

	Articles/rules/clauses, etc.	Related description
	Section 4. To be considered as Sexual Harassment	(1) If anyone commits or causes to be committed, the following acts by abusing one's position, power or authority to any employee or customer in the workplace by creating any form of pressure, influence or enticement or by discouraging, it shall be considered that sexual harassment has been committed: - (a) To touch or attempt to touch any organ of the body with sexual intent, (b) To use or display word, picture, newspaper, audio, visual, other information technology, medium, object or material related to obscene and sexual activity, (c) To display or express obscene and sexual intent by writing, speaking or gesticulating, (d) To make an offer for sexual activity, (e) To tease or annoy with sexual intent (2) Notwithstanding anything contained in clauses (a), (b) or (c) of sub-section (1), anything done in course of educational, informative, research oriented, treatment or lifesaving activity shall not be considered to be a sexual harassment.
Solid Waste Management Act, 2068	Section 4 Sub-section (1)	According to this Act, the responsibility for managing waste will be at the local level, but in sub-section (2) it is mentioned that the responsibility of processing and managing harmful waste, health institution waste, chemical waste or industrial waste subject to the prescribed standards shall be the responsibility of person or entity generating such waste
	Section 10 (1)	The local level will do the necessary work to encourage waste minimization, reuse and recycling and can create and implement the necessary guidelines for its effective implementation.
Human Trafficking and Transportation (Control) Act, 2064	Section 4: Acts considered as Human Trafficking and Transportation	Acts considered as Human Trafficking and Transportation: (1) If anyone commits any of the following acts, that shall be deemed to have committed human trafficking: (a) To sell or purchase a person for any purpose, (b) To use someone into prostitution, with or without any benefit, (c) To extract human organ except otherwise determined by law, (d) To go for in

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	Articles/rules/clauses, etc.	Related description
		prostitution. (2) If anyone commits any of the following acts, that shall be deemed to have committed human transportation: (a) To take a person out of the country for the purpose of buying and selling, (b) To take anyone from his /her home, place of residence or from a person by any means such as enticement, inducement, misinformation, forgery, tricks, coercion, abduction, hostage, allurements, influence, threat, abuse of power and by means of inducement, fear, threat or co-ercion to the guardian or custodian and keep him/her into ones custody or take to any place within Nepal or abroad or handover him/her to somebody else for the purpose of prostitution and exploitation.
Child Labor (Prohibition and Regulation) Act, 2056	Section 3: Child shall not be employed Section 6: Consent to be obtained Section 9: Timing of Employment Section 10: Remuneration and Benefits	1. No one should employ a child under fourteen years of age as a laborer. 1. If an organization has to employ a child, it must take the approval of the relevant labor office or any other body or official designated by that office and the father, mother or guardian of the child. 1. Children should not be employed after 6 pm to 6 am. 2. Children should not be employed for more than 6 hours a day and thirty-six hours a week, with or without additional remuneration. 3. After working for three consecutive hours every day, the child should be given half an hour rest time and one day off every week. 1. The Organization shall give equal wages and facilities for equal work to children working as laborers without any discrimination on the basis of gender, race, religion or caste.
Water Resource Act, 2049	Section 19. Water Resources not to be Polluted	(1) Government of Nepal may, by a notification published in the Nepal Gazette, prescribe the pollution tolerance limit for water resources. (2) 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

	Articles/rules/clauses, etc.	Related description
		pollution tolerance limit of the water resource as prescribed pursuant to Sub-section (1) is exceeded. (3) The prescribed officer may, as required, examine or cause to examine to determine as to whether or not the water resource has been polluted or the quality standard as prescribed pursuant to Sub-section (1) of Section 18 has been maintained.
	Section 20. Not to Cause Substantial Adverse Effect on Environment	While utilizing water resources, it shall be done so in such a manner that no substantial adverse effect be made on environment by way of soil erosion, flood, landslide or similar other cause
Soil and Watershed Conservation Act, 2039	Section 10. Prohibited acts in land vulnerable or likely to be vulnerable to natural calamity	Points a, b, c, d, e, f of the legal provisions on prohibited activities on land where natural disasters occur or may occur
Land Acquisition Act, 2034	Section 3 Right of Government of Nepal to acquire land for public works	If the Government of Nepal deems it necessary to acquire any land for the purpose of any public work, the Government of Nepal may acquire any amount of land in any place by giving compensation in accordance with this Act.
	Section 4 Provisions related to the acquisition of land for the organization	If any organization requests the Nepal Government to acquire any land for the following works by paying compensation and all other expenses as per this Act, the Nepal Government may decide to acquire the land to such an organization.
	Section 7 Compensation for Damages	(1) In accordance with section 6, compensation will be given for the loss due to cutting or breaking down of crops, trees, walls etc. (2) The amount of compensation as per sub-section (1) shall be determined by the officer conducting the initial investigation and given to the concerned person.
Public Road Act 2031	Section 3 Classification of Public Roads and Road Border Thereof	The Government of Nepal shall, by a notification in the Nepal Gazette, classify the public roads as (a) Highways, (b) Feeder roads, (c) District roads and (d) Urban roads and specify the road border not exceeding Thirty


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	Articles/rules/clauses, etc.	Related description
 Ministry of Physical Infrastructure and Transport Department of Roads Transport Coordination and Management Division Kathmandu		One meters on both right and left hand sides from the central line of such roads. The Government of Nepal may specify the required border also setting out the four boundaries: to limit speed or for the safety of a bridge or the river banks around the bridge.
	Section 3A Power to prohibit the making of building etc. within the prescribed distance	(1) The Government of Nepal may prohibit any person from building any kind of permanent structure or building within such distance by a Notification in the Nepal Gazette, as not exceeding Six meters from the road border where it has been specified pursuant to Section 3 and from the side of the public road where the road border has not been specified.
	Section 14 Power to Requisition other land in developing, expanding or improving roads	The Department of Roads may temporarily requisition any land for different specified purpose until the development, expansion or improvement of a public road is completed
	Section 15 Compensation of Land to be requisitioned and Fixation of Compensation	This section deals with different circumstances where compensation can be given and process of compensation. A Compensation Fixation Committee (CFC) determines compensation in case of loss of assets, business or production.
	Section 4. Restriction on entry into national park	No person shall be allowed to enter into a national park or reserve without obtaining an entry permit as prescribed or a written permission from the authorized official
National Parks and Wildlife Conservation Act, 2029	Section 5. Prohibited actions within national park or reserve	This section mentions about different activities prohibited within national park or reserve without obtaining a written permission from the authorized official:
	Section 17 A. Preservation of Archaeological Object	(1) Except the one under private ownership, all archaeological objects found anywhere shall be under the custody of the Department of Archaeology. (2) The Department of Archaeology may, on taking surety at the recommendation of the Local Office-Chief, handover the archaeological object under its custody to perform some traditional fair, festival or
Ancient Monument Preservation Act 2013		

	Articles/rules/clauses, etc.	Related description
Rules		ceremony for a fixed period of time.
Forest Regulation 2079	Rule 3. Land use of national forest land not to be changed	(2) if land use of forest area is to be changed for national security, then GON can approve any part of the forest land for land use change. (3) as per sub rule (2) land use of the approved land should be used only for what it has been approved.
	Rule 4. Provision of providing area of National Forest	(1) As per rule 3 (2), GON can provide forest land whose land use change has been approved for concerned entity. This description of providing land along with approval of land use should be provided to Provincial Ministry and Directorate. (2) The concerned entity who gets land as per sub rule (1) should allocate budget for plantation and care for five years in the area assigned by Department or Division Forest Office.
	Rule 6. Provision on regulation of entering inside forest area	(1) Divisional Forest Officer can give permission to vehicles and people for movement within the forest area for certain time defining certain condition for implementation of development projects as mentioned in section 9 subsection 4 of the Forest Act.
	Paragraph 22. Provision for providing national forest land to development projects	Rule 87. deals with design of development projects without forest land as far as possible. If forest land is unavoidable, then report with all the alternatives should be prepared, environmental study should be done in coordination with concerned division forest office. Rule 88. deals with letter to be given/forwarded for use of forest land Rule 89. deals with description to be asked Rule 90. deals with approval by GON Rule 91. deals with land to be provided in place of forest land use Rule 92. deals with provision of formation of land attainment facilitation committee


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	Articles/rules/clauses, etc.	Related description
Land Use Regulation 2079		Rule 93. deals with amount to be deposited Rule 94. deals with agreement process
		This regulation has divided the land into 10 zones based on its geological capacity, usage and features. The land has been categorised as agricultural zone, residential zone, commercial zone, industrial zone, area of mines and minerals, forest zone, public use zone, area of cultural and archaeological importance and others. The regulations prohibit commercial land plotting and its sale in areas except in classified areas for residential purposes The regulations have the provision that the federal level will deal with the land use mapping procedures across the country and hand it to the local level which can revise and update the mapping as per its needs and implement it.
Environment Protection Rule, 2077	Rule 3. Environmental Studies to be done	As per Environment Protection Act, section 3 subsection 1, the proponent has to conduct Brief Environmental Studies for proposals mentioned in schedule 1, Initial Environmental Examination for proposals mentioned in schedule 2 and Environmental Impact Assessment for proposals mentioned in schedule 3. As per schedule 3 pertaining to rule 3 of EPR 2077, EIA is required for upgradation of National Highways or Feeder Roads of more than 50 Km.
	Rule 4. Scoping to be done	Before conducting EIA, the proponent has to conduct scoping as per section 5 subsection 1 of Act.
	Rule 5. ToR to be prepared	For all the environmental studies, the proponent has to prepare Terms of References. For EIA, TOR has to be prepared in the format as provided in schedule 8
Disaster Risk Reduction and Management Regulations, 2076	Rule 9. Liability of Public Institutions and Commercial	1. Public or commercial organizations should fulfill their obligations to prevent disasters from happening

	Articles/rules/clauses, etc.	Related description
	Organizations	2. Public or commercial organizations should formulate and implement a business continuity plan to resume their business before a disaster, during a disaster, and after a disaster. 3. Public or commercial organizations should install fire control and disaster mitigation equipment
Control of International Trade of Endangered Wild Fauna and Flora Rule 2076	Rule 3. Application for a permit	b) To foster or keep specimens (produce, transport or use) of endangered wildlife c) To plant, grow or keep specimens, use, produce or transport endangered plants; c) To carry out controlled breeding of rare or endangered wild animals or plants
Labour Rule 2075	Rule 16. Rule 17. Rule 34. Rule 35. Rule 39. Rule 41 Rule 42 Rule 44	Provisions relating to determination of working hours Provisions relating to additional time for rest Occupational Safety and related provisions Provisions relating to employer's duties Special provisions relating to occupational safety and health Provisions relating to adoption of protective measures Provisions on not lifting heavy stuffs Other provisions relating to occupational health and safety
Solid Waste Management Rule 2070	Rule 3. Segregation and Management of Solid Waste	(1) The Local Body shall, while fixing segregation at least of organic and non-organic solid waste at its source under Section 6, have to make management and segregation of harmful or chemical waste separately. If it is prescribed as above, the individual, organization or agency generating such solid waste, shall have to make segregation as prescribed. (2) The responsibility of managing the chemical or harmful solid waste under Sub-Rule (1) shall be of concerned generator.


