Initial Environmental Examination

June 2018

NEP: SASEC Highway Improvement Project

ADB Project Directorate Office Building Subproject

Prepared by the Department of Roads, Ministry of Physical Infrastructure and Transport, Government of Nepal for the Asian Development Bank

CURRENCY EQUIVALENTS

(As of 20 May 2018)

Currency Unit		Nepalese Rupee (NRs)
$1.00	=	NRs 108.75
NRs 1.00	=	$ 0.00919

ABBREVIATIONS

ADB	-	Asian Development Bank
AP	-	Affected People
BOD	-	Biological Oxygen Demand
CBS	-	Central Bureau of Statistics
CITES	-	Convention on International Trade in Endangered Species
CO	-	Carbon Monoxide
COI	--	Corridor of Impact
CSC	-	Construction Supervision Consultant
DG	-	Diesel Generating
DoHM	-	Department of Hydrology and Meteorology
DOA	-	Department of Archaeology
DOF	-	Department of Forest
DoR	-	Department of Roads
EA	-	Executing Agency
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
GHG	-	Green House Gas
IA	-	Implementing Agency
IEE	-	Initial Environmental Examination
IUCN	-	International Union for Conservation of Nature
KUKL	-	Kathmandu Upatyaka Khanepani Limited
LPG	-	Liquefied Petroleum Gas
MoFE	-	Ministry of Forest and Environment
MoPIT	-	Ministry of Physical Infrastructure and Transport
NAAQS	-	Nepal Ambient Air Quality Standard
NEP	-	Nepal
NOx	-	Nitrogen Oxide
PD	-	Project Directorate
PIU	-	Project Implementation Unit
PPE	-	Personal Protective Equipment
REA	-	Rapid Environmental Assessment
RoW	-	Right of Way
SASEC	-	South Asia Sub-regional Economic Co-operation
SEIs	-	Significant Environmental Impacts
Sq.ft.	-	Square Feet
SSEMP	-	Site Specific Environmental Management Plan
SRN	-	Strategic Road Network
ZOI	-	Zone of Influence

WEIGHTS AND MEASURES

dBA	-	decibels A
KWH	-	Kilowatt-Hour
K VA	-	Kilo-Volt- Ampere
MLD	-	Millions of Litres Per Day
ppb	-	Parts Per Billion
pph	-	Persons Per Hectare
ppm	-	Parts Per Million

NOTES

The Nepalese calendar year (B.S) runs from mid-April to mid-April. Unless otherwise stated, year ranges written in the form 2015/016 denote a single calendar year.

The fiscal year (FY) of the Government ends on 15 July. FY before a calendar Year denotes the year in which the fiscal year ends (For example, FY 2018 begins on 16 July 2017 and ends on 15 July 2018).

Acts and Regulations are cited under the name of the ministry from which they originate. The official version of Acts and Regulations is published in the Nepal Gazette (in Nepali). Some Acts and Regulations are published by other Government agencies in English (Unofficial translations).

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EXECUTIVE SUMMARY

1. The South Asia Subregional Economic Cooperation (SASEC) Highway Improvement Project (SHIP) proposed to be financed by the Asian Development Bank (ADB) will support the improvement of the East–West Highway (EWH), which is the main domestic and international trade corridor of Nepal and forms part of SAARC and SASEC corridor 4 linking Kathmandu to Dhaka and Chittagong through India. The project will also improve the efficiency and adequacy of the transport system by addressing the deterioration of road asset conditions, the poor safety of the transport network, and the limited cross-border connectivity. The project has two outputs: 1) Rehabilitation and upgradation of about 87 km of road between Kanchanpur and Kamala on the EWH to a 4-lane standard with a design speed of 100 km/h. Civil works contracts will include a performance-based maintenance period of 5 years after completion of construction; and 2) Implementation of activities to improve the planning and management of road safety including capacity enhancement of the Department of Roads (DOR).

2. One of the activities under output 2 is construction of a new, well equipped, environment friendly office building at Bishalnagar in Kathmandu Metropolitan City for the Project Directorate (ADB), DOR. Accordingly the Project Directorate (ADB), DOR, Bishalnagar, Kathmandu is the proponent of this Initial Environmental Examination (IEE) study.

3. The proposed building is located in Bishalnagar, Ward number 5 of Kathmandu Municipal area. Various offices of central and district line agencies of Government of Nepal as well as offices of Commercial Bank, Insurance and other private companies are located in the vicinity of the proposed PD-ADB building. The project will be implemented in an area of 21,826.28 sq. ft. of land in Bishalnagar, out of which 9,277.89 sq. ft. shall be used for office building. The land belongs to Government of Nepal. All required basic amenities like motorable road, electricity, sewerage, water supply etc are available on the site. This area has one approach from the main road in the west direction. Total built up area of the building will be 4997.19 sq. m.; 6 storey and total project cost will be NRs. 242.6 million.

4. The ADB SPS, 2009 aims to avoid, minimize or mitigate harmful environmental and social impacts and help the borrower strengthen their safeguard system. It also provides a platform for participation by affected community in project design and implementation. The office building proposed to be constructed was screened and categorized using Rapid Environmental Assessment (REA). The REA consist of questions relating to: (i) the sensitivity and vulnerability of environmental resources in the project area, and (ii) the potential for the sub-project to cause significant adverse environmental impacts. This project has been classified as Category “B”.

5. The Project site is located in generally flat area. According to the National Building Code of Nepal, the Kathmandu Valley falls under the Seismic Zone "A". The land is occupied by Project Directorate (ADB), Department of Roads with office building, which will be dismantled for the construction of new building. This is mainly the administrative area with various government and private offices. It is well connected with city road network. Climate and geology of the area is same of Kathmandu valley. No major water bodies are located near the project site. Electricity, sewerage, drinking water supply, communication facilities are available in the project site. No major vegetation is found in the project site. Similarly, no endangered species of birds, reptiles, and amphibian were seen in the project area. No aquatic life exists within the project periphery.

6. The population of the ward no. 5 of Kathmandu Municipality as per census 2011 is 18,320 among which male and female population were 9,337 (50.97%) and 8,983 (49.03%) respectively. Number of households in the ward was 4,774 (*Source: CBS 2011)*. Major ethnic groups residing

in this ward are Newar, Brahmin, Chhetri and others. Most of the people are engaged in occupations like trade and business, service and others. Some temples of local importance are also located in this ward.

7. There will be minimum impact to the existing physical environment due to the construction of building. Some minor adverse impacts are anticipated mainly during the construction stage, but can be easily managed by mitigation measures. Large numbers of workers will be required to construct the building. Thus, the project will generate employment opportunity to the local people as well. The project requires large quantities of different type of construction materials such as cement, sand, aggregate, wood, steel reinforcement, electrical fittings, sanitary fittings, enamel paints etc. The workers shall be getting experience to work in high–rise buildings and their skill shall be enhanced. The skill of the plumber, electrician as well as technical staffs shall be also enhanced due to exposure in this the project. No significant impact has been seen in the biological environment. Limited open space shall be converted into built up area.

8. During construction stage, identified and predicted adverse impacts in physical environment are landscape disturbance, decline in air quality due to dust, emissions of gases in construction activities, impact on depth of ground water table, noise pollution, management of solid waste generated by construction workers, traffic management, drinking water supply etc. During operation and maintenance stage of the project, predicted impacts on physical environment are decline in ground water table, management of solid waste, impact on health and security, management of surface drainage. Similarly, there is permanent loss of open land under biological environment.

9. The project shall adhere with National Building Code of Nepal. The project shall strictly adhere with the National Rules, Regulation and Guidelines for the protection of the environment. This IEE study has analyzed the environmental issues and predicted the environmental impacts and suggested Mitigation Measures for each of the identified impacts.

10. The purpose of IEE is to identify, predict and evaluate impacts of the project on the environment and to formulate mitigation strategies to minimize adverse impacts that are likely to occur during the project implementation and operation. In the process of IEE, the formulation and implementation of an EMP lays the framework for continued assessment of potential impacts through the application of monitoring Plan. An Environmental Management Plan has been proposed with necessary organization, manpower and budget. A sum of USD 2,000 has been allocated for implementation of the EMP.

11. Grievance Re-dress mechanism will be established to resolve grievances from public or stakeholders concerning the project. This mechanism will be made effective by establishing mandatory grievance register book at the office of PIU. The grievances in the register book will be assessed in the case of genuine grievance or acceptable suggestion. Accordingly, the response will be given by the concerned PIU in consultation with supervision consultant if the supervision consultants and contractor are unable to resolve the issue. The outcome will also be included in the quarterly report of ADB.

12. Most of the adverse impacts identified and predicted are of minimal scale, temporary, short term and reversible in nature associated with construction stage. The project will be implemented with strict adherence to the mitigation measures as prescribed in the Environmental Management Plan which will be a part of the Bidding Document.

13. The proposed office building construction works do not exceed any of the prescribed thresholds by EPA, EPR and other relevant Acts and Regulations. The IEE study has found beneficial and some adverse impacts to the existing physical, biological and socio-economic environment. Most of the adverse impacts identified in the study are of temporary natures and they will easily be mitigated through the proposed mitigation measures. With sincere implementation of mitigation measures and EMP the project will be successfully implemented.

I. INTRODUCTION

A. Background/Purpose of the Project

1. The Government of Nepal (GoN) is working towards accelerating the economic development of the country while redressing regional imbalances and inequalities. GON recognizes that access to road transport is a key determinant of economic opportunity and delivery of social service. The Asian Development Bank (ADB) has played a leading role in advancing Nepal's transport sector from the early 1970s, has instituted a comprehensive Country Partnership Strategy for Nepal that places at its core environmentally and socially responsible development of the transport sector. In this context, GoN has requested the Asian Development Bank (ADB) to finance the SASEC Highway Improvement Project (SHIP).

2. The South Asia Subregional Economic Cooperation (SASEC) Highway Improvement Project (SHIP) will support the improvement of the East–West Highway (EWH), which is the main domestic and international trade corridor of Nepal and forms part of SAARC and SASEC corridor 4 linking Kathmandu to Dhaka and Chittagong through India. The project will also improve the efficiency and adequacy of the transport system by addressing the deterioration of road asset conditions, the poor safety of the transport network, and the limited cross-border connectivity. The project has two outputs: 1) Rehabilitation and upgradation of about 87 km of road between Kanchanpur and Kamala on the EWH to a 4-lane standard with a design speed of 100 km/h. Civil works contracts will include a performance-based maintenance period of 5 years after completion of construction; and 2) Implementation of activities to improve the planning and management of road safety including capacity enhancement of the Department of Roads (DOR).

3. One of the activities under output 2 is construction of a new, well equipped, environment friendly office building at Bishalnagar in Kathmandu Metropolitan City for the Project Directorate (ADB), DOR. Accordingly the Project Directorate (ADB), DOR, Bishalnagar, Kathmandu is the proponent of this Initial Environmental Examination (IEE)study.

4. The Subproject aims to build a modern multi-storeyed office building to provide all administrative and other logistic services to make plans, improve and maintain major transportation network system of Nepal. The construction of this office building will facilitate PD-ADB to administer all sorts of activities from its headquarter by accommodating optimum numbers of components and relevant offices in one place. With this added facility it is expected that efficiency level of PD-ADB will also increase and contribute more in road transportation development of Nepal. The goal of the subproject is to provide improved, efficient, safe, and environmentally sustainable road transport facilities in all over the country.

B. Purpose of IEE Study

5. The purpose of this IEE is to: assess relevant potential impacts and risks associated with the construction and operation of the office building for PD-ADB, assess the compliance of the proposed project against applicable ADB requirements and domestic environmental laws and regulations, incorporate impact avoidance and mitigation measures early into the project design process, and incorporate cost effective mitigation and monitoring measures in the civil works contract, and require the implementing agencies to organize needed institutional mechanism for effective environmental management plan (EMP) implementation.

6. Specific environmental screening was carried out using ADB's Rapid Environmental Assessment (REA) for buildings. The completed REA checklist for the project is provided in

Appendix 1**.** According to the ADB Safeguard Policy Statement (SPS) 2009, this project is considered as “Category B”. Therefore, an IEE is adequate to meet ADB’s environment safeguard requirements.

C. Methodology

7. The IEE has been carried out for the proposed PD-ADB office building following the steps as given below:

- Review of relevant documents;
- Review environmental requirements of ADB and GON;
- Collection and analysis of baseline information on environment;
- Identification/screening of potential environmental impacts using ADB REA Checklist; and
- Conduction of consultation with relevant stakeholders
- Impact Assessment
- Recommendation of mitigation measures to address the impacts

D. Data Collection

8. Two recognized sources of data are used:

- Secondary sources; and
- Primary sources (from field surveys).

