recommendations incorporated in the design. Supervising consultants will oversee entire activities of proposed road upgrading including day to day supervision of construction undertaken by the contractor, making sure environmental safeguards is fully respected as a part of construction. This will ensure full compliance of all aspects of work related to EMAP specifications by the contractor, with reporting to Project Directorate (ADB), and Planning and Design Branch (including GESU as appropriate), DoR.

Construction contractor will be responsible for undertaking all road works assigned to him in accordance with contract document, including specified conditions in EMAP. Contractor will work closely with the supervising consultant in order to ensure that proposed road upgrading works are undertaken according to EMAP specified standards.

Specific responsibility of DoR, Design and Supervising Consultant (DoR's Representative) and Contactor are as outlined below:

DoR

- Acquisition of all necessary private assets – land and physical structures – according to design / construction needs
- Review and approval of surveyed road alignment
- Review and approval of detailed design of proposed road upgrading
- Securing necessary permits from other line agencies of GoN including local institutions related to proposed road upgrading activities (District Forest Office, District Administration Office, District Land Survey Office, District Land Revenue Office, District Development Committees, Village Development Committee)
- Review and approval of proposed ancillary activities (workforce camps, quarry, borrow pit, crusher plants etc)
- Road maintenance, environmental monitoring and management following road handed over by the contractor

Project Design and Supervision Consultant (DoR's Representative)

- Prepare final design for proposed road upgrading, its required environmental studies and EMAP design recommendations
- Survey and pegging of proposed road upgrading work according to design
- Supervise construction undertaken by the contractor according to contract document
- Inspect and report contractor's state of works related to EMAP respect
- Issue corrective action against works requiring its corrections and verify if it has been respected
- Report all EMAP non-conformances to DoR for action
- Certify road works if and when contractor fully respected to EMAP and approved environmental management action plan

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Contractor

- Undertake construction of road works according to approved design, with full respect to EMAP specifications as well as to approved environmental management plan
- Be available on site as and when inspections of works is to be undertaken by the SC
- Respect Supervision Consultant's instruction for correction action affected against defective works

7.2 Site Supervision, Monitoring and Reporting

Strict supervision of construction activities needs to be in place prior to and during proposed road upgrading in order to ensure that upgrading works are carried out in accordance with the approved designs and environmental adverse impacts are fully safeguarded according to EMAP specifications. A standard system of site inspection will be undertaken over the period of proposed road upgrading including approval and reporting as and if required.

Pre-construction Phase
Pre-construction inspections of each section of the alignment and all ancillary sites will be undertaken by the supervising Consultant and Contractor. It will serve to:

- Identify site specific road construction or environmental problems.
- Identify existing services that are required to be reinstated.
- Identify construction waste disposal sites.
- Identify quarries and borrow pits site for extraction of construction materials.
- Identify labor and work force camp sites.
- Plan of phasing of construction along the alignment.

Supervising Consultant and Contractor shall discuss and agree upon the factors listed above and document accordingly. The supervising Consultant shall review the sites pegged by the Contractor and approve them for construction where appropriate, or request the Contractor to repeg sites. The cost for inspection is included in the project implementation cost.

Construction Phase:

The Supervising Consultant will undertake daily, weekly, and monthly supervision and inspections of upgrading works depending on its nature during the period of construction and weekly inspection of related activities including campsites during its usage. For any non-respect to EMAP specifications during his supervision and inspection, Supervision Consultant will issue letter instructing him to correct defective works within specified time, and will document and present it in Monthly Progress Report.

If any activities are not undertaken in accordance with the contract or EMAP specifications, the Supervising Consultant will document defective works and suggest corrective measures in the Weekly Report. The Supervision Consultant will provide a copy of the Weekly Report to the Contractor within 2 days of the Inspection for action.

Monthly Inspections –the Supervision Consultant will undertake a monthly inspection of all sites in use over the preceding month, as well as site activities currently in progress, at the end of each month together with the Contractor.

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If any activities are not undertaken in accordance with the contract or EMAP conditions, the Supervising Consultant will document defective works and suggest corrective measures in the Monthly Report. The Supervision Consultant will provide a copy of the Monthly Report to the Contractor within 2 days of the Inspection for action.

Post –Construction Phase

The Supervising Consultant shall undertake a post-construction certification inspection of each completed section of road and each rehabilitated ancillary sites. Certification will be based upon the contract conditions and EMP conditions.

Operation Phase:

Environmental monitoring of upgraded road during the operation phase will concentrate on the impact of key environmental issues identified during project design including slide and its conditions, drainage, road side structures etc.

DoR's GESU also will undertake at most two inspections in a year. These inspections will include a visual assessment of:

- Road surface condition
- Slope conditions (cut / fill)
- Road side structures
- Drains and drain line including its state
- Damage from excess materials disposal

7.3 Project Level Monitoring

According to type of work activities, Supervision Consultant will, on behalf of project, undertake its level of monitoring of road upgrading leading to sealed bituminous surface. This monitoring will strictly stick to practicing the approved environmental management plan as well as use monitoring indicators / parameters specified in it. This will form 'yard stick' as, if and where concerned contractor has shown his sincerity by effecting into action management prescriptions.

7.4 DoR Level Monitoring

DoR will undertake bi-annual monitoring of upgrading works with specific focus on issues associated with road upgrading, level of contractor's respect to EMAP, site constraints etc.

7.5 Organization of Environmental Management

Figure 7.1 outlines a number of government agencies responsible for environmental management and its monitoring in line with EPR, 1997, Rule13 (Amendment). Department of Roads, ADB Project Directorate under the Ministry of Physical Infrastructure and Transport (MoPIT) is the proponent of the proposed Earthquake Emergency Assistance Project (EEAP).

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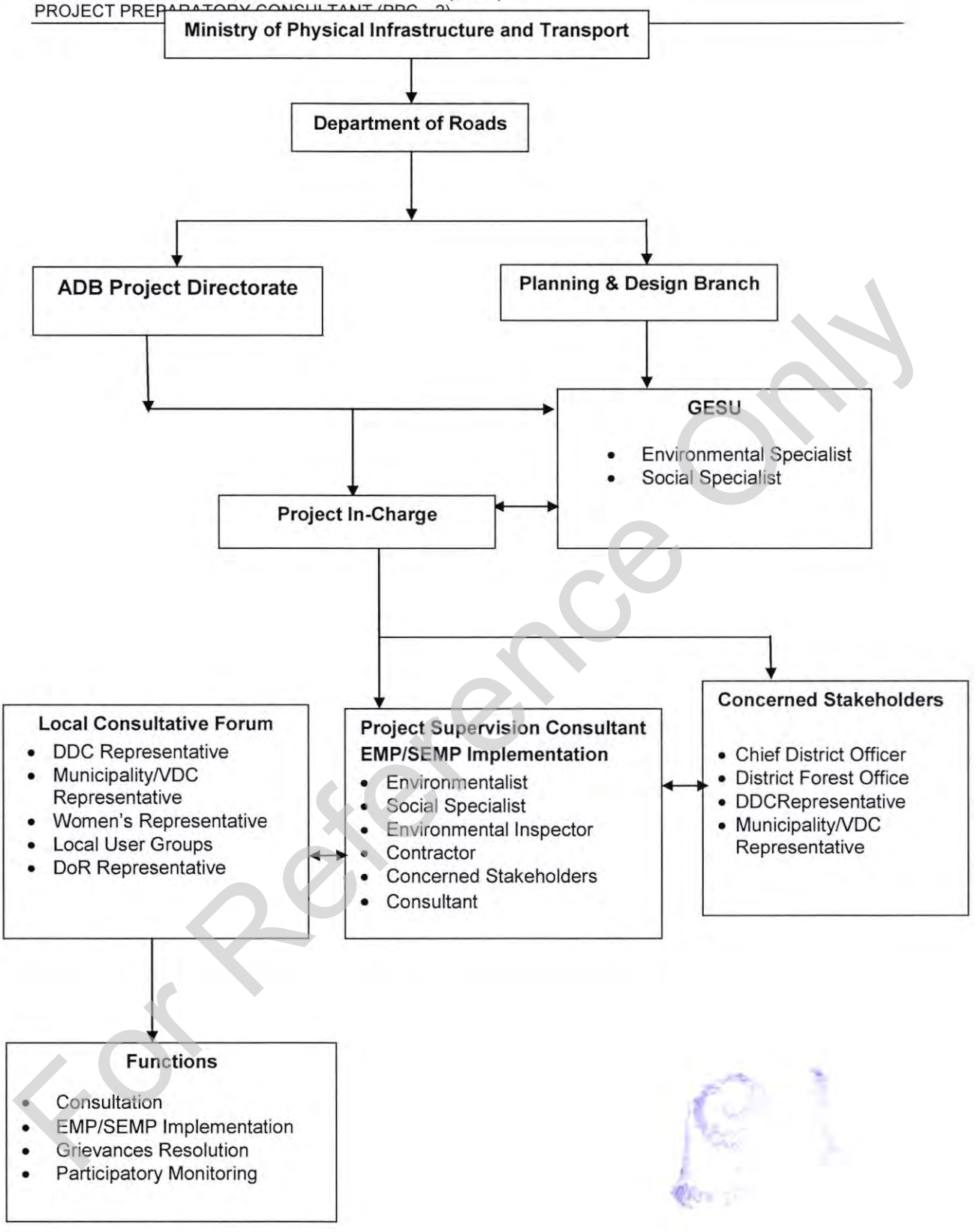


Figure 7.1: Environmental Management Organization Structure

For Reference Only

Table 7.1: Compliance Monitoring for Mugling – Pokhara Road Upgrading Works

Parameters/Issues	Responsible Implementing Agency	Verifiable Indicators	Verification Methods	Schedule	Responsible Monitoring Agency
Socio-economic Environment					
Employment Opportunities and income generation	Contractor	Number of local labors employed in project	Inspection at construction site, interaction with local people	Periodically during construction phase	PIU/SC/ MoPIT
Skill Enhancement	SC	Training in road construction, softengineering structures and Bioengineering works for membersof construction crews.	Training records, check training programme reports, assess feedback from participants	Beginning of construction and during construction	PIU/GESU/MoPIT
Worker's sanitation, Occupational health and safety	Contractor	Incidence of communicable/non-communicable diseases in labor camp, safety gears usage by labor, medical check up camps, shelter, drinking water and toilet facility	Site inspection, interaction with labors	Periodically during construction phase	PIU/SC/GESU
Pressure on social service facilities	Contractor	Number of labors depending on local social infrastructures like forest, water supply lines, health posts, etc	Site observation, interview with local peoples	Periodically during construction phase	PIU/SC/DoR
Social Conflict	Contractor	Number of days lost due to conflict, bandhs at project level etc.	Interview with contractor, site consultant, locals	Periodically during construction phase	PIU/SC/DoR
Employment to Project affected people	Contractor	Number of project affected people employed	Interaction with project affected people, Records	Periodically during construction phase	PIU/SC/MoPIT
Restoration, rehabilitation of infrastructures damaged by the project activities	Contractor	Continued services by the facilities and functional public life	Site observation; VDC/DDC records; Public Consultation Meetings; Photos	Once in a month during construction phase	PIU/ SC/DoR
Physical and Cultural Environment					

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Parameters/Issues	Responsible Implementing Agency	Verifiable Indicators	Verification Methods	Schedule	Responsible Monitoring Agency
Slope protection	Contractor	Bioengineering methods used at recommended sites	Walk through survey	Before award of construction completion certificate	PIU/ SC/DoR/GESU
Extraction of material from recommended quarry sites and borrow pits	Contractor	No cases of material extraction reported from unauthorized sites	Walk through survey, interaction with local peoples	During construction phase	PIU/SC/DoR/GESU
Control of dust pollution	Contractor/SC	Dust level at construction site, water sprinkling practice observed	Use of sprinkler tank, interview local about dust problem	During construction phase	PIU/SC/DoR/GESU
Spoil dumped in safe tipping sites	Contractor/SC	Spoil dumped in sites recommended by project manager	Interaction with project manager, and local people, Walkthrough survey along road alignment, Photographs	During construction phase	PIU/DoR/GESU
Erosion protection measures used in material stockpiling area	Contractor	Erosion protection measures used (Bio-engineering Works), bunds constructed, adequate drainage provided	Visit to material stockpiling area, observation, Photographs	During construction phase	PIU/SC/DoR
Road Safety	Contractor	Use of sign boards (speed limit, men at work, danger etc) during upgrading, safety passage provided to vehicles	Walkthrough survey observation, Photographs, interaction with locals	During construction phase	PIU/SC/DoR/GESU
Measures to protect environment from air & noise pollution	Contractor/SC	Dust level and noise level at work sites, major settlements and sensitive spots like health centers and schools	Visual Observation of good upgrading practices and discussion with residents and workers	Once in a month during construction	PIU/DoR/GESU
Biological Environment					
Spoil disposal in forest and water bodies	Contractor	Spoil dumped in forest, and sensitive areas	Walkthrough survey observation, Photographs	During construction period	PIU/SC/GESU
Compensatory plantation done	Contractor	Number of trees planted	Visit to re-plantation area	Before issuing of construction completion	PIU/SC/ DoR

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Parameters/Issues	Responsible Implementing Agency	Verifiable Indicators	Verification Methods	Schedule	Responsible Monitoring Agency
				certificate	
Use of firewood	Contractor	Use of firewood by labor, and bitumen heating	Inspection, interaction with local, community forestry and labors	During construction phase	PIU/SC/GESU
Disturbing, illegal killing, poaching of wildlife	Contractor	Cases of disturbances, illegal and hunting and poaching	Interaction with CFUG, locals, inspection of labor camp area	During construction phase	PIU/ SC/GESU
Measures to avoid pressure on forest and wildlife	Contractor	Use of firewood or fossil fuel by upgrading crew, events of hunting and killing of wildlife/fishes	Inspection and interview with local people	Once in a month during construction	PIU/ SC/ GESU
Chemical Environment					
Measure to protect water bodies from pollution	Contractor	Visual observation of open defecation and waste disposal around water sources near construction sites; Parameters like pH, hardness, DO etc.	Site inspection, test of site-selected samples of water at laboratory	Once in six months during construction	PIU/ SC/ DoR

Table 7.2: Impact monitoring for the Mugling – Pokhara Road Upgrading Works

Parameter	Verifiable Indicators	Verification Methods	Location	Schedule	Responsible Agency	
					Implemention	Monitoring
Landslide and Erosion	- Inclination, slope failures, causes; Drainage facilities such as Cross drain, side drains ,Fresh gullies and erosion Success/failure of bio-engineering solutions	Site observation, photos Discussion with people and technicians	Near steep slopes and at slide areas and sites where bio-engineering activities are failed.	Continuously during upgrading and operation	Contractor/SC	PIU/ SC/ MoPIT
Bio-engineering of Disturbed Slopes	- Re-vegetation through bio-engineering application on disturbed slope	Site observation Inspection of Bio-engineering works locations, and its survival rate;	Cut slope area, where vegetation is cleared; Nursery	During and at the end of construction	Contractor /SC	PIU/ SC/ MoPIT

For Reference Only

Parameter	Verifiable Indicators	Verification Methods	Location	Schedule	Responsible Agency	
					Implemention	Monitoring
		Photographs				
Disposal of Spoils and construction Wastes	- Initiated erosion, affected aesthetic value, affected forest and agriculture, initiated land erosion by local blocked drainage, hazard to downhill slope residents and agricultural lands	Site observation and interviews,photographs, Toe wall, benching etc.	At specific locations where such sites occur	During construction	Contractor/SC	PIU/ SC/ MoPIT
Quarrying of construction Materials	- Initiated erosion, landslide due to quarrying, degradation of vegetation, water logging, waterborne diseases	Site observation, photographs	Quarry site areas	During construction	Contractor/SC	PIU/ SC/ MoPIT
Disruption of Drainage System	- Status of rehabilitation Service status of irrigation canal and water supply system	Observation and interviews, photos, fisheries data, wildlife records	Outlet of drainages	During construction	Contractor/SC	PIU/ SC/ MoPIT
Water Quality	- Turbidity, Oil and Grease, Dissolved Oxygen	Water quality tests of source of drinking and irrigation water	Water sources	During construction	Contractor	PIU/ SC/ MoPIT
Air Quality	- Total Suspended Solid, Particulates (TSP)	Visual inspection, Photographs	At upgrading sites and at sensitive spots (schools, hospitals)	During construction	Contractor	PIU/ SC/ MoPIT
Forest and Vegetation	- Numbers of trees, presence of ground vegetation, signs of illicit logging and extraction of NTFPs	Observations, DFO records, photos, stake-holder interviews	In and around the upgrading sites	During construction and operation	Contractor	PIU/ SC/ MoPIT
Wildlife	- Wildlife hunting trapping and poaching by work force, Trade of wildlife	Interview with local people / DFO, photos Observations	Forest areas at roadside	Throughout project construction	Contractor, DFO	PIU/ SC/ MoPIT
Worker's sanitation	- Types of diseases in the labor camp	Discussion with labors, health workers,	Project Area	Monthly during construction phase	Contractor	PIU/ SC/ MoPIT
Occupational Health	- Type and number of	Observations, photos,	Project Area	During upgrading	Contractor	PIU/ SC/ MoPIT

For reference Only

Parameter	Verifiable Indicators	Verification Methods	Location	Schedule	Responsible Agency	
					Implemention	Monitoring
and Safety	accident occurred during upgrading, Adequacy of occupational safety measured provided Compensation provided in case of fatal accidents or invalidity	spot checks, Contractors' and health centre records interview with labourer				
Ribbon Settlement	- Congestions to road users Nos. of accidents, RoW encroachment	Records, observations	Project Area	During operation	Div. Road Office	DOR
Drainage blockage	- Water overflow the road, damage to the drainage structure	Observation	Project area	During operation	Div. Road Office	DOR

Table 7.3: Environmental Management Plan (EMP)

Environmental Impacts	Environmental Mitigation Measures	Approximate Location	Mitigation Cost (NRs.)	Institutional Responsibility	
				Implementation	Supervision
[0] Pre-Construction Stage (Upon issuance of Notice to Proceed)					
The Contractor will complete the following activities no later than 30 days upon issuance of Notice to Proceed: 1) Submit appointment letter and resume of the Contractor's Environmental Focal Person (EFP) to DoR Project Directorate 2) EFP will engage SC-Environment Specialist and DoR/PIC to a meeting to discuss in detail the EMP, seek clarification and recommend corresponding revisions if necessary 3) EFP will submit for approval of SC-ES a Site Specific EMP (SSEMP) 4) EFP will request SC-ES copy of monthly monitoring formats and establish deadlines for submission. 5) EFP will submit for SC-ES approval an action plan to secure all permits and approvals needed to be secured during construction stage which include but not limited to: i) operation of crushers and hot mix plants, ii) transport and storage of hazardous materials (e.g. fuel, lubricants, explosives), iii) waste disposal sites, iv) temporary storage location, iv) water use, and v) emission compliance of all vehicles. Arrangements to link with government health programs on hygiene, sanitation, and prevention of communicable diseases will also be included in the action plan.					

For Reference Only

Environmental Impacts	Environmental Mitigation Measures	Approximate Location	Mitigation Cost (NRs.)	Institutional Responsibility	
				Implementation	Supervision
6) EFP will submit for approval of SC-ESthe construction camp layout before its establishment.					
[A] Benefit Augmentation Measures					
• **Construction Stage**					
1. Employment opportunities and income generation	• Employ local people if, and where they are available and willing to work • Give more emphasis to women, ethnic minority and dalit (occupational caste).	Throughout the road corridor	Construction contract	Contractor	SC,GESU/PD /DOR
2. Skill Enhancement	• Facilitate opportunities for hands–on skills gain in civil works if, when and where labor force willing to	Throughout the road corridor	Construction contract	Contractor	SC, GESU/ PD/ DOR
• **Operation Stage**					
1. Improved Access facility	• Proper maintenance of the road	Throughout the road alignment	-	Contractor during DLP period and Construction period/ Division Road office after DLP period	Division Road Office
2. Enhancement of tourism	• Development of lodges, restaurants and hotels for the tourists will be supported. • Facilitate development of lodges, restaurants and hotels	Project area	-	Local Bodies/ local people	
[B] Adverse Impact Mitigation Measures					
I. Physical Environment					

For Reference Only

Environmental Impacts	Environmental Mitigation Measures	Approximate Location	Mitigation Cost (NRs.)	Institutional Responsibility	
				Implementation	Supervision
(A) Pre-Construction Phase					
1. Land and Building Acquisition	• Initiate all acquisition procedures of structures and temporary shops / food stalls built within the COI owned by GoN prior to the commencement of any related work. • Adhere to the acquisition and compensation procedures in accordance to Resettlement Action Plan Entitlement Framework.	Throughout road corridor	Included in Resettlement Plan A budget of NRs. 26,236,815.48 has been allocated for land and property acquisition.	PD/DOR	PD/DOR SC
2. Permits	• Obtain necessary permits for commencement of roadwork and provide a copy to the Contractor. • Obtain written permission from landholders, Municipality, DDC and Rural Municipality under the Local Governent Operation Act, 2017 prior to commencement of various activities related to construction work and provide copies to the Supervising Consultant. • The payment for temporary use of land to the landholders, Local Bodies will be as per the agreement and Local Governent Operation Act.	Throughout road corridor	Subproject Preparation Cost Construction	Contractor /SC	PD/DOR
3. Worksite survey, Pegging and approval	• Conduct layout survey of the proposed upgrading works. • Locate, peg out and seek approval from the Supervising Consultant for each ancillary site prior to the commencement of related activities. • Inspect and approve, if correct all ancillary sites.	Throughout road corridor	Construction Contract project Cost	Contractor , SC	PD/DOR
4. Stockpiling of Construction Materials	• Locate, peg and seek approval from the supervising consultant for the use of stockpile sites. • Stockpile will not be located on/near water courses, schools, hospitals or public standpipes; and will not affect locals and their properties. • Obtain written permission from landowners and local bodies for stockpiling on their land.	Location of identified stockpiling sites. (Ch. 02+150, 03+210, 09+520, 15+980, 24+110, 30+010, 34+990, 42+245, 48+010, 58+510,	Construction Contract	Contractor	SC, PD/DOR

For Reference Only

Environmental Impacts	Environmental Mitigation Measures	Approximate Location	Mitigation Cost (NRs.)	Institutional Responsibility	
				Implementation	Supervision
	• Stockpiles subject to erosion by wind or water will be covered with tarpaulins. For large stockpiles, it will be enclosed with side barriers and also covered when not in use. • Clean area properly after completion.	67+410, 75+750, 77+455 and 82+975			
(B) Construction Phase					
1. Earthworks/Slope Instability	• Survey and peg the extent of unstable area. • Re-vegetation of cut and fill slope or exposed areas as soon as possible by using native plant species • Adoption of bio-engineering techniques	Identified landslide locations (351 locations selected for bio-engineering, Refer Annex 9)	NRs. 49,756,714.00 has been allocated for bio-engineering work.	Contractor	SC, GESU/ PD/ DOR
2. Loss of top soil	• Top soil will be saved by either stockpiling it adjacent to the proposed road formation batter sides, either immediately upslope or downslope of the extent of works, or by stripping it from the road section about to be excavated and re-spreading it immediately onto the previously completed adjacent section of road. • The preferred method is topsoil stripping and re-spreading immediately. If topsoil is to be stockpiled, it will only be done above the excavation site to avoid mixing it with excavated sub-soil. • Topsoil will only be re-spread on batters with a grade of 1:1 (V: H) or flatter.	Throughout road corridor	Construction Contract Subproject Cost	Contractor SC	SC, PD/DOR
3. Reinstatement of Public Utilities/Services	• Inventory of all services to be removed / reinstated /relocated. • Locate and reach agreement with affected landowners and local people / end users (Municipality, DCC, Rural Municipality) regarding services (i.e. irrigation canal, water supply lines, standpipes, • drainage ditches and walking trails, electrical poles, telephone poles, bus bays, paved crossings to be	Throughout road corridor	Construction Contract	Contractor, SC	SC, GESU/ PD/ DOR

For Reference Only

Environmental Impacts	Environmental Mitigation Measures	Approximate Location	Mitigation Cost (NRs.)	Institutional Responsibility	
				Implementation	Supervision
	maintained, temporarily cut and reinstated including timing and location of cuts and reinstatements. • Obtain written permission from affected landowners /local people regarding temporary cessation of services. • Works will be planned with timing to avoid / minimize impact to cultural festivals. • Moving of religious structures will be done based on the results of public consultation. • Coordinate with concerned authority for the reinstatement and relocation of public utilities and obtain their consent prior commencement of work.				
4. Traffic hazard and road safety	• Adequate lighting and safety signal devices be installed for work safety. • Adequate warning signs, safety barriers, traffic calming measures and persons with flags to control traffic will be provided for work safety. • Prepare traffic management plan and get approval from the Supervising Consultant prior to implementation of road works. • Where possible, the road will be constructed in half width allowing traffic flow through other half not under construction so that traffic will at all time have free kept minimum with provision for traffic traveling in opposite direction to pass at frequent intervals. • These will be maintained free of corrugation and potholes with adequate flagmen, signs barriers, lights and necessary staff to ensure free flow of traffic. • Temporary diversions will be provided wherever necessary, with proper drainage facilities and safe trafficable condition. • When completion of construction of road, diversions which are no longer required will be removed and the ground	Throughout road corridor	Construction Contract	Contractor	SC, PD/DOR Traffic police

For Reference Only

Environmental Impacts	Environmental Mitigation Measures	Approximate Location	Mitigation Cost (NRs.)	Institutional Responsibility	
				Implementation	Supervision
	reinstated to its original condition. • Electrical Equipment will be checked and certified regularly. • Provide and install all road signs as per design. • Impart road safety education to all villagers, schools, clubs and drivers of construction vehicles.				
5. Impact due to establishment of construction camps	• Efforts will be made to establish construction camp at such sites so as to utilise the existing houses/ infrastructure as far as possible. • The Contractor will be required to prepare detailed plan for construction camp including location (distance from settlements, drainage facility, outdoor facilities, and surrounding areas), housing facilities (site roads, drainage, waste management and other facilities) and need to get approval from the Supervision Consultant. • Basic facilities such as fire precaution, lavatories and showers, potable water supply, clean eating area, lighting, safe access, air supply, LPG /kerosene, and others will be provided. • Appropriate facilities for women and children will be provided in the construction campsites. • First aid facilities will be made available at camp sites. In addition to this, collaboration with local health/sub-health posts for major injury cases including a contingency plan for emergency cases will be prepared. • The Contractor will ensure that all workers, drivers, delivery crew, as well as the communities are aware of the risk of communicable diseases such as HIV virus, STD and AIDS. In order to prevent the risk of transmission of such diseases, awareness raising programmes such as information education, posters, and consultation and communication campaigns about primary health care will	Designated camp locations	Construction Contract	Contractor	SC, PD/DOR

For Reference Only

Environmental Impacts	Environmental Mitigation Measures	Approximate Location	Mitigation Cost (NRs.)	Institutional Responsibility	
				Implementation	Supervision
	be organized regularly. • The Contractor will be responsible to control open space defecation and pollution of stream sites and public places by workers. • The Contractor will ensure that sufficient and good quality of food stuff at reasonable price including adequate and safe drinking water has been supplied to the workers. • Disposal of sanitary wastes and excreta will be into septic tanks. • Kitchen wastes will be disposed into soak pits. Wastewater from campsites will be discharged and disposed in a kitchen sump located at least 15 meters from any water body. Sump capacity will be at least 1.3 times the maximum volume of wastewater discharged. The bottom of the pit will be filled with coarse gravel and the sides shored up with board, etc. to prevent erosion and collapse of the pit. • Solid wastes generated in the construction site will be reused if recyclable, inert materials will be disposed off in landfill sites and combustible materials will be buried if it is not hazardous.				
6. Impact due to operation of borrow pits and quarries	• Locate and peg quarries and seek approval from the Supervising Consultant. • Obtain permission/license for extraction of materials from Stakeholders, Municipality, DCC or Rural Municipality as appropriate. • Unstable site, erosion prone area, dense forest area, settlement, fertile farm land will be avoided for quarrying operation. • After the extraction is completed, the quarry site will be rehabilitated to suit the local landscape.	• Location of selected quarries and borrow pits proposed during construction • Probable sites for material sources are Marsyangdi River basin (Ch. 09+000), Madi	Construction Contract	Contractor	SC, PD/DOR

For Reference Only

Environmental Impacts	Environmental Mitigation Measures	Approximate Location	Mitigation Cost (NRs.)	Institutional Responsibility	
				Implementation	Supervision
		River Basin (Ch.42+000), and Seti River Basin (Ch.71+000, Kotre area Borrow pit)			
7. Stockpiling of construction materials and spoil/debris disposal	• Locate, peg and seek approval from the supervising consultant for the use of stockpile sites. • Stockpile will not be located on/near water courses, schools, hospitals or public standpipes; and will not affect locals and their properties. • Obtain written permission from landowners and local bodies for stockpiling on their land. • Stockpiles subject to erosion by wind or water will be covered with tarpaulins. For large stockpiles, it will be enclosed with side barriers and also covered when not in use. • Clean area properly after completion.	• Throughout the road alignment. Probable locations are: Ch. 02+150, 03+210, 09+520, 15+980, 24+110, 30+010, 34+990, 42+245, 48+010, 58+510, 67+410, 75+750, 77+455 and 82+975 • Location of identified disposal sites. Probable locations are at Ch. 2+100 – 2+700, 8+200, 16+350, 24+150, 25+500, 28+450, 32+800, 38+500, 41+100, 46+500, 58+000, 68+000, 71+000, 84+500	Construction Contract	Contractor	SC, GESU/ PD/ DOR
8. Impact due to stone crushing plant, hot mix plants	• Locate, stake out and seek approval from Supervision Consultant for stone crushing plant. • Locate plant site away from population centers, drinking water intakes, cultivated lands and sensitive ecosystem	Location of selected Plant sites (Ch. 09+200, 42+100,	Construction Contract	Contractor	SC, GESU/ PD/ DOR

For Reference Only

Environmental Impacts	Environmental Mitigation Measures	Approximate Location	Mitigation Cost (NRs.)	Institutional Responsibility	
				Implementation	Supervision
	preferably at least 500m from settlement and habitation. • Obtain permission from local stakeholders, Municipality, DCC or Rural Municipality as appropriate. • Stone crushing equipment will be fitted with dust control devices and operated as per Manufacturer's Specification. • Hotmix Plant will have in-built mechanisms for the absorption of gases. • The plant will be operated during day time. • Restore the site maintaining natural contours and vegetation after use.	71+000)			
9. Impact on Irrigation channels	• Provision made to extend existing 9 number (300 mm diameter) of irrigation pipes to a length of 10 m hume pipe for irrigation crossing.	Chainages: 27+060, 37+130, 37+725, 48+120, 48+160, 49+150, 52+400, 52+890, and 67+580	Construction contract	Contractor	SC,GESU/PD /DOR
10. Obstruction to natural drainage pattern	• Suitably sized side drains, cross-drainage structures will be constructed /extended as per detailed design. • River training works to avoid depth and side erosion of stream beds. • Standpipes and public water supplies will not be used to extract water for construction works, without prior permission of local authority. • Public will be consulted regarding location of drainage outfalls. • Care will be taken not to disrupt or contaminate the irrigation water supply or local public water supplies.	Throughout road corridor	Construction Contract	Contractor	SC, PD/DOR
11. Air, Noise, Vibration and Water Pollution					
Air Pollution	• Prohibition of open storage and spillage of loose soil in and around constructionsite • Covering of the stockpiled spoil with an erosion control	Sub-project area, Crusher Plant site.	Construction Contract	Contractor	SC, PD/DOR

For Reference Only

Environmental Impacts	Environmental Mitigation Measures	Approximate Location	Mitigation Cost (NRs.)	Institutional Responsibility	
				Implementation	Supervision
	materials • Covering of truckloads of material during transportation • Sprinkling of water on working areas and road if dust pollution becomes nuisance • Use of good quality of fuel • Location of crusher plant away from settlement, school and sensitive ecological areas and they are fitted with air and noise control devices.	Six sensitive locations as directed by SC.	For air quality monitoring **~320,000.00** (4 sites x 2 times x 40,000)	Through approved monitoring agency	SC, PD/DOR
Noise Pollution	• Vehicles and equipment used will be fitted with silencer and maintained to keep noise at minimum levels. • Workers will be provided with appropriate ear muffs/plugs specially at crusher site • Noise barriers will be placed in urban and sensitive locations i.e. schools, hospitals etc. • Noise levels (1 hr Leq dB(A)) will be monitored regularly during construction. Conforming WHO standards. • Construction activities will be carried out only between 6 A.M to 6 P.M to avoid disturbance to nearby communities and wildlife activities at night	Major settlement areas	For noise level monitoring **~120,000.00** (4 sites x 2 times x 15,000)	Contractor	SC, GESU/ PD/ DOR
Vibration	• Photographic records of the existing private and public infrastructures along the corridor of impact will be maintained for verification of any infrastructure damage during construction	Throughout the road corridor	-	Contractor	SC, GESU/ PD/ DOR
Water Pollution	• Disposal of soil, sludge and other waste directly into water bodies will be avoided • Avoid vehicular cleaning activities on/close to the water bodies especially on the river, stream and lakes	20 major rivers/streams crossed by the road	For water quality monitoring	Contractor	SC, GESU/ PD/ DOR

For Reference Only

Environmental Impacts	Environmental Mitigation Measures	Approximate Location	Mitigation Cost (NRs.)	Institutional Responsibility	
				Implementation	Supervision
	• Prevention of soil slipping at toe of the stockpile areas by installing barrier at the perimeter. • Adequate catch drain will be constructed to drain out surface runoff waters quickly as possible		NRs. 100,000.00 (10 sites x 2 times x 5,000)		
12. Impact on ancient monuments, historical sites like "Ghansi Kuwa"	• The impact on Ghansi Kuwa has been avoided by realigning the road section between Ch. 36+700 and Ch. 37+050.	Ch. 36+870	Project cost	Contractor	SC, GESU/PD/ DOR
(C) Operation Phase					
1. Impacts due to slope Instability	• Minor landslide and mass wasting will be immediately cleared and slope restored with appropriate technology (bio-engineering) • Soil conservation will be promoted in the right of way and vulnerable area beyond the road alignment.	Throughout the road alignment	Maintenance budget	Division Road Office	DOR
2. Impact due to poor drainage	• It is recommended to close the side drain especially near settlement/market area and maintain regular to avoid blockage and stagnation of water • Regular cleaning of roadside channel to avoid any blockage of drainage	Throughout the road alignment	Maintenance cost	Division Road Office	DOR
3. Air and Noise pollution	• Plantation of pollution absorbent tree species, especially at the settlement area will help to reduce pollution.	Throughout road corridor	Maintenance cost	DOR Transport Management	DOR, GESU, TESU

For Reference Only

Environmental Impacts	Environmental Mitigation Measures	Approximate Location	Mitigation Cost (NRs.)	Institutional Responsibility	
				Implementation	Supervision
				Department	
II. Biological Environment					
(A) Pre-Construction Phase					
1. Loss of Forest and vegetation	• Mark out extent of clearing within approved worksite areas taking care to avoid religious tress – bar, pipal trees if any. • Undertake vegetation / trees clearance only with prior approval of local stakeholders, DoF, FUG etc. as appropriate. • Stockpile cleared shrub/foliage where possible within ROW as appropriate.	• Community Forest areas along the road alignment and along the road corridor	Construction contract	Contractor	SC, GESU/PD/ DOR
(B) **Construction Phase**					
1. Clearing of Forest land and trees, shrubs and herbs	• Identify and seek approval from SC for felling of trees within COI. (around 6750 trees) • Fuel wood will be banned for construction works. • Project will pay for the plantation at least twenty five (25) numbers against one tree removed from community forests and protection cost for 5 years to the concerned District Forest Offices • Total 18750 tree saplings will be planted for compensating loss of 750 trees from community forests and around 15530 number of road side avenue tree plantation including necessary protection is provisioned on both side of the proposed road alignment within the formation width including on the median at appropriate intervals	• All 17 community forests along the road corridor(Ch. 03+750 – 04+350, 05+175 – 07+525, 19+075 – 19+450, 20+075 –22+225, 35+600 – 35+675, 36+350 – 37+700, 37+800 – 38+425, 44+675 – 45+100, 56+100 –56+250, 56+650 – 58+250, 59+700 – 59+950, 68+325 – 70+050, 71+375 – 71+725)	• NRs. 16,676,630.00 for management of felled trees • NRs. 28,12,500 for compensatory plantation for CF's tree loss • Estimated cost for plantation of avenue trees is NRs. 17,799,115.00	Project	SC, GESU/ PD/ DOR

For Reference Only

Environmental Impacts	Environmental Mitigation Measures	Approximate Location	Mitigation Cost (NRs.)	Institutional Responsibility	
				Implementation	Supervision
		• Along the road corridor			
2. Habitat Fragmentation or loss and Barrier to Wildlife Movement Corridor	• Using narrow widths, lower vertical alignments, smaller cuts and fills, flatter side slopes and less clearing of existing vegetation will be adopted. • Necessary warning signs shall be installed at wildlife movement locations	All 17 community forests along the road corridor	-	Contractor	SC, GESU/PD/ DOR
3. Disturbance to wildlife activities	• Workers will be educated through an awareness program about the importance of wildlife for maintaining the ecosystem. • It is recommended to work during day time to minimize the disturbances to the wildlife. • Posting of environmental signboards (illustrated and in local language) have to be displayed in frequent wildlife movement zone	Forest areas (Ch. 1+150 – 3+650, 4+200 – 6+400, 9+300 – 9+750, 20+250 – 21+100, 21+650 – 22+500, 28+350 – 29+350, 35+200 – 36+900, 43+600 – 45+100, 57+400 – 57+600, 59+800 – 60+500 and 71+000 – 71+300)	-	Contractor	SC, GESU/ PD/ DOR
4. Disturbance on the corridor of the wildlife movement	• Prohibition of blowing horns in the dense forest areas. • Potential area for wildlife crossing will be provided.	All forests along the road corridor	-	Contractor	SC, GESU/ PD/ DOR
5. Possible illegal hunting and poaching of wildlife	• Restrict the works at night. • Do not allow haphazard entry of workers in the forest. • The project will organize wildlife conservation awareness program for the construction workers.	All forests along the road corridor	-	Contractor	SC, GESU/ PD/ DOR
(C) Operation Phase					
1. Impacts on forest resources	The concerned agency will carry out regular maintenance of	In road corridor where	-	Local	DoR, TESU

For Reference Only

Environmental Impacts	Environmental Mitigation Measures	Approximate Location	Mitigation Cost (NRs.)	Institutional Responsibility	
				Implementation	Supervision
	road side trees /vegetative cover and its protection from human and domestic animals.	needed		Govt. Body, DOR	
2. Wildlife Disturbance	• Prohibition of blowing horns in the dense forest areas. • Potential area for wildlife crossing will be provided.	All forest areas along the road corridor	-	Division Road Office	GESU/DOR
	• At the wildlife movement place speed humps at regular interval as well as other restriction measure including 'no horn honking', 'posting speed limit' etc need to be affected.	All forest areas along the road corridor	-	Division Road Office	GESU/DOR
III. Socio-economic and Cultural Environment					
(A) Construction Stage					
1. Land and building acquisition	• Initiate all necessary land and property acquisition formalization procedures prior to the commencement of any related work. • Adhere to the Land Acquisition procedures according to Resettlement Plan Entitlement Framework.	Throughout the road CoI	Included in Resettlement Plan A budget of NRs. 1,012,542,867.00 has been allocated for land and property acquisition.	Proponent	GESU/PD/DOR
2. Stress on social service facilities	• Provide required facilities in the camp during the project construction. • Use of local people in construction activities to reduce the extra burden on existing resource.	All the contractor's campsites	-	Contractor	SC, GESU/ PD/ DOR
3. Occupational Health and Safety, STDs and Nuisance from Construction	• Protective clothing including helmets, masks, boots, gloves, ear plugs and goggles will be provided for workers safety. • Make mandatory the use of helmets, safety belts, masks, gloves and work boot by workers depending upon nature of work.	Project area	NRs. 3,669,036.00 for safety gears/facilities Contractor's employee and	Contractor	SC, GESU/ PD/ DOR

For Reference Only

Environmental Impacts	Environmental Mitigation Measures	Approximate Location	Mitigation Cost (NRs.)	Institutional Responsibility	
				Implementation	Supervision
Camps	• Workers will be provided with first aid and health facilities. • Provision for the group accident insurance for the workers. • Labour recruitment shall comply with Child Labor (prohibition and Regularization) Act. • Adequate lighting and safety signal devices be installed for work safety. • Adequate warning signs and safety barriers will be provided for work safety. • At every work place, a readily available first aid unit including an adequate supply of dressing materials will be provided. • Maintain health care system at construction camps including regular visits by trained medical staff for routine check up of workers and avoidance of communicable disease. • Strict rules and regulation be maintained in the labour and work camp to avoid alcoholic and other bad habbits.		labours' insurance NRs. 11,665,150.00		
4. Social conflicts due to Influx of construction workers	Strict rules and regulation will be maintained in the labour and work camp so that any engagement in alcoholic and other bad habits are restricted.	Throughout road corridor	-	Contractor	SC, GESU/DOR
(B) Operation Phase					
1. Possible township development and likely environmental impacts along the road alignment	• Plantation of trees in the RoW so that it is not encroached; • Awareness raising programme through local organizations about importance of RoW. • Local government bodies shall regulate settlement growth with proper planning along RoW and discourage ribbon settlement	Throughout road corridor	-	Local Government Bodies, DOR	

For Reference Only

Environmental Impacts	Environmental Mitigation Measures	Approximate Location	Mitigation Cost (NRs.)	Institutional Responsibility	
				Implementation	Supervision
2. Social conflicts	• Enforcement of law • Strengthening local communities through awareness • Opportunities to local workforce during maintenance	Throughout road corridor	-	Local Government Bodies, DOR	DOR
3. Road side safety issues	• Required delineators, safety signs, road bumps etc. will be used as appropriate along the road. • Road safety awareness programs will be conducted, including the propagation of educative material in local language(s). • The material will be propagated in schools and be available at all Rural Municipality/Municipality. • It is also recommended to place illustrated sign boards at accident-prone spots and bus bays. • Footpaths should be placed at the town limits and settlement areas.	Throughout road corridor	Operation Maintenance cost	Local Govt. Body, DOR	DOR, TESU Traffic Police
IV. Chemical Environment					
(A) Pre-Construction Phase					
1. Use of fuel, lubricants, oils, acids and other chemicals for construction	• Chemicals (oils, paints, acids etc.) will be stored in leak proof container and disposed in pit safely after use. • Hazardous materials will not be stored near surface waters sources • Used lubricants and oils will be collected and recycled or disposed off site. • Plastic sheeting will be placed under hazardous material storage area to collect and retain leaks and spills.	Throughout road corridor	Construction contract	Contractor	SC, GESU/ PD/ DOR
Construction Phase					

For Reference Only

Environmental Impacts	Environmental Mitigation Measures	Approximate Location	Mitigation Cost (NRs.)	Institutional Responsibility	
				Implementation	Supervision
1. Use of fuel, lubricants, oil, acid and other chemicals for construction	• Chemicals (oils, paints, acids etc) will be stored in leak proof container and disposed in pit safely after use. • Hazardous materials shall not be stored near surface waters sources • Used lubricants and oils will be collected and recycled or disposed off site. • Plastic sheeting will be placed under hazardous material storage area to collect and retain leaks and spills. • Contaminated runoff from storage areas will be captured in ditches or ponds with an oil trap at the outlet. • Contaminated and worn plastic sheeting will be packed into drums and disposed off site.	Throughout road corridor	Construction contract	Contractor	SC, GESU/ PD/ DOR
2. Use and storage of Chemicals like bitumen etc.	• Bitumen drums will be stored in dedicated areas, not scattered along the road and any small accidental spills will be cleared up immediately • Bitumen will be melted in heaters using kerosene, diesel or gas fuel. • No bituminous material will be discharged into side drains. • Bitumen will not be applied in strong wind or rainy conditions. Fuel wood will not be used for heating bitumen.	Throughout road corridor	Construction contract	Contractor	SC, GESU/ PD/ DOR
(B) Operation Stage					
1. Effect on water quality	• Haphazard cleaning/ washing of vehicle and leakage of fuels and lubricants into water channel will be controlled	Throughout road corridor	-	Division Road Office	DOR

Note: COx = Oxides of Carbon, DDC = District Development Committee, GESU = Geo-environment and Social Unit, PD/DoR = Project Directorate/Department of Roads, PIC = Project Implementation Cell, NOx = Oxides of Nitrogen, ROW = Right of Way, SC = Supervising Consultant, SOx = Oxides of Sulfur, TESU = Traffic Engineering and Safety Unit, TSPM = Total Suspended Particulate Matter, VDC = Village Development Committee.

For Reference Only

7.6 Estimated Cost for Executing the Environmental Management Plan

a. Resettlement and Land Acquisition Costs

A separate Resettlement Plan has been prepared to address land and property acquisition as well as compensation issues. Based on the Resettlement Plan, an estimated amount of NRs. 26,236,815.48 has been allocated for property and land acquisition. The resettlement plan implementation cost includes all the expenses required to compensate for the affected assets including rehabilitation/relocation costs and other financial assistance.The actual payments to the Project Affected Peoples loosing such properties will be established by the Compensation Determination Committee. (Refer Annex 9: Summary Resettlement Plan)

b. Environmental Management Cost

The total environmental and social mitigation costs, including the costs for land acquisitionare summarised in Table 7.4.

Table 7.4: Environmental Management Cost

Items	Cost (NRs.)	Remarks
Capacity building • Pre-construction orientation (senior level road builders, mid-level road builders) • Training (labor force leaders)	500,000.00	Part of Environmental Safeguard Cost provisioned in project cost estimate (NRs. 3,075,000.00)
Safety Gadgets/facilities	3,669,036.00	Item of BoQ
Compliance with traffic management provisions for construction sites, etc	14,938,993.67	Item of BoQ
Excess spoil materials (safe disposal) management	49,691,466.00	Item of BoQ
Relocation of public utilities	411,003,100.00	Item of BoQ
Compensatory Plantation	2,812,750.00	Provisional Sum
Plantation of avenue trees with tree guards	17,799,115.00	Item of BoQ
Bioengineering measures	70,551,435.25	Item of BoQ
Environmental Monitoring Cost	740,000.00	
Total Cost (NRs.)	**571,705,895.90**	

Source: Engineers' Estimate, Mugling - Pokhara Road, 2017

7.7 Monitoring and Evaluation

Ministry of Physical Infrastrucrure and Transport will undertake at least once top most tier level independent' monitoring and evaluation of ongoing works of proposed road upgrading with a focus on project impacts on the environment. As, if and where state of any impact is found higher than its anticipated state during environmental study, MoPIT will issue necessary directives to the proponent for practicing a better safeguards so that the impact is reduced remarkably. Monitoring will focus on recording environmental state and proposing a suitable remedial action.

For Reference Only

7.8 Cost for MoPIT, GESU Compliance Level Monitoring

Responsibility for undertaking environmental monitoring of proposed road upgrading during – and post construction phase is rested on the shoulders of MoPIT and GESU at the policy and proponent level. Cost to be incurred to its undertaking is provisioned in proposed subproject as outlined below.

Table 7.5: Environmental Monitoring Cost

S. No.	Particulars	Unit Rate	Amount (NRs)
1.	Air Quality Monitoring	4 sites x 2 times x 40000	320,000.00
2.	Noise Level Monitoring	4 sites x 2 times x 15000	120,000.00
3.	Water Quality Monitoring	10 sites x 2 times x 5000	100,000.00
4.	Other Direct Observation (GESU/DoR, MoPIT)	2 times x 100,000	200,000.00
		TOTAL (NRs)	**7,40,000.00**

7.9 Grievance Re-dress Mechanism

Public dissent, especially amongst local stakeholders is obvious and common to surface upon the road stretch where its activity is undertaken and continued without suggested environmental safeguards being correctly respected, most notably during material extraction, locating cross outfall drainage over private land and draining out hazardous spills over the private land without consent of the landowner, and finally creating inconvenience to the locals (littering arable land, dust hazard, noise pollution etc.) because of inappropriate construction practice.

The concern/grievances from local/affected people may come up related to inappropriate implementation of various components of EMP. These issues can be easily addressed through acknowledgement, evaluation and corrective action and response approach. To resolve grievance from public or stakeholders concerning the subproject will be directed to the PIU. For local stakeholders' convenience, this mechanism will be affected by establishing mandatory "grievance register book" at the Office of PIU. The register book will delineate i) date of grievance registered ii) name / address of grievance lodger (stakeholder) iii) nature of grievance being lodged and iv) location / site of fault works requiring corrections.

Firstly, it will be assessed if the grievances are genuine or suggestion is acceptable. Accordingly, response will be given within 15-30 days by the concerned PIU in consultation with the Supervising Consultant. In case the PIU through Supervising Consultant is unable to resolve the issue, the matter will be forwarded to the Geo-Environment and Social Unit, DOR. The corrective action will be carried out as per the response or action plan indicated to the stakeholder. The outcome shall also form part of quarterly report to ADB. The grievance re-dress mechanism shall be translated in Nepali language and posted to the respective DCC/Municipality/Rural Municipality office by DOR atleast 30 days prior to commencement of construction works.

For Reference Only

Chapter 8

8. CONCLUSIONS

The environmental impacts of the proposed project for upgrading of Mugling – Pokhara road are likely to have minimal adverse impacts on environment. Most of the impacts identified and predicted are of minimal, temporary, reversible and short term natureassociated with construction phase only.

The upgraded road will provide smooth, easy and quick access eliminating existing traffic congestion and reduction in road accidents. Consequently, the transportation of goods and services from remote rural villages to major cities and to other parts of the country will be easier, faster and cheaper.

Further beneficial impacts of upgraded road will be on human life, income generation from employment during the construction phase and enterprise development andcommercialization during operational phase. Seed sowing on road embankment slopes androadside plantation of trees will assist to avoid and minimize road side scouring, erosion andattenuation of noise and dust, and will enhance local environment.

Taking into consideration the nature of the proposal, its location, stakeholder's positive response, and evaluated environmental impacts, this IEE Study proposes to implement the Proposal under the condition that the safeguard measures described in the environmental management plan are implemented and monitored accordingly. Further environmental assessment study at EIA level for implementation of the proposed road upgrading project is not needed.

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ANNEXES

ANNEX 1: Approval Letter and Approved Terms of Reference

ANNEX 2: Copy of Public Notice and Deeds of Enquiry (*Muchulkas*)

ANNEX 3: Recommendation Letters

ANNEX 4: Minutes of Meetings

ANNEX 5: Questionnaire Checklists

ANNEX 6: Baseline Data

ANNEX 7: List of Trees to be Removed

ANNEX 8: Bioengineering Locations

ANNEX 9: Photographs

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For Reference Only

ANNEX 1

Approval Letter and Approved Terms of Reference

For Reference Only

For Reference Only

Government of Nepal
MINISTRY OF PHYSICAL INFRASTRUCTURE & TRANSPORT
DEPARTMENT OF ROADS
PROJECT DIRECTORATE (ADB)

Phone : 4437492
4437493
4414239
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Bishalnagar
Kathmandu, Nepal

PD/Consultant/PPC-2/072-73/ Cha. No: 761

Date : May 22, 2016

Mr. Lalit Kumar Sharma
Team Leader
MMM Group Limited, (Canada)in association with
ITECO Nepal (P) Ltd., Total Management Services Pvt. Ltd. and Material Test Pvt. Ltd
Transport Project Preparatory Facility, Project Preparatory Consultant -2
Minbhawan, Kathmandu

Subject: ADB Grant No. 0227 NEP: Transport Project Preparatory Facility (TPPF), Road Transport Project Preparatory Consultant (PPC– 2): Approved IEE of ToR of **Muglin-Pokhara Road, Chitwan, Tanahu & Kaski**

Dear Mr. Sharma,

We would like to inform you that IEE/ToR of Mugling-Pokhara Road, Chitwan, Tanahu, Kaski has been approved by Ministry of Physical Planning & Transport. The approved letter from Department of Roads, Planning & Design Branch, GESU is enclosed herewith for your information & necessary further action.

Thanking you.

Sincerely yours,

Rajendra Raj Sharma
Acting Project Director

For Reference Only

नेपाल सरकार
भौतिक पूर्वाधार तथा यातायात मन्त्रालय
सडक विभाग
योजना तर्जुमा, डिजाईन महाशाखा
भू-वातावरण तथा सामाजिक शाखा

फ्याक्स: ५५२९९०६
फोन नं. ५२६०६९६
हाल: पाटन, ललितपुर
ई-मेल: gesunit@dor.gov.np
वेव साइट: www.dor.gov.np

चलानी नं-३६८/२.२.२/०७२/७३ मिति :२०७३/०१/१३

PD (ADB)
Receipt
No. 9605
Date 063-9-30

श्री आयोजना निर्देशनालय (ए.डि.बी.),
विशालनगर, काठमाण्डौं ।

विषय: Muglin-Pokhara Road, Chitwan, Tanahu & Kaski को IEE को ToR स्वीकृत भएको सम्बन्धमा ।

उपरोक्त सम्बन्धमा त्यस निर्देशनालय अर्न्तगतको Muglin-Pokhara Road, Chitwan, Tanahu & Kaski को IEE को ToR भौतिक पूर्वाधार तथा यातायात मन्त्रालय, वातावरण तथा सामाजिक शाखाको प.सं.०७२।०७३।२.३ च.नं. १३८५ को पत्रानुसार नेपाल सरकार (सचिवस्तर) को मिति २०७३।१।७ को निर्णयानुसार शर्त सहित स्वीकृत भएको व्यहोरा निर्देशनानुसार अनुरोध गरिन्छ ।

संलग्न: १. भौतिक पूर्वाधार तथा यातायात मन्त्रालयको पत्र छाँयाप्रति - १ थान
२. स्वीकृत ToR - ३ प्रति

नवराज के.सी.
ईन्जिनियर
ईन्जिनियर

For Reference Only

URL : www.moppw.gov.np
email:info@moppw.gov.np
फोन नं. ४२९९८८०
४२९९९३१
४२९९६५५
फ्याक्स नं ४२९९७२०
सिंहदरबार, काठमाडौं,
नेपाल ।

नेपाल सरकार

भौतिक पूर्वाधार तथा यातायात मन्त्रालय

(वातावरण तथा सामाजिक शाखा)

पत्र संख्या:- ०७२/०७३/२३

च.नं.:- ९३८२

मिति : २०७३/१/९

विषय: प्रारम्भिक वातावरणीय परीक्षण(IEE) को कार्यसूची स्वीकृत भएको सम्बन्धमा ।

श्री सडक बिभाग,
भू-वातावरण तथा सामाजिक शाखा,
पुल्चोक, ललितपुर ।

पत्र संख्या: ६१६
मिति: ०७३/१/१०

उपरोक्त सम्बन्धमा भू-वातावरण तथा सामाजिक शाखा, सडक बिभाग प्रस्तावक रहेको **Muglin - Pokhara Road, Chitwan, Tanahu and Kaski** को प्रारम्भिक वातावरणीय परीक्षण(IEE) को कार्यसूची नेपाल सरकार (सचिवस्तर) को मिति २०७३/१/७ को निर्णयानुसार कार्यसूचीमा उल्लेख गरिएका Issue/Impacts का अलावा प्रतिवेदन तयारीका समयमा अन्य Issue/Impacts देखा परेमा सो पनि समावेश गर्नुपर्ने शर्तमा स्वीकृत भएको व्याहोरा अनुरोध छ ।

९/१

(शोभा भण्डारी)
समाजशास्त्री

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Government of Nepal
Ministry of Physical Infrastructure and Transport
Department of Roads
Chakupat, Lalitpur

Terms of Reference (ToR)

for
Initial Environmental Examination (IEE) Study
of
Mugling - Pokhara Road
in
Chitwon, Tanahu and Kaski Districts

Submitted to
Ministry of Physical Infrastructure and Transport
Singhadurbar, Kathmandu

For Reference Only

Submitted by:
Geo-Environment and Social Unit
Department of Roads
Phone No.: 5260505
Email: gesunit@dor.gov.np

On behalf of
ADB Project Directorate

Prepared by:
MMM Group Limited, (Canada) in association with **ITECO Nepal (P) Ltd., Total Management Services Pvt. Ltd.** and **Material Test Pvt. Ltd.**
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APRIL 2016

MMM GROUP

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ACRONYMS AND ABBREVIATIONS

ADB	Asian Development Bank
amsl	Above mean sea level
CBOs	Community Based Organizations
DDC	District Development Committee
DP	District Profile
DoR	Department of Roads
EIA	Environmental Impact Assessment
EMAP	Environmental Management Action Plan
EMoP	Environmental Monitoring Plan
EPA	Environment Protection Act
EPR	Environment Protection Rules
GESU	Geo-Environment and Social Unit
GoN	Government of Nepal
HEP	Hydro Electric Project
IEE	Initial Environmental Examination
m	meter
MoPIT	Ministry of Physical Infrastructure and Transport
NGO	Non-Governmental Organization
PWD	Public Works Directives
RMP	Road Master Plan
SRN	Strategic Road Network
STDs	Sexually Transmitted Diseases
ToR	Terms of Reference
TPPF	Transport Project Preparatory Facility
VDC	Village Development Committee

For Reference Only

1. NAME AND ADDRESS OF THE INDIVIDUAL OR INSTITUTION PREPARING THE REPORT (PROPONENT)

1.1 Name of the Proposal

Name of the Proposal is 'Initial Environmental Examination of **'Mugling-Pokhara Road Upgrading Works'** in Chitwon, Tanahu and Kaski districts.

1.2 Name and Address of the Proponent

The Proponent is the *Geo-Environment and Social Unit,* Planning and Design Branch of Department of Roads. DoR is the leading agency for road development under Ministry of Physical Infrastructure and Transport (MoPIT) and is responsible for translating government policies for the road sub-sector into the provision of services. The name and address of Proponent is presented hereunder.

Geo-Environment and Social Unit
Planning and Design Branch
Department of Roads
Babar Mahal, Kathmandu, Nepal
Phone No.: 5260505, Fax: 5529106
Email: gesu.dor@gmail.com; gesunit@dor.gov.np

1.3 The Consultant

The Consultant is MMM Group Limited, (Canada) in association with ITECO Nepal (P) Ltd., Total Management Services Pvt. Ltd. and Material Test Pvt. Ltd.
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2. INTRODUCTION OF THE PROPOSAL

2.1 General Introduction

The proposed loan and grant (the Project) will finance improvements of two strategic high-priority highways and twelve feeder roads, a total of 405 km, in the central, western and eastern regions of Nepal. These would be important to provide an improved access to rural and hilly areas as well as to non-connected district headquarters. While the Project will contribute to development and expansion of the Strategic Road Network (SRN), it will include an institutional capacity assessment in the areas of road safety and road maintenance, which will form the basis for a capacity development program. Gender and social inclusion will be addressed through a livelihood program that will be targeting women involved in road construction activities in the project-affected area.

The project roads are: (i) Bhairahawa – Lumbini Road (23 km - 4 lane feeder road), (ii) Narayanghat – Butwal (115 km 4 lane highway) Road, (iii) Mugling – Pokhara Road (90-km 4 lane highway), (iv) Lumbini – Taulihawa Road (45-km double-lane feeder road); (v) Kanchanpur – Diman – Rajbiraj Road (22-km 2-lane feeder road), (vi) Janakpur – Basbitti – Manara – Bathanaha (14 km 2 lane feeder road), (vii) Khopasi – Dhunkark – Chamarangbesi – Kaleshwor- Bhardev – Lele (24 km 2 lane feeder road), (viii) Janakpur – Kurtha – Bhramarpur – Ramgopalpar (20 km - 2 lane feeder road), (ix) Nagarkot – Banepa – Dhulikel (25 km 2 lane feeder road), (x) Parsa Border – Parasauni – Jagannathpur – Bara Border (32 km – 2 lane feeder road), (xi) Lahan – Bhagabanpur – Thadi (18 km 2 lane feeder road).

The Department of Roads (DoR) intends to improve this Mugling-Pokhara road to an all-weather bituminous four-lane Asian Highway Standard. Government of Nepal would be responsible to meet the expenses against compensation, acquisition of land/ building, royalty, tax refund, maintenance of handed over section, administrative cost, etc. Department of Road will implement the Project.

2.2 Project Road Description

2.2.1 Road Alignment

Mugling – Pokhara Road section is a part of the Prithvi Highway (174-kilometre-long) highway connecting Naubise of Tribhuvan Highway, 26 km from Kathmandu, the capital of Nepal, and Pokhara, a tourist city in the western part of Nepal. Mugling – Pokhara road section starts from Mugling Bazaar Chowk (00+000) at an elevation of 264.16 m from amsl, passes through various small towns and settlements and it ends at Prthivi Chowk (90+000) of Pokhara city at an elevation of 842.70 m from amsl. From Mugling to Anbukhaireni at about km 8+000, the road passes through steep hilly terrain and at Km 4+100; there is power house of Marsyangdyi HEP on left hand side of the road. After Anbukhaireni, the road alignment traverses through settlements and cultivated lands and crosses Dumre Bazaar (Ch. 25+000), Ghansi Kuwa at Ch. 38+980 in Ghansikuwa VDC of Tanahu district. Major settlement areas crossed by the road are Anbukhaireni, Bimalnagar, Dumre Bazaar, Damauli, Khairenitar, Kotre, Gagangaunda, Lekhnath Chowk, Taal Chowk, Amarsingh Chowk etc. and finally ends at Prithvi Chowk (Ch. 90+000).

Other than settlement areas, rest of the road alignment passes through intermixture of scattered settlements, open land bearing built-up value, cultivated and open grazing lands and some patches of forest lands.

Under the present project scope, upgrading works will be carried out from Ch. 00+400 from the right bank of Trishuli River. The elevation of the road alignment is gradually ascending from the starting to the end point of the road. Elevation of the start point (right bank of Trishuli River) is 256.02 m and lowest point along the road alignment is at Ch. 02+150 with

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elevation of 250.378 m, the highest point being at the end point of the road with elevation of 842.71 m.

This is the vital road link and has strategic importance to boost tourism industry of the country as well as connectivity to western hilly region. In the existing condition, the road is double lane highway with adequate drainage, cross drainage structures and other road structures. Existing pavement is mostly resealed by Surface Dressing.

The road alignment traverses bordering Darechok VDC in Chitwon district, Anbukhaireni municipality, Bandipur Municipality, Ghansikuwa VDC, Vyas Municipality, Jamunebhanjyang VDC, Chhang VDC, Manpang VDC, Shukla Gandaki Municipality in Tanahu district and Lekhnath Municipality and Pokhara Sub-metropolitan city in Kaski district.

2.2.2 Design Standard

The proposed construction of the project road is as per the Design Standards for National Highway of DoR. Design Standard and Geometric Characteristics are being identified as per Nepal Roads Standards-2027, (Second Revision 2070) and are as follows:

Road Category	:	National Highway
Traffic Lane	:	Four
Design speed	:	60 kmph
Maximum Gradient	:	7%
Minimum length of recovery	:	60m
Maximum Super-elevation	:	10%
Minimum Horizontal radius	:	110 m
Min. Horizontal radius at hairpin bend	:	15m
Type of pavement surface	:	Bituminous
Right of Way (m)	:	50 (25m on either side)
Formation Width (m)	:	19
Carriageway Width (m)	:	14
Median	:	3 m
Shoulder Width (m)	:	1 m on either side

2.2.3 Pavement

The pavement for the proposed project road is designed based on the concept of all-weather bituminous road.

2.2.4 Local Construction Materials Requirements

Various types of local construction materials are required for the construction of the project road. These include paving materials comprising sub base, sand, stones and aggregates for masonry and concrete works and fill materials for road embankment. These materials will be extracted locally from alluvial resources such as rivers, streams, established quarry sites etc. lying along the road alignment. Apart from this, selected rock slide debris along the proposed road might be used for gravel sub base, boulders, and stones, if they meet the technical specifications.

2.2.5 Construction Technology

The road construction will require mostly mechanized construction for pavement and earthworks. Transportation of materials will be mechanized. However construction works such as earthwork, simple masonry structures, bio-engineering works etc. will be generally labor intensive with use of light equipment.

For Reference Only

2.2.6 Institutions Involved in Project Implementation

Department of Road (DoR), ADB Project Directorate will be the government institution involved in the implementation of the project. During Construction, MoPIT, DoR/GESU, PIU will carry out internal monitoring of the environmental compliance carried out by the Contractor while the Supervising Consultant and ADB will carry out external monitoring at field and higher level respectively. During operational phase, ADB will carry out external monitoring while MoPIT and DoR/GESU will carry out internal monitoring.
DoR will depute a project team comprising Project Manager, Engineer and other support staff to implement and manage the project. The Project Manager will be assisted by the consultant. The consultant will have the responsibility of construction supervision and contract administration of civil works contracts to be executed by contractors. There will be contractors involved in construction of this road upgrading works. The contractor will have its own site organization responsible for construction activities as per the contract agreement. Local people can be involved in labor intensive works. NGOs/CBOs may be involved in social safeguard activities.

2.3 Existing Environmental Condition

Mugling – Pokhara Road lies in Chitwon, Tanahu and Kaski districts of Narayani and Gandaki zones in central and western development regions of Nepal. The proposed road alignment is located in midland (Middle Mountain) physiographic region. The climate of the project area is sub-tropical.

Maximum temperature of the project district ranges from 39 ^{0}C in Chitwon district to 22 ^{0}C in Pokhara,Kaski district and minimum temperature ranges from 3.5^{0}C in Chitwon district to 2.2^{0}C in Pokhara, Kaski district, the end point of the road alignment. Similarly, average annual precipitation in the project district ranges from 2037.33 mm in Chitwon district, the starting point of the road to about 1701.70 mm in Pokhara in Kaski district. Major rivers and streams along the road alignment are Trishuli, Madi, Seti, Madi, Kotre, Bijayapur etc. The road alignment is comprised of about 40% of settlement areas, 47% of cultivated and barren lands, 12% of forest lands and river/rivulets comprises about 1%. Total population of settlements along the ZoI of the road alignment is 538,863 persons (139664 households) with average family size of 3.86.

Dominant tree species found along the road alignment is Hill sal (*Shorea robusta*) and other species include Chilaune (Schima wallichii), Botdhyero (*Lagerstroemia parviflora*), Bhorla (*Bauhinia vahlii*), Sadan (*Desmodium oojeinense*), Saj (Terminalia alata), Khirro (Sapium insigne), Khayar (Acacia catechu), Sisoo (Dalbergia sisoo) etc.

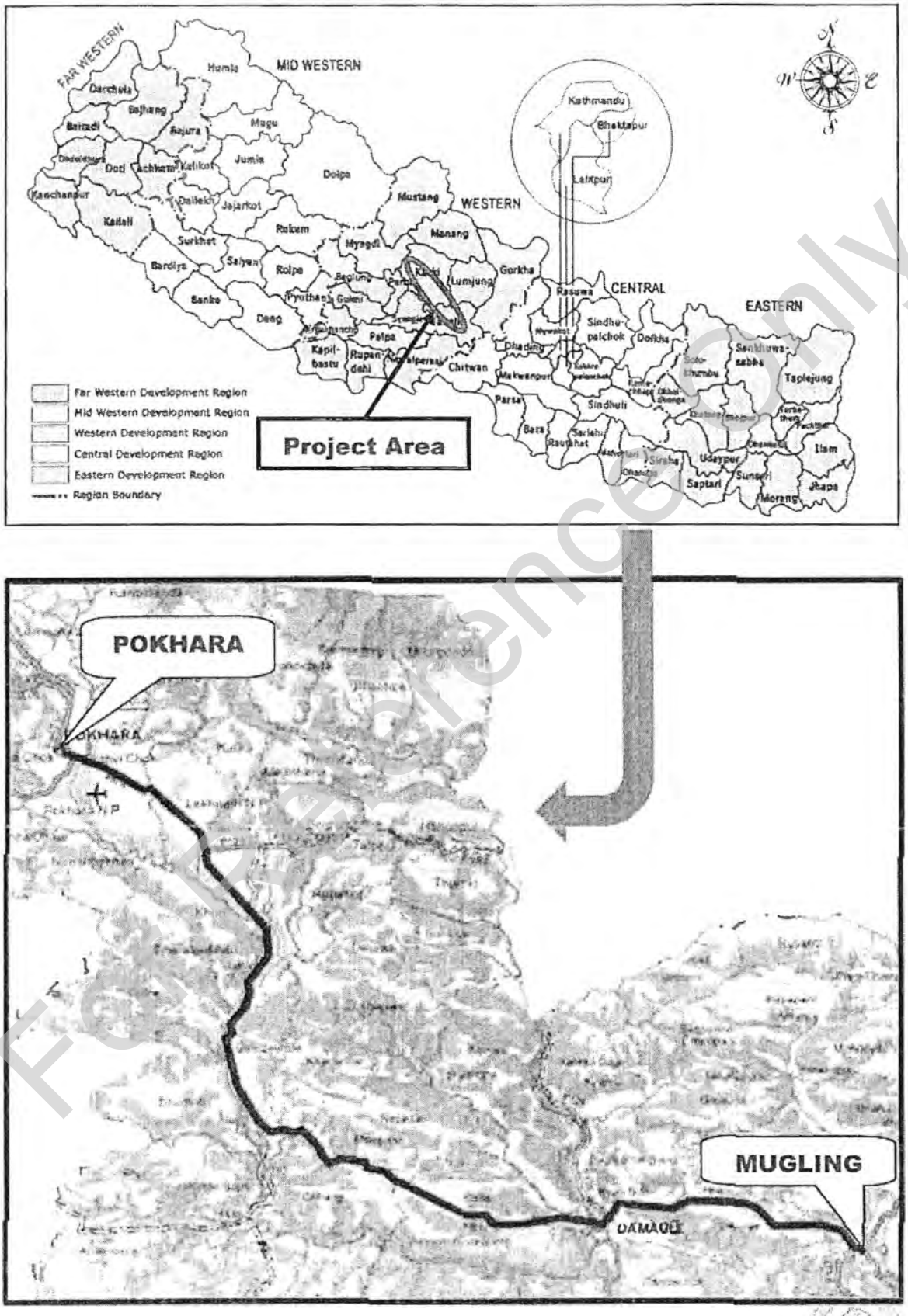
Wild animals reported along the road alignment are Rhesus Monkey (*Macaca mulatta*), Common Langur (*Presbytes entellus*), Malsapro (*Marten flavigulla*), Jackal (*Canis aurieus*), Leopard (*Panthera pardus*), Ghoral (*Nemorhaedus goral*), Ban biralo (*Felis chaus*), Fyauro (*Vulpes bengalensis*), Flying squirrel (Petaurista petaurista), Squirrel (*Funalbus sp.*), Hare (*Lepus nigricolis*), Banel (Sus scrofa) and Dumsi (*Hystrix indica*).

Similarly, birds in the forests along the road alignment are Cuckoos (Cuculus spp), Kalij (*Lophura leucomelana*), Jungle Crow (Corvus macrorhychos), Gray Crowned Pigmy Woodpecker (Dendrocopos canicapillus) etc. The project road does not fall under any protected or buffer zone area.

The location map of the road alignment is presented in **Figure 2.1.**

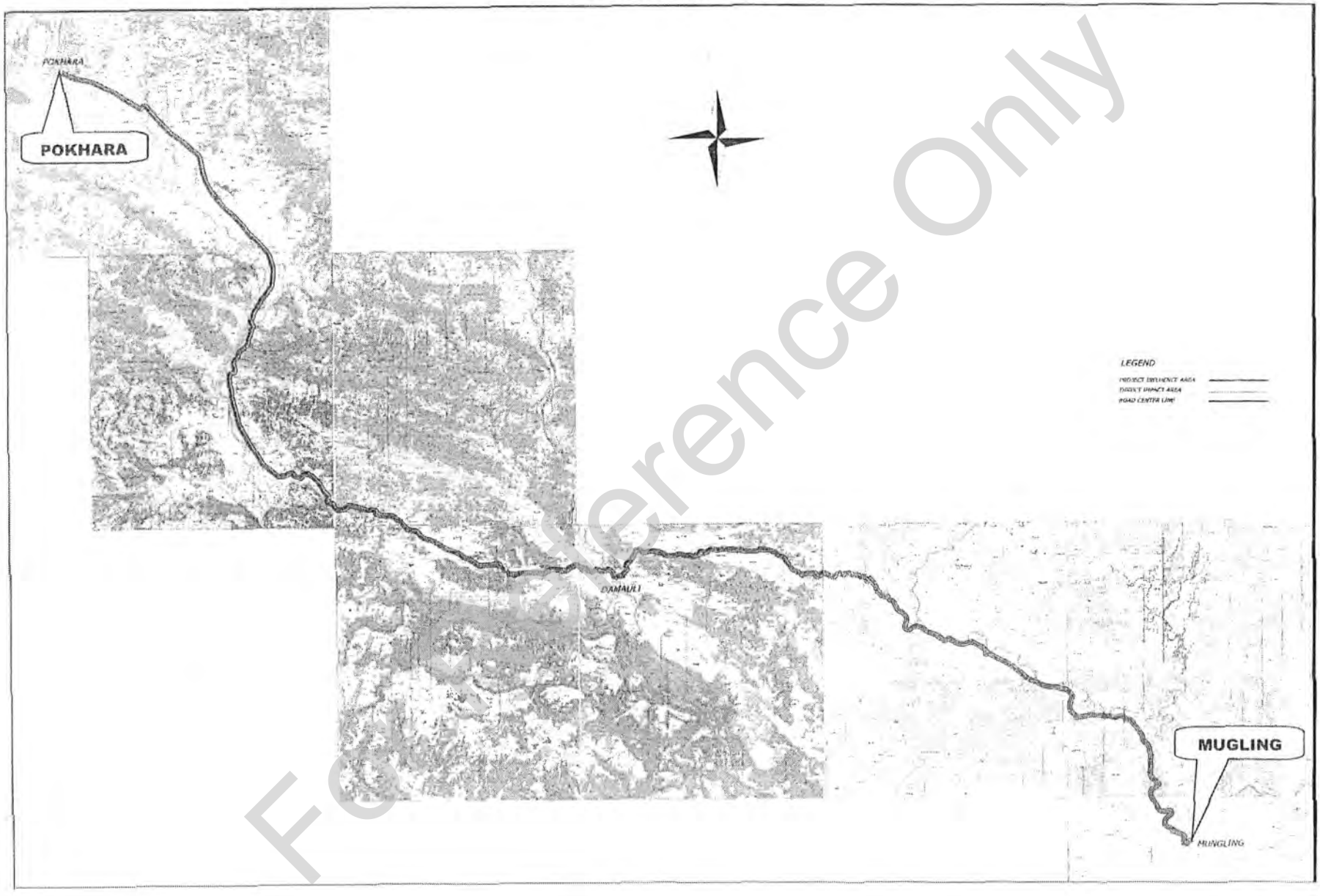
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Figure 2.1: Location Map of the Project



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Figure 2.2: Road Alignment Map



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2.4 Salient Features of the Project

Name of the Project	Mugling-Pokhara Road Upgrading
Development Region	Western Development Region
District	Chitwon, Tanahun and Kaski
Municipality/VDCs	Darechowk VDC in Chitwon district, Anbukhaireni Municipality, Ghansikuwa VDC, Bandipur Municipality, Byas Municipality, Jamune Bhanjyang, Manpang, and Chhang VDCs, Shukla Gandaki Municipality of Tanahu district and Lekhnath municipality and Pokhara Sub-municipality in Kaski district
Start Point	Mugling Bazaar Chowk, Elevation – 264.156 m
End Point	Prithvi Chowk, Pokhara, Elevation – 842.706m
Elevation	Highest: 842.706, Lowest: 250.378 m
Climate	Sub-tropical
Total Length	90 Km
Road Standard	National Highway (H04), Class II
Right of Way	50 m (25 m on either side from center line of the road)
Carriage way Width	14 m
Formation width	19 m (Median – 3 m), Shoulder – 1 m on both sides)
Surface Type	Bituminous
Type of work	Upgrading

Source: Feasibility Study Report, 2016

2.5 Relevancy of the Proposal

The proposed road upgrading project Mugling-Pokhara Road which connects the important Mugling bazaar with various settlements and small emerging towns in Tanahu district and ultimately to Nepal's tourism city Pokhara is kept in the first priority among the fourteen roads considered for the upgrading under the funding of ADB Grant No. 0227-NEP.

Prior to proceeding with detail survey and design of the road, an IEE of the proposed highway improvement work is necessary in order to assess the environmental consequences of the road upgrading related construction activities and suggest appropriate, practical and site specific mitigation and enhancement measures.

2.6 Rationality for Conducting IEE Study

As per the revised Schedule 1-(d)-6 pertaining to Rule 3 of Environment Protection Rule, 1997 (first amendment, 1999) of the Government of Nepal (GoN), an Initial Environmental Examination (IEE) is mandatory to be carried out for the upgrading, rehabilitation and reconstruction of National Highways and Feeder Roads. The project area does not fall under

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any national park, conservation area or wildlife reserve areas and does not require clearance of any forest area.

An IEE of the proposed road is necessary in order to assess the environmental consequences of the road upgrading activities and suggest appropriate, practical and site specific mitigation and enhancement measures. Since this is the upgrading of national highway, an IEE is a legal requirement according to Environment Protection Act, 1997 (EPR, 1997) and Environment Protection Rules, 1997 (EPR, 1997). Preparation of IEE report by the Proponent and approval by the Ministry of Physical Infrastructure and Transport (MoPIT) according to Nepalese legal provision is considered sufficient by the ADB.

2.7 Objectives of the IEE Study

The main objective is to carry out an IEE Study in accordance with Environment Protection Rule, 1997 (first amendment, 1999).

The objectives of the proposed IEE study includes to:

- provide baseline information on the general environmental setting of the project area;
- identify the major issues that may arise as a result of proposed works on bio-physical, socio-economic and cultural environment of the project area;
- recommend practical and site specific environmental mitigation and enhancement measures, prepare environmental monitoring plan for the project; and
- make sure that IEE is sufficient or not for the proposed road project.

2.8 Objectives of the ToR

The main objective of the ToR is to guide the preparation of the subsequent Initial Environmental examination (IEE) study and to produce a comprehensive and coherent IEE report as per the Environment Protection Act 1996 (EPA '96) and Environment Protection Rules 1997 (EPR '97) and amendments.

The basic objectives of the ToR are to:

- Systematize the working procedure for IEE study;
- Delineate the specific activities to be implemented;
- Fit the IEE study into the context of existing polices, rules and administrative procedures;
- Accomplish the IEE study within a specified time frame;
- Give emphasis to the most important elements for study; and
- Provide technical guidance in delineating the specific environmental aspects for the IEE study

2.9 Impact Area Delineation

The project area impact for the IEE study has been divided into two parts on the basis of proximity and magnitude of the impact. They are "Direct Impact Area" and "Indirect Impact Area". These are as delineated below.

Direct Impact Area (DIA)

This direct impact area includes all the areas where all the activities related to the road upgrading work will take place. This area shall be studied in greater detail regarding the impacts on physical, biological as well as socio-economic and cultural environment. The areas within the RoW of proposed road (25 m on either side from the centre line of the road)

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are referred as Corridor of impact (CoI) in this Report. The area, within which upgrading work is carried out, is referred as formation width (19 m).

It includes wards 4 of Darechowk VDC (mugling) of Chitwon district, wards 1, 2, 3,4,5,6, and 8 of Anbukhaireni Municipality, Ghansikuwa VDC (Wards 1, 3, 5, and 8), Bandipur Municipality (Wards 1, 4, 5, 6, and 8), Byas Municipality (Wards 1, 2, 8, 11, and 13), Jamune Bhanjyang (Wards 1, 3, 4, 7, and 8), Manpang (Wards 1 and 2), and Chhang (Wards 1, 3, 4, and 5) VDCs, Shukla Gandaki Municipality (Wards 3, 4, 5, 9, 10, and 13) of Tanahu district and Lekhnath municipality (Wards 1, 2 3, 5, 7, 12 and 13) and Pokhara Sub-municipality (Wards 9, 10, and 14) in Kaski district respectively.

Indirect Impact Area (IIA)
The concerned Municipalities/VDCs, Mugling Bazaar and areas within 200 m from the centre line of road on either side are referred as Indirect Impact area (IIA) in this study.