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	Articles/rules/clauses, etc.	Related description
Child Labor (Prohibition and Regulation) Rule 2062	Rule 4	Eligibility certificate to be submitted in order to employ the child
	Rule 5	If a child is to be employed, the employer must submit the child's details to the labor office and obtain permission
	Rule 25	Provisions to be made regarding the health and safety of children
	Rule 11. Approval to be taken	1) If there is a need to carry out any work on the land designated as a natural disaster or where there is a risk of such a work, permission must be obtained from the Watershed Protection Officer by giving reason for such works.
Soil and Watershed Conservation Rule 2042		This rule describes process to be adopted for operating any services from anybody within National Park of Reserve area.
National Parks and Wildlife Conservation Rule 2030	Rule 3. Services to be operated in a National Parks or a Reserve	
Guidelines		
Wildlife Friendly Infrastructure Construction Guidelines 2078		This guideline assists in constructing wildlife friendly infrastructure in linear nature projects to secure the movement of animals and reduce accidents and conflicts between human and wildlife. This guideline has suggested minimum guideline dimensions for underpass and overpass structures required for different categories of wildlife.
Environmental and Social Management Framework (ESMF), 2077, SRCTIP – Trade Component, MoICS/MoALD		This ESMF forms part of the comprehensive environmental and social management approach that is adopted for addressing potential environmental and social impacts from SRCTIP-trade component. In line with ES Requirements of GoN and applicable 9 out of 10 Environmental and Social Standards (ESS) of WB the ESMF defines (a) the approach for identifying the environmental and social issues associated with the SRCTIP-trade component activities, (b) the requirements for conducting environmental and social screening and environment and social assessment studies, and (c) measures to avoid, minimize, mitigate and manage adverse impacts and enhance positive ones. It includes an exclusion list and simplified tools to be used to determine types of environmental and social assessment required for proposed initiatives. A gender development

	Articles/rules/clauses, etc.	Related description
Indigenous Peoples Planning Framework (IPPF), 2076, SRCTIP, Trade Facilitation Component, MoICS and MoALD		framework and capacity building measures and a monitoring mechanism are also included in the ESMF. This Indigenous Peoples Planning Framework (IPPF) outlines the policy, process and procedures to understand project impacts on Indigenous Peoples (IPs) under the Strategic Road Connectivity and Trade Improvement Project (SRCTIP)-Trade Facilitation Component, to be implemented by the Ministry of the Industry Commerce and Supply (MoICS) and Ministry of the Agriculture and Livestock Development (MoALD), with financial support from the World Bank.
Labor Management Procedures (LMP), 2076, SRCTIP, DCID, DOR, MoPIT		The LMP is developed to manage labour and working conditions' risks, associated with improvement of Nagdhunga-Naubise-Mugling (NNM) & KDP Road and periodic maintenance of selected roads to meet World Bank Environment and Social Standards (ESSs), in particular ESS2 on Labour and Working Conditions and ESS4 on Community Health and Safety.
Resettlement Policy Framework (RPF), 2076, SRCTIP, DCID, DOR, MoPIT		This Resettlement Policy Framework (RPF) provides the resettlement policy, principles and organizational arrangements and design criteria to be applied to the SRCTIP specifically for the upgrading of the KDP road, under the regional connectivity improvement component of the project. The RPF is prepared according to the standards of GON legislation and policy including the Land Acquisition Act 1977, and according to World Bank's Environmental and Social Standard (ESS) 5 on Land Acquisition, Restrictions on Land Use and Involuntary Resettlement
Stakeholder Engagement Plan (SEP), 2076, SRCTIP, DCID, DOR, MoPIT		This SEP includes details of stakeholders and activities carried out in the preparation phase of NNM road and in feasibility and planning stage of the KDP road. Detailed consultations for the KDP road upgrading will be carried out at the detailed design phase. The details of consultations for the periodic maintenance activities will be determined during project

	Articles/rules/clauses, etc.	Related description
Green Infrastructure Design for Transport Projects, A Road Map to Protecting Asia's Wildlife Biodiversity, 2075, ADB		This report discusses the impacts of transport projects on wildlife and biodiversity in Asia, and how to address them by integrating road ecology principles and green infrastructure to balance construction with environmental conservation.
Gender Equality and Social Inclusion (GESI) Operational Guidelines 2074, MoPIT	1.4 Objectives and Guidelines	The main objective of the guideline is to provide guidance on implementation of gender equality and social inclusion in all aspects of MoPIT policies, institutions and in its program/ project implementation processes in an integrated manner. The specific objectives are to: (1) ensure that a gender and social inclusion responsive approach is adopted and monitored in MoPIT to improve the access of women, poor and the excluded to resources, opportunities and benefits from the programs/projects and services of the Ministry. (2) ensure GESI issues are addressed both in programmes and in institutions.
The World Bank Environmental and Social Framework, 2074, The World Bank		The ESF consists of the World Bank's Vision for Sustainable Development; the Bank's Environmental and Social Policy for Investment Project Financing (IPF); ten Environmental and Social Standards (ESSs), which set out the requirements that apply to Borrowers; the Environmental and Social Directive for IPF (which sets out requirements for Bank staff to implement the E&S Policy); and a Directive on Addressing Risks and Impacts on Disadvantaged or Vulnerable Individuals or Groups.
Forest Product Collection and Sale Distribution Guidelines 2073		This guideline assists general public in utilizing forest products. Paragraph 2 describes provision about license on pruning, cutting and collection of forest products, paragraph 4 describes about wood measurement and stocking and sales provision of erect and fallen trees.

	Articles/rules/clauses, etc.	Related description
Nature Conservation National Strategic Framework for Sustainable Development 2072		This Framework addresses topical questions, such as how to carry out conservation of heritage sites such as National Parks and sensitive watershed areas such as Churia, mitigation of water and air pollution and reduction in green gas emissions, while developing physical infrastructure that does not compromise the environment.
Accessible Physical Structure and Communication Service Directive for People with Disabilities 2069		This directive has stated mandatory provisions for making public places accessible for people with disabilities both physically and also in terms of communication. This directive has also stated the proper dimensions on making different structures accessible for people with disabilities.
Environmental and Social Management Framework (ESMF) GESU-DoR, GoN 2064		The framework contains public consultation framework and compendium of environmental and social impacts with mitigation measures that needs to be adopted during road design, construction and operation. Addendum is focused for bridge related cases.
Environmental Management Guidelines, Geo Environmental Unit, DoR, 2053 (1997 AD)		This guideline assists to integrate environmental consideration in each phase of project cycle. The guideline consists of environmental mitigation measures to be incorporated into Road projects, procedures for public participation, and socio-economic consideration.
National Environmental Impact Assessment Guidelines 2050		The guideline assists mechanisms for conducting Environmental Assessment. This guideline guides in project screening, scoping, identifying project impacts, adopting mitigation measures, monitoring, evaluating impacts, community participation, and report preparation.
Standards		
Standards related with extraction sale and management of stone, aggregates and sand, 2077	Section 3, Determining area for extraction or collection	This section mentions about procedures to be adopted by municipalities and rural municipalities for determining area of extraction or collection of river bed and quarry materials
	Section 4, Collection, extraction and sale of river bed materials	This section mentions about procedures to be adopted by municipalities and rural municipalities for collection, extraction and sale of river bed materials


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	Articles/rules/clauses, etc.	Related description
 Ministry of Physical Infrastructure and Transport Department of Roads Construction Implementation Branch Jyoti, Lalitpur	Section 5, Arrangements for extraction of quarry materials	This section mentions about procedures to be adopted for collection and extraction of quarry materials
	Section 6, Arrangements regarding forest and chure area	This section mentions about procedures to be adopted for collection and extraction of stones, aggregates, sand and soil from forest and chure area
	Section 12, Special arrangements for big, transformative, national pride and priority projects	This section mentions about procedures to be adopted for collection and extraction of river bed materials for big, transformative, national pride and priority projects
	Standards regarding removal of government trees 2071	If road side trees are to be removed for road widening or any other reason than as per decision of DOR and recommendation from committee formed as per section 10 of this standard and approval from Department of Forest, Division Forest Office can give approval for removing those trees.
Nepal Road Standards 2070	Section 1. Introduction	a. Nepal Road Standards -2077 (Second Revision 2070), in short called NRS-2070, shall apply to all Strategic Roads in rural areas being constructed within Nepal. For non-strategic (Local Roads) and urban roads separate standards shall be considered.
National Ambient Air Quality Standards 2069	Section 3. Road Classification	Roads in Nepal are classified as follows: A. Administrative Classification: National Highways, Feeder Roads, District Roads and Urban Roads B. Technical/Functional Classification: Class I, Class II, Class III and Class IV
Noise Level Standard of Nepal 2069		Government of Nepal has formulated noise level standard for different area for day and night time. Project Activities should be within the prescribed limit of noise level. No equipment or activities exceeding limit is allowed.
Nepal vehicle mass emission standard 2069		All the vehicle in the use of the project should be followed the emission standard and limits for the stipulated parameter.
National Diesel Generator Emission Standard 2069		The GoN has introduced the National Diesel Generator Emission Standard (NDGES) for new and in-use diesel generators with a capacity of 8 kW-560