1. Secondary Sources

9. Secondary data/information have been collected on the following environmental components of the project:

- ***Physio-Chemical Environment:*** (Topography, climate, drainage, traffic, environmental pollutions such air, noise, ground water etc.);
- ***Biological Environment:*** (Trees and wildlife, environmentally sensitive and protective areas etc.);
- ***Human Environment:*** (Population, socio-economic condition, utilities such as water supply and sewerage, electricity and gas supply etc.)

10. The secondary data has been obtained from the following agencies/organizations:

- Department of Roads (DoR);
- Ministry of Forest and Environment (MoFE);
- Kathmandu Metropolitan City (KMC);
- Department of Hydrology and Meteorology (DoHM);
- Ward 5 Office, KMC;
- Department of Railways;

2. Primary/Field Data

11. The primary/field data/information on trees, drainage, utilities, infrastructure, cultural, communication, traffic, socioeconomic, etc. have been collected at the field to establish baseline condition of the proposed PD-ADB office building site in May 2018.

II. POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

12. This chapter presents a review of the international agreements and commitments, existing institutions and legislations relevant to the project in Nepal and at the National and State levels in Nepal. The environmental assessment processes are based on environmental regulations and guidelines of Government of Nepal and ADB SPS 2009 requirements.

B. Nepal's Legal Framework and Regulatory Requirements for the Project

13. In Nepal, various legal instruments are in place to ease the integration of environmental aspects in development proposals. The study team has reviewed, but not limited to the following legislative provisions and guidelines of Nepal.

1. Plan and Policies

14. **Constitution of Nepal.** Article 25 (2) has mentioned that the state shall acquire legal private property only for public interest, and Article 25 (3) has mentioned that compensation shall be provided for such acquired property on the basis of compensation as prescribed by law. Article 30 (1) has mentioned that every citizen has the right to live in a clean and healthy environment. Under state policy, Article 51 (f) clause (2) has 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.

15. **Fourteenth Plan (2073/74–2075/76 BS), 2017 AD.** The Fourteenth Plan (2016/17-2018/19) has identified EIA as a priority area, and it emphasizes on environmental monitoring of projects that are covered by the GoN EIA process. The Plan focuses on the need for setting-up national environmental standards with the strategy of internalizing environmental management into the development programmes. The Plan has also realized to carry out Strategic Environmental Assessment (SEA) with the long-term policy of promoting environmental governance. The Plan emphasized on the local participation in environment conservation, according to the Local Self Governance Act 2055, through the local bodies and making them responsible and capable to manage local natural resources.

16. The objective of Nepal's Three-Year Plan (FY2014–FY2016) is to achieve sustainable, broad-based, inclusive economic growth. It has five priority areas. The plan aims to develop energy, transport, and urban services infrastructure as a means to underpin growth and inclusion. The plan aims to expand the strategic and rural road networks and air transport capacity to increase connectivity, provide greater access to basic services and markets, and promote tourism and trade. The plan addresses climate change adaptation and mitigation and overall environmental protection.

17. The environmental strategies of the Interim Plan are to launch development programs by internalizing environmental management; mobilize non-government private sector, local agencies and the public in increasing public awareness on environment; determine and implement additional by -laws on air, water, soil and sound pollution; and make action plans that prioritize and implement Treaties and Conventions on environment, which Nepal has endorsed.

2. Acts and Rules

18. **Environment Protection Act, 1997**. The Environment Protection Act, 1997 contains several provisions to institutionalize the integration of environmental aspects in development projects including road sector, and empowers Ministry of Forest and Environment approve EIA report. Similarly, in case of IEE level study, line Ministry, which is Ministry of Physical Infrastructure and Transport is authorized to approve the Final IEE Report. The following are the highlights of the EPA, 1997;

19. 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 Ministry of Environment to clear all EIA and line Ministry for IEE study,

20. The Act empowers Ministry of Forest and Environment 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 and empowers government to provide additional incentives to any industry, occupation, technology or process, which has positive impacts on environmental conservation. It provisions 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 areas.

21. Nepal is the first country in South Asia to ban Import, Sale, Distribution & Uses of Asbestos. National blanket ban of Import, Sale, Distribution and Uses of all form of Asbestos (Corrugated / Non-corrugated Sheet, Tiles, Insulators etc.) and Asbestos containing products except lining of break shoe and clutch plates on 22 December 2014 through publishing a Gazette Notification by the Government of Nepal, Ministry of Population and Environment (MOPE) as per the provision of Environment Protection Act 1997 (Section 7 and Sub-section 3) with an effective dates after 181 days from the date public notification.[1] This took affects from 20th June 2015.

22. **Environment Protection Rules, 1997 (with amendments).** 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 projects 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 Ministry of Forest and Environment for environmental auditing. For IEE, the concerned Ministry, which is the Ministry of Physical Infrastructure and Transport in case of the road projects, 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.

23. **Forest Rule, 1995.** The Forest Rules 1995 (with amendment) 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

[1] National Asbestos Profile of Nepal, October 2016
http://www.takagifund.org/admin/img/sup/rpt_file10342.pdf)

(*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.

24. **Local Government Operation Act, 2017**. 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.

25. **Child Labour Prohibition and Regulation Act 2001**. Section 3 of the act prohibits a child from engaging in work, sub clause 1 of the clause 3 states "Nobody shall engage in work a child who has not completed fourteen years of age as a labour and sub clause 2 states "Nobody shall engage a child in a risk full occupation or work set forth in the Schedule". The section 4 states "Child not to be engaged in work against his will by temptation or fear or pressure or by any other means". Child labor will be strictly prohibited in the project work under SRCP.

26. **Solid Waste Management and Resource Mobilization Act, 2011.** This Act was exclusively formulated for the management of solid waste. The section 4.1 to 4.9 of Act and rule 2.1 to 2.10 is concerned with the management and control of the solid waste. The act instituted the Solid Waste Management and Resource Mobilization Center (SWMRMC) with the authority and responsibility to manage all aspects of solid waste including categorization of hazardous waste and collection, treatment, and disposal of solid wastes in the Kathmandu valley and other municipalities as well. This pioneering act was a positive step towards fulfilling the need of legal basis and regulation for solid waste management. The Local Self Governance Act (1999) also empowers the local bodies to manage their solid wastes independently.

27. **Water Resources Act, 1992.** Water Resources Act (1992) makes provision for the rational use of surface and underground water. The act seeks to prevent environment and hazardous effects from the use of water and prohibit water pollution by chemicals, industries waste. Water may only be used in manner that does not permit soil erosion, landslide or flood. Pollution of drinking water is prohibited under the Nepal drinking water corporation act (1989).

28. **Motor Vehicle and Transportation Management Act, 1993**. This act sets standard for vehicles emission and mechanical condition for vehicle registration by the Transport Management Office (TMO) and the TMO can deny a permit based on environmental factor. Standards are set for petrol and diesel engines under the Nepal vehicle mass emission standard 1999.

29. **Town Development Act, 1988 (2045).** Section 5 (Kha) authorizes Town Development Committees to keep clean and aesthetic beauty of town.

30. **Water Supply Management Board Act, 2005.** As per Sub-section 8 (ga) of section 7 Kathmandu Valley Water Supply Management Board is an authority to issue license for the use of underground water or to regulate, control and prohibit the use of underground water.

3. Norms and standards

31. **Planning Norms and Standards, 2013**. Formulation of Planning Norms and Standard has become necessary to manage an urban environment, improve an economic efficiency and the quality of life of urban area. It is for this reason that the Department has undertaken this

initiative. For the sake of this Planning Norms and Standards, the term "Norms" has been defined as the socially or institutionally set values which does shape and govern the behavior pattern including physical and social relations in a given space, while the term "Standards" has been defined as level and quality of infrastructure services that would be required to make the built environment functional and desirable. The main objective of this planning norms and standards are:

- To facilitate urban designers, planners and policy makers to identify and forecast essential infrastructure need of an urban area as well as help prepare urban plans and programs.
- To enrich understanding of urban form and land use and ensure balance between them.
- To guide the development and management of physical, social and economic infrastructure services in a planned manner.

32. **Kathmandu Valley Building Standards, 2007**. The Building Bylaws authorizes the local government for the conservation of natural resources, management & monitoring of the construction activities inside Kathmandu Valley.

33. **National Building Code, 2005**. The national Building Code of Nepal was endorsed after cabinet decision which deals primarily with matters relating to the strength of buildings, site considerations safety during construction and fire hazards, construction materials etc. The code believes in sincere code of ethics of the personnel involved in designing to implementation phase of construction activities so as to achieve a meaningful improvement in construction in Nepal.

34. **National Urban Development Strategy, 2015.** The objective of National Urban Development Strategy (NUDS) is to develop medium and long term strategic vision of a desirable national/regional urban system based on existing trends and regional resource potentialities. It assesses existing conditions of infrastructure, environment, economy and governance, establishes benchmarks and desirable standards and identifies prioritized strategic initiatives for investment in infrastructure and environment to realize the comparative advantages of urban areas. It also reviews the institutional framework to facilitate implementation and monitoring of National Urban Policy (2007) and proposed urban development strategies. The implementation of NUDS is also expected to complement Nepal’s effort to graduate from Least Developed Country (LDC) to Developing Country (DC).

C. Initial Environmental Examination

35. Government of Nepal statutory requirements for environmental assessment, whether it is EIA or IEE, for any type of development activities is detailed in the EPA-1997, EPR-1997 with amendments. Under the act, it is also made mandatory to suggest and recommend suitable mitigation measures for the control and management of the environmental impacts ensuring minimum deterioration due to project implementation. Implementation of the environmental management plan (EMP) and environmental monitoring program is also considered important under the act.

36. Environment assessment requirements are clearly defined and explained including the scope of IEE study for the projects in the National Legislation of Government of Nepal, EPA-1997 and EPR-1997 Clause E (with amendment) which states:

- Construction of residential, commercial and their combination building having Built-up area or Floor area greater than 5000square meter and up to 10000 square meters requires IEE
- Construction of Cinema Hall, Theatre, Community Hall, Stadium, Concert Hall, Sport Complex with capacity of entrance and exit ranging from 1000-2000 people at once.
- Development ranging area from 1 ha to 4 ha.
- Implementation of land development project ranging area from 10 ha to 100 ha.
- Construction of hard surface pavement area greater than 10 ha (i.e. Dry Port, Bus Park, Parking Lot etc).
- Site development work by cutting or filling more than 20,000 cubic meter of soil.
- Construction of building ranging from 10 storeys or 20-meter-high to 16 storey or 50 m high building.

Table 1: Threshold value for the project requiring IEE based on National Legislation of GoN (EPA-1996, EPR-1997)

Threshold Particulars for IEE	Threshold Value	Value for proposed building	Range
Total built up area	5000 to 10000 sq. m.	4997.19 sq. m. (includes total of all floor area)	Below
Number of storey and height of Building	10 to 16 storeys	6	Below

37. The proposed building falls below the threshold mentioned in the Schedule 1 clause E 1 and 7, hence the proposal does not require IEE as per GoN regulations.

D. Asian Development Bank Policies

1. ADB Safeguard Policy Statement (2009)

38. The safeguard areas of the ADB include safeguard areas that seek to avoid, minimize, or mitigate negative environmental and social impacts, including protecting the rights of those likely to be affected or marginalized by the development process (ADB, 2009).

2. Three Key Safeguard Areas

39. ADB's safeguard policy framework consists of three operational policies on: (i) the Environment, (ii) Indigenous Peoples and (iii) Involuntary Resettlement. All three safeguard policies involve a structured process of impact assessment, planning, and mitigation to address the adverse effects of projects throughout the project cycle. The safeguard policies require that impacts are identified and assessed early in the project cycle; plans to avoid, minimize, mitigate, or compensate for the potential adverse impacts are developed and implemented; and affected people are informed and consulted during project preparation and implementation.

3. Project Category

- **Category A Projects:** Projects with potential for significant adverse environmental impacts. An environmental impact assessment and a summary EIA (SEIA) are required to address significant impacts.

- **Category B Projects:** Projects judged to have some adverse environmental impacts, but of lesser degree and/or significance than those for category A projects. An initial environmental examination and a summary IEE are required to determine whether or not significant environmental impacts warranting an EIA are likely. If an EIA is not needed, the IEE is regarded as the final environmental assessment report.

III. DESCRIPTION OF THE SUBPROJECT

A. Project Description

40. The proposed Office building of ADB Project Directorate under Department of Roads will be located in Kathmandu Metropolitan City-5, Bishalnagar as shown in figure 1 and 2. The proposed location is connected via Bishalnagar Marga. The proposed location could be reached from 200 m from southeast from the Bhatbhateni and attached with the existing Department of Railways. The project will be implemented in an area of 21,826.28 sq ft. of land in Bishalnagar, out of which about 9,227.89 Sq. ft. shall be used for office building. The land belongs to Department of Roads, Government of Nepal. All required basic amenities like motorable road, electricity, sewerage, water supply etc are available at the site. It is an ideal location for the office building due to proximity of Singhdurbar and other important government offices.