Zone of Influence (ZoI):

The zone of influence of project road consists of one sub-metropolis, five (5) municipalities and four affected VDCs falling within its alignment viz. Anbukhaireni Municipality, Ghansikuwa VDC, Bandipur Municipality, Vyas Municipality, Jamune Bhanjyang, Manpang, and Chhang VDCs, Shukla Gandaki Municipality of Tanahu district and Lekhnath municipality and Pokhara Sub-municipality in Kaski district respectively.

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3. PROCEDURE TO BE ADOPTED WHILE PREPARING THE REPORT

The IEE approach, methodology and procedure should generally follow the provisions of the EPA and EPR. In this connection, following approach and methodology shall be adopted during the IEE report preparation.

3.1 Desk Study/Review

The following steps shall be followed during the desk review:

- Collection and review of secondary sources of information from various sources
- Initial interaction and consultation with the local community and district level stakeholders
- Delineation of geographical boundary of the Zone of Influence (ZoI) on the topographical map
- Preparation of project specific checklists

3.2 Field Study

The IEE team shall walk through along the road alignment observing the significant environmental features in the probable influence corridor, and make necessary measurements, inspect/observe and discuss it with the local stakeholders. The information collection shall cover physical, biological, socio-economic and cultural aspects of the environment.

3.3 Data Processing

Primary and secondary data shall be processed through commonly used methods. Available maps shall be interpreted. Physical, Biological information shall be tabulated to the extent possible. Socio-economic and cultural information shall be cross checked and analyzed. Standard conversion tables shall be used to convert local units into metric systems. Socio-economic information shall be processed using computer spread sheet, tabulated and presented in the text as appropriate.

3.4 Public Consultation and Information Disclosure

The role of public consultation and participation is to ensure the quality, comprehensiveness, and effectiveness of IEE report as well as to ensure that the public views are adequately taken into consideration in the decision making process. It shall be done during the preparation of the IEE Report. In order to ensure the public involvement, the following procedures shall be followed during IEE study and report preparation:

- **Publication of notice-** A public notice of 15 days shall be published in a national level daily newspaper seeking written opinion from concerned municipalities, VDCs, DDCs, schools, health posts, DFO, CFUGs and related local organizations. A copy of the public notice shall be affixed in the above mentioned organizations and deed of enquiry (*muchulka*) shall be collected.
- Recommendation letter from concerned DDCs, VDCs and/or municipalities shall also be obtained.
- IEE study team shall also carryout interaction with local communities and related stakeholders and shall also collect the public concerns and suggestions.

3.5 Identification, Prediction and Evaluation of Impacts

The identification and prediction of impacts shall be carried out by considering the proposed project actions/activities in terms of construction and operation stages of the project. The impacts of the activities on biophysical, social, economic, and cultural resources in a defined Zone of Influence (ZoI) shall be analyzed. The impacts shall be classified in terms of extent

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(site specific, local, and regional), magnitude (low, medium, and high) and duration (short term, medium term and long term) as well as nature (Direct. Indirect), Significance Level (low, moderate, and significant). The likely impact shall be assessed covering both adverse and beneficial ones. The methodology adopted for impact identification, prediction and evaluation shall be as directed by the National EIA Guidelines, 1993.

3.6 Preparation of IEE Report

Based on the analysis of impacts and their nature, appropriate beneficial impacts maximization measure and adverse impacts mitigation measures shall be prepared. Such measures shall be based on site specific issues, past experience on similar projects, and expert judgments. Monitoring plan for the implementation of mitigation measures shall be prepared. Based on the above Environmental Management Plan shall be prepared including defined activities, their impacts, mitigation measures, their methodology, implementation schedule, responsible and supervisory agency to implement such measures and cost for mitigation as well as monitoring activities. IEE report shall be prepared including all the above said details.

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4. POLICIES, LAWS, RULES AND MANUALS TO BE TAKEN INTO ACCOUNT WHILE PREPARING THE REPORT

Limiting within the scope of the works, following policies, legislation (with amendments) and guidelines and appropriate information shall be incorporated into the IEE report. They are as presented hereunder:

4.1 Constitution

- Constitution of Nepal, 2072 BS

4.2 Acts and Rules

- Environment Protection Act, 2053 BS (1996 AD) and Environment Protection Rules, 2054BS (1997 AD) with respective amendments
- Forest Act, 2050 BS (1993 AD), its amendments (1995 AD) and Forest Rules (1995 AD)
- Local Self-Governance Act, 2055 BS (1998 AD) and its Rules 2000 AD
- Soil and Watershed Conservation Act, 2039 BS (1982 AD)
- Plant Protection Act, 2029 BS (1972 AD)
- Land Acquisition Act, 2034 BS (1977AD)
- Labor Act, 2048 BS (1991AD)
- Child Labour (Prohibition and Regulation) Act, 2057 BS (2000 AD)
- Solid Waste Management Act, 2068 BS (2011 AD)
- Solid Waste Management Regulation, 2070 BS (2013 AD)
- Explosive Act,2018 BS(1961AD)
- Public Road Act 2031 BS(1977AD)
- Motor Vehicles and Transport Management Act,2049 BS(1993 AD)
- Road Board Act 2059 BS(2002 AD)
- Ancient Monument Act, 2013 BS(1956)
- Mines and Minerals Act 2042 BS (1985 AD)

4.3 Plans and Policies

- National Transport Policy 2058 BS(2001 AD)
- Policy Document of DoR on Environmental Assessment of the Road Sector,2000 AD
- 20 Year Road Plan, 2059 –2079BS (2002-2022AD)
- Nepal Environmental Policy and Action Plan,2049 BS(1993 AD)
- Forest Sector Policy, 2057 BS(2000AD)

4.4 Guidelines/Manuals

- Environmental Management Guidelines, GESU/DoR,2056 BS(1999 AD)
- National Environmental Impact Assessment Guidelines, 2050 BS (1993 AD)
- Roadside Bio-engineering, DoR, GoN, 2056 BS (1999 AD)
- Guideline to Permit Forest Land for Other purpose 2063 BS(2006 AD)
- Forest Products Collection and Sales Distribution Guidelines, 2057 BS(2000 AD)
- Manual for Environmental and Social Aspect of Integrated Road Development,2003 AD
- Guide to Road Slope Protection Works, 2003 AD
- Statistics of Strategic Road Network (SSRN, 2011/2012)
- Guidelines for Environmental Management in Road Sector, 1999 AD
- Environment Directives, 2057 BS (2001 AD)
- Environmental and Social Management Framework, (A guide to Environmental and Social issues Associated with New Road Construction and Upgrading) MoPPW/GoN 2064 BS (2007 AD)

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4.5 Standards

- Nepal Ambient Air Quality Standard 2069 BS (2012 AD)
- National Standard About Noise Level 2069 BS (2012 AD)
- Nepal Vehicle Mass Emission Standard, 2069 BS(2012 AD)
- Nepal Rural Road Standard 2055 BS (revised 2012AD)

4.6 International Conventions and Treaties

- Convention on Biological Diversity, 2049 BS (1992 AD)
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), 2053 BS, amended, 2059 BS (1973 AD, amended 1979 AD)
- Plant Protection Convention, 1951 AD
- ILO Convention on Indigenous and Tribal Peoples, 1989 AD (No.169)
- United Nations Framework Convention on Climate Change (UNFCC), 1992 AD

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5. PREPARATION OF THE REPORT

5.1 Time

In general, the time-frame for IEE Study is four (4) months after the approval of Terms of Reference and a tentative schedule is given in Table 5.1.

Table 5.1: Proposed work schedule

S. No.	Activities	Month				
		April 2016	May 2016	June 2016	July 2016	August 2016
1	Preparation, submission and approval of Terms of Reference					
2	Public Notice issuance					
3	Preliminary secondary data collection and field visit					
4	Data analysis and interpretation					
5	Preparation and submission of draft IEE report					
6	Draft report presentation and feedback collection					
7	Final report preparation, submission and approval					

5.2 Estimated Budget

The budget for the IEE study is a part of consulting services for Project Preparatory Consultant under Transport Project Preparatory Facility (TPPF).

5.3 Necessary Experts

The following Necessary experts will be involved foe the preparation of the IEE Study report of the proposed upgrading Road Project

- Environmental Specialist/Team Leader
- Highway Engineer
- Geologist
- Sociologist/Resettlement Expert
- Biologist

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6. ..... (Deleted by First Amendment, GoN, 1999)

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7. SPECIFIC IMPACTS/ISSUES OF THE PROPOSAL ON THE ENVIRONMENT

The Proponent shall assess and evaluate the possible impacts of the proposed road upgrading works on socio-economic, cultural and religious, physical, chemical and biological aspects for preconstruction, construction and operation periods. The affected municipalities/VDCs shall be considered as the zone of influence. The likely impacts of the proposed road upgrading under the proposal that shall be assessed by the study are described in the following sub-sections. The analysis shall be quantified to the extent possible and tabulated.

7.1 Socio-economic Environment

7.1.1 Beneficial Impacts

Beneficial impacts due to implementation of the Proposal during construction and operation phases of the project shall be assessed and further enhancement measures need to be suggested. They shall be related mainly to raising the livelihoods of the local people. The likely beneficial impacts envisaged during construction and operation phases are:

i. Construction Phase

- Employment opportunities and income generation
- Enterprise development and commercialization
- Skills Enhancement
- Enhancement of the Local Economy

ii. Operation Phase

- Improved access facility
- Enhancement of tourism
- Enhancement of Quality of Life
- Enhancement of social services
- Women Empowerment
- Increased economic activity with improved transport

7.1.2 Adverse Impacts

The likely adverse impacts during construction and subsequent operation phases due to the project actions, as stated in the following sub-sections, shall be identified, predicted and evaluated.

i. Construction Phase

- Land and Building Acquisition
- Stress on Public Utilities and Facilities
- Occupational Health and Safety, STDs and Nuisance from Construction Camps
- Social conflicts due to Influx of construction workers

ii. Operation Phase

- Possible township development and likely environmental impacts along the road alignment
- Social conflicts
- Roadside safety Issues

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7.2 Cultural and Physical Environment

The cultural and physical issues that shall be assessed during the IEE study shall include followings:

❖ **Adverse Impacts/Issues**

i. Pre- Construction Phase Activities/Issues

- Relocation of utilities
- Clearance of land
- Location of storage yards, labor camps, and construction sites
- Procurement of equipment and machinery
- Identification and selection of material sources
- Identification of designated waste disposal locations
- Stockpiling of construction materials

ii. Construction Phase

- Earthworks/Slope Instability
- Loss of top soil
- Change in land use
- Disruption of public utilities
- Traffic hazard and road safety
- Impact due to establishment of construction camps
- Impact due to operation of borrow pits and quarries
- Stockpiling of construction materials and spoil/debris disposal
- Impact due to stone crushing plant, hot mix plants
- Impact on irrigation channels
- Obstruction to natural drainage pattern
- Air, Noise, Vibration and Water Pollution
- Impact on ancient monuments, historical sites like "Ghansi Kuwa"
- Impact on cultural, and religious sites

iii. Post construction phase

- Dismantling of camp site and camp site restoration
- Clearing of water channels, side drains and culverts
- Rehabilitation of borrow areas and quarry sites

iv. Operation Phase

- Impacts due to slope instability
- Right of Way encroachment
- Impacts to cultural heritages
- Drainage and Water Management
- Air and Noise Pollution

7.3 Chemical Environment

The chemical environment related issues concerning environmental protection during pre-construction, construction and operation phases shall be assessed during the IEE study, and may include followings:

i. Pre- Construction Phase

- Use and storage of fuel, lubricants, oils, acids, and other chemicals for construction

ii. Construction Phase

- Use of fuel, lubricants, oils, acids, and other chemicals for construction

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– Use and Storage of chemicals like bitumen etc.

iii. Operation Phase

– Effect on water quality

7.4 Biological Environment

With regard to biological aspects, the IEE study shall focus on the following issues during the pre-construction, construction and operation phases:

- **Pre-construction Phase**

– Diversion of forest land
– Loss of forest and vegetation

- **Construction Phase**

– Clearing of Forest land and trees, shrubs and herbs and Habitat Disturbance
– Habitat Fragmentation or loss and Barrier to Wildlife Movement Corridor
– Use of forest product by construction workers and construction activities
– Damage of Aquatic Habitats
– Disturbance of Biodiversity and Wildlife

- **Operation Phase**

– Impacts on forest resources
– Wildlife Disturbance

7.5 Management Issues

During pre-construction phase, following issues/activities shall be considered for management:

- Regulatory permission
- Work site safety management plan including traffic safety, worker safety, public safety
- Borrow area management and blasting operation plan

Furthermore the study shall take into account the project execution issues, strict management of contractors work and use of appropriate technologies for improvement and upgrading activities.

7.6 Enhancement Issues

Following enhancement issues shall be considered during the preparation of IEE report:

– Orientation of EMP for implementing authority and contractor groups (Pre-construction phase)
– Plantation along the road
– Orientation to workers about Occupational Health and Safety
– Provision of cattle crossing at normal crossing routes for safety of cattle and road user
– Provision of ramp for access to and from agriculture lands for cross traffic
– Provision of paved shoulders at destination/roadside settlements/villages
– Provision of bus bays to avoid traffic obstruction
– Where possible, the road embankment should be widened to provide a platform for stacking materials for road maintenance and to ensure the shoulders are kept free for traffic movement

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7.7 Other likely Issues encountered/raised by Public during IEE study

Apart from the above mentioned impacts/issues, any new issues encountered during the study period shall be included and analyzed during the report preparation.

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8. ALTERNATIVES FOR THE IMPLEMENTATION OF THE PROPOSAL

Alternative analysis has been considered as an integral part of IEE study, which involves an alternative ways of achieving the objectives of a proposed project. The aim of alternative analysis is to arrive at a development option, which maximizes the benefits while minimizing the unwanted impacts.

The study team shall conduct alternative analysis considering the following issues:

- No action option
- Project alternatives
- Alternative alignment
- Alternative design and construction approach
- Alternative schedule and process
- Alternative resources

Likely impacts of each alternative shall be assessed and compared in terms of adverse environmental impacts and benefits, and the environmentally sound alternative shall be recommended.

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9. MATTERS CONCERNING THE PREVENTION OF THE IMPACT OF THE IMPLEMENTATION OF THE PROPOSAL ON THE ENVIRONMENT (MITIGATION MEASURES)

Mitigation measures for all the identified significant impacts shall be taken into consideration during preparation of the IEE report. The proponent shall propose mitigation measures to prevent or reduce significant adverse impacts to acceptable levels. Measures to enhance beneficial project impacts shall also be presented. The mitigation measures shall be proposed for physical, biological, socio-economic and cultural environments for construction and operation phases.

5Ws principle shall be adopted while developing mitigation measures, which include the followings:

- WHAT mitigation measures?
- WHO will implement the mitigation measures?
- WHEN will the mitigation measures be implemented?
- WHERE will the mitigation measures be implemented?
- WHAT standards/requirements for mitigation measures?

The mitigation measures shall be site specific and developed by applying a pragmatic approach that is technically and economically feasible, socially acceptable, and preferably, of proven effectiveness. The cost required for each and every mitigation measure and enhancement measures shall be identified in detail and incorporated in IEE report. Cost of mitigation and enhancement measures shall be categorized in terms of construction and operation phases.

The enhancement and mitigation measures shall be categorized in terms of the physical, biological, socio-economic and cultural environment for the construction and operation phases. A matrix of impact and mitigation measures shall also be included in the IEE report.

The IEE shall propose organizations and agencies to be consulted while implementing mitigation programs.

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10. MATTERS TO BE MONITORED WHILE IMPLEMENTATION OF THE PROPOSAL (ENVIRONMENTAL MONITORING PLAN)

To monitor the impacts of the proposed project on physical, biological, socio-economic and cultural resources of the area, an environmental monitoring plan shall be formulated. The proponent will be responsible for the implementation of environmental monitoring of the proposed project.

5Ws principle shall be adopted while developing mitigation measures, which include the followings:

- WHAT shall be monitored?
- WHO will implement the monitoring program?
- WHEN will the monitoring be implemented?
- WHERE will the monitoring be implemented?
- WHAT standards/requirements for monitoring?

The monitoring plan shall include the following aspects;

- Baseline, compliance and impact monitoring in terms of the physical, biological, Socio-economic and cultural environment. Baseline and impact monitoring shall include parameters, indicators, methods, schedules and locations, while compliance monitoring shall include parameters, indicators, methods and schedules. Compliance and impact monitoring shall be categorized in terms of construction and operation phases;
- Agency responsible for monitoring and agencies to be consulted, if required, during monitoring activities, and
- Organizational set-up, budget and human resources requirements for carrying out the environmental monitoring.

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11. OTHER NECESSARY MATTERS

The other necessary matters to be included in the IEE Report shall be the relevant information, reference list, annexes, maps, photographs, tables and charts, and survey questionnaires used at the time of carrying out baseline survey. Also included shall be the details of public consultation, public notice, muchulka (Deed of enquiry) of pasting public notice, recommendation letters from concerned municipalities, VDCs, DFO, CFUGs etc. The Report Format for IEE Study shall follow Schedule 5 of EPR. All requirements indicated in Schedule 5 of the EPR shall be included and addressed in the IEE report. The conclusions and the recommendations of the Study shall be drawn and presented at the end of the report.

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12. IEE REPORT FORMAT

The IEE report format shall be in line with provision made in the Schedule 5 of EPR, 1997 and should be adapted to project specific situation.

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Photographs

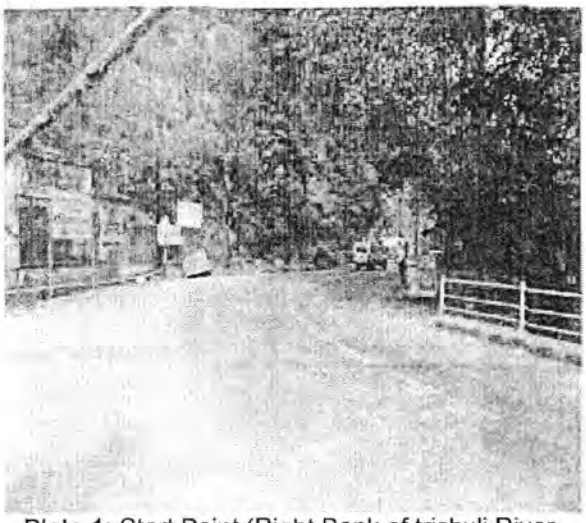


Plate 1: Start Point (Right Bank of trishuli River, Ch. 00+400)

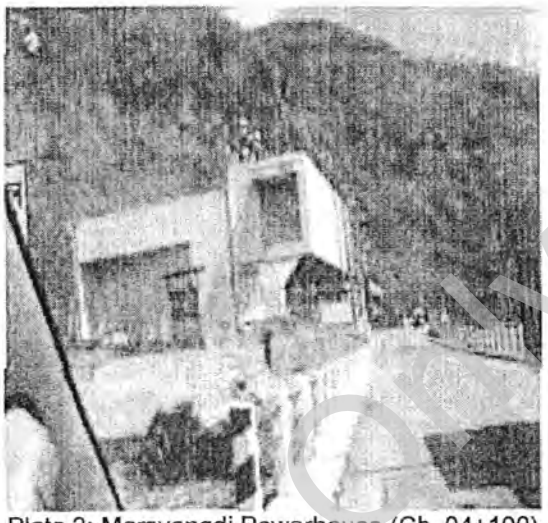


Plate 2: Marsyangdi Powerhouse (Ch. 04+100)

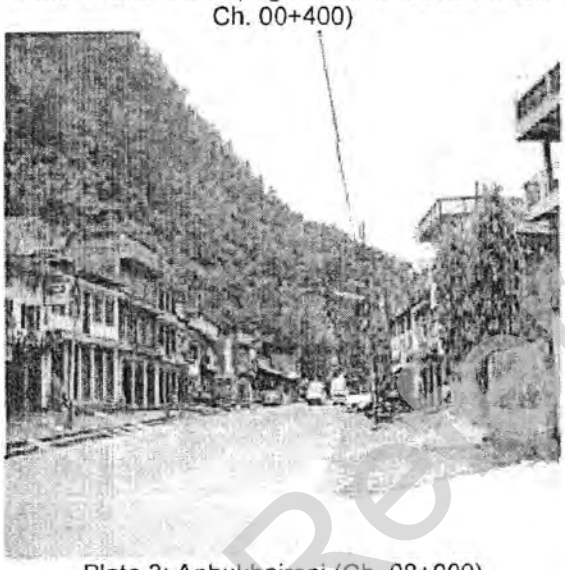


Plate 3: Anbukhaireni (Ch. 08+000)



Plate 4: Ghansikuwa



Plate 5: Forest area at left side

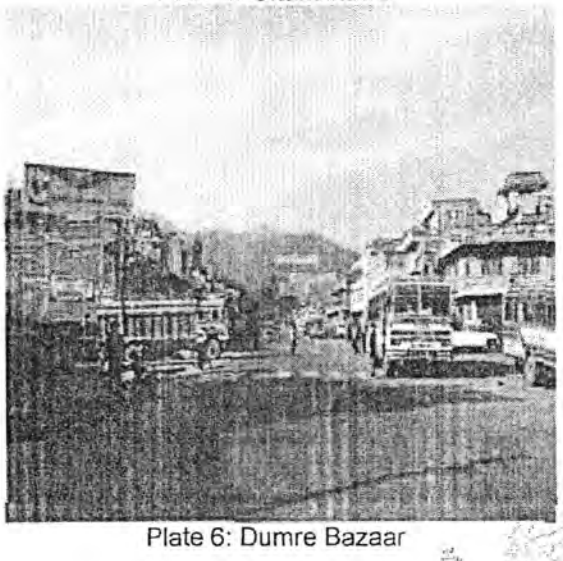


Plate 6: Dumre Bazaar

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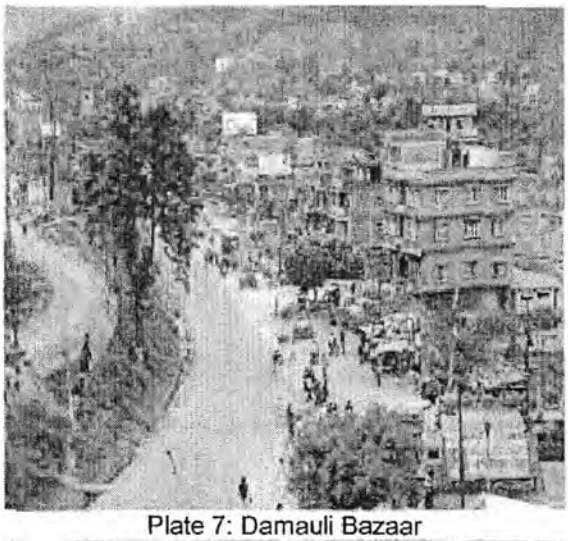


Plate 7: Damauli Bazaar



Plate 8: Madi River, Damauli, Ch. 21+250

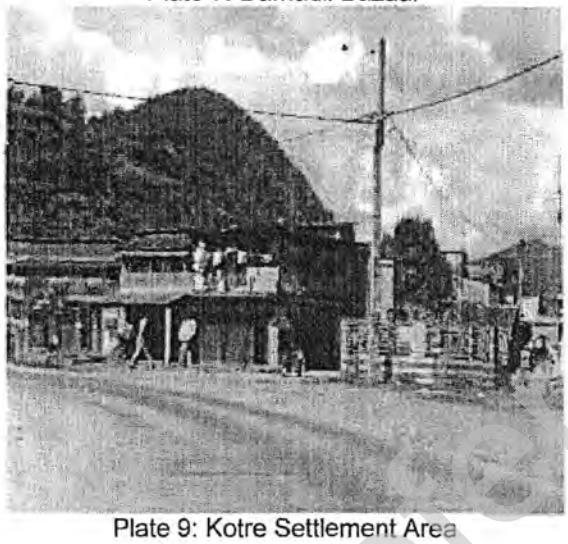


Plate 9: Kotre Settlement Area

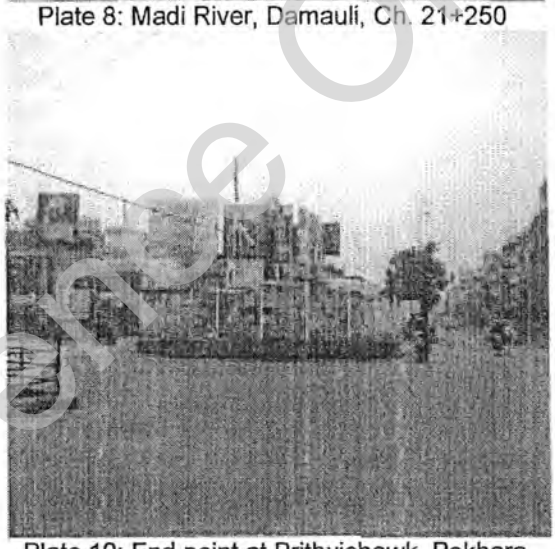


Plate 10: End point at Prithvichowk, Pokhara

For Reference Only

भौतिक पूर्वाधार तथा यातायात मन्त्रालय
नेपाल सरकार
सिंहदरबार, काठमाडौं

ANNEX

(i) Land use Pattern (Within RoW & Formation Width)

S. No.	Land Use Type	Area (ha)	%
1.	Permanent (Built-up)		
2.	Temporary		
3.	Agricultural land		
4.	Pasture/Grass land		
5.	Forest/Jungle land		
6.	River/Stream		

(ii) List of landslide areas along the road alignment

S. No.	Chainage		Location or Name of Place	Description
	From	To		

(iii) List of watershed, water resources/local streams along the road alignment

S. No.	Chainage		Location or Name of Place	Name of Features	Source Type	Description (R & L)
	From	To				

(iv) Spoil Management Location

S. No.	Chainage		Location or Name of Place	Source Type	Description (R & L)
	From	To			

For Reference Only

ANNEX

(v) Baseline Information

S. No.	Section Chainage	Length	Elevation Range (m)/	Cross Slope (Degree)	Aspect	Geology	Geomorphology	Soil Type	Landuse pattern

(vi) Plant Resources

S. No.	Name of Plants	Uses			Others
		Fuelwood	Fodder	Medicine	

(vii) Wildlife Animals

S. No.	Wild Animals	Remark

Note:

For Reference Only

ANNEX

(viii) Information on the Vegetation

S. No.	Chainage		Ownership Type	Number of Trees		Remarks
	From	To		RHS	LHS	

(ix) Information on Birds

S. No.	Birds		Remark
	Local Name	Scientific Name	

Note:

(x) Information on Aquatic Animals

S. No.	Aquatic Species		Remark
	Local Name	Scientific Name	

Note:

For Reference Only

ANNEX

(xi) Information on Quarry Sites

S. No.	Distance to the quarry site	Type of material available	Status of Access Road (Metalled/Gravel/Earthen)	Approx. Quantity of material available

(xii) Format of the EMAP

Environmental Impacts	Environmental Mitigation Measures	Implementation Phase	Mitigation Cost (NRs.)	Institutional Responsibility		Monitoring Indicators/ Methods
				Implementation	Supervision	

For Reference Only



सडक खण्ड नाम : .....

क.सं. ....

नेपाल सरकार

सडक विभाग

ट्रान्सपोर्ट प्रोजेक्ट प्रिपेरेटोरी फ्यासिलिटी (टि.पी.पी.एफ.२)

आयोजना प्रभावित घरधुरी सर्वेक्षण फारम

१. अन्तरवार्ता लिनेको नाम:	२. अन्तरवार्ता मिति: .....

१. परिचयात्मक र साधारण जानकारी

१.१उत्तरदाताको नाम:	१.२ जिल्ला: .....
१.३गा.वि.स./ न.पा. :	१.४वार्ड नं.: .....
१.५ गाउँ / टोल :	१.६ जग्गाधनीको नाम: .....
१.७ नागरिकता नं. :	
१.८ जग्गाधनीको बाबु/आमा वा पति/पत्निको नाम:	
१.९ जग्गाधनीको ससुरा/बाजेको नाम:	
१.१० जात/जाति:	

२. पारिवारीक विवरण

२.१ जम्मा परिवार संख्या .....

क्र. सं.	परिवारका सदस्यको नाम	लिङ्ग	उमेर	शिक्षा (६ वर्ष माथिको)	आर्थिक गतिबिधी	घरमुलीको नाता	कैफियत
१							
२							
३							
४							
५							
६							
७							
८							

संकेत:

लिङ्ग: १= पुरूष, २= महिला

शिक्षा: १= साक्षर मात्र र प्राथमिक शिक्षा पुरा नगरेको, २= प्राथमिक शिक्षा (कक्षा १-५ सम्म) पुरा गरेको, ३= निम्न माध्यमिक (६-८ सम्म) शिक्षा पुरा गरेको, ४ = माध्यमिक शिक्षा (९-१० सम्म) पुरा गरेको, ५= उच्च माध्यमिक शिक्षा (प्रमाण पत्र तह वा सो सरह) पुरा गरेका, ६= स्नातक वा माथि । ७= निरक्षर (पढ्न, लेख्न नसक्ने ।

आर्थिक गतिबिधी: १= खेती (आफ्नै जमिनमा), २= खेती (आफ्नै जमिनमा र अधियाँ समेत), ३= खेती अधियाँ मात्र, ४= कृषि मजदुरी, ५= सरकारी जागिर, ६= निजी जागिर, ७= उमेर नपुगेको, ८= व्यापार/व्यवसाय, ९= पशुपालन, १०= वनजङ्गलको उत्पादन सङ्लन, ११= विद्यार्थी, १२= केहि पनि छैन, १३= वैदेशिक रोजगार, १४= बेरोजगार, १५= अन्य भए उल्लेख गर्ने,

घरमुलीको नाता: १= घरमुली २= श्रीमति, ३= श्रीमान, ४= छोरा, ५= छोरी, ६= दाजुभाई, ७= दिदीबहिनी, ८= नातीनातिनी, ९= छोराबुहारी, १०= भाउजु/बुहारी, ११= भतिजा/भतिजी, १२= बुबाआमा, १३= अन्य (कोहि भए)

For Reference Only

३. जीविकोपार्जनको स्थिति

३.१ तपाईको वा परिवारका अन्य सदस्यको नाममा कति जग्गा छ र कतिमा खेति गर्नुहुन्छ ? सबै प्लट र उपभोगको बारेमा उल्लेख गर्नुहोस् ।

क्र. सं.	धनीको नाम	लिङ्ग	प्लटको नाम वा स्थान	क्षेत्रफल/ ईकाई	जग्गाको प्रकार	सिचाई सुबिधा	जग्गाको उपयोग	उपभोगको तरीका	कैफियत
१									
२									
३									
४									
५									
६									
७									
जम्मा क्षेत्रफल (प्रचलित ईकाईमा)					जम्मा क्षेत्रफल (ब.मी.)				

संकेत:
जग्गाको प्रकार: १= अब्बल, २= दोयम, ३= सीम, ४= चाहार ५ =अन्यभए ।
सिचाई सुविधा: १= छ, २= छैन ।
जग्गाको उपयोग:१= घरबारी, २= खेत, ३= बारी, ४= व्यापारीक क्षेत्र, ५=खरबारी/बुट्यान, ६= बाँझो/चरिचरन, ७= निजी वन, ८= अन्य भए उल्लेख गर्ने,
उपभोगको तरीका: १= आफ्नो जग्गा आँफैले कमाएको, २= आफ्नो जग्गा अरूलाई अधियाँमा दिएको, ३= बन्दकी दिएको,४= मोही, ५= ठेक्का वा भाडामा दिएको ।

३.२ तपाईको परिवारले कसैको जग्गा अधियाँ/ठेक्कामा कमाएको भए सोको विबरण दिनुहोस् ।

क्र. सं.	धनीको नाम	लिङ्ग	प्लटको नाम वा स्थान	क्षेत्रफल/ ईकाई	जग्गाको प्रकार	सिचाई सुबिधा	जग्गाको उपयोग	उपभोगको तरीका	कैफियत
१									
२									
३									
४									
५									
जम्मा क्षेत्रफल (प्रचलित ईकाईमा)					जम्मा क्षेत्रफल (ब.मी.)				

संकेत:
जग्गाको प्रकार: १= अब्बल, २= दोयम, ३= सीम, ४= चाहार ५ =अन्य भए ।
सिचाई सुविधा: १= छ, २= छैन ।
जग्गाको उपयोग:१= घरबारी, २= खेत, ३= बारी, ४= व्यापारीक क्षेत्र, ५=खरबारी/बुट्यान, ६= बाँझो/चरिचरन, ७= निजी वन, ८= अन्य भए उल्लेख गर्ने,
उपभोगको तरीका: १= अरूको जग्गा आफुलेअधियाँमा कमाएको, २= बन्दकी लिएको, ३= ठेक्का वा भाडामा लिएको ।

३.३ तपाईको आफ्नो जग्गाको उत्पादनले वर्षको कति महिना खान पुग्दछ ?

(१) उत्पादन नभएको (२) ३ महिना भन्दा कम
(३) ३-६ महिना (४) ६-९ महिना
(५) ९-१२ महिना (६) वचत हुन्छ

३.४ यदि तपाईको परिवारलाई आफ्नो जमिनमा उत्पादित खाद्यान्न नभएको समयमा किनेर खानुपर्दा मासिक कति रूपैयाँ खर्च गर्नुपर्दछ ? .....रूपैयाँ ।

३.५ खाद्यान्न नभएको समयमा तपाईले कुन स्रोतवाटखाद्यान्नको लागि आवश्यक व्यवस्था गर्नुहुन्छ?[वहुउत्तर]

संकेत:
१ = नोकरी , २ = व्यापार, ३ = कृषि श्रम, ४ = गैर कृषि श्रम, ५ = बैदेशिक रोजगारीबाट प्राप्तहुने कमाइ,
६= सापट, ७=संपत्ति बेचेर, ८ = अन्य भए उल्लेख गर्ने,.....

For Reference Only

४. परिवारीक आम्दानी तथा खर्चको विवरण

४.१ परिवारीक आम्दानीका श्रोतहरु

क.स.	आम्दानीका श्रोतहरु	वार्षिक आम्दानी (रू.)
१	व्यापार / व्यवसायबाट	
२	कृषि मजदुरीबाट	
३	अन्नपात/तरकारी/फलफूल/पशु र पशुजन्य बिक्री	
४	सम्पति बेचबिखनबाट	
५	ज्याला मजदुरीबाट	
६	नोकरीबाट	
७	लघुउद्यमबाट	
८	पेन्सन/विदेशबाट पठाएको	
९	भाडा/व्याज	
१०	अन्य	
	जम्मा वार्षिक आम्दानी	

४.२ परिवारीक खर्च को विवरण

क.स.	खर्चको किसिम	जम्मा वार्षिक खर्च (रू.)
१	खानेकुरा	
२	लत्ताकपडा	
३	स्कुल शुल्क, किताब कापी आदि	
४	औषधी, डाक्टर अस्पताल आदि	
५	बत्ति बाल्ने, पकाउने इन्धन आदि	
६	सुनचाँदी, गरगहना आदि	
७	वस्तुभाउ / मलखाद आदि	
८	यातायात / सञ्चार आदि	
९	सामाजिक, चाडपर्व, पुजा, चन्दा /दान आदि	
१०	चिया सुर्तिजन्य तथा मादक पदार्थमा तासआदिमा	
११	आयआर्जन सम्बन्धी कार्यमा लगानी	
१२	ऋण/व्याज तिर्ने	
१३	कर/विभिन्न शुल्क/जरिवाना आदि	
१४	अन्य	
	जम्मा वार्षिक खर्च:	

४.३ यदि आम्दानी भन्दा खर्च अमिल्दो रुपले बढी आएमा त्यसो हुनाको कारणहरु उल्लेख गर्नुहोस्?

५. पुर्वाधार सम्बन्धी योजनामा कामको अनुभव

५.१ तपाईको परिवारका सदस्यहरुमा पूर्वाधार निर्माण सम्बन्धी कुनै प्रकारको सीप/ज्ञान छ ?

१,[ ] छ। २, [ ] छैन।

यदि छ भने, कस्तो प्रकारको सीप/ज्ञान छ कृपया ठिक चिनो लगाउनुहोस् ।[बहुउत्तर]

१, [ ] सडक २, [ ] पुल ३, [ ] खानेपानी ४,[ ] गोरेटो ५, [ ] वृक्षारोपण ६,[ ] अन्य।

५.२ के तपाई वा तपाईको परिवारका अन्य सदस्यहरु सडक निर्माण सम्बन्धी योजनामा काम गर्न चाहन्छन् ?

१,[ ] चाहन्छन्। २,[ ] चाहदैनन्।

For Reference Only

५.३ यदि चाहन्छन् भने, निम्न विवरण दिनुहोस् । (नाममा प्र. नं. २.को पारिवारीक विवरण वाट परिवार नं. राख्नुहोस्)

क्र.सं.	नाम	लिङ्ग	दक्ष	अदक्ष
१.				
२.				
३.				

संकेतःदक्षः १=गाहो लगाउने, २=ढुङ्गा काट्ने, ३=डण्डी बाध्ने ४=जाली बुन्ने, ५=पाईप जोड्ने, ६=झोलुङ्गेपुल सम्वन्धी काम गर्ने, ७=सिमेन्टको काम गर्ने, ८=वायोईन्जिनियरिङ्गको काम गर्ने, ९=साधारण मेसिन चलाउन जान्ने, १०= अन्य भए उल्लेख गर्ने ।

अदक्षः१=ढुङ्गामाटो खन्ने/बोक्ने, २=ढुङ्गा फुटाउने, ३=ज्यामी/हेल्पर, ४= अन्य भए उल्लेख गर्ने ।

५.४ आयोजनाबाट तपाईले कस्तो तालिम/सिपको अपेक्षा गर्नु भएको छ ?

५.५ आयोजनाबाट हुने क्षति न्यूनिकरणको लागि तपाईको सुझाव के छ ?

५.६ आयोजनाबाट तपाईलाई प्रभावित हुने बिवरण के हो ?

क) जमिनमात्र ख) जमिन र संरचना दुवै ग) जमिन र खेतिबाली दुवै घ) संरचानामात्र ङ) सबै

यदि संरचानामात्र क्षति हुने भए जग्गाको प्रकार कुन हो ?

क) निजी ख) अैलानी ग) अतिक्रमित घ) अन्य

For Reference Only

६ आयोजनामा पर्ने घर परिवारको जग्गा तथा अन्य सम्पत्तीको बिबरण ।

६.१ आयोजनाबाट प्रभावित ल्पटमा सञ्चालित गतिबिधी र खेतिपातीको बिबरण दिनुहोस् (निम्न संकेत प्रयोग गर्नुहोस्) ।

चेनेज			नक्सा / सिट नं.	कित्ता नं.	लालपुर्जाको मोठ नं. र पाना नं. उल्लेख गर्नुहोस)	ठेगाना	क्षेत्रफल / ईकाई		क्षतिको प्रकार [बहुउत्तर]				कमाउने वा उपभोगाको तरीका	जग्गाको उपयोग	जग्गाको किसिम	कैफियत
देखि	सम्म						प्रभावित क्षेत्रफल	जम्मा क्षेत्रफल	जग्गा	बाली	रूखबिरूवा	संरचनाहरू				

संकेत
उपभोगको तरीका: १= आफ्नो जग्गा आँफैले कमाएको, २= आफ्नो जग्गा अरूलाई अधिँयामा दिएको, ३= अरूको जग्गा अधिँयामा आफुले कमाएको, ४= बन्दकी दिएको, ५= बन्दकी लिएको, ६= मोही, ७= ठेक्का वा भाडामा दिएको ८ = अन्य भए उल्लेख गर्ने,।
जग्गाको उपयोग: १= घर, २= खेत, ३= बारी, ४= व्यापारीक क्षेत्र, ५=खरवारी / बुट्यान, ६= बाँझो / चरिचरन, ७= निजी वन, ८= अन्य भए उल्लेख गर्ने,
जग्गाको किसिम: १= अब्बल, २= दोयम, ३= सीम, ४= चाहार, ५= अन्य भए उल्लेख गर्ने

६.२ लालपुर्जा कसका नाममा जारी भएको छ ?

१, नाम: ..... २. लिङ्ग: [ ] पुरुष [ ] महिला

६.३ आयोजनामा पर्ने जग्गामा अरु कुनै परिवारले काम गरिरहेकोछ भने, सो सम्बन्धी विबरण दिनुहोस ।

क्र. सं.	जग्गा उपभोग गर्नेको नाम	ठेगाना	परिवार संख्या	कहिले देखि उपभोग गरेको	उपभोगको तरीका	कित्ता नं.	कैफियत
उपभोगको तरीका: १= मोही,, २= बन्दकी ३= ठेक्का वा भाडा ३ = अन्य ।							

(नोट : प्रभावित जग्गामा कुनै व्यक्ति, संस्था वा परिवारले काम गरिरहेकोछ भने, सो सम्बन्धमा बिशेष ध्यान दिनुहोस् । मोही वा अन्य कुनै श्रमिक छन् भने पत्ता लगाउनुहोस् । जग्गा कमाएको प्रकार र उपभोगको तरिकाका बारेमा पूर्ण बिबरण दिनुहोस् । जस्तै उपभोग गरेको अवधी, अधिँया/बन्दकि वा ठेक्का के हो उल्लेख गर्ने ।)

For Reference Only

६.४ आयोजनामा पर्ने जग्गाधनीको हाल बासोवास गरिरहेको ठेगाना दिनुहोस ?

१. जग्गाधनीको नाम: ..... २. पुरा सम्पर्क ठेगाना र फोन नं.: .....
३. कहिले देखि बाहिर बसोबास गर्दै आएको: ..... ४. वारिसेको नाम:.....

७. कृपया, बिगत एक बर्षको अबधिमा आयोजनामा पर्ने प्लटमा भएको अन्न तथा नगदेबालीको उत्पादन र बिक्रीको बिबरण दिनुहोस् ।

क्र.सं.	प्रभावित प्लटको		तर्फ	बाली चक्र	उत्पादन क्षेत्रफल	जम्मा उत्पादन (के. जी.)	गत वर्षको औषत बिक्री		प्रभावित भागमा हुने उत्पादन (के. जी.)
	सिट नं.	कित्ता नं.					परिमाण (के.जी.)	आम्दानी (रू.)	

८. आयोजनामा पर्ने घर/संरचनाको पूर्ण विवरण दिनुहोस् ।

क्र. सं.	भवन/ संरचना नं.	गाविस	वार्ड नं.	बस्ती	चेनेज	तर्फ (R/L)	केन्द्र बाटको दुरी (मि.)	सिट नं. / किता नं.	धनीको नाम	संरचनाको प्रकार*	निर्माणमा प्रयोग भएको सामाग्री**	जम्मा क्षेत्रफल (लxचौ)	तला संख्या	प्रभावित क्षेत्रफल (लxचौ)	% प्रभावित	निर्माण वर्ष वि.सं.	हालको उपयोग***	अनुमानित मूल्य
१																		
२																		
३																		
४																		
५																		

*संरचनाको प्रकार: १= बस्ने घर, २= व्यापारीक भवन, ३= सामुदायिक भवन, ४= गोठ, ५= शौचालय, ६= पर्खाल, ७= अन्य भएमा उल्लेख गर्नुहोस् ।

**निर्माणमा सामाग्री १= ढुङ्गा र माटोको गारो सहित खरको जस्ता छाना २= ढुङ्गा र माटोको गारो सहित जस्ता वा स्लेटको छाना ३=ढुङ्गा र माटो बाहिरी भागमा सिमेन्ट प्लास्टर सहित जस्ता भिङ्गटीको छानो ४= सिमेन्ट र ढुङ्गा वा इटाको गारो सहित ढलान छाना ४= वाँस वा काठले बारेका

***हालको उपयोग: १= आँफै बसोबास गरिरहेको, २= व्यापार/व्यवसायमा उपयोग भएको, ३= बसोबास वा व्यापार व्यवसाय दुबैमा प्रयोग भएको, ४= अन्य कसैलाई भाडामा दिएको ।

(भवन वा संरचनाको जम्मा क्षेत्रफल वा प्रभावित क्षेत्रफल निकाल्दा तलाको क्षेत्रफल (लम्बाई X चौडाई) लाई तला संख्याले गुणन गरि निकाल्नुपर्नेछ ।)

For Reference Only

८.१ यदि घर/संरचना हटाउनु पर्ने छ भने, के यो संरचना तपाईको आफ्नै जमिनमा बनेको हो?

१,[ ] हो २, [ ] होईन

यदि होईन भने, यो जमिन कस्को हो नाम ठेगाना बताईदिनुहोस् ।

.....

८.२ यदि बसोबास गरिरहेको घर हटाउनु पर्ने भएमा, तपाई बसोबास गर्नको लागि यो बाहेक कुनै अर्को घर छ?

१, [ ] छ २, [ ] छैन ।

८.३ यदि छ भने कहाँ छ?

१, [ ] यहि ल्पटको अर्को स्थानमा २, [ ] दोस्रो कुनै ल्पटमा ।

८.४ यदि यो घर आयोजनाका कारणले भत्काउनु पर्ने भएमा अर्को घरमा तपाईको परिवार वस्न सक्ने ठाउँ उपलब्ध छ?

१, [ ] छ २, [ ] छैन ।

८.५ यदि हाल बसिरहेको ल्पटदेखि फरक ल्पटमा जानुपर्ने भएमा, सो ल्पट कति टाढा छ? ..... कि.मि. ।

८.६ हालको ल्पटबाट नयाँ ल्पटसम्म सामान लैजान कस्तो प्रकारको साधन प्रयोग गर्नुपर्दछ ?

१, [ ] पैदल २, [ ] बस ३, [ ] रिक्सा

४, [ ] ट्रयाक्टर ५, [ ] निजी कुनै सवारी साधन ६, [ ] अन्य कुनै .....

८.७ नयाँ ल्पटसम्म सामान लैजान अनुमानित कति जति खर्च लाग्दछ? ..... रूपैयाँ ।

८.८ यदि अर्को घर छैन भने, बसोबासको व्यवस्था कसरी गर्नुहुन्छ?

१, [ ] नयाँ घर बनाएर २, [ ] बसाई सरी नयाँ ठाउँमा गएर

३,[ ] भाडामा घर लिएर ४, [ ] अन्य कुनै सोच भएमा .....

८.९ यदि तपाईले यो घर सडक आयोजनामा परेपछि नयाँ घर किन्ने वा बनाउने योजना बनाउनु भएको छ भने, यस्तै प्रकारको घर बनाउन कति जति रकम खर्च होला?

..... रूपैयाँ।

८.१० सडक आयोजनामा पर्ने यो घरमा तपाईको बाहेक अन्य कुनै परिवारका सदस्य पनि बसोबास गर्दछन्?

१, [ ] छन् २, [ ] छैनन् ।

८.११ यदि छन् भने, पूर्ण विवरण दिनुहोस् ।

घर नं.	परिवारमुलीको नाम	ठेगाना	जात/ जाति	जम्मा परिवार संख्या	मूख्य पेशा	कति समयदेखि बसोबास गरिरहेको	उपभोग गरेको कोठा संख्या	भाडा प्रति महिना	बस्ने विकल्प

९. आयोजनामा पर्ने ल्पटबाट कुनै रुखविरुवा हटाउनु पर्दछ ।

१, [ ] पर्छ । २, [ ] पर्दैन ।

९.१ आयोजनामा पर्ने प्लटवाट कुनै रूखविरूवा हटाउनु पर्ने भएमा निम्नानुसारको विवरण दिनुहोस् ।

चेनेज		तर्फ (R/L)	नाम/जात	प्रकार	गोलाई (सेमी)	उचाई (मि.)	संख्या	हटाउन समय लाग्ने समय	कैफियत
देखि	सम्म								

संकेतः प्रकारः १= काठका लागि प्रयोग हुने रूख, २ =दाउराको लागि प्रयोग हुने रूख, ३ =बहु प्रयोगको रूख, , ४= ग्रैह काष्ठ वन पैदावर, ५= अन्य भए उल्लेख गर्ने .....

For Reference Only

९.२ आयोजनामा पर्ने प्लटबाट कुनै फलफुलका विरूवा/लहरा हटाउनु पर्ने भएमा निम्नानुसारको विवरण दिनुहोस् ।

चेनेज		तर्फ (R/L)	फलफुलका विरूवा/लहरा को नाम	प्रकार	फल लागेको		फल नलागेको		बार्षिक उत्पादन (कि. ग्रा.)	यदि गत वर्ष बिक्री गरेको भए		तपाईले रोप्नु भएको हो*	रोप्नुको उद्देश्य के थियो**
देखि	सम्म				संख्या	उमेर	संख्या	उमेर		(कि.ग्रा.)	(रूपैयाँ)		

संकेतः प्रकारः १= फलफूलको रूख, २ = गैह्र काष्ठ वन पैदावर, ३ =बाँस /निगालो, , ४= अन्य भए उल्लेख गर्ने .....
*तपाईले रोप्नु भएको हो १= हो २= होइन
**रोप्नुको उद्देश्य १= घरायसी प्रयोजन मात्र २= घरायसी + बिक्री दुबै

९.३ आयोजनामा पर्नेप्लटवाट कुनै घाँस/जडिबुटीको रूख/विरुवा हटाउनु पर्ने भएमा, निम्नानुसारको विवरण दिनुहोस् ।

चेनेज		तफ	नाम/जात	संख्या	गोलाई (से.मी.)	उचाई (मीटर)	वार्षिक उत्पादन	तपाईले रोप्नु भएको हो?	रोप्नुको उद्देश्य के थियो ?	यदि उत्पादन बेच्ने हो भने, प्रति ईकाइ कति पर्दछ ?
देखि	सम्म	R/L								

९.४ आयोजनामा पर्नेप्लटवाट तपाईको बसोबास भएको घरसम्म रुखविरुवा ढुवानी गर्न कति समय लाग्छ/दुरी छ ?
समय ..... मिनेट, दुरी ..... मिटर

१०. स्वामीत्व हस्तान्तरण र यसका लागि प्रभावित परिवारको प्राथमिकता ।

१०.१ यदि तपाई बसोबास गरिरहेको घर आयोजनाले लिएमा, कस्तो प्रकारको क्षति महशुस गर्नुहुन्छ? (बहूउत्तर)

१,[ ] दैनिक आम्दानीको क्षति २, [ ] घर/जग्गाको क्षति ३, [ ] जग्गा/खोतिपातीको क्षति

४,[ ] अन्य भएमा (उल्लेख गर्ने).....

१०.२ यसआयोजनामा पर्ने घर जग्गा/संरचना क्षतिपुर्ती बिना दिन ईच्छुक हुनुहुन्छ?

१,[ ] दिन्छु २, [ ] दिन सक्दिन

१०.३ योजनामा पर्ने परिवारका हैसियतले योजनावाट कस्तो प्रकारको अवसर/सहयोगको अपेक्षा राख्नुहुन्छ?[बहुउत्तर]

१,[ ] रोजगारीको अवसर २, [ ] सीप विकास तालिम

३,[ ] बचत तथा ऋण कार्यक्रम ४, [ ] अन्य भए .....

धन्यवाद !

नेपाल सरकार
भौतिक पूर्वाधार तथा यातायात मन्त्रालय
सिंहदरबार, काठमाडौं

For Reference Only

ANNEX 2

Copy of Public Notice and Deeds of Enquiry (*Muchulkas*)

For Reference Only

For Reference Only

नेपाल सरकार

भौतिक पूर्वाधार तथा यातायात मन्त्रालय

सडक विभाग

प्रारम्भिक वातावरणीय परिक्षण (IEE) अध्ययन सम्बन्धी सार्वजनिक सूचना

प्रथम पटक प्रकाशित मितिः २०७३/७/२६

सडक विभाग आयोजना निर्देशनालय (ADB) अन्तर्गत निम्न बमोजिमको प्रस्तावहरु कार्यान्वयनका लागि प्रारम्भिक वातावरणीय परीक्षण (IEE) प्रतिवेदन तयार गर्नुपर्ने भएकाले वातावरण संरक्षण नियमावली, २०५४ (पहिलो संशोधन २०५५) को नियम ७ उपनियम २ बमोजिम यो सार्वजनिक सूचना प्रकाशित गरिएको छ।

प्रस्तावकको नाम र ठेगानाः भू-वातावरण तथा सामाजिक शाखा, योजना तथा डिजाइन महाशाखा, सडक विभाग, बबरमहल, काठमाडौं प्रस्तावहरुको नाम, प्रस्तावहरुको व्यहोरा तथा प्रस्तावित योजनाहरुबाट वातावरणीय प्रभाव पर्न सक्ने जिल्ला, नगरपालिका तथा गा.वि.स.हरुः

क्र. सं.	प्रस्तावको नाम	अनुमानित लम्बाई (कि.मी.)	जिल्लाहरु	प्रभाव पर्न सक्ने नगरपालिका रगा.वि.स.हरू
१.	मुग्लिङ - पोखरा सडक स्तरोन्नति आयोजना	९०	तनहुं	आँबु खैरेनी, बन्दीपुर, व्यास र शुक्लगण्डकी नगरपालिकाहरू र घाँसीकुवा, जामुन भञ्ज्याङ, मान्पाङ र छाङ्गे गा.वि.स.हरू
			कास्की	लेखनाथ नगरपालिकार पोखरा उप-महानगरपालिका
२.	पर्कलि - नदाहा सडक स्तरोन्नति आयोजना	१२	सुनसरी	इटहरी उप-महानगरपालिका र बकलौरी र भरौल गा.वि.स.हरू

सो प्रस्तावहरू कार्यान्वयन गर्नु अघि वातावरण संरक्षण नियमावली, २०५४ बमोजिम उक्त प्रस्तावको प्रारम्भिक वातावरणीय परीक्षण गरी स्वीकृत गराउने सिलसिलामा उक्त नियमावली बमोजिम योजना प्रभावित क्षेत्रहरूको निम्न अवयवहरूमा के कस्तो प्रभाव पर्दछ भनि पत्ता लगाई गर्नु आवश्यक छ। १. भौतिक प्रणाली सांस्कृतिक प्रणाली, २. जैविक प्रणाली, ३. आर्थिक तथा सामाजिक प्रणाली, ४. मानवीय क्रियाकलाप, यिनका अवयवहरूको अन्तर्क्रिया तथा अन्तरसम्बन्ध।

यसै सिलसिलामा उक्त योजनाहरु प्रभावित क्षेत्रमा पर्ने नगरपालिका, गा.वि.स. तथा त्यस क्षेत्रका विद्यालय, अस्पताल, स्वास्थ्य चौकी तथा सरोकारवाला व्यक्ति तथा संघसंस्थाको लिखित रायसुझाव लिन आवश्यक भएकोले यो सूचना प्रकाशित भएको मितिले १५ (पन्ध्र) दिनभित्र निम्न ठेगानामा आईपुग्ने गरी रायसुझाव उपलब्ध गराइदिनुहुन अनुरोध गरिन्छ।

<u>राय सुझाव पठाउने ठेगाना</u>

भू-वातावरण तथा सामाजिक शाखा, योजना तथा डिजाइन महाशाखा
सडक विभाग, बबरमहल, काठमाडौं, हाल: चाकुपाट, ललितपुर
टेलिफोन नं.: (९७७) (०१) ५२६०५०५, फ्याक्स नं.: (९७७) (०१) ५५२९९०६
इमेलः gesunit@dor.gov.np

यातायात आयोजना तयारी सहयोग (TPPF)
पो.ब.नं. ६७५, काठमाडौं, नेपाल,
वडा नं ३४, मीनभवन, का.म.पा.
फोन नं. (०१) ४६२००५४
फ्याक्स नं. (०१) ४६२००५४
इमेलः mmm.tppf@gmail.com

For Reference Only

For Reference Only

फोन नं. : ०६५-५४००८२
Ph. No. 065-540082

नेपाल सरकार
संघीय मामिला तथा स्थानीय विकास मन्त्रालय
आँबुखैरेनी नगरपालिका कार्यालय
AANBOOKHAIRENI MUNICIPALITY OFFICE
आँबुखैरेनी, तनहुँ
Aanbookhaireni, Tanahun
गण्डकी अञ्चल, नेपाल
Gandaki Zone, Nepal

पत्र संख्या Ref. No : २०७३/०७४
चलानी नम्बर Des. NO : ४२१३

मिति २०७३।०८।०६

श्री भु-वातावरण तथा सामाजिक शाखा,
योजना तथा डिभिजन माहाशाखा
सडक विभाग, बबरमहल काठमाडौं ।

विषय : नगरपालिकाको सूचना पाटिमा सूचना टाँस गरेको सम्बन्धमा ।

प्रस्तुत विषयमा मिति २०७३।७।२६ गतेको अन्नपुर्ण राष्ट्रिय दैनिक पत्रिकामा प्रकाशित मुग्लिन-पोखरा सडक खण्डको स्तरोन्नतिको लागि प्रारम्भिक वातावरणीय परिक्षण (IEE) अध्ययन सम्बन्धी १५ दिने सार्वजनिक सूचना यस कार्यालयको सूचना पाटिमा सूचना टाँस गरेको व्यहोरा जानकारी गराइन्छ ।

कार्यालय
दुर्गा आचार्य
प्रशासकीय अधिकृत

For Reference Only

"समिति तथा राष्ट्र क्रियाकलापहरु आत्मनिर्भरी बनाऔं"

श्री घाँसीकुवा गाउँ विकास समितिको कार्यालय
Shree Ghansikuwa Village Development Committee
घाँसीकुवा, तनहुँ
Ghansikuwa, Tanahun
गण्डकी अञ्चल

प.सं /Ref. No: ०६३।६४
च.नं /Des. No: ४६०

मिति/Date :- २०६३।८।६

विषय: सूचना दाखिल गरेको जानकारी

श्री सडक विभाग
आयोजना निर्देशनालय (एडीबी)
पृथ्वीनगर, काठमाडौं।

उपरोक्त सम्बन्धमा तपाईको मिति २०६३।६।२२ को पत्र नं ०६३।६४५ बमोजिम को सूचना यस कार्यालय को सूचना पाटी मा टाँसेको व्यहोरा जानकारी गरिन्छ।

गुप्त राज न्यौपाने
गा.वि.स. सचिव, एवं अध्यक्ष

For Reference Only

नेपाल सरकार

बन्दिपुर नगरपालिका कार्यालय

बन्दिपुर, तनहुँ

पत्र संख्या : ०६२१६८

चलानी नम्बर : ६९९

मितिः २०७३/०८/०९

विषयः सुचना टाँस सम्वन्धमा ।

श्री सडक विभाग आयोजना निर्देशनालय(ए.डी.बी)
विशालनगर काठमाण्डौ ।

प्रस्तुत विषयमा त्याँहा कार्यालयको मिति २०७३/०७/२२ प.स २०७३/०७४ च.हि.नं ३१५ को पत्र अनुसार मुग्लिङ्ग पोखरा सडक खण्डको स्तरोन्नती आयोजनाको प्रारम्भिक वातावरणिय परीक्षण सम्वन्धि सुचना यस कार्यालयको सुचना पाटीमा सुचना टाँस गरिएको व्यहोरा अनुरोध छ ।

(लेखनाथ न्यौपाने)
कार्यकारी अधिकृत
कार्यकारी अधिकृत

For Reference Only

"विविधतायुक्त सक्षम, अनुपम एवं समृद्ध व्यास नगर"

नेपाल सरकार

व्यास नगरपालिका कार्यालय

Government of Nepal

VYAS MUNICIPALITY OFFICE

Damauli, Tanahun

पत्र संख्या २०७३/०७४

मिति: २०७३/०८/०६

चलानी नम्बर: ४१०८

विषय: जानकारी सम्बन्धमा ।

श्री भू-बातावरण तथा सामाजिक शाखा

योजना तथा डिभिजन शाखा, सडक विभाग

बबरमहल काठमाण्डौं

प्रस्तुत विषयमा त्यहांको पत्र संख्या २०७३/०७४ चलानी नम्बर ३१५ मिति २०७३/०७/२२ गतेको पत्र साथ प्राप्त कार्तिक २६/२०७३ का दिन अन्पूर्ण पोष्टमा प्रकाशित १५ दिने प्रारम्भिक वातावरणीय परिक्षण (IEE) अध्ययन सम्बन्धी सार्वजनिक सूचना मिति २०७३/०८/६ मा यस न.पा. कार्यालयमा प्राप्त भई मिति २०७३/०८/०६ मा नै यस कार्यालयको सूचना पाटीमा टांस गरिएको व्यहोरा जानकारीको लागि अनुरोध गरिन्छ ।

मधुनाथ आचार्य
प्रवक्ता अधिकृत/प्रवक्ता

For Reference Only

"हामीले गर्ने सबै निर्णय र क्रियाकलापहरु पालमैत्री पनाओं"

श्री जामुने नमूना गाउँ विकास समितिको कार्यालय

Shree Jamune Model Village Development Committee

जामुने, तनहुँ
Jamune, Tanahun

फोन: ०६५-५२९३१४
मोबाइल: ९८५६०२४८९३
राण्डकी अञ्चल, नेपाल

प.सं./Ref.No. :-

च.नं./Des.No.:- ९४९

मिति/Date:- २०७१।१०।०६

विषय/Subject:- सूचना दास गरी जानकारी पाऊँ भन्ने

श्री सचिव ज्यू
आयोजना निर्देशनालय (पृथ्वी)
कि.ला.न.ग., काठमाडौं
उपरोक्त सम्बन्धमा मिति २०७१/७/२२ को पत्र साथ प्राप्त हुन आयको प्रारम्भिक वातावरणीय परिक्षण प्रतिवेदन सम्बन्धी सार्वजनिक सूचना यस कार्यालयको सूचना पाटीमा टास गरी पठाईएको व्यहोरा अनुरोध छ ।

२०७१।१०।०६

विजय राज घिमिरे
सामाजिक परिचालक

For Reference Only

"हजारौं जर्जे अघै निर्णय र क्रियाकलापहरू कार्यान्वयन गर्नाहौं"

श्री छाङ्ग गाउँ विकास समितिको कार्यालय

Shree Chhang Village Development Committee

छाङ्ग तनहुँ
Chhang Tanahun

गण्डकी अञ्चल, नेपाल
Gandaki Zone, Nepal

प.सं./Letter No. :- ०६२१०६५

च.नं./Ref.No.:- ६४२

मिति/Date:- २०६९।५।७.

विषय/Sub :- सूचना संकलन गरी पठाईएको बारे ।

श्री सडक विभाग,
कार्यालय प्रमुख ज्यू,
(एडको)
विद्यालय, काठमाडौं ।

प्रस्तुत विषयमा यस कार्यालयबाट मिति २०६९।४।२८ गते/ ०६९।४।२८ को पत्र बमोजिम सुदूरपश्चिम क्षेत्रका सडक सञ्जालहरूको कालोपत्रे स्तरोन्नतिको आवश्यकता र औचित्य पुष्टि गर्ने सम्बन्धमा प्रस्तुत गर्नुपर्ने सूचना संकलन गर्न यस समितिबाट एक सदस्यीय टोली खटाई सूचना संकलन गरी पठाइदिनुहुन अनुरोध छ ।

२०६९।५।७

सिद्धराज बस्नेत
सचिव एवं अध्यक्ष

For Reference Only

"हामीले गर्ने सबै निर्णय र क्रियाकलापहरु बालमैत्री बनाऔं"

श्री मनपाङ्ग गाउँ विकास समितिको कार्यालय

Shree Manapang Village Development Committee

मनपाङ्ग, तनहुँ

Manapang, Tanahun

गण्डकी अञ्चल, नेपाल

प.सं./Ref.No. :-

च.नं./Des.No.:- ५०२

मिति/Date: २०७३।८।१६

विषय/Sub:- सुचना हाँस को जानकारी पठाइएको

श्री/Shree सडक विभाग

आयोजना निर्देशनालय (पिडी)

विझालनगर, कास्की

प्रस्तुत विषयमा व्यहोरा अनुरोध छ कि मिती २०७३।७।२२ गते ३१६ को पत्र बमोजिम मुगलीङ, पोखरा सडक खण्डको स्तरोन्नती को अन्तर्गत पावर मा प्रभावित १५ घरमा पालो-पिछे सुचना यस मनपाङ्ग गा.वि.स को कार्यालय मा मिती २०७३।८।१६ मा हाँस गरिएको व्यहोरा जानकारी गराईन्छ।

०७३।८।१६

सुरुदत्त घिमिरे

वि.स अध्यक्ष

For Reference Only

नेपाल सरकार

शुक्लागण्डकी नगरपालिका कार्यालय

SHUKLAGANDAKI MUNICIPALITY OFFICE

दुलेगौडा, तनहुँ

Dulegaunda, Tanahun

फोन: ०६५-५७००१८,
५७०३०५

पत्र सख्या:२०७३/७४
चलानी नं: ५०५६

मितिः २०७३/०८/०७

विषय : सुचना टास गरी जानकारी पठाईएको सम्वन्धमा ।

श्री सडक विभाग
आयोजना निर्देशनालय (ए.डि.वी)
विशालनगर काठमाण्डौ ।

प्रस्तुत विषयमा तहाँ कार्यालयको च नं ३१५ मिति २०७३/०७/२२ को पत्र साथ प्राप्त पन्ध्र दिने मुग्लिन पोखरा सडक को स्तरोन्नतीकोलागि IEE सम्वन्धि सुचना यस नगरपालिकाको सुचना पाटिमा टाँस गरिएको व्यहोरा जानकारी को लागी अनुरोध छ ।

२०७३/०८/०८

हिमा पोखेल
प्रशासकिय अधिकृत

प्रशासकीय अधिकृत

For Reference Only

☎ ०६१-५६००८०, ०६१-५६०५६६,

लेखनाथ नगरपालिका कार्यालय

तालचोक, कास्की

(प्रशासन शाखा)

सात तालको बगैंचा शहर
GARDEN CITY OF SEVEN LAKES
लेखनाथ नगरपालिका
LEKHNATH MUNICIPALITY

प.सं.

च.नं. ९५४६

मिति :– २०७३/०८/०८

विषय :– सिफारीस सम्बन्धमा ।

श्री सडक विभाग
आयोजना निर्देशनालय (ए.डि.वि)
विशालनगर ,काठमाण्डौ ।

प्रस्ततु विषयमा त्यहाँ रहेको कार्यालयको च.न ३१५ मिति २०७३/०७/२२ गतेको पत्रानुसार बातावरण परिक्षण (IEE) सम्बन्धीत सुचना प्राप्त भएको र एक प्रति यसै कार्यालयको सुचना पाटीमा टाँस गरिएको ब्यहोरा जानकारी गराईन्छ ।

(राममणि अधिकारी)
कानुन अधिकृत

नि.कार्यकारी अधिकृत

For Reference Only

नेपाल सरकार

सङ्घीय मामिला तथा स्थानीय विकास मन्त्रालय

पोखरा उपमहानगरपालिका कार्यालय

"हाम्रो अभिभारा स्वच्छ सुन्दर पोखरा"

फोन नं. ५२१४६०, ५२०३९२ कार्यालय सोधपुछ
फ्याक्स: ५२०६००
इमेल: info@pokharamun.gov.np
वेवसाइट: www.pokharamun.np

पत्र संख्या : ०७३/०७४/३४
चलानी नम्बर : ९४१२१

मिति : २०७३/०८/८

श्री आयोजना निर्देशनालय (ए.डि.वी)
विशालनगर ,काठमाण्डौ ।

विषय :- जानकारी ।

उपरोक्त सम्वन्धमा तहाँको प.सं. पि.डि TPPF-PPC-2 ०७३/०७४ च.नं. ३१५ मिति : २०७३/०७/२२ को पत्रसाथ प्राप्त सूचना पत्र प्राप्त भएको मितिमा यस कार्यालयको सूचना पाटीमा टाँस भएको व्यहोरा जानकारीको लागि अनुरोध छ ।

(कल्पना वराल)
प्रशासकिय अधिकृत
प्रशासकिय अधिकृत

For Reference Only

नेपाल सरकार
गृह मन्त्रालय
जिल्ला प्रशासन कार्यालय
(मेदा शाखा)
कास्की

☎ : { ०६१-४६३०७६
०६१-४६२४७६
फ्याक्स ०६१-४६१९६२

पत्र संख्या : ०६८/०७४
चलानी नं. ८६०४
प्राप्त पत्र संख्या र मिति :-

रत्नपुरी, पार्दी, पोखरा
मिति : २०६८/८/१८

विषय:- जानकारी ।

श्री खेल विकास आयोजना
चिकित्सालय (एडि.वी)

त्यहाँको च.नं. ४९६ मिति २०६८/६/२२ को पत्र साथ संलग्न भै आएको सूचना यस कार्यालयको सूचनापाटीमा टाँस गरिएको व्यहोरा जानकारीको लागि अनुरोध छ ।

२०६८।८।१८

प्रशासकीय अधिकृत

For Reference Only

नेपाल सरकार
संङ्घीय मामिला तथा स्थानीय विकास मन्त्रालय
जिल्ला विकास समितिको कार्यालय
काभ्रेपलाञ्चोक
फोन नं. ४६५०७४, ४६४३४६
४६३५६२, ४६५२०५
फ्याक्स :४६२५४६

पत्र संख्या :
चलानी नं. १७९९

रत्नपुरी पार्दी, पोखरा
मिति: ०६३।०८।२८

प्राप्त पत्र संख्या र मितिः

विषय : सूचना टाँसको जानकारी

श्री सडक विभाग
आयोजना निर्देशनालय (ए.डी.बी.)
विशालनगर काभ्रेडाँडा ।

उपयुक्त विषयमा त्यहाँबाट पठाउनु भएको प.सं. पि.वि.टि.:PPF-PPC-2/063/064 च.नं. ३९५ मिति ०६३।०६।२२ को पत्र साथ प्राप्त सूचना यस कार्यालयको सूचना पाटीमा टाँस भएको व्यहोरा जानकारीको लागि अनुरोध छ ।

०६३।१०।२८

For Reference Only

नेपाल सरकार
गृह मन्त्रालय
जिल्ला प्रशासन कार्यालय
☎ ०६५- ५६०१३३
५६०१०९
फ्याक्स:- ५६०१०७

पत्र संख्या :०७३/०७४
चलानी नम्बर :- ९६२६
प्राप्त पत्र संख्या र मिति :-

मिति २०७३।८।७

विषय :- जानकारी सम्बन्धमा ।

श्री सडक विभाग,
आयोजना निर्देशनालय (ए.डि.बी.)
विशालनगर काठमाडौ ।

प्रस्तुत विषयमा तहांको च.नं.३१५, मिति २०७३।७।२२ को पत्र साथ प्राप्त सुचना पाना १ यस कार्यालयको सूचना पाटीमा टांस गरिएको व्यहोरा जानकारीका लागि अनुरोध छ ।

सुरेश ढकाल
प्रशासकिय अधिकृत
प्रशासकिय अधिकृत

For Reference Only

नेपाल सरकार
वन तथा भू-संरक्षण मन्त्रालय
सडक विभाग

जिल्ला वन कार्यालय

तनहुँ, दमौली

पत्र संख्या :- प्र.व.का./तन/२०७३/७४
चलानी नम्बर :- ९४२
प्राप्त पत्र संख्या र मिति :-

फोन/फ्याक्स नं.: ०६५-५६०१३५

मिति:- २०७३/८/७

विषय :- सूचना टाँसको जानकारी सम्बन्धमा ।

श्री सडक विभाग
आयोजना निर्देशनालय (ए.डि.भि.)
विशालनगर, काठमाण्डौं ।

प्रस्तुत विषयमा तहाँको प.सं. पी.डि. TPP-PPC-2 २०७३/७४ को च.नं. ३१५ मिति २०७३/७/२२ को पत्रसाथ प्राप्त प्रारम्भिक वातावरणीय परिक्षपण (IEE) अध्ययन सम्बन्धी सूचना थान १ यस कार्यालयको सूचना पाटीमा आजै टाँस गरिएको व्यहोरा जानकारीको लागि आदेशानुसार अनुरोध छ ।

२०७३।८।७

(बावुराम उप्रेती)
सहायक वन अधिकृत

For Reference Only

नेपाल सरकार
भौतिक पूर्वाधार तथा यातायात मन्त्रालय
सडक विभाग
आयोजना निर्देशनालय (ए.डी.बी.)
फोन नं.: ४४३७४५२, ४४३७४५३, ४४१४२३५
फ्याक्स नं.: ००५७७-१-४४३७४८८
ई-मेल: pdadb@wlink.com.np
विशालनगर, काठमाडौं

पत्र संख्या :- पी.डि. TPPF-PPC-2 ।०७३।०७४। च. नं. ३९५ मितिः २०७३।०७।२२.....

विषयः सुचना टांस गरिदिने बारे ।

श्री प्रमोद ज्यु
जिल्ला वन कार्यालय
डडेल्धुरा

उपरोक्त सम्बन्धमा यस आयोजना निर्देशनालय (ए.डि.वि.) बाट निकट भविष्यमा Transport Project Preparatory Facility, PPC-2 अन्तर्गत एशियाली विकास बैंकको ऋण सहयोगमा सञ्चालन हुने मुग्लिङ्ग - पोखरा सडक (९० कि.मी.) स्तरोन्नति आयोजनाको प्रारम्भिक वातावरणीय परीक्षण (IEE) प्रतिवेदन तयार गर्ने सिलसिलामा सार्वजनिक राय सुझाव संकलन गर्न परामर्सदातृ संस्थाबाट खटाइएको टोलिलाई प्रारम्भिक वातावरणीय परिक्षण (IEE) अध्ययन सम्बन्धी सार्वजनिक सूचना टांस गरि उक्त सूचना टांस को जानकारी उपलब्ध गराई दिनु हुन निर्देशानुसार अनुरोध छ ।

(राजेन्द्र राज शर्मा)
उप आयोजना निर्देशक

बोधार्थः
श्री MMM Group Limited (Canada) in association with ITECO Nepal (P) Ltd., Total Management Services Pvt. Ltd. and Material Test Pvt. Ltd., TPPF(PPC-2) Project, Min Bhawan, Kathmandu.

चलानी नं ४६३
०७३।८।८

जिल्ला वन कार्यालयबाट
सडक विभाग आयोजना निर्देशनालय (ए.डी.बी) को
मिति ०७३।७।२२ चलानी नं ३९४, ३९५, ३९६ को पत्र आज
मिति ०७३।८।८ गते दिनको १२.१५ बजे प्राप्त भएको
व्यहोरा अनुरोध छ।

(केदारबाल)
जिल्ला वन अधिकृत

For Reference Only

श्री कुकुरगाडे सामुदायिक वन उपभोक्ता समूह

आँबुखैरेनी [illegible] खर्क

पत्र संख्या :- ००२/००४

चलानी नम्बर :-

मिति 2003/08/10

विषय :- सूचना बुझाउने बारे ।

श्री सडक विभाग
आयोजना निर्देशनालय
विशालनगर, काठमाडौं ।

उपरोक्त सम्बन्धमा प्रस्तावित मुग्लिङ-पोखरा सडक खण्डको EE तेस्रो सिलसिलाको मिति 2063/06/26 गतेको पत्र साथ प्राप्त हुन आएको सूचना बापत १ (एक) थप कार्यालयको सूचना पाटीमा बुझि गरिएको व्यहोरा अनुरोध गर्दछु ।

चक्र बहादुर पाध्या
(कोषाध्यक्ष)

For Reference Only

मूह दर्ता नं.

"बिरुवा रोपौं, बन जोगाऔं"

श्री भाँगे सामुदायिक वन उपभोक्ता समूह

आँबु-७, भाँगे, तनहूँ

पत्र संख्या : ००३/०६४

लानी नं. :

मिति २०६३/०८/१९

विषय: सूचना पँल गरेको बारे

श्री सडक विभाग आयोजना तिर्हेथनालय

(शिवालयनगर, काठमाडौं)

यस कम्पनीको मिति -२०६३/०८/२६ गतेको पत्र साथ प्राप्त हुन आएको सूचना बाट ५(एक) एक दोगला पँल गरिएको व्यहोरा अनुरोध गरिन्छ।

धन्यवाद

For Reference Only

चिसोपानी पुरानोकोट सामुदायिक वन उपभोक्ता समिति

आँखुवैरेनी-६, ललितपुर
स्थापितः २०५१

पत्र संख्याः ०७३/०७४
चलानी नं.:

मितिः २०७३/०८/१०

विषय - सूचना उपलब्ध गरेको बारे

श्री सडक विभाग,
आयोजना निर्देशनालय (ए०डी०बी)
विशालनगर, काठमाडौं।

तपसिल कम्पनीको मिति २०७३/०८/२८ गतेको पत्र साथ प्राप्त हुन आएको सूचना बापत १(एक) थान कार्यालयको सूचना पाटीमा उपलब्ध गरिएको व्यहोरा अनुरोध गरिन्छ।

अध्यक्ष

For Reference Only

"सामुदायिक भावनाको विकास गरौं"

प्रगतिशील सामुदायिक वन उपभोक्ता समूह

सिक्लाथ, नगरपालिका-१३, कास्की

पत्र संख्या : ०७२/००४

चलानी नं. :

मिति : २०७३/०८/१५

विषय : सुचना दिने बारेको सम्बन्धमा।

श्री कार्यालय निर्देशनालय (ADB)
पिथौलागढ, काठमाण्डौं।

प्रस्तुत विषयमा ग्रामीण सडक विभाग, कार्यालय निर्देशनालय (ADB) प्रस्तावक रहेको मुक्लिन - पोखरा (६० कि.मी.) सडकको स्तरोन्नति सम्बन्धि निर्णयको मिति २०७३/०६/१६ गतिको अन्तर्गत पालिकामा प्रकाशित सुचना पत्र कार्यालयको सुचना पार्टीमा दिने बारेको व्यवहोराको जानकारी गराईन्छ।

अध्यक्ष
सुनमाया नेपाली

For Reference Only

राईपुरकोट्रे सामुदायिक वन उपभोक्ता समूह

शुक्लामण्डकी-१ कोट्र, तनहुँ

पत्र संख्या: २०६३।०६६
चलानी नं. १

मिति: २०६३।८।१४

श्री आयोजना निर्देशनालय (ADB)
विद्यालयनगर, डाक्मार्ग

विषय: सुचना टाँस गरिएको सम्बन्धमा।

प्रस्तुत विषयमा सडक विभाग, आयोजना निर्देशनालय (ADB) प्रस्तावित रहेको गुल्मिल-पोखरा (६० कि.मी.) सडकको स्तरोन्नती सम्बन्धि विषयको सार्वजनिक सुचना मिति २०६३।०६।१६ गतेको अन्तर्वार्ता सहितमा प्रकाशित सुचना यस कार्यालयको सुचना पाटीमा टाँस गरिएको व्यहोरासे जानकारी गराईन्छ।

१४।८

रामचन्द्र खनाल
उपाध्यक्ष
राईपुरकोट्रे सामुदायिक वन उपभोक्ता समूह

For Reference Only

श्री कायाचोर छहरेपाखा सामुदायिक वन उपभोक्ता समूह

पत्र संख्या :- ०६३/०६४
चलानी नं :- १

मिति :- २०६३/८/१४

विषय :- सुचना टाँस गरिएको सम्बन्धमा ।

श्री अपरोजना निर्देशालय (ADB)
निशालगार, काठमाडौं ।

प्रस्तुत विषयमा स्वच्छ विभाग, आयोजना निर्देशालय (ADB) प्रस्तावक रहेको मुग्लिन-पोखरा (९० कि.मी.) सडकको स्तरोन्नती सम्बन्धी विषयको सार्वजनिक सुचना मिति २०६३/०६/२९ गतेको अङ्गप्रर्ण पत्रिकामा प्रकाशित सुचना यस कार्यालयको सुचना पाटीमा टाँस गरिएको व्यहोरामा जानकारी गराईन्छ ।

सभापति

सचिव

For Reference Only

बागेडाँडा सामुदायिक वन उपभोक्ता समूह

चलानी नं.:- २०६३/०६४ | मिति: २०६३/०८/१४

विषय:- सुचना बुझाउने सम्बन्धमा |

श्री क्षेत्रीय वन निर्देशनालय (RDO)
विराटनगर, मोरङ |

प्रस्तुत विषयमा सडक विभाग, क्षेत्रीय निर्देशनालय (RDO) प्रस्तावक रहेको गुल्मिम - पोखरा (६० कि.मी.) सडकको स्तरोन्नती सम्बन्धी विभागीय कार्यालयबाट सुचना मिति २०६३/०६/२५ गतेको पत्रद्वारा प्राप्त सुचना यस कार्यालयको सुचना पाटीमा टाँस गरिएको व्यहोरा जानकारी गराईन्छ |

अध्यक्ष
कमल रिमाल

For Reference Only

सानुक्रियक पत्र उपभोक्ता समिति

जामुने-१, भण्डारी, कुनडु

पत्र संख्या:
चलानी नं.