	Articles/rules/clauses, etc.	Related description
		kW. The emissions limits are set for four major pollutants: CO, HC, NO _x , and PM. Generators used for the project should comply with the emissions limit.
Nepal Bridge Standards 2067	Section 1.0 Introduction and Background	DOR has formulated these standards with a view to establish a common procedure for design and construction of road bridges in Nepal.
	Section 3.1 Design Life	All permanent bridges shall be designed for a design life of minimum 50 years. Traffic projections shall be made for a period of 30 years.
	Section 3.2 Design Discharge	All permanent bridges shall be designed for a discharge of 100 yrs. return period. For the calculation of design discharge empirical formulas especially developed for other catchments shall not be used.
National Drinking Water Quality Standards, 2062		Government of Nepal has issued this notice of implementation of National Drinking Water Quality Standards, 2062 under the provision of Water Resources Act, 2049, Clause 18 and Sub Clause 1. Water used for drinking purpose within the project should meet this standard
Conventions/Agreements		
Paris Agreement under the United Nations Framework Convention on Climate Change, 2015 A.D.		The Paris Agreement is a legally binding international treaty on climate change. Its goal is to limit global warming to well below 2, preferably to 1.5 degrees Celsius, compared to pre-industrial levels. To achieve this long-term temperature goal, countries aim to reach global peaking of greenhouse gas emissions as soon as possible to achieve a climate neutral world by mid-century.
SIACM (2006) A.D.		The achievement of the sound management of chemicals throughout their life cycles so that the chemicals used in ways that minimize significant adverse impacts on the environment and human health as appropriate, by stakeholders, according to their applicability.
Rio de Janeiro Convention on Biological Diversity(CBD, 1992		The Convention has three main goals including: the conservation of biological diversity (or biodiversity); the sustainable use of its components;



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	Articles/rules/clauses, etc.	Related description
A.D.)		and the fair and equitable sharing of benefits arising from genetic resources. In other words, its objective is to develop national strategies for the conservation and sustainable use of biological diversity.
Convention 182 on The Worst Forms of Child Labour, 1999 		Convention 182 outlines the 5 worst forms of labour that must be eradicated in order to step up the fight against child labour. They are as follows: • Slavery or similar practices, such as the sale or trade of children or the use of children in debt bondage or serfdom; • Obligatory or forced work, including the compulsory recruitment of children for use in armed conflicts; • The recruitment, use or offer of a child for involvement in prostitution, pornographic material or pornographic shows; • The use, recruitment or offer of a child for illicit activities, notably in the production or trafficking of drugs, as defined in the specific international treaties; Work which, by its very nature or the conditions in which it is undertaken, is likely to jeopardise the health, safety or morality of children.
Kyoto Protocol to the United Nations Framework Convention on Climate Change, 1997 A.D.		The Kyoto Protocol operationalizes the United Nations Framework Convention on Climate Change by committing industrialized countries and economies in transition to limit and reduce greenhouse gases (GHG) emissions in accordance with agreed individual targets. The Convention itself only asks those countries to adopt policies and measures on mitigation and to report periodically.
United Nations Framework Convention on Climate Change, 1992 A.D.		The ultimate objective of the Convention is to stabilize greenhouse gas concentrations "at a level that would prevent dangerous anthropogenic (human induced) interference with the climate system." It states that "such a level should be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not

	Articles/rules/clauses, etc.	Related description
Indigenous and Tribal Peoples Convention 1989 (No. 169) ILO Convention 169		threatened, and to enable economic development to proceed in a sustainable manner." The convention has visionary instrument seeking to ensure that indigenous peoples enjoy human rights without discrimination, exercise control over their own development and participate in decision-making processes that affect their lives. The theme of this convention is the project activities should not harm or disturb any Indigenous and Tribal Peoples
Basel Convention on The Control of Transboundary Movements of Hazardous Wastes and Their Disposal, 1989		The provisions of the Convention center around the following principal aims: the reduction of hazardous waste generation and the promotion of environmentally sound management of hazardous wastes, wherever the place of disposal; the restriction of transboundary movements of hazardous wastes except where it is perceived to be in accordance with the principles of environmentally sound management; and a regulatory system applying to cases where transboundary movements are permissible.
Convention on International Trade in Endangered Species of wild Fauna and Flora (CITES 1973 A.D.)		It regulates 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. It urges parties not to allow trade in specimen of species included in the CITES Appendices I, II and III with some exception. As the area holds some CITES listed species, this convention is attracted in case of their trade.
The Ramsar Convention 1971		The Ramsar Convention on Wetlands of International Importance Especially as Waterfowl Habitat is an international treaty for the conservation and sustainable use of Ramsar sites (wetlands). It is also known as the Convention on Wetlands. As per article 3, the Contracting Parties shall formulate and implement their planning so as to promote the conservation of the wetlands included in the list, and as far as possible the wise use of

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	wetlands in their territory. Similarly, as per article 4, Each Contracting Party shall promote the conservation of wetlands and waterfowl by establishing nature reserves on wetlands, whether they are included in the list or not, and provide adequately for their wardening.

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5. Time, Budget and Human Resources

5.1 Time Schedule

EIA report is expected to be completed within one year. An indicative time frame for conducting EIA is given in the table below.

Table 5-1: Proposed Time schedule for conducting EIA

SN	Activities	Months											
		1	2	3	4	5	6	7	8	9	10	11	12
SD and ToR Preparation Phase													
1.	Literature Review												
2.	Identification of Impact Area												
3.	Notice pasting and Publication												
4.	Field Observation, FGDs KII, Collection of Key Issues												
5.	Draft SD and ToR Preparation and Submission												
6.	Comments and Finalization of SD and ToR												
EIA Phase													
7.	Field Observation, Public Consultation, FGDs and KII, Monitoring of Air, Noise and Water Quality of Project Area												
8.	Impact Identification, Prediction and Assessment												
9.	Formulation of Mitigation Measures, Monitoring Plan												
10.	Draft EIA Report Preparation												
11.	Public Hearing and Notification												
12.	Draft Final Report Preparation and Submission												
13.	Comments and Finalization of EIA Report												

5.2 Estimated Budget

For EIA of the proposed project, NRs. 2,500,000 has been allocated.

5.3 Professional Human Resource

For the EIA of the proposed road project, following experts will be deployed by the Consultant

Table 5-2: Proposed EIA Team

S. N	Designation	Name of professionals	Academic Qualification
1.	Team Leader	Mohammad Akhtar	M.Sc. in Env. Science
2.	Deputy Team Leader/Environment Expert	Rabi Bhattarai	M.Sc. in Env. Science
3.	Biodiversity Specialist / Road Ecologist	Dr. Moshin Almaji	Ph.D. in Ecology
4.	Biodiversity Specialist / Road Ecologist	Dr. Gunanda Pathak	Ph.D. in Ecology
5.	Resettlement / Indigenous People Specialist	Devi Prasad Dotel	MA. Sociology
6.	Social Development Specialist	Babu Ram Dumre	MA. Sociology
7.	Highway and Transportation Engineer	K.N. Thakur	M.Sc. in Transport Engineering
8.	Hydrologist	Dr. Binod Shakya	Ph.D./ M.Sc. in Water Resource Engineering

Beside these, other key and non-key experts will be involved as per requirement.



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6. Prioritized Environmental Issues

6.1 Issues Identified by Stakeholders

- Improve accessibility due to road and bridges expansion
- Improve quality of road and make travelling smooth
- Save travel time for social and public services
- Reduce in Traffic Problems
- Improved transportation and connectivity between various districts, increased speed of transportation, reduced travel costs
- Reduction in accident rate due to better road condition
- Decreases rate of road accidents due to improved footpaths, overpasses and underpasses
- Improved road-safety through relevant installed infrastructure (bus stops, zebra crossings, lights, public toilet etc.) and other facilities
- Improved cross-road structures for people and animals
- Develops market centers and improve local business
- Hotel, shops and construction businessmen may increase their sales.
- Enterprise development and commercialization
- Increased market for local agricultural production and gets better market value for local products
- Provides skill development training
- Provides employment opportunities and generate income of skilled and unskilled manpower
- Industrial Development along the proposed alignment
- Promotes internal tourism
- Increases aesthetic value of the area
- Increases value of land
- Increases social/community harmony through migration
- Ease travelling of differently able people due to provision of disable friendly infrastructures
- Environmental and disable friendly road and crossings will easy the public movement
- Empowerment of women and women friendly employment opportunities
- Poor, backward, marginalized community and unemployed women will get skills training which helps to improve economic condition.
- Women and poor may take advantage during construction stage by working as cleaners in the project office, operate tea stall/ snack shops/ hotels and selling goods and vegetables/ fruits to the staff and workers
- Dust and noise pollution.
- Sacred or holy trees, temples, shrines should be relocated and managed properly
- Separate lane for cycle should be built
- Provides better bus stops
- Impact on private and public structures
- Impact on Indigenous, vulnerable and disadvantaged groups



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- Health and sanitation issues (water-born vector disease transmission)
- Labour Influx & health issues
- Pressures in public utilities and resources
- Road accidents due to high speed
- Cultural contamination and insider-outsider conflicts may arise
- Human – Wildlife conflict. Human-wild animal conflict issues (Monkey, Nilgai, Dumsi, Badel destroy the agriculture farm)
- Road crossing problems for both human and animals in places where no proper crossing infrastructures are built
- Issues on the movement of animals naturally
- Water-logging issues mainly in northern side of the road
- Reduction in discharge flow rate during Irrigation months
- Demand for establishment child care & Health and safety care centers
- Destroy of natural beauty during construction
- Loss of public properties like religious trees (Bar, Peepal, Somi, etc.), Chautari, Pratiksyalaya, temples, shrines
- Damage some public places, monasteries, parks, waiting places and some private houses and compound walls.
- Chances of Child labor
- Unequal wage for women, minors and elders
- Bidders violation of rules, regulation and norms during construction stage
- Weak diversion may interrupt traffic flow
- Landslide in various rivers like Bakaiya River and Bhamar River near Nijagadh should be controlled
- Issue of land acquisition if the width of road exceeds more than 25 m from the central line.
- Excessive alcohol consumption by the workers may break the social norms and decorum
- Pollution on local environment during construction
- Health issues, prostitution and HIV/AIDs
- Haphazard development of infrastructures along road side
- Problems in traffic congestion during construction phase
- Risk to live on the side of highway for small business
- Problems for landless informal encroacher settlements within RoW
- Society will affect by dust and fumes from vehicular emission, business will be difficult and traffic problems.
- Problems for children and elderly people to walk due to dusty road during construction period
- Deforestation
- Electricity problem
- Problem of mobility



6.2 Issues Identified by the Study Team

During the field visit, the issues identified on physical, chemical, biological and socio-economic and cultural environments are as follows:

6.2.1 Beneficial Issues

Construction Phase

- Employment opportunities
- Income generation from construction works
- Enhancement of technical skills
- Promotion of local business
- Increase in socio-economic activities

Operation Phase

- Easy and fast transport services, reduced travel time and cost
- Improved accessibility among market centers, municipal and district headquarter and provincial headquarter
- Enterprise development, industrial development, commercialization and business promotion
- National and international trade promotion
- Support to tourism development
- Support to agricultural enhancement and food security