Figure 1: Location Map of Building Site KMC Map

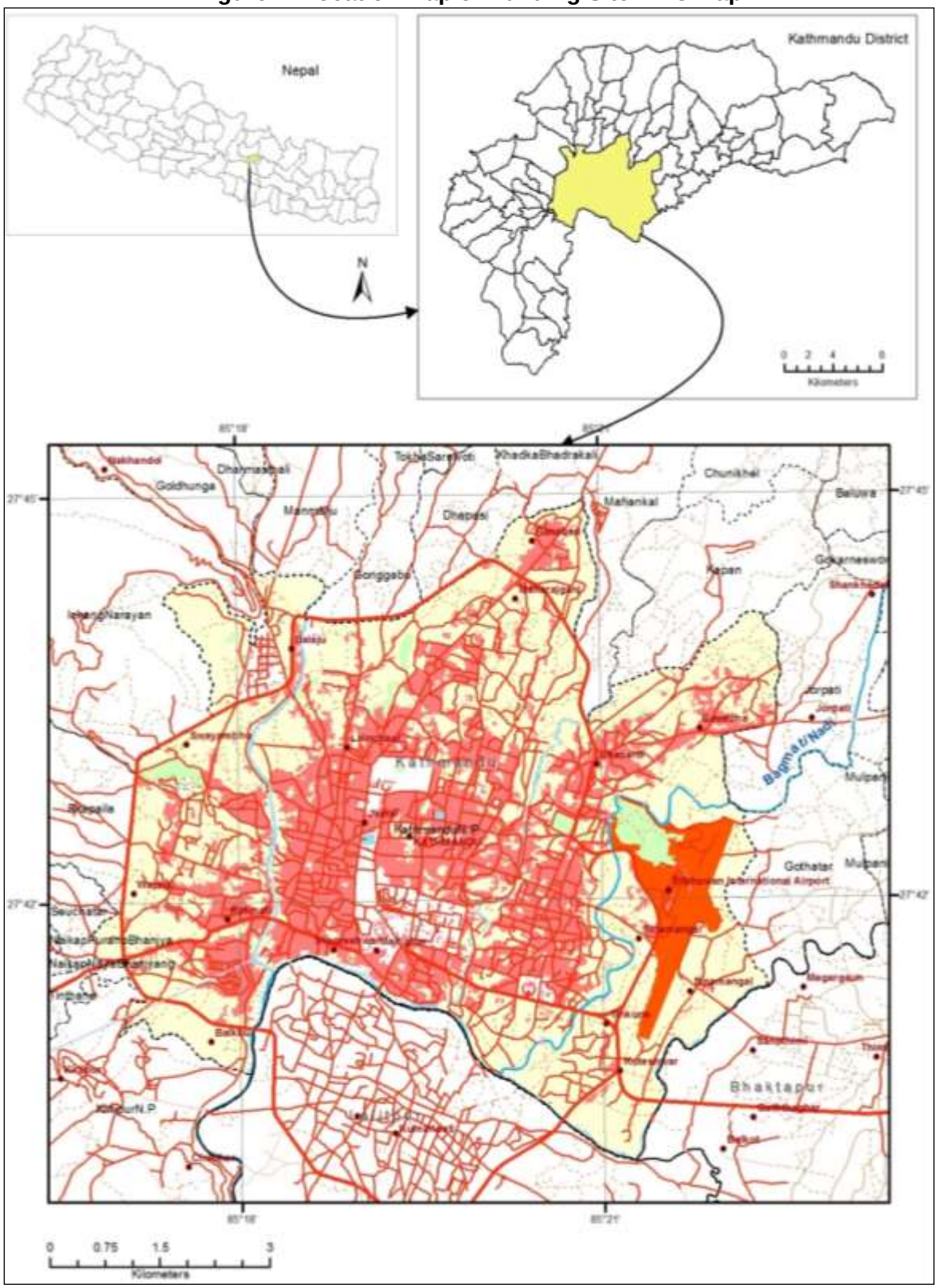
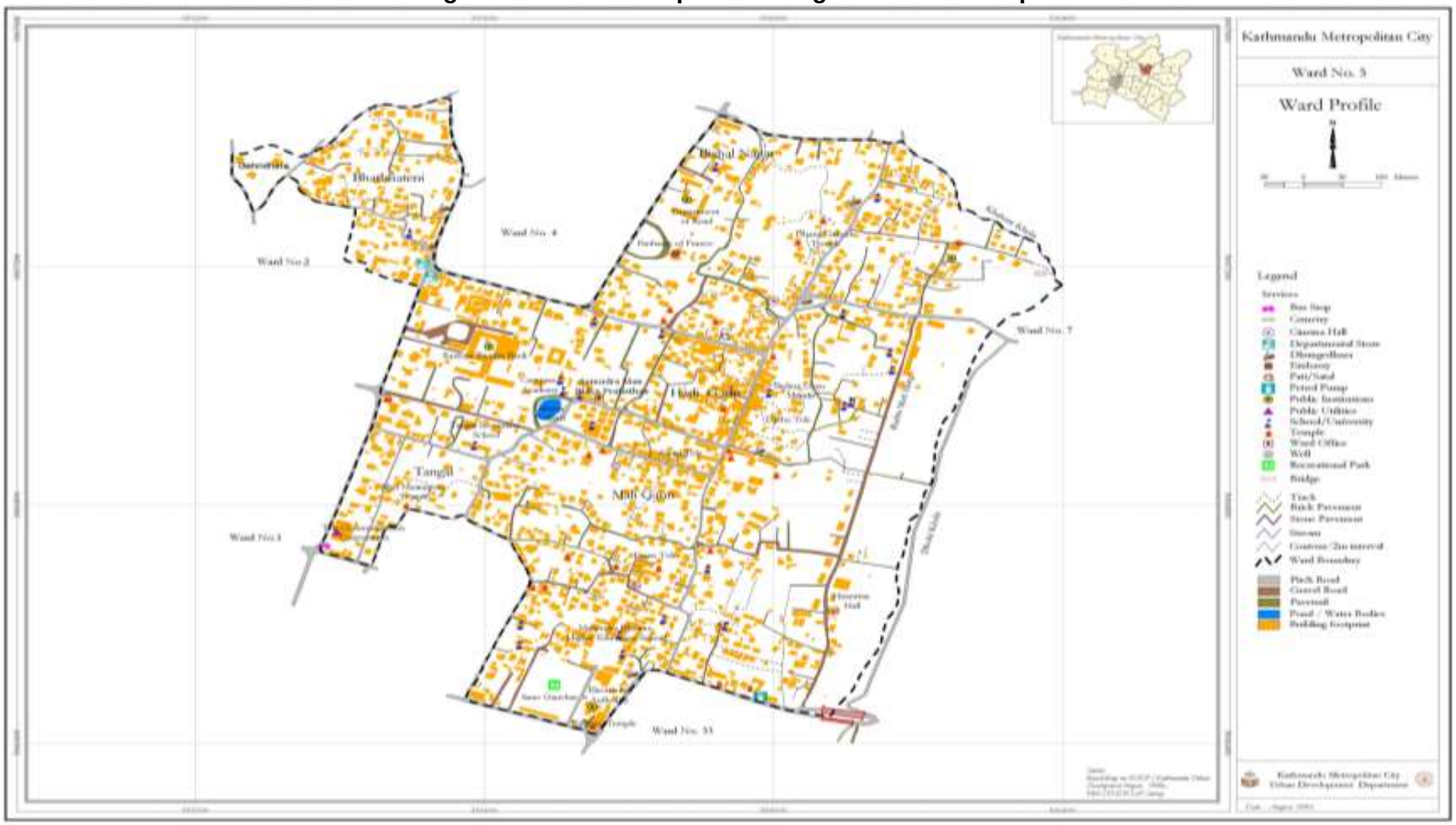


Figure 2: Location Map of Building Site in Ward map



B. Salient features of the proposal

41. Salient features of the proposal are given below:

Table 2: Salient Features of the project

Item	Description	
Project Name	Construction of Office Building for Project Directorate-ADB, Department of Roads	
Location	Bishalnagar-5, Kathmandu Metropolitan City	
Plot Area	21826.28 sq. ft.	
	Permissible	**Actual**
Ground Coverage (sq. ft.)	10,913.14	9,277.89
Permissible Built Up Area (sq. ft.)	32,739.42	
Type of Building	RCC Frame Structure	
FAR	2.5	
Parking	50	
Basement Area (Parking)	Yes	
Total Built Up Area (sq. ft.)	53,769.78 (4997.93 sq.m)	
Total number of storey/Height	6/24.77 m	
Proposed green area (sq. ft.)	3467.42	
Proposed road + parking area		
Total Ground coverage area (sq. ft.)	9,277.89	
Total number of bike parking	22	
Total number of bicycle parking		
Number of block	1	
Type of construction	Mat foundation and RCC structure	
Construction material	Cement, Reinforcement bars, pre-fab, Aluminium, glass etc	
No. of Lifts	1	
Access Road	Main access 14m wide (existing 10.81m)	
Water tank capacity	-	
Set Back	3m min. in the front, 3m min. on east, west and south	
Other	24-hour electrical backup system, 24-hour security service, solar panels etc.	
Cost	NRs. 242.6 million	

Source: Preliminary Engineer's Estimate, 2018

C. Components of PD-ADB Office Building

42. The tentative components of the proposed PD-ADB office building are as follows:

- PD and other engineers' rooms;
- Consultants' rooms
- Admin and other staff offices;
- Design unit;
- Technical service unit;
- Project offices;
- Conference room;
- IT section;

43. In addition, the following facilities will be provided in the PD-ADB office building area:

- Cafeteria;

- Parking area for 50 vehicles (may be in basement or open area);
- Internal paved roads;
- Piped water supply facilities;
- Sewerage connecting toilets and waste water;
- Power supply facilities including solar energy;
- Air condition, lift, generator, fire detection and fighting system;
- Internet facilities;
- Equipment (computers, photocopy machines etc.) and furniture
- Gas supply facilities;
- Telecommunication facilities;
- Storm water drainage facilities;
- Solid waste management;
- RCC or brick concrete boundary fence;
- Landscape/tree plantation;
- H&S measures;
- Security facilities; etc.

D. Planning and Design of PD-ADB office building

44. Currently, the building only has a conceptual design. The detail design and drawings are yet to be prepared. Next steps to finalize the building design and construction will include:

- Architectural planning;
- Structural design,
- Civil works including plumbing, sanitation, electrical works, water and gas supply;
- Installation of air condition, lift, generator, fire detection and fighting system;
- Networking the communication system (telephone, computer, internet etc.);
- Interior design including furniture and furnishing works;
- Landscaping/Tree replantation, etc.

45. The design of the building will be based on IS1893-2002 and IS456:2000. Type of Structure will be RCC Moment Resisting Frame. The following codes and standards will be followed:

- IS875 part 1, Code for design loads in building and structure
- IS 875 part 2, Code for design Imposed loads in building and
- IS1893-2002, Code of practice for design of Seismic Resistant Concrete structures.
- Design of Reinforced Concrete Structure – IS456:2000
- Ductility design for earthquake resistant structure IS13920

46. The building will include the following utility services:

- Water supply system
- Sanitation /Sewage System
- Electrical system
- Fire Detection and Alarm System
- Fire Fighting system
- Rain water harvesting system

- Solar panels for solar energy for electricity.

E. Materials Used

47. Raw materials used for building construction will have brick, cement, tiles, paints, varnish, and mild steel rods, deformed steel bar and wire for concrete reinforcement, galvanized steel and PVC pipes for water supply.

F. Waste generation due to proposal implementation

48. Huge amount of waste is not expected to be generated as it is a government office. However, provisions for management waste generated form office will be provided. different types of diseases if allowed to decay at the open space for a long time. The building shall coordinate with Kathmandu metropolitan City (KMC) for the disposal of waste effluents from the building. The effective measures shall be taken for the disposal of waste form the building keeping in mind the environment impact.

49. **Wastewater discharge**. Soil and waste water will be lead through different pipes to the manholes at ground and further lead through a simple PVC pipe. Sewage waste will be connected to municipal sewerage system. Adequate surface drainage shall be provided for storm water collection.

G. Manpower Requirement.

50. Project construction period will be approximately 24 months followed by 1-year defect liability period. During the construction period, about 350 people will be employed. All of them will be employed on contract basis until the completion of proposal. Whilst, security guards, electrician and gardener will be entitled as temporary or permanent employee based on mutual agreement with the proponent, the expected number of such employee will vary from 3 – 5 persons.

H. Proposal implementation requirement

1. Total investment

51. As per preliminary estimate, the expected total investment for the proposal is NRs. 242.6 million.

2. Machinery equipment

52. Types of machines and equipment required for proposal construction are Concrete pump, Excavator, loader, Mixer machine, Vibrator, Hoisting machine, Concrete testing machine, compressor, Jeep and trucks respectively.