मिति २०७३/८/१२

विषय : सुचना टासें गरिएको सम्बन्धमा ।

श्री आयोजना निर्देशनालय (एच डि०वि)
विशालनगर, काठमाण्डौं

प्रस्तुत विषयमा सडक विभाग, आयोजना निर्देशनालय (ADB) प्रस्तावित रहेको गुप्तिल-पोखरा सडक (६०किमी) स्तरोन्नती सम्बन्धि विषयको सार्वजनिक सुचना (मिति २०७३।०६।२६) गतेको अन्नपूर्ण पत्रिकामा प्रकाशित सुचना यस कार्यालयको सुचना पाटीमा टासें गरिएको व्यहोराको जानकारी गराईन्छ ।

सचिव
शाखा

For Reference Only

चाम्पा सामुदायिक वन उपभोक्ता समूह

चन्दीपुर-८, तनहूँ

पत्र संख्या:- ०७३/०७४ मिति:- ०७३/८।१०

चलानी नं.:-

विषय:- सुचना राखँ जारिएको सम्बन्धमा।

श्री ~~जसप~~। अर्थोजना निर्देशनालय (ADB)

विशालनगर, काठमाण्डौं।

प्रस्तुत विषयमा सडक विभाग अर्थोजना निर्देशनालय (ADB) प्रस्तावक रहेको मुग्लिन-पोखरा सडक (३०कि.मि.) स्तरोन्नती सम्बन्धि विषयमे सार्वजनिक सुचना मिति २०७३।०६।२६ गतिको अन्तर्गत पत्रिकामा प्रकाशित सुचना यस कार्यालयको सुचना पाटीमा राखँ जारिएको व्यहोराको जानकारी गराईन्छ।

भुपिन्दर लामिछाने
अध्यक्ष

ध्रुव प्रसाद लामिछाने
सचिव

For Reference Only

लोहि पाखा सामुदायिक वन उपभोक्ता समूह



पत्र संख्या :-063/064
चलानी नम्बर :-

मिति : 063/८/१०

विषय :- सुचना टाँस गरिएको सम्बन्धमा।

श्री आयोजना निर्देशनालय (ADB)
विशालनगर, काठमाण्डौं।

प्रस्तुत विषयमा खडक विभाग, आयोजना निर्देशनालय (ADB) प्रस्तावद रहेको मुग्लिन-पोखरा खडक (Section) स्तरोन्नती सम्बन्धि विषयको सार्वजनिक सुचना मिति २०६३/०६/२९ गतिको अन्तर्गत पत्रिकामा प्रकाशित सुचना यस कार्यलयको सुचना पाटीमा टाँस गरिएको व्यवहोरको जानकारी गरिछ।

अध्यक्ष

For Reference Only

"रुख रोपौं, वन जोगाऔं"

कोचच सामुदायिक वन उपभोक्ता समूह

वन्दिपुर-६, निर्मलनगर

पत्र संख्या : 062/068

चलानी नं. :

र.नं. TAN/BA/39/12
१(०६१/०६२)
३६७

मिति : ०६३/८/१९

विषय :- सुचना टाँस गरिएको सम्बन्धमा।

श्री उपयोजना निर्देशनालय (ADB)
विशालनगर, काठमाडौं।

प्रस्तुत विषयमा, सडक विभाग, उपयोजना निर्देशनालय (ADB) प्रस्तावक रहेको मुग्लिन - पोखरा सडक (९०कि.मी.) स्तरोन्नती सम्बन्धि विषयमा सर्वजनिक सुचना मिति २०६२/०६/१६ गतेको अन्तर्वार्ता पत्रिकामा प्रकाशित सुचना यस कार्यालयको सुचना पाटीमा टाँस गरिएको व्यवहोराको जानकारी गराईन्छ।

सचिव

For Reference Only

"रुख रोपौं, वन जोगाऔं"

श्री खाण्दी सामुदायिक वन उपभोक्ता समूह

घाँसीकुवा-५, गोल्ला, तनहुँ

पत्र संख्या :- २०७३/७४

चलानी नं.:- १९

मिति २०७३/८/१२

विषय :- सुचना राखँ गरिएको सम्बन्धमा ।

श्री आयोजना निर्देशनालय (ADB)
विद्यालयनगर, काठमाण्डौं ।

प्रस्तुत विषयमा स्थल विभाग, आयोजना निर्देशनालय (ADB) प्रस्तावद रहेको मुग्लिन-पोखरा खाडेँ स्तरोन्नती सम्बन्धि निक्यलो सार्वजनिक सुचना मिति २०७३।०६।२६ गतेको अन्तर्गत पत्रिकामा प्रकाशित सुचना यस कार्यालयको सुचना पाटीमा राखँ गरिएको व्यवहोराको जानकारी गराईन्छ ।

श्री धन बहादुर पाण्डा
अध्यक्ष

श्री काजी बाबु पन्थ
सचिव

For Reference Only

श्री शिव पार्वति सामुदायिक वन उपभोक्ता समिति

घांसीकुवा,५ तनहुँ

स्था. २०६१

प.स. :- 062/068

च.नं. :-

मिति 2067/05/19

विषय :- सुचना टाँस गरिपाउँ सम्बन्धमा ।

श्री अयोजना निर्देशनालय (ADB)

पृथ्वीनगर, काभ्रेपलाञ्चोक ।

प्रस्तुत विषयमा सडक विभाग, अयोजना निर्देशनालय (ADB) प्रस्तावित रहेको मुग्लिन - पोखरा सडक (६०.६km) स्तरोन्नती सम्बन्धि विषय को सार्वजनिक सुचना मिति २०६२/०६/२६ गतेको अन्तर्राष्ट्रिय पत्रिकामा प्रकाशित सुचना यस कार्यालयमा टाँस गरिपाउँ व्यवहोरा जानकारी गराईन्छ ।

सीता

अध्यक्ष

For Reference Only

"रुख रोपौं, वन जोगाऔं"

सुन्दरी सामुदायिक वन उपभोक्ता समूह

डयाङ्ग-९, गुसेखोला, तनहुँ

पत्र संख्या:

चलानी नं.: १७

मितिः २०७५।८।१२

विषयः- सुचना दाँई गरिएको सम्बन्धमा।

श्री आयोजना निर्देशनालय (ADB)

त्रिभुवननगर, काभ्रेपाटी।

प्रस्तुत विषयमा खडढ विभाग, आयोजना निर्देशनालय (ADB) (एडिबी) प्रस्तावित रहेको गुल्मिन - पोखरा खडढ स्तरोन्नती सम्बन्धि विभिन्न सार्वजनिक सुचना मिति २०७३।०६।१६ गतेदेखि अनवरत पत्रिकामा प्रकाशित सुचना पस्न कार्यालयको सुचना पाटीमा टाँस गरिएको व्यहोरा जानकारी गराईन्छ।

भवदीय

बलबहादुर मोक्तान

अध्यक्ष

सुन्दरी सामुदायिक वन उपभोक्ता

समूह डयाङ्ग न.पा.-९

For Reference Only

महिला मसुर्वा सहकारी संस्था लि. वन उपभोक्ता समूह

मनपौडू-१, छतिसे, तनहुँ

पत्र संख्या :-
चलानी नम्बर :-

मिति : २०७२/०८/१५

विषय :- सुचना राखँ सम्बन्धमा ।

श्री आयोजना निर्देशनालय (ADB)
विद्यालनगर, काठमाडौं ।

प्रस्तुत विषयमा, सडक विभाग, आयोजना निर्देशनालय (ADB) प्रस्तावित रहेको मुग्लिन - पोखरा सडक (30Km) स्तरोन्नति — सम्बन्धी विषयको स्थलगतिय सुचना मिति २०७२।०७।१६ गतेको अन्तरर्वार्ता पश्चात प्रकाशित सुचना यस कार्यालय सुचना पारमा राखँ गरिदा यसबेहोरादो जानकारी गराउँछ ।

विष्णु [illegible]

"रुख रोपौं, वन जोगाऔं"

लामिडांडा सामुदायिक वन उपभोक्ता समिति

मनपाङ-२, तनहुँ

पत्र संख्या :- २०७
चलानी नंम्बर :-

मिति : २०७३-८-१२

विषय :- सुचना टाँस गरिदिने सम्बन्धमा ।

श्री आयोजना निर्देशनालय (ADB)
विशालनगर, काठमाण्डौं ।

प्रस्तुत विषयमा स्तर्क जिल्ला, आयोजना निर्देशनालय (ADB) प्रस्तावित रहेको मुग्लिन - पोखरा स्तर्क स्तरोन्नती (६० कि.मी.) सम्बन्धि विषयको स्वार्थजनिक सुचना मिति २०७३।०६।२६ गतेको अङ्गेजी पत्रिकामा प्रकाशित सुचना यस कार्यालयको सुचना पाटीमा टाँस गरिदिने व्यहोराको जानकारी गराईन्छ ।

अध्यक्ष

For Reference Only

"रुख रोपौं, बन जोगाऔं" जि.व.का.तलहँ द.नं.१५/०५२

श्री सिमलचौर सामुदायिक वन उपभोक्ता समूह

खैरेनीटार, तनहूँ

पत्र संख्या: ०८२/००४

चलानी नम्बर : ९३

मिति: २०८२/०८/१३

विषय :- सुचना टासँ गरिदिने सम्बन्धमा ।

श्री आयोजना निर्देशनालय (ADB)
विद्यालयाख, दमौली ।

प्रस्तुत विषयमा खाडु विभाग, आयोजना निर्देशनालय (ADB) (६० कि.मी.) प्रस्तावद रहेको मुग्लिन - पोखरा खाडु स्तरोन्नती सम्बन्धी कि सार्वजनिक सुचना मिति २०८२/०८/१५ गतेदी प्रवर्ध पत्रिकामा प्रकाशित सुचना पत्र हामीलाई सुचना पाएमा यसै गरीदी व्यवहोरादी जानकारी गराईछ ।

मे:/०८/१२

धनाम
कर्मचारी

For Reference Only

ANNEX 3

Recommendation Letters

For Reference Only

For Reference Only

नेपाल सरकार
संघीय मामिला तथा स्थानिय बिकास मन्त्रालय
फोन नं.: ०६५-५४००८२
PH.No.: 065-540082

आँबुखैरेनी नगरपालिका कार्यालय
AANBOOKHAIRENI MUNICIPALITY OFFICE

आँबुखैरेनी, तनहुँ
Aanbookhareni, Tanahun
गण्डकी अञ्चल नेपाल
Gandaki Zone, Nepal

पत्र संख्या Ref.No.:
चलानी नम्बर Des.No.: ९८३३
मिति Date.: २०७३/०९/२८

विषय:- सिफारिस गरिएको सम्बन्धमा ।

श्री सडक विभाग
आयेजना निर्देशनालय (ए.डी.बि.)
बिशाल नगर काठ्माण्डौं

प्रस्तुत विषयमा भौतिक पुर्वाधार तथा यातायात मन्त्रालय आयोजना निर्देशनालय (ए.डि.बी.)को च.नं.३१५ मिति २०७३/७/२२ को प्राप्त पत्र अनुसार प्रस्तावित मुग्लीङ्ग पोखरा सडक खण्ड स्तरन्नतीको कार्य संञ्चालन अवधिमा अल्पकालिन रुपमा बाताबरणीय प्रभाव परेतापनि प्रस्तावको कार्य सम्पन्न पश्चात त्यस क्षेत्रको दिर्ग कालिन रुपमा सामाजिक आर्थिक अवस्थाको स्तरन्नतीका अवसरहरुका साथै बाताबरणीय सुधार हुने देखिएकोले उक्त प्रस्ताव कार्यन्यानको लागि सम्बन्धित निकायलाई सिफारिस गरीएको छ ।

सुभावः- बाताबरणीय प्रभाव (ई.एम.पी.) अनुसार न्यूनीकरणका उपायहरु अपनाउदै आयोजना कार्यन्यन गर्नु हुन अनुरोध गरिन्छ ।

ए- कार्यकारी अधिकृत

For Reference Only

"हामले गर्ने सबै क्रियाकलापहरु बालमैत्री बनाऔं"

श्री घाँसीकुवा गाउँ विकास समितिको कार्यालय
Shree Ghansikuwa Village Development Committee
घाँसीकुवा, तनहुँ
Ghansikuwa, Tanahun
गण्डकी अञ्चल

पत्र सं /Ref. No: ०६२।६४
च.नं /Des. No: ४६१

मिति/Date :-२०६२।८।१६

विषय: सिफारीस सम्बन्धमा

श्री सडक विभाग
आयोजना निर्देशनालय (एडीबी)
विशालनगर, काठमाण्डौं

प्रस्तुत सम्बन्धमा प्रस्तावित मुख्ली पोखरा सडक खण्डको निर्माण को लागी घारम्बीक वातावरणीय परीक्षण को प्रतिवेदन तयारी सिलसिलामा र वातवर्णलाई असर नपर्ने गरी २०५६ वैशाखिम यादको मौलिक सामाजिक-सस्कृतीक जैविक क्षतिको तथा मानवीय कुरा कलाप इकलाई-दुन समाज पोई आयोजना कार्यान्वयन को लागी यो संस्था सिफारीस साथ अनुरोध छ।

राम राज न्यौपाने
स.वि.स. सचिव, एवं अध्यक्ष

For Reference Only

नेपाल सरकार

बन्दिपुर नगरपालिका कार्यालय

बन्दिपुर, तनहुँ

पत्र संख्या : ०७३।७४

चलानी नम्बर : १०००

मितिः २०७३/०८/०९

विषयः सिफारिस तथा राय सुझाव सम्वन्धमा ।

श्री सडक विभाग आयोजना निर्देशनालय(ए.डी.बी)
विशालनगर काठमाण्डौ ।

प्रस्तुत विषयमा त्याँहा कार्यालयको मिति २०७३/०७/२२ प.स २०७३/०७४ च.हि.नं ३१६ को पत्र अनुसार मुग्लिङ्ग पोखरा सडक खण्डको स्तरोन्नतीको लागि आयोजनाको प्रारम्भिक वातावरणिय परीक्षण **(IEE)** तयारीको सिलसिलामा र वातावरण संरक्षण निमावली २०५४ बमोजिम यहाँको भौतिक सामाजिक,जैविक, आर्थिक तथा मानवीय क्रियाकलापहरुलाई न्युन प्रभाव पार्दै आयोजना कार्यन्वयनको लागि सिफारिस साथ अनुरोध छ ।

(लेखनाथ न्यौपाने)
कार्याकारी अधिकृत
कार्यकारी अधिकृत

For Reference Only

"विविधतायुक्त सुदृढ, समुन्नत एवं समृद्ध व्यास नगर"

नेपाल सरकार

व्यास नगरपालिका कार्यालय

Government of Nepal

VYAS MUNICIPALITY OFFICE

Damauli, Tanahun

पत्र संख्या: २०७३।०७४ मिति: २०७३।९।२६

चलानी नम्बर: ७९२०

विषय: **राय सूझाव सम्बन्धमा ।**

श्री भौतिक पुर्वाधार तथा यातायात व्यवस्था मन्त्रालय
सडक विभाग
आयोजना निर्देशनालय (ए.डी.बी)
विशालनगर, काठमाण्डौ ।

प्रस्तुत विषयमा तांहा निर्देशनालयबाट मिति २०७३।७।२२ गते व्यास नगरपालिका कार्यालयको नांउमा प्रेशित च.नं ३१६ को पत्र प्राप्त भई व्यहोरा अवगत भयो । सो सम्बन्धमा यस व्यास नगरपालिका कार्यालयको क्षेत्र भित्र पर्ने पृथ्वी राजमार्ग क्षेत्र आसपासका यस आयोजनाबाट प्रत्यक्ष रुपमा प्रभावित हुने वासिन्दाहरुको सामूहिक भेला वा छलफल कार्यक्रम आयोजना गरी प्रारम्भिक वातावरणीय परीक्षण प्रतिवेदन (IEE)का लागि उक्त भेलाबाट सुझावहरु लिई कार्यक्रम अगाडी बढाउनुहुन राय सुझाव पेश गरिन्छ ।

डिल्लीराम सिंदेल
प्रमुख एवं कार्यकारी अधिकृत

For Reference Only

"हामीले गर्ने सबै विषय र क्रियाकलापहरु घरमैत्री बनाऔं"

श्री जामुने नमूना गाउँ विकास समितिको कार्यालय

Shree Jamune Model Village Development Committee

जामुने, तनहुँ
Jamune, Tanahun
गण्डकी अञ्चल, नेपाल
०६५-५२९३१४
९८५६०२४८९३

प.सं./Ref.No. :-
च.नं./Des.No.:- ९४८

मिति/Date:-२०७३।१०।०६

विषय/Subject:- सिफारीस पत्र-बारे !

श्री सडक विभाग
आयोजना निर्देशनालय (डिवी)
विसालनगर, काठमाण्डौं ।

प्रस्तुत विषयमा प्रस्तावित मुग्लीन पोखरा सडक (पर्वतेश्वरीण) को लागी प्रारम्भीक वातावरणीय परिक्षण को प्रतिवेदन तयारी सिलसिलमा सम्पादन परीक्षण निर्देशावली २०६८ बमोजिम यहाँको भौतिक सामाजिक सांस्कृतिक जैविक आर्थिक एवं मानवीय क्रियाकलाप सम्बन्धी सूचना प्रवाह पाउँ आयोजना कार्यालयमा सूचनाको सिफारीस गरी पठाईएको व्यहोरा अनुरोध छ...

२०७३।१०।६

विजय राज खनाल
गा.वि.स. सचिव एवं सुपरभाइजर

For Reference Only

"हामीले गर्ने अथै निर्णय र क्रियाकलापहरु पालनैपर्ने बचनहरु"

श्री छाङ्ग गाउँ विकास समितिको कार्यालय

Shree Chhang Village Development Committee

छाङ्ग, तनहुँ
Chhang, Tanahun

गण्डकी अञ्चल, नेपाल
Gandaki Zone, Nepal

प.सं./Letter No. :- Ni2106६

च.नं./Ref.No.:- ४२९

मिति/Date:- २०६१.१.१६.

विषय/Sub :- सिफारिस सम्बन्धमा

श्री सडक विभाग

आयोजना निर्देशनालय (एडिबी)

सिंहदरबार, काठमाडौं

प्रस्तुत विषयमा प्रस्तावित मुग्लिन पोखरा सडक खण्डको निर्माण को लागी प्रारम्भिक वातावरणीय परिक्षण को प्रतिवेदन नयाँ सिफारिस गरिएका वातावरण संरक्षण सिफारिस को ४८ बमोजिम पाखाई गाउँपालिका को छाङ्ग गाउँ मा पर्ने भौतिक, जातिय एवं सांस्कृतिक क्षेत्रमा कुनै पनि किसिमको नकारात्मक प्रभाव नपर्ने भएकोले आयोजना कार्यान्वयनको लागि सिफारिस गरी पठाइएको व्यहोरा अनुरोध छ ।

धन्यवाद ।

२०६१.१.१६.

विधिराज बन्जाडे
सचिव तथा प्रशासक

For Reference Only

"हामीले गर्ने सबै निर्णय र क्रियाकलापहरु बालमैत्री बनाऔं"

श्री मनपाङ्ग गाउँ विकास समितिको कार्यालय

Shree Manapang Village Development Committee

मनपाङ्ग, तनहुँ

Manapang, Tanahun

गण्डकी अञ्चल, नेपाल

प.सं./Ref.No. :-

च.नं./Des.No.:- ५०२

मिति/Date: २०७३।८।१६

विषय/Sub:- सिफारीस सम्बन्ध ।

श्री/Shree सडक विभाग

आयोजना निर्देशनालय (एडीबी)

विशाल नगर, काठमाडौं

उपरोक्त विषयमा प्रस्तावित मुग्लोन पोखरा सडक स्तरोन्नति लागी प्रारम्भिक वातावरणीय परीक्षण (ले.वी) को प्रतिवेदन तयारी सिलसिला र वातावरणीय संरक्षण नियमावली २०५४ बमोजिम यसमा भौतिक सामाजीक सेरोफेरो जैविक आयाम एवम मानवीय क्रियाकलाप हुनुलाई ध्यान प्रभाव पार्ने आयोजना कार्यान्वयन गर्ने लागी सिफारिस गरी पठाईएको व्यहोरा अनुरोध छ ।

०७३।८।१६

गुरुदत्त घिमिरे

गा.वि.स अध्यक्ष

For Reference Only

नेपाल सरकार

शुक्लागण्डकी नगरपालिका कार्यालय

SHUKLAGANDAKI MUNICIPALITY OFFICE

दुलेगौंडा, तनहुँ

Dulegauda, Tanahun

फोन : ०६५-५७००१८, ५७०३०५
Phone:- 065-570018, 570305

नेपाल सरकार
शुक्लागण्डकी नगरपालिका कार्यालय
दुलेगौंडा, तनहुँ
२०७१

प.स. २०७३/७४
च.नं. ५०९८

मिति : २०७३/०८/०७

श्री सडक विभाग,
आयोजना निर्देशनालय (ए.डी.बी.),
विशालनगर, काठमाण्डौं ।

विषय : सिफारिस सम्बन्धमा ।

महोदय,

उपरोक्त सम्बन्धमा त्यस कार्यालयबाट मिति २०७३/०७/२२ गते पठाइएको प.स. पी.डि. TPPF-PPC-2।०७३।०७४ च.नं. ३१६ पत्र अनुसार मुग्लिङ्ग पोखरा सडक (९० कि.मी.) स्तरोन्नती आयोजनाको प्रारम्भिवक वातावरणिय परिक्षण (IEE) को लागि सिफारिस मागं भएकोले यहाँको भौतिक, सामाजिक, सांकृतिक जैविक तथा मानविय कृयाकलापहरुलाई असर नपर्ने गरी आयोजना संचालनको लागि सिफारिस साथ अनुरोध छ ।

तिलक बहादुर खड्का
(कार्यकारी अधिकृत)

For Reference Only

☎ ०६१-५६००८०, ०६१-५६०५६६,

लेखनाथ नगरपालिका कार्यालय

तालचोक, कास्की

(प्रशासन शाखा)

सात तालको बगैंचा सहर
GARDEN CITY OF SEVEN LAKES
लेखनाथ नगरपालिका
LEKHNATH MUNICIPALITY

प.सं.
च.नं. ५५४६

मिति :– २०७३/०८/०८

विषय :– सिफारीस सम्बन्धमा ।

श्री सडक विभाग
आयोजना निर्देशनालय (ए.डि.वि)
विशालनगर ,काठमाण्ठौ ।

प्रस्तुत विषयमा त्यहाँ रहेको कार्यालयको च.न ३१६ मिति २०७३/०७/२२ गतेको पत्रानुसार मुग्लीङ्ग पोखरा सडक खण्डको स्तर उन्नतीको लागी प्रारम्भिक बातावरणीय परिक्षण (IEE) प्रतिवेदन शिलशिलामा यहाँको भौतिक ,सामाजिक, सास्कृतिक, जैविक तथा मानवीय कियाकलापहरुलाई न्यून प्रभाव पादै आयोजना कायोनयन गर्नको लागी सिफारिस साथ अनुरोध गरिन्छ ।

२०७३।८।८

नि. कार्यकारी अधिकृत

For Reference Only

नेपाल सरकार

सङ्घीय मामिला तथा स्थानीय विकास मन्त्रालय

पोखरा उपमहानगरपालिका कार्यालय

पोखरा

२०५२

"हाम्रो अभिभारा स्वच्छ सुन्दर पोखरा"

फोन नं. ५२१४६०, ५२०३९२ कार्यालय सौधपुछ
फ्याक्स: ५२०६००
इमेल: info@pokharamun.gov.np
वेवसाइट: www.pokharamun.np

पत्र संख्या :
चलानी नम्बर : ९६८२

(शहरी विकास तथा पूर्वाधार महाशाखा)

मिति : २०७३/०८/१५

श्री सडक विभाग
आयोजना निर्देशनालय (ए.डि.पि.)
विशालनगर, काठमाण्डौं ।

विषय : सिफारीस गरिएको सम्वन्धमा ।

प्रस्तुत विषयमा तहाँ कार्यालयको च.नं.३१६ मिति २०७३/०८/०८ गते प्राप्त पत्रानुसार Transport Project Preparatory Facility, PPC-2 अन्तर्गत एशियाली विकास बैंकको ऋण सहयोगमा सञ्चालन हुने मुग्लिङ्ग-पोखरा सडक (९०कि.मी.) स्तरोन्नती आयोजनाको लागि प्रारम्भिक वातावरणीय परिक्षण (IEE) को प्रतिवेदन तयार गर्नको लागि उक्त स्थानको भौतिक, सामाजिक, साँस्कृतिक, जैविक तथा मानवियका साथै वातावरणीय क्रियाकलापहरुलाई न्युन प्रभाव पार्दै आयोजना कार्यान्वयन गर्नको लागि सिफारीसका साथ अनुरोध गरिन्छ ।

२०७३/०८/१५

(व.ई.शारदामोहन काफ्ले)
महाशाखा प्रमुख

विभागिय प्रमुख
सार्वजनिक निर्माण विभाग

For Reference Only

नेपाल सरकार
वन तथा भू-संरक्षण मन्त्रालय
वन विभाग

जिल्ला वन कार्यालय, कास्की

बगर, पोखरा

फोन नं. ०६१-५२०१७१

प.सं. ०७३।०७४
च.नं. ४८८

मिती: २०७३।०८।१५

विषय : सिफारिस तथा राय सुझाव सम्बन्धमा ।

श्री सडक विभाग

आयोजना निर्देशनालय, काठमाण्डौ ।

प्रस्तुत विषयमा तहाँको च.नं. ३१६ मिति २०७३।०७।२२ को पत्र प्राप्त भई व्यहोरा अवगत भयो । तत् सम्बन्धमा मुग्लिङ-पोखरा सडक स्तरोन्नति आयोजनाको प्रारम्भिक वातावरणीय परिक्षण (IEE) प्रतिवेदन तयार गर्ने क्रममा यस कार्यालयको राय सुझाव माग भएकोमा सडक विस्तारको क्रममा उक्त सडक Right of way भित्र पर्ने निजि, सामुदायिक, कबुलियती तथा सरकार द्वारा व्यवस्थीत वनका रुखहरु हटाउनु पर्ने अवस्था हुन सक्ने हुँदा त्यस्ता रुखहरु हटाँउदा अपनाउनु पर्ने प्रकृया तथा आईपर्ने वातावरणीय समस्या न्यूनीकरणका कार्यहरु (Mitigation measures) अवलम्बन हुने गरी IEE अध्ययन सहमती दिईएको व्यहोरा अनुरोध छ ।

२४।८।१५

केदार खरेल
जिल्ला वन अधिकृत

जिल्ला वन अधिकृत

For Reference Only

नेपाल सरकार
गृह मन्त्रालय
जिल्ला प्रशासन कार्यालय
फोन नं.- ५६०१३३
५६०१०९
फ्याक्स:- ५६०१०७

पत्र संख्या :- ०७३/०७४
चलानी नम्बर :- ९६३०
प्राप्त पत्र संख्या र मिति :-

मिति २०७३।८।७

विषय :- सिफारिस सम्बन्धमा ।

श्री सडक विभाग,
आयोजना निर्देशनालय (ए.डि.बी.)
विशालनगर काठमाडौ ।

प्रस्तुत विषयमा तहांको च.नं.३१६, मिति २०७३।७।२२ को पत्र प्राप्त पत्रानुसार त्यस आयोजना निर्देशनालयबाट निकट भविष्यमा सञ्चालन हुने मुग्लिङ्ग-पोखरा सडक स्तरोन्नती आयोजनाको वातावरणीय सन्तुलन कायम गर्दै प्रारम्भिक वातावरणीय परीक्षण (IEE) प्रतिवेदन तयार गर्ने सिलसिलामा सार्वजनिक राय सुझाव संकलन गर्न परामर्सदातृ संस्थाबाट खटाईएको टोलीलाई आयोजनाको प्रारम्भिक वातावरणीय परीक्षण प्रतिवेदन तयार गर्ने कार्यको लागि सिफारिस गरिएको व्यहोरा आदेशानुसार अनुरोध छ ।

प्रशासकिय अधिकृत
सुरेश ढकाल
प्रशासकिय अधिकृत

For Reference Only

For Reference Only

पत्रो नं. १८०७/०६७/०६८

आदर्श युवा क्लब

आँबुखैरेनी-८, सांखु, तनहूँ

स्था: २०६७

पत्र संख्या:

चालानी नं.:

मिति: २०७३/०८/१९

श्री सडक विभाग, आयोजना निर्देशनालय
क.दि.वि. विशालनगर, काठमाडौं

विषय: सिफारिस तथा लिखित राय सुझाव सम्बन्धमा

महोदय

प्रस्तुत सम्बन्धमा प्रस्तावित मुग्लिन-पोखरा सडक खण्डको स्तरउन्नतीको लागि प्रारम्भिक वातावरणीय परिक्षण (IEE) तयारी सिलसिला र वातावरण संरक्षण दिग्दर्शावली २०५६ बमोजिम उक्त प्रस्तावित मुग्लिन पोखरा सडक खण्डको स्तरोन्नती गर्दा यहाँको भौतिक, सामाजिक, आर्थिक, सांस्कृतिक, जैविक तथा मानविय क्रियाकलापहरुलाई न्यूनतम पार्ने गरी आयोजना कार्यान्वयनको लागि सिफारिस साथ अनुरोध गरिन्छ ।

आदर्श युवा क्लब
स्था. २०६७
आँबुखैरेनी-८, सांखु, तनहूँ

भवदीय

हरिराम बहादुर मगर

श्री कुकुरगाडे सामुदायिक वन उपभोक्ता समूह

आँबुदबारी-५, अदर्वा, खर्क

समूह

पत्र संख्या :- ००१/००४
चलानी नम्बर :-

मिति. २०७३/०८/१०

विषय :- सिफारिस तथा लिखित राय सुझाव

श्री सडक विभाग
आयोजना निर्देशनालय
विशालनगर, काभ्रेडाँडा ।

उपरोक्त सम्बन्धमा प्रारम्भिक वातावरणीय परिक्षण (IEE) तथारी सिलसिला र वातावरण संरक्षण निर्देशिका २०५४ बमोजिम अक्क प्रस्तावित मुर्लिङ्ग पोखरा सडक खण्डको स्तरउन्नति गर्दा यहाँको भौतिक, सामाजिक, आर्थिक, सांस्कृतिक, जैविक तथा सांस्कृतिय क्रियाकलापलाई न्यून असर पार्ने गरी आयोजना ~~कार्यान्वयन~~ कार्यान्वयनको लागि सिफारिस साथ अनुरोध गरिन्छ ।

चाबु बहादुर थापा
(अध्यक्ष)

For Reference Only

चिसोपानी पुरानोकोट सामुदायिक वन उपभोक्ता समिति

आँबुखैरेनी-६, ननहँ
स्थापित: २०५१

पत्र संख्या:
चलानी नं.:

मिति: २०७२/०८/१०

विषय:- सिफारिस तथा लिखित राय सुझाव सम्बन्धमा

श्री सडक विभाग,
आयोजना निर्देशनालय (ए॰डी॰बि)
बिद्यालनगर, काठमाण्डौ

महोदय,

उपरोक्त सम्बन्धमा प्रस्तावित मुग्लिङ-पोखरा सडक खण्डको स्तरउन्नतीको लागि प्रारम्भीक वातावरणीय परिक्षण (IEE) तयारी सिलसिला र वातावरण संरक्षण नियमावली २०७४ बमोजिम उक्त प्रस्तावित मुग्लिङ पोखरा सडक खण्डको स्तरउन्नति गर्दा यहाँको भौतिक, सामाजिक, आर्थिक, सांस्कृतिक, जैविक तथा मानविय क्रियाकलापहरुमा न्यून असर पार्ने गरी आयोजना कार्यान्वयनको लागी सिफारिस साथ अनुरोध गरिन्छ।

अध्यक्ष

For Reference Only

For Reference Only

समूह दर्ता नं.

"बिल्ववा रोपौं, बन जोगाऔं"

श्री भाँगे सामुदायिक वन उपभोक्ता समूह

आँबु-७, भाँगे, तनहूँ

पत्र संख्या : ०६३/०६४

चलानी नं. :

मिति २०६३/०८/१९

विषय: सिफारिस तथा लिखित राय सम्बन्ध

श्री सडक विभाग आयोजना निर्देशनालय

विशालनगर, काठमाडौं

सम्बन्धित विषयमा म्याग्दिङ्ग-पोखरा सडक खण्डको प्रस्तावित आयोजनाको प्रारम्भिक वातावरणीय परिक्षण (IEE) तयारी सिलसिलाको अध्ययन सम्बन्धका कार्य-थनको लागि सिफारिस साथ अनुरोध गरिन्छ।

For Reference Only

"रूख रोपौ, वन जोगाऔं"

कोक्च सामुदायिक वन उपभोक्ता समूह

वन्दिपुर-६, त्रिसलनगर

पत्र संख्या : ०६३/०६४

चलानी नं. :

र.नं. TAN/BA/39/12
९(०६१/०६२)
३६७

मिति : ०६३।८।१९

विषय :- सिफारिस तथा राय सुझाव सम्बन्धमा

श्री सडक विभाग आयोजना निर्देशनालय (ए.डी.बी)
विशालनगर, काठमाडौं

उपरोक्त सम्बन्धमा मुग्लिङ - पोखरा सडक खण्डको स्तरोन्नतिको लागि आयोजनाको प्रारम्भिक वातावरणीय परीक्षण (IEE) तयारीको सिलसिला र वातावरण संरक्षण नियमावली २०५४ बमोजिम उक्त पोखरा - मुग्लिङ सडक खण्ड स्तरोन्नति गर्दा भौतिक, सामाजिक, जैविक, आर्थिक, तथा मानविय क्रियाकलापलाई न्यून प्रभाव पर्ने गरी आयोजना कार्यान्वयनको लागि सिफारिस गरिन्छ ।

सचिव

For Reference Only

लोहि पाखा सामुदायिक वन उपभोक्ता समूह

पत्र संख्या :-063/064
चलानी नम्बर :-

मिति : ०६३/८/१०

विषय :- सिफारिस तथा राय सुझाव सम्बन्धमा

श्री लडक विभाग आयोजना निर्देशनालय (ए.डी.वी.)
विशालनगर, काठमाडौं ।

उपरोक्त सम्बन्धमा मुस्लिङ् पोखरा लडक खण्डको स्तरोन्नतिको लागी आयोजनाको प्रारम्भिक वातावरणीय परिक्षण (IEE) तयारीको सिलसिला र वातावरण संरक्षण नियमावली २०५४ बमोजिम उक्त लडक खण्ड स्तरउन्नति गर्दा भौतिक, सामाजिक, जैविक, आर्थिक तथा मानविय क्रियाकलापलाई न्यून प्रभाव पर्ने गरी आयोजना कार्यान्वयनको लागी सिफारिस गरिन्छ ।

अध्यक्ष

For Reference Only

द.नं. ५४

चाम्पा सामुदायिक वन उपभोक्ता समूह

वन्दीपुर-८, तनहूँ

पत्र संख्याः- ०७४/०७४ मितिः- ०७४/८/१७०

चलानी नं.:-

विषयः- सिफारिस तथा राय सुझाव सम्बन्धमा।

श्री सडक विभाग आयोजना निर्देशनालय (ए० डि० वि०)
विराटनगर, कोशी अञ्चल।

उपरोक्त सम्बन्धमा मुग्लुङ-पोखरा सडक खण्डको स्तरोन्नतिको लागि आयोजनाको प्रारम्भिक वातावरणीय परिक्षण (IEE) तथा सो को सिलसिलामा वातावरण संरक्षण नियमावली २०५४ बमोजिक उक्त पोखरा मुग्लुङ, सडक खण्ड स्तरोन्नति गर्दा भौतिक, सामाजिक भौतिक, आर्थिक, तथा सांस्कृतिक क्रियाकलापमाथि न्यून प्रभाव पर्ने जसरी आयोजना कार्यान्वयनको लागि सिफारिस गरिन्छ।

धनिराम लामिछाने
अध्यक्ष

ध्रुव प्रसाद लामिछाने
सचिव

For Reference Only

"रुख रोपौं, वन जोगाऔं"

श्री खाग्दी सामुदायिक वन उपभोक्ता समूह

घाँसीकुवा-५, गोल्ला, तनहुँ

पत्र संख्या :- २०७३/७४

चलानी नं.:- ९९

मिति २०७३/८/१२

विषय :- सिफारिस तथा राय सुझाव सम्बन्धमा ।

श्री सडक विभाग आयोजना निर्देशनालय (D.O.R.P.)
विशाल नगर काठमाण्डौं

उपरोक्त सम्बन्धमा मुग्लिङ, पोखरा सडक खण्डको स्तरोन्नतिको लागि आयोजनाको प्रारम्भिक वातावरणीय परीक्षण (IEE) तयारीको सिलसिला र वातावरण संरक्षण नियमावली २०५४ बमोजिम उक्त पोखरा - मुग्लिङ सडक खण्ड स्तरोन्नति गर्दा भौतिक सामाजिक जैविक आर्थिक तथा मानविय क्रियाकलापलाई न्यून प्रभाव पर्ने गरि आयोजना कार्यान्वयनको लागि सिफारिस गरिन्छ ।

श्री घम बहादुर थापा
अध्यक्ष

श्री काजी बाबु पन्थ
सचिव

For Reference Only

श्री शिव पार्वति सामुदायिक बन उपभोक्ता समिति

घांसीकुवा,५ तनहुँ

स्था. २०२१

प. स. :- ०६२/०६४

च. नं. :-

मिति २०६३/०९/१९

विषय। सिफारिस तथा लिखित राय सुझाव

श्री सडक विभाग आयोजना निर्देशनालय

विशालनगर, काठमाडौं।

सम्बन्धित विषयमा मुग्लिङ-पोखरा सडक स्तरोन्नति आयोजना प्रारम्भिक वातावरणीय परिक्षण (IEE) तथारी सिलसिलाको अध्ययन सम्बन्धमा कार्यस्थलको लागी सिफारिस साथ अनुरोध गरिन्छ।

सीता

अध्यक्ष

For Reference Only

"रूख रोपौं, वन जोगाऔं"

सुन्दरी सामुदायिक वन उपभोक्ता समूह

ब्यास-१, बुसेखोला, तनहुँ

पत्र संख्या:

चलानी नं.: १८ २०५०

मिति: २०८१।८।१२

विषय:- सिफारिस तथा लिखित राय सुझाव

श्री खड्ग विभाग
आयोजना निर्देशनालय
बिराल नगर, आछामडौं

उपरोक्त सम्बन्धमा प्रारम्भिक वातावरणीय परिक्षण (IEE) तयारी सिलसिलेमा र वातावरण संरक्षण नियमावली २०५४ बमोजिम हुन प्रस्तावित मुग्लिङ-पोखरा खण्डको स्तरउन्नती गर्दा यहांको भौतिक, सामाजिक, आर्थिक, सांस्कृतिक जैविक तथा मानविय क्रियाकलापलाई न्यून असर पार्ने गरी आयोजना कार्यान्वयनको लागी सिफारिस साथ अनुरोध गरिन्छ।

भवदीय
बलबहादुर पोखरेल
अध्यक्ष
सुन्दरी सामुदायिक वन उपभोक्ता
समूह ब्यास न.पा.-१

For Reference Only

पारुडी सामुदायिक वन उपभोक्ता समूह

जामुने, पारुडी, काभ्रेपलाञ्चोक

पत्र संख्या

चलानी नं.

मिति २०७३/८/१२

विषय : सिफारिस तथा राय सुझाव सम्बन्धमा

श्री सडक विभाग आयोजना निर्देशनालय (डि डी. वि) विसालनगर काठमाडौं

उपरोक्त सम्बन्धमा गाउँलिङ पोखरा सडक खण्डको स्तरोन्नतिको लागी आयोजनाको प्रारम्भिक वातावरणीय परीक्षण (IEE) तयारीको सिलसिलामा वातावरण संरक्षण नियमावली २०४९ को आधारमा उक्त पोखरा गुङलीन सडक खण्ड स्तरोन्नति गर्दा भौतिक सामाजिक धार्मिक आर्थिक तथा सांस्कृतिय क्रियाकलाप माथि न्यून प्रभाव पर्ने भएकाले आयोजना कार्यान्वयनको लागी सिफारिस गरीन्छ । सचिव

शाखा

"स्वस्थ रोपौं, वन जोगाऔं"

महिला मस्तुवा सामुदायिक वन उपभोक्ता समूह

मनपौडु-१, छविसे, तनहुँ

पत्र संख्या :-
चलानी नम्बर :-

मिति : २०७२/०८/१२

विषय :- सिफारिस तथा रद्द गुहार सम्बन्धमा ।

श्री सब डिभिजन अफिसर (ए.डी.ओ)
विशाल नगर काभ्रेपाटी

उपरोक्त सम्बन्धमा मुगलिङ - पोखरा सडक स्तरोन्नतिको लागि आयोजनाको प्रारम्भिक वातावरणीय परीक्षण (IEE) सिलसिला र वातावरण संरक्षण नियमावली २०५४ बमोजिम उक्त मुगलिङ-पोखरा सडक स्तरोन्नतिले गर्दा नेपाल सरकारको नियमावली अनुसार भौतिक, सामाजिक, वनिक, आर्थिक तथा मानवीय तियाकलापहरुलाई न्यून असर पार्ने भएकोले आयोजना कार्यान्वयनको लागि सिफारिस गरिएको छ ।

विश्वस्त

For Reference Only

"रूख रोपौं, वन जोगाऔं"

लामिडांडा सामुदायिक वन उपभोक्ता समिति

मनपाङ-२, तनहुँ

पत्र संख्या :- २१
चलानी नम्बर :-

मिति : ०७३-८-१७

विषय :- यौनजन्य तथा राय सुझाव संकलन

श्री सडक विभाग आयोजना निर्देशनालय (स.वि.नि)
विजयनगर काठमाण्डौं

कपरौंज संकलन मुग्लिङ-पोखरा

सडक खण्ड स्तरोन्नतिको लागी आयोजनाको प्रारम्भिक वातवरणीय परिक्षण (IEE) तयारीको सिलसिलामा वातावरण संरक्षण नियमावली २०५४ बमोजिम उक्त मुग्लिङ - पोखरा सडक खण्ड स्तरोन्नति गर्दा भौतिक, सामाजिक, जैविक, आर्थिक तथा सांस्कृतिक क्रियाकलाप लाई पर्न प्रभाव पर्नेबारे आयोजना कार्यान्वयनको लागी सिफारिस गरेको छ ।

अध्यक्ष

For Reference Only

"रुख रोपौं, बन जोगाऔं" जि.व.का.तनहुँ द.नं.१५/०५२

श्री सिमलचौर सामुदायिक वन उपभोक्ता समूह

खैरेनीटार, तनहुँ

पत्र संख्या: ०८२/००४

चलानी नम्बर : ९३

मिति: २०८३/०८/१३

विषय :- सिफारिस तथा लिखित पत्र प्रस्ताव

श्री सडक विभाग आयोजना निर्देशनालय
विशालनगर, काठमाडौं ।

उपरोक्त सम्बन्धमा प्रारम्भिक वातावरणीय परिक्षण (IEE) तयारी सिलसिला र वातावरण संरक्षण नियमावली २०५४ बमोजिम उक्त प्रस्तावित मुस्लिङ्ग घोराही सडक खण्डको स्तरोन्नतिले गर्दा यहाँको भौतिक, सामाजिक, आर्थिक, जैविक तथा मानविय क्रियाकलापलाई न्यून असर पार्ने गरि आयोजना कार्य-थलको लागि सिफारिस साथ अनुरोध गरिन्छ ।

नै.प.दु.ट

कर्मचारी

For Reference Only

बागेडाँडा सामुदायिक वन उपभोक्ता समूह

चलानी नं.:- २०६३/०६४ | मिति: २०६३/०८/१४

विषय:- सिफारिस सम्बन्धमा

उपरोक्त सम्बन्धमा यस आयोजनाको निकट भविष्यमा पोखरा-मुग्लीङ खण्ड स्तरोन्नति गर्न लागेको मा यस सा.व.उ.स.को वन क्षेत्र राजमार्ग को जोड्दै तपाई यस मन्त्रालय सम्बद्ध रहेको हुँदा उक्त सम्बन्धमा जिल्ला वन कार्यालयको नियम अनुसार हस्तान्तरण हुन जाने यस सडकको स्तरोन्नती गर्दा यस क्षेत्रका बासिन्दाको जरुरी प्राकृतिक संसाधन जस्तो महत्व पूर्ण सुरक्षको वन तोकसानी गर्दा गरि कार्य अघाडी बढाई दिनु हुन यो सुझाव सहित राय उपलब्ध गराइदिनु अनुरोध छ।

अध्यक्ष

कमल रिमाल

For Reference Only

द.नं. ०५४/२२६

श्री कायावौर छहरेपाखा सामूदायिक वन उपभोक्ता समूह

दुलगौंडा-७, ललितपुर

पत्र संख्या:- ०६१/०६४

चलानी नं.:- ९

मिति:- २०६१/८/१४

विषय: सिफारिस तथा राय सुझाव सम्बन्धमा।

श्री सडक विभाग आयोजना निर्देशनालय

विशालनगर, काठमाडौं।

उपरोक्त सम्बन्धमा प्रारम्भीक वातावरणीय परिक्षण (IEE) तयारी सिलसिला र वातावरण संरक्षण नियमावली २०५४ बमोजिम यस प्रस्तावित सुखिड, पौरवरा सडक खण्डको विस्तार गर्दा यहाँको भौतिक, सामाजिक, आर्थिक, जैविक तथा मानविय क्रियाकलापलाई न्यून असर पार्ने गरी आयोजना कार्यनयनको लागि यो सिफारिस साथ अनुरोध गरिन्छ।

अध्यक्ष

सचिव

For Reference Only

त जि व का द न २/०५५/०५६

राईपुरकोत्रे सामुदायिक वन उपभोक्ता समूह

शुक्लागण्डकी-५, कोत्रे, तनहुँ

प.स. २०७३।०७४
च.न - १

मिति २०७३।८।१४

श्री, सडक विभाग आयोजना निर्देशनालय

बिषय सिफारिस सम्बन्धमा ।

उपरोक्त विषयमा त्यस आयोजना से निकट भविष्यमा पोखरा-मुग्लीङ् सडक खण्ड स्तरोन्नति गर्न लागेको मा यस सा.व.उ.स.को वन क्षेत्र राजमार्ग वेंग जोडिएतापनी त्यस क्षेत्रमा सडक नभएको र कुल सडक को स्तरोन्नती गर्दा यस क्षेत्रका मानीसहरु को बसोवास, प्राकृतिक सम्पदा, जस्ता महत्व पूर्ण कुराहरु को कम नोक्सानी हुने गरी कार्य अगाडी बढाई दिनु हुन यो सुझाव सहीत राय उपलब्ध गराईदिने व्यहोरा अनुरोध छ।

१४

रामचन्द्र खनाल
उपाध्यक्ष
उपभोक्ता समूह

For Reference Only

"सामुदायिक भावनाको विकास गरौं"

प्रगतिशील सामुदायिक वन उपभोक्ता समूह

सेवनाथ नगरपालिका-13, कास्की

पत्र संख्या : ०७२/००४

चलानी नं. :

मिति : २०७३/०८/१५

विषय : सिफारिस तथा सिफारिस गरिएको अनुरोध

श्री सडक विभाग आयोजना निर्देशनालय
विशालनगर, काठमाडौं ।

उपरोक्त सम्बन्धमा प्रारम्भिक वातावरणीय परीक्षण (IEE) तथाती सिलालिला ट्वातावरण संरक्षण नियमावली २०५४ बमोजिम उक्त प्रस्तावित मुक्तिङ्ग-पोखरा सडक खण्डको स्तरोन्नति गर्दा यहाको भौतिक, सामाजिक, आर्थिक, जैविक तथा सांस्कृतिक कि्याकलापलाई न्यून असर पार्ने गरि आयोजना कार्यान्वयनको लागी सिफारिस साथ अनुरोध गरिन्छ ।

अध्यक्ष
सुनमाया नेपाली

For Reference Only

For Reference Only

नेपाल सरकार

वन तथा भू-संरक्षण मन्त्रालय

वन विभाग

जिल्ला वन कार्यालय

पत्र संख्या :- ०७३/७८

चलानी नम्बर :- ५९७

प्राप्त पत्र संख्या र मिति :-

फोन/फ्याक्स नं.: ०६५-५६०१३५
Email : tandfo@dof.gov.np
website : www.djotanahun.gov.np

मिति :- २०७३/८/१२

विषय :- राय सुझाव सम्बन्धमा ।

श्री सडक विभाग
आयोजना निर्देशनालय, काठमाण्डौ ।

प्रस्तुत विषयमा तहाँको च.नं. ३१६ मिति २०७३/७/२२ को पत्र प्राप्त भई व्यहोरा अवगत भयो । तत् सम्बन्धमा मुग्लिङ्ग-पोखरा सडक स्तरोन्नति आयोजनाको प्रारम्भिक वातावरणीय परीक्षण (IEE) प्रतिवेदन तयार गर्ने क्रममा यस कार्यालयको राय सुझाव माग भएकोमा सडक विस्तारको क्रममा उक्त सडकको Right of Way भित्र पर्ने निजी, सामुदायिक, कबुलियती तथा राष्ट्रिय वनका रुखहरु हटाउनु पर्ने अवस्था हुन सक्ने हुँदा व्यस्ता रुखहरु हटाउँदा अपनाउनु पर्ने प्रक्रिया तथा आईपर्ने वातावरणीय समस्या न्यूनीकरणका कार्यहरु (Mitigation Measures) अवलम्बन हुने गरी IEE अध्ययन सहमति दिइएको व्यहोरा सादर अनुरोध छ । साथै तहाँको जानकारीको लागि सरकारी रुखहरु हटाउने सम्बन्धी मापदण्ड, २०७१ पाना-२ संलग्न गरी पठाइएको व्यहोरा सादर अनुरोध छ ।

२०७३।८।१२

अम्बिका प्रसाद पौडेल
जिल्ला वन अधिकृत

For Reference Only

सरकारी रुखहरु हटाउने सम्बन्धी मापदण्ड, २०७१

नेपाल सरकार मन्त्रिपरिषद्को मिति २०६९/१२/०२ को बैठकबाट **"अब आइन्दा रुख काट्ने सम्बन्धमा मन्त्रालय र मातहतका निकायले समेत कार्यान्वयन गर्न सक्ने गरी मापदण्ड तयार गरी स्वीकृतीका लागि पेश गर्ने"** निर्णय भएकोले विकास निर्माण, सामाजिक हित वा धनजनको सुरक्षाको दृष्टिकोणले रुखहरु हटाउनु परेमा मन्त्रिपरिषद्मा पेश गरी निर्णय गराउनु पर्ने प्रकृयालाई सरलीकरण गर्न प्रस्तुत मापदण्ड, २०७१ जारी गरिएको छ।

१. नेपाल सरकार (मन्त्रिपरिषद) को निर्णयले अन्य प्रयोजनका लागि प्रयोग गर्न दिईएको राष्ट्रिय वन क्षेत्रको जग्गामा भएका रुखहरु हटाउन परेमा वन तथा भू-संरक्षण मन्त्रालयले हटाउने निर्णय गर्ने छ।

२. नेपाल सरकार (मन्त्रिपरिषद) को निर्णयले अन्य सरकारी निकाय (नेपाली सेना, नेपाल प्रहरी आदि) लाई प्रयोग गर्न दिईएको वन क्षेत्रको जग्गामा भौतिक संरचना निर्माण गर्ने कममा हटाउनु पर्ने रुखहरु सम्बन्धित मन्त्रालयको अनुरोधमा वन तथा भू-संरक्षण मन्त्रालयले हटाउने निर्णय गर्ने छ।

३. नेपाल सरकारबाट मुक्त कमैया, पुनर्वास वा यस्तै प्रकृतिका बसोबास प्रयोजनका लागि उपलब्ध गराइएका वन क्षेत्रमा रहेका रुखहरु सम्बन्धित मन्त्रालयको अनुरोधमा वन तथा भू-संरक्षण मन्त्रालयले हटाउने निर्णय गर्ने छ।

४. सडक छेउमा रहेका रुखहरु सडक विस्तारको क्रममा वा अन्य कुनै कारणबाट हटाउनु पर्ने भएमा सडक विभागको निर्णय तथा यसै मापदण्डको दफा १० बमोजिमको समितिले जाँचबुझ गरी सिफारिश गरेमा वन विभागको स्वीकृति लिई जिल्ला वन कार्यालयले उक्त रुखहरु हटाउन स्वीकृति दिन सक्ने छ। सम्बन्धित निकायले उक्त रुखहरु आफ्नै खर्चमा कटान मुछान तथा ढुवानी गरी उत्पादन भएका वन पैदावारहरु सम्बन्धित जिल्ला वन कार्यालयलाई बुझाउनु पर्ने छ।

५. जग्गाधनि प्रमाणपूर्जा भएका सरकारी कार्यालय, संस्थान, समिति कार्यालयका हाता भित्रका रुखहरु हटाउन पर्ने भएमा सम्बन्धित कार्यालयको विभागीय निर्णयको आधारमा यसै मापदण्डको दफा १० बमोजिमको समितिले जाँचबुझ गरी सिफारिश गरेमा जिल्ला वन कार्यालयले उक्त रुखहरु हटाउन स्वीकृती दिन सक्ने छ। कटान स्वीकृत पाएका रुखहरु सम्बन्धित निकायले आफ्नै खर्चमा कटान मुछान गरी उत्पादन भएका वन पैदावारहरु प्रचलित कानुन बमोजिम लिलाम बिकी गरी आएको रकम राजश्वमा दाखिला गर्नु पर्ने छ।

६. वन क्षेत्र बाहेकका जग्गाधनि प्रमाणपूर्जा नभएका सरकारी कार्यालय, संस्थान, समिति कार्यालय, सार्वजनिक स्थल तथा अन्य निकायको स्वामित्वमा रहेका जग्गामा भएका रुखहरु नहटाएमा "धनजनको क्षती हुने अवस्था रहेको" भनि सम्बन्धित निकायबाट अनुरोध भई यसै मापदण्डको दफा १० बमोजिमको समितिले जाँचबुझ गरी सिफारिश गरेमा जिल्ला वन कार्यालयले उक्त रुखहरु हटाउन स्वीकृति दिन सक्नेछ।

For Reference Only

सम्बन्धित निकायले उक्त रुखहरु आफ्नै खर्चमा कटान मुछान तथा ढुवानि गरी उत्पादन भएका वन पैदावारहरु जिल्ला वन कार्यालयलाई बुझाउनु पर्ने छ।

७. स्थानिय विकास आयोजना संचालन गर्ने क्रममा वन क्षेत्र वाहेकका स्थानिय गाउँ विकास समिति/नगरपालिकाको स्वमित्वमा भएका सार्वजनिक जग्गाहरुमा भएका रुखहरु नहटाई नहुने भएमा संबन्धित आयोजनाको अनुरोधमा दफा १० बमोजिमको समितिले जाँचबुझ गरी सिफारिश गरेमा जिल्ला वन कार्यालयले उक्त रुखहरु हटाउन स्वीकृती दिन सक्नेछ। यसरी कटान भएका रुखहरुको संख्यालाई २५ ले गुणा गर्दा हुने संख्या बराबरका बिरुवाहरु सम्बन्धित गाउँ विकास समिति/नगरपालिकाले आफ्नो स्वामित्वमा रहेका त्यस्तै अन्य सार्वजनिक जग्गाहरुमा बृक्षरोपण गरी संरक्षण गर्नु पर्ने छ।

८. स्थानिय समुह गठन तथा परिचालन गरी सार्वजनिक जग्गामा लगाईएका रुख बिरुवाहरु कटान गरी ओसारपसार गर्न जिल्ला विकास समितिको सिफारिशमा जिल्ला वन कार्यालयले स्वीकृति दिन सक्ने छ।

९. यस मापदण्ड बमोजिम कटान भएका रुखहरुबाट उत्पादित वन पैदावारको स्वामित्व अन्यथा लेखिएकामा वाहेक नेपाल सरकारको हुने छ।

१०. यस मापदण्डको प्रयोजनको लागि तल उल्लेख भए अनुसारको जाँचबुझ समिति रहने छ। जाँचबुझ समितिले कटान अनुरोध अनुसारको रुखहरुको जाँच गर्ने तथा कटान हुने क्षेत्र र रुखहरुको अनुगमनको साथै रोपाउनु पर्ने बिरुवाको संख्या र मापदण्ड सिफारिश गर्ने काम समेत गर्ने छ। अनुगमनमा लाग्ने खर्च सम्बन्धित कार्यालय/आयोजनाले नै व्यहोर्नुपर्ने छ।

जाँचबुझ समिति

१. जिल्ला वन अधिकृत –	संयोजक
२. जिल्ला प्रशासन कार्यालयको अधिकृत प्रतिनिधि –	सदस्य
३. मालपोत कार्यालयको अधिकृत प्रतिनिधि –	सदस्य
४. नापी कार्यालयको अधिकृत प्रतिनिधि –	सदस्य
५. जिल्ला भू संरक्षण कार्यालयको अधिकृत प्रतिनिधि–	सदस्य
६. जिल्ला विकास समितिको अधिकृत प्रतिनिधि–	सदस्य
७. सम्बन्धित आयोजना/कार्यालय/निकायका प्रमुख वा निजले तोकेको अधिकृत प्रतिनिधि –	सदस्य सचिव

For Reference Only

For Reference Only

ANNEX 4
Minutes of Meetings

For Reference Only

For Reference Only

आज मिति २०७३/०८/०६ गतेको दिन सडक विभाग आयोजना निर्देशनालय (ADB) अन्तरगत मुग्लिङ – पोखरा सडक स्तरउन्नति आयोजनाका लागि प्रारम्भिक वातावरणीय परिक्षण गरिरहेको अवस्थमा र वातावरण संरक्षण नियमावली २०७४ बमोजिम विमलनगर वार्ड नं ६ विचको ढलफलेन्ड इनल आयोजना कार्यवयन गर्दा भौतिक प्रणाली, जैविक प्रणाली, आर्थिक, सामाजिक क्रियाकलापहरुलाई न्यून प्रभाव पारी आयोजना कार्यावयनको लागि सिफारिस गरिन्छ ।

	उपस्थिति(नाम)	ठेगाना	हस्ताक्षर
१.	मनिमाया आले	विमलनगर (नन्दिपुर-६)	
२.	सञ्जोग थापा	" "	
३.	रेसम बो. नेपाली	" "	
४.	कल बहादुर थापा	विमल नगर	
५.	बहु माया थापा	"	बहु माया थापा
६.	विपना थापा		Thapa Bipana
७.	~~ईन्द्र बहादुर थापा~~ बलाई		

For Reference Only

आज मिति २०८३/०८/०८ गतेका दिन सडक विभाग आयोजना निर्देशनालय (ए.डि.बी) अन्तर्गत माउलेः- पोखरा सडक खण्डको प्रारम्भिक वातावरणीय परीक्षण सिलसिलामा र वातावरण संरक्षण नियमावली २०७४ बमोजिम हामी बन्दिपुर नगरपालिका वार्ड ६ नयाँपुलको बासिन्दाहरु बिचको छलफलत माउलेः- पोखरा सडक खण्डको स्तरोन्नतिको आयोजना कार्यान्वयनको लागि सिफारिस गरिन्छ ।

उपस्थिति

क्र	नाम	ठेगाना	हस्ताक्षर
१	रोहित प्रिया	बन्दिपुर-६ नयाँपुल	
२	प्रदिप राना मगर	"	
३	कबल बन्धु रेग्मी	"	
४	सविना भट्ट रेग्मी	"	
५	सुत्रम भुजेल	"	
६	बाबु शाही	"	
७	सन्तकान्त भुसेल	"	
८	सचित बाबु भुसेल	"	
९	विजया थापा	"	
१०	मिरा प्रिया	"	
११	मन्ना मिया	"	
१२	अमृता राम भुजेल	"	

For Reference Only

आज मिति 2082/07/09 गतेका दिन सडक विभाग आयोजना निर्देशनालय (ए.डि.वी) अन्तरगत स्याङ्जा-पोखरा सडक खण्डको प्रारम्भीक वातावरणीय परिक्षण प्रतिवेदनमा र वातावरण संरक्षण नियमावली 2077 बमोजिम हाम्री वन्दिपुर-८, तर्कु गाम्पाका वासिन्दाहरु विचको छलफलले सडक खण्डको स्तरउन्नतिको आयोजना कार्यान्वयको लागि सिफारिस गरिन्छ ।

नाम	ठेगाना	हस्ताक्षर
१. सुमी नन्दलामी हाेन	वन्दीपुर। ५-	
२. ध्रुव प्रसाद लामिछाने	वन्दीपुर-८	
३. अप्सरा थापा	वन्दीपुर-८	
४.		
५. अमित न्यौपाने	वन्दीपुर-८	
६. लडेन देवी	〃	
७. लडमण पोखरेल	〃	
८. मन बहादुर	〃	

For Reference Only

आज मिति २०७३/०८/०६ गतेका दिन सडक विभाग आयोजना निर्देशनालय (ह.उ.वी) अन्तर्गत मुग्लिङ - पोखरा सडक खण्डको स्तरोन्नतिको लागि प्रारम्भिक वातावरणीय परीक्षण (IEE) तथा लिलतिनामा र वातावरण संरक्षण नियमावली २०५४ बमोजिम हामी तपसिल बमोजिमका आँबुखैरेनी - ध तनहुँ वासिन्दा, उक्त पोखरा - मुग्लिङ सडक खण्डको स्तरोन्नति गर्दा भौतिक, सामाजिक, आर्थिक, पुरातात्विक संरचनामा न्यून प्रभाव पर्दै उक्त पोखरा - मुग्लिङ सडक स्तरोन्नतिको लागि सिफारिस गरेका छौं।

उपस्थिति :—

	नाम	ठेगाना	हस्ताक्षर
१.	बलराम ओझा	आँबु खैरेनी - ध तनहुँ	
२.	प्रविन यादव	"	
३.	कमल राज ओझा	"	
४.	[illegible] माया गुरुङ	"	
५.	चन्द्र बहादुर बुढायोकी	"	
६.	तिल कुमारी बुढायोकी	"	
७.	[illegible]		
८.	चन्द्र ब. यादव		
९.			

For Reference Only

आज मिति २०७३/०८/०९ गते का दिन सडक विभाग आयोजना निर्देशनालय (ए०डी०ने) अन्तर्गत मुलिङ-पोखरा सडक खण्डको स्तरउन्नतीको लागी प्रारम्भिक वातावरणीय परिक्षण (IEE) सिलसिलामा र वातावरण संरक्षण नियमावली २०५४ बमोजिम हामी धाँसीकुवा गा.वि.स वाड न ५, तनहु का निम्न बमोजिमका मानिसहरु उक्त-पोखरा-मुलिङ सडक खण्डको स्तर उन्नतिको लागी सिफारिस गरिन्छ ।

उपस्थिति :-

क्र.	नाम	ठेगाना	दस्तखत
१.	ऋषी आले	धाँसीकुवा-५ गोला	ऋषी आले
२.	सीता थापा	"	सीता
३.	पिमला थापा	"	
४.	सिन्धु माया थापा	"	सिन्धु
५.	देवी माया आले	"	देवी
६.	विष्णु थापा	"	
७.	सागर थापा	"	
८.	बसिला थापा मगर	"	
९.	रान ब. आले	"	
१०.	रम ब. आले	"	

For Reference Only

आज मिति 2063/08/04 गते का दिन सडक विभाग आयोजना निर्देशनालय (ए.डि.पि.) अन्तरगत मुस्ताङ् घोरेपा सडक खण्डको स्तरउन्नतीको लागि प्रारम्भीक वातावरणीय परिक्षण (IEE) सिलसिलामा ट वातावरण संरक्षण नियमवली वमोजिम हात्ती घाँसकुवा, तल्लँका निम्न वमोजिमका मानिसहरु उक्त सडक खण्डको स्तर उन्नतिको लागि सिफारिस गारेन्छ ।

उपस्थिति	ठेगाना	दस्तखत
१. प्रेमराज पन्थ	घाँसीकुवा	
२. काजि वाडु पर्पि	न्याउलो पोखरा.	
३. प्रकास श्रेष्ठ	~~घाँसीकुवा~~ -४	
४. सुजन अधिकारी	"	
५. भवानी घिमिरे	"	भवानी
६. श्यामु पन्त	घाँसीकुवा-४	
७. श्यामल नानी अधिकारी	"	
८. शिव दाहाल	"	

For Reference Only

आज मिति २०७२/०८/१० गतेका दिन सडक निर्माण आयोजना निर्देशनालय (ए.डी.बी) अन्तरगत मुग्लिङ-पोखरा सडक खण्डको स्तरउन्नतिको आयोजनाका लागि प्रारम्भीक वातावरणीय परिक्षण सिलसिलामा मानपाङ-२ का वासिन्दाहरु बीचको छलफलमा उक्त मुग्लिङ-पोखरा सडकको स्तरउन्नती गर्दा भौतिक, सामाजिक, जैविक, आर्थिक तथा मानवीय क्रियाकलापहरुमा न्यून असर पर्ने तथा नेपाल सरकारको नियमावलीमा रहेर आयोजनाको कार्यान्वयन गर्न सिफारिस तथा अनुरोध गरिएको छ।

उपस्थिती

नाम	ठेगाना	हस्ताक्षर
१. डम्बर मान श्रेष्ठ	मानपाङ-२- ~~पुरानो~~ तेरा	
२. विष्ण नारायण श्रेष्ठ	मानपाङ-२-~~ठे~~ [illegible] पानी	
३. नन्द ब. राना	मानपाङ-२- लहरा	
४. गंगा भण्डारी	मानपाङ-२ तुरतुरे	
५. विष्णु कुमारी वल्ले	मानपाङ-१ अक्ले	
६. शिव देवी वल्ले	मानपाङ-१ अक्ले	
७. प्रकाश भण्डारी	मानपाङ-२ तुरतुरे	
८. राजु राना	मानपाङ-२ "	
९. लिलु मान श्रेष्ठ	"	

For Reference Only

आज मिति २०८२/०८/१९ गतेका दिन सडक विभाग धनोजना निर्देशनालय ई.डि.भी अन्तर्गत प्रस्तावित मुढिडा - पोखरा सडक खण्डको स्तर उन्नतिको लागि प्रारम्भीक वातावरणीय परिक्षण सिलसिलामा र वातावरण संरक्षण नियमावली २०५४ बमोजिम हाम्री शुक्लागण्डकी नगरपालिका - ९ को क्षेत्र. तनहु बासीन्दाबीचको छलफल उक्त प्रस्तावित मुढिडा - पोखरा सडक खण्डको स्तर उन्नति गर्दा यहाँ रहेको, भौतिक संरचना, सांस्कृतिक सम्पदा, वन संरचना, जैविक संरचना तथा वातावरणमा न्यून असर पर्ने योजनाको तयारी गरी स्तरउन्नतिको ~~कार्य~~ कार्यको लागि सिफारिश गर्ने भनी छलफल बाट निर्णय गरियो ।

उपस्थिति

नाम	ठेगाना	हस्ताक्षर
१. रामचन्द्र खनाल	शु.न.पा.९	
२. नारायण प्र. पन्थी	"	
३. देवि खनाल	"	
४. गंगाश्मणी गौतम	"	
५. पार्वति भण्डारी	"	
६. पुष्पराज पन्थी	"	
७. मनविर पौड्याल	"	
८. विष्णु प्र. खनाल	"	
९. पोक्त बहादुर पुन	"	

For Reference Only

आज मिति २०६७/०८/१४ गतेका दिन सडक विस्तार आयोजना निर्देशनालय ए० डी० बि अन्तर्गत पोखरा-मुग्लिङ सडक खण्डको प्रारम्भिक वातावरणीय परिक्षण सिलगिताम्मा सुक्लागण्डकी नगरपालिका ७ (धर्दी) गाविसका वडाध्यक्षको छलफलले उक्त आयोजना कार्यान्वयन गर्दा नेपाल सरकारको नियमअनुसार तथा वातावरण संरक्षण नियमावली २०५४ को नियमावली अनुसार यहाँको भौतिक, सामाजिक, सांस्कृतिक जैविक, मानविय क्रियाकलापहरुलाई न्यून असर पार्ने गरी आयोजनाको कार्यान्वयनको लागि सिफारिस गर्ने निर्णय गरियो ।

उपस्थिति

	नाम	ठेगाना	हस्ताक्षर
1.	सन्तोष श्रेष्ठ	शुक्लागण्डकी-७	
2.	सरण सापकोटा	" ७	
3.	विष्णु प्रसाद लम्साल	" ७	

For Reference Only

For Reference Only

ANNEX 5
Questionnaire Checklists

For Reference Only

For Reference Only

मुलिखु नमोनमः

सडक विभाग
ट्रान्सपोर्ट प्रोजेक्ट प्रिपेरेटोरी फ्यासिलिटी (टि.पी.पी.एफ.२)
आयोजना प्रभावित घरधुरी सर्वेक्षण फारम

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१. अन्तरवार्ता लिनेको नाम: आकाश ढकाल २. अन्तरवार्ता मिति: .....

१. परिचयात्मक र साधारण जानकारी

१.१ उत्तरदाताको नाम: तारा दे० आपा १.२ जिल्ला: तनहुँ

१.३ गा.वि.स./ न.पा. : भुल्लाडाँडी १.४वार्ड नं.: ९

१.५ गाउँ / टोल : भुल्लाडी १.६ घरमूलीको नाम: तारा दे० आपा

१.७ नागरिकता नं. : १०६८ १.८ टेलिफोन नं.: .....

१.९ घरमूलीको प्रकार : वृद्धा [ ] विधवा [ ] अपाङ्गता [ ] विदुर [ ] दलित/जनजाती [ ]

१.१० जग्गाधनीको बाबु/आमा वा पति/पत्निको नाम: तारा दे० आपा

१.११ जग्गाधनीको ससुरा/बाजेको नाम: .....

१.१२ जात/जाति: जनजाति

२. पारिवारीक विवरण

२.१ जम्मा परिवार संख्या ४

क्र. सं.	परिवारका सदस्यको नाम	लिङ्ग	उमेर	शिक्षा (६ वर्ष माथिको)	आर्थिक गतिविधी	कस्तो तालिम चाहनुहुन्छ ?	कैफियत
१	९	९	४६	६	६	केहि	
२	२	२	४५	६	६	"	
३	३	२	३०	३	९९	"	
४	१	१	१०	२	९९		
५							
६							
७							
८							

संकेत:

लिङ्ग: १= पुरूष, २= महिला

शिक्षा: १= साक्षर मात्र र प्राथमिक शिक्षा पुरा नगरेको, २= प्राथमिक शिक्षा (कक्षा १-५ सम्म) पुरा गरेको, ३= निम्न माध्यमिक (६-८ सम्म) शिक्षा पुरा गरेको, ४ = माध्यमिक शिक्षा (९-१० सम्म) पुरा गरेको, ५= उच्च माध्यमिक शिक्षा (प्रमाण पत्र तह वा सो सरह) पुरा गरेका, ६= स्नातक वा माथि । ७= निरक्षर (पढ्न, लेख्न नजान्ने ।

आर्थिक गतिविधी: १= खेती (आफ्नै जमिनमा), २= खेती (आफ्नै जमिनमा र बर्दियाँ समेत), ३= खेती बर्दियाँ मात्र, ४= कृषि मजदुरी, ५= सरकारी जागिर, ६= निजी जागिर, ७= उमेर नपुगेको, ८= व्यापार/व्यवसाय, ९= पशुपालन, १०= वनजङ्गलको उत्पादन सङ्कलन, ११= विद्यार्थी, १२= केहि पनि छैन, १३= वैदेशिक रोजगार, १४= बेरोजगार, १५= अन्य भए उल्लेख गर्ने,

घरमुलीको नाता: १= घरमुली २= श्रीमति, ३= श्रीमान, ४= छोरा, ५= छोरी, ६= दाजुभाई, ७= दिदीबहिनी, ८= नातीनातिनी, ९= छोराबुहारी, १०= भाउजु/बुहारी, ११= भतिजा/भतिजी, १२= बुबाआमा, १३= अन्य (केहि भए)

For Reference Only

३. जीविकोपार्जनको स्थिति

३.१ तपाईको वा परिवारका अन्य सदस्यको नाममा कति जग्गा छ र कतिमा खेति गर्नुहुन्छ ? सबै प्लट र उपभोगको बारेमा उल्लेख गर्नुहोस् ।

क्र. सं.	धनीको नाम	लिङ्ग	प्लटको नाम वा स्थान	क्षेत्रफल/ ईकाई	जग्गाको प्रकार	सिचाई सुविधा	जग्गाको उपयोग	उपभोगको तरीका	कैफियत
१	Rewan Prasad		पुतलीबा	—	—	—	९	६	
२									
३									
४									
५									
६									
७									
जम्मा क्षेत्रफल (प्रचलित ईकाईमा)					जम्मा क्षेत्रफल (ब.मी.)				

संकेत:
जग्गाको प्रकार: १= अब्बल, २= दोयम, ३= सीम, ४= चाहार ५ =अन्यभए ।
सिचाई सुविधा: १= छ, २= छैन ।
जग्गाको उपयोग:१= घरबारी, २= खेत, ३= बारी, ४= व्यापारीक क्षेत्र, ५=खरबारी/बुट्यान, ६= बाँझो/चरिचरन, ७= निजी वन, ८= अन्य भए उल्लेख गर्ने,
उपभोगको तरीका: १= आफ्नो जग्गा आँफैले कमाएको, २= आफ्नो जग्गा अरूलाई अधियाँमा दिएको, ३= बन्दकी दिएको,४= मोही, ५= ठेक्का वा भाडामा दिएको । ६ Rewan Prasad

३.२ तपाईको परिवारले कसैको जग्गा अधियाँ/ठेक्कामा कमाएको भए सोको विवरण दिनुहोस् ।

क्र. सं.	धनीको नाम	लिङ्ग	प्लटको नाम वा स्थान	क्षेत्रफल/ ईकाई	जग्गाको प्रकार	सिचाई सुविधा	जग्गाको उपयोग	उपभोगको तरीका	कैफियत
१									
२									
३									
४									
५									
जम्मा क्षेत्रफल (प्रचलित ईकाईमा)					जम्मा क्षेत्रफल (ब.मी.)				

संकेत:
जग्गाको प्रकार: १= अब्बल, २= दोयम, ३= सीम, ४= चाहार ५ =अन्य भए ।
सिचाई सुविधा: १= छ, २= छैन ।
जग्गाको उपयोग:१= घरबारी, २= खेत, ३= बारी, ४= व्यापारीक क्षेत्र, ५=खरबारी/बुट्यान, ६= बाँझो/चरिचरन, ७= निजी वन, ८= अन्य भए उल्लेख गर्ने,
उपभोगको तरीका: १= अरूको जग्गा आफुलेअधियाँमा कमाएको, २= बन्दकी लिएको, ३= ठेक्का वा भाडामा लिएको ।

३.३ तपाईको आफ्नो जग्गाको उत्पादनले वर्षको कति महिना खान पुग्दछ ?

(१) उत्पादन नभएको (२) ३ महिना भन्दा कम
(३) ३-६ महिना (४) ६-९ महिना
(५) ९-१२ महिना (६) वचत हुन्छ

३.४ यदि तपाईको परिवारलाई आफ्नो जमिनमा उत्पादित खाद्यान्न नभएको समयमा किनेर खानुपर्दा मासिक कति रूपैयाँ खर्च गर्नुपर्दछ ? ८००० रूपैयाँ ।

३.५ खाद्यान्न नभएको समयमा तपाईले कुन स्रोतबाटखाद्यान्नको लागि आवश्यक व्यवस्था गर्नुहुन्छ?[बहुउत्तर]

संकेत:
१ = नोकरी , २ = व्यापार, ३ = कृषि श्रम, ४ गैर कृषि श्रम, ५ = वैदेशिक रोजगारीबाट प्राप्तहुने कमाइ,
६= सापट, ७=संपत्ति बेचेर, ८ = अन्य भए उल्लेख गर्ने,.....

For Reference Only

४. परिवारीक आम्दानी तथा खर्चको विवरण

४.१ परिवारीक आम्दानीका श्रोतहरु

क.स.	आम्दानीका श्रोतहरु	वार्षिक आम्दानी (रू.)
१	व्यापार / व्यवसायबाट	—
२	कृषि मजदुरीबाट	—
३	अन्नपात/तरकारी/फलफूल/पशु र पशुजन्य बिक्री	—
४	सम्पति बेचबिखनबाट	—
५	ज्याला मजदुरीबाट ३०००० × ८ × २ (२ जना)	२६००००/-
६	नोकरीबाट	—
७	लघुउद्यमबाट	—
८	पेन्सन/विदेशबाट पठाएको	—
९	भाडा/व्याज	—
१०	अन्य	—
	जम्मा वार्षिक आम्दानी	

४.२ परिवारीक खर्च को विवरण

क.स.	खर्चको किसिम	जम्मा वार्षिक खर्च (रू.)
१	खानेकुरा	६६०००/-
२	लत्ताकपडा	१००००/-
३	स्कुल शुल्क, किताब कापी आदि	८००००/-
४	औषधी, डाक्टर अस्पताल आदि	—
५	बत्ति बाल्ने, पकाउने इन्धन आदि	९७०००/-
६	सुनचाँदी, गरगहना आदि	—
७	वस्तुभाउ / मलखाद आदि	—
८	यातायात / सञ्चार आदि	६०००/-
९	सामाजिक, चाडपर्व, पुजा, चन्दा /दान आदि	१००००/-
१०	चिया सुर्तिजन्य तथा मादक पदार्थमा तामआदिमा	३०००/-
११	आयआर्जन सम्बन्धी कार्यमा लगानी	—
१२	ऋण/व्याज तिर्ने	९३०००/-
१३	कर/विभिन्न शुल्क/जरिवाना आदि	२००/-
१४	अन्य	—
	जम्मा वार्षिक खर्च	

४.३ यदि आम्दानी भन्दा खर्च अमिल्दो रुपले बढी आएमा त्यसो हुनाको कारणहरु उल्लेख गर्नुहोस्?

५. पुर्वाधार सम्बन्धी योजनामा कामको अनुभव

५.१ तपाईको परिवारका सदस्यहरुमा पूर्वाधार निर्माण सम्बन्धी कुनै प्रकारको सीप/ज्ञान छ ?

१,[ ] छ। २, [✓] छैन।

यदि छ भने, कस्तो प्रकारको सीप/ज्ञान छ कृपया ठिक चिनो लगाउनुहोस् ।[बहुउत्तर]

१, [ ] सडक २, [ ] पुल ३, [ ] खानेपानी ४,[ ] गोरेटो ५, [ ] वृक्षारोपण ६,[ ] अन्य।

५.२ के तपाई वा तपाईको परिवारका अन्य सदस्यहरु सडक निर्माण सम्बन्धी योजनामा काम गर्न चाहन्छन् ?

१,[ ] चाहन्छन्। २,[✓] चाहदैनन्।

For Reference Only

५.३ यदि चाहनुहुन्छ भने, निम्न विवरण दिनुहोस् । (नाममा प्र. नं. २.को पारिवारिक विवरण वाट परिवार नं. राख्नुहोस्)

क.सं.	नाम	लिङ्ग	दक्ष	अदक्ष
१.				
२.				
३.				

संकेत:दक्षः १=गाही लगाउने, २=ढुङ्गा काट्ने, ३=डण्डी बाध्ने ४=जाली बुन्ने, ५=पाईप जोड्ने, ६=झोलुङ्गेपुल सम्बन्धी काम गर्ने, ७=सिमेन्टको काम गर्ने, ८=वायोईन्जिनियरिङको काम गर्ने, ९=साधारण मेसिन चलाउन जान्ने, १०= अन्य भए उल्लेख गर्ने ।

अदक्षः१=ढुङ्गामाटो खन्ने/बोक्ने, २=ढुङ्गा फुटाउने, ३=ज्यामी/हेल्पर, ४= अन्य भए उल्लेख गर्ने ।

५.४ आयोजना कार्यान्वयनको समयमा तपाईले कस्तो तालिम/सिपको अपेक्षा गर्नु भएको छ ?

तालिमको प्रकार: .....

५.५ आयोजनाबाट तपाईलाई प्रभावित हुने विवरण के हो ?

क) जमिनमात्र ख) जमिन र संरचना दुवै ग) जमिन र खेतिवाली दुवै घ) संरचानामात्र ङ) न

५.६ तपाईको परिवार कहाबाट बसाई सरि आएको हो ? .....