6.2.2 Adverse Issues

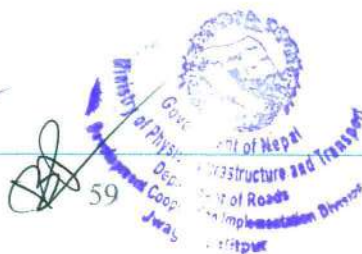
6.2.2.1 Physical Environment

Construction Phase

- Change in land use
- Issues regarding quarry sites and borrow pits; sand and gravel extraction: changing river regime and affecting aquatic ecology, exposing river side embankment without natural protection causing embankment instability and bank cutting
- Air, water and soil pollution from labor camp, issues regarding management of solid and liquid wastes
- Air, water and soil pollution from stockpiling yards
- Air, water and soil pollution from construction yards
- Air, water and soil pollution from crusher plant, hot mix plant, batching plant etc., increase in noise level
- Increase in dust level, air pollution from excavation and construction activities
- Increase in noise level and vibration due to movement of heavy construction vehicles
- Generation of spoil/muck, construction wastes and disposal issues
- River bank and road embankment activities
- Disruption of natural water flow due to construction of water related structure
- Contamination of surface and ground water bodies
- Contamination of Soil



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- Issues regarding river bank excavation for bridge abutment and piers: excessive bank cutting and embankment instability, downstream sedimentation and changing river regime
- Issues related with river diversion for creating working space and for foundation works: Changing river regime, artificial flooding/ inundation on low land on flow side and damaging public property
- Bank protection works and bed protection like cutoff wall, embankment side riprap: Changing river regime at bridge

Operation Phase

- Issues regarding reinstatement of quarry sites, camp sites, spoil disposal sites etc.
- Issues related with river bank/embankment cutting/erosion
- Issues related with flooding and water logging
- Issues related with road safety furniture
- Issues relates with high traffic movement and vehicular movement in high speed
- Issues related with maintenance of road side drainage
- Issues related with vehicular emission and air pollution
- Problem of waste management
- Bridges within and near urban areas can be sites of throwing solid wastes

6.2.2.2 Chemical Environment

Construction Phase

- Use of bitumen, their storage and handling
- Use of fuel, lubricants, oil/grease, acid and other chemicals and their leakage

Operation Phase

- Issues related with leakages from vehicles/accidents and contamination of soil, surface water and ground water.
- Chemical contamination of water bodies in case of direct washing of vehicles in such water bodies

6.2.2.3 Biological Environment

Construction Phase

- Issues related with clearing of road side vegetation
- Loss of habitat
- Disturbance to wildlife due to construction activities
- Pressure in forest products from workers
- Hunting and poaching of wildlife
- Forest fires
- Impact on Aquatic life
- Uncontrolled fishing due to the influx of people during construction period: Affecting aquatic ecology
- Increased sedimentation load in river affecting aquatic ecology

Operation Phase

- Habitat fragmentation
- Disturbance to the road side vegetations
- Disturbance to wildlife movement and wildlife accidents/collision with vehicles
- Hunting and poaching of wildlife
- Human wildlife and free domestic/stay animal conflicts

6.2.2.4 Social and Cultural

Preconstruction Phase

- Issues related with acquisition of private, public and government land,
- Issues related with relocation of private and public structures

Construction Phase

- Loss of private, public and government land, structures and other properties
- Loss of standing crops
- Issues related to probable loss of livelihood
- Issues regarding community health and Safety
- Issues regarding occupational health and safety and construction hazards including Labour and working condition
- Pressures in public utilities and resources
- Possible involvements of children in construction activities
- Possible conflicts between outside workforce and local people
- Issues related with gender discrimination
- Damage of roads, blockage, diversion and disturbance in mobility
- Possible damage/disturbance of public and private utilities (i.e. irrigation cannel, water ponds, pedestrian foot path)
- Possibility of social dispute
- High consumption of alcohol beverage and associated issues

Operation Phase

- Encroachment of ROW
- Issues related with Road Safety
- Issues related with settlement fragmentation, fragmentation of settlements and agricultural land
- Diversion bridges/ temporary diversion roads: Unsafe traffic flow including pedestrian movement
- Possibility of impact on increment in girl trafficking and other social nuisance due to large flow of outsiders

6.2.2.5 Cultural Environment

Construction Phase

- Issues related with relocation of scared or holy trees, temples, shrines etc.
- Possible damage to cultural heritage and religious sites



Operation Phase

- Possible change in traditional knowledge and beliefs and cultural practices

6.3 Prioritized Issues

Different issues collected were prioritized during scoping and will be considered for EIA study. Prioritized issues are given below as:

6.3.1 General Issues and Issues related with Road Upgradation

6.3.1.1 Beneficial Issues

Construction Phase

- Employment opportunities
- Income generation from construction works
- Enhancement of technical skills
- Promotion of local business

Operation Phase

- Easily accessible and comfortable transport facility along with reduced time of travel
- Improved accessibility among market centers, municipal and district headquarter and provincial headquarter
- Enterprise development, industrial development, commercialization and business promotion
- National and international trade promotion
- Support to tourism development
- Support to agricultural enhancement and food security
- Durability of road and reduced rate of maintenance

6.3.1.2 Adverse Issues

Physical Environment

Construction Phase

- Change in land use
- Issues regarding quarry sites and borrow pits; sand and gravel extraction: changing river regime and affecting aquatic ecology, exposing river side embankment without natural protection causing embankment instability and bank cutting
- Air, water and soil pollution from labor camp, issues regarding management of solid and liquid wastes
- Air, water and soil pollution from stockpiling yards
- Air, water and soil pollution from construction yards
- Air, water and soil pollution from crusher plant, hot mix plant, batching plant etc., increase in noise level
- Increase in dust level, air pollution from excavation and construction activities
- Increase in noise level and vibration due to movement of heavy construction vehicles
- Generation of spoil/muck, construction wastes and disposal issues



Operation Phase

- Issues regarding reinstatement of quarry sites, camp sites, spoil disposal sites etc.
- Issues related with river bank/embankment cutting/erosion,
- Issues related with flooding and water logging
- Issues related with road safety furniture
- Issues relates with high traffic movement and vehicular movement in high speed
- Issues related with maintenance of road side drainage
- Issues related with vehicular emission and air pollution

Chemical Environment

Construction Phase

- Issues related with different chemicals, their transportation, storage and handling/use

Operation Phase

- Issues related with leakages from vehicles/accidents and contamination of soil, surface water and ground water.
- Chemical contamination of water bodies in case of direct washing of vehicles in such water bodies

Biological Environment

Construction Phase

- Issues related with clearing of road side vegetation
- Loss of habitat
- Disturbance to wildlife due to construction activities
- Pressure in forest products from workers
- Hunting and poaching of wildlife
- Forest fires
- Issues related with water logging due to construction activities and death of vegetation

Operation Phase

- Habitat fragmentation
- Disturbance to wildlife movement and wildlife accidents/collision with vehicles
- Hunting and poaching of wildlife
- Human wildlife and free domestic/stay animal conflicts
- Forest Land encroachment

Social and Cultural

Preconstruction Phase

- Issues related with acquisition of private, public and government land,
- Issues related with relocation of private and public structures

Construction Phase

- Loss of private, public and government land, structures and other properties



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- Loss of standing crops
- Issues related to probable loss of livelihood
- Issues regarding community health and safety
- Issues regarding occupational health and safety and construction hazards including Labour and working condition
- Pressures in public utilities and resources
- Possible involvements of children in construction activities
- Possible conflicts between outside workforce and local people
- Issues related with gender discrimination
- Damage of roads, blockage, diversion and disturbance in mobility

Operation Phase

- Encroachment of ROW
- Issues related with Road Safety
- Issues related with settlement fragmentation, fragmentation of settlements and agricultural land

Cultural Environment

Construction Phase

- Issues related with relocation of scared or holy trees, temples, shrines etc.

Operation Phase

- Possible change in traditional knowledge and beliefs and cultural practices

6.3.2 Issues related with Bridge Construction

6.3.2.1 Adverse Issues

Physical Environment

Construction Phase

- Issues regarding river bank excavation for bridge abutment and piers: excessive bank cutting and embankment instability, downstream sedimentation and changing river regime
- Issues related with river diversion for creating working space and for foundation works: Changing river regime, artificial flooding/ inundation on low land on flow side and damaging public property
- Bank protection works and bed protection like cutoff wall, embankment side riprap: Changing river regime at bridge
- Issues regarding community health and safety
- Issues regarding occupational health and safety and construction hazards including Labour and working condition

Operation Phase

- Bridges within and near urban areas can be sites of throwing solid wastes
- Issues related to road safety



Biological Environment

- Uncontrolled fishing due to the influx of people during construction period: Affecting aquatic ecology
- Increased sedimentation load in river affecting aquatic ecology

Socio-economic Environment

- Diversion of bridges/ temporary diversion roads: Unsafe traffic flow including pedestrian movement

6.4 Rationality for not Prioritizing and Removing the Issues Raised by Stakeholders

Issues raised by stakeholders, their prioritization and rationality for not prioritizing and removing the issues are mentioned in table below.

Table 6-1: Issues Raised by Stakeholders and Reason for not Prioritizing them

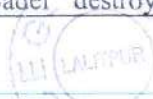
Issues Raised by Stakeholders	Prioritized or not, if not reason
Improve accessibility due to road and bridges expansion	Prioritized, will be addressed under 'Easy and fast transport services, reduced travel time and cost'
Improve quality of road and make travelling smooth	Prioritized, will be addressed under 'Easy and fast transport services, reduced travel time and cost'
Save travel time for social and public services	Prioritized, will be addressed under 'Improved accessibility among market centers, municipal and district headquarter and provincial headquarter'
Reduce in Traffic Problems	Will be addressed under 'Issues related with Road Safety'
Improved transportation and connectivity between various districts, increased speed of transportation, reduced travel costs	Prioritized, will be addressed under 'Improved accessibility among market centers, municipal and district headquarter and provincial headquarter'
Reduction in accident rate due to better road condition	Will be addressed under 'Issues related with Road Safety'
Decreases rate of road accidents due to improved footpaths, overpasses and underpasses	Will be addressed under 'Issues related with Road Safety'
Improved road-safety through relevant infrastructure (bus stops, zebra crossings, lights, public toilet etc.) and other facilities	Will be addressed under 'Issues related with Road Safety'
Improved cross-road structures for people and animals	Will be addressed under 'Habitat fragmentation' and 'Settlement fragmentation'
Develops market centers and improve local business	Prioritized, will be addressed under 'Enterprise development, industrial development, commercialization and business promotion'
Hotel, shops and construction businessmen may increase their sales.	Prioritized, will be addressed under 'Enterprise development, industrial development, commercialization and business promotion'
Enterprise development and commercialization	Prioritized, will be addressed under 'Enterprise development, industrial development, commercialization and business promotion'
Increased market for local agricultural product and get better market value for	Will be addressed under 'Enterprise development, industrial development, commercialization and business