3. Others

53. Since the nature of product is service oriented, it requires transformer, generator, fire extinguisher, lifts, and smoke control devices as the major equipment to be installed for service delivery to the families of unit holders.

I. Study Area and Study Area Delineation

54. The study area covers areas of Ward-5 of KMC. For the consideration of the study, the areas which are within 100 m from the boundaries of the building site have been defined as the Zone of Influence (ZoI). Among this, the areas which are within 50m distance from the project site are considered as Direct ZoI whereas the areas beyond the Direct ZoI and up to 100m distance are considered as Indirect ZoI.

Figure 3: Proposed Master Plan of Building

IV. DESCRIPTION OF THE ENVIRONMENT

A. Physical Resources

1. Topography and Land Use

55. The present proposal is construction and operation of the Project Directorate-ADB office building at Kathmandu Metropolitan City ward No: 5, Kathmandu District. The elevation of the project site lies at 1310 masl. There are no unique, fragile or difficult topography, elevations and slope characteristic in the proposed project area.

56. Existing land used around the proposal site is completely built up area. As it lies within the urban area, other form of land use such as farmland, forest or protected areas are not identified. Thus, the overall scenario of land use within the direct impact area is described as below.

Direction	Current Land Use
East	Residential Buildings
West	Road
North	Vacant plot and Road
South	Department of Railways

2. Climate

57. A temperate climate prevails in Kathmandu valley. There are three dominant seasons in the valley; winter, spring, summer and autumn; with three months each season and December is the harbinger of winter. The range of temperature is below 0^{o}C in winter and reaches more than 30^{o}C in summer. The Kathmandu Valley experiences four distinct seasons: pre-monsoon, monsoon, post-monsoon and winter. The rainy season is from June to September when 80% of the rainfall occurs. The annual rainfall of the valley is around 1900 mm.

3. Geology

58. The Kathmandu valley is a large intermontane basin carried above the Himalayan major detachment and it is the largest basin situated in the Lesser Himalaya of Nepal. It occupies the central portion of the nearly elliptical KCN towards the northern margin. It is limited southward by the Mahabharat Range, which forms the hanging wall of the Mahabharat Thrust (MT), and northward by the Shivapuri range, which belongs to transported sheet of the Higher Himalayan crystalline towards south along the MCT. This basin lies on the basement of crystalline rocks and Precambrian to Paleozoic meta sedimentary formations. It covers a part of the Mahabharat Synclinorium. It extends for about 30 km in the east-west direction and about 25 km in the north-south direction and has an almost circular shape. A lake is known to have filled most of the basin from Pliocene to Pleistocene age. The basin is filled with a very thick (more than 650m) sequence of fluvio-lacustrine sediments (Moribayashi and Maruo, 1980) that covers about 400 km2 area. The drilling data shows that the thickness of sediment at Hyumat Tole at Kalimati, Bhrikutimandap, Bansbari, Gausala and Katunje are 504m, 550m, 79m, 113m, and 160m respectively. In this centripetal drainage basin, sediments were derived from the crystalline (schist, gneiss, pegmatite) and meta sedimentary (phyllite, siltstone, shale, meta sandstone and limestone) rocks. The semi consolidated sediments filling the basin mainly consist of muds, silts, sandy loam, fine to coarse sands, and gravel to cobble conglomerates.

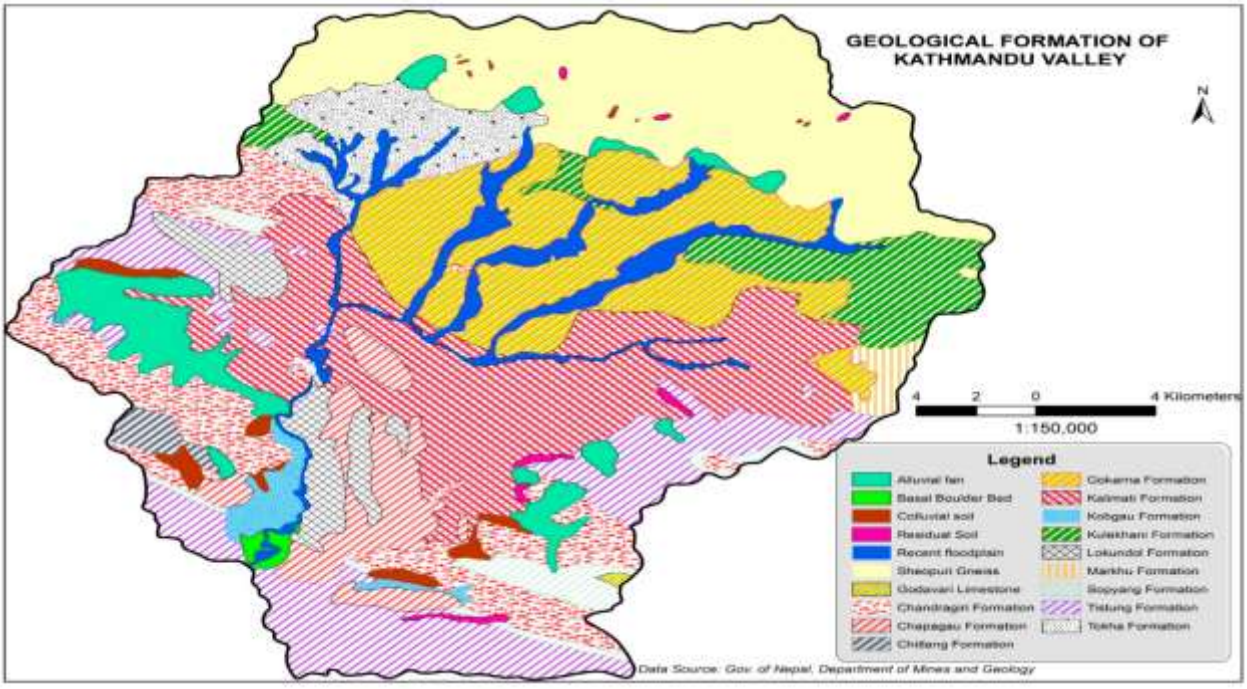
59. Many faults (main trend WNW-ESE) have been mapped that crosscut the meta

sedimentary basement. Previous studies have revealed the presence of geomorphic and structural features indicatives of active faults including young fault scarps and displaced lacustrine sediments. In the south west part of the basin, NW/SE trending faults (Chobhar Fault, CF, and Chandragiri Fault, CGF have been traced for about a length of 3-4 km and have contributed to the formation of the Kathmandu basin and the upliftment of the Mahabharat Range since Late Quaternary time.

60. Moribayashi and Mauro (1980) conducted gravity survey in Nov.1976 with 112 gravity stations to understand the basement topography of the Kathmandu Basin and concluded that the maximum depth of the basement below the sediments is a little more than 650 m Judging on the basis of the borehole data of different agencies and the rock outcrops within the valley the basement contour map prepared by Moribayashi and Mauro (1980) fairly reflects the objective reality. The basement rock depth in the investigated area is around 400-450m from the ground. Geologically, Kathmandu valley is a synclinal tectonic basin consisting of fluvio-lacustrine deposit of Pleistocene age resting on the Precambrian metamorphic bedrock. In the North side of the valley, there is a thick formation of fluvial overburden whereas the South part of the valley comprises dominantly of lacustrine deposit formed by the mechanical and chemical weathering of rocks of surrounding hills of the valley. The products of the weathering were transported by various agencies and the weathering products finally were deposited on the bed of the lake. In general, the clay layer is capped by occasional sand and silt sedimentary layers. The clay deposit is occasionally organic in nature and is compressible. Organic content in the clay/silt layer increases with depth.

61. The project site lies at the interface of Kalimati Formation and Gokarna formation consisting of slightly consolidated sediments. It also consists of light to brownish grey, fine laminated and poorly graded silty sand with intercalation of clay of variable thickness. The thickness of the formation is as thick as 300 m at places.

Figure 4: Geological formation map of Kathmandu valley



4. Hydrology

62. The annual basin rainfall in the project area averages about 1900 mm of which 80% rain falls between June and September during the monsoon. Bagmati River and its tributaries, originating in the Mahabharat hills undergoes considerable seasonal fluctuation. This affects water availability during the winter months. There are almost 20 small rivers and rivulets in Kathmandu Valley. The project area lies in Bagmati river watershed, one of the major rivers in the Kathmandu valley. The latest available data of temperature, rainfall and humidity at the nearest meteorological station (Panipokhari) are given in the table below:

Table 3: Temperature, Rainfall and Humidity Data at Panipokhari Station, Kathmandu (2014)

Month	T_{max}	T_{min}	Rainfall (mm)	Relative Humidity (%)
January	19.3	3.8	0.0	84.3
February	23.7	8.0	0.0	85.7
March	25.7	9.0	22.5	84.2
April	28.1	10.8	129.8	85.6
May	28.2	16.6	165.7	87.9
June	29.7	19.9	190.6	88.2
July	29.1	20.7	394.8	87.8
August	28.8	20.5	441.1	88.2
September	27.9	19.2	275.2	88.2
October	27.3	15.3	20.4	87.4
November	22.3	10.0	0.0	87.9
December	20.9	8.0	23.1	84.2
Grand Average	**25.91**	**13.48**	**138.6**	**86.63**

5. Seismicity of the Project Area

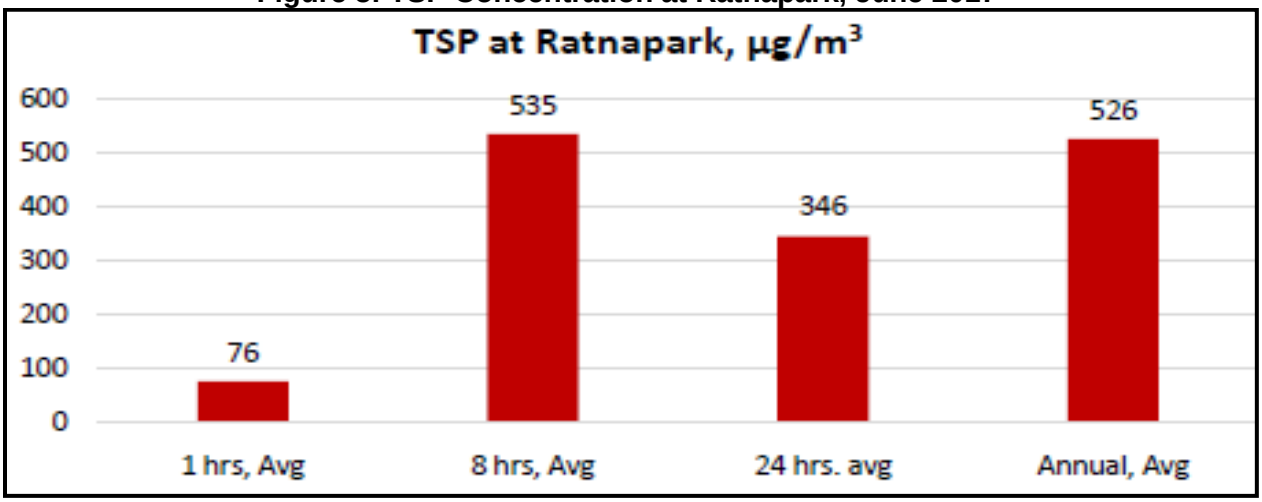
63. Nepal is a seismically active country lying between collisions of the Indian and Eurasian plates and moving continuously resulting in frequent and often devastating earthquakes within the region. Nepal has experienced catastrophic earthquake damages in 1934, 1988 and recently in 2015. Recently tremor of earthquake having epicentre at Barpak of Gorkha and Sindhupalchok in 2015 and its aftershock has caused loss of several thousands of peoples and damaged tremendous value of infrastructures. According to the National Building Code of Nepal, the Kathmandu Valley falls under the Seismic Zone "A".

6. Air, Noise and Water Quality

64. The major sources of air pollution in the site are vehicular emissions, dust particles from unpaved footpaths. According to the then Ministry of Science, Technology and Environment (MoSTE), vehicular emissions have become the main source of air pollution in the Kathmandu Valley.