५.७ आयोजनाबाट तपाईले कस्तो किसिमको सहयोगको अपेक्षा गर्नुहुन्छ ?

क) नगद ख) जमिन सट्टा जमिन ग) घरको सट्टा घर

५.८ तपाईको संरचना कस्को जमिनमा बनेको हो ?

क) निजी ख) अैलानी ग) अतिक्रमित घ) अन्य व्यक्तिको जमिन

५.९ आयोजनाबाट हुने क्षति न्यूनिकरणको लागि तपाईको सुझाव के छ ?

For Reference Only

६ आयोजनामा पर्ने घर परिवारको जग्गा तथा अन्य सम्पत्तीको बिबरण ।

६.१ आयोजनाबाट प्रभावित स्थलमा सञ्चालित गतिविधी र खेतिपातीको बिवरण दिनुहोस् (निम्न संकेत प्रयोग गर्नुहोस्) ।

चेनेज			नक्सा / सिट नं.	किल्ला नं.	लालपुर्जाको मोठ नं. र पाना नं. उल्लेख गर्नुहोस)	ठेगाना	क्षेत्रफल / ईकाई		क्षतिको प्रकार [बहुउत्तर]				कमाउने वा उपभोगको तरीका	जग्गाको उपयोग	जग्गाको किसिम	कैफियत
देखि	सम्म						प्रभावित क्षेत्रफल	जम्मा क्षेत्रफल	जग्गा	घाली	रुखबिरुवा	संरचनाहरू				
			Rowdi गा.वि.			[illegible]	—	—	—	—	—	✓	2	9	—	

संकेत

उपभोगको तरीका: १= आफ्नो जग्गा आफैले कमाएको, २= आफ्नो जग्गा अरूलाई अधियामा दिएको, ३= अरूको जग्गा अधियामा आफुले कमाएको, ४= बन्दकी दिएको, ५= बन्दकी लिएको, ६= मोही, ७= ठेक्का वा भाडामा दिएको ८ = अन्य भए उल्लेख गर्ने,: Rowdi गा.वि.

जग्गाको उपयोग: १= घर, २= खेत, ३= बारी, ४= व्यापारीक क्षेत्र, ५=खरबारी / बुट्यान, ६= बाँझो / चरिचरन, ७= निजी बन, ८= अन्य भए उल्लेख गर्ने,

जग्गाको किसिम: १= अब्बल, २= दोयम, ३= सीम, ४= चाहार, ५= अन्य भए उल्लेख गर्ने

६.२ लालपुर्जा कसका नाममा जारी भएको छ ?

१. नाम: Rowdi गा.वि. ..... २. लिङ्ग: [ ] पुरुष [ ] महिला

६.३ आयोजनामा पर्ने जग्गामा अरु कुनै परिवारले काम गरिरहेकोछ भने, सो सम्बन्धी विवरण दिनुहोस ।

क्र. सं.	जग्गा उपभोग गर्नेको नाम	ठेगाना	परिवार संख्या	कहिले देखि उपभोग गरेको	उपभोगको तरीका	किल्ला नं.	कैफियत
उपभोगको तरीका: १= मोही,, २= बन्दकी ३= ठेक्का वा भाडा ३ = अन्य ।							

(नोट : प्रभावित जग्गामा कुनै व्यक्ति, संस्था वा परिवारले काम गरिरहेकोछ भने, सो सम्बन्धमा बिशेष ध्यान दिनुहोस् । मोही वा अन्य कुनै श्रमिक छन् भने पत्ता लगाउनुहोस् । जग्गा कमाएको प्रकार र उपभोगको तरिकाका बारेमा पूर्ण बिवरण दिनुहोस् । जस्तै उपभोग गरेको अवधी, अधिंया/बन्दकि वा ठेक्का के हो उल्लेख गर्ने ।)

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६.४ आयोजनामा पर्ने जग्गाधनीको हाल बासोबास गरिरहेको ठेगाना दिनुहोस ?

१. जग्गाधनीको नाम: ...Ram Prasad Sharma... २. पुरा सम्पर्क ठेगाना र फोन नं.: .....

३. कहिले देखि बाहिर बसोबास गर्दै आएको: ..... ४. वारिसेको नाम:.....

७. कृपया, बिगत एक वर्षको अबधिमा आयोजनामा पर्ने प्लटमा भएको अन्न तथा नगदेबालीको उत्पादन र बिक्रीको बिवरण दिनुहोस् ।

क्र.सं.	प्रभावित प्लटको		तर्फ	बाली चक्र	उत्पादन क्षेत्रफल	जम्मा उत्पादन (के. जी.)	गत वर्षको औषत बिक्री		प्रभावित भागमा हुने उत्पादन (के. जी.)
	सिट नं.	किता नं.					परिमाण (के.जी.)	आम्दानी (रू.)	

८. आयोजनामा पर्ने घर/संरचनाको पूर्ण विवरण दिनुहोस् ।

क्र. सं.	भवन/ संरचना नं.	गाविस	वार्ड नं.	बस्ती	चेनेज	तर्फ (R/L)	केन्द्र बाटको दुरी (मि.)	सिट नं. / किता नं.	धनीको नाम	संरचनाको प्रकार*	निर्माणमा प्रयोग भएको सामाग्री**	जम्मा क्षेत्रफल (लxचौ)	तला संख्या	प्रभावित क्षेत्रफल (लxचौ)	% प्रभावित	निर्माण वर्ष वि.सं.	हालको उपयोग***	अनुमानित मूल्य
१																		
२																		
३																		
४																		
५																		

*संरचनाको प्रकार: १= बस्ने घर, २= व्यापारीक भवन, ३= सामुदायिक भवन, ४= गोठ, ५= शौचालय, ६= पर्खाल, ७= अन्य भएमा उल्लेख गर्नुहोस् ।

**निर्माणमा सामाग्री १= ढुङ्गा र माटोको गारो सहित खरको जस्ता छाना २= ढुङ्गा र माटोको गारो सहित जस्ता वा स्लेटको छाना ३=ढुङ्गा र माटो बाहिरी भागमा सिमेन्ट प्लास्टर सहित जस्ता भिङ्गटीको छानो ४= सिमेन्ट र ढुङ्गा वा इटाको गारो सहित ढलान छाना ४= बाँस वा काठले बारेका

***हालको उपयोग: १= आफै बसोबास गरिरहेको, २= व्यापार/व्यवसायमा उपयोग भएको, ३= बसोबास वा व्यापार व्यवसाय दुबैमा प्रयोग भएको, ४= अन्य कसैलाई भाडामा दिएको ।

(भवन वा संरचनाको जम्मा क्षेत्रफल वा प्रभावित क्षेत्रफल निकाल्दा तलाको क्षेत्रफल (लम्बाई X चौडाई) लाई तला संख्याले गुणन गरि निकाल्नुपर्नेछ ।)

८.१ यदि घर/संरचना हटाउनु पर्ने छ भने, के यो संरचना तपाईको आफ्नै जमिनमा बनेको हो?

१,[ ] हो २, [✓] होईन

यदि होईन भने, यो जमिन कस्को हो नाम ठेगाना बताईदिनुहोस् ।

.....

८.२ यदि बसोबास गरिरहेको घर हटाउनु पर्ने भएमा, तपाई बसोबास गर्नको लागि यो बाहेक कुनै अर्को घर छ?

१,[ ] छ २, [✓] छैन ।

८.३ यदि छ भने कहाँ छ?

१,[ ] यहि ल्पटको अर्को स्थानमा २, [ ] दोस्रो कुनै ल्पटमा ।

८.४ यदि यो घर आयोजनाका कारणले भत्काउनु पर्ने भएमा अर्को घरमा तपाईको परिवार बस्न सक्ने ठाउँ उपलब्ध छ?

१,[ ] छ २, [ ] छैन ।

८.५ यदि हाल बसिरहेको ल्पटदेखि फरक ल्पटमा जानुपर्ने भएमा, सो ल्पट कति टाढा छ? 2 कि.मि. ।

८.६ हालको ल्पटबाट नयाँ ल्पटसम्म सामान लैजान कस्तो प्रकारको साधन प्रयोग गर्नुपर्दछ ?

१,[ ] पैदल २, [ ] बस ३, [ ] रिक्सा

४, [✓] ट्रयाक्टर ५, [ ] निजी कुनै सवारी साधन ६, [ ] अन्य कुनै .....

८.७ नयाँ ल्पटसम्म सामान लैजान अनुमानित कति जति खर्च लाग्दछ? 10000 रूपैयाँ ।

८.८ यदि अर्को घर छैन भने, बसोबासको व्यवस्था कसरी गर्नुहुन्छ?

१,[ ] नयाँ घर बनाएर २, [ ]बसाई सरी नयाँ ठाउँमा गएर

३,[✓] भाडामा घर लिएर ४, [ ] अन्य कुनै सोच भएमा .....

८.९ यदि तपाईले यो घर सडक आयोजनामा परेपछि नयाँ घर किन्ने वा बनाउने योजना बनाउनु भएको छ भने, यस्तै प्रकारको घर बनाउन कति जति रकम खर्च होला? 2,00,000 रूपैया।

८.१० सडक आयोजनामा पर्ने यो घरमा तपाईको बाहेक अन्य कुनै परिवारका सदस्य पनि बसोबास गर्दछन्?

१,[ ] छन् २, [✓] छैनन् ।

८.११ यदि छन् भने, पूर्ण विवरण दिनुहोस् ।

घर नं	परिवारमुलीको नाम	ठेगाना	जात/ जाति	जम्मा परिवार संख्या	मूख्य पेशा	कति समयदेखि बसोबास गरिरहेको	उपभोग गरेको कोठा संख्या	भाडा प्रति महिना	बस्ने विकल्प

९. आयोजनामा पर्ने ल्पटबाट कुनै रुखविरुवा हटाउनु पर्दछ । १,[ ] पर्छ । २, [✓] पदैन ।

९.१ आयोजनामा पर्ने ल्पटबाट कुनै रूखविरूवा हटाउनु पर्ने भएमा निम्नानुसारको विवरण दिनुहोस् ।

चेनेज		तर्फ (R/L)	नाम/जात	प्रकार	गोलाई (सेमी)	उचाई (मि.)	संख्या	हटाउन समय लाग्ने समय	कैफियत
देखि	सम्म								

संकेत: प्रकार: १= काठका लागि प्रयोग हुने रूख, २ =दाउराको लागि प्रयोग हुने रूख, ३ =बहु प्रयोगको रूख, ,
४= गैह्र काष्ठ वन पैदावर, ५= अन्य भए उल्लेख गर्ने .....

For Reference Only

९.२ आयोजनामा पर्ने प्लटबाट कुनै फलफुलका विरूवा/लहरा हटाउनु पर्ने भएमा निम्नानुसारको विवरण दिनुहोस् ।

चेनेज		तर्फ (R/L)	फलफुलका विरूवा/लहरा को नाम	प्रकार	फल लागेको		फल नलागेको		वार्षिक उत्पादन (कि. ग्रा.)	यदि गत वर्ष बिक्री गरेको भए		तपाईले रोप्नु भएको हो*	रोप्नुको उद्देश्य के थियो**
देखि	सम्म				संख्या	उमेर	संख्या	उमेर		(कि.ग्रा.)	(रूपैयाँ)		

संकेत: प्रकार: १= फलफूलको रूख, २ = गैह्र काष्ठ वन पैदावर, ३ =बाँस /निगालो, , ४= अन्य भए उल्लेख गर्ने .....
*तपाईले रोप्नु भएको हो १= हो २= होइन
**रोप्नुको उद्देश्य १= घरायसी प्रयोजन मात्र २= घरायसी + बिक्री दुवै

९.३ आयोजनामा पर्नेप्लटबाट कुनै घाँस/जडिबुटीको रूख/विरुवा हटाउनु पर्ने भएमा, निम्नानुसारको विवरण दिनुहोस् ।

चेनेज		तर्फ	नाम/जात	संख्या	गोलाई (से.मी.)	उचाई (मीटर)	वार्षिक उत्पादन	तपाईले रोप्नु भएको हो?	रोप्नुको उद्देश्य के थियो ?	यदि उत्पादन बेच्ने हो भने, प्रति ईकाइ कति पर्दछ ?
देखि	सम्म	R/L								

९.४ आयोजनामा पर्नेप्लटबाट तपाईको बसोबास भएको घरसम्म रुखविरुवा ढुवानी गर्न कति समय लाग्छ/दुरी छ ?
समय ..... मिनेट, दुरी ..... मिटर

१०. स्वामीत्व हस्तान्तरण र यसका लागि प्रभावित परिवारको प्राथमिकता ।

१०.१ यदि तपाई बसोबास गरिरहेको घर आयोजनाले लिएमा, कस्तो प्रकारको क्षति महशुस गर्नुहुन्छ? (बहूउत्तर)

१,[ ] दैनिक आम्दानीको क्षति २, [✓] घर/जग्गाको अति ३, [ ] जग्गा/खोतिपातीको क्षति

४,[ ] अन्य भएमा (उल्लेख गर्ने).....

१०.२ यसआयोजनामा पर्ने घर जग्गा/संरचना क्षतिपुर्ती बिना दिन ईच्छुक हुनुहुन्छ?

१,[ ] दिन्छु २, [✓] दिन सक्दिन

१०.३ योजनामा पर्ने परिवारका हैसियतले योजनाबाट कस्तो प्रकारको अवसर/सहयोगको अपेक्षा राख्नुहुन्छ?[बहुउत्तर]

१,[ ] रोजगारीको अवसर २, [ ] सीप विकास तालिम

३,[ ] बचत तथा ऋण कार्यक्रम ४, [✓] अन्य भए ठाचि र गुहेछन

धन्यवाद !

For Reference Only

ANNEX 6
Baseline Data

For Reference Only

For Reference Only

Table 1: Households by main source of drinking water

District/Municipality/VDC	Total households	Main Source of Drinking Water							
		Tap/piped water	Tubewell / handpump	Covered well/kuwa	Uncovered well/kuwa	Spout water	River/stream	Others	Not Stated
Tanahu	78,286	58,688	211	4,326	9,184	4,945	426	78	428
Kaski	125,459	115,822	171	1,266	1,831	3,527	482	1,935	425
Municipality/VDCs									
Aanbukhaireni NP	4,034	3,865	32	10	10	63	32	8	14
Ghansikuwa VDC	1,942	1,206	5	306	290	107	19	0	9
Bandipur NP	3,056	2,681	1	16	191	132	12	1	22
Vyas NP	11,321	8,969	25	639	1,233	356	28	19	52
Jamunne Bhanjyang VDC	2,408	1,530	10	127	439	215	76	3	8
Manpang VDC	1,721	1,099	4	104	389	119	0	1	5
Chhang VDC	1,499	1,117	3	99	151	118	3	0	8
Shuklagandaki NP	9,676	8,924	8	85	361	233	24	22	19
Lekhnath Municipality	17,405	15,482	12	535	550	655	68	40	63
Pokhara SMC	82,870	77,561	142	365	694	1,691	271	1,866	280
Total	**135,932**	**122,434**	**242**	**2286**	**4308**	**3689**	**533**	**1960**	**480**
Percent (%)		**90.07**	**0.18**	**1.68**	**3.17**	**2.71**	**0.39**	**1.44**	**0.36**

Table 2: Households by usual type of fuel used for cooking

Municipality/VDC	Total household	Fuel usually used for cooking							
		Wood / firewood	Kerosene	LP gas	Gobar gas/ guitha (cow dung)	Bio gas	Electricity	Others	Not Stated
Aanbukhaireni Municipality	4,034	1,827	9	1,885	0	243	50	6	14
Ghansikuwa VDC	1,942	1,628	7	72	2	223	1	0	9
Bandipur NP	3,056	1,856	18	999	0	154	5	2	22
Vyas NP	11,321	3,840	54	6,720	14	614	4	21	54
Jamunne Bhanjyang VDC	2,408	1,735	6	353	9	295	1	1	8
Manpang VDC	1,721	1,556	4	45	3	108	0	0	5
Chhang VDC	1,499	1,104	14	262	1	103	2	5	8
Shuklagandaki NP	9,676	4,365	83	3856	7	1330	**4**	**10**	**21**
Lekhnath Municipality	17,405	5,607	178	8,302	23	3174	20	35	66
Pokhara SMC	82,870	12,137	1,467	67,151	30	1,422	112	252	299
Total	**135,932**	**35,655**	**1840**	**89,645**	**89**	**7666**	**199**	**332**	**506**
Percent (%)		**26.23**	**1.35**	**65.95**	**0.06**	**5.64**	**0.15**	**0.24**	**0.38**

Table 3: Households by usual source of lighting

District/Municipality/ VDC	Total households	Fuel usually used for lighting					
		Electricity	Kerosene	Bio-gas	Solar	Others	Not Stated
Tanahu	78,286	60,350	7,879	213	7,414	1,991	439
Kaski	125,459	119,757	3,694	249	929	370	460
Aanbukhaireni	4,034	3,784	218	9	8	1	14
Ghansikuwa	1,942	1,654	264	6	6	3	9
Bandipur	3,056	2,640	366	8	5	15	22
Byas Municipality	11,321	10,921	268	34	13	29	56
Jamune Bhanjyang	2,408	2,200	189	7	1	3	8
Manpang	1,721	1,586	114	8	7	1	5

For Reference Only

District/Municipality/ VDC	Total households	Fuel usually used for lighting					
		Electricity	Kerosene	Bio-gas	Solar	Others	Not Stated
Chhang	1,499	1,420	62	6	3	0	8
Shuklagandaki NP	9,676	9,024	535	29	18	48	22
Lekhnath Municipality	14,937	14,323	449	32	9	62	62
Bharat Pokhari	2,468	2,277	168	5	1	10	7
Pokhara Sub-Metropolitan City	82,870	80,974	1181	191	39	179	306
Total	**135,932**	**130,803**	**3814**	**335**	**110**	**351**	**517**
Percent (%)		**96.30**	**2.73**	**0.25**	**0.08**	**0.26**	**0.38**

Table 4: Households by type of toilet

V.D.C. / Municipality	Total households	Households without toilet facility	Households with toilet facility of		Toilet facility not stated
			Flush toilet	Ordinary toilet	
Tanahu	78,286	12,623	49,783	15,445	435
Kaski	125,459	1,061	116,001	7,934	463
Aanbukhaireni NP	4,034	295	3,169	556	14
Ghansikuwa VDC	1,942	247	1,224	462	9
Bandipur NP	3,056	297	2,148	589	22
Vyas NP	11,321	674	9,558	1,034	55
Jamunne Bhanjyang VDC	2,408	377	1,404	619	8
Manpang VDC	1,721	566	613	537	5
Chhang VDC	1,499	289	871	331	8
Shuklagandaki NP	9,676	941	6943	1770	22
Lekhnath Municipality	17405	92	16127	1117	69
Pokhara Sub-municipality	82,870	480	77,214	4,868	308
Total	**135,932**	**4258**	**119,271**	**11883**	**520**
Percent (%)		**3.13**	**87.74**	**8.74**	**0.39**

Table 5: Households, Population & Average HH Size

Municipality/VDC	Total HHs	Population			Average HH Size
		Total	Male	Female	
Tanahu	**78,309**	**323,288**	**143,410**	**179,878**	**4.13**
Kaski	**125,673**	**492,098**	**236,385**	**255,713**	**3.92**
Aanbukhaireni NP	4,034	16,382	7,573	8,809	4.06
Ghansikuwa VDC	1,942	7,834	3,484	4,350	4.03
Bandipur NP	3,056	12,450	5,710	6,740	4.07
Vyas NP	11,321	42,899	19,376	23,523	3.79
Jamunne Bhanjyang VDC	2,408	9,838	4,416	5,422	4.09
Manpang VDC	1,721	6,698	2,863	3,835	3.89
Chhang VDC	1,499	5,966	2,607	3,359	3.98
Shuklagandaki NP	9,676	38,307	16,911	21,396	3.96
Lekhnath Municipality	17,405	68,622	31,218	37,404	3.94
Pokhara Sub-municipality	82,870	313,841	161,190	152,651	3.78
TOTAL	**135,932**	**522,837**	**255,348**	**267,489**	**3.85**

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Table 6: Population by Caste/Ethnicity

Caste/ethnicity	Project Affected Municipality/VDCs											
	Anbukhaireni	Ghansikuwa	Bandipur	Byas Municipality	Chhang	Jamune Bhanjyang	Manpang	ShuklaGandaki	Lekhnath Municipality	Pokhara Sub-Metropolitan City	Total	Percent (%)
All Caste	**16382**	7834	12450	42899	5966	9838	6698	38307	68622	313841	**522837**	
Magar	4279	1627	2367	7546	2181	3285	1709	7926	6449	29835	67204	**12.85**
Gurung	3721	342	2670	3257	470	99	296	3806	9642	53876	78179	**14.95**
Chhetree	1889	1419	1308	5985	409	1298	727	5275	10134	49564	78008	**14.92**
Newar	1719	546	1430	4074	806	1298	517	2911	2021	20199	35521	**6.80**
Brahman - Hill	1575	1469	1227	7029	393	1213	448	6338	20911	81746	122349	**23.40**
Kami	943	569	942	3047	508	1483	693	3984	7012	18180	37361	**7.15**
Gharti/Bhujel	444	495	521	507	30	76	92	842	1101	3658	7766	**1.49**
Damai/Dholi	409	268	216	1225	253	279	486	1270	2260	9820	16486	**3.15**
Badi	223	26		100	132	26	17	0	636	2783	3943	**0.75**
Thakuri	208	29	39	990	93	126	608	1042	981	4502	8618	**1.65**
Tamang	188	55	129	384	15	34	0	390	1816	9250	12261	**2.34**
Sarki	118	549	870	1551	240	434	759	1057	1778	5253	12609	**2.41**
Kumal	91	0	59	861	340	36	132	1665	1208	608	5000	**0.96**
Musalman	102	0	124	850	0	19	0	494	0	3435	5024	**0.96**
Others	473	440	210	5493	96	132	214	1307	2673	21132	32508	**6.22**

Table 7: Population by mother tongue

Municipality/VDC	All Mother Tongue	Mother Tongue											
		Nepali	Magar	Gurung	Newar	Bhujel	Tamang	Rai	Thakali	Kumal	Bhojpuri	Darai	Others
Anbukhaireni	16,382	11,194	2,665	1,522	346	111	76	12	13	0	166	0	277
Ghansikuwa	7,834	6,846	763	115	17	53	22	0	0	0	0	0	18
Bandipur	12,450	7,399	1,371	2,276	833	118	86	12	0	0	73	0	282
Vyas Municipality	42,899	27,308	5,416	2,548	2,390	32	240	35	0	47	419	3,034	1430

For Reference Only

Municipality/VDC	All Mother Tongue	Mother Tongue											
		Nepali	Magar	Gurung	Newar	Bhujel	Tamang	Rai	Thakali	Kumal	Bhojpuri	Darai	Others
Jamune Bhanjyang	9,838	6,106	2,722	81	836	0	17	0	0	0	20	0	56
Manpang	6,698	5,541	709	168	267	0	0	0	0	0	0	0	13
Chhang	5,966	3,423	1,588	365	527	0	0	0	0	23	0	0	40
Shuklagandaki Municipality	38,307	29,197	3,793	2,631	1,273	0	155	97	0	197	170	0	794
Lekhnath Municipality	78,428	65,443	1,696	7,834	785	0	1,027	91	37	0	458	0	1094
Pokhara SMC	313,841	241,910	7,954	35,481	8,911	0	4,669	796	910	0	2,949	0	10,261
Total	**532,643**	**404,367**	**28,677**	**53,021**	**16,185**	**314**	**6,292**	**1,043**	**960**	**267**	**4,255**	**3,034**	**14,265**
Percent (%)		**75.92**	**5.38**	**9.95**	**3.04**	**0.06**	**1.18**	**0.20**	**0.18**	**0.05**	**0.80**	**0.57**	**2.67**

Table 8: Population aged 5 years and above by literacy status and sex

VDC/Municipality and sex	Total/Sex	Population aged 5 years & above	Population who are			Literacy not stated	Literacy rate
			Can read & write	Can read only	Can't read & write		
	Total	353,924	247,049	9,665	96,942	268	69.80
	Male	168,411	134,037	4,547	29,750	77	79.59
	Female	185,513	113,012	5,118	67,192	191	60.92
	Total	264,274	157,469	7,635	98,960	210	59.59
	Male	126,532	86,010	3,674	36,771	77	67.97
	Female	137,742	71,459	3,961	62,189	133	51.88

Table 9: Population aged 5 years and above by educational attainment (level passed) and sex

VDC/Municipality and sex	Total	Population that have completed the educational level of									Non-formal	Non-formal
		Beginner	Primary (1-5)	Lower secondary (6 -8)	Secondary (9 -10)	S.L.C. & equiv.	Intermediate & equiv.	Graduate & equiv.	Post Graduate equiv. & above	Others		

For Reference Only

ANNEX 7
Road Improvement Option

For Reference Only

For Reference Only

Chainage		Length (m)	Type of Improvement	Main Carriageway Width (m)	Total Width (m)	Description of Section
From	To					
00+000	03+700	3700	Two Lane without Service Road	7.00	9.00	Mugling – Marsyangdi Hydropower Powerhouse
03+700	03+900	200		7.00	7.00	Marsyangdi Hydropower Powerhouse
03+900	06+770	2870	Two Lane with Normal Shoulder + Centre Space	7.00	12.50	Marsyangdi Hydropower Powerhouse - Abukhaireni
06+770	08+250	1480	Two Lane without Service Road + Centre Space + Footpath	7.00	18.50	Abukhaireni Bazar
08+250	23+400	15150	Four Lane with Normal Shoulder + Centre Space	14.00	18.00	Abukhaireni - Dumre Bazar
23+400	23+950	550	Four Lane without Service Road + Centre Median+ Footpath	14.00	42.50	Dumre Bazar
23+950	40+430	16480	Four Lane with Normal Shoulder + Centre Space	14.00	18.00	Dumre - Damauli Bazar
40+430	41+400	970	Four Lane without Service Road + Centre Median+ Footpath	14.00	42.50	Damauli Bazar
41+400	61+700	20300	Four Lane with Normal Shoulder + Centre Space	14.00	18.00	Damauli - Dulegaunda
61+700	66+740	5040	Four Lane with Service Road + Centre Median+ Footpath	14.00	46.20	Dulegaunda, Belchautara and Thati Bazar
66+740	70+210	3470	Four Lane with Normal Shoulder + Centre Median	14.00	23.00	Thati - Kotre Bazar
70+210	70+510	300	Four Lane with Service Road + Centre Median+ Footpath	14.00	46.20	Kotre Bazar
70+510	74+600	4090	Four Lane with Normal Shoulder + Centre Median	14.00	23.00	Kotre - Gagangauda
74+600	76+940	2340	Four Lane with Service Road + Centre Median+ Footpath	14.00	46.20	Gagangauda - Sainik Basti
76+940	77+010	70	Four Lane with Normal Shoulder + Centre Median	14.00	23.00	Sainik Basti - Bhandardhik
77+010	83+920	6910	Four Lane with Service Road + Centre Median+ Footpath	14.00	46.20	Bhandardhik, Okhale, Talchok, Lakhanchok, Sundar Bazar, Budhi Bazaar, Kalika Chok, Bijayapur
83+920	84+570	650	Four Lane with Normal Shoulder +Centre Median	14.00	23.00	Bijayapur
84+570	88+583	4013	Four Lane with Service Road +Centre Median+ Footpath	14.00	46.20	Baijayapur - Start of Seti Bridge
Total		**88,583.00**	Source: Detail Design Report, 2017			

For Reference Only

For Reference Only

Major Bridges

S. No.	Location (Km)	Bridge Name	Proposed Type	Proposed Length (m)	Span Arrangement (no. x span length)	Carriageway Width (m)	Footpath width (m)	Total Bridge Width (m)
1	0+838	NEW BRIDGE	PSC I Girder	24.00	1 x 24	7.50	1.50	12.06
2	11+060	KHANI KHOLA BRIDGE	PSC I Girder	33.20	1 x 33.2	8.00	2.75	11.66
3	24+679	NALA KHOLA BRIDGE	PSC I Girder	24.00	1 x 24	7.50	1.50	10.56
4	40+110	BULDI KHOLA BRIDGE	PSC I Girder	48.00	2 x 24	8.00	2.75	11.66
5	55+043	MAGDI KHOLA BRIDGE	PSC I Girder	24.00	1 x 24	8.00	2.75	11.66
6	60+570	KUMLE KHOLA BRIDGE	Pre-cast RCC T-Beam	48.00	3 x 16	8.00	2.75	11.66
7	70+195	KOTRE KHOLA BRIDGE	Cast-in-situl Girder	35.00	1 x 35	8.00	2.75	11.66
8	84+160	BIJAYPUR BRIDGE	PSC I Girder	65.20	16 + 33.2 + 16	8.00	2.75	11.66

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Minor Bridges

S. No.	Location (km)	Bridge Name	Existing Bridge				Proposed				
			Type	No of Span/Cell	Span Length/opening (m)	Total Length (m)	Type	Side	No of Span/Cell	Span Length/ opening (m)	Total Length (m)
1	1+700	Khowsing Khola	RCC Slab	1	14.25	14.25	RCC Slab	U/S	1	14	14.00
2	4+950	Slab Bridge	RCC Slab	1	11.6	11.60	RCC Slab	B/S			
3	5+100	Slab Bridge	RCC Slab	1	6	6.00	RCC Slab	B/S			
4	5+160	Arch Bridge	Arch	1	12	12.00	Box Girder	U/S	1	12	12.00
5	6+665	Adheri Khola-1	RCC Slab	1	6.9	6.90	RCC Slab	B/S			
6	8+040	Khahare Khola	RCC Slab	1	8.7	8.70	RCC Slab	U/S	1	10	10.00
7	12+860	Rodi Khola	RCBC	11	3	37.20	RCBC	D/S	11	3	37.2
8	14+900	SukhaureaKhola	RCC Slab	1	7	7.00	RCC Slab	B/S			
9	15+600	KundiKhola (Baradi)	Steel Girder	1	11	11.00	Box Girder	D/S	1	16.2	16.20
10	15+910	Slab Bridge	RCC Slab	1	6.4	6.40	RCC Slab	B/S			
11	17+300	AdheriKhola	Arch	1	8	8.00	RCC Slab	D/S	1	12	12.00
12	19+830	Boke Khola	Arch	1	8	8.00	RCC Slab	D/S	1	12	12.00
13	22+010	BadhKhola	RCC Slab	1	6.5	6.50	RCC Slab	B/S			
14	22+255	KhahareKhola	RCC Slab	1	8.7	8.70	RCC Slab	B/S			
15	28+370	Sathimure (ChaubiseKhola)	RCC Slab	1	8	8.00	RCC Slab	D/S	1	8	8.00
16	31+850	Slab Bridge	RCC Slab	1	6.8	6.80	RCC Slab	D/S			
17	35+550	Slab Bridge	RCC Slab	1	7.5	7.50	RCC Slab	D/S			
18	37+155	Muse Khola	Arch, skew	1	8.5	8.50	Box Girder	D/S	1	12	12.00
19	48+975	SaatmureKhola	RCC Slab	2	7	14.00	Box Girder	U/S	1	14	14.00
20	50+250	ThadeKhola	RCC Slab, skew	2	6	12.00	Box Girder	U/S	1	12	12.00
21	51+062	SamdiKhola	RCC Slab	1	17.2	17.20	RCC T-beam	U/S	1	17.2	17.20

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S. No.	Location (km)	Bridge Name	Existing Bridge				Proposed				
			Type	No of Span/Cell	Span Length/opening (m)	Total Length (m)	Type	Side	No of Span/Cell	Span Length/ opening (m)	Total Length (m)
22	53+840	Slab Bridge	RCC Slab	1	7	7.00	RCC Slab	CL	1	8	8.00
23	58+395	MulKhola	RCC Slab	1	6.7	6.70	RCC Slab	CL	1	8	8.00
24	58+920	PhediKhola	RCC Slab	1	6.7	6.70	RCC Slab	D/S	1	12	12.00
25	66+550	Rudi Khola	Arch	1	8	8.00	Box Girder	U/S	1	15	15.00
26	67+250	HadeliKhola	Arch	1	12	12.00	Box Girder	U/S	1	25	25.00

NOTE: B/S: Both side, U/S: Up Stream, D/S: Down Stream, RCBC: RC Box Culvert

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ANNEX 8
List of Trees to be Removed

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Species	Scientific Name	Tree (> 30cm girth)	Pole size (< 30 cm girth)	Bamboo Culms (no)	Total No.
Bakaino	*Melia azederach*	12	28		40
Khirro	*Sapium insigne (Royle) Benth. Ex Hook.f.*	17	39		56
Simal	*Bombax ceiba*	6	2		8
Sal	*Shorea robusta*	60	86		146
Rittha	*Sapindus mukorossi*	14	34		48
Chanp	*Michelia champcta*	10	26		36
Khayer	*Acacia catechu*	22	40		62
Pipal	*ficus religiosa*	2	0		2
Bar	*ficus bengalensis*	2	0		2
Ramritho		14	20		34
Sissau	*Dalbergia Sissoo*	22	44		66
Padke	*Albizia lucida*	22	48		70
Chilaune	*Schima wallichii*	14	48		62
Paiyau	*Prunus cerasoides*	2	4		6
Bael	*Aegle marmellos*	0	4		4
Katus	*Castanopsis indica*	8	30		38
Ipil ipil	*Leucena leucocephala*	8	12		20
Amaro	*Magnifera pinnata*	4	10		14
Ashok	*Saraca asoca*	4	0		4
Dhumri	*Ficus nervosa*	2	4		6
kyamuno	*Syzigium cerasoides*	2	6		8
Shami	*Ficus benjamina*	2	8		10
Bamboo	*Bambusa vulgaris*	0	0	2	2
Buldhangro	*Mucuna macrocarpa*	2	4		6
	Total	**252**	**496**	**2**	**750**

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List of trees to be removed within Formation Width from Community Forests

Name of CFUG	Bakaino	Khirro	Simal	Sai	Ritha	Chanp	Khayer	Peepal	Baar	Ramritho	Sissoo	Padke	Chilaune	Paiyau	Bael	Katus	Ipil ipil	Amaro	Ashoka	Dhumri	kyamuno	Shami	Bamboo	Buldhangro	Total
Kukurgade		28	-	12	-	-	6	-	-	2	-	10	-	2	-	2	-	-	-	-	-	-	-	6	68
Chisopani Puranokot	10	-	-	12	26	-	-	-	-	-	-	14	2	-	-	-	8	-	-	-	-	10	2	-	84
Shri Bhange	8	18	2	8	20	12																			68
Kokcha		2			2						8	20					6								38
Lohi Pakha	8									2	6	6					6	14	4	6					52
Yampa	4									2	18	14									8				46
Shri Shwagdi						4				10	6	6	10	4											40
Shri Shiv Parbati			2	4		4	12	2	2	18															44
Shri Sundari	2					10																			12
Barahi			4	30			20						8		4	4									70
Mahila Makhuwa		4				2	8						4												18
Lamidanda				10			8						8			2									28
Shri Simalchaur				2									6			4									12
Bagedanda				2									6			6									14
Kayachaur Chaharepakha				26			2				8		10			12									58
Raipurkotre	8	4		10		4					12					8									46
Pragatishil				30			6				8		8												52
Total	**40**	**56**	**8**	**146**	**48**	**36**	**62**	**2**	**2**	**34**	**66**	**70**	**62**	**6**	**4**	**38**	**20**	**14**	**4**	**6**	**8**	**10**	**2**	**6**	**750**

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List of trees to be removed from private land/roadside within road formation width

Chainage/Location	Species	District		Total
		Tanahu	Kaski	
4+350-5+175, 7+525-19+075, 19+450-20+075, 22+225-35+600, 35+675-36+350, 37+700-37+800, 38+425-44+675, 45+100-56+100, 56+250-56+650, 58+250-59+700, 59+950-68+325, 70+500-71+375, 71+725-88+583	Kabhro (*Ficus infectoria/lacor*)	139	10	149
	Tuni (*Toona ciliate*)	62	17	79
	Lapsi (*Choerospondias axillaris*)	8	3	11
	Padke (*Albizia lucida*)	107	29	136
	Rittha (*Sapindus mukorossi*)	2	0	2
	Kalki (*Callistemon viminalis*)	187	48	235
	Dumri (*Ficus racemosa*)	17	0	17
	Ipil ipil (*Leucaena leucocephala*)	62	0	62
	Neem (*Azadirahta indica*)	1	0	1
	Lahare pipal (*Populus deltoids*)	2	1	3
	Ramrittho	307	2	309
	Siris (*Albizzia lebbeck*)	67	22	89
	Dabdabe (*Garuga pinnata*)	188	4	192
	Lakuri (*Fraxinus floribunda*)	63	0	63
	Mauwa (Engelhardia spicata)	1	0	1
	Simal (*Bombax ceiba*)	113	13	126
	Khirro (*Holarrhena pubescens*)	103	6	109
	Dhupi (*Thuja Sp*)	74	25	99
	Bakaino (*Melia azedarach*)	257	14	271
	Khayar (*Acacia catechu*)	183	20	203
	Chilaune (*Schima wallichii*)	662	0	662
	Kapur (*Cinnamomum camphora*)	780	188	968
	Kadam (*Anthocephalus cadamba*)	6	0	6
	Asoka (*Polyalthea longifolia*)	164	207	371
	Shami (*Ficus benjamina*)	44	15	59
	Salla (*Pinus roxburghii*)	2	4	6
	Foxtail palm (*Wodyetia bifurcate*)	22	4	26
	Budhaero (*Lagestromia parviflora*)	48	29	77
	Bar (*Ficus Bengalensis*)	126	14	140
	Pipal (*Ficus religiosa*)	126	13	139
	Sissau (*Dalbergia sissoo*)	399	65	464
	Khanyu (*Ficus semicordata*)	69	2	71
	Nevaro (*Ficus rosenbergii*)	18	0	18
	Badahar (*Artocarpus lakoocha*)	2	0	2
	Kainyo (*Gravellis robusta*)	113	0	113
	Rubber plant (*Ficus elastica*)	1	0	1
	Karam (*Adina cordifolia*)	21	0	21
	Total	**4546**	**755**	**5301**
	Fruit species			
	Naspati (*Pyrus commums*)	41	1	42
	Rukh katahar (*Artocarpus interga/heterophyllus*)	54	3	57
	Amba (Guava) (*Psidium gaujava*)	53	3	56
	Nibuwa/Bhogate (*Citrus lemon*)	56	7	63
	Orange (*Tangerine*)	10	0	10
	Mango (*Mangifera indica*)	227	32	259

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	Mewa (Papaya) (*Carica papaya L*).	116	15	131
	Lichi (*Nephelium litchi camp.*)	65	16	81
	Total	**622**	**77**	**699**
	Grand Total	**5168**	**832**	**6000**
	Banana (*Musa paradisiacal*)	391 clumps	25 clumps	416
	Bamboo (*Bambusa vulgaris*)	179 clumps	7 clumps	186
	Nigalo (*Arundinaria species*)	5 clumps	0	5

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ANNEX 9
Bioengineering Locations

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Proposed Bio-engineering Locations

S. No.	Chainage		Side	S. No.	Chainage		Side	S. No.	Chainage		Side	S. No.	Chainage		Side
	From	To			From	To			From	To			From	To	
1	1+160	1+170	LHS	37	10930	10940	RHS	73	20090	20230	RHS	109	28+340	28+350	RHS
2	1+180	1+190	LHS	38	10560	10570	RHS	74	20300	20360	RHS	110	28+930	29+090	RHS
3	1+260	1+300	LHS	39	10670	11750	LHS	75	20470	20480	LHS	111	29+140	29+460	Both
4	1+370	1+380	LHS	40	11780	11830	Both	76	20590	20620	RHS	112	29+500	29+540	RHS
5	1+390	1+400	LHS	41	11870	12030	LHS	77	21710	22120	LHS	113	29+560	29+670	RHS
6	1+410	1630	LHS	42	12070	12130	LHS	78	22170	22180	RHS	114	29+820	29+840	LHS
7	1+720	1740	LHS	43	12190	12270	RHS	79	22240	22270	LHS	115	29+860	29+950	RHS
8	1+790	1800	LHS	44	12370	12400	RHS	80	22490	22500	Both	116	30+000	30+020	LHS
9	3+080	3100	LHS	45	12800	13090	RHS	81	22510	22520	Both	117	30+040	30+060	Both
10	3+280	3290	LHS	46	13110	13140	Both	82	22620	22630	LHS	118	30+110	30+130	LHS
11	3+320	3330	LHS	47	13160	13240	RHS	83	22730	22750	LHS	119	30+200	30+240	LHS
12	3+390	3400	LHS	48	13400	13410	LHS	84	22840	22850	LHS	120	30+270	30+440	LHS
13	3+440	3540	LHS	49	13440	13450	LHS	85	24560	24630	Both	121	34+210	34+320	LHS
14	5+420	5490	LHS	50	13460	13480	LHS	86	24760	24780	LHS	122	34+380	34+440	LHS
15	6+120	6250	LHS	51	13570	13580	RHS	87	25420	25430	RHS	123	34570	34630	LHS
16	6+280	6370	LHS	52	13600	13640	RHS	88	25490	25510	RHS	124	34660	34670	RHS
17	8+520	8530	LHS	53	13970	13980	RHS	89	25530	25670	RHS	125	34730	34760	RHS
18	8+700	8920	LHS	54	15360	15370	RHS	90	25740	25830	RHS	126	34850	34860	Both
19	8+950	8960	RHS	55	15440	15550	LHS	91	26610	26620	LHS	127	34900	34910	RHS
20	8+990	9110	LHS	56	15620	15630	Both	92	26730	26850	LHS	128	34970	35010	LHS
21	9+130	9170	LHS	57	15690	15700	RHS	93	26+920	26+930	RHS	129	35080	35090	RHS
22	9+240	9250	RHS	58	15720	15740	RHS	94	26+940	26+950	LHS	130	35110	35120	Both
23	9+270	9320	Both	59	19160	19170	LHS	95	26+980	26+990	LHS	131	35160	35170	LHS
24	9340	9350	RHS	60	19220	19230	RHS	96	27+030	27+130	LHS	132	35210	35220	RHS
25	9360	9530	Both	61	19240	19310	RHS	97	27+190	27+200	LHS	133	35250	35300	LHS
26	9550	9600	LHS	62	19340	19350	LHS	98	27+250	27+260	LHS	134	35340	35350	RHS
27	9620	9960	LHS	63	19360	19370	LHS	99	27+290	27+320	RHS	135	35380	35490	LHS
28	9980	9990	LHS	64	19400	19410	RHS	100	27+360	27+390	RHS	136	36810	36850	LHS
29	10230	10270	RHS	65	19450	19500	RHS	101	27+480	27+500	RHS	137	36930	37100	LHS
30	10300	10310	RHS	66	19530	19550	LHS	102	27+530	27+550	RHS	138	37150	37180	RHS

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S. No.	Chainage		Side	S. No.	Chainage		Side	S. No.	Chainage		Side	S. No.	Chainage		Side
	From	To			From	To			From	To			From	To	
31	10370	10390	LHS	67	19570	19600	LHS	103	27+620	27+630	LHS	139	37330	37490	RHS
32	10480	10490	LHS	68	19620	19880	LHS	104	27+670	27+850	RHS	140	37510	37520	LHS
33	10520	10530	RHS	69	19900	19910	RHS	105	27+900	27+910	RHS	141	37590	37610	RHS
34	10560	10620	RHS	70	19930	19940	LHS	106	27+920	28+050	RHS	142	37650	37660	RHS
35	10650	10830	LHS	71	20000	20030	LHS	107	28+260	28+280	LHS	143	37690	37700	LHS
36	10880	10900	RHS	72	20060	20070	Both	108	28+300	28+310	RHS	144	37970	37980	RHS
145	37990	38140	Both	176	45180	45190	RHS	207	48250	48460	LHS	238	51+740	51+750	LHS
146	38170	38190	RHS	177	45200	45290	RHS	208	48480	48680	LHS	239	51+850	51+890	RHS
147	38370	38510	RHS	178	45330	45340	LHS	209	48700	48820	RHS	240	51+990	52+000	RHS
148	38610	38640	RHS	179	45370	45460	LHS	210	48870	48880	LHS	241	52+000	52+050	RHS
149	41410	41600	RHS	180	45480	45490	LHS	211	48910	48920	LHS	242	52+240	52+260	LHS
150	41820	42010	LHS	181	45690	45700	RHS	212	48950	48970	RHS	243	52430	52440	RHS
151	42040	42170	Both	182	45730	45760	LHS	213	49+120	49+130	LHS	244	52460	52470	RHS
152	42210	42290	LHS	183	45810	45820	LHS	214	49+140	49+150	LHS	245	52480	52490	LHS
153	42320	42400	LHS	184	45840	45870	Both	215	49+160	49+170	LHS	246	52520	52530	LHS
154	42400	42410	RHS	185	45910	45920	LHS	216	49+180	49+190	RHS	247	52640	52680	RHS
155	42630	42640	LHS	186	46090	46100	RHS	217	49190	49+320	RHS	248	52720	52730	RHS
156	42650	42660	LHS	187	46120	46130	LHS	218	49360	49+370	LHS	249	52750	52760	RHS
157	42710	42720	LHS	188	46160	46170	LHS	219	49470	49+480	RHS	250	52770	52780	RHS
158	42810	42940	LHS	189	46190	46290	RHS	220	49490	49+740	RHS	251	52810	52820	LHS
159	42960	42970	LHS	190	46310	46320	RHS	221	49760	49+950	Both	252	52870	52880	LHS
160	43020	43500	LHS	191	46370	46520	LHS	222	50070	50+080	RHS	253	52890	52900	LHS
161	43530	43540	Both	192	46590	46600	RHS	223	50110	50+120	RHS	254	52950	52980	RHS
162	43580	43780	LHS	193	46620	46630	RHS	224	50230	50+250	LHS	255	53080	53240	RHS
163	43850	43920	LHS	194	46650	46660	RHS	225	50300	50+310	RHS	256	53290	53370	LHS
164	43940	44070	LHS	195	46690	46710	Both	226	50470	50+600	LHS	257	53390	53400	RHS
165	44120	44250	LHS	196	46730	46970	LHS	227	50620	50+630	RHS	258	53440	53460	RHS
166	44280	44290	RHS	197	47080	47130	LHS	228	50680	50+710	LHS	259	53690	53700	LHS
167	44310	44340	RHS	198	47180	47190	LHS	229	50880	50890	RHS	260	53760	53800	Both
168	44390	44400	RHS	199	47330	47430	LHS	230	51000	51020	LHS	261	53830	53890	RHS
169	44410	44420	RHS	200	47460	47500	Both	231	51040	51090	LHS	262	54030	54160	LHS
170	44430	44460	LHS	201	47520	47540	RHS	232	51110	51160	Both	263	54200	54210	LHS

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S. No.	Chainage		Side	S. No.	Chainage		Side	S. No.	Chainage		Side	S. No.	Chainage		Side
	From	To			From	To			From	To			From	To	
171	44500	44510	RHS	202	47560	47640	RHS	233	51370	51380	LHS	264	54220	54340	RHS
172	44540	44720	LHS	203	47670	47830	LHS	234	51390	51400	LHS	265	54370	54390	LHS
173	44740	44750	RHS	204	47870	47910	RHS	235	51400	51410	LHS	266	54450	54500	LHS
174	44760	44920	LHS	205	47950	47960	RHS	236	51+420	51+430	LHS	267	54550	54560	RHS
175	44950	45150	LHS	206	47970	48180	LHS	237	51+440	51+470	RHS	268	54570	54690	RHS
269	54840	54850	RHS	292	58580	58650	LHS	315	66870	66920	RHS	338	72+240	72+280	RHS
270	54870	54880	RHS	293	58670	58740	Both	316	67380	67390	RHS	339	72+330	72+360	LHS
271	54960	55030	LHS	294	58760	58780	LHS	317	67420	67570	RHS	340	72+390	72+400	LHS
272	55+060	55+370	RHS	295	58830	58870	LHS	318	67590	67600	RHS	341	72+620	72+680	RHS
273	55460	55510	LHS	296	58940	58990	RHS	319	67630	67750	LHS	342	72+840	72+900	LHS
274	55550	55810	LHS	297	59200	59220	RHS	320	67780	67900	RHS	343	72+930	73+030	RHS
275	55830	55840	RHS	298	59240	59250	LHS	321	67970	67990	RHS	344	74+270	74+290	RHS
276	55860	56140	LHS	299	59270	59280	LHS	322	68060	68070	RHS	345	74+430	74+440	RHS
277	56290	56330	Both	300	59290	59370	RHS	323	68100	68160	RHS	346	74+470	74+500	LHS
278	56430	56470	RHS	301	59620	59640	LHS	324	68400	68430	RHS	347	83+950	83+960	RHS
279	56520	56610	LHS	302	59+960	60+140	Both	325	68620	68630	RHS	348	83+970	83+980	RHS
280	56630	56640	Both	303	60180	60190	LHS	326	68680	68700	LHS	349	84+070	84+110	RHS
281	56650	56660	LHS	304	60200	60220	RHS	327	68760	68770	RHS	350	84+220	84+470	RHS
282	56750	56760	LHS	305	60620	60780	LHS	328	69550	69640	RHS	351	84+490	84+500	RHS
283	57580	57610	RHS	306	60800	60810	LHS	329	69890	69940	RHS				
284	57630	57680	LHS	307	60820	60860	RHS	330	70090	70200	Both				
285	57700	57840	Both	308	60880	60890	LHS	331	70890	71190	RHS				
286	57890	58070	RHS	309	60910	60920	Both	332	71+220	71+230	RHS				
287	58090	58170	RHS	310	61090	61100	LHS	333	71+260	71+330	LHS				
288	58190	58230	LHS	311	61150	61390	RHS	334	71+570	71+580	RHS				
289	58260	58400	Both	312	61610	61620	RHS	335	71+650	71+660	Both				
290	58450	58470	LHS	313	61630	61670	Both	336	71+680	71+690	RHS				
291	58500	58550	RHS	314	66750	66770	RHS	337	71+820	71+940	RHS				

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ANNEX 10

Location Map of Campsites and Disposal Sites

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ANNEX 11
Photographs

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Appendix H: Photographs



Plate 1: New Bridge Location, Trishuli River



Plate 2: Marsyangdi Hydropower Powerhouse, (Ch. 4+100)



Plate 3: Abukhaireni Bazar, (Ch. 6+800)



Plate 4: Road section through Bimal Nagar (Ch-20+075 to Ch-21+400)

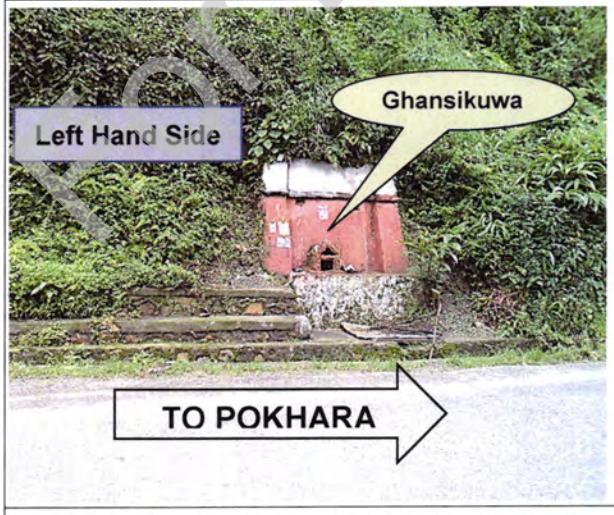


Plate 5: Ghasikuwa at ch. 36+870 along the road alignment



Plate 6: Dumre Bazaar at Ch. 23+668

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Plate 7: Major landslide between Ch. 5+825 to Ch. 5+875



Plate 8: Forest in the project area



Plate 9: Tree measurement



Plate 10: Affected Structure



Plate 11: Affected Structure

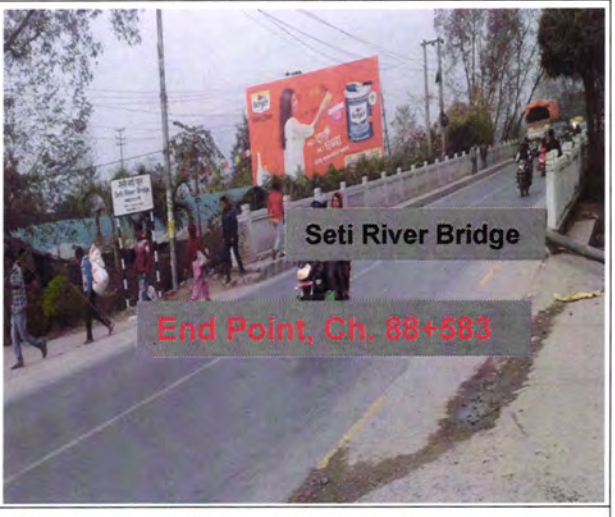


Plate 12: End Point, Seti Bridge, Ch. 88+583

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For Reference Only

Government of Nepal
Ministry of Physical Infrastructure and Transport
Department of Roads
Project Directorate (ADB)
Kathmandu, Nepal

SASEC Mugling Pokhara Highway Improvement Phase I Project (SMPHIP)
(ADB Project No. 52097-002)

Mugling-Anbukhaireni-Pokhara Road (Section – 2) From Km 49+700 to km 88+583

Contract No. SMPHIP/OCB/MAP/02

Phase 1: Upgrading Works
(Upgrading of existing road from 2-Lanes to 4 Lanes and Service Lanes, Structures, Bridges, etc. including Defect Notification Period)

Phase 2: Performance Based Maintenance Works
(Maintenance works consisting of all activities to be carried out to achieve and keep the road assets as defined in the PBM Specifications)

Bidding Document

Part III Conditions of Contract

Appendix-3: Resettlement Plan

November, 2019

For Reference Only

Draft Resettlement Plan

July 2019

NEP: SASEC Mugling–Pokhara Highway Improvement Phase 1 Project

Abukhaireni–Pokhara Road (including Madi and Seti Bridges)

For Reference Only

Prepared by Department of Roads, Ministry of Physical Infrastructure and Transport, Government of Nepal for the Asian Development Bank.

CURRENCY EQUIVALENTS

(as of 31 March 2019)

Currency unit	–	Nepalese rupee (NPR)
$1.00	=	110.35

ABBREVIATIONS

- ADB - Asian Development Bank
- APs - Affected Persons
- BPL - Below Poverty Line
- CBO - Community Based Organization
- CBS - Central Bureau of Statistics
- CDC - Compensation Determination Committee
- CDO - Chief District Officer
- COI - Corridor of Impact
- DAO - District Administration Office
- DDC - District Development Committee
- DLSO - District Land Survey Office
- DLRO - District Land Revenue Office
- DOR - Department of Roads
- CSC - Construction and Supervision Consultant
- EA - Executing Agency
- FGD - Focus Group Discussion
- GDI - Gender Development Index
- GESU - Geo - Environment and Social Unit
- GRC - Grievance Redress Committee
- GoN - Government of Nepal
- HDI - Human Development Index
- HPI - Human Poverty Index
- HHs - Households
- IA - Implementing Agency
- MoPIT - Ministry of Physical Infrastructure and Transport
- PAP(s) - Project Affected Family (Families)
- PD - Project Director, PID
- PIU - Project Implementation Unit
- ROW - Right of Way
- RP - Resettlement Plan
- R&R - Resettlement and Rehabilitation
- RS - Resettlement Specialist
- SPAF - Severely project Affected Family
- SPS - Safeguard Policy Statement (ADB 2009)
- Sqm - Square meters
- TPPF - Transport Project Preparatory Facility
- VDC - Village Development Committee (Rural Municipality)
- ZOI - Zone of Influence

For Reference Only

NOTE

In this report, "$" refers to United States dollars.

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In preparing any country program or strategy, financing any project, or by making any designation of or reference to a particular territory or geographic area in this document, the Asian Development Bank does not intend to make any judgments as to the legal or other status of any territory or area.

GLOSSARY

Affected Person	–	Any person including Vulnerable encroachers/squatters, households, business affected by the project through the acquisition of land or other assets or disruption in business irrespective of legal or ownership title. This includes any person whose rights, standard of living, subsistence and income-generating capacity are adversely affected because of the disruption in the acquisition of assets or business, whether full/partial, or permanent/temporary.
Compensation	–	The payment in cash or kind for private property acquired by the government for the project, based on replacement value
Corridor of Impact	–	Minimum width of land required for the construction of roads and provision of shoulder, width plus safety zone on either side of the road. COI is generally within the ROW, except where construction requirements and topography necessitate the acquisition of wider area.
Cut-off Date	–	The date of census survey to count the affected persons (APs) and their affected business and assets.
Entitled Person	–	Any person physically or economically displaced as a result of (i) involuntary acquisition of land, or (ii) involuntary restrictions on land use or on access to legally designated parks and protected areas.
Local Consultative Groups	–	Municipalities/village level committees established to assist the affected population, legally constituted committees for land acquisition and project authorities, monitoring of implementation issues and community reactions and grievance resolution.
Poverty Line Income	–	The cost of maintaining basic minimum needs. PLIs have been defined by different organizations and the government departments, using factors such as per Capita calorie requirements and expenditures on housing and other non- food items.
Rehabilitation	–	The measures taken to mitigate social impacts, including compensation, resettlement and rehabilitation allowances where required
Replacement Cost	–	The calculation of full replacement cost will be based on the following elements: (i) fair market value; (ii) transaction costs; (iii) interest accrued, and (iv) other applicable payments.
Right of Way	–	The legal right to use the land by the Department of Road.
Titleholder	–	The person in whose name the project-affected business, land and/or building business is legally registered and who is authorized to receive the compensation granted for the loss of business or acquisition of the land
Tenant	–	A person occupying or utilizing land of a titleholder, which was legally registered at concern authority.
Vulnerable persons	–	In the context of this Resettlement and Indigenous Peoples Plan (RIPP), vulnerable include affected households, who are headed by poor indigenous persons (but for the advanced group), disabled persons, women, orphans (under 18 years old), independent elderly persons above 70 years of age, the landless, and headed by persons living below the poverty line as defined in this document.

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EXECUTIVE SUMMARY

A. Project Description

1. The Government of Nepal has requested the financial assistance from the Asian Development Bank (ADB) to finance the upgrading of the Mugling - Pokhara Highway Improvement Project. The road improvement will consist of upgrading and widening the existing road into a four-lane highway. The Mugling - Pokhara road starts at Mugling Bazaar in Ichhakamana Rural Municipality of Chitwan district in province no. 3, passing through various settlements in Tanahun district, and ends at Prithivi Chok, Pokhara of Pokhara Metropolitan City of Kaski district in capital of the Gandaki province (*Pradesh*). The total length of the road section is 89 km but under the present scope, it is proposed to implement the road section from Abukhaireni, Milan Chowk (Ch.8+250) to Seti Bridge of the Pokhara city. The section from Mugling at Ch. 00+000 to Ch.8+250 km near to the Abukhaireni municipality due to the rocky areas, where geography is tight for two lanes, Madhyamarshyangdi Hydroelectric Powerhouse and major settlements which are not possible for construction of the four lanes, and may be considered as a separate phase of project. For this section, alternative analysis and assessment is being undertaken by the government. This RP does not include the Mugling - Abukhaireni section and includes Madi & Seti bridges. The total length of the road covered by this RP is about 81 Km.

2. The main objective of the Resettlement Plan is to identify adverse social impacts related to the project. While about 62% of the project affected households belong to various ethnicity or Janajatis as they are known in Nepal. These households are however fully integrated into the mainstream society and the project does not impact tribal land hence do not fall within the definition of indigenous people in the ADB SPS. However, considerations for their ethnicity has been considered particularly in the conduct of consultation, participation and information disclosure.

3. This RP describes the (i) types and the extent of losses of assets including land and physical structures; (ii) policy and legal framework for mitigating losses; (iii) an entitlement matrix, (iii) a budget, (iv) institutional framework for the implementation of the plan, including monitoring and evaluation.

B. Resettlement Impacts

4. Major efforts have been made to avoid involuntary resettlement wherever possible by adopting an appropriate technical design that minimized social impacts. Although the Right of Way (ROW) is 50 meters, its utilization was rationalized and resettlement impacts have been limited to a Corridor of Impact (COI) of 46 meter in built-up sections. Structures and private land acquisition have been avoided to the extent possible.

5. The road improvements will require minor land acquisition of private land where the existing alignment is insufficient to meet the requirement of the new design, usually for intersection improvements and bridges. The land to be acquired mostly comprises of small strips of uncultivated and cultivated land on either side of the existing road. It is expected that the upgrading of Aabukaireni – Pokhara road section of the Prithivi highway will impact 810 households, including 3985 persons. A total of 143 private land parcels equivalent to 12838.53 square meters and belonging to 122 households will be affected. Moreover, a total of 767 structures belonging to 750 households will also be affected; most of them (85%) belong to non-titled holders. Only 400kg (in 0.074 ha of land) of paddy crops are expected to be affected. There is no major impact on the income of affected households due to the loss of land. The table below summarizes total affected households in road alignment.

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Table 1: Summary of Affected Assets

Type of Asset Affected	No of affected HHs
Land only	60
Land & structures	62
Residential cum Commercial & others structures without land	688
Total	**810**

C. Information Disclosure, Consultation and Participation

6. Consultations were undertaken at different levels, in particular with affected persons, but also with local level social workers, representatives of political parties, civil-based organizations, business men, and representatives of vulnerable groups. Based on the revised technical design re-consultation were conducted with all Mayor, deputy Mayor and ward Chairman of all the projected affected rural municipalities and municipalities along the road corridor. They were informed about the affected structures lying within their ward and municipality. At least one meeting was held in each major settlement to get feedback of people's perceptions of the project and suggestions. A total of 321 persons were consulted for the preparation of this RP. The RP will be disclosed to the EA's and ADB's websites. During the consultation with the mayors and ward chairman they were fully supportive for implementation of the Highway improvement project of the Mugling to Pokhara, They have requested for the implementation of the project as soon as possible to cater increased traffic load and provide smooth, easy and quick access eliminating existing traffic congestion and reduction in roadway accidents. The whole section of the road is rapidly being developed as urban area and forms the only major gateways (lifeline) to Pokhara, famous tourist center in western region of Nepal.

D. Grievance Redress Mechanism

7. The Grievance Redress Mechanism proposed for this project is composed of three level committees to ensure issues can be addressed at the local level and if necessary escalated to the higher project authority. The first level committee will be field level committee which will be approaches the field level social mobilizer and social & environmental focal person from contractors. The second level committee will be site specific (Rural Municipality or Municipality ward level), the third level committee will be at the district-level or road-specific PIU led by the DOR Project Manager, and the final level will be at the project directorate level in Kathmandu. In the first and second level committee, the representation of project affected persons, including women is ensured. The mechanism is informed to all project affected households and other stakeholders.

E. Legal Framework

8. The Resettlement Plan is guided by the ADB Safeguard Policy Statement 2009, the Land Acquisition Act of Nepal 2034 (1977) and other relevant policies and guidelines. The main objective of the RP is to identify impacts and mitigation measures to address the various losses due to the project road. The RP has been prepared based on the findings of the field reconnaissance survey, which started in 2016,updated 2018 the verification of land records with the land revenue offices, the census and socioeconomic survey of affected households and consultations with affected persons, broader community residents and line agencies at district and local levels.

F. Entitlement, Assistance and Benefits

9. ADB's Safeguard Policy Statement (2009) on involuntary resettlement requires the compensation for the loss of land and assets on land at replacement cost, relocation assistance,

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assistance for the loss of income and livelihoods as well as special measure for vulnerable affected households defined as household headed by women, disabled persons, ethnic persons, orphan-headed, the landless and household living below the poverty line. SPS considers non-titled holders as eligible for resettlement assistance for the loss of income and assets other than land. The Entitlement Matrix (EM) has provisions in line with the requirements mentioned above. In addition, Aps will receive other cash grants, resettlement assistance, such as transportation allowances, and reconstruction allowance.

G. Resettlement Budget and Financing

10. The total estimated budget for the implementation of this RP is NRs. **1,494,759,811.42** (US $ **13,562,832.88**@ NRS. 110.21 March, 2019). This cost includes all cost related to the compensation for land, structures, economic rehabilitation of vulnerable group, RP implementation, external monitor and 10% contingencies for the total cost of resettlement and rehabilitation. All cost related to the land acquisition and resettlement budget will be borne by the Government. The EA will ensure that adequate funds are delivered on time to the CDO for timely implementation of RP.

H. Institutional Arrangement

11. The Ministry of Physical Infrastructure and Transport (MoPIT) will be the executing agency (EA) and the Department of Roads (DOR) will be the implementing agency (IA) of this project. A Project Implementation Unit (PIU), based in Kathmandu, headed by the Project Director will be responsible for the overall execution of the project. Second class senior divisional engineer from PD will be deputed as Project Manager who will work as project in charge for the IA. The Project Manager (PM) will play a crucial role in coordinating with other line agencies for the verification of affected households and the determination of the rate of affected assets. The PM will be also being involved in resolving the grievances at local or district levels.

12. The RP will be implemented by the team of resettlement experts and field-level social mobilizers hired under the Supervision Consultant. They will be responsible for confirming and updating the list of affected households and assets, identifying vulnerable households, preparing the affected household ID cards, supporting DOR in finalizing the compensation and assistance package for each affected household, facilitating payments, and preparing and conducting the livelihood training program. The SC team will also be responsible for facilitating the submission and documenting grievances, setting up an internal monitoring system and baseline, and conducting a training program to DOR staff on resettlement activities and finally, for preparing and conducting the livelihood training program to vulnerable.

I. Implementation Schedule

13. Construction activities are expected to start from the last quarter of 2019 and be completed at the end of 2024. Major activities to be carried out prior to construction activities are: (i) the payment of compensations and other rehabilitation assistance to the Aps and (ii) handing over sections free of encumbrances to the contractor. Advance actions to accelerate the implementation of the resettlement plan are the establishment of the project office, the recruitment of the Project Manager and supervision consultant resettlement staff, and the establishment of grievance redress committees. Affected persons will not be asked to relocate prior to receiving compensation and resettlement assistance. Information on this regard will be validated during external monitoring.

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J. Monitoring and Reporting

14. The RP implementation will have both internal and external monitoring systems. Internal monitoring will be the regular activity of the PIU and supervision consultant in charge of implementing the RP. The PIU will maintain a record of all transactions in the resettlement database. The project office will be responsible to keep the record of the baseline, socioeconomic, census and land acquisition and compensation payment data for field level monitoring.

15. An external professional/individual/researcher or consulting agency, university department or development NGOs will be recruited by DoR to carry out an independent bi- annual review of the implementation of resettlement activities.

16. The Department of Road will submit biannual internal monitoring reports of the RP implementation to ADB. The independent monitoring individual/agency will submit bi-annual external monitoring reports directly to ADB with a copy to the EA to determine whether or not the resettlement goals have been achieved in line with ADB's SPS.

For Reference Only

I. PROJECT DESCRIPTION AND METHODOLOGY

A. General Description of the Project and Objectives of the Resettlement Plan

1. The government of Nepal has request financial assistance from the Asian Development Bank (ADB) to implement the upgrading of Abukhaireni – Pokhara road section (km 8+250 to 88+583 Km).The project will contribute to poverty reduction and support the economic development of rural communities through (i) improved connectivity and accessibility of markets, headquarters and other centers of economic activity; (ii) year round all weather road connections; and (iii) improving DOR capacity for managing road construction/ improvement and maintenance. The project will affect 810 households with 3985 persons.

B. Description of the Project Road

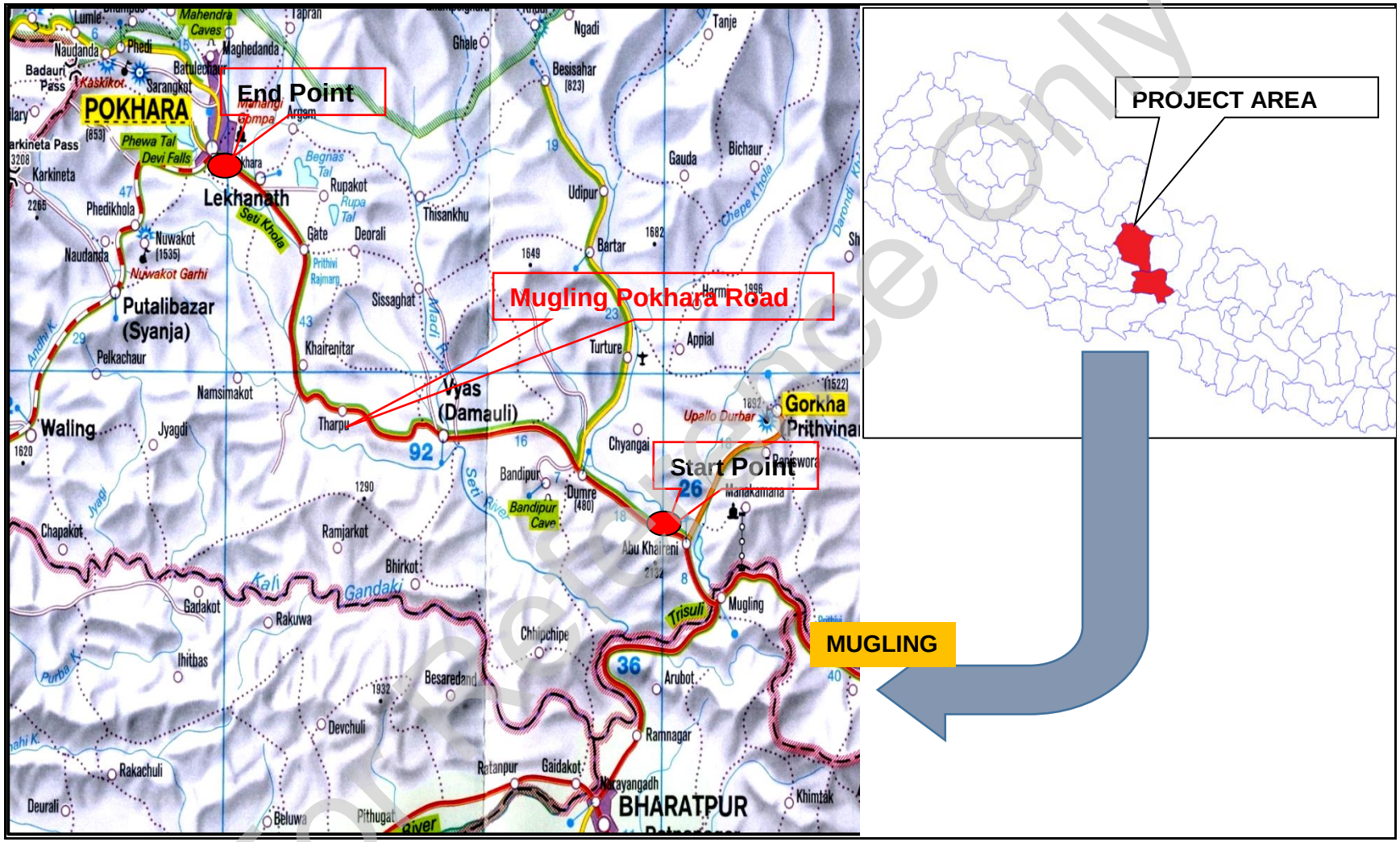
2. The road section starts at near to the municipal office of Abhukhairaini municipality and passes through various settlement areas (built-up area), and small emerging towns in Tanahu district and ends at Prithivi Chok of Pokhara metropolitan city of Kaski district of the Gandaki Pradesh. The existing width of the road is 8.0 m and the condition of the road, structures and drainage facilities are in very good condition throughout the road section.

3. The Department of Roads (DoR) intends to upgrade the Abukhaireni – Pokhara Section (km 8+250 to 88+583) to meet the Four Lane Standard with DBST Surfacing. Under the present project scope, upgrading works will be carried out from Ch. 8+250 at Milan Chowk of the Abukhaireni Municipality to Seti Bridge of the Pokhara Metropolitan City

4. Figure 1 shows the location map of the Mugling – Pokhara road section.

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Figure 1: Location Map of Mugling – Pokhara road



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5. Under the present project scope, the proposed upgrading section of the road starts at Milanchok of the Abukhaireni Municipality and passes through Bandipur Municipality, Vyas Municipality, Myagde Rural Municipality and Shukla Gandaki Municipality in Tanahu district and Pokhara metropolitan city in Kaski district respectively. There are various settlement areas (built-up area), paddy fields and market zones the road passes through. The total design length of the proposed upgrading section is 81 km. The road provides connectivity to major settlements, market centers and agriculture production pockets and also crosses the entry point of the proposed Pokhara International Airport. Salient features of the project road are presented in Table 2 below.

Table 2: Salient Features of the Project Road

Name of the Project	Mugling-Pokhara Road Upgrading
Province	Gandaki
District	Tanahu and Kaski
Municipalities/Rural Municipality	The alignment passes through one metropolitan city, two municipalities and three rural municipalities namely; Abukhaireni Rural Municipality, Bandipur Rural Municipality, Vyas Municipality, Myagde Rural Municipality, Shukla Gandaki Municipality of Tanahu district and Pokhara metropolitan city in Kaski district respectively
Start Point	Abukhaireni, near Municipality office in Milan Chowk
End Point	Seti Bridge, Pokhara,
Total Length	81 Km
Road Standard	National Highway (H04), Class II
Right of Way	50 m (25 m on either side from center line of the road)
Carriage way Width	14 m
Formation width	19 m (Median – 3 m), Shoulder – 1 m on both sides)
Surface Type	Bituminous
Type of work	Upgrading

Source: Detail Design Report, Mugling – Pokhara Road, 2017 & updated, 2019.

C. Measures to Avoid or Minimize Impact

6. Efforts have been made to avoid or minimize involuntary resettlement impacts by adopting a technical design that uses the available space owned by DOR to the extent possible and limiting the impacts to the corridor of impact (COI). Although the RoW is 50 meters, its utilization was minimized and resettlement impacts limited to the COI which is 46 meter in built up section, 30 meters in rural areas and avoided Ch. 0+00 to 8+200 km near to the Abukhaireni due to the rocky areas, where geography is tight only for two lane roads is sufficient. The impacts on public famous historical public places (i.e. Ghasikwa) located at km 36+870 and two temples of the Damauli Bazar were avoided in consultation with the technical design team together with the nearby communities.

D. Objective and Methodology of the Resettlement Plan

7. The objective of this RP is to assess and document impacts as well as develop mitigation, compensation and rehabilitation measures to restore the assets and livelihoods of all persons affected by this project. The considerations for janajatis are placed in the RP as majority of project-affected persons (58%) are janajatis . The RP covers the Abukhaireni-Pokhara road improvement and complies with the Land Acquisition Act of Nepal 2034 (1977) and ADB's Standard for Involuntary Resettlement outlined in the Safeguards Policy Statement (2009).

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8. **Cadastral survey and land records verification:** DOR's ownership of the ROW was verified (see Appendices 1.A, 1.B and 1.C, with English translation). A cadastral survey of the likely affected land parcels was carried out under the leadership of the Cadastral Surveyor from the District Land Survey Office. Based on the upgrading requirements of the engineering design, Cadastral Surveyor identified likely areas of land to be acquired. The team pegged the alignment and impact boundaries and verified the affected land areas, assets and structures. The affected land and other assets were confirmed through field verification and the cadastral surveyors enumerated and measured other affected assets (e.g. structures, etc.) within the premises of affected land parcels. The cadastral survey revealed that the available ROW is enough for the road upgrade but some intersections of the services lane require nominal land acquisition. Therefore, an additional 1.2828 ha of private land is required for the implementation of the project road. The survey and record verification confirmed that no ancestral domain or tribal land is affected by the project, and there is no known legacy issues based on records or stories from the communities leaving along the road corridor. Moreover, being on an existing road, the project does not impact access to natural resource.

9. **Consultations:** Some of the key stakeholders consulted included local community members, family members of affected households, local key informants, officials of relevant district level agencies (i.e. District Land Survey Office, District Land Revenue Office, District Forest Office, local political leaders, and representatives of local level institutions, etc.). The Resettlement Specialist in charge of the RP preparation, supported by the Cadastral Surveyor and other team members conducted field surveys on the road alignment. Qualitative socio-economic information such as perceptions about the project, potential benefits and likely negative impacts (especially to indigenous and vulnerable groups), likely resettlement issues, key issues related to women and children, and other local issues were also assed during the census survey. Such information was collected through discussion with the family members of the affected households, local community, representative of local level institutions and political parties, and other key informants (e.g. ward representatives, significantly affected persons, women, school teachers etc.) individually or in group.

10. **Census survey:** To obtain the socioeconomic information of project affected households, a census survey was undertaken in the month of December 2016; however, additional census survey was undertaken in the month of October, 2018 at Madi & Seti bridges of the Tanahu and Kaski district, based on the detailed designs. For carrying out the census surveys of APs, a household level questionnaire was used and updated on the 2018 & 2019, containing structured questions for the generation of the desired data. The census was carried out based upon the detailed design drawings prepared by the technical team. The census survey of all affected households was conducted. Information on family members were collected through the census of project affected households and their family members was acquired through the survey. Information about sources of income and average annual income of the affected households, education level, vulnerability status, etc. was collected.

11. **Affected asset inventory**: The resettlement team with the support of the local community and APs prepared the list of affected assets and their owners that are located within the COI. The list contained the name of household's head, address, assets owned and ownership status along the road corridor.

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II. SCOPE OF LAND ACQUISTION AND RESETTLEMENT

A. Project Benefits

12. The Government of Nepal (GON) is working towards accelerating the economic development of the country while redressing regional imbalances and inequalities. Access to road transport is a key determinant of economic development and socioeconomic opportunities. The Government of Nepal requested the assistance of the Asian Development Bank (ADB) to support the improvement of Mungling- Pokhara Highway (Prithivi Rajmarga). The proposed project aims to improve the efficiency and adequacy of the transport system by addressing the construction of the four lane road and new bridges. The project road traverses through Tanahun & Kaski districts as a part of the Prithivi Highway. This is the vital road link and has strategic importance to boost tourism industry of the country as well as connectivity to Gandaki Pradesh (province no 4). Reductions in travel time due to the improvement of the project road and direct linkage with the Mugling, Narayanghat, Kathmandu and Pokhara are major benefits of the project road. The improvement of the project is expected to increase the number of tourists in the area. It will bring economic benefits to local people through savings in vehicle operating costs, time savings for passengers and goods transit, and savings in road maintenance cost. It is anticipated that the improvement of this road will bring several positive socioeconomic impacts contributing to the poverty reduction in the area, foremost among which are the followings:

- Employment opportunity during construction period
- Reduction of travel time about 20% i.e. about 30 minute
- Increase of income-generating activities like development of market center, and tourist centers.
- Easy transport facilities to export and import goods from and to the project road districts
- Increase of land price along the road alignment
- Development of other infrastructures and
- Development of economic diversification activities.

13. The project is part of a major trade corridor, and feeder roads of SAARC and SASEC corridors linking Kathmandu to Dhaka and Chittagong through India. The project is designed to improve domestic connectivity between touristic provincial capitals of Gandaki to the Central Capital Kathmandu. The projects consistent with the objectives set out in the country partnership strategy, are included in ADB's country operations business plan 2018–2020 and SASEC's operations plan 2016–2025.

14. The project has some negative socioeconomic impacts primarily related to loss of land and structures, which is discussed below.

B. Summary of Negative Impacts

15. The ROW of the road is defined as 25 meter in either side from the center line of road and census was carried out within the COI for the clearance of all structures. A total of 810 households will be affected by the project. Among the affected households, 60 households will lose land only, 62 households will lose land with structures and 688 households will lose structures only. Among the all affected structures, 450 are residential structures, 150 commercial and remaining 150 are commercial cum residential house & others. The detail of affected structures is presented in below table.

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16. Altogether 3985 people will be affected from 810 households. Of the total 810 affected households, 496 households were interviewed and 314 were absentees at the time of the Census Survey. . Sixty (60) landowners were absent during the survey but the impact on their land has been measured and their names included in the list of affected households after verification with the Land Revenue Offices of the Tanahu and kaski Districts. The total list of APs has been presented in Table 4 below. The full list of affected persons can be found in Appendices 2 to 7.

Table 3: Number of Affected People

Types of Affected Assets	Affected Households	Affected Peoples	Land Parcels	Land Area to be acquired (sq. m)
Land only	60	295	143	12,838.53 Sq. meter
Land with structures	62	305		
Structure only	688	3,385		
Total	**810**	**3,985**		

Source: Field Surveys, Dec 2016 & re-updated, 2019.