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Issues Raised by Stakeholders	Prioritized or not, if not reason
local products	promotion'
Provides skill development training	Prioritized, will be addressed under 'Enhancement of technical skills'
Provides employment opportunities and generate income of skilled and unskilled manpower	Prioritized, will be addressed under 'Income generation from construction works'
Industrial Development along the proposed alignment	Prioritized, will be addressed under 'Enterprise development, Industrial Development, Commercialization and Business promotion'
Promotes internal tourism	Prioritized, will be addressed under Support to tourism development
Increases aesthetic value of the area	Not prioritized due to low significance
Increases value of land	Prioritized
Increases social/community harmony through migration	Not prioritized due to low significance, migration can create conflicts too and not only harmony
Ease travelling of disabled people due to provision of disable friendly infrastructures	Will be addressed under 'Improved accessibility among market centers' and 'Settlement fragmentation'
Environmental and disable friendly road and crossings will easy the public movement	Will be addressed under 'Improved accessibility among market centers' and 'Settlement fragmentation'
Empowerment of women and women friendly employment opportunities	Will be addressed under 'Employment opportunities'
Poor, backward, marginalized community and unemployed women will get skills training which helps to improve economic condition.	Will be addressed under 'Employment opportunities', 'Income generation from construction works' and 'Enhancement of technical skills'
Women and poor may take advantage during construction stage by working as cleaners in the project office, operate tea stall/ snack shops/ hotels and selling goods and vegetables/ fruits to the staff and workers	Will be addressed under 'Employment opportunities', 'Income generation from construction works', 'Enhancement of technical skills' and 'Promotion of local business'
Dust and noise pollution	Prioritized
Sacred or holy trees, temples, shrines should be relocated and managed properly	Prioritized
Separate lane for cycle should be built	Not prioritized, as it is suggestion and design has not considered for separate cycle lane.
Provides better bus stops	Will be addressed under 'Road safety'
Impact on private and public structures	Prioritized
Impact on Indigenous, vulnerable and disadvantaged groups	Will be addressed under 'Loss of private, public and government land, structures and other properties'
Health and sanitation issues (water-born vector disease transmission)	Will be addressed under 'Issues regarding community health'
Labour Influx & health issues	Will be addressed under 'Issues regarding occupational health and safety and construction hazards'
Pressures in public utilities and resources	Prioritized
Road accidents due to high speed	Will be addressed under 'Road safety'
Cultural contamination and insider-outsider conflicts may arise	Prioritized, will be addressed under 'Possible conflicts between outside workforce and local people'
Human - Wildlife conflict. Human-wild animal conflict issues (Monkey, Nilgai, Dumsi, Badel destroy the agriculture	Prioritized



Issues Raised by Stakeholders	Prioritized or not, if not reason
farm)	
Road crossing problems for both human and animals in places where no proper crossing infrastructures are built	Prioritized, will be addressed under 'Habitat fragmentation' and 'Settlement fragmentation'
Issues on the movement of animals naturally	Prioritized, will be addressed under 'Habitat fragmentation'
Water-logging issues mainly in northern side of the road	Prioritized, will be addressed under 'Issues related with flooding and water logging'
Reduction in discharge flow rate during Irrigation months	Will be addressed under 'Pressures in public utilities and resources'
Demand for establishment child care & Health and safety care centers	Out of scope of this project
Destroy of natural beauty during construction	Not prioritized due to low significance
Loss of public properties like religious trees (Bar, Peepal, Somi, etc.), Chautari, Pratiksyalaya, temples, shrines	Prioritized, will be addressed under 'Issues related with relocation of scared or holy trees, temples, shrines etc.'
Damage some public places, monasteries, parks, waiting places and some private houses and compound walls.	Prioritized, will be addressed under 'Loss of private, public and government land, structures and other properties'
Chances of Child labor	Prioritized
Unequal wage for women, minors and elders	Prioritized, will be addressed under 'Issues related with gender discrimination'
Bidders violation of rules, regulation and norms during construction stage	Not prioritized as it is not under environmental domain
Weak diversion may interrupt traffic flow	Prioritized, will be addressed under 'Damage of roads, blockage and disturbance in mobility'
Landslide in various rivers like Bakaiya River and Bhamar River near Nijagadh should be controlled	Not prioritized as there is no landslide issues within project area. 'Issues regarding river bank excavation for bridge abutment and piers' and 'Change in river morphology and flow direction' has been prioritized that will address issues regarding rivers
Issue of land acquisition if the width of road exceed more than 25 m from the central line.	Will be addressed under 'Issues related with acquisition of private, public and government land'
Excessive alcohol consumption by the workers may break the social norms and decorum	Will be addressed under 'Possible conflicts between outside workforce and local people'
Pollution on local environment during construction	Will be addressed under different topics like 'Pollution/contamination from operation of quarry sites', 'Pollution/contamination from labor camp', 'Pollution/contamination from stockpiling yards', 'Pollution/contamination from construction yards', 'Pollution/contamination from crusher plant, hot mix plant, batching plant etc.'
Health issues, prostitution and HIV/AIDs	Will be addressed under 'Issues regarding community health', and 'Issues regarding occupational health and safety and construction hazards'
Haphazard development of infrastructures along road side	Will be addressed under 'Encroachment of ROW'
Problems in traffic congestion during construction phase	Will be addressed under 'Damage of roads, blockage and disturbance in mobility'
Risk to live on the side of highway for	Will be addressed under 'Road safety'



W



Issues Raised by Stakeholders	Prioritized or not, if not reason
small business	
Problems for landless informal encroacher settlements within RoW	Will be addressed under 'Loss of private, public and government land, structures and other properties'
Society will affect by dust and fumes from vehicular emission, business will be difficult and traffic problems.	Will be addressed under 'Issues related to probable loss of livelihood' and 'Issues regarding community health'
Problems for children and elderly people to walk due to dusty road during construction period	Will be addressed under 'Issues regarding community health'
Deforestation	Prioritized, will be addressed under 'Issues related with clearing of road side vegetation'
Electricity problem	Will be addressed under 'Pressures in public utilities and resources'
Problem of mobility	Prioritized, will be addressed under 'Damage of roads, blockage and disturbance in mobility'



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7. Analysis of Impacts due to Project Implementation

7.1 Risk Assessment

As the project is funded by World Bank, to study the possible risk and impacts due to project, risk assessment criteria based on Environment and Social Framework (ESF) will be employed as suggested in table below.

Table 7-1: Risk Assessment Criteria

Risk Category	Assessment Criteria
High	The resource/receptor would likely experience a large magnitude impact that would endure for a long time, extend over a large area, exceed national/international standards, endangers public health and safety, threatens a species or habitat of national or international significance, and/or exceeds a community's resilience and ability to adapt to change. The Project may have difficulty in complying with the applicable ESF requirement, and significant mitigation would likely be required.
Substantial	The resource/receptor would experience a clearly evident change from baseline conditions and would approach but not exceed applicable standards. The Project would comply with the applicable ESF requirement, but mitigation would be required.
Moderate	The resource/receptor would experience a noticeable effect, but the magnitude of the impact is sufficiently small (with or without mitigation) that the overall effect would remain well within applicable standards. The Project would comply with the applicable ESF requirement, but mitigation may be required.
Low	The resource/receptor will either not be affected or the likely effect would be imperceptible or indistinguishable from natural background variation. The Project would comply with the applicable ESF requirement and mitigation would typically not be required.

Further, all the possible environmental impacts associated with the project during construction and operation phase will be identified, predicted and evaluated as per EPR 2017 as mentioned in sub-headings below.

7.2 Identification, Prediction and Evaluation of Environmental Impacts

Impact Identification: Based on field visit observation and consultation meeting with local, issues that may trigger due to project intervention will be identified and prioritized. From the exercise both types of beneficial and adverse impacts will be identified for EIA. The impacts will be categorized as per environmental domain (i.e. physical, biological, and socio-economic and cultural environments). Likewise; an impact that may trigger under different phases of project implementation (i.e. construction and operation) will also be considered for the assessment.

Impact Prediction: Extrapolative (i.e. predictions on the basis of past and present data, and trend analysis), and experts experience and judgment (applying past experience and knowledge of the experts) methods will be applied for impact prediction on the basis of identified impacts.



Impact Evaluation: The assessment of environmental impacts will be derived exclusively from the baseline environmental conditions of the affected environment with the subproject activities in relation to spatial and temporal aspects in terms of magnitude extent and duration of impacts. The impacts will be predicted in terms of their magnitude (minor, moderate and high), extent (site-specific, local and regional) and duration (short, medium and long term). Evaluation of the level of significance of impacts will be made based on prevailing legislative setup, numerical values with scoring (National EIA Guideline, 1993 and EPR 2077), expert's past experience and other criteria.

Table 7-2: Numerical Scales for Impact Evaluation

Magnitude	Score	Extent	Score	Duration	Score
High/Major	60	Regional	60	Long- term	20
Moderate	20	Local	20	Mid -term	10
Minor	10	Site specific	10	Short-term	5

Source: NEIAG, 1993 and EPR 2077

Significance of Impact (Cumulative scores of level of Significance)	
Total Score:	Significance
More than 100	Very Significant
50 to 100	Significant
Less than 50	Insignificant

7.3 Impact Identification and Analysis

Beneficial and adverse impacts that the project can have are mentioned in table below

Table 7-3: Beneficial and Adverse Impacts

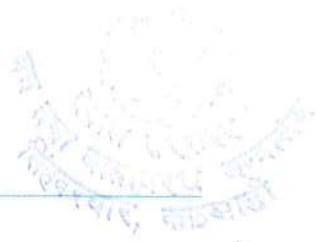
Beneficial Impacts	
Construction Phase	
Social and Economic Environment	Employment opportunity, enhancement of technical skills, income generation, gender awareness and empowerment
Operation Phase	
Physical Environment	Widened and improved road surface, improved drainage and cross drainage
Biological Environment	Passage for wildlife and cattle crossings
Social and economic Environment	Improved transportation and connectivity between various districts, increased speed of transportation, reduced travel costs, Environmental and disable friendly road and crossings
Adverse Impacts	
Pre-construction Phase	
Social-Economic Environment	Relocation/rehabilitation of damaged structures, Displacement of religious trees, temples, shrines, ponds Displacement of informal encroachers and their temporary sheds, shops, etc.
Construction Phase	
Physical Environment	Temporary and permanent change in land use Pollution from labor camp, crusher plants, hot mix plant, batching plant etc. Dust and noise pollution Vibration due to use of heavy vehicles
Chemical Environment	Transportation, storage and use of bitumen, fuel, lubricants, oil/grease, acid and other chemicals and their leakage
Biological	Cutting of Trees and Vegetation removal