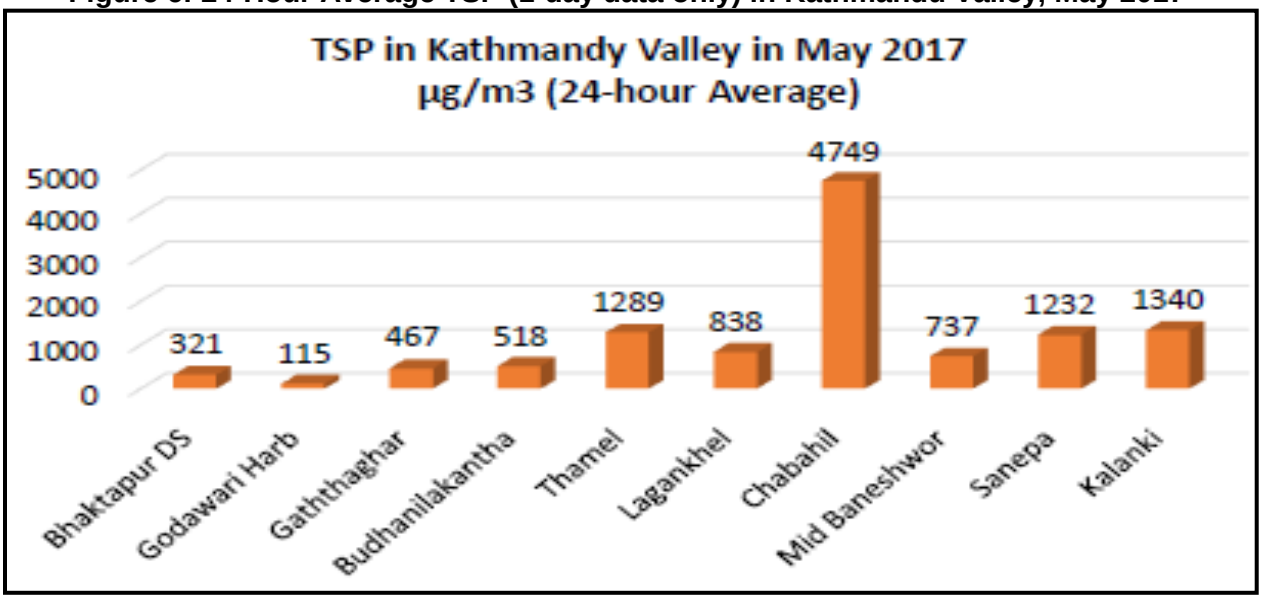
65. **Total Suspended Particulates (TSP):** The results obtained from the monitoring station established by Ministry of Population and Environment (Now Ministry of Forest and Environment) are being disseminated through the webpage of MOPE (www.pollution.gov.np), and the results obtained on June 9, 2017 for Kathmandu valley is presented in Figure 6 and 7 which shows the one-hour average, 8-hour average, 24-hour average, and the annual average. Ratnapark, the sampling station in Kathmandu is located 2.5 km away south-west of the project building. In figure 7 Chabahil which is about 1.2km away towards the east is located closest to the project site. The GON limit for 24-hour average TSP concentration is 230$\mu g/m^3$ and for World Health Organization (WHO) it is 120 – 230 $\mu g/m^3$. WB-EHS standards requirements does not included TSP. Therefore, the data in figure 6 shows that the 24-hour average TSP level on June 9, 2017 in Ratnapark exceeded the standards of both GON and WHO. Data in figure 7 shows that the TSP levels for one day in May exceeded both GON and WHO standards in all locations except for one area – Godawari Harb.

Figure 5: TSP Concentration at Ratnapark, June 2017



(Source: www.pollution.gov.np)

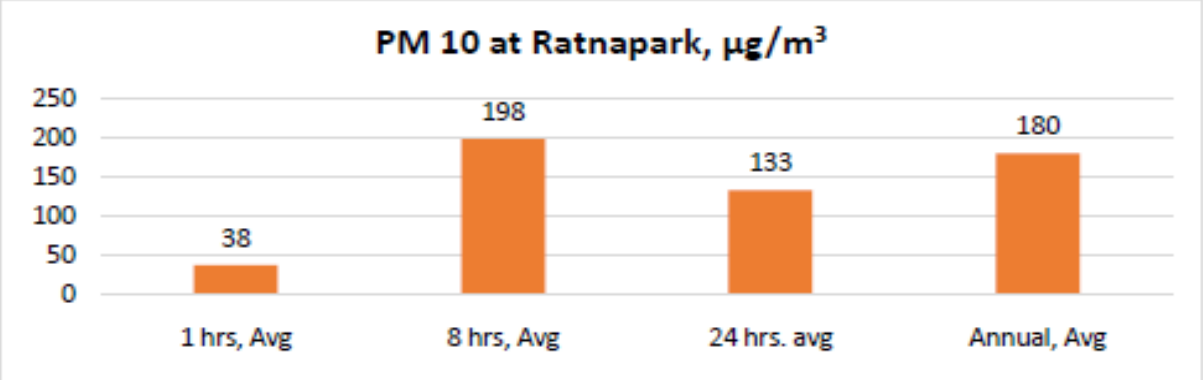
Figure 6: 24-Hour Average TSP (1-day data only) in Kathmandu Valley, May 2017



(Source: **QUEST** Nepal)

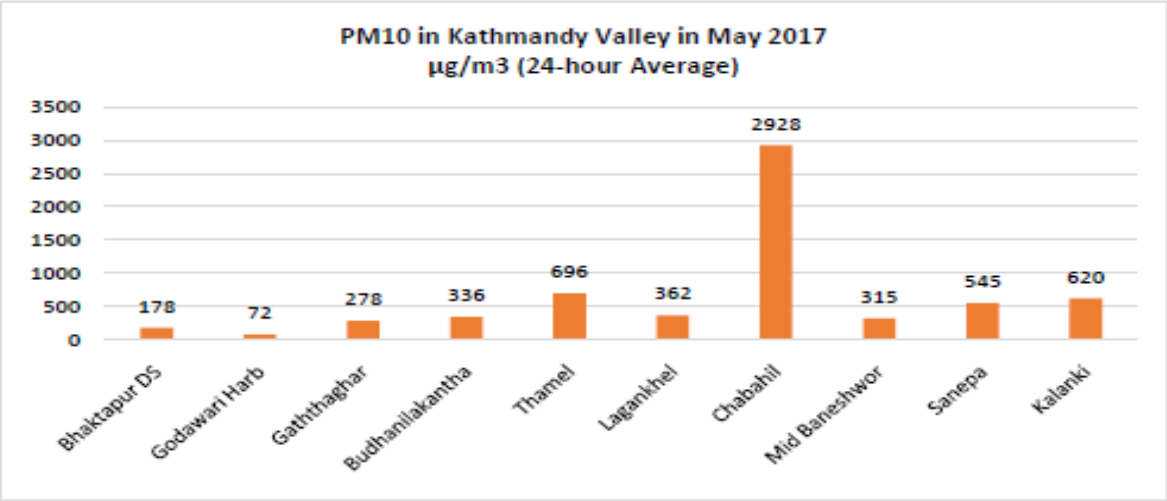
66. **PM_{10} (Particulate Matter with Aerodynamic Diameter 10 Micron or Less** From the human health point of view, smaller particulates are the main concern specially PM10 and the smaller ones. The status of the PM10 in the Kathmandu Valley on June 9 2017 from the MOPE station at Ratnapark is presented in Figure 8. The results of PM10 concentration of one-day campaign monitoring in 10 different locations of Kathmandu Valley in the month of May 2017 are shown in Figure 9. This monitoring was only done to understand the highest level of pollution in a very dry day, and the high level of pollution observed is therefore for a day only. In figure 9 Chahabil is located closest to the project site. The GON limit for 24-hour average PM10 concentration is 230 and 110 µg/m^3 and the World Bank - Environmental Health and Safety (WB-EHS) standards' maximum interim target level for 24-hour average is 150 µg/m^3. Therefore, the data in figure 8 shows that the PM10 level on June 9, 2017 in Ratnapark was within the standards of both GON and WB-EHS. Data in figure 9 shows that the PM10 levels for one day in May exceeded both GON and WB-EHS standards in all locations except for one area – Godawari Harb.

Figure 7: PM10 in Ratnapark and Pulchok, January 2017



(Source: MOPE)

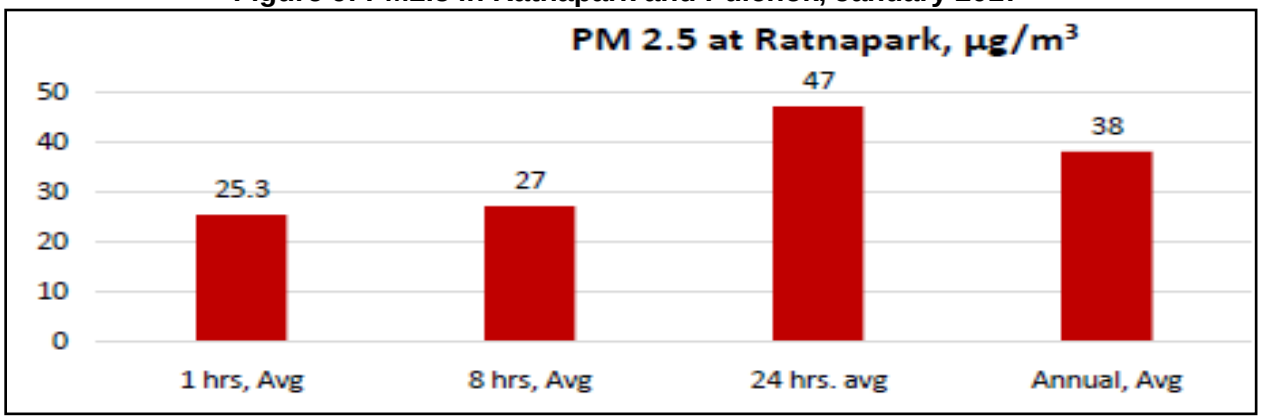
Figure 8: 24-Hour Average PM10 (1-day data in Kathmandu Valley), May 2017



(Source: QUEST Nepal)

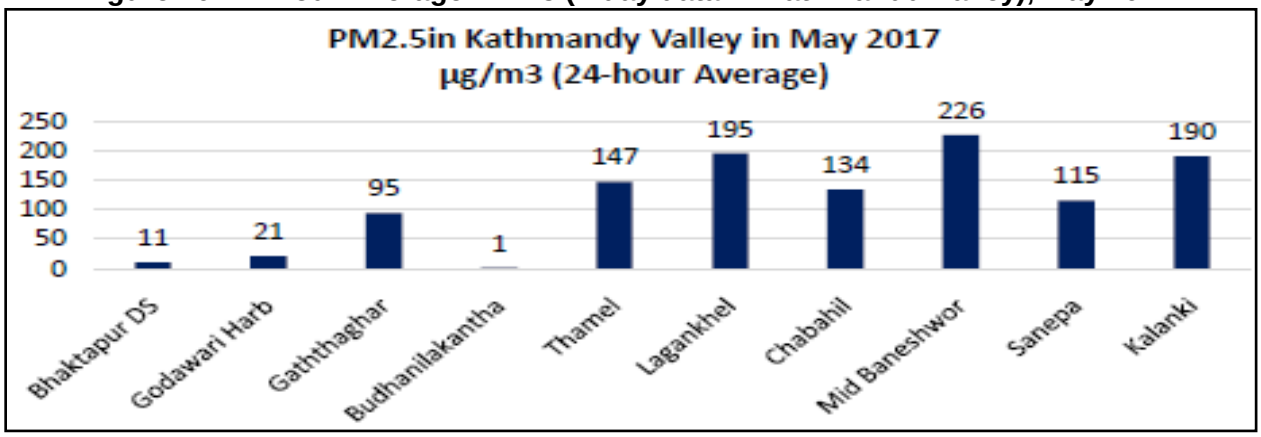
67. **PM2.5 (Particulate Matter with Aerodynamic Diameter 2.5 Micron or Less).** In recent years, more focus has been provided in the monitoring of the smaller particles, like the PM2.5, about one-thirtieth of the width of a human hair, can penetrate deep into the lungs and the cardiovascular system, posing the greatest risks to human health. The monitoring stations recently established by MOPE also provide highest priority in monitoring PM2.5. The results of this system obtained on June 9, 2017 are presented in Figure 10. The results of PM2.5 concentrations of one-day campaign monitoring in 10 different location of Kathmandu Valley in the month of May 2017 are shown in Figure 11. This monitoring was done to understand the highest level of pollution in a very dry day, and the high level of pollution observed are therefore for a day only. In figure 11 Chahabil is located closest to the project site. There is no GON standard for PM2.5 con-centration. However there WB-EHS 24-hour average maximum interim target concentration for PM2.5 is 75 µg/m^3. Therefore, the data in figure 6 shows that the 24-hour average PM2.5 level on June 9, 2017 is within the WB-EHS standards. Data in figure 11 shows that the PM2.5 levels for one day in May exceeded the WB-EHS standards in 7 out of 10 locations.

Figure 9: PM2.5 in Ratnapark and Pulchok, January 2017



(Source: MOPE)

Figure 10: 24-Hour Average PM2.5 (1-day data in Kathmandu Valley), May 2017



(Source: QUEST Nepal)

68. The noise generated by the vehicular operations, industrial activity and other human activities are the main source of noise pollution. Noise pollution is created by moving vehicles with their unnecessarily blowing horn.