17. The inventory of losses shows that among the affected households, 594 household fall on the category of IP, Dalit and female headed households and remaining 216 households belongs to the other categories. The table below shows the detail

Table 4: Status of Impact Title vs. Nontitle

Categories	All households		IPs		Dalits		Female-headed HH	
	No.	%	No.	%	No.	%	No.	%
Title holders	122	15.1	75	61.5	2	1.64	10	8.2
Non-titled holders	688	85.0	391	56.8	53	7.7	63	9.2
Total	**810**	**100.0**	**466**	**57.5**	**55**	**6.8**	**73**	**9.0**
Surveyed HHs	496		267		39		57	

Source: Field Survey 2016 & re –updated, 2018.

C. Scope of Land Acquisition

18. This road is classified as National Highway and was constructed about four decade ago. The right of way (RoW) of 50 m (25 meter either side from centerline of road) for this road is declared by His Majesty Government (now Government of Nepal) through gazette publication in 1977. The entire RoW was acquired and owned by the government and subsequently most of the private land was transferred to the Government of Nepal (see Appendix 1). But the encroachment within the RoW is highly observed. The road improvement and upgrading works requires to clear encroachment is few stretch of road alignment.

19. The improvement works are mostly limited to the existing ROW except in a few stretch of intersections improvement. Based on the detail design and field verification from cadastral surveyors, the project needs to acquire 1.28 ha of land from 122 households for major intersections improvement. All the land to be acquired is homestead land, barren and agricultural land. Based on the information elicited from the field survey and after verification with the land survey office, three households will lose more than 10% of their total land holdings. The table below shows the loss of land among the land losers. See Appendix 2 for more details on land loss and affected owners.

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Table 5: Extent of Loss of Land

Section	Extent of land loss of the total land holdings (in %)		
	Less than 10 %	More than 10%	Total
No. of households	119	3	122

Source: Field Surveys, Dec 2016 & re- updated 2018.

20. The survey and consultations with *janajati* populations confirmed that no ancestral domain or tribal land is impacted by the project. In fact the project is far from any ancestral land area. No other religious structures or locations, regarded as traditionally sacred by the *Janajatis* will be affected because of the project. In addition, no specific forestland or water body is linked with Magars' or Gurungs' rituals, ancestries or their spiritual realms. Each affected land plot is either individually owned or non-titled.

D. Impacts on Private Structures

21. A total of 767 structures belonging to 750 affected households will be affected by the project. Most structures (688) belong to non-titled holders in the existing ROW and 62 residential structures belong to title-holders. Of the total affected households, 2950 population from 600 households will be fully affected and will require physical relocation.

22. Among the affected structures, 450 are residential structures, 150 are commercial structures and the remaining 150 are residential cum commercial structures as well as others (secondary) structures, etc. The following Table 6 provides the details of the structures loss and type. Also, please see **Appendix 3** for the list of affected structures and their owners.

Table 6: Types of assets by loss and structure type

S. No.	Type of Asset Affected	No. of affected HHs	No. of affected structures	No. of Aps
1	Residential Structures	450	450	2215
2	Commercial Structure	150	150	737
3	Residential cum commercial structure & others	150	167	737
	Total	**750**	**767**	**3690**

Source: Field Survey, December, 2016 & Re- updated on 2018.

Table 7: Status of affected structures

Affected assets	Partially affected	Fully affected	Total
Residential Structures	150	300	450
Commercial Structure	0	150	150
Residential cum commercial structure & others	17	150	167
Total	**167**	**600**	**767**

Source: Field Survey Dec 2016 & Re- updated on 2018.

23. **Affected structures by construction materials.** Among the affected residential structures, 200 are made from concrete with pillars, 43 are made from bricks & cement with cement mortar with slate/CGI sheet roofs, 521 are made from block /bricks and CGI roofs, and the remaining 4 are made from mud/CGI sheet/bamboo wall with straw/thatch roofs. Table 8 provides the breakdown of the affected structures as per construction materials type.

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Table 8: Types of Affected Structures by Construction Material

S.N	Types of Structures	No. of structures	Percent (%)
1	Frame structures with concrete	200	26.08
2	Brick & stone wall with cement mortar of slate/CGI roof etc.	43	5.61
3	Brick, wood or stone wall with CGI roof	521	67.93
4	Wooden/bamboo/mud wall with straw roof	3	0.39
	Total	767	**100**

Source: Field Survey Dec 2016 & re-updated 2018.

E. Impact on Community and Public Structures

24. The census reveals that 414 community & public structures will be fully affected by the project road. These include 15 public toilets, 105 bus sheds, 135 public water tanks & taps, 52 temple stairs and outside sitting areas (i.e. small shed for sitting) and public/Chautara (rest- place under the tree) etc. These community properties need to be relocated during the implementation phase in close coordination and collaboration with the local community. The community structures will be rebuilt by the project. The replacement cost for reconstruction has been incorporated into the engineering cost estimates. The detailed list of community structures is attached in **Appendix 7** & Table 9.

Table 9: Affected Community and Public structures

S.N	Resources	Number
1	Public Toilet	15
2	Chautara	50
3	Passenger Waiting shed	105
4	Public Tap	135
5	Temples strias or outsiders setting areas etc.	52
6	Petrol pump nozzle, Wall etc.	36
7	Public figure statue & Notice Board etc.	5
8	Police check post, entrance gate, Trafic direction post etc.	16
	Total	**414**

Source: Field Survey, December 2016.

Table 10: Users of Key Affected Community Assets

Type of community asset	Location	Main user community
Water tank & tap	25+540	Janajati, Dalit and others cast group
Temple	41+290	Chhetri, and Brahman etc.
Panitank	54+575	Mixed group
Passenger waiting shed & temple	65+290	Mixed group (Dalit and other cast groups etc.)

F. Other Impacts

25. Based on the detailed design about 1400.00 kg of crops likely to be lost due to the project **(Appendix 4)**. The estimated quantity of crops loss has been calculated based on the area of land to be acquired and the average quantity of major crops produced and yield. The Entitlement Matrix (EM: C-1) provisions three months' advance notification to APs to harvest the standing crops. In case of loss of standing crops, cash compensation will be paid at replacement cost as decided by CDC.

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26. The survey indicated that 2,221 privately-owned fruit trees will be affected by the project. Close to 50% of them are banana trees. Affected fruit trees will be further verified during project implementation. Cash compensation will be provided tor affected fruit trees based on next 5 years average fruit production with the support of District Agriculture Office (DAO), [EM: C-1].. Similarly, the CDC may seek support from District Forest Office (DFO) while fixing compensation for other trees please see Table 11 below and **Appendix 5** for more details.

Table 11: Affected Privately-owned Trees

S,n	Fruit tree	No
1	Bananas	1250
2	Orange	12
3	Citrus (Nibuwa)	43
4	Guava(Amba)	23
5	Papaya(Mewa)	71
6	Lichhi	55
7	Mango	50
8	Palm tree	2
9	Supari	4
10	Jack fruits (Rukhakathar)	15
11	Pears(Naspati)	21
12	Bamboo	599
13	Chiulani	55
15	Khainaio	14
16	Badar	7
	Total	**2,221**

27. The inventory of loss assets identified at the time mobile123 kiosks operating on the road. Kiosk owners will be notified one month in advance to move their structure, which are on wheels, out of the corridor of impact. Beside that there no other assets, such as private fish ponds and others to be affected.

G. Impact on Noise and Vibration

28. The pre-construction survey will identify the location of the noise and vibration sensitive location/areas, where there may be likely to be impacted. So that joint survey (pre-construction) identified the risk households and settlement with in ROW of the road alignment. The issued/impact of Noise and Vibration and their mitigation measures were mentioned in the Environmental Management Plan of environmental assessment report and the same will be followed by the contractor during project implementation period. The contract documents also mention that contractor is responsible to follow the EMP. Social issues arising from noise and vibration during will be adequately addressed under the project grievance redress mechanism and monitored in accordance with applicable requirements, including ADB SPS.

29. The following measures will be adopted by the contractor to minimize the noise and vibration impact during the implementation of the project:

- Compaction equipment will be used during day time only and night time will be avoided.
- The loaded vehicle plying on the road will be monitored as per Nepal Road Standard.
- Carefully monitoring for any cracks of the households nearby settlement areas.
- Smaller compensation equipment generated less vibration shall be used.

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- Contractor will aware the operator for careful handling of machines and equipment at sensitive areas.
- Blasting will be avoided as far as possible.
- The Contractor will inform the local government and community in due time about operations that bear the risk of nuisance, vibration and accidents, especially when operating heavy equipment & blasting operations are underway.

H. Impact on Socially Vulnerable Groups

30. The Government of Nepal has plans and policies that recognize women, disabled, ethnic minorities and Dalits groups as vulnerable, eligible for special assistance. Women in all social groups and regions tend to be more disadvantaged than their male counterparts and women-headed households (i.e. widows, separated or single moms) are at a particular disadvantage. ADB's resettlement policy has special provisions for affected vulnerable households. These are defined "those below the poverty line, the landless, the elderly, women and children, and Indigenous Peoples, and those without legal title to land." In the context of this RP, vulnerable households will be defined as households headed by (i) women; (ii) disabled; (iii) elderly (over 70 year old); (iv) children (under 18 year old); (v) indigenous persons or janajati/adivasi (besides for the "advanced" group); (vi) the landless or (vii) headed by men below poverty level (defined as NRs. 130,500 per household per year, see explanation in Chapter 3).

31. Originally all indigenous people (Adibasi/Janajati) were considered in the vulnerable category. However, further analysis showed that at least half of all affected indigenous households were well off and part of the advance IP category in the context of this RP, the IPs belonging to the "advanced" category will not be considered as vulnerable. Not only have they been historically at an advantaged politically and socio-economically compared to all other groups, but the socio-economic survey confirmed that their socio-economic indicators were above the average for all affected persons. The survey confirmed they have multiple sources of income, including foreign remittance. Many of them are retired from the British, Indian and Singapore military forces and have sound economic condition. Therefore only IPs included in the Marginal, Highly Marginal and Endangered Category (none were found in the former) are considered as vulnerable for the purpose of this RP (more details is provided in Chapter III).

32. Out of 496 total survey households, 228 were identified as vulnerable. The most important vulnerability categories are Single women Headed HHs, Disable HHs, below poverty level households and landless households. The table below presents details on the vulnerability categories identified during the survey. Please see **Appendix 6** for the list of vulnerable affected households.

Table 12: Vulnerability Status of the APs of Affected Households

Vulnerability Category	Number of HHs
Single Female Headed Households	9
Elderly (Above 70 Years)	1
Disable HHs	3
Below Poverty Level	20
Indigenous-headed (disadvantaged, marginalized, highly-marginalized and endangered) who are not already included in categories above, including Dalits)	195
Landless who are not already included in the categories above	-
Total Vulnerable Peoples (APs)[a]	**228**

[a] Additional validation by the local authorities/agency will be undertaken during RP implementation. The total number of vulnerable households will be confirmed during the RP implementation.

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33. Based on ADB SPS, the RP has special provisions and additional financial assistance for vulnerable affected households. They will receive financial assistance for the 90 days at local wage rate as a transitional allowance to bear any additional cost related to the relocation process. All IPs have relatively higher living standard so that additional allowance are provided to below poverty line family members. They will be eligible to participate in the livelihood training program.

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III. SOCIOECONOMIC INFORMATION AND PROFILE

34. The project will affect 810 households. The survey was conducted on 496 (62%) out of the 810 households, as the others were absent during the exercise. Therefore, the socio-economic analysis below is based on the 496 surveyed households.

A. Social Profile of Affected Households

35. **Demography**. The average family size of the affected household is 4.91, which is similar to the national average. With regard to age distribution of households, 71% of the population comes under the category 15 - 60 years, whereas 18% are below 15 years old and 11% are above 60 years age. The age-wise distribution of the household members of the project road is given in Table 13.

Table 13: Age Wise Distribution of Household Members

Survey HHs	Total Family Members	Population by Age Group					
		Below 15 Yrs.		15-60 Yrs.		Above 60 Yrs.	
		No.	%	No.	%	No.	%
496	2417	446	18.45	1713	70.87	258	10.67

Source: Field Surveys December 2016 & Updated, 2018.

36. **Social classification.** Out of the 496 interviewed affected households, 306 are identified as indigenous including Gurung, Magar, Tamang, and Newar households, which are categorized as advanced IPs[1]. Other occupational caste group Dalit consists of 43 families. Others caste groups including Brahmin, Chhetri and Sanyasi, were 136 households and remaining 11 were religious minority of Muslim caste group. Based on the census and field observation, the IP households and Dalit are assimilated and absorbed with the mainstream society, sharing common social values, norms and culture. Table 14 provides the distribution of affected households by IPs and caste group categories.

Table 14: Affected Households by Ethnicity

S.N	Affected households Type	No. of Affected HHs	Percentage
1	Janajati/IPs including Advanced IP Gurung, Magar and Newar etc.	306	61.69
2	Dalit	43	8.67
3	Brahmin/Chhetri & Sanyasi	136	27.42
4	Muslim	11	2.22
	Total	**496**	**100.00**

Source: Field Surveys, Dec, 2016 & Re-Updated, 2018.

37. **Literacy and education.** Out of a total 496 interviewed household heads, 7.74 percent are illiterate, followed by 11.99 percent households functionally literate (can read and write). The remaining 80.27 percent comprise of a mixed group of people with primary, lower secondary, secondary, and SLC level of education. Table 15 provides the distribution of literacy and educational status levels of surveyed affected households.

[1] The categorization is made by The Nepal Federation of Indigenous Nationalities (NEFIN), an autonomous and the one and only representative umbrella organization of the 59 indigenous nationalities or peoples, recognized by the government of Nepal. http://www.nefin.org.np/en/

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Table 15: Educational Status of the Respondents of Affected Households

S.N	Educational Status	No. of Population (<5 years)	Percent
1	Illiterate	175	7.74
2	Literate (can read and write)	271	11.99
3	Primary	360	15.93
4	Lower Secondary	304	13.45
5	Secondary	507	22.43
6	SLC	430	19.03
7	10+2 & Above	213	9.42
	Total	**2,260**	**100.00**

Source: Field Surveys, December, 2016 & Updated, 2018.

38. The male literacy status among affected household was 96.83% whereas it was reported 87.63% in the case of female respondents. Table 16 indicates the distribution of male/ female literacy status in the project road area.

Table 16: Literacy Status of the Family Members of the Households

Reported HHs	Total Literate Members	Male		Female	
		No.	Percent	No.	Percent
496	2085	1099	96.83	986	87.64
Reported IP HHs	**Total IP Literate Members**	708	50.28	700	49.72
306	**1408**	708	50.28	700	49.72

Source: Field Surveys, December, 2016 & Updated, 2018.

B. Economic Profile

39. Occupational background of the households. The survey of affected persons revealed that most affected households depend on more than one source of income for the fulfillment of their livelihood needs. Agriculture with occupations (mainly agriculture, business and labor works) are the main sources of livelihoods. The most important occupation among the affected households is business (28%), followed by agriculture lease & own (11%). Other sources include services (10%), foreign employment (12.74%), and 3.87% are agricultural labor. Similarly, there is not significance variance in source of income of IP and on IP. They have similar source of income but only the numbers of students and others is higher. Table 17 provides the main source of income of the interviewed households.

Table 17: Main Source of Income of Interviewed Households

S.N	Sources of Income	Survey households (all)		Indigenous People	
		No of Population	In Percentage	No of Population	In Percentage
1	Agriculture own and lease	244	11.59	75	5.63
2	Agriculture Labor	82	3.87	9	0.68
3	Business	602	28.41	341	25.60
4	Private & government Services	219	10.34	117	8.78
5	Foreign employment	270	12.74	132	9.91
6	Student & others	702	33.13	658	49.40
	Total	**2,119**	**100.00**	**1,332**	**100**

Source: Field Survey, December 2016 & Re-Updated, 2018.

40. Out of a total of 2,417 APs (446 populations are below 15 years and not counted in economic active population), 1713 persons are economically active. Among them 49% of the female

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population have been reported as economically active against the male population (51%). This indicates that the females in the project road area are playing a crucial role in income-generating activities. Table 18 provides the number and percentage of economically active population of the affected households by sex. Table 19 shows the IPs that are economically active by sex.

Table 18: Economically Active Population by Sex

Total Number of Female Involved in Income Generation		Total Number of Male Involved in Income Generation		Total number of APs Involved in Income Generation	
No.	**Percent**	**No.**	**Percent**	**No.**	**Percent**
843	49.00	870	51.00	1713	100.00

Source: Field Surveys, Dec 2016 & Updated, 2018

Table 19: Economically Active Ethnic Population by Sex

Ethnic Female Involved in Income Generation		Ethnic Male Involved in Income Generation		Total number of ethnic APs Involved in Income Generation	
No.	**Percent**	**No.**	**Percent**	**No.**	**Percent**
616	49.36	632	50.64	1248	83.26

Source: Field Surveys, Dec 2016 & Updated, 2018.

41. **Poverty status**. According to the Nepal Living Standard Survey 2011, an individual is considered poor if his/her per capita total annual consumptions is below NRs. 19,261. It has also categorized the food items and non-food items and the expenses required to be above the poverty line. Accordingly, the income required for providing adequate calories (2,220 kilocalorie) for an average Nepali to be active is NRs 11,929. For non-food items, on average, the average income required is NRs. 7,332. For the food item only, this has been calculated as NRs.11, 929 per person per year (National Planning Commission of Nepal, Nepal Living Standard Survey 2010/2011). The poverty line for Nepal, in average 2010/11 prices has been estimated at NRs. 19,261 (NLSS). On this baseline and calculating price inflation of Nepal Rastra Bank and considering the average HH size of 4.8 (national standard of CBS 2011) for the whole project roads, the poverty line for this project has been defined as NRs. 130,500 per household per year.

42. Based on this calculation, 20 households (out of 496 households interviewed) were identified to be Below Poverty Level (BPL) in terms of their average annual household income as reported by them. There is no variation in terms of BPL for IP and non-IP. Table 20 provides the breakdown of income levels of affected households and IP as per the average annual income recorded during field survey.

Table 20: Average Annual Income of the Affected Households (NPRs)

S.N	Income Range	Affected households		Affected IP households	
		No.	**Percent**	**No.**	**Percent (from total HH)**
1	<50,000	6	1.21	3	0.98
2	50,000- 130,000	14	2.82	11	3.59
3	130,000 – 200,000	56	11.29	29	9.48
4	200,000 – 300,000	60	12.1	29	9.48
5	300,000 - 400,000	100	20.16	59	19.28
6	400,000 - 500,000	68	13.71	37	12.09
7	Above 500,000	192	38.71	138	45.10
	Total	**496**	**100**	**306**	**100.00**

Source: Field Surveys, Dec 2016 & Updated, 2018.

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43. Of the 496 respondent households, 306 (62%) are indigenous people. Other caste groups are 48%. Of the total IPs, 14 households reported as falling under Below Poverty Level (BPL). In other castes 95 percent are above poverty level etc. Table 21 provides the poverty status of the affected households by indigenous, occupational and other caste groups.

Table 21: Poverty Status by Ethnic and/or Indigenous & Other Caste Groups

Affected households Type	Ethnic/Indigenous/ Occupational Caste Groups		Other Caste Groups		Total	
	Number	Percent	Number	Percent	Number	Percent
Below poverty line HHS	14	4.58	6	3.16	20	4.03
Above poverty line HHs	292	95.42	184	96.84	476	95.97
Total	**306**	**100.00**	**190**	**100.00**	**496**	**100.00**

Source: Field Surveys, 2016 &Re- Updated, 2018

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IV. INDIGENOUS PEOPLES

A. National Policy on Indigenous People

44. The Constitution of Nepal recognizes the rights of Adivasi and Janajati to "participate in state structures on the basis of principles of proportional inclusion" (article. 51), and authorizes the state to implement special measures "for the protection, empowerment and advancement of indigenous nationalities" (art. 42).

B. Negative Impacts on Indigenous Peoples' Households

45. The data of affected households' survey shows that 306 surveyed Janajatis households will be affected. Among them, 207 HHs will have to physically relocate. Most of all affected Janajatis are non-titled holders (the land ownership certificate was verified during the survey). Information on janajati households such those relevant to total number of households, affected land, assets and livelihood, will be updated during implementation.

46. Based on the meeting/discussion with affected people of the project area and the cadastral survey, none of the affected land is tribal land or ancestral domain. Each affected land plot is either privately owned or public land. Moreover, the project does not limit access to forests, water, wildlife, and other natural resources used for the Janajatis' livelihood. Finally, the surveys also confirmed that no shrines, temples or other religious structures regarded as traditionally sacred by Janajatis, will be affected by the project.

Table 22: Affected Ethnic Households

	Total	Title-holders	Non-title holders	Physically relocate
Land only	35	35	0	
Land and structures	40	40	0	7
Structures	231	0	231	200
Total	**306**	**75**	**231**	**207**

47. Overall, *Janajati* households who will have to physically relocate because of the project, have opted for cash compensation at replacement cost. Among the affected households about 97.5% preferred to receive cash for compensation. The table below shows relocation preference.

Table 23: Ethnic Households Relocation Assistance Preference

Type of Compensation	No. of Households (IPs)	Percent (%)
Cash	298	97.39
Land for Land	0	0.00
House for House	8	2.61
Total	**306**	100.00

C. Socioeconomic Characteristics of Affected Indigenous People Households

48. Among the 306 ethnichouseholds affected, 46% are Newar, 30% are Gurung, 17 % are Magar, 4 % are Thakali and remaining 2% are Tamang.

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Table 24: Affected Household Per Ethnic Background

S.N	Ethnicity	Household Number	Percent
1	Newar (Shrestha, Pradhan)	142	46.41
2	Gurung & Pun	93	30.39
3	Magar (Thapa, Ale etc.)	54	17.65
4	Thakali	12	3.92
5	Tamang	5	1.63
	Total	**306**	**100.00**

Source: Field Survey, December 2016

49. The Nepal Federation of Indigenous Nationalities (NEFIN) categorizes[2] indigenous groups into 5 broad categories based on their population numbers, living conditions such as literacy, housing, land holdings, occupation, language and area of residence (i) Endangered Group (10); (ii) Highly Marginalized Group (12); (iii) Marginalized Group (20); (iv) Disadvantaged Group (15) and (v) Advanced Group (2) . None of the affected Indigenous Peoples' households are in the Endangered Category, which is the category that the Government of Nepal considers at risk of extinction. The Table 25 below shows the details of the IP categorizations.

Table 25: Affected Indigenous People Categorization as per NEFIN

Categorization of IP	No.	%
Advanced	154	50%
Disadvantaged	147	48%
Marginalized	5	2%
Highly Marginalized	0	-
Endangered	0	-
Total	**306**	

50. Affected ethnic households share the same income-generation activities as the rest of affected. Overall, Indigenous households tend to have a higher socioeconomic status than other non-IP households. None of the households surveyed follow a traditional occupation like hunting, fishing, etc. Affected ethnic households have the following occupations: 25% are in ex-army, 7% are in agriculture, 25% in business, 10% in services, and the rest are students or conducting other activities. Only 14 IP households (4.5%) are below poverty level (compared to 4% for all affected persons). More details on socioeconomic characteristics are provided in Tables 26 and 27 below.

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[2] (**i) Endangered Groups:** Bankariya, Kusunda, Khusbadia, Raute, Surel, Hayu, Raji, KIPSSan, Lepcha, Meche (10) groups, **(ii) Highly marginalized Groups:** Santhal, Jhangad, Chepang, Thami, Majhi, Bote, Dhanuk (Rajbansi), Lhomi (Singsawa), Thudamba, Siyar (Chumba), Barmu, Danwar (12 groups), **(iii) Marginalized Groups:** Sunwar, Tharu, Tamang, Bhujel, Kumal, Rajbansi (Koch), Gangai, Dhimal, Bhote, Darai, Tajpuriya, Pahari, Dhokpya (Topkegola), Dolpo, Free, Magal, Larke (Nupriba), Lhopa, Dura, Walung (20 groups), **(iv) Disadvantaged Groups:** Jirel, Tangbe (Tangbetani), Hylmo, Limbu, Yakkha, Rai, Chhantyal, Magar, Chhairotan, Tingaunle, Bahregaunle, Byansi, Gurung, Marphali Sherpa (15 groups), **(v) Advanced Group:** Newar, Thakali (2 Groups).

Table 26: Average Annual Income of the Affected Households (NRs)

S.N	Income Range	Affected Newar		Gurung		Magar (Thapa, Ale etc.)		Thakali		Tamang	
		In No.	**In %**	**In No**	**%**	**In No.**	**In %**	**In No.**	**In %**	**In No.**	**In %**
1	<50,000	0	0	2	2.94	1	1.54		0		0
2	50,000- 130,000	5	2.99	2	2.94	2	3.08		0		0
3	130,000 – 200,000	10	5.99	8	11.76	13	20.00		0		0
4	200,000 – 300,000	14	8.38	9	13.24	5	7.69	1	25		0
5	300,000-400,000	25	14.97	17	25.00	14	21.54	1	25	1	50
6	400,000 - 500,000	19	11.38	10	14.71	7	10.77	1	25	1	50
7	Above 500,000	94	56.29	20	29.41	23	35.38	1	25		
	Total	**167**	**100**	**68**	**100**	**65**	**100**	**4**	**100**	**2**	**100**

Table 27: Main Source of Income of Affected Ethnic People

S.N	**Sources of Income**	**Newar (Shrestha, Pradhan)**		**Magar (Thapa, Ale etc.)**		**Gurung and Pun**		**Thakali**		**Tamang**		**Total**	
		No	**%**	**No**	**% o**	**No**	**%**	**No**	**%**	**No**	**%**	**No**	**%**
1	Agriculture own and lease	33	4.19	27	10.23	15	5.70		0.00		0.00	75	5.63
2	Agriculture Labor	3	0.38	4	1.52	2	0.76		0.00		0.00	9	0.68
3	Business	255	32.40	40	15.15	42	15.97	4	40.00		0.00	341	25.60
4	Private & govern-ment Ser-vices	60	7.62	29	10.98	26	9.89	1	10.00	1	12.50	117	8.78
5	Foreign employ-ment	75	9.53	127	48.11	126	47.91	3	30.00	1	12.50	332	24.96
6	Student & others	361	45.87	37	14.02	52	19.77	2	20.00	6	75.00	458	34.38
	Total	**787**	**100**	**264**	**100**	**263**	**100**	**10**	**100**	**8**	**100**	**1,332**	**100**

51. **Conclusion.** the project will have limited impacts on ethnic people. Overall, the surveys concluded that *Janajati* and non-*janajati* households display similar socioeconomic characteristics, except in their national identification as *janajatis.*

52. The project is already on an existing corridor. In this perspective and combined with the analysis provided above as well as interviews and consultations with Janajati households, we can conclude that the project will have no impact on the Janajatis' cultural identity, survival and cultural resources.

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V. OTHER VULNERABLE GROUPS

A. Affected Dalit Households

53. Dalit are one of the vulnerable groups affected by the project, and are scattered in all the Rural Municipality and municipalities of the project area. Their socioeconomic status is very low as in other parts of Nepal. According to the population census of 2001 the population of Dalit was 10.9% in the project area. Based on the survey findings, the socioeconomic statuses of the Dalit communities of the project have been summarized below. The number of Dalits will be determined and updated to reflect the total number based on all affected households.

Table 28: Project Impacts on Dalit Households

	Title-holders (Dalit)	Non-title holders (Dalit)	Physically relo-cate (Dalit)
Land only	1	0	
Land and structures	1	0	
Structures	1	40	30
Total	**3**	**40**	

54. Among the affected Dalit households, the population below poverty level is about 2.3% which less than IP and non-Dalit households. The table below shows the income range of the Dalit affected households.

Table 29: Income Range of Dalit Population

S.N	Income Range	Affected Dalits	
		In No.	In %
1	<50,000	1	2.3
2	50,000 – 130,000		0.0
3	130,000 – 200,000	9	20.9
4	200,000 – 300,000	8	18.6
5	300,000 – 400,000	9	20.9
6	400,000 – 500,000	5	11.6
7	Above 500,000	11	25.6
	Total	43	100

B. Gender Analysis of Affected Women

55. Women are not disproportionately affected by the project. A total of 60 women headed households will be affected.

Table 30: Project impacts on female-headed households

	Title-holders (female headed)	Non-title holders (female headed)	Physically relo-cate (female headed)
Land only	8	0	
Land and structures	1	0	0
Structures	1	50	5
Total	**10**	**50**	**5**

56. The survey shows that 49% of affected women are economically active. Women affected by the project are extensively involved in hotel, highway-based business, grocery shops, sewing

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& netting, farming, cattle raring and household activities. As for women-headed households, most (76%) are economically active, the key occupation being business.

Table 31: Occupations of Affected Women Heads of Households

S.N	Sources of Income	No of females	
		No	%
1	Agriculture own and lease	5	8.33
2	Agriculture Labor	3	5.00
3	Business	25	41.67
4	Private & government Services	10	16.67
5	Foreign employment	3	5.00
6	Student & others	14	23.33
	Total	**60**	**100.00**

57. Overall, a third of women heads of households earn between NRs 200,000 and 300,000 a year. Only 3.3% of affected women heads of households are below poverty levels, which is less than the average of 4% for all affected households. The table below provides further details.

Table 32: Income of Affected Women Heads of Households

S.N	Income Range	Affected Dalit's	
		In No.	In %
1	<50,000	1	1.67
2	50,000- 130,000	1	1.67
3	130,000 – 200,000	12	20.00
4	200,000 – 300,000	20	33.33
5	300,000-400,000	15	25.00
6	400,000 - 500,000	6	10.00
7	Above 500,000	5	8.33
	Total	**60**	**100.00**

58. A total of 17 consultations with women mixed with men were conducted at different places of the project area. One of the most important project benefits perceived by women is that the road improvement will facilitate access to reach health facilities particularly during childbearing. Besides, discussions among the women revealed that the improved transport facilities would greatly benefit their mobility by reducing the travel time. Similarly, improvement of the road has been as an opportunity by women engaged in small trade for selling and purchasing goods. Like-wise, they were also of the opinion that the project may also provide them employment opportunity during construction phase.

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VI. INFORMATION DISCLOSURE, CONSULTATION AND PARTICIPATION

A. Introduction

59. This RP has been prepared in close consultation with stakeholders at different levels including affected households represented by head of the households, local people along the corridor, local level social workers, representatives of political parties, business men, and civil based organizations. Some of the basic objectives of these consultations were:

- Assessment of socioeconomic information required for the study
- Information dissemination on the project's impacts and resettlement mitigation measures
- Understanding the perceptions of affected persons, local residents
- Understanding expectations of affected people
- Assess support for the project and willingness to get involved
- Inform affected persons about the cut-off date

B. Methods of Public Consultation

60. Public consultations were carried out during the entire process of the RP preparation, from the field reconnaissance survey to the period of carrying out the census. Table 33 gives a description of the type of stakeholders consulted and methods adopted for the consultations according to their specific purposes. PowerPoint presentations have been presented at Chamber of the Chief Minister in the Gandaki Province on 28 May 2019. Project Director of Project Directorate-ADB, DOR presented overall project scenario including municipality wise likely resettlement impact during the project implementation. Also during the meeting, a local newspaper also reported about the project process and its impact during the construction period, the following day of the interview local newspaper published news highlighting its proposed design features, compensation, availability of the raw materials and number of the affected structures/households.

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Table 33: Methods Employed During the Course of Consultations

Stakeholders	Purpose	Method
Department of Roads at central level	To collect government's policy, guidelines priorities on the project, and to seek advice for initiating work.	Frequent individual meetings with the officials of DOR and Project Directorate.
Local Community in the different locations of the project road area are Abukhaireni, Bimalnagar, Dumbre Bazaar, Damauli, Khairenitar,Dhulegauda Kotre, Gagangaunda, Lekhnath Chowk, Taal Chowk, Amarsingh Chowk , Madi bridge, Seti bridge and Prithivi Chowk etc	To assess overall social perception about the importance of the project road and local peoples felt need for improvement and applying road safety infrastructures	Consultation and discussion with local people at different road locations during the reconnaissance survey, social survey and census survey.
District level line agencies (Divisional Roads Office, Land Revenue Office, Land Measurement Office)	To assess the existing operational status of roads, to verify the land likely to be acquired based on design drawings, to collect cadastral maps and to collect land price fixed by District Land Revenue Office.	Individual meetings with the officials of respective offices.
Affected persons based on the design drawing	To prepare the inventory of affected assets, get measurements and conduct interviews with affected families	Individual interviews of the affected households by means of a structured questionnaire
Local people and other stakeholders at the local level	Assess the level of social willingness to be involved in the project activities	Representatives of local people and other stakeholders including community members were consulted at different sections of the road during field visits by the domestic and international team members in order to assess the overall social perception about the road project and also to assess their willingness to cooperate in the study.

C. Key Issues Raised During Social Consultation

61. The consultant team carried out 30 consultation meetings with communities along the road alignment. 321 persons participated to these meetings 224 men and 97 women). The feedback from these consultations is summarized in the table below.

Table 34: Public Consultation Matrix

Name of Place and date	VDC/ Municipality	Consulted Persons	Questions/Issues Raised and Discussed	Answers Given /Measures adopted in RP to Address the Issues
Abukhaireni 5 December 2016	Abukhaireni Municipality, Ward No. 6	Male : 9 Female : 3	• If the private structure are affected early notice should be given to structure owners • We are here since 1970s AD so convenient replacement cost of structures should be provided.	• DOR will arrange early Information dissemination before the construction phase. • DOR will build over crossing or under crossing etc. • DOR/ CSC will arrange road safety programs

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Name of Place and date	VDC/ Municipality	Consulted Persons	Questions/Issues Raised and Discussed	Answers Given /Measures adopted in RP to Address the Issues
			• Before construction Right of Way should be cleared by DOR.	• The public structures likely to be affected by the project will be relocated during constructions activities at project cost in collaboration with local community • Compensation for affected structures and other assets will be paid by the Government and the compensation rate will be fixed at replacement cost by the Compensation Determination Committee (CDC) to be formed under the chairmanship of the Chief District Officer (CDO)
Markinchok Dam 7 December 2016	Abukhaireni Municipality, Ward No. 3	Male :7 Female : 8	• Road safety designs and awareness campaigns should be included in project. • If the private structures are affected early notice should be given to structure owners	• DOR will arrange early Information dissemination before the construction phase. • DOR/ CSC will arrange road safety programs • The public structures likely to be affected by the project will be relocated during constructions activities at project cost in collaboration with local community
Baradibazar 7 2016 December	Abukhaireni Municipality, Ward No. 2	Male :9 Female : 5	• Road safety designs and awareness campaigns should be included in project. There should be an zebra crossing in Baradi bazar Chok • The existing private structures will be affected due to project, reasonable compensation cost should be provided • Early Information should be provided before the construction phase	• DoR/ CSC will arrange a road safety program • DoR will arrange early Information dissemination before the construction phase.
Bimalnagar 8 December 2016	Bandipur Municipality, Ward No. 6	Male :6 Female : 8	• Early Information should be provided us before construction phase • We are here since 1930s AD so convenient replacement cost of structures should be provided. • The existing private structures will be affected due to project, reasonable compensation cost should be provided	• DoR will be arrange an early information campaign before construction phase • Compensation for affected structures and other assets will be paid by the Government and the compensation rate will be fixed at replacement cost by the Compensation Determination Committee (CDC) to be formed under the chairmanship of the Chief District Officer (CDO)
Rimalinka 10 December 2016	Ghashikuwa VDC, Ward No. 1	Male :6 Female : 2	• Employment opportunities should be provided to the local people	• DoR will arrange necessary action to provide the

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Name of Place and date	VDC/ Municipality	Consulted Persons	Questions/Issues Raised and Discussed	Answers Given /Measures adopted in RP to Address the Issues
			during construction phase as per the community capacity • Early Information should be provided us before construction phase • If public structures & public utility such as drinking water pipe are going to be affected, such structures should be relocated in a convenient places as requested by community	employment to the affected people as far as possible. • DoR will arrange an early information campaign before construction phase
Kamalbari 11 December 2016	Ghashikuwa VDC, Ward No. 3	Male :10 Female : 3	• The existing private structures will be affected due to project, reasonable compensation cost should be provided • Early Information should be provided before construction phase • If public structures & public utility such as drinking water pipe are going to be affected, such structures should be relocated in a convenient places as requested by community	• The public structures likely to be affected by the project will be relocated during constructions activities at project cost in collaboration with local community • DoR will arrange an early information campaign before the construction phase.
Ghashikuwa 11 December 2016	Ghashikuwa VDC, Ward No. 5	Male :12 Female : 5	• Special attention should be protect Ghashikuwaas for possible. • Special attention should be provided to seriously affected people by the project. • Early Information should be provided before construction phase • Employment opportunities should be provided to the local during construction phase as per the community capacity	• The public structures likely to be affected by the project will be relocated during constructions activities at project cost in collaboration with local community • DoR will take necessary steps arrange necessary action to provide the employment to the affected people as far as possible. • DoR will arrange an early information campaign before the construction phase.
Damauli bazar Chok 12 December 2016	Vyas Municipality Ward No. 2,10,11	Male :23 Female : 7	• Special attention should be given such structures which has been provided building permit by municipality. • Road safety designs and awareness campaigns should be included in project. There should be Zebra crossing & traffic light system in Damaulibanzar	• The public structures likely to be affected by the project will be relocated during constructions activities at project cost in collaboration with local community • DoR will arrange an early information campaign before the construction phase.
Jamune 17 December 2016	Vyas Municipality Ward No. 8	Male :11 Female : 8	• Special attention should be provided to seriously affected people by the project. • The existing private structures will be affected due to project, reasonable compensation cost should be provided	• DoR will take necessary steps arrange necessary action to provide the employment to the affected people as far as possible. •

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Name of Place and date	VDC/ Municipality	Consulted Persons	Questions/Issues Raised and Discussed	Answers Given /Measures adopted in RP to Address the Issues
Gunadhi 17 December 2016	Jamune Vyas Municipality Ward	Male :13 Female : 2	• If private structures will be affected due to project, reasonable compensation cost should be provided.	• DoR will take necessary steps arrange necessary action to provide the employment to the affected people as far as possible.
Chhabaisha 18 December 2016	Manpang VDC-1	Male :9 Female : 4	• Special attention should be given for road safety and construction of foot path both side at this areas	• DoR will take necessary steps arrange necessary action to provide the employment to the affected people as far as possible
Belchoutara 18 December 2016	Shukla Gandaki Municipality	Male :9 Female : 4	• Road safety design and awareness campaigns should be included in the project. There should be zebra crossing in Belchoutara. • There should be foot path in both side of the road • Construction works should be completed within contract period.	• DoR will build zebra crossing especially at market areas etc.
Gagangauda 28 December 2016	Lekhanath Municipality ward no 12	Male :14 Female : 3	• Road safety designs and awareness campaigns should be included in project. There should be an zebra crossing in Gagangaida • Before construction Right of Way should be cleared by DOR	• DoR will build over crossing or under crossing etc.
Buddha Chok 29 December 2016	Pokhara Sub-metropolitan City -10	Male :7 Female : 3	• There are no any private structures within 46 meters • Road safety designs and awareness campaigns should be included in project. There should be an zebra crossing in Buddhachok • Before construction of the road Right of Way should be cleared by DOR	• DoR will arrange an early information campaign before the construction phase
Abhukhairani 7 May 2017	Abhukhairani Bazar ward no 6	Male 10 Female 5	• If private structures will be affected due to project, reasonable compensation cost should be provided • Before construction Right of Way should be cleared by DOR	• DoR will arrange an early payment of the structures before the construction phase • DoR will arrange an early information campaign before the construction phase
Dumbre bazar 7 May 2017	Bandipur -1, Bandipur	Male 7 Female 2	• If private structures will be affected due to project, reasonable compensation cost should be provided	• DoR will arrange an early payment of the structures before the construction phase
Nala bridge 17 Sept 2017	Bandipur -1, Bandipur	Male 21 Female 6	• If private Land & structures will be affected due to project, reasonable compensation cost should be provided • Special priority should be given for indigenous people in distribution of the compensation amount. • Special attention should be given for road safety and construction of foot path both side at this areas	• DoR will arrange an early payment of the structures & land before the construction phase • DoR will build zebra crossing especially at market areas etc • DoR will take necessary steps arrange necessary action to provide the employment to the affected IP people as far as possible

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Name of Place and date	VDC/ Municipality	Consulted Persons	Questions/Issues Raised and Discussed	Answers Given /Measures adopted in RP to Address the Issues
Tanahu - 5 Changughat June 7th 2018	Byas Municipality ward 5	Male:8, Female : 1	• Electric poles should also be managed properly • Early Information should be provided before construction phase	• DOR will be managing shifting of the electric poles before construction period. • DoR will be arrange early Information system before construction phase
Tanahu, Byas-5 ward office 7th June, 2018	Byas Municipality Ward 5	Male :5, Female ;3	• . • Early Information should be provided for road site people before construction period. • Employment opportunities should be provided to the local during construction period	• During the implementation affected land parcels & structures shall be compensated. • DOR will be arrange during the implementation period
Tanahu, Byas-4 ward office 7th June 2018	Byas Municipality ward 4	Male :5, Female :1	• In Bastipur chowk there shall be purpose as overhead pedestrians bridge at built up areas	• All safety measure will be applied during implementation.
Kaski, Seti Bridge Site 5 June, 2018	Pokhara – Metropolitan city, Ward no 9	Male: 10, Female: 2	• Safety measures should be taken as far as possible. • early information should be provided to the structure owners timely	• DoR should arrange Early Information before construction phase. • The public structures likely to be affected by the project will be restored by project during the implementation period with close coordination with Local Level stakeholders • DoR/ CSC should be arrange road safety program during in implementation
Ward office 10 Lekhnath 5 June, 2018	Pokhara – Metropolitan city, Ward no 10	Male: 5, Female: 4	• If public structures & will be affected within the ROW such structures should be relocated in a convenient place as requested by community. • .	• during the Construction phase DoR should make wide from Buddha chock to Seti bridge for green city • DoR/ CSC should be arranged bridge & road safety program during implementation phase
Ward office 9 Pokhara June 6th 2018	Pokhara Metropolitan city ward 9	Male :7, Female: 5	• If public structures will be affected, such structures should be relocated in a convenient place • The existing private structures will be affected due to project, the	• DoR/ CSC should address environment and its negative

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Name of Place and date	VDC/ Municipality	Consulted Persons	Questions/Issues Raised and Discussed	Answers Given /Measures adopted in RP to Address the Issues
			reasonable compensation cost should be provided. •	impact during the implementation phase of project • DoR should be arranging Early Information before construction phase. • Committed to support in the construction phase
Office of the Abukhaireni Rural municipality 10th April,2019	Abhukhairani Rural municipality	Mayor & Concern ward chairman	• 6+250 to 8.250 area also should be included in this phase • Early Information should be provided to the community before construction phase	• DOR should be proper manage of all public utility and private property • DoR will take necessary steps arrange necessary action to provide the employment to the affected people as far as possible
Bimal Nagar, Nala & Bandipur 11 & 12 April 2019	Bandipur	Mayor & Concern ward chairman	• Special support may be required for Vulnerable HHs • Overhead pedestrian bridge should be manage at Dumbre bazar • Proper manage of the Median at Bimal nagar areas	• Early information should be provided for concern local level Authorities. • DOR will be implemented road safety feathers at built up areas of the Dumbre bazar
Vyas Municipality 12 April 2019	Vyash	Concern ward Chairman	• Proper management of the Durga temple area of the market areas • Special attention should be given for road safety and construction of foot path both side at this areas	• DoR will be build zebra crossing especially at market area • DoR will take necessary action to provide the employment to the affected IP people as far as possible
Myagde 13 April 2019	Myagde Rural Municipality	Ward Chairman	• Construction of the six lane road at Myagde Rural Municipality area also	• DoR should be arranging Early Information before construction phase
14 April 2019 Pokhara Metropolitan city	Pokhara Metropolitan city	Ward Chairman	• Overhead pedestrian bridge will be applicable at Buddhha Chock as well as in the Amarsingha Chok • Before construction of the road Right of Way should be cleared by DOR	• DoR should be arranging Early Information before construction phase
15 April Suklagandaki Municipality	Sukla Gandaki Municipality	Ward Chairman	• Proper established of the Zebra Crossing at major settlement of the Sukla Gandaki • Discussion for Typical Design at the Municipality areas	• DOR should implemented proper management of the Drainage at major settlement • Affected structures should be manage properly before construction.

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Name of Place and date	VDC/ Municipality	Consulted Persons	Questions/Issues Raised and Discussed	Answers Given /Measures adopted in RP to Address the Issues
28 May 2019 at Chamber of the Chief Minister Gandaki Pradesh	Pokhara metropolitan city	Chief Minister of the , Gandaki Pradesh & others	• Mugling to Pokhara highway is a lifeline of the Gandaki province so that all consulted Chief minister, minister, mayors and local authorities were fully supportive for implementation of the highway improvement project, • They requested implementation of the project as soon as possible so as to reduce frequent road accidents and also eliminate increasing traffic congestion in the road section • Local newspaper also highlighted, proposed road design features, compensation, availability of the raw materials and number of the affected structures/households	• DOR will be implemented as soon as possible • DOR/CDO/Local authorities

D. Disclosure of the Resettlement Plan and Further Consultations

62. It is the responsibility of the EA to disclose the RP to the affected households. A summarized translated version of the RP in Nepali will be made available to affected and local people through the respective DCCs and CDO offices. A one-page leaflet summarizing key impacts, the entitlements, payment processes, grievance redress committee and contact information will be translated into Nepali and distributed to the affected people through the CSC social mobilizers and resettlement specialists. The full resettlement plan will be disclosed on the EA's and ADB's websites.

63. In order for the implementation of the RP to be effective, several additional rounds of consultative meetings with the APs will be carried out during project implementation. Additional surveys will also be carried out to assess the scope of the impacts, compensation, and budget of the land acquisition and resettlement. Such consultations will be carried out by the CSC resettlement staff in coordination with field based DOR staff. During RP implementation, consultation strategy will be formulated after formation of the first and second level GRM.

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VII. GRIEVANCE REDRESS MECHANISMS

64. DOR will establish a grievance redress mechanism (GRM) to voice and resolve social and environmental concerns linked to the project and ensure greater accountability of the project authorities towards all affected persons. This mechanism is not intended to bypass the government's own legal process, but is intended to provide a time-bound and transparent mechanism that is readily accessible to all segments of the affected people. The aggrieved party should be free to approach national legal system at any time. All costs involved in resolving the complaints (meetings, consultations, communication and reporting/information dissemination) will be borne by the Project. The complaints and problems related to resettlement that are likely to rise during and before the implementation of a project include the following:

- Project affected persons are not listed in the compensation list;
- Losses that are not identified correctly
- Compensation/assistance inadequate or not as per the entitlement matrix
- Dispute about ownership
- Delay in disbursement of compensation/assistance and
- Improper distribution of compensation/assistance in case of joint ownership

Through public consultations, the APs will be informed that they have a right to grievances redress and provided with the local and project-level contact information to submit their complaints. The APs will be eligible to call upon the support of the social mobilizer to assist them in submitting or presenting their grievances or queries to the GRC.

A. Proposed Grievance Redress Mechanism for the Project Road

65. The table below illustrated the purposed grievance redress mechanism of the Abhukhaireni - Pokhara road section.

Table 35: Proposed Grievance Redress Mechanism

Field-Level Committee	Ward-Level Committee	Project-Level Committee
• Social mobilizers • Contractor Environmental/Social Focal Point	• DoR site engineer • Ward chairman from concern Rural Municipality or Municipality • CSC Social mobilizer • 2 representatives designated by affected community local level (man/woman)	• PM DOR • Chief District Officer • Representatives of the Municipalities. • CSC Resettlement Expert • CSC Environmental Expert

B. Grievance Redress Procedures

66. The following steps of grievance redress procedures will be adopted for the implementation of this RP. However, affected persons are free to approach the country's legal system at any time. In addition, the affected person may submit their complaint in writing directly to the ADB Accountability Mechanism: http://www.adb.org/Accountability- Mechanism/default.asp.

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Step 1 **Field-level Grievance Committee**	In case of any grievances, the complainant approaches the field level social mobilizers or officials for clarification, or submits any formal complaints. The social mobilizer will provide clarification to the affected person and try to resolve the problem at local level with the involvement of the PIU resettlement representative if necessary. The social mobilizer and environment focal point person from the contractor will document the cases and call a Meeting with GC engineer and affected persons. If this is not resolved (maximum 7 days), The social mobilizer will recommend that the affected person submit his/her complaint to the local-level GRC.
Step 2 **Local-Level GRC**	The local level GRC committee will be formed at site specific on the road alignment at each ward level of all Rural municipalities or municipalities/metropolitan city. For the Aabhukhireni-Pokhara road, two Rural municipalities and four municipalities and one metropolitan city are involved. The APs may submit their concerns or grievances verbally or in writing to this Committee. The committee shall make a field-based assessment to verify/examine the grievances, if necessary. After proper examination/verification of the grievances the Committee, a proposed action/decision will have to be made and the complainant will be informed orally and in writing within 7 days. All complaints/grievances will be documented properly by the CSC Resettlement specialist who is part of this Committee.
Step 3 **Project-Level GRC**	If the complainant is not satisfied, s/he with the support of the CSC resettlement specialist will forward the grievance to the project-level GRC. The DoR project manager will play as lead role to settle the complaint.
Step 4	If the complainant does not accept the project-level Committee decision, he/she may want to submit directly (in writing) to the ADB's Resident Mission or South Asian Transport and Communication Division
Step 5	If the grievances cannot be solved by this level, it will be referred to the Home Ministry. The Ministry of Home Affairs is normally required to make decision on a complaint within 15 days, unless further information is required, or unless the complaint has to be solved in a court of law (e.g. ownership disputes). The CSC resettlement specialist will assist the complainant in filing the claim (maximum 7 days).

C. Government Policy for Grievance Redress

67. There are provisions of compensation for losses or any damages during land acquisition under the Land acquisition act of Nepal 1977. The Act allows for interested persons (i.e. APs) during a land acquisition process to file or represent their cases to the Chief District Officer (CDO), raise objection against the acquisition by a notice to the Ministry of Home and get redressed under the LA Act clause 11 Section 1, 2 and 3.

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VIII. LEGAL FRAMEWORK

A. Legislation

68. The Constitution of Republic of Nepal (2015), Article 25 (1) guarantees the fundamental right of a citizen, i.e. right to acquire, own, sell and dispose of the property. Article 25 (2) describe that the state cannot acquire the property of any person except in case of public interest. Article 25 (3) also state that compensation shall be provided for any loss of individual property for public interest.

B. Land Acquisition Act of 1977

69. The Land Acquisition Act (1977) specifies the procedures for land acquisition and compensation. The Act empowers the government to acquire any land for public interest or for the execution of any development works. There is a provision of Compensation Determination Committee (CDC) under the leadership of Chief District officer, which will fix the rate of compensation for the affected property. The other members in the committee are the Chief of Land Revenue Officer, representative from District Coordination Committee (DCC), concerned Project Director/Manager.

70. The basic function of the CDC is to review the verification of lands to be acquired, review and determine the compensation rate, identify the proper owners, distribution of compensation and address the issues related to land acquisition and compensation distribution. District Administrative Office (DAO) is also responsible to notify the public regarding the details of the land area, structure affected and other assets affected in the concerned Rural Municipality/Municipality for project purposes.

71. The Land Reform Act (1964) is relevant in the compensation distribution modality. It specifies the compensation entitlements for the registered tenant. Where the tenancy right is legally established, the owner and tenant each will be entitled to 50% of the total compensation amount. Section 42 of the Land Reform Act states that Guthi (religious/trust) land acquired for development work must be replaced with another land.

C. Land Acquisition, Rehabilitation and Resettlement Policy of 2015

72. The Government of Nepal has recently formulated Land Acquisition, Rehabilitation and Resettlement Policy 2071 (2015) to facilitate the land acquisition process for infrastructure project. The policy outlines the need to conduct an economic and Social Impact Assessment (SIA) of the development project, which was not a requirement under the Land Acquisition Act 1977. Based on this assessment, projects will be categorized as high-, medium- and low-risk.[3] The Act also provisioned for the project affected families to be entitled to compensation if works like installation of transmission, telephone and underground drinking water pipe lines affect livelihood. And in case the projects affect yields of registered commercial crop, fruit or flower producers, compensation equivalent to five years of revenue must be given in cash.

[3] High-risk projects refer to those which displace 50 or more households in the mountainous region, 75 or more households in the hilly region and 100 or more households in the Tarai. Medium-risk projects, on the other hand, are those that force relocation of less than 50 households in the mountainous region, less than 75 households in the hilly region and less than 100 households in the Tarai. Likewise, low-risk projects refer to those which cause productive property to shrink by up to 10 per cent.

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73. The policy adds that all expenses related to land acquisition, compensation and the implementation of resettlement and rehabilitation plans should be considered as project cost and interest should be paid on compensation amount depending on the days it took to release funds to those affected by the project. The interest calculation begins from the day a formal decision was taken to operate the project, says the policy.

74. The compensation amount for those affected by the project will be fixed by a five-member compensation committee formed under the Chief District Officer. The committee can form a technical team to determine the compensation amount. This team should derive the compensation amount as close possible to the minimum market rate by working closely with members of families that are likely to be displaced.

75. Those not satisfied with land acquisition, resettlement and rehabilitation processes can lodge complaints at a body formed at the project office and complaint hearing offices at district and regional levels. If verdict issued by the regional level complaint hearing office is also deemed unsatisfactory, the person can knock on the doors of appellate court.

D. ADB Involuntary Resettlement Standard Requirement

76. According to the ADB Safeguard Policy Statement (2009), the basic objectives of the safeguards requirements are to avoid involuntary resettlement wherever possible; to minimize involuntary resettlement by exploring project and design alternatives; to enhance, or at least restore, the livelihoods of all affected persons in real terms relative to pre-project levels; and to improve the standards of living of the affected poor and other vulnerable groups. ADB's main policy guidelines are:

- Involuntary Resettlement (IR) should be avoided wherever possible;
- Where IR is unavoidable, minimize involuntary resettlement by exploring project and design alternatives;
- Enhance or at least restore the livelihoods of all affected persons in real terms relative to pre-project levels;
- Improve the standards of living of the affected poor and other vulnerable groups;
- Gender analysis is required to identify related resettlement impacts and risks;
- Resettlement Plans (RP) should be prepared in full consultation with affected persons (APs), host communities, and concerned nongovernment organizations (NGOs) including disclosure of the RP and project related information;
- Preference will be given to land-based resettlement for affected persons whose livelihoods are land-based. However, if the land is not the preferred option or the land is not available at reasonable price, the DPs will be provided opportunities for employment, or self-employment, in addition to the reasonable cash compensation for land and other assets lost;
- Cash compensations for the loss of structures, other assets and incomes should be based on full replacement cost;
- Absence of formal legal title to land or non-recognized or recognizable claims to such land by the affected persons should not be a bar to compensation;
- The rate of compensation for land, structures and other assets should be calculated at full replacement cost on the basis of fair market value; transaction cost; interest accrued; transitional and restoration cost, and other applicable payments, if any.

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- All compensation payments and related activities must be completed prior to the commencement of the civil work;
- Special attention to be paid to the needs of vulnerable groups especially those below the poverty line, the landless, the elderly, women and children and ethnic people/Dalits and those without legal title to land.

E. Nepal and ADB Resettlement Policy Differences and Measures to Bridge the Gaps

77. The following table summarizes the main differences between ADB and government of Nepal's legislation in terms of involuntary resettlement and measures included in this resettlement plan to bridge the gaps.

Table 36: Comparison of Differences and Gaps between Government Law, ADB SPS and Measures Recommended in the Resettlement Framework

Key Issues	Government Laws	ADB SPS	Measures recommended in the RP
Loss of more than 10% of the total landholdings and income	Do not consider the percentage loss of income or total land holdings	Income restoration programmed such as training and other measures to restore and improve the standard of living of the affected households	Provision has been made to provide training and measures in the EM
Squatters/illegal occupants/non-titled land users	Do not consider squatters/ encroachers/ non-titled land users for compensation	Non-title holders are not entitled for the compensation of land but for replacement cost of assets on land and resettlement assistance business and other assistance	Provision has been made to provide compensation for the structures/houses/ business in the EM
Valuation of affected land , houses & other structures and trees	Compensation rate will be determined by CDC, consisting of (i) CDO, (ii) representative from DDC (iii)Chief of Land Revenue Office (iv) Project Manager	All compensation is based on the principle of replacement cost	Provision has been made for the replacement value for the loss of land, houses/structures. The methodology for assessing the replacement cost of land and structure is explained in chapter X APs are allowed to take salvaged materials. CDC will make final decision on the rates in the presence of representatives from DPs, VDCs, civil society, who will attend the meeting as an observer
Other assistance for relocation of the houses	No provision	All the eligible DPs including tenants, employees are entitled to receive financial assistance to cover physical and economical displacement	Provision has been made for the transitional allowances, transport allowances and one time financial assistance to the tenants, employees
Vulnerable groups	No provision	Focused on the poor and vulnerable group to avoid future impoverishment and create new opportunities	Provision has been made for income restoration programme and other financial assistance

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F. Indigenous Community in the Context of Nepal

78. The Constitution of 2015 recognizes the rights of *Adivasi* and *Janajati* to "participate in State structures on the basis of principles of proportional inclusion" (art. 51), and authorizes the State to implement special measures *"for the protection, empowerment and advancement of indigenous nationalities" (art. 42).*

79. The specific policy initiatives for the advancement of *Adivasi, Janajati* and other communities started in 1997. The National Committee for Development of Indigenous Nationalities was set up to ensure the welfare of *Adivasi/Janajati*. In 2002, the Parliament passed a bill enabling the establishment of NFDIN. The NFDIN Act 2002 established the first comprehensive policy and institutional framework pertaining to Adivasis and Janajatis. The NFDIN is a semi-autonomous body that acts as the State's focal point for indigenous policy, with a mandate to recommend measures to promote the welfare of indigenous groups paying attention to their social, economic, and cultural rights and requirements.

80. The National Federation of Indigenous Nationalities Act 2002, National Human Rights Action Plan 2005, Environmental Act 1997, and Forest Act 1993 have also provided for the protection and promotion of *Janajatis*" traditional knowledge and cultural heritage. The Local Self-Governance Act (1999) gave more power to local political bodies to promote, preserve and protect *Janajatis'* language, religion, culture and welfare.

81. The Fourteen three year's Plan included following policies for inclusive development of *Adivasis/Janajatis* and other disadvantaged groups: (i) creation of an environment for social inclusion; (ii) participation of disadvantaged groups in policy and decision making; (iii) development of special programs for disadvantaged groups; (iv) positive discrimination or reservation in education, employment; (v) protection of their culture, language and knowledge; and (vi) proportional representation in development.

G. ADB Indigenous People Standard Requirement (2009)

82. The objective of ADB's SPS on IPs is to help design and implement projects in a manner that would foster respect for IPs' identity, dignity, human rights, livelihood systems, and cultural uniqueness, as defined by IPs themselves, so that they: (i) receive culturally appropriate social and economic benefits, (ii) do not suffer adverse impacts as a result of projects, and (iii) can participate actively in projects that affect them. The SPS uses the term "IPs" in a generic sense to refer to a distinct, vulnerable, social and cultural group possessing the following characteristics in varying degrees:

(i) Self-identification as members of a distinct indigenous cultural group and recognition of this identity by others;
(ii) Collective attachment to geographically distinct habitats or ancestral territories in the project area and to the natural resources in these habitats and territories;
(iii) Customary cultural, economic, social, or political institutions that are separate from those of the dominant society and culture; and
(iv) Distinct language, often different from the official language of the country or region.

83. The IPs' safeguards in SPS trigger when a project affects the dignity, human rights, livelihood systems, or culture of IPs or affects the territories or natural or cultural resources that IPs own, use, occupy, or claim as an "ancestral domain" or asset.

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84. A group that has lost collective attachment to geographically distinct habitats or ancestral territories in the project area because of forced severance remains eligible for coverage under the policy.

85. A proposed project is assigned to one of the following categories depending on the significance of the potential impacts on Indigenous Peoples:

- **Category A:** A proposed project is classified as category A if it is likely to have significant impacts on Indigenous Peoples. An Indigenous Peoples plan (IPP), including assessment of social impacts, is required.
- **Category B:** A proposed project is classified as category B if it is likely to have limited impacts on Indigenous Peoples. An IPP, including assessment of social impacts, is required.
- **Category C:** A proposed project is classified as category C if it is not expected to have impacts on Indigenous Peoples. No further action is required.

86. A project's Indigenous Peoples category is determined by the category of its most sensitive component in terms of impacts on Indigenous Peoples. The significance of impacts of an ADB-supported project on Indigenous Peoples is determined by assessing (i) the magnitude of impact in terms of (a) customary rights of use and access to land and natural resources; (b) socioeconomic status; (c) cultural and communal integrity; (d) health, education, livelihood, and social security status; and (e) the recognition of indigenous knowledge; and (ii) the level of vulnerability of the affected Indigenous Peoples community. The level of detail and comprehensiveness of the IPP are commensurate with the significance of potential impacts on Indigenous Peoples.

H. Dalit Community in the Context of Nepal

87. Dalit are the most vulnerable groups scattered all over the country with concentration of some groups in some districts. The socioeconomic status of Dalits in Nepal is very low and they are often living in basic or even dire conditions.

88. The caste-based discrimination is a part of the caste system of the Indian subcontinent originated time-immemorial. The National Code of Nepal, implemented in 1854 had classified all the Nepalese people into four caste hierarchy (Barna) based on their occupation: 1. Brahmin "Sacred thread wearing", 2. Chhetri "ruling class", 3. Baisa "touchable low castes", and 4. Chudra (Dalits) "Untouchables" and 36 castes. The National Civil Code of Nepal "Muluki Ain", 1963 was an attempt to reform the system. However little is changed in practice, with caste-based discrimination prevailing. The practices of untouchability remain common and discrimination also exists among Dalits based on their occupation.

89. The Constitution 2015 has ensured the Right against Untouchability and Racial Discrimination (Article 24) as fundamental rights. No person shall be treated with any kind of untouchability or discrimination in any private or public place on grounds of cast, ethnicity, origin community, occupation or physical condition.

90. The Caste Based Discrimination and Untouchability (Offence and Punishment) Act, 2011 is the main law that has criminalized the act of caste-based discrimination and untouchability in any form anywhere. However, the implementation is very weak.

91. Dalits are discriminated at work including at government offices.

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92. Children from the Dalit community face discrimination at schools by teachers and peers. Due to a discriminatory mindset, teachers provide less care for Dalit children, 13 Education Act 14 Nepal Social Inclusion Survey (NSIS) 2012, Central Department of Sociology/Anthropology, Tribhuvan University, Nepal 15 National Census 2011, Central Bureau of Statistics, Nepal 16 Nepal Human Development Report 2009, UNDP 17 Poverty in Nepal, CBS 2012 13 Dalit children not being permitted to Drinkwater; rude manner of addressing them; putting Dalit children in separate lines, etc. Ultimately, their learning achievement becomes low which leads them to dropout. b. Access to Land and Natural Resources and Extreme Poverty 25. Land is the main asset for determining an individual's social status and standard of living in Nepali society. Dalits' land holdings are small; and the landlessness among Dalits is extreme

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IX. ENTITLEMENT, ASSISTANCE AND BENEFITS

A. Entitlement Policy

93. An Entitlement Matrix based on *ADB Safeguard Policy* 2009 and the Land Acquisition Act of 1977 has been specifically designed for this project. ADB's Safeguard Policy Statement (2009) on involuntary resettlement requires compensation for the loss of assets at replacement cost to both titled and non-titled holders and resettlement assistance for lost income and livelihoods. Further, the principles adopted herein contains special measures and assistance for vulnerable affected households, such as household headed by women, disabled persons, ethnic/indigenous groups, and household living below poverty line.

B. Entitlement Matrix

9 4 . All the APs will be compensated at replacement costs. The entitlement matrix will be re-visited when all resettlement information is updated to ensure all impacts are covered. For the loss of agricultural land, cash compensation will be made. Additional compensation will be given for the loss of crops/vegetation. It will be calculated on the basis of net production of one crop in the affected area. Rehabilitation allowances will be paid to the severely affected families (who have lost more than 10 % of their productive lands holdings and income). Similarly, additional assistance to vulnerable groups will be provided for restoring their livelihoods. Both vulnerable and severely affected households will also be eligible to participate to the livelihood/skill development trainings. The rate of compensation for land structures and other assets is calculated at full replacement cost on the basis of fair market value, transaction cost, interest accrued, transitional and restoration cost, and other applicable payments, if any. No physical or economic displacement will occur until compensation at replacement cost and other entitlements are fully paid to the affected people. The livelihood restoration program will be in place, budgeted and implemented, as discussed with the affected people.

95. The cut-off date is 31st December, 2016 for the Abukhaireni – Pokhara road section. Similarly, cutoff date is 30th June 2018, for the Madi & seti bridges but re-updated on May2019. Most of the structure owners are non-title holders. Of the ROW, this is last date of the census survey. This cut-off date mostly applies to non-titled holders, as titled-holders will be officially notified by the district commissioner. This was communicated to the affected persons during the survey process. However, concessions should be made for enumerator errors and absentees during the survey process on a case-by-case basis. Moreover, if there is a significant time lag between the completion of the census and implementation of the RP, an updated census may have to be conducted in the implementation period.

96. A detailed Entitlement Matrix has been provided in the following Table 37:

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Table 37: Entitlement Matrix

No.	Type of Loss	Application	Eligible Persons	Entitlements	Responsibilities
A-1	Permanent loss of agricultural/ residential/ commercial land	Land to be acquired. If the remaining land is no longer viable for continued use or does not meet the expected yield, the remaining land is also acquired.	Titleholders with land records	▪ Cash compensation based on replacement cost ▪ If the loss is equivalent to 10% or more of the total agricultural land of the household is affected, see Item No. E-1 below. ▪ Affected household will be notified at least 3 months in advance of the actual acquisition.	▪ DOR/CDC/ CSC ▪ DOR/CSC ▪ DOR/CSC
A-2	Permanent loss of agricultural/ residential/ commercial land	Land to be acquired. If the remaining land is no longer viable for continued use or does not meet the expected yield, the remaining land is also acquired.	Legally register tenant or share-cropper/renter or of land with legal lease.	▪ Fifty percent cash compensation to the share cropper/ tenants of the affected plots as per the prevailing laws (LA Act Clause 20). ▪ Affected households and share cropper without legal proof will be notified at least 3 months in advance	▪ DOR/CDC/ CSC ▪ DOR/CSC
A-3	Temporary loss of land temporarily due to construction activities, access roads and diversions	Land is occupied temporarily and will be viable after construction activities	Title holders with land records Renter or share-cropper of land with legal lease	▪ Payment as per the contract rental rate for the temporary use of land agreed between the owner and contractor ▪ Land should be returned to the owner at the end of use period, and restored to its original condition.	▪ DOR/CSC/contractor ▪ Contractor
B-1	Residential and commercial Structures	Marginal impact (i.e. unaffected portion of the house is still viable for use and no relocation required. An economically viable portion of the structure requiring to be relocated will be considered as severely impacted) This will be confirmed by the implementing agency and concurred with by the affected household during the RP implementation.	Owners of the structures with or without acceptable proof of ownership over the land, including squatters and encroachers	▪ Cash compensation at replacement cost without depreciation for the affected portion. ▪ Affected household will be notified at least 3 months in advance of the date of construction ▪ Affected households will be able to salvage materials without any cost.	▪ DOR/CDC/CSC ▪ DOR/CSC ▪ DOR/CSC
B-2		Severe impact (i.e., house is no longer viable for continued use and the entire	Owners of the structures with or without acceptable proof of ownership over the land, including	▪ Cash compensation at replacement cost without depreciation for the entire structure. ▪ Shifting allowance equivalent to 10% of replacement	▪ DOR/CDC/CSC ▪ DOR/CSC ▪ DOR/CSC ▪ DOR/CSC

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No.	Type of Loss	Application	Eligible Persons	Entitlements	Responsibilities
		structure is to be acquired) This will be confirmed by the implementing agency and concurred with by the affected household during RP implementation.	squatters and encroachers who have to physically relocate	cost of the structure, or the actal cost of shifting. ▪ Affected household will be notified at least 3 months in advance of the date of construction ▪ Affected households will be able to salvage materials without any cost	
			Renters who have to physically relocate	▪ Equivalent of 2 month rent to find alternative place to stay ▪ Affected household will be notified at least 3 months in advance of the date of construction ▪ Affected households will be able to salvage materials ▪ Rental deposit – if any- to be reimbursed to renter (deducted from structure owner's entitlement)	▪ DOR/CSC ▪ DOR/CSC ▪ DOR/CSC
B-3	Secondary structures (kitchen, latrine, etc.)	Loss of, or damage to, assets	Owners of the structures with or without acceptable proof of ownership over the land, including squatters and encroachers	▪ Cash compensation at replacement cost without depreciation ▪ Affected households will be able to salvage materials without any cost	▪ DOR/CDC/CSC
B-4	Mobile commercial structures	Change of structure location	Owners of the structures with or without acceptable proof of ownership over the land, including squatters and encroachers	▪ One-month notice to move structure out of the corridor of impact ▪ Other applicable entitlements such as those relevant to livelihood improvement program.	▪ DOR/CSC
C-1	Crops and trees	Loss of or damage to assets	Owners regardless of tenure status, including squatters and encroachers	▪ Compensation for crops for one harvest at current market value ▪ Cash compensation for timber tree at current market price ▪ Compensation for loss of fruit bearing trees for average fruit production for 5 years at current market value and replacement cost for sapling especially for commercial farm or fruit production.	▪ DOR/CDC/CSC ▪ DOR/CDC/CSC
D-1	Public facilities, common property structures and facilities	Loss of, or damage to, assets	Owners	▪ Will be rebuilt by the project as in public land and as coordinated with the community.	▪ DOR/Contractor /CSC

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No.	Type of Loss	Application	Eligible Persons	Entitlements	Responsibilities
E-1	Loss of income/ livelihood due to loss of agricultural land	Loss of 10%or more of total productive land	Person(s) with land records, renter or share-cropper of land with legally register share cropper lease	▪ One-time assistance allowance of 3 months minimum wage per affected person ▪ Entitled to take part in livelihood improvement program.	▪DOR/CDC/CSC ▪DOR/CDC/CSC
E-2	Loss of income/ livelihood due to disruption of business or employment	Marginal impact (i.e., disruption of business due to reorganization of the shop on the residual and; disruption of employment of less than 1 months)	Shop owners (regardless of tenure status) and employees/laborers of affected assets	▪ One-time assistance allowance of 3 months monthly income or one month minimum wage	▪DOR/CDC/CSC
E-3		Severe impacts (i.e., disruption of business due to relocation of shop; and disruption of employment for more than 3 months)	Shop owners (regardless of tenure status) who have to physically relocate	▪ One-time assistance allowance of 3 months monthly income for shop owners based on nature of business or three months minimum wage ▪ Affected households will be entitled to participate in livelihood improvement training.	▪DOR/CDC/CSC
F-1	Higher risks of impoverishment due to vulnerability	Loss of land and non-land assets and income	Affected vulnerable households defined as: ▪ Ethnic households (besides for "advanced" category) ▪ Female-headed ▪ Male below poverty levels ▪ Disabled-headed ▪ Orphan-headed household ▪ Dalit-headed ▪ Landless[4] ▪ *Vulnerable Household can only qualify to one of the categories above	▪ One-time assistance allowance of 3 month minimum wage per affected vulnerable household. ▪ Entitled to take part in livelihood improvement program.	▪DOR/CDC/CSC ▪DOR/CDC/CSC
G-1	Unanticipated impacts		Affected households, business, common properties.	▪ Specific entitlement will be determined following all applicable safeguards policies, including ADB SPS.	▪DOR/CDC/CSC

CDC=Compensation Determination Committee, CSC=Construction Supervision Consultant
DMS= Detailed Measurement Survey. DOR=Department of Roads, LA= Land Acquisition

[4] Landless status will have to be demonstrated through affidavit from relevant district office. Results of status of landless will be reflected in the RP and will be recorded during implementation phase.

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X. RELOCATION PREFERENCES

97. From the 810 households, 600 households will have to physically relocate their residence or shop. The total number of residence or shops will be confirmed and updated during implementation. Based on socio-economic survey, 496 (2417 affected persons) were asked their preferences for relocation assistance by the project, in case relocation is required. Most of them (80%) preferred cash compensation. The following table shows the compensation choice of project affected families.

Table 38: Preference for relocation assistance

Type of Compensation	No. of Households	Percent (%)
Cash	399	80.44
Land for Land	34	6.85
House for House	63	12.70
Total	**496**	**100.00**

Source: Field Survey, December 2016

98. In addition to the replacement cost of the structure, the entitlement matrix provides shifting assistance for severely impacted structures (equivalent to 10% of the replacement cost of the structure affected, or the actual cost of shifting, whichever is higher). There is no land for land option offered by project. Land replacement is not practical and would have complex legal consideration and it is also difficulties to identify replacement land. Moreover, all affected household will be notified at least 3 months in advance of the date of construction.

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XI. LIVELIHOOD RESTORATION MEASURES

99. A Livelihood Improvement Training will be provided for one member of each of the vulnerable household, and of other eligible households as detailed in the entitlement matrix. Based on the socio-economic status and preliminary information of the 496 surveyed households, a tentative livelihood improvement training plan and budget was prepared; it is summarized in Table 39. Based on the entitlement matrix, households eligible for the livelihood improvement program notably include vulnerable households, and those significantly affected due to loss of agricultural land or disruption business (it is estimated that at least 303 households fully impacted due to loss of agricultural land or disruption of business will be eligible for the training). The households entitled for the livelihood improvement program will be confirmed and updated during implementation. Training courses will also be identified during the implementation of the RP through a training needs assessment of the participants, and will be closely monitored during implementation of the program.

100. Examples of training courses are vegetable farming (off-season vegetable production), poultry farming, cattle rising, sewing classes, etc. The CSC livelihood expert will conduct the assessment, facilitate the training program in the implementation, and coordinate with line agency like District Agricultural Development Office, District small and Cottage Industries Development Council etc. The following table shows the tentative livelihood restoration training for the Project affected people. The project's livelihood specialist will ensure all entitled households are matched with proper training activities.

Table 39: Tentative Livelihood & Income Restoration Training for PAF

S.N	Activities	Duration	Participants	Per person cost	Tentative estimated Cost (NRS)	Responsibility
1	Off seasonal vegetable farming/ production and marketing	21 days	160	4500	720,000.00	DOR/CSC
2	Goat Rearing	21 days	61	4500	274,500.00	DOR/CSC
3	Poultry farming	21 days	45	8500	382,500.00	DOR/CSC
4	Small Hotel & lodge management training	45 Days	40	10500	420,000.00	DOR/CSC
5	Basic Food preparation and tourist guide	45	30	20000	600,000.00	DOR/CSC
6	Travel agency , ticketing & fare construction and trekking guide/trust guide & potter guide	30 Days	50	10500	525,000.00	DOR/CSC
7	Homestay guide/agro tourism/ guide	45	50	10500	525,000.00	DOR/CSC
8	Mason training	15	30	7100	213,000.00	DOR/CSC
9	Mobile repairing training	30	30	10300	309,000.00	DOR/CSC
	Total		**496**		**3,968,000.00**	

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XII. RESETTLEMENT BUDGET AND FINANCING PLAN

101. This chapter provides cost estimates only for the RP activities described in preceding chapters under the following items.

A. Cost for Land Acquisition

102. According to the engineering estimate, a total of 12838. 53 sq. m of land is required at different location of from Abukhaireni to Pokhara for bridges section of the road alignment.

103. The estimate of the land cost used for this RP are based on an assessment of recent transactions of land from Land Revenue Office and recent market price confirmed via consultations with key stakeholders (i.e. Aps and with district level officials to know the prevailing rate). There are two different types of valuation systems; (i) one based on Government rate, and (ii) one based on current local market rate. As being practiced, Government rates are fixed by the District Land Revenue Office (DLRO)[5] in accordance to the location of land, type of land, the rate of land quoted on the current land transaction documents and land revenue paid by the public. Official land prices are thus different from the market price. The methodology used in this RP is based on consultations with landowner to assess the price of land in different areas of the project and an average is drawn to make budget estimates that reflect replacement cost. The following are the estimate of land price and total cost of land by affected areas. (EM: A-1, 2). However, the final compensation amount will be decided by CDC meeting. Please see **Appendix 8** on the land and structure evaluation methodology.

Table 40: Estimated Compensation Cost for Land

Districts	Name of municipality/VDCs	Land to be acquired (Sqm)	Per Unit Cost (NRs per Sqm)	Tentative Estimated Cost (NRs.)
Tanahu	Sthanchok (Shukla Gandaki. Municipality)	717.32	5000	3,586,600.00
	Udendhunga (Shukla Gandaki Municipality)	717.42	7000	5,021,940.00
	Chhang Madyapa Rural Municipality	838	4500	3,771,000.00
	Gunadi (Vyas Municipality)	711.44	2500	1,778,600.00
	Nala Bridge (Bandipur Rural Municipality)	421.18	14700	6,191,346.00
	Madi Bridge (Vyas Municipality	241.18	15500	4,125,790.00
	Total	**3646.41**		**24,475,276.00**
Kaski	Sisuwa (Pokhara MC)	3757.78	15500	58245590.00
	Rupakot (Pokhara MC, Kotre)	856.49	7900	6766271.00
	Chhinedanda (Pokhara MC, Bijayapur)	4580.5	39313	180073196.5
	Total	**9194.77**		**245,085,057.50**
Grand Total		**12838.53**		**269,188,333.50**

Source: Field Survey, December 2016 & re-updated 2018

[5] There are District Land Revenue Offices (DLRO) in all (77) district and responsible for also fixing land price of the respective districts based on land transaction made in the district and update them annually.

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B. Cost for Private Structures

104. There are 767 private structures going to be affected in the project road. As provisioned in the entitlement matrix (EM: B-1 and B-2), compensation cost for the affected structures have been calculated based on the measurement of the affected structures taken out during the field survey and construction type of affected structures. Furthermore, the social survey team consulted local construction contractors, key local community members, and residents who constructed new houses within one year to investigate the market rate of structures. Based on these investigations the technical team members provided technical ideas to estimate the cost of affected structures. Guidelines of the Department of Urban Development and Building Construction (DUDBC) & DCC/DTCO have also been taken into account while calculating the cost for affected structures.[6] The structures were valued without deducting any depreciation in material use. The estimated cost for the private structure is presented in Table 41. **Appendix 8** provides calculation methodology for affected structures. The compensation rate for the affected buildings and structures were estimated according to the type of structures such as frame structures, cement mortar RCC structure, Bricks/stone and mud mortar structures, block bricks and cement mortar with zinc roofed. 767 structures, including all residential cum commercial structures, were affected for the project purpose. However, the final compensation amount will be decided by the CDC. The total cost for 767 structures is estimated based on recent increase in the price of the construction materials as NRs. 1,050,638,574.34

Table 41: Estimated Compensation Cost for Structures

S. N	Types of Structures	No. of structures	Plinth area(Sqft)	Rate Per Sqft	Estimated Cost (NRs)
1	Frame structures with concrete	200	259267.7	2340	606,686,418.00
2	Brick & stone wall with cement mortar of slate/CGI roof etc	43	40821.42	1952	79,683,411.84
3	Brick, wood or CGI sheet wall with CGI roofing	521	211157.8	1710	361,079,838.00
4	wooden/bamboo/mud wall with straw roof	3	548.05	1330	728,906.50
	Total	**767**	**511795**		**1,048,178,574.34**
5	Movable kiosks	123	-	20000	2,460,000.00
	Total	890	511795		1,050,638,574.34

Source; Field Survey, December 2016 & re- updated, 2018

105. Note Due to un-availed of the structure, dismantle district rate of Tanahu & Kaski, Kathmandu district rate 2075/76 and market rate through the public consultation has been used for calculation

C. Cost of Other Assets

106. The following cost has been estimated for the cost of crops and trees. Cash compensation will be provided tor affected fruit trees based on next 5 years average fruit production with the

[6] The Government of Nepal, Urban Development and Building Construction Office (UDBCO) & District Technical Coordination Office are the authorized Government body The Department regularly updates its rate based on current market price and provides basis for calculating the cost of different types of structures.

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support of District Agriculture Office (DAO), [EM: C-1]. Please see Appendices 4 and 5 for more details.