Environment	Loss of wildlife habitat Disturbance to the wild animals Forest fires Use of forest resources by construction crew
Social and Economic Environment	Land and settlement fragmentation Pressure on existing facility and resources Occupational health safety Traffic safety, movement and traffic diversion Construction hazards
Cultural Environment	Damage to temples and other religious sites Impact to locations of religious activities
Operation Phase	
Physical Environment	High traffic movement Road side drainage maintenance
Chemical Environment	Soil, surface water and ground water contamination due to leakage of fuel and other chemicals/washing of vehicles in water bodies.
Biological Environment	Disturbance to wildlife Human wildlife and free domestic/stay animal conflicts
Social-Economic Environment	Congested gap between road and settlement in dense and encroached areas Road safety



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8. Alternatives of the Proposal

Alternative analysis has been considered as an integral part of EIA, which involves an alternative way of achieving the objectives of the proposal. The aim of alternative analysis is to arrive at a development option that maximizes the benefits while minimizing the unwanted impacts. The study team will analyze the alternatives with respect to the following issues:

8.1 No Project Alternative

The “no project” alternative is the circumstance under which the project does not proceed. In this case though there will be no environmental impacts due to construction activities, existing issues regarding traffic congestion, road safety, water logging, lack of pedestrian crossings in settlements, hinderance to wildlife movement in forest areas etc. will still prevail.

8.2 Alternative Design

KDP road section of Mahendra Highway (Chainage 236+698 to 366+667) is a part of Asian Highway 2 (AH2) that originates from Dhaka in Bangladesh and ends in New Delhi in India. The Proponent has initiated the procurement process to upgrade the KDP Road section of the existing 2 lanes to 4 lanes under SRCTIP (Road Classification: Class II as per Nepal Road Standards 2070 and Class I as per Asian Highway Design Standard).

8.3 Alternative Technology

The proposed construction works is intended by DoR to be implemented through a combination of conventional road construction using contractor with labour-intensive approach. Human workforce will be prioritized over the total mechanical works. Bio-engineering/turfing and road side plantation where possible will be adopted to stabilize road embankments. This is based on the successful experience of Green Roads experience implemented by various agencies in the past, and also the experience of Highway Road Coordination Unit/DoR.

The pavement construction is intended to be carried out by conventional method, whereas earthwork, construction of simple structure such as drains, gabion walls, bio-engineering works etc. will be carried out manually.

8.4 Project site and Alignment

The project is to upgrade Kamala to Pathlaiya section of Mahendra Highway. The road section is already under operation and the proposal is to upgrade the existing road. Hence there is no much alternatives to change in alignment.

8.5 Time schedule

The schedule for construction works will be arranged such that excavation works will avoid the rainy season. Further, working during the agriculture off-season would be most appropriate since the local people could be involved as construction labors.

The likely impacts of each alternative will be assessed and compared in terms of adverse environmental impacts and benefits and the environmentally sound alternative will be further recommended in EIA.



9. Matters Concerning the Prevention of the Impact of the Implementation of the Proposal on the Environment

In general, the proposed road upgrading subproject will create surface-related environmental impacts. For the impacts, priority has to be given to preventive or impact avoidance followed by corrective or reductive and finally compensatory. Incorporation of mitigation measures in the detail design and tender document and subsequent implementation should mitigate most of the likely environmental impacts. The mitigation measures to be included in design phase, construction phase and operational phase will be presented in EIA report. The EIA will propose site-specific mitigation measures to minimize/mitigate/avoid or control of proposal's adverse impacts during construction and operation stages. The mitigation measures will be selected based upon appropriateness and cost analysis. Mitigation measures will be proposed for the impacts on physical, biological, socio-economic and cultural environment. Mitigation Measures will be of two types, which are benefit augmentation measures and adverse impacts mitigation measures.

Types of Mitigation Measure:

In general, there are three types of mitigation measures. Different types of mitigation measures act in different ways to reduce adverse impacts.

Prevention and Control Measures: These measures fully or partially prevent an impact/reduce a risk by changing means or technique, changing the site and/or specifying operating practices. For example: application of PPEs by workers, public awareness programs, adoption of bioengineering measures for slope protection etc. fall under this measure.

Remediation/Corrective Measures: These measures repair or restore the environment after damage is done. For example: avenue plantation along ROW, reinstatement of quarry site, adoption of bioengineering in cut slopes etc. fall under this measure.

Compensatory Measures: These measures offset adverse impacts in one area with improvements elsewhere. For example: compensatory plantation of cut down trees, compensation to damaged structures or relocation of damaged structures etc. fall under this measure.

While assessing and managing environmental and social risks and impacts, system of mitigation hierarchy will be adopted. As per this mitigation hierarchy first priority will be given for avoiding impact, second priority for minimizing impact, third priority for rectifying impact, forth priority for reducing impact and finally for offsetting impact.

Further, major disasters associated during construction are river bank cutting, fire hazards and accidents. Project should also be prepared for earth quake hazards, cloud burst and flood hazards. Disaster management plan considering all these hazards will be prepared and presented in EIA report.



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10. Environmental Management Plan

Environmental Management Plan (EMP) will be developed to ensure the implementation of environmental protection measures and make subproject environmentally friendly and sustainable. It will include aspects that should be implemented during construction and operation phases of the subproject detailing (i) what to implement, (ii) when to implement, (iii) where to implement, (iv) which technique/method to be employed, and (v) who is responsible.

Following tables will be used for presenting the impacts and mitigation measures along with monitoring authority

Table 10-1: Cost and Responsibility for Beneficial Impacts Augmentation and Enhancement and Adverse Impact Mitigation Measures

Mitigation for Environmental Protection	Location of Implementation	Time of Implementation	Estimated Cost	Responsible agency
Beneficial Impacts				
1.				
2.				
Adverse Impacts				
1.				
2.				

Beside this Environmental Management Plan will be developed for the project as per the template provide in section 14 of Schedule 12 pertaining to rule 7, sub rule 5(C) of EPR 2077. The sample template is given in table below.




Table 10-2: Template for Environmental Management Plan

Subject Areas	Activities for Enhancement of Beneficial Impacts	What to do	Where to do	How to do	When to do	Who will do	Expected human resource, cost, time frame	Monitoring and Evaluation
Physical environment								
Biological environment								
Socio-economic environment								
Cultural environment								
Others								
Subject Areas	Activities for Mitigating Adverse Impacts	What to do	Where to do	How to do	When to do	Who will do	Expected human resource, cost, time frame	Monitoring and Evaluation
Physical environment								
Biological environment								
Socio-economic environment								
Cultural environment								
Others								

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Government of Nepal
Department of Roads
Development Cooperation Implementation Branch
Jhagal, Lalitpur

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11. Matters to be Monitored while Implementing the Proposal

Environmental monitoring involves the systematic collection of data to determine the actual environment effects of the project, compliance of the project with regulatory standards, and the degree of implementation and effectiveness of the environmental protection. Environmental monitoring will form part of an EIA as it generates useful information and improves the quality of implementation of mitigation measures.

Environmental Monitoring Plan will be prepared with respect to the environmental parameters, monitoring indicators, and monitoring methods, location of monitoring, schedule of monitoring and responsible agencies or person for monitoring. The monitoring plan will also include the estimated cost for monitoring.

11.1 Types of Environmental Monitoring and Indicators

The monitoring plan will be prepared covering Compliance Monitoring and Impact Monitoring and if necessary, Baseline Condition of Monitoring.

Baseline monitoring: Its purpose is to collect, and verify the additional environmental baseline data, that is scientific or social in nature and supports information on baseline conditions initially generated. General indicators include existing baseline environmental condition like air quality, water quality, noise level, vegetation status, socio-economic condition of adjoining settlement areas etc.

Compliance monitoring: Its purpose is to ensure that the contractors comply with the requirement as listed in the mitigation measures and any condition set-forth during the project approval. General indicators include compliances with dust reduction strategies, waste management practices, provisions on occupational health and safety, adoption of bioengineering practices, compensatory plantation, process on land acquisition, compensation to damaged structures etc.

Impact monitoring: Its purpose is to know the actual level of impact in the field during the construction and operation of the proposed Project. General indicators include impact on air quality, impact on water resources, increase in noise level, impact in adjoining forest, impact in adjoining settlement areas and agricultural land etc.

11.2 Monitoring Format

Monitoring format will be presented as per the following table;



Table 11-1: Monitoring format

Types of Monitoring	Monitoring Indicators	Monitoring Methods	Location	Time	Estimated Cost	Monitoring Agency
Baseline Monitoring (All domain)						
1.						
2.						
Compliance Monitoring (All domain)						
1.						
2.						
Impact Monitoring (All domain)						
1.						
2.						



W ✓



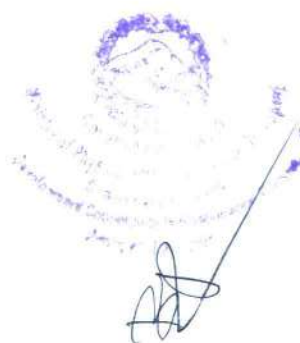
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12. Environmental Auditing Plan

An auditing plan will be prepared to audit the effectiveness of the mitigation measures and the effect of unforeseen impacts. The auditing will be carried out after two years of the completion of the project as per the EPA 2076 and EPR 2077. The auditing plans will also identify agencies to be consulted, if required any, during auditing activities.

The auditing plan will be categorized in terms of physical, biological and socio-economic and cultural environments. The auditing plan will describe the auditing parameters and indicators, its location, schedule and methods. Human resource and budget required to carry out the audit will be presented in EIA report. The format of Auditing Plan will be in the form as given in section 10.4 of Schedule 12 pertaining to rule 7, sub rule 5(C) of EPR 2077.