Table 4: Noise level at Different Areas

Traffic Area	Day Hour			Night Hour	
	Observed Value	WHO Guideline	WB-EHS Guideline	Observed Value	WB-EHS Guideline
High Traffic Area		70			
Kalanki, Kathmandu	74			70	
Shahidgate, Kathmandu	67			69	
Putalisadak, Kathmandu	75			69	
Maitighar, Kathmandu	71			70	
Commercial Cum Residence Area			70		70
Asan Chowk, Kathmandu	74			67	
Naya Bazar, Kirtipur, Kathmandu	64			62	
Manbhawan, Lalitpur	71			67	

Source: Environmental Statistics of Nepal, CBS, 2013

Table 5: World Bank Noise Guideline Values/standards

Receptor	World Bank		GON	Receptor
	Daytime	Nightime	Daytime (average) Ldn, dBA	
	7:00-22:00	22:00-7:00		
Residential	55	45	66.28	Old Residential Area
Institutional; educational			62	New Residential Area
Industrial	70	70	72.75	Commercial Cum Residential Area
Commercial			69.25	Commercial Cum Tourist Area
			74.36	High Traffic Area
Silence Zone	None	None	None	None

69. The noise zones of the WB EHS guidelines and the National Ambient standards for Government of Nepal is quite different as can be seen in table 5. Within these constraints it was seen that noise levels exceeded the GON standards as well as WB-EHS standards at 2 locations

(Asan and Manbhavan) and the at 2 locations.

B. Ecological Resources

1. Vegetation

70. As project site lie in the heart of city, there is no forest in project site and its periphery and the floral diversity is not significant in the area. No clearance of vegetation is required in the project site. However, there are Bakaino(*Melia azedarach*), Kapur (*Dryobalanops aromatica*), Mango (*Mangifera indica*), Dhupi (*Juniperus indica Bertol*), Avocado (*Persea americana*)trees are located in the premises of the building and none of them are expected to be lost due to building construction. None of these trees fall in the endangered list of species.

2. Terrestrial fauna and birds

71. As the area is surrounded by settlements form all directions, fauna diversity is not significant in the area. The different animals recorded in and around the site are Calotes species (Garden lizard*), Rattus rattus* (House rat), *Mus musculus* (House mouse). Besides this, varieties of butterflies and insects are also found in the area. Different birds found in the area are *Streptopelia* species (Dove), *Columbia livia* (Rock pigeon), *Passer domesticus* (House sparrow) and *Corvus splendens* (crow). None of these species are endangered under International Union for Conservation of Nature (IUCN) or protected under GON.

C. Socioeconomic Environment

1. Socio-cultural status

72. The total population of ward number 5 is 18,320 among which male and female population were 9,337 (50.97%) and 8,983 (49.03%) respectively. Number of households in the ward was 4,774. The dominant ethnic group in the area is Newars followed by Brahmin and Chhetri. (Source: CBS 2011)

73. Population in the ward is densely distributed. More than 90% buildings of this area are constructed with RCC and brick structure. The major professions of the people in the ward are: service, business, foreign employment etc. Literacy rate in the given ward is considered very high as compared to national average literacy rate.

74. The majority of the ward's multi-ethnic inhabitants follow the Hindu faith. Most of the people belong to the Newar community, and the feeling of religious tolerance and mutual cooperation runs high. The many Lichchhavi-era artefacts found here is evidence of its ancient glory. Its cultural wealth is shown by the numerous sacred temples and religious sites lying here, like Satya Narayan, Manmaneswari, Dhanawantari, Gahana Pokhari, Dhana Ganesh, Krishna, Dakshinkali, Bhat Bhateni and Saraswati. The locality of Hadigaon in the saying, "No festival like at Hadigaon" is situated in the ward. And so is Gahana Pokhari, a historic and ceremonially important pond. Apart from the festivals celebrated according to the Hindu tradition, special local celebrations include Hadigaon Jatra and Teen Narayan Jatra. (Source: KMC, 2005, Ward Profile)

V. ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

A. Introduction

75. The potential impacts due to implementation of the project has been identified by initially using a screening checklist. The checklist includes a comprehensive list of potential environmental impacts as provided in the table below. Potential environmental impacts that may occur at the various stages of the project activities, are listed and the significance of each environmental impact is indicated. The terms none, minor, moderate, and major are used in the checklists to evaluate the magnitude of the impacts. In the checklist, the location, construction, and operational phases of the proposed development are considered separately in order to distinguish the short-term and long-term impacts. As can be seen from the table below a number of potential adverse impacts have been identified. However, the significance or extent of the impacts are mostly minor and will be short term as they are associated with the construction stage impacts.

Table 6: Checklists of Construction of Multi-storeyed Office Building

Project Phase	Potential environmental resource impacts	Significance of Environmental Impact				Type		Remarks
		None	Minor	Medium	Major	Adverse	Beneficial	
Project Location	Land value depreciation	x						No land value changes anticipated
	Loss of and displacement from homestead land	x						No loss of and displacement from homesteads land; no impact
	Loss of and displacement from agricultural land	x						Loss of and displacement from Agricultural land will not occur; no impact
	Damage to nearby operation	x						No impact anticipated
	Disruption to drainage pattern		x			x		Land development may create problems in local drainage pattern, minor impact
	Blockade of wildlife passage	x						No wildlife in the area, no impact
	Encroachment into precious ecological area	x						No precious ecological issues; no impact
Construction Stage	Blockade of natural drainage	x				x		Cutting/Filling and construction site preparation would create natural drainage blockade during rainy season, minor impact
	Worker accident	x				x		Irregularly may occur in construction period, minor impact
	Safe drinking water and Sanitation hazard			x		x		Concentration of labor force create un-hygienic condition, medium impact
	Noise/vibration hazard		x			x		Piling, brick/stone crushing and equipment installations may create noise, minor impact

Project Phase	Potential environmental resource impacts	Significance of Environmental Impact				Type		Remarks
		None	Minor	Medium	Major	Adverse	Beneficial	
	Traffic congestion		x			x		Carrying of construction materials will create traffic congestion
	Dust Emission		x			x		Cutting/filling, stockpiling of construction material and traffic movement may create dust emission, minor impact
	Surface water pollution	x						No water discharge from the site, no impact
	Solid waste management		x			x		Improper management of construction debris and solid waste may pose risk to the neighbors, minor impact
	Occupational health & safety of workers		x			x		Health & safety of workers at site may pose to risk in some cases, minor impact
	Building site security		x			x		Improper site security may pose risk to the school children or community, minor impact
Operation Stage	Employment opportunity			x			x	Major employment opportunity during construction, medium positive impact
	Pollution from liquid discharge	x						No liquid discharge from the project, domestic sewage should be disposed through septic tank, no impact
	Pollution from solid waste		x			x		Minor domestic solid waste may generate; minor impact
	Air quality	x						No air pollution; no impact
	Noise hazard	x						No noise generation is expected; no impact.
	Traffic congestion	x						No traffic congestion: no impact
	Renewable energy option			x			x	Solar panel may be installed at the roof of the building may save energy and CO_2 emission
	Employment			x			x	Medium Employment opportunity during operation

B. Impacts during Pre–Construction Phase

1. Land Acquisition

76. The land of the proposed project site belongs to DOR and already has an existing office building. Relocation of homestead will be required. Hence, there will be no land acquisition or need for relocating homesteads or non-title holders. No precious ecological issue is involved with this project since the project site is already used land, has no natural habitat and is not immediately close to watercourses.

2. Removal of Dismantled Concrete and Equipment

77. **Impact:** Existing infrastructure such as the current 3 storied office building, security camp, store, RCC drains etc. within the existing area of PD-ADB office will need to be dismantled and removed. Anticipated impacts from these damaged concretes and equipment will be the pollution of soil, air and ground water. There is also the potential of generating asbestos containing material (ACM) from the dismantling of buildings within the PD-ADB office compound.

78. **Mitigation:** Prior to the start of construction, the existing infrastructure should be dismantled, broken into chips and stored in the designated area of the PD-ADB office by skilled technicians/labors properly. Alternatively, all these materials should be carried out by the dump trucks and reused for ongoing road construction works or dumped at designated approved locations. Any hazardous materials or wastes such as lead acid batteries and old printers and toners must be disposed off carefully either by selling to waste recycling agents or disposed only in legally designated locations. In case asbestos is present in buildings to be demolished, the Contractor will coordinate with the Ministry of Population and Environment (MOPE) on the proper dismantling and disposal of asbestos. The contractor (or external service provider with competency in handling asbestos) must identify the locations of asbestos-containing materials and carry out a risk assessment. The contractor must also ensure that people involved in clear-up work are adequately informed of the risks and the methods of best practice. In addition, the following safeguards should also be implemented: (i)minimize the disturbance of asbestos containing materials; (ii) minimize the release of respirable asbestos in the atmosphere by wetting; (iii) minimize the extent to which people have contact with asbestos; and (iv) ensure that waste is securely stored and adequately labelled.

C. During Construction Stage

1. Drainage Congestion

79. Impact: Construction of the proposed office building may impact the existing drainage pattern by impeding the natural flow. Temporary drainage congestion may occur especially during monsoon period due to excavation of earth from the foundation trench of the proposed building construction area. In addition, drainage congestion resulting into stagnant water or local flooding also may be occur in places such as construction yard and labor’s camp. The drainage system on the surrounding of the proposed building construction area may be affected by construction activities.

80. **Mitigation:** Temporary storm water drainage congestion in the proposed building construction area due to rainwater should be removed by pumping of rain water from the foundation trench by pump. Drainage congestion at the labor camp and construction yard should be removed by temporary earth or brick drain. Alternative temporary drain close to the boundary can be provided up to the outfall in case the existing drain gets closed or dismantled. Storm water and rainwater will be used for recharging ground water or reused for construction.

2. Ground Water/Drinking Water

81. **Impact:** The proposed PD-ADB building location can affect the ground water resources due to uncontrolled extraction of groundwater for construction purpose. The water table in this area like other areas of Kathmandu valley is constantly depleting due to extraction for drinking, bathing, cooking etc. Groundwater will be required for construction in absence of surface water availability in this area. However, water for construction will also be sourced from other private

supplier. Hence, it is expected that the required quantity of ground water for the construction purpose (only for mixing of concrete, curing and washing of stone chips) will not be high. Hence, impact on quantity of ground water is expected to be insignificant. Drinking and domestic water requirement for workers camp will be arranged by the contractor. Contamination of groundwater is not envisaged since construction camp will have septic tanks or mobile toilets depending on the number of workers in the camp. However accidental spillage of hazardous liquid on the construction yard may contaminate the ground water.

82. **Mitigation:** The contractor will make arrangement for water required for construction in such a way that the water availability and supply to nearby communities remain unaffected. It means that due to construction works the nearby communities will not be affected by water scarcity. Handling and storage of the potential contaminants (such as hazardous chemicals, fuels, lubricants, acids, paints etc) will be handled by experienced workers and will be organized under strict condition to avoid water pollution during construction of the proposed building construction. Proper monitoring should be done by a suitably qualified and experienced person. As the proposed building construction area is not connected with any major water body, no direct impact on the surface water quality is anticipated by the construction of the proposed building construction.

3. Air Pollution

83. **Impact:** Air quality may be affected in and around the construction site due to various construction activities and construction vehicular movement. The pollutants of primary concern include SOx, Total Suspended Particulates (TSP), PM10 and PM2.5. The construction equipment/vehicles, using fuel and diesel and movement of vehicles will also contribute to air pollution releasing hazardous air emissions such as NOX, SO_2, PM10 and PM2.5. This will impact the air quality affecting the immediate vicinity of the working area.

84. Another possible source of air pollution will be dust generation due to handling of sand, cement, breaking of bricks/boulders, and mixing of concrete ingredients. However, due to the openness of construction sites and wind conditions, the dust and engine emissions are expected to have limited effects on the existing air quality. The anticipated air quality problem will be for short term, localized and minor lasting mainly during the construction.

85. **Mitigation:** In order to keep the pollution level within acceptable limit, construction related emissions should be regulated. Regular spraying of water on dusty surfaces during dry season to reduce dust generation must be practiced. The rules and regulations of the building specification guideline as mentioned in NNBC should be followed especially by the contractors. Loading and unloading of construction materials likely to generate fugitive emission, shall be done in covered area or provisions of water fogging arrangement may be made around these areas. Regular maintenance of machinery and equipment and vehicular pollution check shall be made mandatory. Silt screens maybe installed around the construction site to control the release of dust to surrounding buildings. Ambient air quality monitoring should be carried out quarterly during construction. If monitored parameters are above the baseline levels (see chapter IV, section xx) or GoN standard, suitable control measures must be taken by the contractor.

4. Noise and Vibration

86. **Impact:** Noise levels in and around the construction site is expected to increase as a result of the operation of construction vehicles/equipment and during unloading and loading of construction materials. A number of vehicles and equipment will be required for the construction

of the proposed PD-ADB building and will depend upon the construction methodology for various types of works. However, the equipment will broadly consist of mixer machine, concrete vibrator, brick/boulder breaking machine and crane. Construction vehicles will mainly consist of heavy trucks to transport materials in and out of the site. Most of them will use diesel engines that generate noise and exhaust emissions. In addition to noise, the construction activities may generate vibration as well. The vibration could potentially impact the buildings and houses nearby.