Table 42: Budget for Loss of Crops and Trees

S.n	Type of asset affected	Amount (NRs.)
1	Crops& others	127650.00
2	Trees/ fruits	1487590.00
	Total	**1614940.00**

Source; Field Survey, December 2016 & re- updated, 2018

D. Assistance to Reconstruction and Rehabilitation Allowances

107. In addition to the replacement cost of the structure, the entitlement matrix provides shifting assistance for severely impacted structures (equivalent to 10% of the replacement cost of the structure affected, or the actual cost of shifting, whichever is higher). Furthermore, owners of commercial enterprises requiring relocation will also receive an income compensation to address the disruption to business during the relocation process. The estimated cost for the reconstruction allowance, shifiting allowance, and business disruption allowances is presented below. An economically viable structure that requires to be shifted will be considered as a severely affected structure. Shifting allowance will not be given to structures that are partially affected.

Table 43: Displacement and Rehabilitation Allowances

S. N	Allowances	Total Structures	Rate / (NRs.)	Amount (NRs.)	Remarks
1	Shifting allowances for structure	465	-	5,246,508.00	In accordance with B-2 and B-3
2	Business disruption allowance	145	59,400.00	8,613,000.00	In accordance with E-2 and E-3
Total				**13,859,508.00**	

Source; Field Survey, December 2016 & Updated, 2019

Average minimum wage rate of Tanahu district is NRs 625 & Kaski district is NRs 700 for the fiscal year 075/76, therefore, an average wage rate is NRs 660.00. Actual figures will be updated to reflect all affected households and appropriate budget requirements determined.

E. Additional Assistance to the Vulnerable Groups

108. Based on the census survey as well as consultation of the ward Chairman and elected local bodies, all ethnic people (Adibasi/Janajati) were considered in the vulnerable category. However, further analysis showed that most of the affected ethnic households were well off and part of the advanced ethnic category in the context of this RP.The ethnic households belonging to the "advanced" category will not be considered as vulnerable. So that there are about 228 vulnerable households of different categories, as estimated from the surveyed 496 households. During the implementation of the RP the number of the vulnerable households will be increased.The Entitlement matrix **(EM: B-1-E-1, E-2, E-3, & F-1-b, c)** provisions cash compensation for such vulnerable households equivalent to three Months wage for restarting their livelihood. However, additional assistance to such vulnerable groups needs to be distributed only after the finalization of resettlement impact and its extent, and confirmation of the vulnerability of the households in close collaboration with the local communities/local level stakeholders and CDC. BPL households are considered as a vulnerable households. Different rehabilitation measures as per EM for such households are as below:

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Table 44: Additional Assistance to Vulnerable Groups

S.n	Vulnerability Category	No. of HHs[a]	One Time Cash Assistance at the Local Agricultural Wage Rate (NRs.)	Total cost for assis-tance(NRs.)
1	Single Female Headed Households	9	59,400.00	534,600.00
2	Elderly (Above 70 Years headed hh	1	59,400.00	59,400.00
3	Disable HHs	3	59,400.00	178,200.00
4	Below Poverty Level	20	59,400.00	1,188,000.00
5	Indigenous-headed (disadvantaged, marginalized, highly-marginalized and endangered) are vulnerable	152	59,400.00	9,028,800.00
6	Dalit HHS	43	59,400.00	2,554,200.00
7	Landless who are not already included in the categories above	-	0.00	
8	Livelihood Training	496	8,000.00	3968000.00
	Total			17,511,200.00

[a] Additional validation by the local authorities/agency will be undertaken during RP implementation. The total number of vulnerable households will be confirmed during the RP implementation.
Source: Field survey on 2016, re-updated, 2019.

F. RP Implementation and Management Cost

109. There are also several RP implementation activities that need to be carried out at project road level by the Project Manager (PM). Some of such activities are: (i) public consultation, and information dissemination, (ii) organizing CDC meetings, and implement CDC decision, field verification, and updating RP, (iii) organizing and mobilizing local grievance redress committee meetings, (iv) Deed Transfer and required land surveying so on. The RP Implementation budget has also included these expenses as per the following:

For Reference Only

Table 45: Cost Estimate for Resettlement Implementation Activities

S. n.	Description of Tasks	Quantity	Rate (NRs.)	Estimated Costs (NRs.)
1	Information dissemination about the project, resettlement impacts, and compensation provision	4	100,000.00	400,000.00
2	Organizing CDC meeting and follow up activities	8	50,000.00	400,000.00
3	Organizing GRC meetings and follow-up activities	20	10,000.00	200,000.00
4	Establishing Sub-local level committees and their mobilization (@ NRs.5,000 per committee)	20	5,000.00	100,000.00
5	Public notification of Affected assets and invitation to receive compensation (@ NRs. 75,000)	4	75,000.00	300,000.00
6	If required, Surveyor/Amin Mobilization/ Revenue office for Field Verification and Deed Transform (NRs. 50,000 Per Man month) two districts	8	50,000.00	400,000.00
7	Sub-total (1-5)	-	-	1,800,000.00
8	Contingency	10%	-	180,000.00
	Total			**1,980,000.00**

Source: Field Survey, December 2016 & Re updated, 2018.

110. The RP implementation covers the cost for the implementation and management of resettlement–related activities. It includes information dissemination, campaign, public consultation, CDC meeting, local grievance redress committee formation and conducting meetings with Aps etc.

G. External Monitor

111. An amount of NRs. 4,080,000.00 has been budgeted for an external monitoring of the resettlement process. This will be conducted by a university teachers/ researchers or Individual consultant. For detail attached at **Appendix 9** of external monitoring terms of references. Table 46 presents budgetary details for external resettlement

Table 46: Estimated cost for External Monitoring and Evaluation

S.N	Description	Unit	Month/ days	Rate/month/days (NRs)	Total Amount (NRs)
1	Salary	Month	12	290,000.00	3,480,000.00
2	DSA	days	60	5,000.00	300,000.00
3	Transportation (land &air)	LS			200,000.00
4	Miscellaneous	LS			100,000.00
5	**Total**				**4,080,000.00**

H. Contingencies

112. A contingency amount of 10 % of the total RP budget has also been included.

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I. Total Cost Estimate

113. The total cost estimate for the widening and upgrading of existing road from Abukhaireni to Pokhara is presented in Table 47 below:

Table 47: Summary of Compensation Cost

S.N	Items	Total estimated cost (in NRs.)
1	Compensation of Land	269,188,333.50
2	Compensation of structures	1,050,638,574.34
3	Compensation of the Crops, fruits & others trees	1,614,940.00
4	Displacement and rehabilitation cost	13,859,508.00
5	Assistance to vulnerable & livelihood training	17,511,200.00
6	RP implementation	1,980,000.00
7	External monitor	4,080,000.00
8	**Total (A)**	**1,358,872,555.84**
9	Contingencies (10 %) (B)	135,887,255.58
10	**Grand Total estimated (A+B)**	1,494,759,811.42
	Total $ @110.21 March 2019	13,562,832.88

J. Financing Plan

114. RP implementation cost will be confirmed and updated once all resettlement information are updated, including unanticipated impacts. All costs related to land acquisition and resettlement budget will be borne by the Government. The EA will ensure that adequate funds are delivered on time to the CDO for timely implementation of RP. The EA will confirm the availability of funding during loan negotiation.

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XIII. INSTITUTIONAL ARRANGEMENTS

A. Central Level Project Implementation Unit (PIU), Department of Roads (DOR)

115. The Ministry of Physical Infrastructure and Transport (MoPIT) will be the executing agency (EA) and the Department of Road (DoR) the implementing agency (IA) for this project. DoR has established a Project Directorate PIU at the central level (Kathmandu). For resettlement activities, the PIU will be supported by a resettlement consultant who will review the monitoring data, conduct his/her own field level data verification and consultation with affected persons and provide advice to DoR in follow-up actions. The central level PIU Project Director of the central will assume the following responsibility for RP implementation:

- Establish the two field offices headed by Project Managers (PM) responsible for the implementation of the Mugling- Pokhara road improvement project;
- Establish the third tier Grievance Redress Committee (GRC);
- Establish and approve the procedures for the resettlement and compensation activities;
- Review the monthly monitoring report prepared by the field PIUs and supervision consultant
- Prepare the semi-annual social monitoring report

B. Field-level Project Office, PM/DOR

116. The IA will establish two field-level PIUs headed by Project Managers (PM) with officer in rank of Senior Divisional Engineer. The Project Manager will be responsible for implementing the resettlement activities at the field level with the help of the resettlement team from the Supervising Consultant (SC). The PM will coordinate with the CDO in formation of CDC at district level and keep coordination with other line agencies at district level for the implementation of RP. Key activities of the PM are:

- Approve the survey verification and update of affected persons and entitlement cards
- Liaise with CDO and participate in CDC
- Distribute resettlement benefits
- Verify the field and prepare RP addendums and updates
- conduct and document regular and meaningful consultations with affected persons – including the dissemination of entitlement benefits
- conduct internal monitoring of RP activities and prepare monthly progress reports
- Establish the second tier Grievance Redress Committee (GRC);
- convene the GRC

C. Compensation Determination Committee (CDC)

117. The Land Acquisition Act (1977) specifies the procedures for land acquisition and compensation. The Act empowers the government to acquire any land for public interest or for the execution of any development works. There is a provision of Compensation Determination Committee (CDC) under the chairmanship of Chief District officer which will fix the rate of compensation for the affected property. The other members in the committee are the Chief of Land Revenue Officer, representative from District Coordination Committee (DDC), concerned Project Director/Manager. The committee will also invite representatives from among the affected persons,

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representative from affected ward chairman/Municipality. The committee will be responsible for dealing with the issues related to compensation and rehabilitation. The main responsibilities of the committee are:

- To verify the loss of land and other assets due to project implementation
- Publish notice for land and other assets acquisition by the project
- Determine the price of all kinds of loss incurred
- Hold meetings with the affected people
- Notify the APs to collect compensation
- Pay compensation for all loses
- Hear grievances if any and
- Implement rehabilitation measures

D. Grievance Redress Committee (GRC)

118. There will be two level of GRC. One will be according to the clause 11of Land Acquisition Act 1977 which will be chaired by the CDO. Under the LA Act, any APs can raise objection against acquisition of land by a notice to Ministry of Home. There are normal procedure and rules and regulation to address the complaints/grievances. There will be another GRC at local level (each wards). APs can submit grievances verbally or written to this committee for resolution. If the grievances resolved at local level, it will not refer to CDO. In case, it is not resolved, it will refer to GRC at district level which is chaired by CDO.

E. Supervision Consultant (SC)

119. A team of resettlement specialist and field level social mobilizers will be responsible for the day-to-day implementation of the land acquisition process and resettlement activities. More specifically, the SC resettlement team will perform the following activities. Inform affected persons of entitled compensation and methods of receiving compensation payment;

- support the survey verification and update of affected persons and assets prepare identification and entitlement cards
- provide assistance to the District Commissioner's office for land acquisition activities
- Assist CDC in determining the compensation for various affected assets;
- provide support to the affected persons in gathering their documentation to collect their award payment at the district's office
- support the PIU in the distribution of resettlement benefits
- support the field data gathering for the preparation of RP addendums and updates
- conduct and document regular and meaningful consultations with affected persons – including the dissemination of entitlement benefits
- conduct internal monitoring of RP activities and prepare monthly progress reports;
- Keep and update all resettlement activities and submit monthly resettlement implementation progress report to PIU, DoR;
- address grievances at local level
- act as secretary in grievance redress mechanism and document grievances and resolution process
- support affected persons in filing grievances

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- Identify vulnerable group and severely affected persons and recommend additional assistance and livelihood assistance and skill development training to them;
- Arrange skill development training through recognized training institution at project level;

F. Staff Training at PIU

120. At present, there are no sufficient experienced personnel involved in land acquisition, resettlement and rehabilitation activities at PIU, though Geo-Environment Unit (GEU) of DOR looks at the social and resettlement aspect of the project. The unit comprises of one Senior Divisional Engineer, 2 Assistant Engineers and 2 Sociologist. They are involved in all the social and environmental aspects of the project under DoR. However, most of them are not familiar with the ADB new Safeguard Policy. After the SC resettlement team is mobilized, a 2 days orientation and training regarding the ADB new Safeguard Policy 2009 and management and the resettlement activities to be implemented under this project will be conducted for the DOR staff involved in the implementation of resettlement and rehabilitation activities of this project (including the field staff). The training/orientation session will be repeated in the field offices, DCCs or representative from Rural municipalities or municipalities and ward Chairman's either by grouping the adjacent districts or individually as per convenience of the field staff

121. Proper handling of the Grievances need to be familiar with ADB new safeguard policy, 2009 and management of the grievances in the field, will be conducted for the DOR staff/project staff, local government and ward chairman will be trained/orientated for the implementation of the policies

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XIV. IMPLEMENTATION SCHEDULE

122. The project is expected to be implemented from the Fourth quarter of 2019 to the fourth quarter of 2024. Advance actions such as the establishment of the field-level PIU office, the appointment of the Project Managers, the recruitment and mobilization of the SC resettlement team, the establishment of grievance redress committee and the formation of the CDC are required. Disbursement of compensation and resettlement assistance activities will be completed before each section is handed over by DoR to the contractor. However, income rehabilitation measures may continue and be completed even after civil works begin. Table 48 provides the timeline for project resettlement activities.

Table 48: Implementation Schedule of the Resettlement Plan Implementation

S.N.	Activities	Time period	Responsibility
1	Establishment of the two PM field offices	Fourth quarter 2019	DOR
2	Mobilization of Supervision Consultant resettlement team	First Quarter 2020	DOR
3	Joint survey with contractor	Third Quarter 2020	PM/CSC
4	Formation of CDC	Fourth Quarter 2019	DOR, CDO
5	Formation of the GRC	Fourth Quarter 2019	DOR
7	Determination of compensation of affected assets	First Quarter 202o	DOR, SC, CDO
8	Publication of structure Acquisition Notice	First Quarter 2020	DAO, Tanahu & Kaskii
10	Publish notice to collect compensation	Second Quarter 2020	DoR, DAO
11	Distribution of compensation	Second Quarter 2020 onwards	DoR, DAO
12	Dissemination of information, public consultation, distribution of summary of RP in Nepali	First Quarter 2020	DOR, SC
13	Recruitment of External independent monitoring agency	Second quarter of 2020	DoR
14	Payment of rehabilitation allowances to SPAF & Vulnerable groups	First Quarter 2021	DoR, SC
16	Transfer of land already acquired but remaining to deed transfer in the name of DOR/Government	Second Quarter 2020 onwards	DAO, DLRO, DLSO, DoR

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XV. MONITORING AND REPORTING

A. Internal Monitoring System

123. An internal monitoring system will be established by DOR, the PIU, PM and the CSC resettlement staff. A set of process, outcome and baseline indicators will be developed and the baseline gathered at the onset of RP implementation. The PIU and CSC resettlement staff will maintain record of all activities related to the resettlement in a database. Indicative indicators for the resettlement plan can be found in Table 49.

Table 49: Monitoring Issues and Indicators

Monitoring Issues	Monitoring Indicators
Budget and time frame	▪ Has all resettlement staff been appointed and mobilized for field and office work on schedule? ▪ Have capacity building and training activities been completed on schedule? ▪ Are resettlement implementation activities being achieved according to agreed implementation plan? ▪ Are funds for resettlement being allocated to resettlement agencies on time? Have resettlement offices received the scheduled funds? ▪ Have funds been disbursed according to RP? ▪ Has the land been made encumbrance-free and handed over to the contractor in time for project implementation?
Delivery of entitlements	▪ Have all affected persons received entitlements according to numbers and categories of loss set out in the entitlement matrix? ▪ How many affected households have relocated and built their new structures at new locations? ▪ Are income and livelihood restoration activities being implemented as planned? Have affected businesses received entitlements? ▪ Have the community structures been compensated and rebuilt at new sites? ▪ Have all processes been documented? ▪ Are there discrepancies between the estimated number of affected persons as per the RP/RP addendum and actual numbers ▪ Share of compensation disbursement vs. total Title-Holders affected ▪ Share of Titled-holders who have received their entire compensation packages (compensation and other resettlement allowances) vs. total Title-Holders affected ▪ Share of non-titled holders who have received compensation of structures vs. total non-titled holders identified ▪ Share of non-titled holders who have received their other resettlement allowances vs. total non-titled holders identified ▪ Is the rate for compensation for land and structure equivalent to replacement cost?
Relocation assistance	▪ Has NGO prepared a list of alternative places to rent/buy? ▪ Have affected households benefitted from support of NGO to find alternative place to rent/buy? If so, how many and what services were provided?
▪ Consultation, grievances, and special issues	▪ Have resettlement information brochures/leaflets been prepared and distributed? Have consultations taken place as scheduled, including meetings, groups, and community activities? ▪ Have any affected persons used the grievance redress procedures? What grievances were raised? What were the outcomes? ▪ Have conflicts been resolved? ▪ Have grievances and resolutions been documented? Have any cases been taken to court?

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Monitoring Issues	Monitoring Indicators
▪ Resettlement Benefit/ Impacts	▪ What changes have occurred in patterns of occupation compared to the pre-project situation? ▪ What changes have occurred in income, expenditure and livelihood patterns compared to pre-project situation? ▪ How many physically displaced households have relocated? Where are they relocated (i.e. remaining plot of land, newly purchased plot, rented plot/structure) ▪ How many households have purchased plot? ▪ What was compensations/resettlement benefits spent on? ▪ Have the participants of the livelihood-training program used their new skills? What was the seed grant spent on?

124. The central level GESU under the Door will also carry out internal monitoring. Among others, the GESU monitoring will also be focused on process monitoring.

B. External Monitoring

125. An external professional/individual/researcher or consulting agency, university department or development NGOs will be recruited by DOR to carry out an independent bi- annual review of the resettlement implementation process as well as the post resettlement completion evaluation. Two monitoring surveys (biannually) of a sample of affected households (minimum 20% of affected households) will be undertaken by independent the external monitoring agency/researchers. The main objective of this monitoring will be to measure the extent to which households' standards of living have been restored or improved. The external monitoring agency will also carry out a final ex-post evaluation to ensure that all RP implementation activities have been completed. Any problems or issues identified are followed-up (including recommendation of mitigation measures and supplementary budget if required); and learning from such issues must be recorded which would help to deal with issues such as these more effectively. A Terms of Reference (Tore) for the external monitoring agency has been included in **Annex 4**.

Table 50: Scope of External Monitoring

Independent Monitor	▪ Conduct a field-based assessment of the implementation of the resettlement plan on a bi-annual basis: ▪ Conduct sample survey of 20% affected households, as needed. ▪ Reconciliation of data provided by DOR/CSC resettlement team with field and records verification; ▪ Assess progress of land acquisition and resettlement activities; ▪ Asses Progress vis-à-vis indicators; ▪ Assess compliance of RP implementation with SPS Interview affected persons to assess their views on the resettlement process; and ▪ Propose corrective/remedial actions.

C. Reporting

126. The PIU/CSC resettlement staff will prepare Monthly Progress Report (MPR) highlighting progress, issues, constrains, targets for every month. These reports will closely follow the resettlement monitoring indicators as mentioned above. The project directorate Resettlement team will review the MPRs and produce a Semi-annual resettlement report. An outline of the Social Monitoring Report is provided in Appendix 10. **Error! Reference source not found.** Table 51 below provides details on the contents and timing of various progress monitoring reports.

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Table 51: Reporting Requirements

Type of Report	Content	Frequency	Responsibility
Monthly progress report	Progress on land acquisition and resettlement activities, progress on indicators, results, issues affecting performance, constraints, variation from RP (if any) and reason for the same and corrections recommended	Monthly	PIU/CSC
Semi-annual resettlement monitoring report	Progress on land acquisition and resettlement activities, indicators, and variations if any with explanation and outcome, recommended corrective actions.	Semi-annually	DOR/CSC
External monitoring report	Progress on land acquisition and resettlement activities, indicators, variations if any with explanation and outcome, affected person's satisfaction with process, compliance with ADB's SPS, corrective actions recommended	Semi-annually	External Monitor
Resettlement completion report	Overall narrative of the land acquisition and resettlement process, outputs and outcomes of indicators from baseline, key variations/changes, lessons learned	Once	External Monitor

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APPENDIX 1: INFORMATION OF THE RIGHT-OF WAY AND LAND ACQUISITION

Mugling-Pokhara Road (part of Prithivi Highway) in English translated documents

Government of Nepal
Ministry of Infrastructure & Transport
Department of Roads
Western Region Road Directorate
Division Road Office
Damauli, Tanahu

Ref No 2073/074

Cha No5019 Date: 2073-09-25

Subject: Regarding information:

Department of Roads
Project Directorate (ADB)
Bishalnagar, Kathmandu.

In refrence of the above mentioned subject it is hereby informed that the ownership of the Land with in the Right of Way (ROW) of Mugling to Kotre road section under this office is as detailed below:

S.N	Road Sections	ROW	Status of Land ownership
1	Mugling - Kotre Road sections	25 meters both sides from centreline	Ownership of maximimun land parcels has already been trasfered to the name of the Division Road Office , Damauli , Tahnahu

Sig
Er. Bhanu Joshi
Division Chief

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Government of Nepal
Ministry of Infrastructure & Transport
Department of Roads
Western Regin Road Directorate
Division Road Office
Pokhara, Kaski

Ref No: 2073/074

Cha No: 952 **Date:** 2073-09-27

Subject: information of the Right of Way:

Department of Roads
Project Directorate (ADB)
Bishalnagar, Kathmandu.

As requested by Mr. Chintamani Sharma from MMM Canada ITECO Nepal , TMS Materials Test JV on 2073-09-27 it is here by informed that the Right of Way (ROW) of Roads section under the prithivi Rajmarg (Highway) is as detailed below :

S.N	Road Sections	ROW	Status of Land Ownership
1	Kotre to Prithivi Chowk Road sections of Kaski	25 meters both sides	Ownership of maximimun land parcels has already been trasfered to the name of the Division Road Office , Pokhara , Kaski
2	Bijayapur to Prithivi Chowk Road sections of Kaski	23/23 meters ROW is cleared althoug ROW is fixed 25meters both sides	

Sig

Er. Pream Prakesh Khatri
Division Chief

ROW information in Nepali

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नेपाल सरकार
भौतिक पूर्वाधार तथा यातायात मन्त्रालय
सडक विभाग
पश्चिमाञ्चल क्षेत्रीय सडक निर्देशनालय
डिभिजन सडक कार्यालय
पोखरी कास्की
☎ ०६१-४६३४८७
फ्याक्स: ०६१-४६५१२३
Email:dropokhara@gmail.com
रत्नपुरी, पार्दी

पत्र संख्या : ०७३/०७४
चलानी नम्बर. : ५२२
मिति: २०७३/०९/२७

विषयः- सडक सीमा सम्वन्धमा ।

श्री सडक विभाग
आयोजना निर्देशनालय (एडिवी)
विशालनगर,काठमाण्डौ ।

प्रस्तुत विषयमा यस कार्यालयको क्षेत्राधिकार अन्तर्गत पर्ने पृथ्वीराजमार्गको सडक सीमाको जानकारी उपलव्ध गराई पाउ भनी MMM-Canda ITFCO- Nepal-TMS-Materials Test को Joint Venture को तर्फवाट श्री चिन्तामणी शर्माले मिति ०७३।९।२७ मा यस कार्यालयमा निवेदन दिनु भएकोमा यस कार्यालय अन्तर्गत पर्ने पृथ्वीराजमार्गको सडक सीमा निम्नानुसार भएको व्यहोरा जानकारीका लागि अनुरोध छ ।

तपसिल

सि.नं.	सडक खण्ड	सडक सीमा	जग्गा स्वामित्वको स्थिती
१	कोत्रे-पृथ्वीचोक कास्की	केन्द्रबाट दायाँ बायाँ दुवै तर्फ २५ मीटर	सडक सीमा भित्र पर्ने अधिकांश जग्गाहरुको लगत कट्टा भई कार्यालयको नाममा स्वामित्व हस्तान्तरण भै सकेको ।
२	विजयपुर-पृथ्वीचोक	२५/२५ मीटर सडक सीमा तोकिएको भएतापनि २३/२३ मीटर Row Clear रहेको	

(प्रेमप्रकाश खत्री)
डिभिजन प्रमुख

For Reference Only

नेपाल सरकार
भौतिक पूर्वाधार तथा यातायात मन्त्रालय
सडक विभाग
पश्चिमाञ्चल क्षेत्रीय सडक निर्देशनालय
डिभिजन सडक कार्यालय
दमौली, तनहुँ

पत्र संख्या :- २०७३/०७४
चलानी नम्बर :- ४९३

मिति: २०७३/०९/२५

विषयः- जानकारी सम्वन्धमा ।

श्री सडक विभाग
आयोजना निर्देशनालय (ए .डि.बि.)
बिशालनगर, काठमाण्डौ ।

प्रस्तुत बिषयमा यस कार्यालयको क्षेत्राधिकार भित्र रहेका निम्न सडकहरुको सडक सिमा तथा सो भित्र पर्ने जग्गाहरुको स्वामित्वको स्थिती निम्नानुसार रहेको व्यहोरा जानकारीको लागि अनुरोध तथा सो भित्र पर्ने जग्गाहरुको स्वामित्वको स्थिती निम्नानुसार रहेको व्यहोरा जानकारीको लागि अनुरोध गरिन्छ ।

सि.नं.	सडक खण्डहरु	सडक सिमा	जग्गा स्वामित्वको स्थिती
१	मुग्लिङ - कोत्रे सडक खण्ड	२५ मि. दुवै तर्फ	सडक सिमा भित्र पर्ने अधिकांश जग्गाहरुको लगत कट्टा भई डिभिजनको नाममा स्वामित्व ग्रहण भई सकेको ।

२०७३।१।२५
भानु जोशी
डिभिजन प्रमुख

Translated Information

For Reference Only

Government of Nepal
Ministry of Land Reform & Management
Department of Land Revenue
Land Revenue office
Tanahu

Ref No 2073/074

Cha No4992 Date: 2073-09-28

Subject: Regarding the details of the Land owners:

Department of Roads
Project Directorate (ADB)
Bishalnagar, Kathmandu.

Regarding the subject mentioned above, it is here by informed that the details of the land owners received attached with your letter reference no 393 dated on 2073-08-15,is being forwarded..

Sig
Senior Land Revenue officer

In Nepali

For Reference Only

नेपाल सरकार
भूमिसुधार तथा व्यवस्था मन्त्रालय
भूमिसुधार तथा व्यवस्थापन विभाग
मालपोत कार्यालय
तनहुँ

☎ ०६५-५६०१७७
Email: tanahun_malpot@yahoo.com

प.सं. ०७३/०७४ मिति : २०७३/०९/२८

च.नं. ४५६२

विषय :- विवरण पठाएको सम्बन्धमा ।

श्री आयोजना निर्देशानालय (ए.डि.वि)
सडक विभाग, विशाल नगर काठमाण्डौं ।

प्रस्तुत विषयमा ताहांको च.नं. ३९३ मिति २०७३।०८।१५ को पत्र साथ संलग्न भै आएको कित्ता नं. अनुसारको हाल सम्म कायम भएका जग्गा धनीको विवरण सोही फर्ममा भरी यसै पत्रसाथ संलग्न गरि पठाईएको व्यहोरा अनुरोध छ ।

Translated information received by Land survey office

For Reference Only

Government of Nepal
Ministry of Land Reform & Management
Department of Survey
Land Survey office Kaski
Kaski Pokhara

Ref No 2073/074

Cha No232 Date: 2073-09-27

Subject: Regarding the details of the land parcels:

Department of Roads
Project Directorate (ADB)
Bishalnagar, Kathmandu.

We acknowledge the receipt of your letter with reference no 394 dated on 2073-08-15, on the above mentioned subject it is informed that, Based on the upgrading requirements of the engineering design of the Mugling – Pokhara. The technical team marks the impact boundaries in field and verified the affected land areas the cadastral Surveyor from this office, the details of the identified affected parcels are being forwarded.

Sig
Senior Land survey officer

For Reference Only

Government of Nepal
Ministry of Land Reform & Management
Department of Survey
Land Survey office Tanahu
Damauli

Ref No 2073/074

Cha No: 405 Date: 2073-09-26

Subject: Regarding the details of the Land parcels.

Department of Roads
Project Directorate (ADB)
Bishalnagar, Kathmandu.

With reference of your letter no 394 dated on 2073-08-15, on the above mentioned subject it is informed that, Based on the upgrading requirements of the engineering design of the Mugling – Pokhara. Coordination with technical team from design and survey office, the team marks the certain places for impact boundaries in field and verified the affected land areas. The technical team prepared a report of the affected land parcels are being forwarded.

Sig

Senior Land survey officer

In Nepali

For Reference Only

नेपाल सरकार
भूमिसुधार तथा व्यवस्था मन्त्रालय
नापी विभाग
नापी कार्यालय, कास्की

०६१-५३२३६८
फ्याक्स नं.:०६१-५२०३४८

प.सं.:०७३।७४
च.नं. ४२२

मिति :०७३।०९।२७

श्री आयोजना निर्देशनालय (ए.डि.बी)
सडक विभाग विशालनगर, काठमाडौ

विषय : विवरण पठाएको सम्वन्धमा ।

प्रस्तुत विषयमा त्यहाको च.न. ३९४ मिति २०७३।०८।१५ को पत्रनुसार मुग्लिङ्ग-पोखरा सडक सुधार योजनाको Detail Design अनुसार त्यहाको प्राविधिकले देखाएको स्थानमा यस कार्यालयबाट खटाईएका प्राविधिक कर्मचारीहरुले जग्गाको क्षेत्रफल एकिन गरी तयार गरेको विवरण थान ५ यसै पत्रसाथ संग्लन गरी पठाएको व्यहोरा अनुरोध छ ।

२०७३/९/२७
प्रमुख नापी अधिकृत

For Reference Only

नेपाल सरकार
भूमि सुधार तथा व्यवस्था मन्त्रालय
नापी विभाग
नापी कार्यालय तनहूँ
दमौली

फोन नं. ०६५५६०१२

पत्र संख्या : ०७३।०७४
च.नं. ४०२

मिति :-२०७३/०९/२६

श्री आयोजना निर्देशनालय (एम.डि.पि.)
सडक विभाग, खिचा ल नगर, काठमाडौं ।

विषय : विवरण पठाइएको सम्बन्धमा ।

प्रस्तुत विषयमा त्यहाँको च.नं.३९९ मिति २०७३/८/१५ को पत्रको व्यहोरा अवगत भयो । तत् सम्बन्धमा यस कार्यालय बाट प्राविधिक कर्मचारी खवाई त्यहाँको कार्यालय बाट रवलिइ अध्यन भएका प्रतिनिधी एवं सम्बन्धित गरि भए जिल्लामा पर्ने विद्यमान पृथ्वी राजमार्ग को मूलधीन पोखरा सडक खण्डको अधिक ढोंच वारेमा डिटेल डिजाइन अनुसार बाहिर पर्ने मगाहरूको नेपाल सकिन जरी प्राविधिक कर्मचारीले तयार पारेको विवरण यस ३ थप पत्र साथ संलग्न राखी पठाइएको व्यहोरा अनुरोध छ ।

०७३।९।२६
नापी अधिकृत

For Reference Only

नेपाल सरकार
कृषि, भुमि व्यवस्था तथा सहकारी मन्त्रालय
नापी विभाग

नापी कार्यालय तनहुँ

पत्र संख्याः २०७४।७५
चलानी नं: ८११

नेपाल सरकार
कृषि, भुमि व्यवस्था तथा सहकारी मन्त्रालय
नापी विभाग
नापी कार्यालय
दमौली, तनहुँ

मितिः २०७५।२।२६

श्री सडक विभाग,
आयोजना निर्देशनालय,(ए.डि.वी)
विशाल नगर, काठमाण्डौं ।

विषय : रेकर्ड पठाईएको बारे ।

प्रस्तुत विषयमा तहाँ कार्यालयको च.नं. ८६२५ मिति २०७५।०२।१६ को पत्र प्राप्त भई व्यहोरा अवगत् भयो, सो सम्वन्धमा त्यस कार्यलयबाट खटिइ आउनुभएका प्रतिनिधिले देखाउनु भएको प्रस्तावित प्लान अनुसार प्रस्तावित सडकको अधिकार क्षेत्रभित्र पर्ने जग्गाहरुको तपशिल बमोजिम रेकर्ड तयार गरि पठाईएको व्यहोरा अनुरोध छ ।

क.स	जिल्ला	गा.वि.स.। न.पा.	वडा नं. । नक्सा नं.	कि.नं.	क्षे.फ.	लगत कट्टा हुने क्षे.फ.	कैफियत
१	तनहुँ	गुणादी हाल व्या.न.पा.	२।क ५	५७२	०-६-३-२	०-३-०-१	
२	,,	,,	,,	६४८	०-६-३-३	०-१-२-१	
३	,,	,,	,,	६४९	०-६-३-३	०-०-०-३	
४	,,	,,	,,	१२०३	०-६-३-१	०-२-३-१	

८।५।२०१८

नि. कार्यालय प्रमुख

For Reference Only

APPENDIX 2: CALCULATION LOSS OF PERCENTAGE FROM TOTAL LANDS HOLDING

Kaski District

S.N	Land Owners Name	VDC Name	Ward No.	Sheet No	Parcel No	Total land holding of HHs	Affected area (Sqm)	Loss %
1		Sisuwa	2	094-1166-2	1190	2776.25	101.35	3.65
2		Sisuwa	2	094-1166-2	3117	2625.22	101.35	3.86
3		Sisuwa	2	094-1166-2	4764	1285.78	103.33	8.04
4		Sisuwa	2	094-1166-2	541	1713.05	85.45	4.99
5		Sisuwa	2	094-1166-2	2192	565.66	53.65	9.48
6		Sisuwa	2	094-1166-2	4127	557.71	51.66	9.26
7		Sisuwa	2	094-1166-2	2199	610.01	49.68	8.14
8		Sisuwa	2	094-1166-2	2200	633.86	53.65	8.46
9		Sisuwa	2	094-1166-2	6546	1707.09	111.28	6.52
10		Sisuwa	2	094-1166-2	2985	1633.56	95.38	5.84
11		Sisuwa	2	094-1166-2	9077	790.78	65.57	8.29
12		Sisuwa	2	094-1166-2	5254	1500.40	93.4	6.23
13		Sisuwa	2	094-1166-2	2346	897.45	71.54	7.97
14		Sisuwa	2	094-1166-2	5694	998.75	99.36	9.95
15		Sisuwa	2	094-1166-2	4262	1565.99	113.27	7.23
16		Sisuwa	2	094-1166-2	4270	1565.99	109.29	6.98
17		Sisuwa	2	094-1166-2	4266	1760.74	109.29	6.21
18		Sisuwa	2	094-1166-2	2855	1695.16	75.51	4.45
19		Sisuwa	2	094-1166-2	1199	1897.86	61.6	3.25
20		Sisuwa	2	094-1166-2	2829	1571.95	73.52	4.68
21		Sisuwa	2	094-1166-2	10513	1192.13	107.31	9.00
22		Sisuwa	2	094-1166-2	10891	0.00	67.57	0.00
23		Sisuwa	2	094-1166-2	9661	467.01	19.87	4.25
24		Sisuwa	2	094-1166-4	5417	1246.03	3.97	0.32
25		Sisuwa	2	094-1166-4	5332	1269.88	11.92	0.94
26		Sisuwa	2	094-1166-4	5568	1872.03	27.82	1.49
27		Sisuwa	2	094-1166-4		0.00	17.88	0.00
28		Sisuwa	2	094-1166-4	5689	1025.45	19.87	1.94
29		Sisuwa	2	094-1166-4	2775	390.78	31.97	8.18
30		Sisuwa	2	094-1166-4	2770	1410.97	5.96	0.42
31		Sisuwa	2	094-1166-4	4576	858.51	31.79	3.70
32		Sisuwa	2	094-1166-4	7609	725.20	71.54	9.86
33		Sisuwa	2	094-1166-4	3003	811.29	79.49	9.80
34		Sisuwa	2	094-1166-4	11264	597.45	53.65	8.98
35		Sisuwa	2	094-1166-4	8727	699.44	61.6	8.81
36		Sisuwa	2	094-1166-4	3909	770.27	53.65	6.97
37		Sisuwa	2	094-1166-4	1868	0.00	39.74	0.00
38		Sisuwa	2	094-1166-4	9015	973.60	95.38	9.92
39		Sisuwa	2	094-1166-4	1188	543.08	39.74	7.32
40		Sisuwa	2	094-1166-4	4701	622.57	57.63	9.26
41		Sisuwa	2	094-1166-4	4734	614.62	55.64	9.05
42		Sisuwa	2	094-1166-4	4732	906.20	11.92	1.32

For Reference Only

43		Sisuwa	2	094-1167-1	6035	1446.75	13.91	0.96

For Reference Only

S.N	Land Owners Name	VDC Name	Ward No.	Sheet No	Parcel No	Total land holding of HHs	Affected area (Sqm)	Loss %
44		Sisuwa	2	094-1167-1	6039	1500.40	29.8	1.99
45		Sisuwa	2	094-1167-1	6568	508.75	31.79	6.25
46		Sisuwa	2	094-1167-1	2579	1689.20	27.82	1.65
47		Sisuwa	2	094-1167-1	10901	1033.40	29.8	2.88
48		Sisuwa	2	094-1167-1	7439	1564.01	29.8	1.91
49		Sisuwa	2	094-1167-1	7567	127.82	11.92	9.33
50		Sisuwa	2	094-1167-1	3955	608.75	55.64	9.14
51		Sisuwa	2	094-1167-1	11332	278.22	21.85	7.85
52		Sisuwa	2	094-1167-1	8890	515.34	43.71	8.48
53		Sisuwa	2	094-1167-1	10869	1740.87	61.6	3.54
54		Sisuwa	2	094-1167-1	7282	961.84	59.61	6.20
55		Sisuwa	2	094-1167-1	6017	906.20	27.82	3.07
56		Sisuwa	2	094-1167-1	6020	890.30	27.82	3.12
57		Sisuwa	2	094-1167-1	3954	1707.09	93.4	5.47
58		Sisuwa	2	094-1167-1	2344	1569.97	79.49	5.06
59		Sisuwa	2	094-1167-1	6024	1701.13	89.42	5.26
60		Sisuwa	2	094-1167-1	8932	1581.89	93.4	5.90
61		Sisuwa	2	094-1167-1	2208	729.33	33.78	4.63
62		Sisuwa	2	094-1167-1	2365	518.60	37.75	7.28
63		Sisuwa	2	094-1167-1	2254	643.08	79.49	.94
64		Sisuwa	2	094-1167-1	11361	804.85	59.61	7.41
65		Sisuwa	2	094-1167-1	665	1834.27	41.73	2.28
66		Sisuwa	2	094-1167-1	2770	608.66	43.71	7.18
67		Sisuwa	2	094-1167-1	672	1577.92	23.84	1.51
68		Sisuwa	2	094-1167-1	1883	508.75	3.97	0.78
69		Rupakot	1	094-1327	5352	3989.84	373.6	9.36
70		Rupakot	1	094-1327	5358	1073.14	79.49	7.41
71		Rupakot	1	094-1327	5354	2368.86	71.54	3.02
72		Rupakot	1	094-1327	1433	14310.55	325.9	2.28
73		Rupakot	1	094-1327	5118	188.79	5.96	3.16
74		Chinedaanda	1	094-0963-3	212	5946.58	610.08	8.46
75		Chinedaanda	1	094-0963-3	213	3946.98	39.74	1.01
76		Chinedaanda	1	094-0963-3	209	3946.11	319.94	8.11
77		Chinedaanda	1	094-0963-3	8657	4246.56	522.64	8.24
78		Chinedaanda	1	094-0963-3	4715	4387.52	387.51	7.23
79		Chinedaanda	1	094-0963-3	4714	2726.57	174.87	6.41
80		Chinedaanda	1	094-0963-3	905	3655.42	784.96	6.56
81		Chinedaanda	1	094-0963-3	4348	2690.14	222.57	8.27
82		Chinedaanda	1	094-0963-3	4349	3690.14	204.68	6.11
83		Chinedaanda	1	094-0963-3	4350	1239.11	123.2	5.12
84		Chinedaanda	1	094-0963-3	4345	2960.17	125.19	4.23
85		Chinedaanda	1	094-0963-3	4344	2960.78	7.94	0.27
86		Chinedaanda	1	094-0963-3	16079	1949.76	349.75	6.83
87		Chinedaanda	1	094-0963-3	16080	3920.67	520.66	6.83
88		Chinedaanda	1	094-0963-3	2250	1669.10	131.15	7.86

For Reference Only

S.N	Land Owners Name	VDC Name	Ward No.	Sheet No	Parcel No	Total land holding of HHs	Affected area (Sqm)	Loss %
89		Chinedaanda	1	094-0963-3	2418	1669.55	25.83	1.55
90		Chinedaanda	1	094-0963-3	16336	239.11	21.85	9.14
91		Chinedaanda	1	094-0963-3	6207	190.78	7.94	4.16
							9234.51	

Loss of Affected Land in Tanahu District

S.N	Land Owner Name	VDCs	Ward No	Sheet No	Parcel No	Total Land Holding in HHs	Area to be required (Sqm)	% Loss of total land holding
1		Sthan Chowk	3	Ja	307	1392.76	182.82	5.33
2		Sthan Chowk	3	Ja	309	371.54	31.79	9.53
3		Sthan Chowk	3	Ja	311	501.35	35.77	8.87
4		Sthan Chowk	3	Ja	243	476.86	51.66	8.71
5		Sthan Chowk	3	Ja	244	678.85	41.73	6.15
6		Sthan Chowk	3	Ja	130	414.62	35.77	8.63
7		Sthan Chowk	3	Ja	403	518.59	49.68	9.58
8		Sthan Chowk	3	Ja	404	418.59	31.79	7.59
9		Sthan Chowk	3	Ja	366	681.55	65.57	9.62
10		Sthan Chowk	3	Ja	365	606.03	59.61	9.84
11		Sthan Chowk	3	Ja	317	399.77	35.77	9.00
12		Sthan Chowk	3	Ja	319	392.76	31.79	8.09
13		Sthan Chowk	3	Ja	321	424.56	25.83	6.08
14		Sthan Chowk	3	Ja	323	224.56	21.85	9.73
15		Sthan Chowk	3	Ja	410	204.68	9.93	4.85
16		Sthan Chowk	3	Ja	409	204.68	5.96	2.91
17		Uden Dhunga	1	Nga	971	188.78	7.94	4.21
18		Uden Dhunga	1	Nga	1032	174.8785	7.94	4.54
19		Uden Dhunga	1	Nga	1031	174.87	7.94	4.54
20		Uden Dhunga	1	Nga	515	454.36	41.73	9.18
21		Uden Dhunga	1	Nga	746	369.62	7.94	2.15
22		Uden Dhunga	1	Nga	1409	967.00	95.38	9.86
23		Uden Dhunga	1	Nga	1408	1282.35	117.24	9.14
24		Uden Dhunga	1	Nga	704	378.85	35.77	6.83
25		Uden Dhunga	1	Nga	705	1178.85	41.73	3.54
26		Uden Dhunga	1	Nga	669	955.08	85.57	8.96
27		Uden Dhunga	1	Nga	671	676.22	55.64	8.14
28		Uden Dhunga	1	Nga	673	291.41	23.84	8.18
29		Uden Dhunga	1	Nga	377	201.35	15.89	7.89
30		Uden Dhunga	1	Nga	562	131.79	5.96	4.52
31		Uden Dhunga	1	Nga	563	139.74	5.96	4.26
32		Uden Dhunga	1	Nga	812	1327.50	73.52	5.54
33		Uden Dhunga	5	Cha	423	91.41	87.43	6.65
34		Chang	4	Kha	168	1182.44	79.49	6.72

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35		Chang	5	Cha	210	282.19	25.83	9.15
36		Chang	5	Ka	211	472.25	39.74	8.41

For Reference Only

S.N	Land Owner Name	VDCs	Ward No	Sheet No	Par-cel No	Total Land Holding in HHs	Area to be re-quired (Sqm)	% Loss of total land holding
37		Chang	5	Ka	212	4998.61	534.57	10.61
38		Chang	5	Ka	156	974.87	158.98	8.17
39		Gudadi	2	Ka	334	21605.73	310.01	7.31
40		Gudadi	2	Ka	335	2091.90	206.67	9.88
41		Gudadi	2	Ka	298	1354.36	127.18	9.39
42		Gudadi	2	Ka	1130	355.64	31.79	7.42
43		Gudadi	2	Ka	809	508.74	35.79	7.03

Loss of affected land in Nala bridges at Tanahu district

S.N	Land Owner Name	VDCs	Ward No	Sheet No	Par-cel No	Total Land Holding in HHs	Area to be re-quired (Sqm)	% Loss of total land hold-ing
1		Maibal	4	Kha	337	1476.86	63.58	4.31
2		Maibal	4	Kha	338	1678.85	71.52	4.26
3		Maibal	4	Kha	339	1414.62	71.52	5.06
4		Maibal	4	Kha	340	1518.59	71.52	4.71
5		Maibal	4	Kha	341	1418.59	71.52	5.04
6		Maibal	4	Kha	512	1681.55	71.52	4.25

Loss of affected land at Madi bridges at Tanahu district

S.N	Land Owner Name	VDCs	Ward No	Sheet No	Par-cel No	Total Land Holding in HHs	Area to be re-quired (Sqm)	% Loss of total land hold-ing
1		Gudadi	2	Ka	572	1218.59	97.37	7.99
2		Gudadi	2	Ka	648	1220.58	69.68	5.71
3		Gudadi	2	Ka	649	220.58	5.96	2.70
4		Gudadi	2	Ka	1203	1216.61	89.42	7.35

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APPENDIX 3: LIST OF AFFECTED STRUCTURES

S.N	HHs no.	House Owner Name	Chainage	Address	Side	Structure Type	Roof types	Flat No	Length (L)	Breath (B)	Wall Types	Present Use	Affected	Construction Year	Distance from CL meter	Total area of structure	Affected structure area (Sqm)	Affected %	Categories
1	68		9+110	Abukhaireni 2 Dhaptar	R	1	2	1	7	3.5	1	1	2	2030	5.5	24.5	14	57.1	
2	69		9+130	Abukhaireni 2 Dhaptar	R	1	2	1	6.5	4.1	1	3	2	2038	7	26.65	10.25	38.5	
3	70		9+150	Abukhaireni 2 Dhaptar	R	1	2	1	7	3.8	9	3	2	2035	7	26.6	9.5	35.7	
4	71		9+167	Abukhaireni 2 Dhaptar	R	1	2	1	10	5	9	3	2	2068	7	50	12.5	25	
5	72		9+260	Abukhaireni 2 Dhaptar	R	1	2	1	7	5	1+9	4	2	2045	7	35	12.5	35.7	
6	73		9+268	Abukhaireni 2 Dhaptar	R	1	2	2	7	5.2	9	3	2	2055	7	72.8	26	35.7	
7	74		9+980	Abukhaireni 2, Narighat	L	1	2	1	6.3	5.1	2	1	2	2057	6	32.13	17.85	55.6	
8	75		9+990	Abukhaireni 2 Narighat	L	1	2	1	7.7	6	9	1	2	2065	6.5	46.2	18	39	BPL
9	76		10+880	Abukhaireni 2 Khanikhola	L	1	2	1	5.3	4.3	2	4	2	2040	5.5	22.79	17.2	75.5	
10	77		10+887	Abukhaireni 2 Khanikhola	L	1	2	1	5.3	4	2	1	2	2040	5.5	21.2	16	75.5	
11	78		10+895	Abukhaireni 2 Khanikhola	L	1	2	1	7	5.3	2	1	2	2045	5.5	37.1	21.2	57.1	
12	79		10+903	Abukhaireni 2 Khanikhola	L	1	2	1	9.8	7	2	1	2	2045	5.5	68.6	28	40.8	
13	80		10+915	Abukhaireni 2 Khanikhola	L	1	2	1	10	9.8	2	1	2	2045	5.5	98	39.2	40	
14	81		10+960	Abukhaireni 2 Khanikhola	L	1	3	2	7.7	6.7	2	3	2	2044	5	103.2	60.3	58.4	
15	82		10+968	Abukhaireni 2Khanikhola	L	1	3	1	7	5.7	2	1	2	2044	5	39.9	25.65	64.3	
16	83		10+975	Abukhaireni 2 Khanikhola	L	1	3	1	7.5	5.2	4	4	2	2050	5	39	23.4	60	
17	84		10+985	Abukhaireni 2 Khanikhola	L	1	3	2	9	7.2	4	3	2	2050	5	129.6	64.8	50	BPL
18	85		10+995	Abukhaireni 2 Khanikhola	L	1	2	1	9	4	9	4	2	2057	5	36	18	50	
19	86		11+010	Abukhaireni 2 Khanikhola	L	1	2	1	9.6	4.5	9	1	2	2064	5	43.2	20.25	46.9	
20	87		11+020	Abukhaireni 2 Khanikhola	L	1	2	1	6.7	4.6	9	1	2	2064	5	30.82	20.7	67.2	
21	88		11+027	Abukhaireni 2 Khanikhola	L	1	2	1	10	3.5	9	1	2	2056	5	35	15.75	45	
22	89		11+040	Abukhaireni 2 Khanikhola	L	1	2	1	6.5	6.2	2	4	2	2040	5	40.3	27.9	69.2	
23	90		11+047	Abukhaireni 2, Khanikhola	L	1	2	1	5.7	4.5	2	1	2	2040	5	25.65	20.25	78.9	
24	91		11+080	Abukhaireni 2 Khanikhola	R	1	3	1	8.5	6.2	4	1	2	2052	6	52.7	21.7	41.2	
25	92		11+115	Abukhaireni 2 Khanikhola	R	1	2	2	9.8	6.3	9	1	2	2052	5	123.5	56.7	45.9	
26	94		11+185	Abukhaireni 2 Khanikhola	R	1	2	1	5	4.5	1	1	2	2050	6	22.5	15.75	70	
27	95		11+200	Abukhaireni 2 Khanikhola	R	1	2	1	10.8	10	2	3	2	2055	6	108	35	32.4	
28	96		11+212	Abukhaireni 2, Khanikhola	R	1	2	2	13.8	5.5	4	3	2	2050	6	151.8	38.5	25.4	
29	97		11+625	Abukhaireni 2 Khanikhola	R	1	2	1	7.3	5.5	9	3	2	2063	6	40.15	19.25	47.9	
30	98		11+635	Abukhaireni 2 Khanikhola	R	1	2	1	7	4.5	2	1	2	2060	6	31.5	15.75	50	
31	99		11+725	Abukhaireni 2Khanikhola	R	1	2	1	11.3	3.7	1	1	2	2065	6	41.81	12.95	31	
32	100		12+430	Abukhaireni 2 Marki Chowk	L	1	2	2	8.4	5	2	3	2	2041	7	84	25	29.8	

For reference Only

S.N	HHs no.	House Owner Name	Chainage	Address	Side	Structure Type	Roof types	Flat No	Length (L)	Breath (B)	Wall Types	Present Use	Affected	Construction Year	Distance from CL meter	Total area of structure	Affected structure area (Sqm)	Affected %	Categories
33	101		12+440	Abukhaireni 2 Marki Chowk	L	1	2	1	9	5.6	3	1	2	2057	6	50.4	19.6	38.9	
34	102		12+455	Abukhaireni 2 Marki Chowk	L	1	2	1	4.5	3.8	2	1	2	2033	6.5	17.1	11.4	66.7	
35	103		12+510	Abukhaireni 2 Marki Chowk	L	1	2	1	5.6	5.1	1	3	2	2043	6.5	28.56	15.3	53.6	
36	104		12+750	Abukhaireni 2Marki Chowk	L	1	2	1	5.6	4.2	9	3	2	2061	6	23.52	14.7	62.5	
37	105		12+775	Abukhaireni 2Marki Chowk	R	1	2	2	8.6	8.1	2	4	2	2040	8	139.3	24.3	17.4	
38	106		12+785	Abukhaireni 2 Marki Chowk	R	1	2	2	7.3	5.1	9	3	2	2053	8	74.46	15.3	20.5	
39	107		12+950	Abukhaireni 2 Marki Chowk	L	1	2	1	7.2	3.7	1	1	2	2070	6	26.64	12.95	48.6	
40	108		12+950	Abukhaireni 2 Marki Chowk	R	7	4	1	7	4	9	1	2	2040	5.5	28	16	57.1	
41	109		12+958	Abukhaireni 2 Marki Chowk	R	1	2	1	3.3	2.8	9	1	2	2060	5.5	9.24	9.24	100	
42	110		12+962	Abukhaireni2 Marki Chowk	R	1	2	1	8.5	4.5	6	1	2	2046	5.5	38.25	18	47.1	
43	111		12+975	Abukhaireni 2 Marki Chowk	R	1	2	1	8	2.5	9	1	2	2038	5.5	20	10	50	
44	112		12+990	Abukhaireni 2 Marki Chowk	R	1	2	1	6.7	4.9	9	1	2	2038	5.5	32.83	19.6	59.7	
45	113		12+996	Abukhaireni 2 Marki Chowk	R	1	2	1	6	4	5	1	2	2038	5.5	24	16	66.7	
46	114		13+003	Abukhaireni 2 Marki Chowk	R	1	2	1	6	5	9	1	2	2038	5.5	30	20	66.7	
47	115		13+010	Abukhaireni 2 Marki Chowk	R	1	2	2	7.4	4.3	9	1	2	2040	5.5	63.64	34.4	54.1	
48	116		13+017	Abukhaireni 2 Marki Chowk	R	1	2	2	5.4	5	9	1	2	2040	5.5	54	40	74.1	
49	117		13+925	Abukhaireni 2 Yeklephant	L	1	2	2	5	4	1	1	2	2038	8	40	12	30	SFHs
50	118		14+125	Abukhaireni 2 Yeklephant	L	1	2	1	7.4	6.5	2	1	2	2050	8	48.1	9.75	20.3	
51	119		14+160	Abukhaireni 2 Yeklephant	L	1	2	2	7.7	7.4	2	1	2	2048	8	114	22.2	19.5	
52	120		14+250	Abukhaireni 2 Yeklephant	L	1	2	1	7	5.3	2	1	2	2050	8	37.1	7.95	21.4	

For Reference Only

S.N	HHs no.	House Owner Name	Chainage	Address	Side	Structure Type	Roof types	Flat No	Length (L)	Breath (B)	Wall Types	Present Use	Affected	Construction Year	Distance from CL meter	Total area of structure	Affected structure area (Sqm)	Affected %	Categories
53	121		14+340	Abukhaireni 2 Yeklephant	L	1	2	1	9.2	3.5	1	1	2	2048	7.5	32.2	7	21.7	
54	122		15+415	Abukhaireni 2 Yeklephant	L	1	2	2	5.3	4.3	2	3	2	2045	7.5	45.58	17.2	37.7	SFHs+B PL
55	123		15+485	Abukhaireni 2 Yeklephant	L	1	B+ C	1	8.7	7	2	1	2	2045	8	60.9	10.5	17.2	
56	124		15+550	Abukhaireni 2 Yeklephant	L	1	2	2	5.7	4.6	2	3	2	2063	7	52.44	23	43.9	
57	125		15+557	Abukhaireni 2 Yeklephant	L	1	2	1	6.2	4.9	3	3	2	2063	7	30.38	12.25	40.3	
58	126		15+565	Abukhaireni 2 Yeklephant	L	1	2	2	6.2	5.5	2	3	2	2050	7	68.2	27.5	40.3	
59	127		15+572	Abukhaireni 2 Yeklephant	L	1	2	2	4.2	3.6	4	3	2	2057	7	30.24	18	59.5	
60	128		15+578	Abukhaireni 2 Yeklephant	L	1	3	2	5	4.6	4	3	2	2048	7	46	23	50	
61	129		15+560	Abukhaireni 2 Yeklephant	R	1	3	1	6.3	5.2	4	4	2		8	32.76	7.8	23.8	
62	130		15+568	Abukhaireni 2 Yeklephant	R	1	2	1	5.2	5.1	4	3	2	2057	7.5	26.52	10.2	38.5	
63	131		15+575	Abukhaireni 2 Yeklephant	R	1	3	1	6	4.6	4	3	2	2058	8	27.6	6.9	25	
64	132		15+582	Abukhaireni 2 Yeklephant	R	1	2	2	8.1	7.7	5	3	2	2035	7.2	124.7	35.42	28.4	
65	133		15+590	Abukhaireni 2 Yeklephant	R	1	2	2	6	3.6	5	1	2	2036	7.35	43.2	15.48	35.8	
66	134		15+597	Abukhaireni 2 Yeklephant	R	1	2	2	6.6	3.5	5	1	2	2036	7.4	46.2	14.7	31.8	
67	135		15+630	Abukhaireni 1 Baradi Bazar	L	1	2	2	4.8	4	5	1	2	2035	7.8	38.4	13.6	35.4	
68	136		15+635	Abukhaireni 1 Baradi Bazar	L	1	4	1	4.5	3	5	1	2	2040	8	13.5	4.5	33.3	SFHs
69	137		15+690	Abukhaireni 1 Baradi Bazar	L	1	4	2	7.7	6.2	2	4	2	2050	7.9	95.48	19.84	20.8	
70	138		15+630	Abukhaireni 1 Baradi Bazar	R	1	2	2	5	4.2	4	4	2	2036	7.5	42	16.8	40	
71	139		15+635	Abukhaireni 1 Baradi Bazar	R	1	2	2	8.6	6	1	1	2	2036	7	103.2	30	29.1	
72	140		15+645	Abukhaireni 1 Baradi Bazar	R	1	1	2	6.6	5.6	2	4	2	2036	7.8	73.92	19.04	25.8	
73	141		15+652	Abukhaireni 1 Baradi Bazar	R	1	2	2	6	4	1+5	1	2	2040	8	48	12	25	
74	142		15+660	Abukhaireni 1 Baradi Bazar	R	1	2	1	8.1	6.1	4	1	2	2057	7.25	49.41	13.73	27.8	
75	143		15+670	Abukhaireni 1 Baradi Bazar	R	5	2	1	1.5	1.5	9		2	2066	7.5	2.25	2.25	100	
76	144		15+190	Abukhaireni 1 Baradi Bazar	L	1	2	1	5.3	3.3	9	3	2	2063	7.75	17.49	5.775	33	

For Reference Only

S.N	HHs no.	House Owner Name	Chainage	Address	Side	Structure Type	Roof types	Flat No	Length (L)	Breath (B)	Wall Types	Present Use	Affected	Construction Year	Distance from CL meter	Total area of structure	Affected structure area (Sqm)	Affected %	Categories
77	145		16+450	Abukhaireni 1 Baradi Bazar	L	1	2	1	7.2	7	9	1	2	2060	8.1	50.4	9.8	19.4	
78	146		16+460	Abukhaireni 1 Baradi Bazar	L	1	2	1	5.3	5	9	1	2	2060	7.9	26.5	8	30.2	
79	147		16+575	Abukhaireni 1 Baradi Bazar	R	1	2	1	6.7	5.1	1	6	2	2050	7	34.17	12.75	37.3	
80	148		16+615	Abukhaireni 1 Baradi Bazar	L	2	3	1	6.2	2.4	4	2	2	2061	8	14.88	3.6	24.2	
81	149		17+050	Abukhaireni 1 Baradi Bazar	L	2	2	1	30.8	4.5	4+6	4	2	2058	8	138.6	6.75	4.9	
82	150		17+450	Bandipur 5 Yampa	L	2	2	2	9	6.8	4	4	2	2050	7.9	122.4	21.76	17.8	
83	151		17+460	Bandipur 5 Yampa	L	1	2	1	7.3	3.5	4	3	2	2053	8	25.55	5.25	20.5	
84	152		17+470	Bandipur 5 Yampa	L	1	2	1	4	4	4	4	2	2055	6.2	16	13.2	82.5	
85	153		18+360	Bandipur 5 Yampa	R	2	2	1	5.8	3.7	9	2	2	2057	7	21.46	9.25	43.1	
86	154		18+875	Bandipur 5 Yampa	R	1	2	1	12	7.5	9	1	2	2053	7.5	90	15	16.7	
87	155		19+175	Bandipur 5 Dhawa	R	1	2	1	7.3	7	4	3	2	2060	7.5	51.1	14	27.4	
88	156		19+185	Bandipur 5 Dhawa	R	1	2	1	9.5	7	4	3	2	2056	7.5	66.5	14	21.1	
89	157		19+935	Bandipur 5 Gohore Chautara	R	1	2	1	10.8	5.2	9	3	2	2057	7.3	56.16	11.44	20.4	
90	158		19+947	Bandipur 5 Gohore Chautara	R	1	2	1	5.3	4.2	9	1	2	2056	7.3	22.26	9.24	41.5	
91	159		19+953	Bandipur 5 Gohore Chautara	R	1	2	1	5	4	9	3	2	2056	7.3	20	8.8	44	
92	160		19+960	Bandipur 5 Gohore Chautara	R	1	2	1	5.5	5.2	1	1	2	2056	7.5	28.6	10.4	36.4	
93	161		19+990	Bandipur 5 Gohore Chautara	R	1	2	1	11	6	9	3	2	2064	7.4	66	12.6	19.1	
94	162		20+002	Bandipur 5 Gohore Chautara	R	1	2	1	5.5	5.5	9	4	2		7.5	30.25	11	36.4	
95	163		20+010	Bandipur 5 Gohore Chautara	R	1	2	1	5	4.8	9	1	2	2056	7	24	12	50	
96	164		20+016	Bandipur 5 Gohore Chautara	R	1	2	1	7	4.8	9	3	2	2056	7.8	33.6	8.16	24.3	
97	165		19+960	Bandipur 5 Gohore Chautara	L	1	2	1	5.6	5.1	1	7	2	2055	7.2	28.56	11.73	41.1	

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S.N	HHs no.	House Owner Name	Chainage	Address	Side	Structure Type	Roof types	Flat No	Length (L)	Breath (B)	Wall Types	Present Use	Affected	Construction Year	Distance from CL meter	Total area of structure	Affected structure area (Sqm)	Affected %	Categories
98	166		19+967	Bandipur 5 Gohore Chautara	L	1	2	1	7	5.4	9	4	2	2060	7.3	37.8	11.88	31.4	
99	167		19+975	Bandipur 5 Gohore Chautara	L	1	2	1	5	4	9	1	2	2055	7	20	10	50	
100	168		19+980	Bandipur 5 Gohore Chautara	L	1	2	1	4.6	4.3	1	3	2	2053	7	19.78	10.75	54.3	
101	169		19+985	Bandipur 5 Gohore Chautara	L	1	2	1	10.5	5.6	9	1	2	2057	7	58.8	14	23.8	
102	170		20+005	Bandipur 5 Gohore Chautara	L	1	2	1	4.1	4.1	9	1	2	2057	7	16.81	10.25	61	
103	171		20+010	Bandipur 5 Gohore Chautara	L	1	2	1	4.5	3.8	9	1	2	2056	7	17.1	9.5	55.6	
104	172		20+415	Bandipur 5 Nayapool	L	1	1	2	4.9	4.3	1	1	2	2050	7.2	42.14	19.78	46.9	
105	173		21+350	Bandipur 5 Nayapool	L	1	2	1	6.1	4	9	1	2	2040	8	24.4	6	24.6	
106	174		21+362	Bandipur 5 Nayapool	L	1	1	2	8.3	5.8	1	4	2	2032	8	96.28	17.4	18.1	
107	175		21+371	Bandipur 5 Nayapool	L	1	2	2	8.7	5.2	4	3	2	2035	8	90.48	15.6	17.2	
108	176		21+380	Bandipur 5 Nayapool	L	1	2	2	12.3	10.1	4	3	2	2031	8	248.5	30.3	12.2	
109	177		21+395	Bandipur 5 Nayapool	L	1	2	2	8	5.4	4	3	2	2031	8	86.4	16.2	18.8	
110	178		21+410	Bandipur 5 Nayapool	L	1	2	2	6.2	5.2	1+5	1	2	2030	8	64.48	15.6	24.2	
111	179		21+418	Bandipur 5 Nayapool	L	1	2	2	6.3	5.5	2	1	2	2035	8	69.3	16.5	23.8	
112	180		21+425	Bandipur 5 Nayapool	L	1	2	2	5.1	5.6	7+6	1	2	2040	8	57.12	16.8	29.4	
113	181		21+680	Bandipur 4, Bimal Nagar	L	1	2	3	4.7	4.1	2	1	2	2055	8	57.81	18.45	31.9	
114	182		21+700	Bandipur 4 Bimal Nagar	L	1	2	2	9.3	4.3	4	1	2	2056	8	79.98	12.9	16.1	
115	183		21+780	Bandipur 4 Bimal Nagar	R	1	2	1	4	4.7	1	6	2	2058	8	18.8	7.05	37.5	
116	184		21+800	Bandipur 4 Bimal Nagar	R	1	2	2	8.4	7.8	1	1	2	2030	8	131	23.4	17.9	
117	185		21+820	Bandipur 4 Bimal Nagar	R	1	2	2	4.9	3	2	1	2	2059	8	29.4	9	30.6	
118	186		21+825	Bandipur 4 Bimal Nagar	R	1	2	2	5	4	4	1	2	2050	8	40	12	30	
119	187		21+850	Bandipur 6 Bimal Nagar	R	1	2	2	6	5.3	4	1	2	2057	8	63.6	15.9	25	
120	188		21+858	Bandipur 4 Thulo Dunga	R	1	2	1	5	4	1	1	2	2055	8	20	6	30	
121	189		22+880	Bandipur 4 Thulo Dunga	R	1	2	1	6.5	5	1	3	2	2060	7.75	32.5	8.75	26.9	
122	190		23+010	Bandipur 4 Thulo Dunga	R	1	2	2	6.9	5.7	4	1	2	2053	7	78.66	28.5	36.2	
123	191		23+020	Bandipur 4 Dumre	R	1	2	1	7	3.5	1	1	2	2040	6.75	24.5	9.625	39.3	
124	192		23+055	Bandipur 4 Dumre	R	1	2	1	6.5	5.6	9	1	2	2069	7.25	36.4	12.6	34.6	
125	193		23+062	Bandipur 4 Dumre	R	1	2	1	5.6	5.1	9	1	2	2062	7	28.56	12.75	44.6	
126	194		23+075	Bandipur 4 Dumre	R	1	2	1	6.8	6.5	4	3	2	2055	6.5	44.2	19.5	44.1	
127	195		23+082	Bandipur 4 Dumre	R	1	2	2	6.8	4.7	1+4	1	2	2050	7.1	63.92	22.56	35.3	

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128	196		23+090	Bandipur 4 Dumre	R	1	2	2	7.1	4.5	4	3	2	2050	6.9	63.9	23.4	36.6	
129	197		23+098	Bandipur 4 Dumre	R	God am ghar	2	1	4.5	3	9	khali	2	2057	7	13.5	7.5	55.6	Empty
130	198		23+080	Bandipur 4 Dumre	L	1	2	1	8.6	5	2	1	2	2060	7	43	12.5	29.1	
131	199		23+105	Bandipur 4 Dumre	R	1	2	2	6	4	4	1	2	2055	7	48	20	41.7	
132	200		23+112	Bandipur 4 Dumre	R	1	2	2	5.1	4.4	2	3	2	2036	7	44.88	22	49	
133	201		23+120	Bandipur 4 Dumre	R	1	2	1	5.5	4.8	4+8	1	2	2040	6.5	26.4	14.4	54.5	
134	202		23+126	Bandipur 4 Dumre	R	1	2	1	3.7	8.1	4	1	2	2028	6.5	29.97	24.3	81.1	
135	203		23+130	Bandipur 4 Dumre	R	1	1	2	6	8.1	4	1	2	2030	6.5	97.2	48.6	50	
136	204		23+137	Bandipur 4 Dumre	R	1	1	3	6.7	4.1	4	4	2	2032	6.5	82.41	36.9	44.8	
137	205		23+143	Bandipur 4 Dumre	R	1	2	2	5.2	4	3	1	2	2030	6.5	41.6	24	57.7	
138	206		23+150	Bandipur 4 Dumre	R	1	2	1	6	4	1	1	2		6.5	24	12	50	
139	207		23+157	Bandipur 4 Dumre	R	1	2	1	10.6	3.1	1	1	2	2028	6.5	32.86	9.3	28.3	
140	208		23+170	Bandipur 4 Dumre	R	1	2	1	5.2	3.5	8,4	1	2	2055	6.5	18.2	10.5	57.7	
141	209		23+176	Bandipur 4 Dumre	R	15	2	1	6	4.5	5	1	2	2055	6.5	27	13.5	50	
142	210		23+185	Bandipur 4 Dumre	R	1	2	1	6	6	4	1	2	2038	6.5	36	18	50	
143	211		23+192	Bandipur 4 Dumre	R	1	2	1	6.1	5	4	1	2	2045	6.75	30.5	13.75	45.1	
144	212		23+198	Bandipur 4 Dumre	R	1	2	1	5.3	4.3	4	1	2	2048	6.75	22.79	11.83	51.9	
145	213		23+205	Bandipur 4 Dumre	R	1	2	1	4	3	5	1	2	2057	6.75	12	8.25	68.8	
146	214		23+210	Bandipur 4 Dumre	R	1	2	2	5.3	5	4	3	2	2057	6.75	53	27.5	51.9	
147	215		23+215	Bandipur 4 Dumre	R	7	2	1	5	5	5	khali	2	2057	6.75	25	13.75	55	
148	216		23+220	Bandipur 4 Dumre	R	1	2	1	6.2	3.3	9	1	2	2057	6.75	20.46	9.075	44.4	
149	217		23+230	Bandipur 4 Dumre	R	1	2	1	5	3	5	1	2	2057	6.75	15	8.25	55	
150	218		23+330	Bandipur 4 Dumre	R	1	2	2	5.2	4	2+8	1	2	2035	6.75	41.6	22	52.9	
151	219		23+336	Bandipur 4 Dumre	R	1	2	2	6.5	5.5	2	4	2	2035	6.75	71.5	30.25	42.3	
152	220		23+345	Bandipur 4 Dumre	R	1	2	1	5.7	5.5	4+8	1	2	2030	6.75	31.35	15.13	48.2	
153	221		23+352	Bandipur 4 Dumre	R	1	3	2	9	5.6	4	1	2	2055	6.75	100.8	30.8	30.6	
154	222		23+362	Bandipur 4 Dumre	R	1	3	3	10.1	5.5	4	2	2	2053	6.75	166.7	45.38	27.2	
155	223		23+373	Bandipur 4 Dumre	R	1	2	1	5.2	5.6	5	1	2	2056	6.75	29.12	15.4	52.9	
156	224		23+380	Bandipur 4 Dumre	R	1	2	3	12	2.8	1	1	2	2041	6.75	100.8	23.1	22.9	
157	225		23+385	Bandipur 4 Dumre	R	1	2	3	12	2.8	1	1	2	2041	6.75	100.8	23.1	22.9	
158	226		23+390	Bandipur 4 Dumre	R	1	2	3	11	6.2	4	1	2	2057	6.75	204.6	51.15	25	
159	227		23+395	Bandipur 4 Dumre	R	1	2	1	7	4.8	5	4	2	2040	6.75	33.6	13.2	39.3	
160	229		23+417	Bandipur 4 Dumre	R	1	2	3	9.1	5.4	4	3	2	2040	7	147.4	147.4	100	

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161	230		23+427	Bandipur 4 Dumre	R	1	1	2	7.3	4.5	1	4	2	2041	7	65.7	65.7	100	
162	231		23+435	Bandipur 4 Dumre	R	1	2	2	7.7	5.5	5	4	2	2032	7	84.7	84	99.2	
163	232		23+443	Bandipur 4 Dumre	R	1	1	3	7.7	4.6	4	4	2	2032	7	106.3	106	99.8	
164	233		23+448	Bandipur 4 Dumre	R	1	1	3	10.2	5	8	4	2	2032	7	153	153	100	
165	234		23+460	Bandipur 4 Dumre	R	1	2	4	7.1	5.4	4	3	2	2032	10	153.4	153.4	100	SFHs
166	235		23+468	Bandipur 4 Dumre	R	1	2	5	9	5.8	4	4	2	2032	10	261	208.8	80	
167	236		23+478	Bandipur 4 Dumre	R	1	2	3	7	5.6	4	3	2	2032	10	117.6	117.6	100	
168	237		23+485	Bandipur 4 Dumre	R	1	2	3	7.2	5.2	4	1	2	2058	10	112.3	112.3	100	
169	238		23+493	Bandipur 4 Dumre	R	1	2	2	10	6.5	4	1	2	2060	10	130	130	100	
170	239		23+504	Bandipur 4 Dumre	R	1	2	2	5	4.7	4	4	2	2032	10	47	47	100	
171	240		23+510	Bandipur 4 Dumre	R	1	2	2	5.2	3.6	4	4	2	2032	10	37.44	37.44	100	
172	241		23+516	Bandipur 4 Dumre	R	1	2	2	7.3	4.2	4	4	2	2032	10	61.32	61.32	100	
173	242		23+525	Bandipur 4 Dumre	R	1	2	2	7.3	5.6	4	4	2	2032	10	81.76	81.76	100	
174	243		23+533	Bandipur 4 Dumre	R	1	2	3	12.4	6	4	3	2	2030	10	223.2	223.2	100	
175	244		23+546	Bandipur 4 Dumre	R	1	2	4	9.5	4.6	2	4	2	2045	10	174.8	87.4	50	
176	245		23+556	Bandipur 4 Dumre	R	1	3	3	13.6	8	4	4	2	2050	10	326.4	326.4	100	
177	246		23+570	Bandipur 4 Dumre	R	1	2	3	12	1.8	4	3	2	2051	10	64.8	64.8	100	
178	247		23+573	Bandipur 4 Dumre	R	1	2+	3	19.7	4.8	4	3	2	2060	10	283.7	208.8	73.6	
179	248		23+578	Bandipur 4 Dumre	R	1	2	5	15.4	4.6	4	3	2	2035	10	354.2	333.5	94.2	
180	249		23+583	Bandipur 4 Dumre	R	1	2	4	20.2	5.1	4	3	2	2035	10	412.1	295.8	71.8	
181	250		23+589	Bandipur 4 Dumre	R	1	2	3	14	7	4	3	2	2054	10	294	294	100	
182	251		23+596	Bandipur 4 Dumre	R	1	2	3	15.7	5.2	4	3	2	2055	10	244.9	226.2	92.4	
183	252		23+603	Bandipur 4 Dumre	R	1	2	2	23	5.7	4	3	2	2040	10	262.2	165.3	63	
184	253		23+610	Bandipur-1, Dumre	R	1	2	2	20	4.8	4	3	2	2030	10	192	139.2	72.5	
185	254		23+617	Bandipur-1, Dumre	R	1	2	2	11.5	4.9	4	3	2	2030	10	112.7	112.7	100	
186	255		23+624	Bandipur-1, Dumre	R	1	3	3	19.2	6.1	4	3	2	2056	10	351.4	265.4	75.5	
187	256		23+630	Bandipur-1, Dumre	R	1	1	2	20.3	4.6	8	3	2	2035	10	186.8	133.4	71.4	
188	257		23+635	Bandipur-1, Dumre	R	1	3	3	21	7	4	3	2	2064	10	441	304.5	69	
189	258		23+640	Bandipur-1, Dumre	R	1	3	3	21	3.5	4	3	2	2050	10	220.5	152.3	69	
190	259		23+644	Bandipur-1, Dumre	R	1	3	3	21	3.4	4	3	2	2050	10	214.2	147.9	69	
191	260		23+648	Bandipur-1, Dumre	R	1	3	3	19	6.5	4	3	2	2055	10	370.5	282.8	76.3	
192	261		23+655	Bandipur-1, Dumre	R	1	2	2	27	9.7	8,4	3	2	2028	10	523.8	281.3	53.7	
193	262		23+666	Bandipur-1, Dumre	R	1	3	4	16	9.7	4	3	2	2055	10	620.8	562.6	90.6	
194	263		23+671	Bandipur-1, Dumre	R	1	1	4	18.5	4.6	4	3	2		10	340.4	266.8	78.4	

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195	264		23+675	Bandipur-1, Dumre	R	1	3+	2	24	4	4	3	2		10	192	116	60.4	
196	265		23+680	Bandipur-1, Dumre	R	1	3	2.5	14.8	7.8	4	3	2	2063	16	288.6	165.8	57.4	
197	266		23+688	Bandipur-1, Dumre	R	1	3	3	14.8	10.5	4	3	2	2063	16	466.2	267.8	57.4	
198	267		23+698	Bandipur-1, Dumre	R	1	3	3	15	6.6	4	3	2	2063	16	297	168.3	56.7	
199	268		23+705	Bandipur-1, Dumre	R	1	3	3	15.2	9.6	4	3	2	2063	16	437.8	244.8	55.9	
200	269		23+715	Bandipur-1, Dumre	R	1	3	2	15.2	1.5	4	3	2	2063	16	45.6	25.5	55.9	
201	270		23+717	Bandipur-1, Dumre	R	1	3	2	15.2	2.3	4	3	2	2050	16	69.92	39.1	55.9	
202	271		23+720	Bandipur-1, Dumre	R	1	3	2	15.2	2.3	4	3	2	2060	16	69.92	39.1	55.9	
203	272		23+725	Bandipur-1, Dumre	R	1	3	4	14.2	5	4	3	2		16	284	170	59.9	
204	273		23+730	Bandipur-1, Dumre	R	1	3	4	14.2	5	4	3	2		16	284	170	59.9	
205	274		23+735	Bandipur-1, Dumre	R	1	3	3	13.5	9.1	4	3	2		16	368.6	232.1	63	
206	275		23+745	Bandipur-1, Dumre	R	1	3	4	20.2	3.6	4	3	2	2056	16	290.9	122.4	42.1	
207	276		23+749	Bandipur-1, Dumre	R	1	3	4	20.2	3.6	4	3	2	2056	16	290.9	122.4	42.1	
208	277		23+753	Bandipur-1, Dumre	R	1	3	4	20.2	13	4	3	2	2052	16	1050	442	42.1	
209	278		23+766	Bandipur-1, Dumre	R	1	2,3	4	23.6	15	4	3	2		16	1416	510	36	
210	279		23+786	Bandipur-1, Dumre	R	1	3	3	23.6	8.9	4	3	2	2055	16	630.1	227	36	
211	280		23+795	Bandipur-1, Dumre	R	1	3	2.5	23.6	5.5	4	3	2	2046	16	324.5	116.9	36	
212	281		23+801	Bandipur-1, Dumre	R	1	3	2	23.6	4.1	4	3	2	2047	16	193.5	69.7	36	
213	282		23+806	Bandipur-1, Dumre	R	1	3	1	9.2	5.7	4	2	2	2047	16	52.44	48.45	92.4	
214	283		23+813	Bandipur-1, Dumre	R	1	3	3	20	4.6	4	3	2		16	276	117.3	42.5	
215	284		23+818	Bandipur-1, Dumre	R	1	3	3	20	4.6	4	3	2		16	276	117.3	42.5	
216	285		23+823	Bandipur-1, Dumre	R	1	3	4	20	3	4	3	2	2060	16	240	102	42.5	
217	286		23+826	Bandipur-1, Dumre	R	1	3	3	17.8	4.5	4	3	2	2064	16	240.3	114.8	47.8	
218	287		23+831	Bandipur-1, Dumre	R	1	3	3	18.7	9.5	4	3	2	2064	16	533	242.3	45.5	
219	288		23+841	Bandipur-1, Dumre	R	1	3	2	10.7	9	4	3	2	2043	16	192.6	153	79.4	
220	289		23+851	Bandipur-1, Dumre	R	1	3	3	11.8	7.8	4	3	2	2048	16	276.1	198.9	72	
221	290		23+859	Bandipur-1, Dumre	R	1	3	3	9.8	7.9	4	3	2	2032	16	232.3	201.5	86.7	
222	291		23+867	Bandipur-1, Dumre	R	1	3	3	10	9.5	4	4	2		16	285	242.3	85	
223	292		23+877	Bandipur-1, Dumre	R	1	2	3	12.5	3.2	4	3	2	2053	16	120	81.6	68	
224	293		23+880	Bandipur-1, Dumre	R	1	3	3	8	6.9	4	3	2	2053	16	165.6	165.6	100	
225	294		23+887	Bandipur-1, Dumre	R	1	2	4	8.3	5.7	4	3	2	2048	16	189.2	189.2	100	
226	295		23+893	Bandipur-1, Dumre	R	1	3	3	14	3.4	4	3	2		16	142.8	86.7	60.7	
227	296		23+897	Bandipur-1, Dumre	R	1	3	3	14	3.4	4	3	2		16	142.8	86.7	60.7	
228	297		23+901	Bandipur-1, Dumre	R	1	2	3	9.7	4.7	4	3	2	2048	16	136.8	119.9	87.6	
229	298		23+906	Bandipur-1, Dumre	R	1	2	3	9.2	4.8	4	3	2	2050	16	132.5	132.5	100	