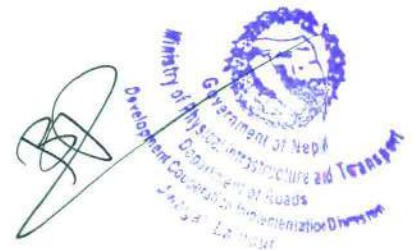


13. References

1. Conceptual Design Report of Highway and Bridges for Detailed Design of Upgradation of Kamala-Dhalkebar-Pathlaiya Section (130 km) of Mahendra Highway and Bridges/ DoR/ SRCITP, March 2022
2. DFRS (2014). "Terai Forests of Nepal, Forest Resource Assessment Nepal, Department of Forest Research and Survey".
3. Draft Baseline Report for Upgrading works of Kamala-Dhalkebar-Pathlaiya Section with Associated Bridges of the Mahendra Highway/ DoR/ SRCITP, 2023 (unpublished)
4. Draft Design Report for Upgrading works of Kamala-Dhalkebar-Pathlaiya Section with Associated Bridges of the Mahendra Highway/ DoR/ SRCITP, 2023 (unpublished)
5. Draft ESIA Report for Upgrading of Butwal-Gorusinghe Road Section of E-W Highway BBIN Phase-1, Jan 2021
6. Environmental and Social Assessment (ESA) of Kakarbhitta-Pathalaiya Road Section, including Kamala-Dhalkebar-Pathalaiya of EWH-2020
7. Environmental and Social Assessment (ESIA) of Improvement of Naghdhunga-Naubise-Mugling (NNM) Road/ DoR/SRCTIP, April 2020.
8. Environmental and Social Framework (ESMF) of Strategic Road Connectivity and Trade Improvement Project (SRCTIP)-Trade Component/ MoICS/ MoALD), Sep 2020
9. Environmental and Social Framework, The World Bank, 2017
10. Feasibility Study Report of Kamala-Dhalkebar-Pathlaiya Section (130 km) of Mahendra Highway and Bridges/ DoR/ RSDP, Jan 2020
11. Feasibility Study Report of Kamala-Dhalkebar-Pathlaiya Section with Associated Bridges of the Mahendra Highway/ DoR/ SRCITP, Jan 2020
12. Scoping Document of EIA for Improvement of Butwal - Pokhara (157.958 km) Road section/ DoR Kartik 2078 BS



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Annex 2: Study Team and Their Declaration

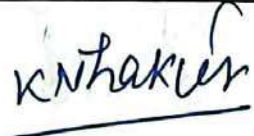
Declaration from EIA Team Members

Title of the Report: Environmental Impact Assessment of the Upgrading of Kamala-Dhalkebar-Pathlaiya Section (130 km) with associated Bridges of the Mahendra Highway

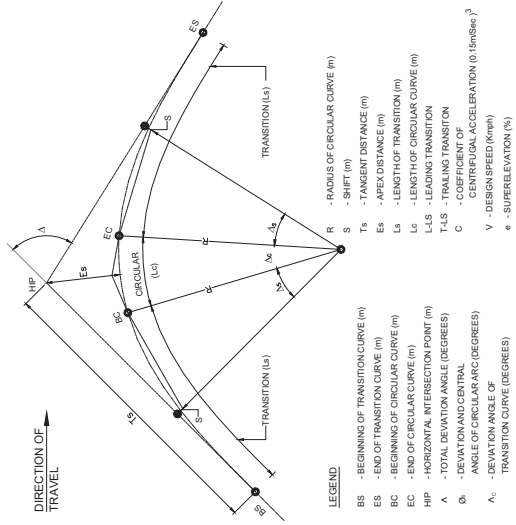
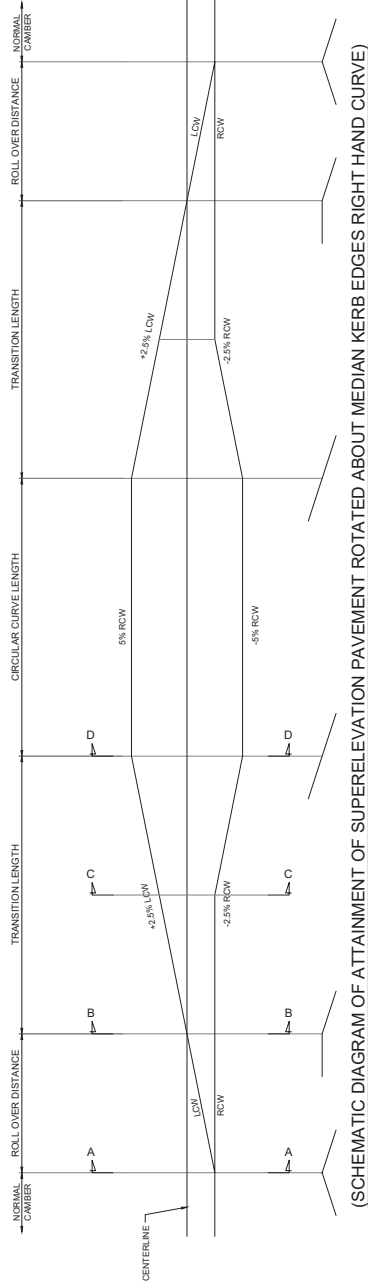
We declare the following:

1. We have conducted the study professionally using acceptable and standard methodologies;
2. The study findings are correct to the best of our knowledge and will not be altered in any manner
3. We shall be accountable for misleading information in the part of the report related to our area(s) of study.

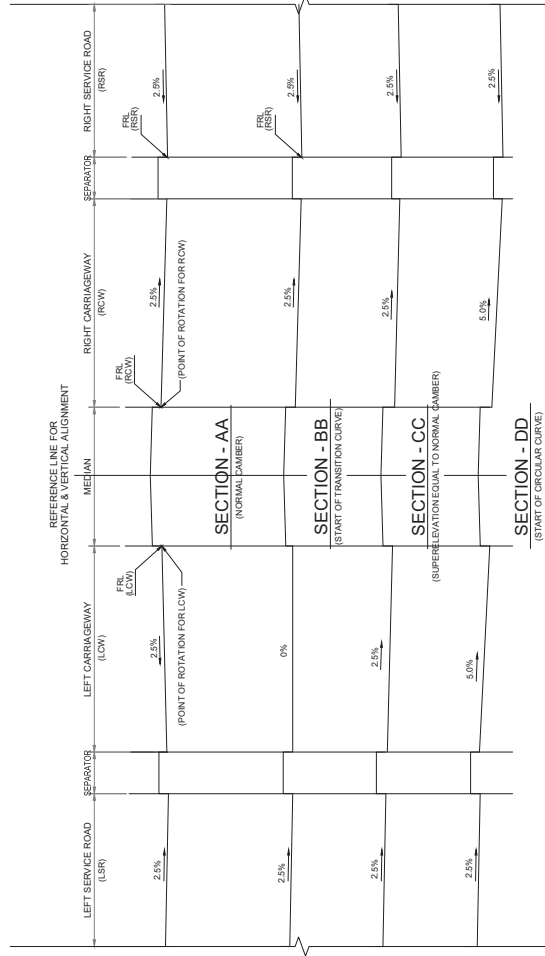
Name, designation and signature of study team

Name	Designation	Signature
Mr. Mohamad Akhtar	Team Leader	
Mr. Rabi Bhattarai	Deputy Team Leader/ Environmental Expert	
Dr. Moshin Almaji	Biodiversity Specialist / Road Ecologist	
Dr. Gunanda Pathak	Biodiversity Specialist / Road Ecologist	
Mr. Devi Prasad Dotel	Resettlement / Indigenous People Specialist	
Mr. Babu Ram Dumre	Social Development Specialist	
Er. Krityanand Thakur	Highway and Transportation Engineer	

Annex 3: Typical Cross-sections Proposed



ELEMENTS OF COMBINED CIRCULAR AND TRANSITION CURVE



ATTAINMENT OF SUPERELEVATION - MAIN CARRIAGEWAY PAVEMENT ROTATED ABOUT MEDIAN KERB EDGES

NOTES:

1. DESIGN OF TRANSITION CURVES AND HORIZONTAL CURVES ARE BASED ON NEPAL ROAD STANDARD 2070 AND IRC-36:1988

EMPLOYER	PROJECT
Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Development Cooperation Implementation Division	Strategic Road Connectivity & Trade Improvement Project (SRCTIP) Detailed Design of Upgradation of Kamala-Dhailkebar-Pathalya Road Section (130 Km) of Mahendra Highway and Bridges

DESIGN CONSULTANTS				DATE	
EPTISA Servicios De Ingenieria Madrid, Spain		STUP Consultants Private Limited Kolkatta, India		NOVEMBER 2022	
In Association With Udaya Consultancy, Geocom International, Sundar Krti Consultant and Rays Consultant Private Limited		Checked By Approved By		Scale: NONE	
Mr. [Signature]		Mr. [Signature]		Drawing Name	
Noc. No. [Signature]		Noc. No. [Signature]		ATTACHMENT OF SUPERELEVATION DETAILS	
Noc. No. [Signature]		Noc. No. [Signature]		Reference Drawings	
Noc. No. [Signature]		Noc. No. [Signature]		1. TYPICAL CROSS SECTIONS 2. PLAN AND PROFILE	
Noc. No. [Signature]		Noc. No. [Signature]		Chainage:	
Noc. No. [Signature]		Noc. No. [Signature]		KOP/DB/HIGHWAY/STD01	
Noc. No. [Signature]		Noc. No. [Signature]		Sheet No.	

1. MATERIAL SPECIFICATIONS AND WORK SPECIFICATIONS FOR COMPLETE PROJECT ROAD CONSTRUCTION SHALL BE IN ACCORDANCE WITH "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGES" 2073 UNLESS OTHERWISE SPECIFIED.

- | | | |
|--|---|--------------------|
| • EARTHWORK IN CUTTING | • | CLAUSE 905 & 906 |
| • EARTHWORK IN EMBANKMENT | • | CLAUSE 909 & 910 |
| • SUBGRADE | • | CLAUSE 1000 |
| • GRANULAR SHOULDER & MEDIAN | • | CLAUSE 1205 |
| • GRANULAR SUB-BASE | • | CLAUSE 1201, TABLE |
| • WET MIX MACADAM | • | CLAUSE 1208, TABLE |
| • DENSE BITUMINOUS MACADAM | • | CLAUSE 1308, TABLE |
| • BITUMINOUS CONCRETE (POLYMER MODIFIED) | • | CLAUSE 1309, TABLE |
| • DRY LEAN CONCRETE | • | CLAUSE |
| • PAVEMENT QUALITY CONCRETE | • | CLAUSE |

- | | 95% | 95% | 95% | 95% |
|-------------------------------------|-----|-----|-----|-----|
| a. EMBANKMENT | 1.0 | 1.0 | 1.0 | 1.0 |
| b. CUT SECTIONS SUPPORTING PAVEMENT | 1.0 | 1.0 | 1.0 | 1.0 |
| c. SUBGRADE | 1.0 | 1.0 | 1.0 | 1.0 |
| d. SHOULDER AND MEDIAN FILL | 1.0 | 1.0 | 1.0 | 1.0 |

- | | | |
|----|---------------------------------|-----|
| a. | EMBANKMENT | 5% |
| b. | SUBGRADE | 10% |
| c. | CUT SURFACE SUPPORTING PAVEMENT | 10% |
| d. | CUT SURFACE SUPPORTING SUBGRADE | 5% |

6. AT ALL CUT SECTIONS, THE NATURAL GROUND SUPPORTING THE GROUND SHALL BE PROVIDED WITH SELECT / BORROW SOIL FOR SUBGRADE IF EFFECTIVE CBR OF THE SOIL AT NATURAL GROUND IS LESS THAN THE REQUIRED CBR.