87. Mitigation: Since the existing noise level already exceeds the standards of both GON and WB-EHS, strict measures for noise pollution control will need to be undertaken during construction activities. The Contractor should apply optimum site activities and site layout so as not to exacerbate existing noise levels. Since there is Department of Railways office adjacent to the proposed PD-ADB building area boundary, temporary noise barrier (such as wooden screen, heavy jute screen, heavy plastic screen etc) should be constructed to protect the nearby office from noise pollution. In addition, the timing of construction activities must be limited from 7:00am to 8pm so as the impact intensity is minimized. Undesirable noise should be avoided by confining the source of noise. Brick breaking machine should be confined within a temporary shed so that noise pollution could be kept at minimum. In no case such machine should be allowed to operate at night. Protection devices (ear plugs or ear muffs) shall be provided to the workers operating in the vicinity of high noise generating machines during construction. Construction equipment and vehicles shall be fitted with silencers and maintained properly. Construction equipment will be used judiciously so as not to cause vibration or damage to buildings nearby.

5. Waste Pollution

88. **Impact:** The building construction process will take about 2.5 years and as a result, the worker camp will have a semi-permanent presence at the project site. The majority of waste generated will include construction wastes (solid wastes: piece of rods, woods, bricks, stones, containers etc. Liquid waste: paint, oil etc.) and general wastes (solid wastes: papers, plastic containers, residues of food, fruits etc and liquid waste: from kitchen and bathroom etc.). These wastes will be generated due to construction camp, construction activities and materials used for construction. If inadequate arrangements are made for the disposal of above mentioned wastes, there will be negative impact on the soil, aesthetic beauty of area and workers' health and safety.

89. **Mitigation:** Solid wastes collection system will be essential, which should include separation and collection of solid wastes in the dustbins/ waste containers throughout the work site, construction yard/labor camp. Wastes such as pieces of rods and woods, newspapers, and containers can be sold to local venders and the remaining waste can be given to the local waste collection service provider from where KMC will send these wastes to the Landfill Site of Kathmandu city regularly by their own arrangement. A log of the disposal of toxic and other waste materials will be kept by the Contractor. Waste water from the labor camp should be disposed through sewerage pipeline. Prior to transport, container of all liquid materials such as bitumen and oil should be checked by experienced persons properly.

6. Sewage Pollution/Sanitation Hazards

90. **Impact:** During construction stage, the proposed building construction area shall be occupied by the construction workers (about 25-30 persons/day). Inadequate and unhygienic sanitation facility can pollute the surrounding area as well as various diseases might be spread out among the workers. Sewage waste also might be the source of odor pollution to the local environment.

91. **Mitigation:** Sewage disposal should follow accepted practice (through sewerage pipe) and avoid ground water contamination. Proper sanitation facilities such as toilets and bathing area with proper water supply must be provided to the workers. Waste water generated must be drained through drains connected with the municipal drainage system.

7. Road and Traffic

92. **Impact:** Heavy construction vehicles will be required during construction for carrying of various construction materials and equipment. There is an existing 6m wide bituminous paved road at the west side which connects with the proposed building construction area. Traffic observation shows that almost all types of vehicles such as buses, minibuses, microbuses, Jeeps, cars, motor cycles, vans, students and workers use this 6m wide access road, and as a result, traffic jams occur especially during peak hour at morning (from 8:00 to 10:00 hrs.) and evening times (from 17:00 to 19:00 hrs.), as mentioned by the local people during consultations. The construction vehicles will add more traffic and as a result, traffic congestions will be increased. In addition, road accidents may be increased due to movement of construction vehicles with construction materials and equipment.

93. **Mitigation:** Proper Traffic Management Plan (TMP) should be prepared during detailed design stage and act accordingly during construction stage of the project. In this TMP, the road safety measures such as warning signs/lights, road safety signs, zebra crossing, flagman etc should be included to ensure uninterrupted traffic movement during construction. Traffic congestions should be minimized by adopting proper planning. Timing schedule for arrival of construction materials can be adjusted so that interruption with the public utilities will be minimal. The public must also be informed about the timing of the movement of the construction vehicles in order to minimize inconveniences.

8. Landscape

94. **Impact:** Construction activities especially excavation of foundation trench, stockpiling of construction materials, placing of construction equipment, parking of construction vehicles etc. will change the local landscape temporarily.

95. **Mitigation**: Stockpiling of construction materials, placing of equipment, parking of vehicles etc. should be done in systematic way to enhance the aesthetics of the site. Duration of stockpiling of construction materials should be minimized as much as possible.

9. Job Opportunities

96. **Impact:** At the peak of construction phase, it is likely to provide employment of minimum 50-60 personnel in various positions. The contractor will be responsible for creating these employment opportunities. Priority will need to be given to the local community for unskilled labor. This may result in an increase on household income. At the time of construction, business opportunity in this area will also be increased.

97. **Recommendation:** Based on the nature of job, adequate salary with other social benefits should be ensured for the men and women workers in time. In addition to adequate salary, equal pay for same type of work between men and women should also be provided.

10. Community Health and Safety

98. **Impact:** Improper health and safety (H&S) policy maintained at the site may lead to outbreak of different diseases to the surrounding communities through the sick construction workers. Storage of construction material and equipment in improper places may also cause inconveniences and hazards to local residents and people visiting the buildings nearby.

99. **Mitigation:** Proper TMP and health and safety should be prepared during design and take action accordingly during construction to avoid road accidents and health hazards of the surrounding project community. In addition, mitigation measures, such as health screening tests for the workers and proper designation and signage of restricted areas for general public to avoid accidents and injuries. All construction material and equipment must be kept at safe distances from existing residents and buildings with proper safety signage.

11. Occupational Health and Safety

100. **Impact:** Construction workers may face occupational health hazards such as minor or major injuries due to lack of general safety requirements and precautions applicable for such sites, malfunctioning equipment and careless use of equipment and vehicles. At the construction site, camp will be constructed for temporary accommodation for about 10-15 workers who will stay overnight. (Other workers will be from the local area and hence will not need to stay overnight at the project site) Poorly designed temporary camp and sanitation facilities may pose a health threat and nuisance to the workers. Uncontrolled vending of food and drinking water on the work site may also pose a risk with respect to the transmission of contagious diseases like typhoid, diarrhea, malaria, dengue and others. Construction workers will be required to handle hazardous materials such as cement, bitumen, paints, chemicals, and fuels therefore increasing health risks of workers.

101. **Mitigation:** A proper Occupational Health and Safety (H&S) Plan should be prepared and follow it to avoid health hazard of the workers. First Aid Box and Personnel Protective Equipment (PPE) such as ear plugs, helmets, hand gloves, safety shoes, goggles, raincoats (during rains) etc. are provided for the workers on construction site. The safety belts and harnesses must be worn by the workers, working at heights at all times and safe anchorage points provided. Plastic net should be provided surrounding the buildings. In case of major accident, transport should be made available to take the patient to the nearest hospital. Health and Safety Manager (H&SM) should be engaged for the construction period of the project. Workers operating the equipment and drivers driving the construction vehicles at construction site should be skilled. Proper H&S signboards and appropriate information to the local people about the construction activities should be provided.

12. Renewable energy option

102. **Impact:** Solar power is one of the best renewable energy options. It is the conversion of sunlight into electricity that may be used for supporting electricity demand of the building and for individual outdoor lights by adding some design and budget modifications.

103. **Benefit maximization measure.** Solar photovoltaic (PV) panels are to be installed in the office premises or at roof. It is a low cost sustainable solution to meet the electricity demand.

13. Rain Water Harvesting

104. **Impact:** Rainwater harvesting is a technique used for collecting, storing, and using rainwater for landscape irrigation and other domestic uses. Rainwater harvesting may contribute to the solution of water logging problem associated the heavy rainfall.

105. **Benefit maximization measure.** Rainwater harvesting systems can be installed with minimal skills. Installation of storage tanks at roof top is the easiest way of rain water harvesting. The water storage tank size should be large enough to contain the captured water and the system should be sized to meet the water demand throughout the dry season specifically, the rainfall capturing area such as a building roof must be large enough to maintain adequate flow.

D. During Operation Stage

106. Operational impacts continue during the life of the project after the completion of construction stage and these impacts are long lasting and, in some cases, permanent. Following sub-sections provide the following potential impacts along with mitigation measures.

2. Drainage Congestion

107. **Impact:** Drainage congestion may occur during operation period in surrounding the proposed building area if all the drains are not adequate in size and are not covered with provision of several adequate round holes (to facilitate cleaning) as well as not connected with the central drain properly.

108. **Mitigation:** The adequate sizes of drains with holes should be provided and connected with the central drain and maintained regularly so that solid wastes such as papers, tree leaves, food grains etc. cannot enter into the drain and create blockage.

3. Air and noise pollution including indoor air pollution

109. **Impact:** This building does not have any foreseen air pollution issues. However, during operation of generators and high capacity water pumps, sound pollution will be an issue. This impact is low in magnitude, local and long term in duration.

110. **Mitigation:** The GoN rules and regulations must be followed to reduce air pollution. Restriction should be imposed on the movement of the old vehicles, installation of generators openly. Generators will have silencer installed and will be kept inside a separate room.

4. Change in Water Table/ Water Quality

111. **Impact:** This office building will be using deep boring to fulfill its water demand. This, in long term will decrease water table of this area. In addition to this, increased built-up area will reduce the percolation of water into the ground. The decrease in percolation shall cause in the fall of water table level. Greenery area must be maintained to reduce this problem.

112. Mitigation:

- Rainwater harvesting technology will be applied to reduce the ground water depletion.
- Rechargeable pits will be constructed to recharge ground water.

- Excessive water will not be extracted.
- Permission will be taken from the Underground Water Development Board to install deep boring

5. Water Demand and Supply

113. **Impact:** The whole building shall be supplied water from the deep tube well boring which will be only constructed after getting the permission through KUKL. A filter plant shall also be installed. This will be sufficient for water demand of the building.

114. Mitigation:

- Only required quantity of water will be extracted by deep boring
- Deep boring water will be treated to meet Nepal's Drinking Water Quality Standard

6. Pressure on public utilities (water supply, electricity, telephone etc.)

115. **Impact:** During operation phase, the building will require water, electricity and telephone facilities. Water demand will be fulfilled through the municipal water supply system and also from underground resources therefore, it will not put any pressure on municipal drinking water supply chain. However, electricity and telephone connections will be connected from Nepal Electricity Authority (NEA) and local telecom companies. This will not impose any significant pressure on local supply chains.

116. **Mitigation:** No significant impact detected therefore no mitigation measures is suggested.

7. Uninterrupted and efficient power supply

117. **Impact:** This building will have 24 hours supply of power. The building will take electricity power from the NEA supply by installing a high capacity transformer to receive HT power and convert it into LT power, but will also be equipped with standby generator to be used during the intervals of power interruption for a long period.

118. Mitigation:

- 24 hours electricity supply will be provided
- Generator backup in case of power cut

8. Movement of vehicles and parking

119. **Impact:** This building will have regular traffic flow during office hour. This will create traffic congestion in the entrance and exit points to and from the building. As the sideway section road is already congested, this access point will add to congestion in the area. This impact will be of medium significance, local and long term in duration. Pressure is more on office time i.e. 10 am-5pm.

120. **Mitigation**:

- Roadside & haphazard parking will not be allowed
- Traffic signs will be placed inside and around the area.
- Separate entrance and exit outlets for vehicles will be constructed

9. Surface Runoff and Drainage systems

121. **Impact:** Lack of proper drainage of storm water shall cause pounding of water resulting vector diseases in the area. Rainwater could be managed by using domestically or by recharging ground water. Then excess water needs to drain out through the existing municipal drain.

122. **Mitigation:** Rainwater harvesting technology with recharge pits will be installed to recharge ground water

10. Solid Waste Management

123. **Impact:** The forms of solid wastes would be biodegradable and non-degradable which will be generated from the proposal implementation. The degradable solid waste may spread different types of diseases if allowed to decay at the open space for a long time. The collected waste will be finally disposed in the Municipal waste disposal system only the waste which cannot be reused or recycled. The reusable and recyclable waste from the office building shall be encouraged to sell to the local scrapers.

124. **Mitigation**:

- Both bio-degradable and non-bio-degradable will be segregated. 3R principle will be followed for the management of the solid waste.
- Waste segregation and disposal mechanism will be established by providing different colored dustbins marking degradable and non-degradable waste
- Recyclable solid waste will be sold
- Non -degradable waste will be recycled to some extent.
- Coordinate with KMC authority for final disposal of solid waste
- Keep required number of container inside the premises.