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230	299		23+911	Bandipur-1, Dumre	R	15	2	1	7	5	1	4	2	2050	16	35	35	100	
231	300		23+925	Bandipur-1, Dumre	R	1	2	2	7.2	5.9	3	3	2	2037	16	84.96	84.96	100	
232	301		23+435	Bandipur-1, Dumre	L	1	3	1	5.5	4.6	4	4	2	2065	7	25.3	25.3	100	
233	302		23+440	Bandipur-1, Dumre	L	1	3	1	7.2	5.1	4	4	2		7	36.72	36.72	100	
234	303		23+445	Bandipur-1, Dumre	L	1	2	3	7.2	5.5	4	3	2		7	118.8	118.8	100	
235	304		23+451	Bandipur-1, Dumre	L	1	2	3	8	7.1	4	3	2		7	170.4	170.4	100	
236	305		23+459	Bandipur-1, Dumre	L	1	2	3	8.6	5.3	4	3	2	2055	7	136.7	136.7	100	
237	306		23+465	Bandipur-1, Dumre	L	1	2	2	11.5	6.5	4	4	2	2040	7	149.5	150	100.3	
238	307		23+476	Bandipur-1, Dumre	L	1	1	2	10.3	5.3	4	3	2	2045	10	109.2	109.2	100	
239	308		23+482	Bandipur-1, Dumre	L	1	2	3	7.3	5.6	4	3	2	2045	10	122.6	122.6	100	
240	309		23+488	Bandipur-1, Dumre	L	1	1	2	6.2	4.2	8	3	2	2025	10	52.08	52.08	100	
241	310		23+493	Bandipur-1, Dumre	L	1	3+	3	11	7.9	4	3	2	2035	10	260.7	260.7	100	BPL
242	311		23+501	Bandipur-1, Dumre	L	1	2	2	5	4	4	3	2	2035	10	40	40	100	
243	312		23+505	Bandipur-1, Dumre	L	1	1	2	8	4.5	8	3	2	2035	10	72	72	100	
244	313		23+510	Bandipur-1, Dumre	L	1	2	3	10.3	6	4	3	2	2040	10	185.4	185.4	100	
245	314		23+516	Bandipur-1, Dumre	L	1	2	3	8	4.3	4	3	2	2050	10	103.2	103.2	100	
246	315		23+521	Bandipur-1, Dumre	L	1	2	3	8	3.4	4	3	2	2050	10	81.6	81.6	100	
247	316		23+525	Bandipur-1, Dumre	L	1	2	3	9	3.4	4	3	2	2051	10	91.8	91.8	100	
248	317		23+529	Bandipur-1, Dumre	L	1	3	3	12	3.7	4	3	2		10	133.2	133.2	100	
249	318		23+533	Bandipur-1, Dumre	L	1	2	4	12	9.8	4	3	2		10	470.4	470	99.9	
250	319		23+543	Bandipur-1, Dumre	L	1	1	3	8.9	7	4	3	2		10	186.9	186	99.5	
251	320		23+550	Bandipur-1, Dumre	L	1	2	3	9.7	9.2	4	3	2	2030	10	267.7	267	99.7	
252	321		23+560	Bandipur-1, Dumre	L	1	2	2	7	7	2	3	2		10	98	98	100	
253	322		23+567	Bandipur-1, Dumre	L	1	2	2	7.9	5	4	3	2		10	79	79	100	
254	323		23+572	Bandipur-1, Dumre	L	1	1	4	8.3	6.9	4	3	2		10	229.1	229	100	
255	324		23+579	Bandipur-1, Dumre	L	1	3	2	11.7	8.2	4	3	2	2067	10	191.9	191	99.5	
256	325		23+598	Bandipur-1, Dumre	L	1	1	3	7.6	5.4	4	3	2	2031	10	123.1	123	99.9	
257	326		23+605	Bandipur-1, Dumre	L	1	3	3	9.6	7.7	4	3	2	2057	10	221.8	221	99.7	
258	327		23+613	Bandipur-1, Dumre	L	1	2	3	9.6	7.2	3	3	2		10	207.4	207	99.8	
259	328		23+620	Bandipur-1, Dumre	L	1	2	3	13	5.3	4	3	2	2039	10	206.7	206	99.7	
260	329		23+626	Bandipur-1, Dumre	L	1	2	3	7	4.2	4	3	2	2052	10	88.2	88	99.8	
261	330		23+630	Bandipur-1, Dumre	L	1	2	3	17	5.8	4	3	2	2040	10	295.8	252.3	85.3	
262	331		23+636	Bandipur-1, Dumre	L	1	2	3	15	8.2	4	3	2		10	369	356.7	96.7	
263	332		23+645	Bandipur-1, Dumre	L	1	3	3.5	10.3	7.5	4	3	2	2031	10	270.4	270	99.9	
264	333		23+653	Bandipur-1, Dumre	L	1	2	3	9.5	6.9	4	3	2		10	196.7	196	99.7	

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265	334		23+660	Bandipur-1, Dumre	L	1	2	2	16.5	6.7	4	3	2	2032	10	221.1	194.3	87.9	
266	335		23+667	Bandipur-1, Dumre	L	2	2	1	9.5	5.6	4	2	2	2057	10	53.2	53	99.6	
267	336		23+673	Bandipur-1, Dumre	L	1	1	2	10.3	7.1	8	3	2	2025	16	146.3	120.7	82.5	
268	337		23+680	Bandipur-1, Dumre	L	1	3	2	9.6	4.6	4	3	2	2050	16	88.32	78.2	88.5	
269	338		23+685	Bandipur-1, Dumre	L	1	3	2	10	6.8	4	3	2	2054	16	136	115.6	85	
270	339		23+692	Bandipur-1, Dumre	L	1	2	3	9	7	4	3	2	2066	16	189	178.5	94.4	
271	340		23+700	Bandipur-1, Dumre	L	1	3	3	9	7.3	4	3	2	2066	16	197.1	186.2	94.4	
272	341		23+708	Bandipur-1, Dumre	L	1	1	2	11.4	7.3	4	3	2	2036	16	166.4	124.1	74.6	
273	342		23+716	Bandipur-1, Dumre	L	1	3	3	12.5	3.65	4	3	2	2056	16	136.9	93.08	68	
274	343		23+720	Bandipur-1, Dumre	L	1	3	3	12.5	3.65	4	3	2	2056	16	136.9	93.08	68	
275	344		23+724	Bandipur-1, Dumre	L	1	2	3	10.6	4.7	4	3	2	2045	16	149.5	119.9	80.2	
276	345		23+729	Bandipur-1, Dumre	L	1	3	3	10.7	6.7	4	3	2	2065	16	215.1	170.9	79.4	
277	346		23+736	Bandipur-1, Dumre	L	1	3	2	12.5	5.3	4	3	2	2068	16	132.5	90.1	68	
278	347		23+742	Bandipur-1, Dumre	L	1	2	2	11.5	6.7	4	3	2	2038	16	154.1	113.9	73.9	
279	348		23+750	Bandipur-1, Dumre	L	1	3	2	31.3	5.4	4	3	2		16	338	91.8	27.2	
280	349		23+756	Bandipur-1, Dumre	L	1	2	3	7.5	3.3	4	3	2	2030	16	74.25	74	99.7	
281	350		23+760	Bandipur-1, Dumre	L	1	2	3	20.5	3.3	4	3	2	2030	16	203	84.15	41.5	
282	351		23+764	Bandipur-1, Dumre	L	1	3	3	21.5	7.5	4	3	2	2052	16	483.8	191.3	39.5	
283	352		23+774	Bandipur-1, Dumre	L	1	2	3	11.2	6.2	4	3	2	2035	16	208.3	158.1	75.9	
284	354		23+789	Bandipur-1, Dumre	L	1	2	2	13.5	7	4	3	2	2040	16	189	119	63	
285	355		23+796	Bandipur-1, Dumre	L	1	2	3	11.3	7.2	4	3	2	2041	16	244.1	183.6	75.2	
286	356		23+804	Bandipur-1, Dumre	L	1	2	3	11.3	7.2	4	3	2	2041	16	244.1	183.6	75.2	
287	357		23+812	Bandipur-1, Dumre	L	1	3	3	21.5	6.5	4	3	2		16	419.3	165.8	39.5	
288	358		23+819	Bandipur-1, Dumre	L	1	2	3	15.2	6.2	4	3	2	2040	16	282.7	158.1	55.9	
289	359		23+826	Bandipur-1, Dumre	L	1	2	2	7	6	4	3	2	2040	16	84	84	100	
290	360		23+832	Bandipur-1, Dumre	L	1	3	2	8.7	7.7	4	3	2	2045	16	134	130.9	97.7	
291	361		23+840	Bandipur-1, Dumre	L	1	3	3	18.2	7	4	3	2	2052	16	382.2	178.5	46.7	
292	362		23+847	Bandipur-1, Dumre	L	1	3	2	17.2	7	4	3	2		16	240.8	119	49.4	
293	363		23+855	Bandipur-1, Dumre	L	1	3	3	8.2	6.1	4	3	2	2048	16	150.1	150	100	
294	364		23+862	Bandipur-1, Dumre	L	1	3	2.5	12.5	6.1	4	4	2		16	190.6	129.6	68	
295	365		23+869	Bandipur-1, Dumre	L	1	3	3	11	6.1	4	3	2		16	201.3	155.6	77.3	
296	366		23+876	Bandipur-1, Dumre	L	1	3	3	11	9.1	4	3	2		16	300.3	232.1	77.3	
297	367		23+886	Bandipur-1, Dumre	L	2	2	1	15.3	9	4	2	2		16	137.7	76.5	55.6	
298	368		23+902	Bandipur-1, Dumre	L	1	3	4	13.5	4.7	4	3	2	2067	22.5	253.8	37.6	14.8	
299	369		23+907	Bandipur-1, Dumre	L	1	3	5.5	12	7.8	4	3	2		21	514.8	150.2	29.2	

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300	370		23+975	Bandipur-1, Dumre	L	15	2	1	10	3.8	4	3	2	2057	6.8	38	38	100	
301	371		24+090	Bandipur 1 Chisapani Dumre	L	2	2	1	8	3.3	6	2	2	2067	6	26.4	26.4	100	
302	373		24+575	Bandipur 1 Chisapani Dumre	R	1	2	2	5	4.6	4	3	2	2064	7	46	23	50	
303	374		24+670	Bandipur 1 Chisapani Dumre	L	1	1	2	6.5	6	3	3	2	2030	7.5	78	24	30.8	
304	Nala		24+670	Bandipur 1 Chisapani Dumre	L	1	1	2	6.5	6	3	3	2	2056	7.5	78	24	30.8	
305	Nala		24+670	Bandipur 1 Chisapani Dumre	L	1	1	2	16.5	16	3	3	2	2059	7.5	1478	24	80.8	Bridge
306	375		25+360	Vyasha-12	L	1	2	1	5	3.8	1	1	2	2040	7	19	9.5	50	
307	376		28+460	Vyasha-12	R	1	2	2	4.4	3.8	1	1	2	2053	8	33.44	11.4	34.1	
308	377		28+464	Vyasha-12	R	5	2	1	1.3	1.3	4	1	2	2053	8	1.69	1.69	100	
309	378		28+466	Vyasha-12	R	1	2	1	4.8	4	2	1	2	2053	8	19.2	6	31.3	
310	379		28+470	Vyasha-12	R	5	2	1	2	2	4	1	2	2053	8	4	3	75	
311	380		29+980	Vyasha-12	R	1	2	1	4	3.1	1	3	2	2055	7	12.4	7.75	62.5	
312	381		30+060	Vyasha-12	L	1	2	2	6.6	5.4	1	1	2	2040	7.8	71.28	18.36	25.8	
313	382		30+100	Vyasha-12	L	1	2	1	7.7	4.2	1	1	2	2050	7	32.34	10.5	32.5	BPL
314	383		30+105	Vyasha-12	L	5	2	1	2	2	4	1	2	2057	7.5	4	4	100	
315	384		30+125	Vyasha-12	L	1	2	1	9.1	6	3	1	2	2065	7	54.6	15	27.5	
316	385		30+131	Vyasha-12	L	1	2	1	5.7	3.7	4	1	2	2057	7.5	21.09	7.4	35.1	
317	386		30+135	Vyasha-12	L	8	2	1	3	2.5	1	1	2	2057	6.5	7.5	7.5	100	
318	387		30+160	Vyasha-12	R	1	1	2	7.7	4.2	4	1	2	2025	7	64.68	21	32.5	BPL
319	388		30+165	Vyasha-12	R	1	1	2	5	4.2	4	1	2	2025	7	42	21	50	
320	389		30+460	Vyasha-12	L	1	2	1	5.4	4	1	1	2	2055	8	21.6	6	27.8	
321	390		30+520	Vyasha-12	L	1	2	2	7	4.7	4	3	2	2058	7.75	65.8	16.45	25	
322	391		30+565	Vyasha-12	L	1	2	1	5.8	4.2	9	3	2	2049	7.5	24.36	8.4	34.5	
323	392		30+585	Vyasha-12	R	1	2	1	8	4.5	1	3	2	2053	6.9	36	11.7	32.5	
324	393		30+590	Vyasha-12	R	1	2	1	4.9	4.2	1	1	2	2050	7.2	20.58	9.66	46.9	
325	394		30+595	Vyasha-12	R	1	2	1	5	4.9	1	1	2	2040	8	24.5	7.35	30	SFHs+B PL
326	395		30+600	Vyasha-12	R	1	2	1	5	4.4	4	1	2	2057	8.1	22	6.16	28	
327	396		30+605	Vyasha-12	R	1	1	2	4.3	4	2	1	2	2035	7.9	34.4	12.8	37.2	
328	397		30+609	Vyasha-12	R	1	1	2	7.5	4.7	1	3	2	2035	8	70.5	14.1	20	
329	398		30+675	Vyasha-12	R	1	2	2	5.3	5.2	1	3	2	2056	8	55.12	15.6	28.3	

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330	399		30+680	Vyasha-12	R	1	1	2	4.5	4	1	1	2	2045	8	36	12	33.3	BPL
331	400		30+685	Vyasha-12	R	1	2	2	6	5	2	3	2	2055	8	60	15	25	
332	401		30+690	Vyasha-12	R	1	2	2	4.6	4.3	3	3	2	2037	7.5	39.56	17.2	43.5	
333	402		30+695	Vyasha-12	R	1	2	2	5	4.2	7	3	2	2037	8.1	42	11.76	28	
334	403		30+700	Vyasha-12	R	1	2	2	5	3.5	7	3	2	2037	7.8	35	11.9	34	
335	404		30+705	Vyasha-12	R	1	3	2	7.1	4.2	4	3	2	2053	7	59.64	21	35.2	
336	405		30+710	Vyasha-12	R	1	2	2	4.3	4.2	1	3	2	2040	8	36.12	12.6	34.9	
337	406		30+715	Vyasha-12	R	1	2	2	6	5.9	4	3	2	2057	8.2	70.8	15.34	21.7	
338	407		30+721	Vyasha-12	R	1	3	2	6.9	5.9	4	3	2	2057	8.3	81.42	14.16	17.4	
339	408		30+685	Vyasha-12	L	1	2	2	5.3	4.3	3	3	2	2045	8.5	45.58	8.6	18.9	
340	409		30+690	Vyasha-12	L	1	2	2	8.1	4.5	3	3	2	2050	8.5	72.9	9	12.3	
341	410		30+695	Vyasha-12	L	1	1	2	6	4.5	1	3	2	2035	7	54	22.5	41.7	
342	411		30+735	Vyasha-12, Ghikarna	L	1	3	2	10	4.9	4	3	2	2055	8	98	14.7	15	SFHs
343	412		30+740	Vyasha-12, Ghikarna	L	1	2	1	11	5.2	3	4	2	2048	8	57.2	7.8	13.6	
344	413		30+745	Vyasha-12, Ghikarna	L	1	3	2	10	4.2	4	3	2	2055	8	84	12.6	15	BPL
345	414		30+750	Vyasha-12, Ghikarna	L	1	2	1	9	4.5	4	3	2	2055	8	40.5	6.75	16.7	
346	415		30+755	Vyasha-12, Ghikarna	L	1	2	1	8	4.5	4	4	2	2055	8	36	6.75	18.8	
347	416		30+760	Vyasha-12, Ghikarna	L	1	2	1	9	5.1	4	4	2	2055	8	45.9	7.65	16.7	
348	417		30+735	Vyasha-12, Ghikarna	R	1	2	1	4.6	4.5	4	3	2	20	7.5	20.7	9	43.5	
349	418		30+740	Vyasha-12, Ghikarna	R	1	2	2	7.3	6	4	3	2	20	7.5	87.6	24	27.4	
350	419		30+746	Vyasha-12, Ghikarna	R	1	2	1	7.7	4.6	4	3	2	2055	7.5	35.42	9.2	26	
351	420		30+751	Vyasha-12, Ghikarna	R	1	2	1	8.5	4.5	4	1	2	2055	7.4	38.25	9.45	24.7	
352	421		30+756	Vyasha-12, Ghikarna	R	1	2	1	4.1	4	4	3	2	2053	7.45	16.4	8.2	50	
353	422		30+785	Vyasha-12, Ghikarna	R	1	2	2	7.7	5.3	4	3	2	2050	8	81.62	15.9	19.5	
354	423		30+790	Vyasha-12, Ghikarna	R	1	2	1	6.3	5.2	4	1	2	2059	12	32.76	23.4	71.4	
355	424		30+865	Vyasha-12, Ghikarna	R	1	2	1	3.7	3.1	1	1	2	2050	8	11.47	4.65	40.5	
356	425		30+869	Vyasha-12, Ghikarna	R	1	2	1	8.7	3.1	1	1	2	2050	8	26.97	4.65	17.2	
357	426		30+873	Vyasha-12, Ghikarna	R	1	2	1	5	4	1	1	2	2040	8	20	6	30	
358	427		30+877	Vyasha-12, Ghikarna	R	1	2	1	3.8	3.8	9	1	2	2040	8	14.44	5.7	39.5	
359	428		30+881	Vyasha-12, Ghikarna	R	1	2	1	4.3	3.8	1	1	2	2040	8	16.34	5.7	34.9	
360	429		31+950	Vyasha-12, Deurali	R	1	2	3	7.9	7	4	1	2	2050	14	165.9	31.5	19	
361	430		32+425	Vyasha-12, Deurali	R	1	3	2	5.3	4.7	4	3	2	2049	8.5	49.82	9.4	18.9	
362	431		32+430	Vyasha-12, Deurali	R	1	2	2	5	4.1	4	3	2	2050	8.5	41	8.2	20	
363	432		32+440	Vyasha-12, Deurali	R	1	3	2	7.8	7.6	4	3	2	2053	8	118.6	22.8	19.2	
364	433		32+475	Vyasha-12, Deurali	L	1	2	1	5	5	4	3	2	2058	8	25	7.5	30	

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365	434		33+235	Vyasha-12, Paling	R	1	2	2	4.1	3.5	4	3	2	2055	7.5	28.7	14	48.8	
366	435		33+285	Vyasha-12, Paling	R	1	2	2	4.1	3.2	4	3	2	2056	7.5	26.24	12.8	48.8	
367	436		34+125	Vyasha-12, Paling	R	1	2	1	6	4	2	2	2	2050	7	24	10	41.7	
368	437		34+665	Vyasha-12, Kamalbari	L	1	2	2	7	5.3	1	1	2	2037	7.5	74.2	21.2	28.6	
369	438		34+665	Vyasha-12, Kamalbari	L	5	2	1	1.5	1.5	9		2	2055	7.5	2.25	2.25	100	
370	439		34+680	Vyasha-12, Kamalbari	L	1	2	2	6.2	4.3	2	1	2	2057	7	53.32	21.5	40.3	
371	440		34+720	Vyasha-12, Kamalbari	L	1	2	2	4.4	4.1	1	3	2	2030	7	36.08	20.5	56.8	
372	441		34+724	Vyasha-12, Kamalbari	L	5	2	1	2	1.9	9		2	2050	7	3.8	3.8	100	
373	442		34+850	Vyasha-12, Kamalbari	L	1	2	1	8	6.8	9	3	2	2040	7.5	54.4	13.6	25	
374	443		34+935	Vyasha-12, Kamalbari	L	1	2	1	5	4	9	1	2	2050	7	20	10	50	
375	444		34+935	Vyasha-12, Kamalbari	R	1	2	2	6	5	7	1	2		7	60	25	41.7	
376	445		34+940	Vyasha-12, Kamalbari	R	1	2	2	9	4.7	2	1	2	2060	6.9	84.6	24.44	28.9	
377	446		34+950	Vyasha-12, Kamalbari	R	1	2	1	9	5.8	9	1	2	2062	7	52.2	14.5	27.8	
378	447		34+956	Vyasha-12, Kamalbari	R	1	2	1	7.7	4.2	9	1	2	2064	7	32.34	10.5	32.5	
379	448		34+961	Vyasha-12, Kamalbari	R	1	2	2	7.7	3.7	9	3	2	2064	7	56.98	18.5	32.5	
380	449		34+970	Vyasha-12, Kamalbari	R	1	2	2	9.8	6.7	7	1	2	2048	7	131.3	33.5	25.5	BPL
381	450		34+985	Vyasha-12, Kamalbari	L	1	2	2	5.5	4	7+1	1	2	2044	6.8	44	21.6	49.1	
382	451		35+225	Vyasha-12, Kamalbari	R	1	2	1	6.2	4	1	1	2	2052	12	24.8	10	40.3	
383	452		36+665	Vyasha-12, Ghasikuwa	R	1	2	1	6	6	5	3	2	2073	6	36	21	58.3	
384	453		36+740	Vyasha-12, Ghasikuwa	R	2	2	1	4.5	4	9	2	2	2058	6	18	14	77.8	
385	454		36+745	Vyasha-12, Ghasikuwa	R	1	2	2	5	4	9+7	4	2	2057	6	40	28	70	
386	455		36+749	Vyasha-12, Ghasikuwa	R	2	2	2	5	4	7	2	2	2060	6	40	28	70	
387	456		36+753	Vyasha-12, Ghasikuwa	R	1	2	2	9	4	9	1	2	2058	6	72	28	38.9	
388	457		36+762	Vyasha-12, Ghasikuwa	R	2	2	1	5	3.5	7	2	2		6	17.5	12.25	70	
389	458		36+767	Vyasha-12, Ghasikuwa	R	1	2	1	5	4.8	9	3	2	2064	6	24	16.8	70	
390	459		36+772	Vyasha-12, Ghasikuwa	R	1	2	1	5	4.8	9	3	2	2063	6	24	16.8	70	
391	460		36+781	Vyasha-12, Ghasikuwa	R	1	2	1	9	5.3	9	3	2	2055	6	47.7	18.55	38.9	SFHs
392	461		36+790	Vyasha-12, Ghasikuwa	R	1	2	1	8	5	9	3	2	2056	6	40	17.5	43.8	
393	462		36+795	Vyasha-12, Ghasikuwa	R	1	2	1	6.3	5	2+7	3	2	2053	6	31.5	17.5	55.6	
394	463		36+800	Vyasha-12, Ghasikuwa	R	1	2	1	4.5	3.5	9	3	2	2053	6	15.75	12.25	77.8	BPL
395	464		36+805	Vyasha-12, Ghasikuwa	R	1	2	1	10	6	7	3	2	2055	6	60	21	35	
396	465		36+810	Vyasha-12, Ghasikuwa	R	1	2	1	6.2	3	5	1	2	2056	6	18.6	10.5	56.5	
397	466		36+815	Vyasha-12, Ghasikuwa	R	1	2	1	7	3.5	5	3	2	2057	6	24.5	12.25	50	
398	467		36+985	Vyasha-12, Ghasikuwa	R	1	2	1	4	3.5	9	1	2	2058	6	14	12.25	87.5	
399	468		36+990	Vyasha-12, Ghasikuwa	R	1	2	1	6	3	6	3	2	2060	6	18	10.5	58.3	

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400	469		36+910	Vyasha-12, Ghasikuwa	R	1	2	1	6	3	6	3	2	2065	6	18	10.5	58.3	
401	470		37+415	Vyasha-12, Ghasikuwa	R	1	2	1	6	3.5	9	1	2	2072	6	21	12.25	58.3	
402	471		37+435	Vyasha-12, Ghasikuwa	R	1	2	1	8	3.5	9	1	2	2070	6.5	28	10.5	37.5	
403	472		37+442	Vyasha-12, Ghasikuwa	R	1	2	1	6	4	9	1	2	2069	6.5	24	12	50	
404	473		37+555	Vyasha-12, Ghasikuwa	R	1	2	1	5.2	3.5	1	1	2	2050	6	18.2	12.25	67.3	
405	474		37+561	Vyasha-12, Ghasikuwa	R	1	2	1	5	3.8	1	1	2	2064	6	19	13.3	70	
406	475		37+567	Vyasha-12, Ghasikuwa	R	1	2	1	6.5	3.5	1	1	2	2057	6	22.75	12.25	53.8	
407	476		37+574	Vyasha-12, Ghasikuwa	R	1	2	1	9	4.7	1	1	2	2040	6	42.3	16.45	38.9	WHS
408	477		37+583	Vyasha-12, Ghasikuwa	R	1	4	1	5	3	1	1	2	2055	6	15	10.5	70	BPL
409	478		37+588	Vyasha-12, Ghasikuwa	R	1	2	1	6	4.8	7	1	2	2055	6	28.8	16.8	58.3	Elder
410	479		37+620	Vyasha-12, Ghasikuwa	R	1	2	1	7	4	1	1	2	2056	6	28	14	50	
411	480		38+525	Byas 1 Amreni	R	1	2	1	6	5	9	3	2	2064	8	30	7.5	25	
412	481		38+535	Byas 1 Amreni	R	1	2	1	6	5	4	3	2	2065	6	30	17.5	58.3	
413	482		38+580	Byas 1 Amreni	R	1	2	1	6	3	1	1	2	2031	8	18	4.5	25	
414	483		39+260	Byas 1 Amreni	R	1	2	1	4	4	4	1	2	2065	7	16	10	62.5	
415	485		39+565	Byas 1 Amreni	R	1	2	1	6	5	4	1	2	2050	7	30	12.5	41.7	
416	487		40+415	Byas 2 Malebazar	L	15	2	1	4	4	1	2	2	2029	7	16	10	62.5	
417	489		40+475	Byas 2 Malebazar	L	2	2	1	4.6	4.5	4	2	2	2040	12	20.7	20.7	100	SFHs
418	490		40+475	Byas 2 Malebazar	L	1	3	2	16	5.6	4	1	2	2040	24	179.2	5.6	3.1	
419	491		40+685	Byas 2 Damauli	L	1	3	4	13.8	4.6	4	3	1	2060		253.9	254	100	
420	492		40+690	Byas 2 Damauli	L	1	3	4	13.2	4.9	4	3	1	2051		258.7	258	99.7	
421	493		40+695	Byas 2 Damauli	L	1	3	4	14.7	5.7	4	3	1	2071		335.2	335	100	
422	494		40+701	Byas 2 Damauli	L	1	2	3	7.1	4.8	4	1	1	2045		102.2	102	99.8	
423	495		40+735	Byas 2 Damauli	L	1	3	3	9.7	3.8	4	3	1	2052		110.6	110	99.5	
424	496		40+739	Byas 2 Damauli	L	1	3	1	9.8	4.1	4	3	1	2055		40.18	40	99.6	
425	497		40+744	Byas 2 Damauli	L	1	2	2	13.1	6.2	4	3	1	2030		162.4	162	99.7	
426	498		40+750	Byas 2 Damauli	L	1	2	2	13.1	6.2	4	3	1	2030		162.4	162	99.7	
427	499		40+756	Byas 2 Damauli	L	1	3+	2	12.5	4.1	4	3	1	2030		102.5	102	99.5	
428	500		40+760	Byas 2 Damauli	L	1	3	2	9.6	4.1	4	3	1	2037		78.72	78	99.1	
429	501		40+765	Byas 2 Damauli	L	1	3	2	16	4.8	4	3	1	2043		153.6	153	99.6	
430	502		40+770	Byas 2 Damauli	L	1	3	2	16.3	4.5	4	3	1	2045		146.7	146	99.5	
431	503		40+775	Byas 2 Damauli	L	1	3	2	16.3	4.1	4	3	1	2060		133.7	133	99.5	
432	504		40+780	Byas 2 Damauli	L	1	3	2	10	4.6	4	3	1	2025		92	92	100	
433	505		40+785	Byas 2 Damauli	L	1	2	2.5	14	4.9	4	3	1			171.5	171	99.7	
434	506		40+835	Byas 2 Damauli	L	1	3	3	11	5.6	4	4	1			184.8	185	100.1	

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435	507		40+841	Byas 2 Damauli	L	1	3	3	8.4	5.9	4	3	1	2053		148.7	149	100.2	
436	508		40+847	Byas 2 Damauli	L	1	3	3	16.2	5.6	4	3	1	2065		272.2	272	99.9	
437	510		40+880	Byas 2 Damauli	L	1	3	4	11.7	8.4	4	3	1			393.1	393	100	
438	511		40+925	Byas 2 Damauli	L	1	2	1	6.5	4.8	9	3	2	2047		31.2	31	99.4	
439	512		40+935	Byas 2 Damauli	L	1	3	5	24	8.4	4	4	1			1008	1008	100	
440	513		40+944	Byas 2 Damauli	L	1	3	3	11.3	5.5	4	3	1	2041		186.5	186	99.8	
441	514		40+950	Byas 2 Damauli	L	1	3	4	21	6.4	4	3	1	2051		537.6	538	100.1	
442	515		40+957	Byas 2 Damauli	L	1	3	3	14.2	7.8	4	3	1			332.3	332	99.9	
443	516		40+960	Byas 2 Damauli	L	1	3	3.5	26.3	7.8	4	3	1	2067		718	668.9	93.2	
444	517		40+968	Byas 2 Damauli	L	1	3	4	25.2	5.4	4	3	1	2067		544.3	529.2	97.2	
445	518		40+974	Byas 2 Damauli	L	1	3	3.5	24	5.5	4	3	1	2068		462	462	100	
446	519		40+980	Byas 2 Damauli	L	1	3	3	19	5.6	4	3	1			319.2	319	99.9	
447	520		40+986	Byas 2 Damauli	L	1	3	4	19.4	1.3	4	3	2			100.9	101	100.1	
448	521		40+990	Byas 2 Damauli	L	1	3	3.5	5.8	2.6	4	3	1			52.78	52.8	100	
449	522		40+993	Byas 2 Damauli	L	1	3	3	14	8	4	3	1			336	336	100	
450	523		41+001	Byas 2 Damauli	L	1	3	2	15.5	8.2	4	3	1			254.2	254	99.9	
451	524		41+010	Byas 2 Damauli	L	1	3	1	12.3	4.7	4	3	1			57.81	57.8	100	
452	525		41+015	Byas 2 Damauli	L	1	3	3.5	13.1	4.2	4	3	1			192.6	193	100.2	
453	526		41+020	Byas 2 Damauli	L	1	3	3	21.3	7.2	4	3	1	2050		460.1	460	100	
454	527		41+028	Byas 2 Damauli	L	1	3	3	15.5	6.1	4	3	1	2053		283.7	284	100.1	
455	528		41+034	Byas 2 Damauli	L	1	3	3	9	7	4	3	1	2053		189	189	100	
456	529		41+041	Byas 2 Damauli	L	1	3	3	6.4	5.7	4	3	1	2047		109.4	109	99.6	
457	530		41+048	Byas 2 Damauli	L	1	3	4	16	5.3	4	3	1	2047		339.2	339	99.9	
458	532		41+056	Byas 2 Damauli	L	1	3	5	11	5	4	3	1	2049		275	275	100	
459	533		41+065	Byas 2 Damauli	L	1	3	3	13	6	4	3	1	2062		234	234	100	
460	534		41+075	Byas 2 Damauli	L	1	2	3	13	6	4	3	1	2062		234	234	15	
461	535		41+085	Byas 2 Damauli	L	1	2	3	13	6	4	3	1	2062		234	234	20	
462	536		41+095	Byas 2 Damauli	L	1	2	3	13	6	4	3	1	2062		234	234	50	
463	537		41+100	Byas 2 Damauli	L	1	3	3	13	6	4	3	1	2062		234	234	23	
464	538		41+105	Byas 2 Damauli	L	1	3	3	13	6	4	3	1	2062		234	234	21	
465			41+	Byas 2 Damauli	L	1	3	3	13	6	4	3	1	2062		234	234	20	
466			41+	Byas 2 Damauli	L	1	3	3	13	6	4	3	1	2062		234	234	20	
467			41+	Byas 2 Damauli	L	1	3	3	13	6	4	3	1	2062		234	234	20	
468			41+	Byas 2 Damauli	L	1	3	3	13	6	4	3	1	2062		234	234	25	
469			41+	Byas 2 Damauli	L	1	2	3	13	6	4	3	1	2062		234	234	24	

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470			41+	Byas 2 Damauli	L	1	4	3	13	6	4	3	1	2062		234	234	30	
471			41+	Byas 2 Damauli		1	5	3	13	6	4	3	1	2062		234	234	31	
472			41+	Byas 2 Damauli		1	6	3	13	6	4	3	1	2062		234	234	43	
473	539		41+750	Byas -3	L	1	2	1	8	4	4	1	2	2052	6	32	16	50	
474	540		43+940	Byas-5, Siddi	R	1	2	2	15	4.1	2	1	2	2035	6	123	32.8	26.7	
475	541		45+160	Myagde-1, Barchaur	L	1	2	1	7.6	4.4	2	4	2	2050	8	33.44	8.8	26.3	
476	542		45+895	Myagde-1, Gunardi	R	2	2	1	4	3.5	4	2	2		8	14	7	50	
477	543		45+910	Myagde-1, Gunardi	L	2	2	1	5	3.5	1	2	2		8	17.5	7	40	
478	544		45+950	Myagde-1, Gunardi	L	2	2	1	8	7.2	4	2	2	2053	8	57.6	14.4	25	
479	545		46+765	Myagde-1, Gunardi	R	1	2	1	6.2	6.2	4	4	2	2062	8	38.44	12.4	32.3	
480	546		47+450	Myagde-1, Gunardi	L	1	2	1	5.7	3	9	4	2		7.5	17.1	7.5	43.9	
481	547		47+775	Myagde-1, Gunardi	L	2	2	1	8.2	4.5	1	2	2		7.8	36.9	9.9	26.8	
482	548		47+815	Myagde-1, Gunardi	R	1	1	2	6.7	6.6	2	1	2	2028	8.2	88.44	23.76	26.9	
483	549		47+860	Myagde-1, Gunardi	R	1	2	1	6.5	5.5	9	1	2	2060	8.5	35.75	8.25	23.1	
484	550		48+175	Myagde-2,	R	1	2	1	7.2	5.7	9	1	2		7.9	41.04	11.97	29.2	
485	551		48+325	Myagde-2,	R	1	2	1	6	4.7	1	6	2		9	28.2	4.7	16.7	
486	552		48+480	Myagde-2,	L	1	2	1	3.5	3	1	1	1		9.5	10.5	1.5	14.3	
487	553		48+525	Myagde-2,	R	1	2	1	5.8	3	2	4	2		9	17.4	3	17.2	
488	554		49+865	Myagde-2,	R	1	2	1	6.1	3.5	1	1	2	2065	8	21.35	7	32.8	
489	555		49+870	Myagde-2,	R	1	2	2	7.3	3.5	1	1	2	2024	8	51.1	14	27.4	
490	556		49+925	Myagde-2,	R	1	3	2	6.2	5	4	1	2	2060	7.8	62	22	35.5	
491	557		49+965	Myagde-2,	R	1	2	2	6.3	6.1	2	2	2		6.5	76.86	42.7	55.6	
492	558		49+980	Myagde-2,	R	1	1	2	8.2	4.2	2	2	2	2015	7	68.88	25.2	36.6	
493	559		49+985	Myagde-2,	R	8	2	1	3.2	2.5	9	8	2		7	8	7.5	93.8	
494	560		50+050	Myagde-2,	R	2	2	1	4.5	3.3	4	2	2		8	14.85	6.6	44.4	
495	561		50+054	Myagde-2,	R	1	2	1	5.3	4.3	4	1	2	2030	8	22.79	8.6	37.7	
496	562		50+059	Myagde-2,	R	1	2	1	5.1	4.2	1	2	2	2035	8	21.42	8.4	39.2	
497	563		50+064	Myagde-2,	R	1	2	1	5.6	4	9	3	2	2040	8	22.4	8	35.7	
498	565		50+032	Myagde-2,	L	1	2	1	6.2	4	2	1	2	2036	6.8	24.8	12.8	51.6	
499	566		50+036	Myagde-2,	L	1	2	2	5.3	4.8	2	3	2	2040	7.5	50.88	24	47.2	
500	568		50+050	Myagde-2,	L	1	2	2	7.3	4.6	2	4	2	2036	6.8	67.16	29.44	43.8	
501	570		50+100	Myagde-2,	L	1	2	2	6.8	5	2	1	2	2036	7.2	68	28	41.2	
502	571		50+105	Myagde-2,	L	1	2	2	7.5	5.5	2	3	2	2028	7.9	82.5	23.1	28	
503	572		50+111	Myagde-2,	L	1	3	1	4.6	4.6	4	3	2	2045	8	21.16	9.2	43.5	
504	575		50+350	Myagde-2,	L	1	2	3	6.8	5.2	4	3	2	2060	7.8	106.1	34.32	32.4	

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505	576		50+356	Myagde-2,	L	1	2	1	11.4	5	2	4	2	2060	7.8	57	11	19.3	
506	577		50+780	Myagde-3, Pasale	L	2	2	1	6.2	3.6	9	2	2	2073	7	22.32	10.8	48.4	
507	578		50+995	Myagde-3, Pasale	L	1	1	3	8.5	4.3	1	6	2	2028	8	109.7	25.8	23.5	
508	579		51+020	Myagde-3, Pasale	L	1	1	1	5.8	4.4	4	1	2	2053	8	25.52	8.8	34.5	
509			51+500	Myagde-3, Samdhi	L	5,8	2	1	4.6	4.1	4,9	9	2	2061	10	18.86	18.86	100	Due to bridge
510			51+550	Myagde-3, Samdhi	L	2	2	1	3.1	3.1	9		2	2062	9.5	9.61	9.61	100	;;
511			51+580	Myagde-3, Samdhi	L	5	2	1	1.5	1.5	4		2	2070	11	2.25	2.25	100	;;
512			51+590	Myagde-3, Samdhi	L	9	2	1	10.9	8.1	4		2	2040	9	88.29	88.29	100	;;
513			51+598	Myagde-3, Samdhi	L	2	2	1	6.2	3.3	4		2		11	20.46	20.46	100	Extended Part
514			51+600	Myagde-3, Samdhi	L	5	1	4	2	2	4		2	20	11	16	16	100	;;
515			51+610	Myagde-3, Samdhi	L	1	2	2	5.8	4.7	4		2	2026	9	54.52	54.52	100	;;
516			51+520	Myagde-3, Samdhi	L	2	1	2	4.8	3.7	2		2	2075	10.5	35.52	35.52	100	
517			51+625	Myagde-3, Samdhi	L	4	1	1	5.7	3.1	4		2	20	10	17.67	17.67	100	
518			51+630	Myagde-3, Samdhi	L	8	2	1	2.4	2.2	4		2	2072	11	5.28	17.67	100	
519	580		52+705	Myagde-4, Ghumti	L	1	2	1	7.3	4.3	2	4	2		6.5	31.39	15.05	47.9	
520	581		52+710	Myagde-4, Ghumti	L	1	2	1	4.6	4.3	2	4	2		6	19.78	17.2	87	
521	582		52+730	Myagde-4, Ghumti	L	1	2	1	8	4.4		2	2		5.8	35.2	18.48	52.5	
522	583		52+735	Myagde-4, Ghumti	L	1	2	1	8.1	7	4	3	2	2052	5.8	56.7	29.4	51.9	
523	584		52+760	Myagde-4, Ghumti	L	2	2	1	4.3	3.5	9	2	2	2060	5.9	15.05	14.35	95.3	
524	585		52+770	Myagde-4, Ghumti	R	2	2	1	5.1	4.5	4	2	2	2063	5.7	22.95	19.35	84.3	
525	586		52+830	Myagde-4, Ghumti	R	1	2	1	4	3	9	2	2	2063	6	12	12	100	
526	587		53+410	Myagde-4, Yarpu	R	1	2	2	4	3	1	1	2	2040	7	24	18	75	
527	588		53+580	Myagde-4, Yarpu	R	1	2	1	6.1	5.7	2	3	1	2045	12	34.77	34	97.8	
528	589		53+720	Myagde-4, Yarpu	L	1	2	2	7	6	4	3	2		6	84	48	57.1	
529	590		53+830	Myagde-4, Yarpu	R	1	3	2	10.2	6.1	4	3	2		7	124.4	36.6	29.4	
530	591		53+980	Myagde-4, Yarpu	L	2	2	1	6.1	3.7	1	2	2	2069	6.5	22.57	12.95	57.4	
531	592		54+155	Myagde-4, Yarpu	L	1	2	1	6.9	5.1	2	1	2	2053	14	35.19	30.6	87	
532	593		54+180	Myagde-4, Yarpu	L	1	2	2	8.3	5	4	1	2	2045	8	83	20	24.1	
533	594		54+185	Myagde-4, Yarpu	L	1	2	2	5.6	5.2	1	1	2	2038	8	58.24	20.8	35.7	
534	595		54+191	Myagde-4, Yarpu	L	1	2	1	7	5.2	2	1	2	2038	8	36.4	10.4	28.6	
535	596		54+550	Myagde-4,Manhari	L	1	2	2	7.1	5.6	1	1	2	2024	8	79.52	22.4	28.2	
536	597		54+580	Myagde-4,Manhari	R	1	2	2	5.2	4.4	4	3	2	2053	7	45.76	26.4	57.7	

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537	598		54+720	Myagde-4,Manhari	R	1	2	3	9	6	2	3	2	2024	8.5	162	27	16.7	
538	599		54+726	Myagde-4,Manhari	R	1	1	3	9	5.7	1	1	2	2024	8.5	153.9	25.65	16.7	
539	600		54+732	Myagde-4,Manhari	R	1	2	3	5.7	4.4	1	1	2	2024	8.5	75.24	19.8	26.3	
540	601		55+105	Myagde-4, Pipaltar	R	1	2	1	8.9	7.4	4	1	2	2056	14	65.86	44.4	67.4	
541	602		55+115	Myagde-4, Pipaltar	R	5	2	1	1.5	1.5	4		2	2056	14	2.25	2.25	100	
542	603		55+125	Myagde-4, Pipaltar	R	1	2	2	5.3	4	1	1	2	2018	14	42.4	42	99.1	
543	604		55+385	Myagde-4, Pipaltar	L	1	2	1	7.5	5.8	2	3	2	2043	14	43.5	34.8	80	
544	605		55+570	Myagde-6, Chaibise	L	7	2	2	6	5	2	6	2		15	60	50	83.3	
545	606		55+970	Myagde-6, Akala	R	1	2	2	8	5.2	2	1	2		18	83.2	20.8	25	
546	607		55+580	Myagde-6, Turture	R	2	2	1	3	3	9	2	2	2067	6	9	9	100	
547	608		56+585	Myagde-6, Turture	R	2	2	1	4.2	3.3	9	2	2	2067	6	13.86	13.2	95.2	
548	609		56+590	Myagde-6, Mauribazar	R	1	2	1	4.5	3.2	9	1	2	2067	6	14.4	12.8	88.9	
549	610		57+230	Myagde-6, Mauribazar	L	7	2	2	5.9	3.7	2	6	2	2067	10	43.66	22.2	50.8	
550	611		57+235	Myagde-6, Mauribazar	L	1	3	1	8.3	5.1	4	3	2		10	42.33	15.3	36.1	BPL
551	612		57+242	Myagde-6, Mauribazar	L	1	2	1	5.5	4.5	2	3	2	2027	10	24.75	13.5	54.5	
552	613		57+247	Myagde-6, Mauribazar	L	1	2	2	4.9	4.2	2	1	2	2027	10	41.16	25.2	61.2	
553	614		57+885	Myagde-6, Rithepani	R	1	2	2	5	3	1	1	2	2002	12	30	30	100	
554	615		57+890	Myagde-6, Rithepani	L	4	2	2	10.1	3.2	1		2	2036	10	64.64	12.8	19.8	
555	616		57+895	Myagde-6, Rithepani	L	5	2	1	2	1.5	3		2	2038	10	3	3	100	
556	617		58+915	Myagde-6,Seraphant	R	1	2	2	5	4.1	2	1	2	2020	7.5	41	20.5	50	
557	618		58+920	Myagde-6, Seraphant	R	8	2	1	3.5	3	2		2	2050	7.5	10.5	7.5	71.4	
558	619		60+220	Sukla Gandaki 5 Dharapani	L	1	2	1	5.4	3.4	9	3	2	2071	13	18.36	18	98	
559	620		60+515	Sukla Gandaki 5 Malenagar	L	7	2	1	3	3	1	khali	2		12	9	7.5	83.3	
560	621		60+800	Su.na.pa 5 Malenagar	R	1	2	1	6.8	4.4	9	3	2	2052	12	29.92	11	36.8	
561			60+850	Sunapa 5 Malenagar	L	1	2	1	6	3.5	1	1	2	2063	10	19	14	69.1	Due to bridge left
562	623		62+975	Sunapa 5 Shiv nagar Jhauraha	R	7	2	1	6	3	1	khali	2	2064	12	18	18	100	
563	624		62+980	Sunapa 5 Shiv nagar Jhauraha	R	1	2	1	7.6	3.6	2	1	2	2046	12	27.36	27	98.7	
564	625		63+000	Sunapa 5 Shiv nagar Jhauraha	R	1	3	1	6.8	4.5	4	1	2		12	30.6	30.6	100	

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565	626		63+190	Sunapa 5 Shiv nagar Jhauraha	R	1	3	2	11.3	6.9	4	3	2		22	155.9	34.5	22.1	
566	627		64+175	Sunapa-5, Belchautara	R	1	2	1	10.7	4.7	4	3	1	2039	22	50.29	11.75	23.4	
567	628		64+185	Sunapa-5, Belchautara	R	1	2	2	7.5	6.9	4	4	1		22	103.5	34.5	33.3	
568	629		64+525	Sunapa4 Belchautara	R	1	2	1	7	6.2	2	1	1		22	43.4	15.5	35.7	
569	630		64+535	Sunapa-5, Belchautara	R	1	2	1	7.4	6.8	2	1	1	2040	22.5	50.32	13.6	27	
570	631		64+545	Sunapa-5, Belchautara	R	1	2	1	6.8	4.8	3	1	1	2048	21.5	32.64	14.4	44.1	
571	632		64+600	Sunapa-4, Galchina	R	1	2	1	5.7	2	9	3	1	2048	21.5	11.4	6	52.6	
572	633		64+675	Sunapa-4 Galchina	R	1	2	1	7.6	5.8	2	4	1		21.5	44.08	17.4	39.5	
573	634		64+565	Sunapa4 Galchina	L	1	2	1	8.1	6.7	4	3	2	2043	19.7	54.27	32.16	59.3	
574	635		64+590	Sunapa4 Galchina	L	1	3	2.5	12.7	9	4	3	1	2049	22.5	285.8	45	15.7	
575	636		64+600	Sunapa4 Galchina	L	1	2	1	12.7	3.35	4	1	1	2042	22.5	42.55	6.7	15.7	
576	637		64+800	Sunapa4 Galchina	R	1	2	1	5.2	2.7	9	1	2		16	14.04	14	99.7	
577	638		66+155	Sunapa4 Galchina	R	1	3	2	10.7	9	4	3	1	2050	21	192.6	63	32.7	
578	639		66+280	Sunapa4 Jagriti Tole	R	1	3	2	12.6	6.8	4	3	1		21.5	171.4	40.8	23.8	
579	640		66+290	Sunapa4 Jagriti Tole	R	1	3	2	8.3	6	4	3	1		21.5	99.6	36	36.1	
580	641		66+725	Su na pa 2 Gachhepani	R	1	2	1	20.3	6.5	9	4	2		21.5	132	19.5	14.8	
581	642		66+740	Su na pa 2 Gachhepani	R	1	2	1	14.8	5.5	9	4	2		23.5	81.4	5.5	6.8	
582	643		66+825	Su na pa 2 Gachhepani	R	1	2	1	6.6	3.9	2	4	2		18	25.74	25.35	98.5	
583	644		66+865	Su na pa 3 Gachhepani	R	1	2	1	8.6	5.4	9	1	1	2073	22	46.44	13.5	29.1	
584	645		66+871	Su na pa 2 Gachhepani	R	1	2	1	6.2	3.3	9	1	1	2069	22	20.46	8.25	40.3	
585	646		66+875	Su na pa 2 Gachhepani	R	1	2	1	6.7	2.9	9	1	1	2066	23	19.43	4.35	22.4	
586	647		66+885	Su na pa 2 Gachhepani	R	3	3	1	9.6	8.3	4		1	2065	24	79.68	4.15	5.2	
587	648		67+615	Su na pa-2, haledi	R	1	2	1	4.5	2.5	9	3	2	2057	20	11.25	11.25	100	
588	649		68+090	Su na pa-2, haledi	R	1	2	1	6	3	9	1	2		16	18	18	100	
589	650		68+190	Su na pa-2, Haledi	L	1	2	1	13.6	3.1	9	1	2		12	42.16	7.75	18.4	
590	651		68+195	Su na pa 2 haledi	L	7	2	1	4.1	3.1	9	Khali	1		12	12.71	7.75	61	
591	652		68+275	Su na pa 2 haledi	R	1	2	1	6	5.7	9	1	2	2036	12	34.2	14.25	41.7	
592	653		68+281	Su na pa 2 haledi	R	1	2	1	7.9	3	9	1	2		12	23.7	7.5	31.6	
593	654		68+285	Su na pa 2 haledi	R	1	2	1	5.7	2.9	9	1	2	2057	12	16.53	7.25	43.9	BPL
594	655		68+460	Su na pa 2 Chunemuda	L	1	2	1	8.6	4.8	9	1	2	2057	12	41.28	12	29.1	
595	656		68+465	Su na pa 2 Chunemuda	L	1	2	1	7.3	4.3	9	4	2	2050	12	31.39	10.75	34.2	
596	657		68+470	Su na pa 2 Chunemuda	L	1	2	1	7.3	5.8	9	1	2	2050	12	42.34	14.5	34.2	
597	658		68+476	Su na pa 2 Chunemuda	L	5	2	1	2	2	9		2	2057	12	4	4	100	
598	659		68+770	Su na pa 2 Chunemuda	L	1	2	1	11.1	5.8	9	4	2		10	64.38	26.1	40.5	

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599	660		68+780	Su na pa 2 Chunemuda	L	5	2	1	2.2	2	9		2		10	4.4	4	90.9	
600	661		69+555	Su na pa 2 Chunemuda	R	7	2	1	5	3	9	khali	2		10	15	13.5	90	
601	662		69+925	Su na pa 1 Chunemuda	R	2	2	1	5.5	3.3	9	2	2	2067	16	18.15	18	99.2	
602	663		70+075	Su.na.pa-2 Kotra	R	1	2	1	6.8	2.8	9	4	2	2063	14	19.04	19	99.8	
603	664		70+085	Su.na.pa-2 Kotra	R	1	2	1	7.8	6	9	1	2	2065	14	46.8	46	98.3	
604	665		70+220	Su.na.pa-2 Kotra	L	1	2	1	8	6	2	1	2	2038	16	48	48	100	
605	666		70+245	Su.na.pa-2 Kotra	L	1	2	1	7	3.5	2	1	2	2043	16	24.5	24	98	BPL
606	667		70+265	Su.na.pa-2 Kotra	R	1	2	1	9.5	3.2	9	3	1	2060	16	30.4	27.2	89.5	
607	668		70+335	Su.na.pa-2, Kotra	R	1	2	2	4.8	3.5	9	1	1	2035	16	33.6	33	98.2	
608	669		70+340	Su.na.pa-2, Kotra	R	1	2	2	10	4.7	3	3	2	2032	16	94	94	100	
609	672		70+450	Su.na.pa-2 Kotra	L	1	1	2	6.1	5.8	3	3	1	2028	18	70.76	70.76	100	
610	673		70+465	Su.na.pa-2, Kotra	L	1	1	2	6.1	5.8	3	3	1	2028	18	70.76	70.76	100	
611	674		70+471	Su.na.pa-2, Kotra	L	1	2	1	6.9	5.1	9	9	2	2050	18	35.19	35	99.5	
612	675		70+477	Su.na.pa-2, Kotra	L	2	2	1	6	4	9	9	2	2061	18	24	24	100	
613	676		70+725	Pokhara-32, Manuwa	L	1	2	1	5.7	5.1	9	9	1		18	29.07	29	99.8	
614	677		66+470	Su.na.pa-2, Gachhepani	R	1	3	1	13.3	7.9	4	4	1	2060	24	105.1	27.65	26.3	
615	678		66+490	Su.na.pa-2, Gachhepani	R	1	3	1	12.1	5.1	4	4	1	2057	24	61.71	17.85	28.9	
616	679		66+500	Su.na.pa-2, Gachhepani, Tanahu	R	1	3	1	10	8.2	4	4	1	2071	24	82	28.7	35	
617	680		66+520	Su.na.pa-2, Gachhepani	R	1	2	1	8.4	7	9	9	1	2062	24	58.8	24.5	41.7	
618	681		66+530	Su.na.pa-2, Gachhepani	R	1	3	2	14.8	4.6	4	3	2	2073	24	136.2	32.2	23.6	
619	682		66+565	Su.na.pa-2, Gachhepani	R	1	2	1	12.4	3.8	9	1	2	2063	24	47.12	13.3	28.2	
620	683		66+595	Su.na.pa-2, Gachhepani	R	1	2	1	7.3	5.7	9	4	2	2035	26	41.61	8.55	20.5	
621	684		66+680	Su.na.pa-2, Gachhepani	R	1	3	1	7.6	6.2	4	1	2	2054	24	47.12	21.7	46.1	
622	685		66+687	Su.na.pa-2, Gachhepani	R	1	3	2	9.5	6	4	1	2	2069	24	114	42	36.8	
623	686		66+693	Su.na.pa-2, Gachhepani	R	1	3	1	12	6	4	1	2	2060	24	72	21	29.2	
624	687		66+700	Su.na.pa-2, Gachhepani	R	1	3	2	12.2	7.4	4	1	2	2058	24	180.6	51.8	28.7	
625	688		66+708	Su.na.pa-2, Gachhepani	R	1	3	1	13.7	7	4	3	2	2056	24	95.9	24.5	25.5	
626	689		66+800	Su.na.pa-2, Gachhepani	R	1	3	2	10	5.7	4	1	2	2069	25	114	28.5	25	
627	690		74+710	Su.na.pa-2, Gachhepani	L	1	2	1	4.9	3.1	9	1	2		20	15.19	13.95	91.8	SFHs+B PL
628	691		74+72	Su.na.pa-2, Gachhepani	L	1	3	2	8.1	6.9	4	1	2		20	111.8	62.1	55.6	
629	692		75+025	Pokhara-32, Galan Gauda	R	1	2	1	13.1	7.7	9	2	2		10	100.9	100	99.1	
630	693		75+160	Pokhara-32, Galan Gauda	R	1	2	1	7.9	4.4	1	4	2		16	34.76	34.5	99.3	
631	694		75+170	Pokhara-32, Galan Gauda	R	1	2	1	9.3	4.4	2	4	2		16	40.92	37.4	91.4	

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632	695		75+180	Pokhara-32, Galan Gauda	R	1	3	1	4.5	4.6	3	4	2		16	20.7	20	96.6	
633	696		75+630	Pokhara-30,Power House	R	1	2	1	4.7	3.6	1	3	2		20	16.92	16.2	95.7	
634	697		76+220	Pokhara-29,Ghotghote	L	1	2	1	7.5	3.2	9	4	2		18	24	20.8	86.7	
635	698		76+225	Pokhara-29, Ghotghote	L	1	2	1	9	4	2	4	2		18	36	26	72.2	
636	699		76+450	Pokhara-29	L	1	2	1	6.7	4.8	9	1	2		10	32.16	32.16	100	
637	700		76+550	Pokhara-29, SainikBasti	L	1	1	2	8.4	5.8	2	1	2		16	97.44	97	99.5	BPL
638	701		76+590	Pokhara-29, SainikBasti	R	2	2	1	4	3	9	khali	1		22	12	7.5	62.5	
639	702		76+595	Pokhara-29, SainikBasti	R	2	2	1	4	3.7	9	khali	1		22	14.8	9.25	62.5	
640	703		76+765	Pokhara-29, SainikBasti	R	1	2	1	10.7	6.4	3	4	2	2027	22	68.48	16	23.4	
641	704		76+775	Pokhara-29, SainikBasti	R	1	2	1	11	3.7	9	4	2	2027	22	40.7	9.25	22.7	
642	705		76+785	Pokhara-29, SainikBasti	R	1	2	2	8	5.9	9	4	2	2027	22	94.4	29.5	31.3	
643	706		76+810	Pokhara-29, SainikBasti	R	1	2	2	9.5	8.5	9	4	2	2037	22	161.5	42.5	26.3	
644	707		76+830	Pokhara-29, SainikBasti	R	1	2	1	5.6	3.4	2	store	2	20	22	19.04	8.5	44.6	
645	708		76+855	Pokhara-29, SainikBasti	R	1	3	1	11	8.7	4	1	2	2055	22	95.7	21.75	22.7	
646	709		76+890	Pokhara-29, SainikBasti	R	1	1	2	7	4.2	3	1	2	2015	20	58.8	37.8	64.3	
647	710		76+900	Pokhara-29, SainikBasti	R	1	2	2	7	4.1	3	1	2		20	57.4	36.9	64.3	
648	711		76+950	Pokhara-29, SainikBasti	L	1	2	1	7.5	3.1	9	1	2	2070	12	23.25	23.25	100	
649	712		76+135	Pokhara-29, SainikBasti	L	1	2	1	6.7	4.5	2	3	2	2044	12	30.15	30.15	100	
650	713		76+145	Pokhara-29, SainikBasti	L	1	2	1	7.2	3	9	4	2		12	21.6	21.6	100	
651	1		74+640	Pokhara -30,Mathillo GaganGauda	L	1	3	1	8.3	5.3	4	1	1		21	43.99	18.55	42.2	
652	2		74+665	Pokhara -30,Mathillo GaganGauda	L	1	3	2	7.1	7	4	1	1		21.5	99.4	42	42.3	
653	3		74+900	Pokhara -30,Mathillo GaganGauda	R	1	3	1	7	6.4	4	1	1		22	44.8	16	35.7	
654	4		74+915	Pokhara -30,Mathillo GaganGauda	R	1	2	1	7	6.9	2	1	1		22	48.3	17.25	35.7	
655	5		74+930	Pokhara -30,Mathillo GaganGauda	R	1	2	2	12.4	9	4	4	1		22	223.2	45	20.2	
656	6		74+940	Pokhara -30,Mathillo GaganGauda	R	1	3	3	9.7	5.5	4	1	1	2061	22	160.1	41.25	25.8	
657	7		74+880	Pokhara -30,Mathillo GaganGauda	L	1	2	2	12.7	9.5	9	1	1	2042	14	241.3	199.5	82.7	
658	8		74+895	Pokhara -30,Mathillo GaganGauda	L	1	3	4	9.1	5.1	4	3	1	2052	23	185.6	30.6	16.5	

For Reference Only

S.N	HHs no.	House Owner Name	Chainage	Address	Side	Structure Type	Roof types	Flat No	Length (L)	Breath (B)	Wall Types	Present Use	Affected	Construction Year	Distance from CL meter	Total area of structure	Affected structure area (Sqm)	Affected %	Categories
659	9		74+905	Pokhara -30,Mathillo GaganGauda	L	1	2	2	5	3.2	3	1	1		23	32	9.6	30	SFHs+B PL
660	10		74+910	Pokhara -30,Mathillo GaganGauda	L	1	2	3	9.75	7	4	3	1	2050	22	204.8	52.5	25.6	
661	11		74+920	Pokhara-30, Gagangauda	L	1	3	1	12	9	4	3	2	2050	16.5	108	72	66.7	
662	12		74+935	Pokhara-30, Gagangauda	L	1	3	1	10.6	7.3	4	3	1		23	77.38	10.95	14.2	
663	13		74+945	Pokhara-30, Gagangauda	L	1	3	1	17.1	9.9	4	3	1	2022	20	169.3	44.55	26.3	
664	14		74+965	Pokhara-30, Gagangauda	L	1	2	2	13.3	4.2	3	3	1		20	111.7	37.8	33.8	
665	15		74+980	Pokhara-30, Gagangauda	L	1	2	2	9.3	5.5	3	4	1		20	102.3	49.5	48.4	
666	16		74+990	Pokhara-30, Gagangauda	L	1	2	2	8	7	3	3	1		20	112	63	56.3	
667	17		74+998	Pokhara-30, Gagangauda	L	1	3	3	11	5.7	4	3	1	2048	20	188.1	76.95	40.9	
668	18		75+010	Pokhara-30, Gagangauda	L	1	3	2	7.3	5.1	4	3	1		20	74.46	45.9	61.6	
669	19		75+018	Pokhara-30, Gagangauda	L	1	3	2	7.3	7	4	3	1		20	102.2	63	61.6	
670	20		75+025	Pokhara-30, Gagangauda	L	1	2	2	6.8	6.8	3	3	1	2028	20	92.48	61.2	66.2	
671	21		75+032	Pokhara-30, Gagangauda	L	1	2	2	7.9	6.8	3	3	1	2035	20	107.4	61.2	57	
672	22		74+985	Pokhara-30, Gagangauda	R	1	3	3	8.7	6.2	4	3	1		21.5	161.8	55.8	34.5	
673	23		75+040	Pokhara-30, Gagangauda	L	1	2	2	12.8	7.2	4	1	1		22.5	184.3	28.8	15.6	
674	24		75+053	Pokhara-30, Gagangauda	L	1	3	2	7.4	6.2	4	4	1		22.5	91.76	24.8	27	
675	25		75+061	Pokhara-30, Gagangauda	L	1	3	2	10.5	7.3	4	3	1	20	22.5	153.3	29.2	19	
676	26		75+072	Pokhara-30, Gagangauda	L	1	3	2	10.4	10	4	3	1		22.5	212.2	40.8	19.2	
677	27		75+082	Pokhara-30, Gagangauda	L	1	3	1	10.1	7.5	4	3	1	2054	22.5	75.75	15	19.8	
678	28		75+060	Pokhara-30, Gagangauda	R	1	2	1	7.1	3.7	9	4	1		22.5	26.27	7.4	28.2	
679	29		75+080	Pokhara-30, Gagangauda	R	1	3	2	8.2	6	4	3	1		22.5	98.4	24	24.4	
680	30		75+088	Pokhara-30, Gagangauda	R	1	3	1	16.1	7.6	4	4	1		23	122.4	11.4	9.3	
681	31		75+105	Pokhara-30, Gagangauda	R	1	3	2	8	7.8	4	3	1	2039	23	124.8	23.4	18.8	
682	32		75+113	Pokhara-30, Gagangauda	R	1	3	2	13.4	8	4	3	1	2039	23	214.4	24	11.2	
683	33		75+127	Pokhara-30, Gagangauda	R	1	3	2	16	7	4	3	1	2039	23	224	21	9.4	
684	34		75+055	Pokhara-30, Gagangauda	L	1	3	2	8	7.9	4	3	1	2038	17.5	126.4	110.6	87.5	
685	35		75+200	Pokhara-30, Gagangauda	R	1	3	2	6.9	5.5	4	1	1		22.5	75.9	22	29	
686	36		75+190	Pokhara-30, Gagangauda	L	1	2	2	8.4	7.9	3	1	1		22.5	132.7	31.6	23.8	
687	37		75+230	Pokhara-30, Gagangauda	L	1	3	2	11.3	5	4	3	1	2052	21.5	113	30	26.5	
688	38		75+250	Pokhara-30, Gagangauda	L	1	2	3	7.8	6	4	3	1		22	140.4	45	32.1	
689	39		75+335	Pokhara-29, Powerhouse	L	1	3	2	7.4	6.6	4	3	1	2053	22	97.68	33	33.8	
690	40		75+365	Pokhara-29, Powerhouse	R	1	2+	2	10.9	10	4	3	1	2048	22	220.2	50.5	22.9	
691	41		75+376	Pokhara-29, Powerhouse	R	1	3	2	7	5.1	4	3	1		22	71.4	25.5	35.7	

For Reference Only

S.N	HHs no.	House Owner Name	Chainage	Address	Side	Structure Type	Roof types	Flat No	Length (L)	Breath (B)	Wall Types	Present Use	Affected	Construction Year	Distance from CL meter	Total area of structure	Affected structure area (Sqm)	Affected %	Categories
692	42		75+390	Pokhara-29, Powerhouse	R	1	3	1	7	5.1	4	4	1		22	35.7	12.75	35.7	
693	43		75+425	Pokhara-29, Powerhouse	L	1	2	1	11	6.9	3	1	1		21.5	75.9	20.7	27.3	
694	44		75+450	Pokhara-29, Powerhouse	L	1	2	1	7.3	6	2	4	1		19	43.8	33	75.3	
695	46		76+715	Pokhara-29, Sainik Basti	R	1	2	1	8.4	3.7	9	1	1	2039	22.5	31.08	7.4	23.8	
696	47		76+970	Pokhara-29, Sainik Basti	R	2	2	1	9.7	7.1	3	2	1	2073	21.5	68.87	21.3	30.9	
697	48		77+010	Pokhara-29, Sainik Basti	L	1	2	1	7.1	3.1	9	1	2		16	22.01	22	100	
698	49		77+025	Pokhara-29, Sainik Basti	R	1	2	2	9	6.7	3	1	1		22.5	120.6	26.8	22.2	
699	50		77+425	Pokhara-29, Sainik Basti	L	1	2	2	9	4.5	2	1	1		21.5	81	27	33.3	
700	51		77+650	Pokhara-29, Sainik Basti	R	2	2	1	4	3.3	9	2	2		20	13.2	13.2	100	
701	53		78+185	Pokhara-29, Bhandardhik	L	1	3	2	14.6	7.3	4	3	1	2054	22	213.2	36.5	17.1	
702	55		78+530	Pokhara-29, Bhandardhik	R	2	2	1	4.8	4.6	9	4	2		19	22.08	22.08	100	
703	56		78+625	Pokhara-29, Aadarsha Chowk	R	2	2	1	8.5	3.7	9	2	2	2073	19	31.45	20.35	64.7	
704	57		78+565	Pokhara-29, Aadarsha Chowk	L	1	3	2.5	7.4	7.3	4	3	1	2048	21	135.1	63.88	47.3	
705	58		78+570	Pokhara-29, Aadarsha Chowk	L	1	3	2.5	10.7	8.1	4	3	1	2048	21	216.7	70.88	32.7	
706	59		78+590	Pokhara-29, Aadarsha Chowk	L	7	2	3	10.4	6	3	khali	2	2023	19	187.2	99	52.9	
707	61		78+785	Pokhara-29, Aadarsha Chowk	R	1	2	1	7.5	5.1	9	1	2	2040	20	38.25	22.95	60	
708	62		78+860	Pokhara-29, Aadarsha Chowk	L	1	2	3	7.1	6.5	2	1	1	2028	21	138.5	68.25	49.3	
709	63		78+850	Pokhara-29, Aadarsha Chowk	R	1	2	2	8.2	7.4	9	3	1		22.5	121.4	29.6	24.4	
710	64		79+005	Pokhara-29, Aadarsha Chowk	L	1	2	2	7.1	4.7	2	4	2	2062	17	66.74	66.7	99.9	
711	68		79+940	Pokhara-27, Taalchowk	R	1	3	1	10.7	7.7		4	1		22.5	82.39	15.4	18.7	
712	69		79+990	Pokhara-27, Taalchowk	R	1	3	2.5	9	7.3		3	1		22.7	164.3	32.85	20	
713	70		80+050	Pokhara-27, Taalchowk	R	1	2	2	8.2	6.7		1	1		22.7	109.9	24.12	22	
714	71		80+020	Pokhara-27, Taalchowk	L	1	3	2	14.2	7.4	4	3	1		22	210.2	37	17.6	
715	72		80+060	Pokhara-27, Taalchowk	L	1	3	2	7.1	6.8	4	3	1		22	96.56	34	35.2	
716	73		80+135	Pokhara-27, Taalchowk	L	1	3	2.5	9.7	8.8	4	4	1		22	213.4	55	25.8	
717	74		80+375	Pokhara-27, Taalchowk	L	1	2	1	9.7	7	9	1	1	2049	22	67.9	17.5	25.8	
718	75		80+650	Pokhara-27, Daandakonaak	L	1	3	2	7.6	6.9	4	1	1	2036	22	104.9	34.5	32.9	

For Reference Only

S.N	HHs no.	House Owner Name	Chainage	Address	Side	Structure Type	Roof types	Flat No	Length (L)	Breath (B)	Wall Types	Present Use	Affected	Construction Year	Distance from CL meter	Total area of structure	Affected structure area (Sqm)	Affected %	Categories
719	76		80+670	Pokhara-27, Daandakonaak	L	1	3	2	10.8	7.1	4	1	1		22	153.4	35.5	23.1	
720	77		80+625	Pokhara-27,Daandakonaak	R	1	3	2	12	7.3	4	3	1	2049	22	175.2	36.5	20.8	
721	78		80+650	Pokhara-27, Daandakonaak	R	1	3	2	11	6.9	4	3	1		22	151.8	34.5	22.7	
722	79		80+660	Pokhara-27, Daandakonaak	R	1	3	2	10	7	4	1	1		22.5	140	28	20	
723	80		80+675	Pokhara-27, Daandakonaak	R	1	3	1	9.4	8.7	4	4	2	2039	19	81.78	47.85	58.5	
724	81		80+685	Pokhara-27, Daandakonaak	R	1	3	3	13.4	8	4	3	2		19	321.6	132	41	
725	82		80+695	Pokhara-27, Daandakonaak	R	1	2	1	7	5.4	9	4	2		19	37.8	29.7	78.6	
726	83		80+700	Pokhara-27, Daandako	R	1	2	1	7	6	9	4	2		19	42	33	78.6	
727	84		80+900	Pokhara-27, Daandakonaak	R		2	1	8	3	9	store	2		19	24	16.5	68.8	
728	85		81+235	Pokhara-26,Aaghau-chowk	L	1	3	1.5	8.4	7.4	4	1	1	2052	22	93.24	27.75	29.8	
729	86		81+540	Pokhara-26, Aaghau-chowk	L	2	2	1	7.5	3	9	2	2	2059	20	22.5	13.5	60	
730	87		81+550	Pokhara-27, Aaghau-chowk	L	2	2	1	4.5	4	9	2	2	2059	20	18	18	100	
731	88		81+560	Pokhara-26, Aaghau-chowk	L	1	3	1	12.6	9.8	4	4	1		22.5	123.5	19.6	15.9	
732	89		81+570	Pokhara-26, Aaghau-chowk	L	1	2	1	7.7	3.9	2	2	1		22.5	30.03	7.8	26	
733	90		81+640	Pokhara-26,Aaghau-chowk	L	2	2	1	9	6	9	4	1		22.5	54	12	22.2	
734	91		81+650	Pokhara-26, Aaghau-chowk	L	2	2	1	6.2	3	9	4	1		22.5	18.6	6	32.3	
735	92		82+050	Pokhara-26, Aaghau-chowk	R	7	2	2	8	4	2	khali	1		22.5	64	16	25	
736	93		82+185	Pokhara-26,Aaghau-chowk	L	1	2	2	10.3	5	1	1	2	2011	17	103	75	72.8	

For Reference Only

S.N	HHs no.	House Owner Name	Chainage	Address	Side	Structure Type	Roof types	Flat No	Length (L)	Breath (B)	Wall Types	Present Use	Affected	Construction Year	Distance from CL meter	Total area of structure	Affected structure area (Sqm)	Affected %	Categories
737	94		82+815	Pokhara-26, Aaghau-chowk	L	1	2	1	8	5	9	1	2		21	40	17.5	43.8	
738	95		82+810	Pokhara-26,Budhibazar	R	1	3	1	10.7	7	4	1	1	2052	22.5	74.9	14	18.7	
739	96		82+825	Pokhara-27, Budhibazar	R	1	3	1.5	10.2	8.5	4	1	1	2050	22.5	130.1	25.5	19.6	
740	97		82+815	Pokhara-26,Budhibazar	R	1	3	2.5	10	7.3	4	1	1	2051	22.5	182.5	36.5	20	
741	98		82+915	Pokhara-27, Budhibazar	R	1	2	1	9.5	4.5	9	1	2		21	42.75	15.75	36.8	
742	99		82+950	Pokhara-26,Budhibazar	R	1	2	1	8.5	6	9	4	2	2035	18	51	39	76.5	
743	100		83+635	Pokhara-26, Budhibazar	R	1	3	3	7.8	7.8	4	4	2		15	182.5	183	100.3	
744	101		83+650	Pokhara-26, Sangamna-gar	R	1	2	1	9.5	5.8	1	1	2	2018	8.5	55.1	55.1	100	Disable
745	102		83+660	Pokhara-26, Sangamna-gar	R	1	2	2	8	5.2	2	1	2	2016	17.5	83.2	72.8	87.5	
746	103		83+535	Pokhara-26, Sangamna-gar	L	1	2	1	6.8	6.5	3	1	2	2040	21.5	44.2	19.5	44.1	Disable
747	104		83+545	Pokhara-26, Sangamna-gar	L	1	3	2	9.2	7.9	4	1	1		21.5	145.4	47.4	32.6	
748	105		83+655	Pokhara-26,	L	2	2	1	5.8	5.7	9	2	2		21.5	33.06	17.1	51.7	
749	106		83+735	Pokhara-26,	R	1	3	1	12.6	4.1	9	4	2		14	51.66	43.05	83.3	
750	107		83+925	Pokhara-26,	R	7	2	1	6	5	2	khali	2		13	30	17.5	58.3	
751	108		84+235	Pokhara-26, Bijaypur	L	1	2	1	9.3	5	9	1	2		14	46.5	12.5	26.9	
752	109		84+245	Pokhara-26, Bijaypur	L	1	2	1	9.3	5.6	1	2	2	2027	14	52.08	14	26.9	
753	110		84+070	Pokhara-26, Bijaypur	R	1	2	1	10.3	4.1	9	1	2		20	42.23	18.45	43.7	
754	111		84+735	Pokhara Na. Pa 14 Chau-the	R	2	2	1	9.3	8	4	1	2		26.5	74.4	74.6	100.3	
755	112		84+750	Pokhara Na. Pa 14 Chau-the	R	9	3	2.5	12.1	8.8	9	2	2		26.5	266.2	266	99.9	

BPL= Below Poverty Level,SFHHs=Single Female Headed Households,Disable etc

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Types of structure:1- Residental, 2-Commercial, 3- Community , 4- Shed, 5- toilet, 6- wall, 7- Empty House/ hut, 8- Kitchen, 9-Community res, 10- Temple, 11- Waiting shed ,12- Public tap,13- Well/ tubewall,14- Gate, 16- Different status& Park, 1&2 – Res+ Commercial, 4& 6- Wall& gate etc

Roof Type : 1- Slate 2- ZinK sheet, 3-RRC Dhalan, 4- Straw, 6- Tripal

Wall Type: 1-Stone & mud mortar plaster by Mud, 2- Stone & mud mortar plaster by Cement, 3-Stone and cement mortar by cement plaster, 4- Bricks & cement mortar by cement plaster, 5- Bamboo& wood, 6- Zink sheet, 7-stone , mud, wood and Zink sheet , 8- Zink sheet & wood, 9- Block , 10-Stone cement, and metal pipe mix

Use: 1-Self settlement, 2 -Commercial, 3- Res+ Commercial, 4- Rented , 5- under construction, 6-Empty house, 7- common uses, 8- etc

Affected Situation: 2 Fully, 1- Partially

Inventary of the Madi & Seti Bridge site

HHs	House Owner Name	Chainage	Address	Side	Structure Type	Roof types	Flat No	Length (L)	Breath (B)	Wall Types	Present Use	Affected	Construction Year	Distance from CL meter	Total area of structure	Affected area of structures (Sqm)	Affected %	Categories
1		Madi	Tanhu , bays -5 Changughat	R	RCC House	RCC	2.5	4.5	4	Cement+Motar+ Break	Residential	Parcially			45	10	22	IP
		Madi	Tanhu , bays -5 Changughat	R	RCC Toilet	RCC	1	2.5	2.5	Cement+Motar+ Break		Full			6.25	6.25	100	IP
		Madi	Tanhu , bays -5 Changughat	R	Tahara	CGI Sheet	1	6	4	Sheet + break	Residential	Full			24	24	100	IP
		Madi	Tanhu , bays -5 Changughat	R	Mud House	Mud House	1	9	10	Break+Mud+Sheet	Commercial	Full			90	90	100	IP
2		Madi	Tanhu , bays -5 Changughat	R	RCC House	RCC	2	5.5	11	Cement+Motar+ Break	Residential Cum Business	Full			121	121	100	IP
3		Madi	Tanhu , bays -5 Changughat	R	RCC House	RCC	2	7	12	Cet+Motar+ Break	Residential	Full			168	168	100	Ip
4		Madi	Tanhu , bays -4 Dharabari	R	RCC House	RCC		6	4	Cement+Motar+ Break	Residential	Full			24	21	100	IP
5		Seti	Pokhara -10	L	Tahara	Wood+ Sheet	1	3	4	CGI Sheet	Commercial	Fully			12	12	100	IP
		Seti	Pokhara-10	L	Toilet	Break+Cement+Sheet	1	2	2	CGI Sheet		Fully			4	4	100	IP
		Seti	Pokhara-10	L	Tahara	Break+Cement+Sheet	1	5	6	CGI Sheet	Residential	Fully			30	30	100	IP

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		Seti	Pokhara-10	L	Nurshary	Plastic + Wood	1	20	1.5	CGI Sheet	Other (Nursery)	Fully			30	30	100	IP
6		Seti	Pokhara-10	L	Tahara	Wood+ Sheet	1	5	7	CGI Sheet	Com-mercial	Fully			35	35	100	IP
7		Seti	Pokhara-10	L	Tahara	Break+Ce-ment+Sheet	1	11	7	CGI Sheet	Resi-dential	Fully			77	77	100	IP
8		Seti	Pokhara-9	L	Tahara	Break+Ce-ment+Sheet	1	2	2	CGI Sheet	Com-mercial	Fully			4	4	100	IP
9		Seti	Pokhara-9	L	Tahara	Break+Ce-ment+Sheet	1	4	4	CGI Sheet	Resi-dential	Fully			16	16	100	IP
		Seti	Pokhara-9	L	Fountain	Break+Ce-ment+ Motar	1	2	2	CGI Sheet	Other	Fully			4	4	100	IP
		Seti	Pokhara-9	L	Tahara	Plastic + Wood	1	2.5	2.5	CGI Sheet	Other (Nursery)	Fully			6.25	6.25	100	IP

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APPENDIX 3.1: LIST OF AFFECTED SEMI-MOVABLE KISOKS

S. N.	Chainage	Side	Structures Owner Name	Address
1.	Seti	L		Pokhara -10, Seti Pokha
2.	Seti	R		Pokhara-10, People's Republic of China Bridge
3.	Seti	R		Pokhara-10, People's Republic of China Bridge
4.	seti	L		Abukhaireni 6
5.	8+370	L		Abukhaireni 6 Milan Chowk
6.	8+915	L		Abukhaireni 5 Dhaptar
7.	9+330	R		Abukhaireni 5 Dhaptar
8.	11+310	R		Abukhaireni 3 Khanikhola
9.	12+525	L		Abukhaireni 3 Marki Chowk
10.	12+715	L		Abukhaireni 3 Marki Chowk
11.	13+685	L		Abukhaireni 3 Marki Chowk
12.	13+950	L		Abukhaireni 3 Raklefant
13.	14+610	L		Abukhaireni 2 Baradi
14.	14+625	L		Abukhaireni 2 Baradi
15.	14+635	L		Abukhaireni 1 Baradi Bazar
16.	14+625	L		Abukhaireni 1 Baradi Bazar
17.	14+625	L		Abukhaireni 1 Baradi Bazar
18.	14+625	R		Abukhaireni 1 Baradi Bazar
19.	14+625	L		Abukhaireni 1 Baradi Bazar
20.	15+875	L		Abukhaireni 1 Baradi Bazar
21.	16+060	R		Abukhaireni 1 Satrasaya
22.	16+130	L		Abukhaireni 1 Satrasaya
23.	16+060	L		Abukhaireni 1 Satrasaya
24.	16+140	R		Abukhaireni 1 Satrasaya
25.	16+060	L		Abukhaireni 1 Satrasaya
26.	16+150	L		Abukhaireni 1 Satrasaya
27.	16+160	R		Abukhaireni 1 Satrasaya
28.	16+610	L		Abukhaireni 1 Satrasaya
29.	16+540	L		Abukhaireni 1 Satrasaya
30.	16+660	R		Abukhaireni 1 Satrasaya
31.	16+760	L		Abukhaireni 1 Satrasaya
32.	16+835	L		Abukhaireni 1 Satrasaya
33.	16+850	L		Abukhaireni 1 Satrasaya
34.	16+875	L		Abukhaireni 1 Satrasaya