- * MORT&H SPECIFICATION FOR ROAD AND BRIDGE WORKS - V REVISION.

9. FINISHED ROAD LEVELS FOR MAIN ROAD IS MEASURED WITH RESPECT TO MEDIAN KERB EDGES. SERVICE ROAD LEVELS WILL BE AN EXTENDED CROSS FALL OF MAIN ROAD EXCEPT AT UNDERPASS AND FLYOVER LOCATIONS.

11. THE SIDES SLOPES OF ROAD IN FILL / CUT SECTIONS SHALL BE IN ACCORDANCE WITH CLAUSE 11.7 OF NRS 2070.

- | PAVEMENT
THICKNESS IN MM | SECTION I,
CH 236.470
TO CH
268.300 | SECTION II,
CH 268.300
TO CH
347.100 | SECTION III,
CH 347.100
(ALL SECTIONS) |
|-----------------------------|--|---|--|
| BITUMINOUS CONCRETE | 40 | 40 | 40 |
| DENSE BITUMINOUS | 100 | 85 | 110 |
| MACADAM | | | |
| WET MIX MACADAM | 250 | 250 | 250 |
| GRANULAR SUBBASE | 200 | 200 | 200 |
| TOTAL | 590 | 575 | 600 |
| | | | 390 |
| | | | 150 |

- a) CYCLE TRACK: * INTERLOCKING PAVER BLOCK IN M30 CONCRETE, 60mm
* SAND BED, 30mm
* GRANULAR SUBBASE, 200mm
LAID OVER SUBGRADE, EFFECTIVE CBR₂ 10%

- b) SEPARATOR:
- * INTERLOCKING PAVER BLOCK IN M40 CONCRETE, 80mm
 - * SAND BED, 30mm
 - * WET MIX MACADAM, 250mm
 - * GRANULAR SUBBASE, 200mm
- LAI D OVER SUBGRADE EFFECTIVE CBR= 10%

DESIGN CONSULTANTS

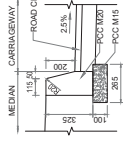
	EPTISA Servicios De Ingeniería Madrid, Spain		STUP Consultants Private Limited Kolkata, India
In Association With Udaya Consultancy, Geocom International, Sundar Krti Consultant and Rays Consultant Private Limited			

Designed By	Mr.
Checked By	Nac. No. Mr.
Approved By	Nac. No. Mr.

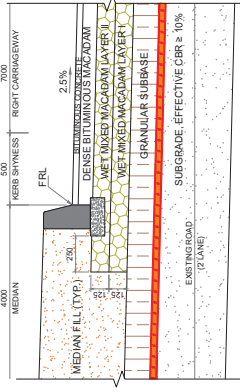
Reference Drawings

- 1. TYPICAL CROSS SECTIONS
 - KOP/DDR/HIGHWAY/TCS/001 TO 005
- 2. PLAN AND PROFILE
 - KOP/DDR/HIGHWAY/PP-111 TO 243

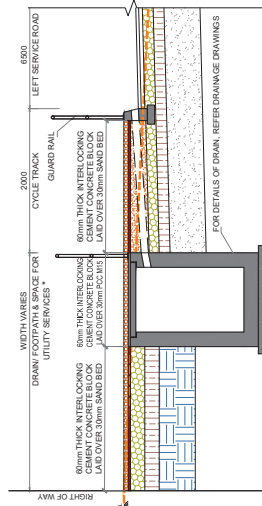
S	Scale:	Scale: 1:100	Date:	NOVEMBER 2022
	Chaining:		Drawing No.	
005				KDP:DDHGHWAY/TCS/001 REV R(0)
43				Sheet No.



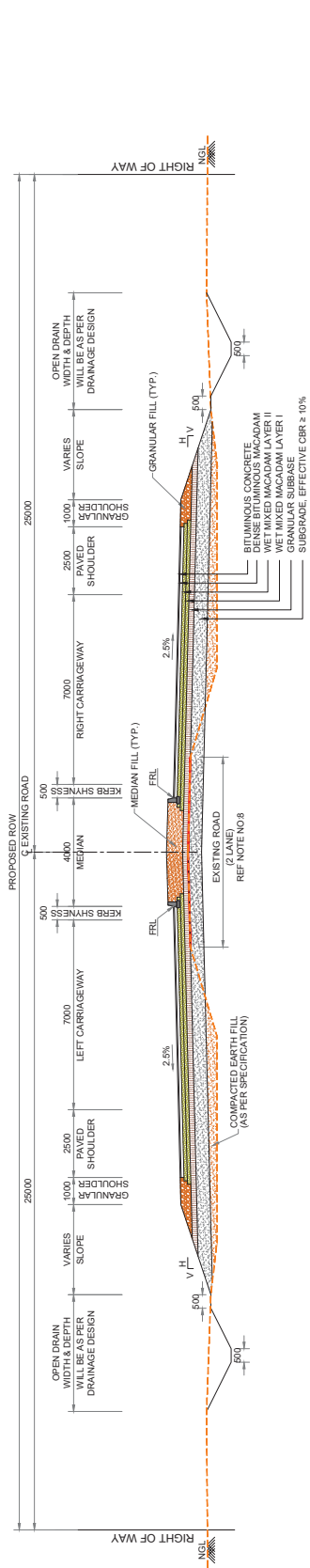
TYPICAL DETAILS OF KERB



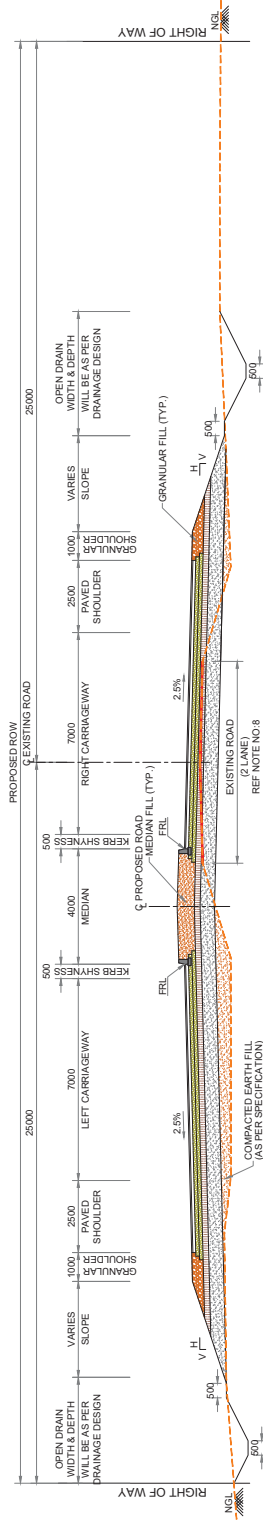
TYPICAL CONSTRUCTION OFFSETS FOR MEDIAN



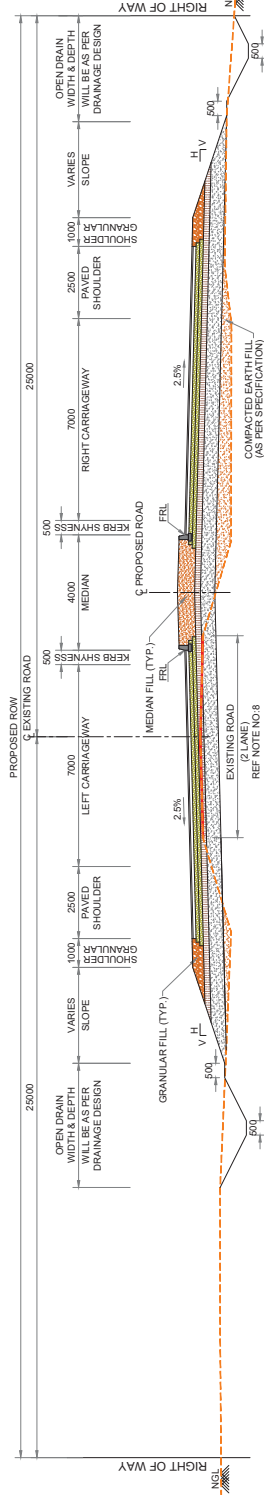
TYPICAL DETAILS OF CYCLE TRACK AND FOOTPATH



TYPE-1: TYPICAL CROSS SECTION FOR 4 LANE DIVIDED CARRIAGEWAY - CONCENTRIC WIDENING OF EXISTING 2 LANE



TYPE-2: TYPICAL CROSS SECTION FOR 4 LANE DIVIDED CARRIAGEWAY - ECCENTRIC WIDENING ON LHS SIDE



TYPE-3: TYPICAL CROSS SECTION FOR 4 LANE DIVIDED CARRIAGEWAY - ECCENTRIC WIDENING ON RHS SIDE

NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE INDICATED.
2. THE WIDTH OF FOOTPATH SPACE INCLUDING CYCLE TRACK VARIES WHERE RIGHT OF WAY IS CONSTRAINED

 Government of Nepal Ministry of Physical Infrastructure and Transport Department of Roads Development Cooperation Implementation Division	PROJECT	DESIGN CONSULTANTS				Drawing Name TYPICAL CROSS SECTION TYPE-1 TO TYPE-3	Scale: Scale: 1:100	Date: NOVEMBER 2022	
		Local Name of Firm							
		EPTISA  STUP Consultants Private Limited Madrid, Spain Kolkatta, India							
		Checked By							
		In Association With							
		Udaya Consultancy, Geocom International, Sunder Kirti Consultant and Rays Consultant Private Limited							
		Approved By							
Signature		Signature		Signature		Reference Drawings		Chainage:	
1. TYPICAL HORIZONTAL CURVE & ATTAINMENT		2. PLAN AND PROFILE		KOP/DOR/HIGHWAY/STD/01		KOP/DOR/HIGHWAY/CS/002 (REV R0)		Drawing No.	
KOP/DOR/HIGHWAY/STD/01		KOP/DOR/HIGHWAY/CS/002 (REV R0)		KOP/DOR/HIGHWAY/STD/01		KOP/DOR/HIGHWAY/CS/002 (REV R0)		Sheet No.	