For Reference Only

S. N.	Chainage	Side	Structures Owner Name	Address
35.	16+875	L		Abukhaireni 1 Satrasaya
36.	17+025	R		Abukhaireni 1 Satrasaya
37.	18+355	R		Bandipur Na pa 5 Yampa
38.	19+055	R		Bandipur Na pa 5 Yampa
39.	19+865	L		Bandipur 5 Gohar Chautara
40.	20+775	L		Bandipur 5 Chunpahara
41.	20+780	L		Bandipur 5 Chunpahara
42.	20+785	L		Bandipur 5 Chunpahara
43.	20+790	L		Bandipur 5 Chunpahara
44.	20+795	L		Bandipur 5 Chunpahara
45.	20+800	L		Bandipur 5 Chunpahara
46.	20+805	L		Bandipur 5 Chunpahara
47.	20+810	L		Bandipur 5 Chunpahara
48.	20+815	L		Bandipur 5 Chunpahara
49.	21+460	R		Bandipur 6 Bimal Nagar
50.	21+465	R		Bandipur 4 Thulo Dhunga
51.	21+470	L		Bandipur 4 Dumre
52.	21+475	L		Bandipur 4 Dumre
53.	21+480	L		Bandipur 4 Dumre
54.	21+460	L		Bandipur 4 Dumre
55.	21+465	L		Bandipur 4 Dumre
56.	21+485	L		Bandipur 4 Dumre
57.	27+315	L		Ghasikuwa 1 Nayabasti
58.	28+155	R		Bel Vanjyang Bazar
59.	28+250	R		Bel Vanjyang Bazar
60.	28+260	L		Bel Vanjyang Bazar
61.	28+255	R		Bel Vanjyang Bazar
62.	28+265	R		Bel Vanjyang Bazar
63.	28+350	R		Bel Vanjyang Bazar
64.	28+370	R		Bel Vanjyang Bazar
65.	28+480	R		Bel Vanjyang Bazar
66.	29+955	R		Ghasikawa 8 Chirkan
67.	29+985	L		Ghasikawa 8 Chirkan
68.	30+030	R		Ghasikawa 8 Chirkan
69.	30+035	L		Ghasikawa 8 Chirkan
70.	30+085	R		Ghasikawa 8 Chirkan

For Reference Only

S. N.	Chainage	Side	Structures Owner Name	Address
71.	30+100	R		Ghasikawa 8 Chirkan
72.	30+185	L		Ghasikawa 8 Chirkan
73.	30+200	L		Ghasikawa 8 Chirkan
74.	30+260	L		Ghasikawa 8 Chirkan
75.	30+465	L		Ghasikawa 8 Chirkan
76.	30+615	R		Ghasikawa 8 Chirkan
77.	30+625	L		Ghasikawa 8 Chirkan
78.	30+735	L		Ghasikawa 8 Chirkan
79.	30+720	L		Ghasikawa 8 Chirkan
80.	34+985	L		Ghasikuwa 3 Kamal Bari
81.	36+935	R		Ghasikuwa 3 Kamal Bari
82.	36+945	L		Byas 8 Chapaghat
83.	45+820	L		Jamune 1 Gunardi
84.	45+830	L		Jamune 1 Gunardi
85.	45+840	L		Jamune 1 Gunardi
86.	46+025	L		Jamune 1 Gunardi
87.	47+685	R		Jamune 2 Gunardi
88.	47+700	R		Jamune 2 Gunardi
89.	47+710	R		Jamune 2 Gunardi
90.	49+860	R		Jamune 4 Jamune
91.	49+880	R		Jamune 4 Jamune
92.	49+910	R		Jamune 4 Jamune
93.	49+980	R		Jamune 4 Jamune
94.	50+140	L		Jamune 4 Jamune
95.	52+835	R		Chang 1 Ghumti
96.	54+700	L		Chang 5 Manhari
97.	54+700	L		Chang 5 Manhari
98.	54+755	R		Chang 5 Manhari
99.	54+760	R		Chang 5 Manhari
100.	54+985	R		Chang 5 Manhari
101.	55+640	L		Manpang 1 Chabise
102.	56+575	L		Manpang 2 Akala
103.	56+575	R		Manpang 2 Akala
104.	56+780	R		Manpang 2 Turture
105.	57+235	R		Manpang 2 Mauribazar
106.	57+835	R		Manpang 2 Rithepani

For Reference Only

S. N.	Chainage	Side	Structures Owner Name	Address
107.	57+900	R		Manpang 2 Rithepani
108.	57+900	R		Manpang 2 Rithepani
109.	59+000	L		Manpang 2 Serafant
110.	64+575	L		Su Na Pa 4 Galchina
111.	64+970	R		Su Na Pa 4 Galchina
112.	68+160	R		Su Na pa 1 Haledi
113.	68+275	R		Su Na pa 1 Haledi
114.	70+085	R		Su Na Pa 1 Kotre
115.	70+175	R		Su Na Pa 1 Kotre
116.	70+400	R		Su Na Pa 1 Kotre
117.	71+650	L		Lekhnath 13 Bhajuwa
118.	76+215	L		Le. Na Pa 1 Sainik Basti
119.	76+700	L		Lekhnath 1 Sainik Basti
120.	76+835	R		Lekhnath 1 Sainik Basti
121.	76+840	R		Lekhnath 1 Sainik Basti
122.	81+580	L		Lekhnath 3 Adhau Chowk
123.	82+985	R		Lekhnath 3 Budhibazar

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APPENDIX 4: LIST OF AFFECTED CROPS

S.N	VDC	Ward No	Land Owner Name	Name of Crops	Production at affected plots (In Kg.)	Affected areas production in Kg	Average Price Per Kg	Total Estimated Cost	Remarka
1	Chhang	5		Rice	5700	1200	45	54000	Updated during Implimentation
2	Chhang	4		Rice	1500	950	45	42750	Updated during Implimentation
3	Chhang	4		Millate & Vegetable	500	450	68	30600	Updated during Implimentation
	Total				7700	2600		127,350.00	

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APPENDIX 5: LIST OF AFFECTED PRIVATELY-OWNED FRUITS/TREES OF MUGLING-POKHARA ROAD SECTION

S.N	Districts Name	Fruits Name	No	Average Production (kg)/Year	Average rate	Annual In-come	Based on the EM: C-1	Estimated Total Cost NRs.
1	Tanahu	Bananas	1,000	10	15	150	1	150,000
2	Tanahu	Orange	10	20	40	800	5	40,000
3	Tanahu	Citrus (Nibuwa)	36	30	15	450	5	81,000
4	Tanahu	Guava(Amba)	20	10	25	250	5	25,000
5	Tanahu	Papaya(Mewa)	56	10	40	400	1	22,400
6	Tanahu	Lichhi	45	5	120	600	5	135,000
7	Tanahu	Mango	40	50	35	1750	5	350,000
8	Tanahu	Palm tree	2	10	20	200	1	400
9	Tanahu	Supari	4	2	200	400	5	8,000
10	Tanahu	Jack fruits (Rukhakathar)	12	24	30	720	1	8,640
11	Tanahu	Pears(Naspati)	20	15	30	450	5	45,000
12	Tanahu	Bamboo	574	Tree	200	114800	1	114,800
13	Tanahu	Chiulani	50	Tree	2,500	125000	1	125,000
14	Tanahu	Khainaio	12	Tree	1,500	18000	1	18,000
15	Tanahu	Badar	7	Tree	1,800	12600	1	12,600
16	Kashi	Bananas	250	15	15	225	1	56,250
17	Kashi	Orange	2	15	40	600	5	6,000
18	Kashi	Citrus(Nibuwa)	7	20	25	500	5	17,500
19	Kashi	Guava(Amba)	3	10	25	250	5	3,750
20	Kashi	Papaya(Mewa)	15	10	40	400	1	6,000
21	Kashi	Lichhi	10	10	120	1200	5	60,000
22	Kashi	Mango	10	80	35	2800	5	140,000
23	Kashi	Jack fruit(Rukhakathar)	3	100	25	2500	5	37,500
24	Kashi	Pears(Naspati)	1	20	30	600	5	3,000
25	Kashi	Bamboo	25	Tree	200	5000	1	6,250
26	Kashi	Chiulani	5	Tree	2,500	12500	1	12,500
27	Kashi	Khainaio	2	Tree	1,500	3000	1	3,000
	Total		2,221					1,487,590.00

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APPENDIX 6: LIST OF VULNERABLE HHS

S.no.	House Owner Name	Chainage	Address	Side	Structure Type	Construc-tion Year	Distance from CL meter	Categories
1		8+155	Abukhaireni 6	R	1	2051	6	Disable
2		9+990	Abukhaireni 4 Narighat	L	1	2065	6.5	BPL
3		10+985	Abukhaireni 4 Khanikhola	L	1	2050	5	BPL
4		13+925	Abukhaireni 3 Yeklephant	L	1	2038	8	SFHs
5		15+415	Abukhaireni 3 Yeklephant	L	1	2045	7.5	SFHs+BPL
6		15+635	Abukhaireni 1 Baradi Bazar	L	1	2040	8	SFHs
7		23+460	Bandipur 4 Dumre	R	1	2032	10	SFHs
8		23+493	Bandipur 4 Dumre	L	1	2035	10	BPL
9		30+100	Ghasikuwa 8	L	1	2050	7	BPL
10		30+160	Ghasikuwa 8	R	1	2025	7	BPL
11		30+595	Ghasikuwa 8	R	1	2040	8	SFHs+BPL
12		30+680	Ghasikuwa 8	R	1	2045	8	BPL
13		30+735	Ghasikuwa 8 Ghikarna	L	1	2055	8	SFHs
14		30+745	Ghasikuwa 8 Ghikarna	L	1	2055	8	BPL
15		34+970	Ghasikuwa 3 Kamalbari	R	1	2048	7	BPL
16		35+225	Ghasikuwa 3 Kamalbari	R	1	2052	12	BPL
17		36+781	Ghasikuwa 5 Ghasikuwa	R	1	2055	6	EFHs
18		36+800	Ghasikuwa 5 Ghasikuwa	R	1	2053	6	BPL
19		37+574	Ghasikuwa 5 Ghasikuwa	R	1	2040	6	SFHs
20		37+583	Ghasikuwa 5 Ghasikuwa	R	1	2055	6	BPL
21		37+588	Ghasikuwa 5 Ghasikuwa	R	1	2055	6	SFHs
22		40+475	Byas 2 Malebazar	L	2	2040	12	SFHs
23		57+235	Manpang 2 Mauribazar	L	1	2047	10	BPL
24		68+285	Su na pa 1 haledi	R	1	2057	12	BPL
25		70+245	Su na pa 1 Kotra	L	1	2043	16	BPL
26		70+485	Su na pa 1 Kotra	R	1	2027	16	BPL
27		74+710	un a pa 1 Gachhepani	L	1	2063	20	SFHs+BPL
28		76+550	Lekhnath 1 Sainik Basti	L	1	2046	16	BPL
29		74+905	Mathillo Gagan Le na pa 12 Gauda	L	1	2046	23	SFHs+BPL
30		75+061	Le na pa 12 Gagangauda	L	1	2046	22.5	SFHs
31		83+650	Lekhnath 3 Sangamnagar	R	1	2018	8.5	Disable
32		83+535	Lekhnath 3 Sangamnagar	L	1	2040	21.5	Disable
33		84+235	Lekhnath 5 Bijaypur	L	1	2056	14	SFHs

Note: SFH = Singe FemaleHeahed BPL = Below Poverty Level, EFH=Early Aged Headed Female [a] The above table only shows surveyed single female-headed household, elderly (above 70 years)-headed households, disabled-headed households, and households below poverty line. Additional criteria such as Dalit, part of ethnic households, and landless households are also considered vulnerable. Additional validation by the local authorities/agency will be undertaken during RP implementation. The total number of vulnerable households will be confirmed during the RP implementation.

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APPENDIX 7: LIST OF PUBLIC AND COMMUNITY STRUCTURES

S. N.	Name of Structures	Chainage	Address	Side	Structure use	Roof types	Flat No	length (m)	Breath (b)	Affected areas Sqm	Wall Types	Affected Position	Re-marks
1.	Chautara	8+190	Abukhaireni 5 Dhaptar	R	chautara					0		2	
2.	Public Tap	9+330	Abukhaireni 5 Dhaptar	R	12					0	3	2	
3.	Public Toilet	9+330	Abukhaireni 5 Dhaptar	R	5	2	1	6	1.2	7.2	6	2	
4.	Chautara	9+330	Abukhaireni 5 Dhaptar	L	chautara					0		2	
5.	Chautara	9+975	Abukhaireni 5 Narighat	L	chautara					0		2	
6.	Chimkeswori Prasodhit Suddha Piune Paniko Toilet	10+940	Abukhaireni 5 Khanikhola	L	5	2	1	3	2.5	7.5	4	2	
7.	Public Tap 2 ta	10+950	Abukhaireni 5 Khanikhola	L	12			2.5	2	0	3	2	
8.	Public Tap	10+960	Abukhaireni 3 Khanikhola	L	12			2	2	0	3	2	
9.	Public Tap	10+980	Abukhaireni 3 Khanikhola	R	12			2	2	0	3	2	
10.	Public Tap	10+990	Abukhaireni 3 Khanikhola	R	12			2	2	0	3	2	
11.	Bhai Mandir	12+200	Abukhaireni 3 Marki Chowk	R	10	3	1	3	3	9	3	2	
12.	Public Tap	12+200	Abukhaireni 3 Marki Chowk	L	12			2	2	0	3	2	
13.	Public Tap	12+200	Abukhaireni 3 Marki Chowk	L	12			2	2	0		2	
14.	Public Tap	12+200	Abukhaireni 3 Marki Chowk	R	12			2	2	0		2	
15.	Pratikshyalaya	12+550	Abukhaireni 3 Marki Chowk	L	11	2	1	5	3.8	19		2	
16.	Marsyangdi Jaldipur Pariyojanako khali ghar	12+560	Abukhaireni 3 Marki Chowk	R	7	2	1	14	6.8	95.2	3	2	
17.	Marsyangdi Jaldipur Pariyojanako Guard Ghar	12+665	Abukhaireni 3 Marki Chowk	R	7	3	1	4	4	16	4	2	
18.	Public Tap	12+665	Abukhaireni 3 Marki Chowk	L	12			2	2	0	3	2	
19.	Public Tap	12+665	Abukhaireni 3 Marki Chowk	L	12			2	2	0	3	2	
20.	Chautara	12+665	Abukhaireni 3 Marki Chowk	R	chautara			10	4	0		2	
21.	Chautara	12+665	Abukhaireni 3 Marki Chowk	R	chautara					0		2	
22.	Pratikshyalaya	13+040	Abukhaireni 3 Marki Chowk	R	11	2	1	4	3	12	10	2	
23.	Public Tap	13+040	Abukhaireni 3 Marki Chowk	L	12			4.4	3.2	0	3	2	
24.	Chautara	13+800	Abukhaireni 3 Raklefant	R	chautara					0		2	
25.	Public Tap	13+800	Abukhaireni 3 Raklefant	L	12			2	2	0	3	2	
26.	Public tap	13+800	Abukhaireni 3 Raklefant	L	12			2	2	0	3	2	
27.	Pratikshyalaya	14+650	Abukhaireni 2 Baradi	R	11	2	1	4	3	12	3	2	
28.	Public Tap	14+750	Abukhaireni 2 Baradi	L	12			2	2	0	3	2	
29.	Public Tap	14+850	Abukhaireni 2 Baradi	R	12			2	2	0	3	2	

For Reference Only

S. N.	Name of Structures	Chainage	Address	Side	Structure use	Roof types	Flat No	lengt h (m)	Breath (b)	Affected areas Sqm	Wall Types	Affected Position	Re-marks
30.	Public Tap	14+950	Abukhaireni 2 Baradi	L	12			2	2	0	3	2	
31.	Public Tap	14+950	Abukhaireni 2 Baradi	R	12			2	2	0	3	2	
32.	Akala Mandir Prabesh Dwar	15+420	Abukhaireni 2 Baradi	R	14					0	3	2	
33.	Public Tap	15+420	Abukhaireni 2 Baradi	R	12			2	2	0	3	2	
34.	Public Tap	15+420	Abukhaireni 2 Baradi	R	12			2	2	0	3	2	
35.	Chautara	15+420	Abukhaireni 2 Baradi	R	chautara					0		2	
36.	Public Tap 3 ta	15+420	Abukhaireni 2 Baradi	R	12			5	1.5	0	3	2	
37.	Public tap	15+420	Abukhaireni 1 Baradi Bazar	L	12			2	2	0	3	2	
38.	Pratikshyalaya	15+890	Abukhaireni 1 Satrasaya	L	11	3	1	3.8	3.8	14.44	khali	2	
39.	Public Tap		Abukhaireni 1 Satrasaya	L	12			2.2	2	0	3	2	
40.	Public Tap	15+890	Abukhaireni 1 Satrasaya	L	12			2.2	2	0	3	2	
41.	Pratikshyalaya	15+890	Abukhaireni 1 Satrasaya	R	11	2	1	4	4	16		2	
42.	Public Tap	15+890	Abukhaireni 1 Satrasaya	L	12			2	2	0	3	2	
43.	Public Tap	15+890	Abukhaireni 1 Satrasaya	L	12			2	2	0	3	2	
44.	Chautara	15+890	Abukhaireni 1 Satrasaya	L	chautara					0		2	
45.	Public Tap	15+890	Abukhaireni 1 Satrasaya	L	12			2	2	0	3	2	
46.	Chautara+ Pratikshyalaya +Tap	15+890	Abukhaireni 1 Satrasaya	R	11,12	2	1			0		2	
47.	Santoshi Mata ko Mandir	16+560	Abukhaireni 1 Satrasaya	L	10	1	1	2.5	2.5	6.25	4	2	
48.	Public Tap	16+560	Abukhaireni 1 Satrasaya	L	12			2	2	0	3	2	
49.	Public tap	16+560	Abukhaireni 1 Satrasaya	R	12			2	2	0	3	2	
50.	Khagendra Pd. Le banayeko niji mandir(Shiv Mandir)	16+690	Abukhaireni 1 Satrasaya	L	10	3	2	2	2	8	4	2	
51.	Public tap	16+690	Abukhaireni 1 Satrasaya	L	12			2	2	0	3	2	
52.	Public tap	16+690	Abukhaireni 1 Satrasaya	L	12			2	2	0	3	2	
53.	Public Tap		Abukhaireni 1 Satrasaya	R	12			2	2	0	3	2	
54.	Public Tap	16+690	Abukhaireni 1 Satrasaya	L	12			2	2	0	3	2	
55.	Chautara	16+690	Abukhaireni 1 Satrasaya	L	chautara					0		2	
56.	Public Tap	16+690	Abukhaireni 1 Satrasaya	L	12			2	2	0	3	2	
57.	Ram Sita Ko Mandir	17+415	Abukhaireni 1 Satrasaya	L	10	2	1	2	1.5	3	9	2	
58.	Chautara + Pratikshyalaya	17+460	Bandipur Na pa 5 Yampa	L	11	2	1	5	3.1	15.5	10	2	1272
59.	Public tap	16+690	Bandipur Na pa 5 Yampa	L	12			2	2	0	3	2	
60.	Public Toilet	16+690	Bandipur Na pa 5 Yampa	L	5	3	1	3	1.8	5.4	4	2	
61.	Chautara + Pratikshyalaya	18+360	Bandipur Na pa 5 Yampa	L	11	2	1	5	3.2	16	3+kath	2	1274

For reference Only

S. N.	Name of Structures	Chainage	Address	Side	Structure use	Roof types	Flat No	lengt h (m)	Breath (b)	Affected areas Sqm	Wall Types	Affected Position	Re-marks
62.	Public Tap	16+690	Bandipur Na pa 5 Yampa	L	12			2	2	0	3	2	
63.	Chautara	16+690	Bandipur Na pa 5 Yampa	L	chautara					0		2	
64.	Chautara	16+690	Bandipur 5 Gohar Chautara	R	chautara					0		2	
65.	Pratikshyalaya	19+990	Bandipur 5 Gohar Chautara	R	11	2	1	4	4	16	5	2	
66.	Public tap		Bandipur 5 Gohar Chautara	R	12			1.5	1.2	0	3	2	
67.	Pratikshyalaya	20+435	Bandipur 5 Nayapul	R	11	2	1	3	2	6	10	2	
68.	Pratikshyalaya	21+385	Bandipur 6 Bimal Nagar	L	11	2	1	5	3.5	17.5	3	2	
69.	Public Tap	21+385	Bandipur 6 Bimal Nagar	L	12			2	2	0	3	2	
70.	Krishna Mandir	21+515	Bandipur 6 Bimal Nagar	R	10	1	1	3	3	9	4	2	
71.	Public Tap	21+515	Bandipur 6 Bimal Nagar	R	12			2	2	0	3	2	
72.	Pratikshyalaya	21+585	Bandipur 6 Bimal Nagar	R	11	3	1	4.8	3.1	14.88	3	2	
73.	Public tap	21+585	Bandipur 6 Bimal Nagar	R	12			2	2	0	3	2	
74.	Public Tap	21+585	Bandipur 6 Bimal Nagar	R	12			2	2	0	3	2	
75.	Chautara	21+585	Bandipur 6 Bimal Nagar	R	chautara					0		2	
76.	Chautara	21+585	Bandipur 6 Bimal Nagar	R	chautara					0		2	
77.	Chautara	21+585	Bandipur 4 Thulo Dhunga	R	chautara					0		2	
78.	Chautara	21+585	Bandipur 4 Thulo Dhunga	R	chautara					0		2	
79.	Public tap	21+585	Bandipur 4 Thulo Dhunga	R	12			2	2	0	3	2	
80.	Public tap	21+585	Bandipur 4 Dumre	R	12			2	2	0	3	2	
81.	Shiv mandir	21+585	Bandipur 4 Dumre	R	10	2	1	2.2	2	4.4	4	2	
82.	Bhadal Daanda Samudayik Ban Upavokta Samuha	23+190	Bandipur 4 Dumre	R	3	3	1	8.6	4	34.4	4	2	
83.	Public Tap		Bandipur 4 Dumre	R	12			2	2	0	3	2	
84.	Shiv mandir	23+410	Bandipur 4 Dumre	R	10	1	1	2.3	2.3	5.29	4	2	
85.	Pratikshyalaya	23+410	Bandipur 4 Dumre	R	11	3	1	9	4	36	10	2	
86.	Shiv Mandirko Pati	23+410	Bandipur 4 Dumre	R	3	1	1		2.5	0	2	2	
87.	Harihar Mandir + Pati	23+610	Bandipur 4 Dumre	R	10	3	2	26.2	3.6	188.64	4	2	
88.	Chautara	23+610	Bandipur 4 Dumre	R	chautara					0		2	
89.	Public Tap	23+610	Bandipur 4 Dumre	L	12			2	2	0	3	2	
90.	Public Tap	23+610	Bandipur 4 Dumre	L	12			2	2	0	3	2	
91.	Public Tap	23+610	Bandipur 4 Dumre	L	12			2	2	0	3	2	
92.	Chautara	23+610	Bandipur 4 Dumre	R	chautara					0		2	
93.	Durga Purna Kamana Mandirko Prabesh Dwar	24+160	Dumre Chisapani Bandipur 1	L	14					0	3	2	

For reference Only

S. N.	Name of Structures	Chainage	Address	Side	Structure use	Roof types	Flat No	lengt h (m)	Breath (b)	Affected areas Sqm	Wall Types	Affected Position	Re-marks
94	Bazar Samitiko Bhawan	24+665	Bandipur Gate	L	3	1	2	5	3.5	35	4	2	
95	Public tap		Ghasikuwa 1 Rimalni	R	12			2	2	0	3	2	
96	Pratikshyalaya	25+320	Ghasikuwa 1 Rimalni	L	11	3	1	3	3	9	4	2	
97	Public Tap	25+320	Ghasikuwa 1 Rimalni	R	12			2	2	0	3	2	
98	Chautara	25+320	Ghasikuwa 1 Rimalni	R	chautara					0		2	
99	Public Tap + Pani Tanki	25+540	Ghasikuwa 1 Rimalni	L	12			2	2	0	3	2	
100	Chautara		Ghaskuwa 1 Nahala	L	chautara	3				0		2	
101	Public Tap	25+540	Ghaskuwa 1 Nahala	L	12			2	2	0	3	2	
102	Chautara	25+540	Ghaskuwa 1 Nahala	R	chautara					0	3	2	
103	Public tap	25+540	Ghaskuwa 1 Nahala	R	12			2	2	0	3	2	
104	Chautara 2 Ta	25+540	Ghaskuwa 1 Nahala	L	chautara					0	3	2	
105	Pratikshyalaya	26+715	Ghaskuwa 1 Nahala	L	11	3	1	3	2.5	7.5	3	2	
106	Chautara		Ghaskuwa 1 Nahala	R	chautara					0		2	
107	Pratikshyalaya	26+860	Ghaskuwa 1 Nahala	L	11	1	2			0	8	2	
108	Chautara		Ghaskuwa 1 Nahala	L	chautara					0		2	
109	Chautara	26+860	Ghasikuwa 1 Nayabasti	L	chautara					0		2	
110	Pratikshyalaya	27+635	Ghasikuwa 1 Nayabasti	R	11	2	1	4	3	12	3	2	
111	Pratikshyalaya	28+085	Bel Vanjyang Bazar	R	11	3	1	4	3	12	3	2	
112	Pratikshyalaya	28+085	Bel Vanjyang Bazar	L	11	1	1	4	3	12	3	2	
113	Chautara	28+085	Bel Vanjyang Bazar	L	chautara					0		2	
114	Public Tap	28+085	Bel Vanjyang Bazar	R	12			2	2	0	3	2	
115	Public Tap	28+085	Bel Vanjyang Bazar	R	12			2	2	0	3	2	
116	Public tap	28+085	Bel Vanjyang Bazar	R	12			2	2	0	3	2	
117	Pratikshyalaya	28+410	Bel Vanjyang Bazar	R	11	2	1	2.5	2	5	3	2	
118	Public tap		Bel Vanjyang Bazar	R	12			2	2	0	3	2	
119	Chautara + Pratikshyalaya	28+700	Bel Vanjyang Bazar	L	11	2	1	2.2	2.5	5.5	3	2	
120	Public tap		Ghasikawa 8 Chirkan	L	12			2	2	0	3	2	
121	Chautara		Ghasikawa 8 Chirkan	L	chautara					0		2	
122	Pratikshyalaya	30+150	Ghasikawa 8 Chirkan	L	11	3	1	3.5	2	7	4	2	
123	Public Tap		Ghasikawa 8 Chirkan	L	12			2	2	0	3	2	
124	Public Tap		Ghasikawa 8 Chirkan	R	12			2	2	0	3	2	
125	Public Toilet	31+850	Ghasikuwa 2 Deurali	R	5	2	1	2	1	2	9	2	
126	Chautara		Ghasikuwa 4 Deurali							0			
127	Ganesh Mandir	33+465	Ghasikuwa Paling	R	10	1	1	4	4	16	4	2	

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12	Pratikshyalaya	33+475	Ghasikuwa Paling	R	11	2	1	8	3.5	28	4	2	
12	Public tap	33+475	Ghasikuwa Paling	L	12			2.5	2	0	3	2	
13	Chautara	33+475	Ghasikuwa Paling	R	chautara					0		2	
13	Chautara	33+475	Ghasikuwa 3 Kamal Bari	L	chautara					0		2	
13	Public tap	33+475	Ghasikuwa 3 Kamal Bari	R	12			2	2	0	3	2	
13	Postrajkaini Tap	34+740	Ghasikuwa 3 Kamal Bari	L	Tap			2	2	0	3	2	
13	Pratikshyalaya	34+950	Ghasikuwa 3 Kamal Bari	L	11	2	2	5.5	4.2	46.2	4	2	
13	Chautara	34+950	Ghasikuwa 3 Kamal Bari	L	chautara					0		2	
13	Chautara	34+950	Ghasikuwa 3 Kamal Bari	R	chautara					0		2	
13	Pratikshyalaya	36+800	Ghasikuwa 3 Kamal Bari	R	11	3	1	6	2	12	4	2	
13	Ghasi Smarak Park ko Wall	36+860	Ghasikuwa 3 Kamal Bari	R	6			60		0	2	2	
13	Ghasi Smarak Park Samitiko Bha-wan	36+875	Ghasikuwa 3 Kamal Bari	R	3	2	1	9	5	45	4	2	
14	Ghasi Kuwa	36+885	Ghasikuwa 3 Kamal Bari	R	kuwa	3	1	2.5	2.5	6.25	4	2	
14	Ram mandir	36+990	Ghasikuwa 3 Kamal Bari	R	10	1	1	2.5	2.5	6.25	2	2	
14	Chautara		Ghasikuwa 3 Kamal Bari	R	chautara					0		2	
14	Madan Aasrit Pratikshyalaya	37+715	Byas 1 Bhusekhola	L	11	3	1	5	2	10	3	2	
14	Pratikshyalaya	38+525	Byas 1 Amreni	R	11	1	1	4.5	2.5	11.25	3	2	
14	Chautara		Byas 1 Amreni	R	chautara					0		2	
14	Sahid Smriti Dwar	40+875	Byas 2 Damauli		14					0	3	2	
14	Pratikshyalaya	41+280	Byas 10	L	10	3	1	7	4	28	4	2	
14	Shiv mandir	41+290	Byas 10	L	10	3	1	3.5	3.5	12.25	4	2	
14	Nab Durga Mandirko Parti	41+335	Byas 10	L	party	3	2	11.8	6.2	146.32	4	2	
15	Shree nab Durga Bhawani mandir	41+335	Byas 10	L	10	3	1	5	5	25	4	2	
15	Shree Nab Durga Home Kunda	41+335	Byas 10	L	10	2	1	3	3	9		2	
15	Gorakh Nath Mandir	41+335	Byas 10	L	10	3	1	4	4	16	4	2	
15	Pratikshyalaya	41+335	Byas 10	L	11	3	1	13.7	4	54.8	4	2	
15	Mandirko Wall	41+335	Byas 10	L	6			45		0	4	2	
15	Mandirko Party Ghar	41+335	Byas 10	L	3	2	1	7	4.3	30.1	4	2	
15	Aneki Sangh Sworna Jayanti Park Ko wall	41+335	Byas 10	L	6			26		0	4	2	
15	Ramban Grihamko Pratikshya-laya	42+280	Byas 8 Chapaghat	L	3	2	1	5	4	20	1	2	
15	Shiv Mandir	42+580	Byas 8 Chapaghat	L	10	3	1	4	4	16	4	2	

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15	Chautara		Byas 8 Chapaghat	R	chautara					0		2	
16	Pratikshyalaya	43+015	Byas 8 Chapaghat	R	11	2	1	5.5	4	22		2	
16	Public tap	43+015	Byas 8 Chapaghat	R	12			2	2	0	4	2	
16	Public tap	43+015	Byas 8 Chapaghat	R	12			2	2	0	4	2	
16	Pratikshyalaya	45+990	Jamune 1 Gunardi	L	11	2	2	4	3.8	30.4	4	2	
16	Pratikshyalaya	46+950	Jamune 1 Gunardi	R	11	3	1	4.2	3	12.6	4	2	
16	Public tap		Jamune 2 Gunardi	R	12			2	2	0	3	2	
16	Pratikshyalaya	47+725	Jamune 2 Gunardi	R	11	1	2	6.2	4.1	50.84	2	2	
16	Public tap		Jamune 2 Gunardi	L	12			2	2	0	3	2	
16	Naag Mandir	47+835	Jamune 2 Gunardi	R	10	1	1	2.5	2	5	3	2	
16	Pratikshyalaya	47+385	Jamune 3 Nirmal Basti	L	11	2	1	5	4	20	9	2	
17	Public tap		Jamune 3 Nirmal Basti	L	12			2	2	0	3	2	
17	Public tap		Jamune 3 Nirmal Basti	L	12			2	2	0	3	2	
17	Pratikshyalaya	47+585	Jamune 3 Nirmal Basti	R	11	1	1	2	2	4	6	2	
17	Public tap		Jamune 3 Nirmal Basti	R	12			2	2	0	3	2	
17	Pratikshyalaya	49+030	Jamune 3 Nirmal Basti	L	11	3	1	4	2	8	3	2	
17	Pani tanki	49+030	Jamune 3 Nirmal Basti	L	pani tanki	3	1	3	1.5	4.5	3	2	
17	Pratikshyalaya	50+010	Jamune 4 Jamune	R	11	2	2	5	3.1	31	4	2	
17	Public tap	50+010	Jamune 4 Jamune	L	12			2	2	0	3	2	
17	Public tap	50+010	Jamune 4 Jamune	L	12			2	2	0	3	2	
17	public Tap	50+010	Jamune 4 Jamune	L	12			2	2	0	3	2	
18	Pratikshyalaya	50+190	Jamune 4 Jamune	R	11	2	1	3	1.5	4.5	3	2	
18	Pratikshyalaya	50+335	Jamune 4 Badhare	R	11	3	1	3.5	3	10.5	3	2	
18	Pratikshyalaya	50+775	Jamune 7 Pasale	L	11	3	1	4	2.8	11.2	3	2	
18	Public tap		Jamune 7 Pasale	L	12			2	2	0	3	2	
18	Bhimsen Mandir	50+985	Jamune 7 Pasale	L	10	1	1	2.2	2	4.4	4	2	
18	Pratikshyalaya	51+030	Jamune 7 Pasale	L	11	2	1	4	4	16		2	
18	Pratikshyalaya	51+110	Jamune 7 Pasale	L	11	3	1	4.3	3.5	15.05	4	2	
18	Public tap		Jamune 7 Pasale	L	12			2	2	0	3	2	
18	Kantipur Khabar Patrikako Su-chana party	51+600	Jamune 7 Dhayaire	R	3	3	1	4	0.6	2.4	4	2	
18	Pratikshyalaya	51+615	Jamune 7 Dhayaire	L	11	3	1	6	4	24	4	2	
19	Pratikshyalaya	52+755	Chang 1 Ghumti	R	11	3	1	4.8	4	19.2	4	2	
19	Public Tap + Pani Tanki	53+380	Chang 2 Tharpu	L	12			2	2	0	3	2	

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19	Pratikshyalaya	53+640	Chang 2 Tharpu	R	11	2	2	5.5	3.2	35.2	4	2	
19	Pratikshyalaya	53+660	Chang 2 Tharpu	L	11	3	1	6	3	18	4	2	
19	Public tap	53+660	Chang 2 Tharpu	L	12			2	2	0	3	2	
19	Public tap	53+660	Chang 3 Tharpu	R	12			2	2	0	3	2	
19	Public tap	53+660	Chang 3 Tharpu	R	12			2	2	0	3	2	
19	Public tap	53+660	Chang 3 Tharpu	L	12			2	2	0	3	2	
19	Durga Mandir	54+195	Chang 3 Tharpu	R	10	2	1	6.3	4.3	27.09	3	2	
19	Ganesh Mandir	54+460	Chang 3 Tharpu	R	10	3	1	5	3	15	4	2	
20	Pani tanki	54+440	Chang 5 Manhari	L	pani tanki	3	1	3	2	6	3	2	
20	Shankeswor Shivalaya Mandirko Wall	54+535	Chang 5 Manhari	L	6			9.5		0	4		
20	Pani tanki	54+575	Chang 5 Manhari	R	pani tanki	3	1	3	2.5	7.5	9	2	
20	Pratikshyalaya	54+685	Chang 5 Manhari	L	11	3	1	5.3	3	15.9	4	2	
20	Bhimsen Mandir	54+695	Chang 5 Manhari	L	10	3	1	2.5	2.5	6.25	4	2	
20	Public tap	54+695	Chang 5 Manhari	R	12			2	2	0		2	
20	Public tap	54+695	Chang 4 Pipaltar	R	12			2	2	0	3	2	
20	Devi Mandir	55+385	Chang 4 Pipaltar	L	10	1	1	2.8	2.5	7	3	2	
20	Pratikshyalaya	55+425	Manpang 1 Chabise	L	11	3	1	3	3	9	4	2	
20	Public tap	55+425	Manpang 1 Chabise	R	12			2	2	0	3	2	
21	Public Tap	55+425	Manpang 1 Chabise	L	12			2	2	0	3	2	
21	Chautara	55+425	Manpang 1 Chabise	R	chautara					0		2	
21	Pratikshyalaya	57+225	Manpang 2 Mauribazar	L	11	3	1	4.5	3	13.5	4	2	
21	Public tap		Manpang 2 Mauribazar	R	12	2	1	1.5	1.5	2.25	9	2	
21	Bhimsen Mandir	57+300	Manpang 2 Mauribazar	R	10	3	1	2	2	4	3	2	
21	Shiv Mandir	57+360	Manpang 2 Mauribazar	L	10	3	1	3.5	3.5	12.25	4	2	
21	Bhimsen Mandir	58+240	Manpang 2 Rithepani	R	10	3	1	2	1.8	3.6	4	2	
21	Pratikshyalaya	58+700	Manpang 2 Rithepani	L	11	2	1	5	3	15		2	
21	Pratikshyalaya	59+050	Manpang 2 Serafant	R	11	3	1	4.5	3	13.5	3	2	
21	Pratikshyalaya	59+480	Sukla Gandaki Na pa 9 Seratar	L	11	3	1	3.4	3.2	10.88	4	2	
22	Public Toilet	59+480	Sukla Gandaki Na pa 9 Seratar	L	5	2	1	6.5	2	13	9	2	
22	Chautara	59+480	Sukla Gandaki Na pa 9 Seratar	L	chautara					0		2	
22	Pratikshyalaya	60+560	Su Na Pa 9 Malebagar	R	11	2	1	4	2	8	10	2	

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22	Shree Bhimalchaur Samudayik Ban Upavokta Samuhako Bha-wan	60+885	Su Na Pa 9 Malebagar	R	3	3	1	6	5	30	4	2	
22	Pratikshyalaya	60+885	Kumlekhol Su na pa 9	L	11	3	1	4.5	3	13.5	3	2	
22	Chautara	60+885	Kumlekhol Su na pa 10	L	chautara					0		2	
22	Chautara	60+885	Su na pa 11	L	chautara					0		2	
22	Chautara	60+885	Su na pa 11	L	chautara					0		2	
22	Shiv Mandir	61+420	Su na pa 11 Khairenitar	L	10	3	1	2	2	4	4	2	
22	Pratikshyalaya	62+090	Su na pa 11 Khairenitar	L	11	3	1	5	3	15	4	2	
23	Bhimsen Mandir	62+585	Su na pa 1 Mildaanda	L	10	3	1	2.5	2.5	6.25	4	2	
23	Public Toilet	62+660	Su na pa 1 Mildaanda	R	5	2	1	2.5	1.2	3	4	2	
23	Pratikshyalaya	62+680	Su na pa 1 Mildaanda	L	11	3	1	4	2.5	10	4	2	
23	Naagthan	63+025	Su Na pa 5 Shivnagar	R	10			2	2	0	9	2	
23	Pratikshyalaya	63+075	Su Na pa 5 Shivnagar	R	11	3	1	5	4	20	3	2	
23	Pratikshyalaya	63+315	Su Na pa 5 Shivnagar	L	11	3	1	4.6	2.5	11.5	4	2	
23	Chautara		Su Na pa 5 Shivnagar	L	chautara					0		2	
23	Pratikshyalaya	63+515	Su Na pa 5 Shivnagar	R	11	3	1	3.5	3.2	11.2	4	2	
23	Pratikshyalaya	64+030	Su Na pa 4	L	11	2	1	2	2	4		2	
23	Pratikshyalaya	64+075	Su Na pa 4	L	11	3	1	5	3	15	3	2	
24	Pratikshyalaya	64+220	Su Na pa 4	R	11	1	1	3.5	2.5	8.75	3	2	
24	Police Post	64+015	Su Na pa 4	L	3	2	1	2	2	4	6	2	
24	Pratikshyalaya	64+320	Su Na pa 4	L	11	3	1	4.7	2.5	11.75	3	2	
24	Pratikshyalaya	64+435	Su Na pa 4	R	11	2	1			0	3	2	
24	Pratikshyalaya		Su Na pa 4	R	11	2	1	4	3.5	14	3	2	
24	Pratikshyalaya	64+815	Su Na Pa 4 Galchina	L	11	2	1	2	2	4		2	
24	Mandir + Pratikshyalaya	65+290	Su Na Pa 3 Dulegauda	L	11	3	2	5	3.5	35	4	2	
24	Pratikshyalaya	65+640	Su Na Pa 3 Dulegauda	R	11	2	1	4.7	2.5	11.75	3	2	
24	Pratikshyalaya	65+730	Su Na Pa 3 Dulegauda	L	11	2	1	5.4	2.5	13.5	3	2	
24	Pratikshyalaya	65+830	Su Na Pa 3 Dulegauda	L	10	3	1	4	3	12	3	2	
25	Bhimsen Mandir	65+875	Su Na Pa 3 Dulegauda	L	10	3	1	2	2	4	4	2	
25	Bipi Park	65+930	Su Na Pa 3 Dulegauda	L	park			12	7	0	3	2	
25	Pratikshyalaya	66+440	Su Na Pa 3 Dulegauda	R	11	2	1	3	1.2	3.6		2	
25	Pani tanki	66+370	Su Na Pa 3 Dulegauda	R	tanki	3	1	4	3	12	3	2	
25	Kuwa	66+430	Su Na Pa 3 Dulegauda	R	kuwa			3	2	0	3	2	

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25	Pratikshyalaya		Su Na Pa 3 Dulegauda	L	11	3	1	3	3	9	3	2	
25	Pratikshyalaya	66+850	Su Na Pa 3 Dulegauda	R	11	3	1	4	3.5	14	4	2	
25	Pratikshyalaya	66+965	Su na Pa 1	R	11	2	1	2	2	4	3	2	
25	Pratikshyalaya	67+000	Su Na pa 1 Gachhepani	R	11	3	1	4	3	12	4	2	
25	Chautara		Su Na pa 1 Gachhepani	L	chautara					0		2	
26	Chautara		Su Na pa 1 Haledi	R	chautara					0		2	
26	Pratikshyalaya	67+625	Su Na pa 1 Haledi	R	11	2	1	4.2	4	16.8	3	2	
26	Public Tap + Pani Tanki	68+435	Su Na pa 1 Haledi	R	12	2	1	3	2	6	3	2	
26	Pratikshyalaya	68+500	Su Na pa 1 Haledi	R	11	3	1	3	3	9	3	2	
26	Public Toilet	69+545	Su .Na . Pa 1 Nursery	L	5	2	1	5	1.5	7.5	9	2	
26	Public Toilet	69+560	Su .Na . Pa 1 Nursery	L	5	2	1	5	1.5	7.5	9	2	
26	Pratikshyalaya	69+545	Su .Na . Pa 1 Nursery	R	11	3	1	4.3	2	8.6	3	2	
26	Pratikshyalaya	69+765	Su .Na . Pa 1 Nursery	L	11	3	1	4.7	3.1	14.335	3	2	
26	Chautara	69+765	Su Na Pa 1 Kotre	R	chautara					0		2	
26	Pratikshyalaya	69+765	Su Na Pa 1 Kotre	L	11	3	1	4	3.5	14	3	2	
27	Saddi Lal Dhoj Park	70+465	Su Na Pa 1 Kotre	R	park					0	3	2	
27	Pratikshyalaya	70+445	Su Na Pa 1 Kotre	R	11	2		3.2	2	0	falam	2	
27	Pratikshyalaya	71+275	Lekhnath 13 Bhajuwa	L	11	3	1	4.5	3	13.5	3	2	
27	Sahid Smriti Prabesh Dwar	71+275	Lekhnath 13 Bhajuwa		14					0	4	2	
27	Public Toilet	71+760	Lekhnath 13 Bhajuwa	L	5	2	1	1.5	1.5	2.25	9	2	
27	Public Tap		Lekhnath 13 Lameaahal	L	12	3	1	3	3	9	3	2	
27	Pratikshyalaya	72+265	Lekhnath 13 Lameaahal	L	11			2	2	0	3	2	
27	Public Tap	72+265	Lekhnath 13 Gagan Gauda	L	12			2	2	0	3	2	
27	Chautara	72+265	Lekhnath 13 Gagan Gauda	R	chautara					0		2	
27	Chautara	72+265	Lekhnath 13 Gagan Gauda	R	chautara					0		2	
28	Public Tap	72+265	Lekhnath 13 Gagan Gauda	R	12			2	2	0	3	2	
28	Mandir	73+065	Lekhnath 13 Gagan Gauda	L	10			1.5	1.5	0	3	2	
28	Public Tap	73+065	Lekhnath 13 Gagan Gauda	L	12			2	2	0	3	2	
28	Durga Mandir	73+290	Lekhnath 13 Gagan Gauda	L	10	3	1	2	2	4	4	2	
28	Shiv Mandir	73+370	Lekhnath 13 Tallo Gagan Gaida	L	10	3	1	2	2	4	4	2	
28	Bhimsen Mandir	73+360	Lekhnath 13 Tallo Gagan Gaida	R	10	3	1	2	2	4	4	2	
28	Pratikshyalaya	73+385	Lekhnath 13 Gagan Gauda	R	11	3	1	3	3	9	4	2	
28	Pratikshyalaya	73+410	Lekhnath 13 Gagan Gauda	L	11	3	1	3	2.5	7.5	4	2	
28	Public Tap	73+410	Lekhnath 13 Gagan Gauda	L	12			2	2	0	3	2	

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28	Public Tap	73+410	Lekhnath 13 Gagan Gauda	L	12			2	2	0	3	2	
29	Public Tap	73+410	Lekhnath 13 Gagan Gauda	L	12			2	2	0	3	2	
29	Pratikshyalaya	74+100	Lekhnath 13 Gagan Gauda	L	11	3	1	6.1	4	24.4	3	2	
29	Ganesh Mandir	74+540	Lekhnath 12 Gagan Gauda	R	10	3	1	1.8	1.8	3.24	4	2	
29	Shiv Mandir	74+970	Lekhnath 12 Gagan Gauda	L	10	3	1	2.5	2.5	6.25	4	2	
29	Ganesh Mandir	74+980	Lekhnath 12 Gagan Gauda	R	10	3	1	1.2	1.2	1.44	4	2	
29	Pratikshyalaya	75+005	Lekhnath 12 Gagan Gauda	R	11	3	1	3	3	9	3	2	
29	Pani tanki	75+310	Lekhnath 12 Gagan Gauda	R	pani tanki	3	1			0	4	2	
29	Shiv Mandir	75+380	Lekhnath 12 Gagan Gauda	L	10	3	1	2	2	4	4	2	
29	Shiv Mandir	75+235	Lekhneth 12 Powerhouse	R	10	3	1	4	4	16	4	2	
29	Pani tanki	75+435	Lekhneth 12 Powerhouse	L	pani tanki	2	1	2.5	2	5	4	2	
30	Pani tanki	75+490	Lekhneth 12 Powerhouse	R	tanki	3	1	4	2.5	10	4	2	
30	Pratikshyalaya	75+635	Lekhneth 12 Powerhouse	R	11	2		3.2	2	0	falam	2	
30	Police Beat	75+655	Lekhneth 12 Powerhouse	R	3	2	1	2.5	2	5	6	2	
30	Pratikshyalaya	75+655	Lekhneth 12 Powerhouse	R	11	3	1	5	3.3	16.5	3	2	
30	Public Tap	75+665	Lekhneth 12 Powerhouse	L	12			2	2	0	3	2	
30	Public Tap	75+675	Lekhnath 1	L	12			2	2	0	3	2	
30	Public Tap	75+685	Lekhnath 1	R	12			2	2	0	3	2	
30	Public Tap	75+695	Lekhnath 1	L	12			2	2	0	3	2	
30	Public Tap	75+685	Lekhnath 1	R	12			2	2	0	3	2	
30	Public Tap	75+675	Lekhnath 1	L	12			2	2	0	3	2	
31	Public tap	75+695	Le. Na Pa 1 Sainik Basti	L	12			2	2	0	3	2	
31	Public tap	75+755	Le. Na Pa 1 Sainik Basti	L	12			2	2	0	3	2	
31	Pratikshyalaya	76+485	Le. Na Pa 1 Sainik Basti	L	11	3	1	4.8	2.6	12.48	3	2	
31	Pani tanki	76+525	Le. Na Pa 1 Sainik Basti	L	tanki					0	4	2	
31	Public Tap	76+625	Le. Na Pa 1 Sainik Basti	R	12			2	2	0	3	2	
31	Public Tap	76+725	Le. Na Pa 1 Sainik Basti	R	12			2	2	0	3	2	
31	Public Tap	76+825	Le. Na Pa 1 Sainik Basti	R	12			2	2	0	3	2	
31	Public Tap	76+925	Le. Na Pa 1 Sainik Basti	L	12			2	2	0	3	2	
31	Public Tap	76+525	Le. Na Pa 1 Sainik Basti	L	12			2	2	0	3	2	
31	Pratikshyalaya	76+760	Lekhnath 1 Sainik Basti	R	11	2	1	3	2	6	falam	2	
32	Public Tap 3 Ta		Lekhnath 1 Sainik Basti	R	12			2	2	0	3	2	
32	Pratikshyalaya	76+830	Lekhnath 1 Sainik Basti	L	11	3	1	3.7	3	11.1	3	2	
32	Pani tanki	76+890	Lekhnath 1 Sainik Basti	R	tanki	2	1	3	2.5	7.5	4	2	

For Reference Only

S. N.	Name of Structures	Chainage	Address	Side	Structure use	Roof types	Flat No	lengt h (m)	Breath (b)	Affected areas Sqm	Wall Types	Affected Position	Re-marks
32	Pani tanki	77+135	Lekhnath 1 Sainik Basti	R	tanki	2	1	3	2.5	7.5	4	2	
32	Pratikshyalaya	77+135	Lekhnath 1 Sainik Basti	L	11	3	1	4	3	12	4	2	
32	Chautara	77+470	Lekhnath 1 Sainik Basti	R	chautara					0		2	
32	Pani tanki	77+490	Lekhnath 1 Sainik Basti	R	pani tanki	2	1	3	2.5	7.5	3	2	
32	Krishna Mandir	77+600	Lekhnath 1 Sainik Basti	L	10	3	1	3.5	3.5	12.25	4	2	
32	Pratikshyalaya	78+180	Lekhnath 1 Sainik Basti	R	11	3	1	8	5	40	4	2	
32	Chautara	78+180	Lekhnath 1 Sainik Basti	L	chautara					0		2	
33	Jan Prakash Uccha Ma. B ko Bha-wan (Byaparik)	78+230	Le Na Pa 1 Bhandarthik	R	2	3	1	17.3	5.7	98.61	4	1	
33	Jan Prakash Uccha Ma. B ko Bha-wan (Byaparik)	78+230	Le Na Pa 1 Bhandarthik	R	2	2	1	16.7	8	133.6	9	1	
33	Chautara	78+265	Le Na Pa 1 Bhandarthik	R	chautara					0		2	
33	Pratikshyalaya	78+515	Le Na Pa 1 Bhandarthik	L	11	3	1	5	2.5	12.5	4	2	
33	Traffic Police Post	80+710	Le Na Pa 7 Daandoko Naak	L	3	2	2	8.4	8.1	136.08	4	1	391
33	Durga Mandir	80+710	Le Na Pa 7 Daandoko Naak	L	10	2	1	2	2	4	4	2	
33	Public Dhara	80+710	Le Na Pa 7 Daandoko Naak	R	12			2	2	0	3	2	
33	Pratikshyalaya	80+635	Le Na Pa 7 Daandoko Naak	R	11	3	1	4.5	3	13.5	3	2	
33	Public Toilet	80+950	Lekhnath 3 Adhau Chowk	L	5	2	1	3	3	9	4	2	
33	Public Tap	80+950	Lekhnath 3 Adhau Chowk	L	12			2	2	0	3	2	
34	Pratikshyalaya	81+490	Lekhnath 3 Adhau Chowk	L	11	3	1	3	3.5	10.5	3	2	
34	Pratikshyalaya	81+490	Lekhnath 3 Adhau Chowk	L	11	2	1	3	2	6	falam	2	
34	Lekhnath Ko Salik	81+510	Lekhnath 3 Adhau Chowk	R	Salik			0		0	3	2	
34	Pratikshyalaya	82+270	Lekhnath 3 Sundari Bazar	L	1	3	1	5	2.5	12.5	4	2	
34	Public Tap	82+270	Lekhnath 3 Sundari Bazar	L	112			2	2	0	3	2	
34	Public Tap	82+270	Lekhnath 3 Sundari Bazar	L	12			2	2	0	3	2	
34	Public Tap	82+270	Lekhnath 3 Budhibazar	R	12			2	2	0	3	2	
34	Pratikshyalaya	82+900	Lekhnath 3 Budhibazar	R	11	2	1	6	3.5	21	9	2	
34	Shiva Mandir	82+910	Lekhnath 3 Budhibazar	R	10	2	1	3	3	9	9	2	
34	Pratikshyalaya	82+975	Lekhnath 3 Budhibazar	L	11	2	1	2	2	4		2	
35	Chetana Ward Pustakalya	83+000	Lekhnath 3 Budhibazar	R	3	3	1	4.5	2.5	11.25	4	2	
35	Public Tap	83+000	Lekhnath 3 Budhibazar	L	12			2	2	0	3	2	
35	Pratikshyalaya	83+140	Lekhnath 3 Budhibazar	L	11	2	1	3	2	6		2	
35	Pratikshyalaya	83+210	Lekhnath 3 Budhibazar	R	11	2	1	5	3	15	3	2	
35	Public Tap	83+210	Lekhnath 3 Budhibazar	R	12			2	2	0	3	2	

For Reference Only

S. N.	Name of Structures	Chainage	Address	Side	Structure use	Roof types	Flat No	lengt h (m)	Breath (b)	Affected areas Sqm	Wall Types	Affected Position	Re-marks
35	Public Tap	83+210	Lekhnath 3 Sangamnagar	R	12			2	2	0	3	2	
35	Public tap	83+210	Lekhnath 3 Sangamnagar	R	12			2	2	0	3	2	
35	Pratikshyalaya	83+690	Lekhnath 3 Sangamnagar	L	11	3	2	4	3	24	4	2	419
35	Shiv Mandir	83+695	Lekhnath 3 Sangamnagar	L	10	3	1	2	2	4	4	2	419
35	Public Tap	83+695	Lekhnath 3 Sangamnagar	L	12			2	2	0	3	2	
36	Public Tap	83+695	Lekhnath 3 Sangamnagar	R	12			2	2	0	3	2	
36	Public Tap	83+695	Lekhnath 3 Sangamnagar	L	12			2	2	0	3	2	
36	Public Tap	83+695	Lekhnath 3 Sangamnagar	R	12			2	2	0	3	2	
36	Shree Pachim Pritana He Kwa Bi-jaypur	84+170	Bijaypur	R	14					0			
36	Chautara	85+260	Pokhara Na. Pa 14 Chauthe	L	chautara					0		2	
36	Pratikshyalaya	86+660	Pokhara Na. Pa 14 Chauthe	R	11	2	1	3	2	6	10	2	
36	Shiv Mandir	86+950	Pokhara Na. Pa Amar Singh Chowk	L	10	3	1	3.5	3	10.5	4	2	
36	Chautara	86+970	Pokhara Na. Pa Amar Singh Chowk	L	chautara					0		2	
36	Pokhara Prabesh Dwar	87+165	Pokhara Na. Pa Amar Singh Chowk	L	14	3	1			0	4	2	
36	Pani tanki	87+375	Pokhara Na. Pa Amar Singh Chowk	L	pani tanki	3	1	3	2.5	7.5	4	2	
37	Shiv Mandir	87+380	Pokhara Na. Pa Amar Singh Chowk	L	10	3	1	3	3	9	4	2	
37	Amar Singh Ko Salik	87+575	Pokhara Na. Pa Amar Singh Chowk	L	Salik					0		2	
	R= Right site, L= Left site, C= Centerline								Sqm	3230.52			

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APPENDIX 7.1 : LIST OF GOVERNMENT & INSTITUTIONAL SECONDARY STRUCTURES

S. N.	Chainage	Address	Side	Struc-ture Type	Roof types	Flat No	length	Breath	Affected area Sqm	Wall Types	Use	Affected situation	Remarks
1	8+3	Abukhaireni 6	L	5	2	1	2	1.5	3	9		2	
2	9+980	Abukhaireni 5 Narighat	R	6		1	1	1	1	9		2	
3	10+780	Abukhaireni 5 Khanikhola	L	8	2	1	4.5	2.5	11.3	9		2	
4	10+975	Abukhaireni 5 Khanikhola	L	2	2	2	3	2.2	13.2	4	2	2	
5	10+875	Abukhaireni 5 Khanikhola	L	6		1	145	0.5	72.5	2+4		2	
6	11+740	Abukhaireni 3 Khanikhola	R	4	4	1	7	3	21			2	
7	13+150	Abukhaireni 3 Marki Chowk	R	3	3	2	3	3	18	4	8	2	
8	13+150	Abukhaireni 3 Marki Chowk	R	3	3	1	8	6	48	4	8	2	
9	14+840	Abukhaireni 2 Baradi	L	3	2	1	8	3.5	28	9	8	2	
10	15+360	Abukhaireni 2 Baradi	L	4,5	2	1	8	5	40	2+5		2	
11	15+650	Abukhaireni 1 Baradi Bazar	L	1	1	1	7	3.5	24.5	3	8	2	
12		Abukhaireni 1 Baradi Bazar	L	5	2	1	1.5	1.5	2.25	9		2	
13	25+275	Ghasikuwa 1 Rimalni	R	3	2	1	5	3.5	17.5	4	8	2	
14	30+075	Ghasikawa 8 Chirkan	R	5+8	2	1	5	2	10	4		2	
15	32+430	Ghasikuwa 7 Deurali	L	15	2	1	4	3.5	14	7		2	
16	34+755	Ghasikuwa 3 Kamal Bari	L	15	1	1	2	2	4	3		2	
17	45+890	Jamune 1 Gunardi	R	2	1	1	3.8	3.5	13.3	4	2	2	
18	49+985	Jamune 4 Jamune	R	5	2	1	2	1.8	3.6	4		2	
19	63+265	Su Na pa 5 Shivnagar	R		2	1	2	2	4	4		2	
20	63+320	Su Na pa 5 Shivnagar	L	15	2	1	8	4	32		8	2	
21	64+680	Su Na Pa 4 Galchina	R	3	2	1	18.	5.5	101	4	8	2	
22	64+725	Su Na Pa 4 Galchina	R	3	2	1	6.3	4	25.2	9	8	2	
23	76+835	Lekhnath 1 Sainik Basti	L	3	3	1	32.	4.6	148	4	8	1	
24	80+950	Lekhnath 3 Adhau Chowk	L	2	2	1	6	3	18	4	2	2	
25	82+475	Lekhnath 3 Sundari Bazar	R	2	2	1	4	2.5	10	9	2	1	
26	82+865	Lekhnath 3 Budhibazar	R	4	2	1	4	3.5	14	1		2	
27	83+030	Lekhnath 3 Budhibazar	L	2		1	1.5	2	3		2	2	
28	88+180	Pokhara Na. pa 10 Buddha Chowk	L			1	2	2	4		2	2	

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APPENDIX 8: LAND & STRUCTURE VALUATION METHODOLOGY

Comparative Cost Analysis for affected land of Mugling- Pokhara Sub- Project Public consultation and government rate of the affected areas

SN	Place of consultation	Land rate received from Consultation (NRs.) Sqm	Government Rate (NRs) Sqm
1	Chhidanda/Pokhara, Bijayapur	39,316.00	29,316.00
2	Sisuwa/ Sainaki basti, Lekhanath municipility	15,000.00	10,220.00
3	Rupakot / Kotre	7,000.00	6,500.00

Note: Government rate determined by A Land Revenue Office (LRO) of the project road districts 2074/75

SN	Place of consultation	Land rate received from Consultation (NRs.) Sqm	Government Rate (NRs) Sqm
1	Sthithanthok/Kotra, Sukla Gandaki Np – Tanahu	5,600	4,515
2	Chang VDC	4,900	3,060
3	Jamaunne / Gudahi	5,100	1,900
4	Udhendhunga/ Gagangauda	6,900	5,500
5	Nala Bridges	15000	2100
6	Madi Bridges	15000	1500

Note: Government rate determined by A Land Revenue Office (LRO) of the project road districts 2074/75

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Appendixes 8: Government Structures Costing

Kathmandu district FY2075/76 Costing Norms for Compensation / rental or lease of the Land & Structures

Purpose of the costing Norms for Compensation / rental or lease of the Land & Structures determined based on the structure types decided committee

S.N.	Description of Structures	Unit	FY2073/74	FY 2074/75	FY2075/76
1	Outside heated bricks/ stone & inside Raw Brick mortar wall with straw/ tile roof	Square feet(Sqft)	1092	1267	1330
2	Heated bricks inside & outside mud mortar wall with straw/ tile roof and plastered by mud mortar and plastered by mud mortar	Square feet(Sqft)	1403	1629	1710
3	Bricks Stone & mud mortar wall with slate or corrugated zinc sheet roof and plastered by cement mortar	Square feet(Sqft	1561	1811	1902
4	Bricks Stone & mud mortar wall with RCC sheet roofing and plastered by cement mortar	Square feet(Sqft	1641	1906	2001
5.	Stone & mud mortar wall with slate or corrugated zinc sheet roof	Square feet(Sqft	1602	1859	1952
6.	Stone & mud mortar wall with slate or corrugated zinc sheet roof and plastered by mud mortar	Square feet(Sqft	1742	2022	2123
7.	Stone & mud mortar wall with RCC roof and plastered by cement mortar out and inside	Square feet(Sqft	1813	2105	2210
8.	Stone or brick & cement mortar wall with slate or corrugated zinc sheet roof	Square feet(Sqft	1756	2038	2140
9.	RCC frame structure, stone or brick & cement mortar wall with RCC roof and plastered by cement	Square feet(Sqft	1818	2110	2216
10	Full RCC frame structures		1920	2229	2340
11	Whole structures is wooden with CGI sheet roofing	Square feet(Sqft	1680	1950	2048

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Types of the structures depending up on the quality of the decoration and its out looks

- **Building with wall putting and painting**
- **Outside Wall is weather coat pain tinting / wall cladding/Alumnium composite pannel**
- **Attached list system**
- **Higher quality electrical goods were connected**
- **Passage and stair coated by marble**
- **Higher quality toilet**
- **Fire Hose reel extinguisher**
- **Basement Parking**
- **Raft / pile foundation**

The structures which have above mention facilities shall be categories based on the facilities Such as categories A for minimum 7 point shall be fulfill. If did not match the above mention the seven point of the facilities should be categories under the Categories B and C

Categories C: Should be compensated by above rate

Categories B: Should be adding 20% of the above rate

Categories A: Should be adding 40% of the above rate

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Appendix in Nepali

घर र जग्गा भाडा तथा क्षतिपूर्ति/मुआव्जा निर्धारण

घर र जग्गा भाडा तथा क्षतिपूर्ति/मुआव्जा निर्धारण प्रयोजनको लागि विभिन्न प्रकारको घरको बनावट हेरी तपशिल बमोजिम दर कायम गर्ने निर्णय गरियो ।

सि. नं.	घरको बनावट विवरण	इकाइ	आ.व. २०७३/०७४ को दर (रु)	आ.व. २०७४/०७५ को दर (रु)	आ.व. २०७५/०७६को दर(रु)
१	भवनको निर्माण भित्र काँचो, बाहिर पाको ईटामा माटोको जोडाई भई छाना जस्ता, भिगटी, टायल, एसवेसटस् सिट ।	व.फु	१०९२.००	१२६७.००	१३३०.०
२	भवनको निर्माण भित्र, बाहिर पाको ईटामा माटोको जोडाई भई छाना जस्ता, भिगटी, टायल, एसवेसटस् सिट ।	व.फु	१४०३.००	१६२९.००	१७१०.०
३	भवनको निर्माण भित्र, बाहिर पाको ईटामा माटोको जोडाई भई भित्र बाहिर सिमेण्ट प्लाष्टर भई छाना जस्ता, भिगटी, टायल, एसवेसटस् सिट ।	व.फु	१४६१.००	१८११.००	१९०२.०
४	भवनको निर्माण भित्र, बाहिर पाको ईटामा माटोको जोडाई भई भित्र बाहिर सिमेण्ट प्लाष्टर भई छाना आर.वि.सी./ आर.सि.सि. ।	व.फु	१६४१.००	१९०६.००	२००१.०
५	भवनको निर्माण भित्र, बाहिर पाको ईटामा वङ्गको जोडाई भई छाना जस्ता, भिगटी, टायल, एसवेसटस् सिट ।	व.फु	१७०२.००	१८५९.००	१९५२.०
६	भवनको निर्माण भित्र, बाहिर पाको ईटामा वङ्गको जोडाई र भित्र बाहिर सिमेण्ट प्लाष्टर भई छाना जस्ता, भिगटी, टायल, एसवेसटस् सिट ।	व.फु	१७४२.००	२०२२.००	२१२३.०
७	भवनको निर्माण भित्र, बाहिर पाको ईटामा वङ्गको जोडाई र भित्र बाहिर सिमेण्ट प्लाष्टर भई छाना आर.वि.सी./आर.सि.सि. ।	व.फु	१८१३.००	२१०५.००	२२१०.०
८	भवनको निर्माण भित्र, बाहिर पाको ईटामा सिमेण्ट जोडाई भई छाना जस्ता, भिगटी, टायल, एसवेसटस् सिट ।	व.फु	१७५६.००	२०३८.००	२१४०.०
९	भवनको निर्माण भित्र, बाहिर पाको ईटामा सिमेण्ट जोडाई भई छाना आर.वि.सी./आर.सि.सि. ।	व.फु	१८१८.००	२११०.००	२२१६.०
१०	आर.सि.सि.फ्रेम स्ट्रक्चर भवन ।	व.फु	१९२०.००	२२२९.००	२३४०.०
११	काठेकाठको भवन भई छाना जस्ता, भिगटी, टायल, एसवेसटस् सिट ।	व.फु	१६८०.००	१९५०.००	२०४८.०

भवनको बनावट र फिनिसिङ्ग तथा सामान/उपकरण जडानको आधारमा वर्गीकरण

क) भवनको भित्र Wall Putty गरी इमल्सन पेन्टिङ्ग गरेको ।

ख) भवनको बाहिर Weather Coat painting/wall cladding/Almunium composite pannel भएको ।

ग) लिफ्ट तथा एक्सालेटर जडान भएको ।

घ) विद्युतीकरणको लागि उच्चस्तरीय सामग्रीको प्रयोग भएको ।

ङ) प्यासेज, भर्याङमा मार्वल/पार्केटिङ्ग भएको ।

च) शौचालयमा टायल, फिक्सर र सि.पि. फिटिङ्ग उच्चस्तरीय प्रयोग भएको ।

छ) अग्नी नियन्त्रण प्रविधि (Fire Hose Reel / Extinguisher) जडान भएको ।

ज) बेसमेण्टमा (Basement) पार्किङ्ग सुविधा भएको ।

झ) Raft/Pile foundation भएको ।

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उल्लेखित माथिका सबै सुविधा भएको भए **'क' वर्ग,** र उल्लेखित मध्ये कम्तीमा ७ गोटा सुविधा भएको **'ख' वर्ग** अन्य **'ग' वर्ग** मानिने छ। यस अनुसार वर्गीकृत गरिएको भवनको हकमा निम्नानुसारको दर कायम हुने छ :

अ) **'ग'** वर्गको भवनको हकमा उपरोक्त तालिका अनुसारको दर मानिने छ।

आ) **'ख'** वर्गको भवनको हकमा उपरोक्त तालिका अनुसारको दरमा २० प्रतिशत थप गरिने छ।

इ) **'क'** वर्गको भवनको हकमा उपरोक्त तालिका अनुसारको दरमा ४० प्रतिशत थप गरिने छ।

घरभाडा मूल्यांकन प्रयोजनको लागि निम्न मुख्य सडकको दायाँ र बायाँ निर्माण भएका घरहरुको हकमा Internal R of Return (IRR) १० प्रतिशत र जग्गाको हकमा IRR ५ प्रतिशत कायम गर्ने र मुख्य सडकसग जोडिएका सह सडक र सो सहायक सडकबाट हाँगा फाटेका सडकको दायाँ र बायाँ निर्माण भएका घरहरुको हकमा IRR क्र घटाउदै न्यूनमतम ६ प्रतिशत सम्म कायम गर्ने तथा जग्गाको हकमा IRR क्रमश : घटाउदै न्यूनतम ३ प्रतिशत क गर्ने निर्णय गरियो।

मुख्य सडकहरु :

१) मनोहरा पुल (जडीबुटी) देखि कोटेश्वर-सुविधानगर-बानेश्वर-माईतीघर-त्रिपुरेश्वर-कलंकी-थानकोट चेकपोष्ट-नागढुंगासम्मको सडक।

२) माईतीघर-सिंहदरबार-पुतलीसडक-कमलपोखरी-जय नेपाल हल-नागपोखरी-नक्साल-भाटभटेनी-प्रहरी तालिम केन्द्रसम्मको सडक।

३) त्रिपुरेश्वर-सुन्धारा-न्यूरोडगेट-विशालबजार (इनद्रचोक)-न्यूरोड गेट-वीर अस्पताल-जमल-लैनचौर- लाजिम्पाट-टीचिङ्ग अस्पताल-महाराजगंज चोक-बूढानीलकण्ठसम्मको सडक।

४) चक्रपथ पुरै।

५) शंखमुल पुल -नयाँबानेश्वर-पुरानो बानेश्वर-गोशाला चोकसम्मको सडक।

६) सिनामंगल पुरानो बानेश्वर चोक-मैतीदेवी-डिल्लीबजार-बागबजार हुदै रत्नपार्कसम्मको सडक।

७) गोशाला चोक - ज्ञानेश्वर - कमलपोखरी-एकेडेमी भवन-तीनधारा पाठशाला-महेन्द्र शालिकसम्मको सडक।

८) चावहिल चोक -बौद्ध - जोरपाटी साँखु बसपार्क सम्मको सडक।

९) लैनचौर - नयाँबजार- बालाजु चोक - बालाजु बाईपास- काठमाडौ र नुवाकोटको सिमानासम्मको सडक।

१०) कालिमाटी चोक-कुलेश्वर-बल्खुचोक-फर्पिङ्ग दक्षिणकालीको पार्किङ्गस्थलसम्मको सडक।

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APPENDIX 9: TERMS OF REFERENCE FOR THE EXTERNAL MONITOR

1. The external monitor will conduct a bi-annual assessment of the resettlement plan process, performance, outputs and outcomes and its compliance with ADB's SPS. The key tasks to be conducted for this purpose are the following:

A. Key tasks

1. Data verification:

- Verification of the internal monitoring data from the implementation Supervision Consultant (SC)'s resettlement team and DOR project implementation unit (PIU)
- Verification of the baseline monitoring data
- Verification of the data/official documentation from the Deputy Commissioners offices (CDO) and land revenue offices.
- Verification of Compensation Determination Committee (CDC) pricing methods
- Direct verification with affected persons – of compensations and/or resettlement assistance received
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2. Assessment of RP process:

- Assessment of performance of internal monitoring system
- Assessment of the performance of the RP implementation team
- Assessment of performance of Grievance Redress Mechanism (GRM) or other complaint resolution system set up by the project
- Assessment of information disclose and consultation process
- Assessment of implementation of Income and Livelihood Training Program
- Assessment of RP implementation compliance with ADB's Safeguards Policy Statement
- Provide recommendations and corrective actions if necessary
-

3. Assessment of RP performance

- Setting up parallel, sample baseline and monitoring system for post-project RP impact verification
- Conduct satisfaction survey of the resettlement process
- Assess whether RP and livelihood training objectives have been met; especially whether livelihoods and living standards have been restored or enhanced;
- Evaluation of change in living standards pre/after resettlement process: assess whether the resettlement entitlements were appropriate in meeting the objectives, and whether the objectives were suited to AP conditions.
- Provide recommendations and corrective actions if necessary
- Compiling of lessons-learned and best practices of RP design and implementation for future resettlement plans

B. Methodology

2. The external monitor will identify and select a set of appropriate process, output and outcome indicators and gather information on them to substantiate its assessment. This exercise will require formal and informal surveys, field level verification and consultation with

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affected persons. A combination of the following quantitative and qualitative methods should be used:

- ***Sample Affected Household Survey:*** a sample baseline of affected household survey (at least 20%) and representative (of different categories such as titled and non- titled, vulnerable, etc.) will be gathered to obtain information on the key indicators of entitlement delivery, efficiency, effectiveness, impact and sustainability;
- ***Focus Group Discussion (FGD):*** Consultation with a range of stakeholder groups (local Government, resettlement field staff, community leaders and APs including women and vulnerable groups);
- ***Key Informant Interviews:*** Consultation with individuals like local leaders, village workers or persons with special knowledge or experience about resettlement activities and implementation;
- ***Public Consultation Meetings:*** Public consultation meetings at resettlement sites to elicit information about performance of various resettlement activities;
- ***Structured Direct Observations:*** Field observations on status of resettlement implementation, plus individual or group interviews for crosschecking purposes;
- ***Informal Surveys/Interviews:*** Informal surveys of APs, host village, workers, resettlement staff, and implementing agency personnel using non-sampled methods; and
- In the case of special issues, in-depth case studies of APs and host populations from various social classes will be undertaken to assess impact of resettlement.

C. Outputs

- 2 independent review reports per year: to be developed for each year of the RP implementation. The reports should include (i) assessment of the RP implementation process (process and output/outcome indicators); (ii) compliance status with ADB's SPS; (iii) Corrective action plans and recommendations. These reports will be submitted to the project director (DoR project implementation unit) and ADB simultaneously.
- Post-Completion RP Evaluation Report: to be conducted within 6 months of the completion of the RP implementation process. This should include: (i) overall assessment of RP implementation process; (ii) assessment of RP outcomes; (iii) implementation of corrective action plans; (iv) lessons-learned and best practices. This report will be submitted to the project director (DOR project implementation unit) and ADB simultaneously.

D. Institutional Arrangements

3. The external monitor will be recruited by DoR. DoR's project implementation unit and in particular its project director, will facilitate access to the internal monitoring system, the SC resettlement team and affected persons and will serve as liaison for data to be checked with the Deputy Commissioners' offices in the districts concerned by the project.

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E. Qualifications, Experience and Inputs of Experts and Staff (National)

4. The external monitor agency should have at least master degree in sociology, anthropology or other social development studies, and at least 9 years' experience in resettlement activities in Nepal. They should have experience in resettlement activities for project financed by multi-lateral development banks, such as the Asian Development Bank (ADB) or the World Bank (WB). He or she should be proficient in English and have good writing skills.

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APPENDIX 10: SAMPLE OUTLINE OF RP MONITORING REPORT

Following requirements of the ADB Safeguard Policy Statement (2009) and the *Operations Manual* section on safeguard policy (OM F1), borrowers/clients are required to establish and maintain procedures to monitor the status of implementation of safeguard plans and ensure progress is made toward the desired outcomes. For projects categorized as A or B in Involuntary Resettlement and/or Indigenous People, the Borrowers/clients are required to submit semi-annual monitoring reports for ADB review. The level of detail and comprehensiveness of a monitoring report is commensurate with the complexity and significance of social safeguards impacts (IR and IP) and with the current status of project implementation phase. The RP monitoring report may include the following elements:

A. Executive Summary: This section provides a concise statement of project scope and impacts, key findings and recommended actions (as applicable).

B. Background of the Monitoring Report: This section provides:

(i) Background/context of the monitoring report which includes information on the project, project components, safeguards categorizations and general scope of the social safeguards impacts;
(ii) Information on the implementation progress of the project activities, scope of monitoring report and requirements, methodology used, reporting period;
(iii) Changes in project scope, if any.

C. Scope of Impacts: This section outlines the detail of

(i) Scale and scopes of the project impacts on involuntary resettlements or indigenous people as identified in the approved RP/IPP,
(ii) Adjusted safeguard measures due to changes in project scope, if applicable
(iii) Vulnerability status of the affected people,
(iv) Entitlements matrix and other rehabilitation measures, as applicable, as described in the approved final RP(s) /IPP(s).

D. Status of RP/IPP Implementation: This section provides detail and progress for the implementation of the RP/IPP. This includes various activities and institutional arrangements required prior the finalization and implementation of the RP/IPP. This section should have descriptions on:

(i) **Institutional Arrangement and Capacity**: This section describes the actual implementation or any adjustment made to the institutional arrangement for implementing and managing the social safeguards issues. This includes the establishment of safeguards unit/ team and appointment of staff in the EA/IA; implementation of the GRM and its committee; supervision and coordination between institutions involved in the management and monitoring of safeguards issues, the roles of NGO and women's groups in the monitoring and implementation of the plan, if any; budget/fund availability for implementing the GRM, RP/IPP; adequacy of EA/IA capacity to manage safeguards issues; updated RP/IPP implementation schedule, etc.
(ii) **Compensation and Rehabilitation:** This section describes the process and progress of the implementation of the land acquisition and resettlement (LAR) and/or indigenous people (IP) impacts mitigation activities as determined in the RP. This includes payment of the affected assets compensation, allowances, loss of incomes, etc. to the entitled persons; provisions of other types of entitlement as described in the matrix and implementation of livelihood rehabilitation activities as

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determined in the plan. Quantitative as well as qualitative results of the monitoring parameters, should be provided. (e.g., adequacy of compensation rates and timeliness of payments, adequacy and timeliness of IR rehabilitation measures including preparation of the replacement housing sites, house reconstruction, livelihood support measures, and training, etc.). Any discrepancies that may occur from the approved RP/IPP during the implementation should be explained.

(iii) **Disclosure and public consultation:** This section describes public disclosure and consultations activities during the project's implementation as agreed in the plan. This includes final consultations with APs during RP finalization after the completion of detail design and final DMS survey; the numbers of activities conducted; issues raised during consultations and responses provided by the project team, implementing NGOs, project supervision consultants, contractors; project reports posted on website, etc.

(iv) **Grievance Redress Mechanism (GRM):** This section described the implementation of project GRM as design in the approved RP/IPP. The monitoring and evaluation include its readiness, effectiveness, procedures, complaints receive, timeliness to resolve issues/ complaints and adequacy of resources provided to solve the complaints. Special attentions should be given if there are complaints received from the affected people or communities.

E. Summary Monitoring Results and Key Findings: This section describes the summary and key findings of the monitoring activities. The results are compared against previously established benchmarks and compliance status or resolutions/follow up of previously identified issues. It also compared against the objectives of safeguards or desired outcomes (e.g. IR impacts avoided or minimized; livelihood restored or enhanced).

F. Compliance Status: This section summarizes the compliance status of the project activities with the loan covenants, ADB SPS (2009) on SR2.

G. Follow up Actions, Recommendation and Disclosure: This section describes recommendations and further actions or items to focus on for the remaining monitoring period. If noncompliance or any major gaps identified, include the recommendation of corrective action plan. It also includes lesson learned for improvement for future safeguards monitoring activities. Disclosure dates of the monitoring report to the affected communities should also be included and, as needed, a time-bound summary table for required actions.

H. Appendices:

(i) List of Affected Persons and Entitlements
(ii) Summary of the survey results (from the external monitor)
(iii) Copies of AP's certification of payment (signed by the APs)
(iv) Summary of minutes of meetings during public consultations
(v) Summary of complaints received and solution status

Photographs of the affected areas, consultation meetings, housing reconstruction activities, etc.

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