11. Landscaping

125. **Impact:** A landscape is a subjective concept that cannot be precisely quantified. However, any project designed without considering the local landscape would create visual intrusion to the people. The proposed project has minimal amount of vegetation to be affected due to the construction. A significant net positive effect is possible with the design of the building and its surroundings to accommodate both the School building itself and a net increase in green cover on the site.

126. **Benefit maximization measure.** Plantation of trees around the office building i.e. grass and shrubs would provide increased habitat for birds and small mammals and enhance the visual aesthetics of the current land.

12. Renewable energy option

127. **Impact:** Solar power is one of the best renewable energy options. It is the conversion of sunlight into electricity that may be used for supporting electricity demand of the building and for individual outdoor lights by adding some design and budget modifications.

128. **Benefit maximization measure.** Solar photovoltaic (PV) panels are to be installed in the office premises or at roof. Regular maintenance of the system will be done.

129. **Mitigation:** The PV cells that will be installed in the office premises or at the roof is expected to have a life expectancy of at least 25 years. In case the cells are damaged or needs to be replaced, rare earth materials can be recovered which commands higher market value rather than just dumping. Also, an emergency response committee, which will be part of the overall emergency response system for the building, will be formed to address any emergency cases such as earthquake.

13. Rain Water Harvesting

130. **Impact:** Rainwater harvesting is a technique used for collecting, storing, and using rainwater for landscape irrigation and other domestic uses. Rainwater harvesting may contribute to the solution of water logging problem associated the heavy rainfall.

131. **Benefit maximization measure.** Rainwater harvesting system will be used with regular maintenance of its components to keep it functioning well. Proper operation and maintenance of rainwater harvesting system helps to protect water quality in several ways. Regular inspection and cleaning of catchment, gutters, filters and tanks reduce the likelihood of contamination.

VI. PUBLIC CONSULTATION AND INFORMATION DISCLOSURE

A. Consultation and Information Disclosure

132. During IEE report preparation consultation meeting was organized at ward office of affected ward i.e. ward no 5 of Kathmandu Metropolitan City on 20 May 2018. The program was facilitated by the Environmental and Social specialist of PD (ADB)/DOR and Design Consultant in presence of Chief of ward, engineer, ward member, locals and representatives from project directorate. A total of 11 people (2 women and 9 men) attended the meeting. Information about the building design, and environmental considerations were shared in the meeting. The participant put their concerns and suggested to build the building with modern facilities with gender and disable friendly facilities. The meeting also suggested to reduce disturbances to the local community due to movement of construction materials, equipment and machinery, waste disposal, noise, dust pollution etc. needs to be paid proper attention and if construction performed at night time.

133. Major concerns raised and discussed in the meeting were:

- Appreciated description of the proposed PD-building by the participants
- Suggested to construct the building in environment, women and disabled people friendly manner
- Suggested to maintain coordination with the ward office at different stages of construction
- Suggested to minimize direct influence of noise, dust, silt and other construction associated hindrance to the local people

134. Draft IEE report of the building will be disclosed on the ADB website. It will also be disclosed on DoR's website for public information and suggestions. During construction PD-ADB through its consultant will prepare annual environmental monitoring reports and provide to ADB for disclosure on their website. The environmental monitoring reports will also be provided to MoPIT to demonstrate implementation of the required environment safeguard measures.

VII. GRIEVANCE REDRESS MECHANISM

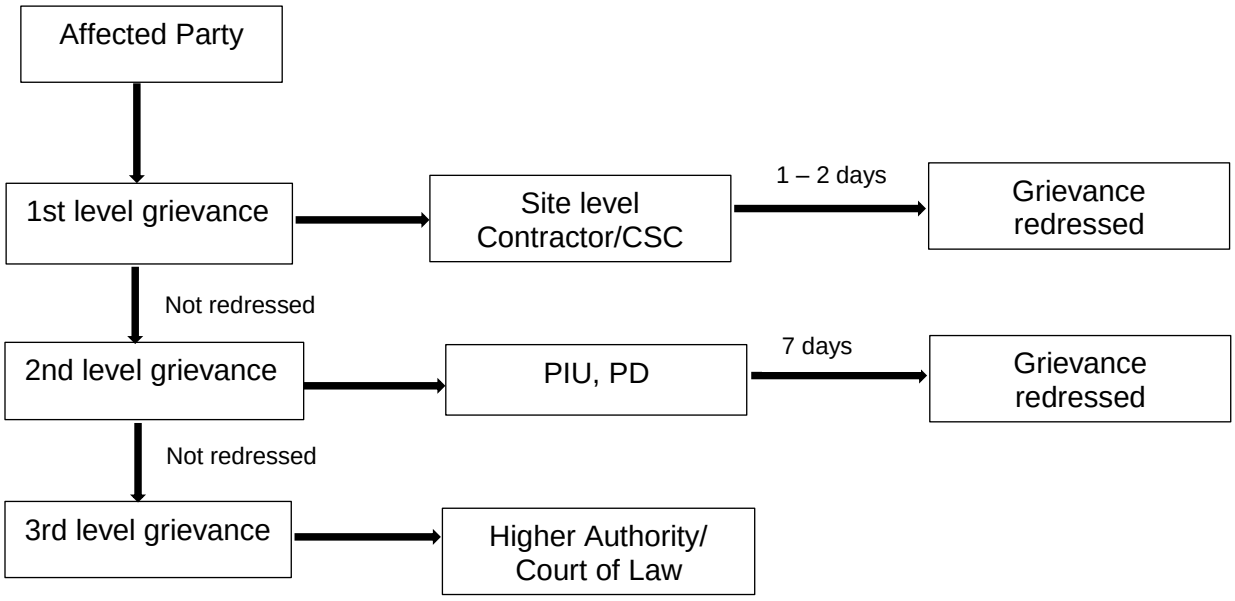
135. A Grievance Redress Mechanism (GRM) will be established to receive, evaluate, and facilitate the resolution of affected people's concerns, complaints, and grievances about the construction of the new building of PD-ADB. During the building construction period, grievances of individual/institutions will be addressed.

136. **First level:** The first level and most accessible and immediate contact for the fastest resolution of grievances are the contractors, and supervision consultants on site. Prior to construction of any works, the PIU (PD-ADB) or its representative will ensure local community to inform them of the Project. If any complaints arise, the contractors, consultants can immediately resolve the complaint on site. Any person with a grievance related to the project works can contact the project to file a complaint. The PIU office will have a safeguards focal person to field and resolve complaints. The safeguards (environment and resettlement) focus person of contractor will document the complaint, and immediately address and resolve the issue within 1-2 days. If the complaint remains unresolved at the field level. The contractor may seek the assistance of the consultant safeguards specialists (the environmental specialist or social safeguards specialist) to resolve the issue. The safeguards focal person that a complaint was received, and whether it was resolved. The safeguards focal person will fully document the following information: (i) name of the person; (ii) date complaint was received; (iii) nature of complaint; (iv) location, and (v) how the complaint was resolved.

137. **Second level.** If the grievance remains unresolved the specialist of CSC will forward the complaint to the PIU safeguards focal person. The person filing the grievance will be notified by DOR site Project Office safeguards focal person that the grievance was forwarded to the PIU safeguards focal person. The PIU will address the grievance. Grievances will be resolved through continuous interactions with affected persons, and the PIU will answer queries and resolve grievances regarding various issues including environmental or social impacts. Corrective measures will be undertaken at the field level by the PIU safeguards focal person within 7 days. He/she will fully document the following information: (i) name of the person; (ii) date complaint was received; (iii) nature of complaint; (iv) location and (v) how the complaint was resolved

138. **Third level**. In the event that a grievance is not addressed by the contractor, CSC, PIU the affected person can seek legal redress of the grievance in the appropriate courts, the fourth level of the GRM, which is the formal legal court system. The GRM however does not prevent affected persons from seeking legal redress at any time. Figure 6 provided below shows the arrangement of resolving different level of Grievance recorded during project implementation.

Figure 11: Grievances Resolution Steps and Processes



Note: PD-Project Director, CSC-Construction supervision consultant, PIU= project implementation unit

VIII. ENVIRONMENTAL MANAGEMENT PLAN

A. Environmental Management Plan

139. The Environmental Management Plan (EMP) is prepared to facilitate effective implementation of recommended mitigations measures with defined roles and responsibility for implementation and monitoring, regulatory compliance requirements, stages of implementation with location, timeframe and costs. The mitigation measures are proposed to eliminate or minimize the identified impact associated with design, construction and operation stages of the project, to acceptable level by adopting the most feasible options.

140. The identified impacts are insignificant and are related to clearing operations of site, setting and operation of construction site, materials sourcing, transportation of materials, air and noise pollution due to construction activities and operation of construction equipment, tree cutting, and shifting of utilities. Appropriate mitigation measures are identified for all construction and operation activities. An Environmental Management Plan (EMP) is given at table 7. The EMP is an integral part of the tender document for the project which shall be available to contractor at the time of bidding.

B. Environmental Monitoring Plan

141. The environmental monitoring program is prepared with the aim to monitor the environmental performance of environmental management plan. The EMoP is planned with the focus on following objectives:

- To assess the effectiveness of mitigation measures proposed
- To assess the change in environmental quality during construction and operation stage with respect to before the project scenario.
- To assess compliance to regulatory requirements
- To monitor the status of corrective action taken in case of deviation from the planned measures or regulatory requirements.

142. The environmental monitoring plan is envisaged to be done once for the identified indicators at following stages of the project:

- During Design and Pre-Construction Stage
- During early Construction Stage (Before 25% progress of Physical works)
- During substantial completion Stage (after 75% progress of Physical works)
- After 1st year of operation

143. The PIU with support of the CSC will be responsible for carrying out the environmental monitoring at the project location. A monitoring plan with monitoring indicator and frequency of monitoring is given at table 8.

Table 7: Environmental Management Plan – PD Office Building

Environmental Impact	Mitigation Measures	Mitigation Cost (NRs.)	Institutional Responsibility	
			Implementation	Monitoring/ Supervision
DETAILED DESIGN AND PRE-CONSTRUCTION STAGE				
Improper design	• All project facilities are to be designed in accordance with the planning and design norms of NNBC. • Earthquake risk should be considered in the structural design of the PD-ADB office building.	Design cost	DSC	PD-ADB
Lack of environmental specifications	• Prepare relevant environmental sections in the tender documents for bidders and include the EMP in the bidding documents • Prepare a bid evaluations section for environment, according to ADB bid evaluation format • Prepare environmental contract clauses for contractors	Design cost	DSC	PD-ADB
Removal of Existing structures	All concrete structures/equipment in the proposed PD-ADB office building area to be dismantled and managed before construction starts.	Construction cost	PD-ADB	PD-ADB
Tree cutting	• Existing trees are located at the periphery of the site. Hence, cutting of trees should be avoided to the extent possible. • If required to be felled, necessary permission should be processed as per GON requirements. • Every tree felled should be compensated at the rate of 1:25. • Cutting, carry out and selling these trees should be as per GoN procedure to avoid any accident.	Construction cost	PD-ADB	PD-ADB
CONSTRUCTION STAGE				
Air, Noise and Dust Pollution during the demolition of existing building	• Prior information shall be given to the adjacent offices regarding the demolishing process, scheduling of the activities etc. • Water spraying at the demolition site • Fencing / Install barriers (GI sheets, geo-net) to shield from dust and aggregates • Avoid usage of machines/equipment with extra noise; • Carry out demolition activities in stages, give adequate notice and information of activities to the adjoining stakeholders	Construction	Contractor	CSC
Drainage Congestion	• Temporary drainage congestion (TDC) in the foundation trench due to rainwater to be removed by pumping. Avoid monsoon period for foundation works. • TDC in construction yard and camp of the proposed building area to be removed by temporary earth or RCC drains.	Construction	Contractor	CSC

Environmental Impact	Mitigation Measures	Mitigation Cost (NRs.)	Institutional Responsibility	
			Implementation	Monitoring/ Supervision
	• All rainwater, storm water waste water etc. should be drain out via central sewerage pipelines.			
Air Pollution	• Fit construction vehicles with appropriate exhaust systems and emission control devices. • Maintain construction vehicles and equipment in good working condition including regular servicing. • Cover hauls vehicles carrying dusty materials moving outside the construction site. • Equipment/vehicles causing excess pollution (e.g. visible smoke) should be banned from construction sites or fixed immediately prior to further usage. • Water spray to the material stockpiles as and when required to minimize the potential environmental nuisance due to dust. • Increase the watering frequency during periods of high risk (e.g. high winds and dry periods). Stored materials such as boulders and sand should be covered and confined to avoid them being wind-drifted. • Erect dust barriers along the boundary of the building area to reduce dust movement to the surrounding areas. • Restore disturbed areas as soon as possible by vegetation/grass-turfing. • Establish adequate locations for storage, mixing and loading of construction materials, in a way that dust dispersion is prevented because of such operations.	Construction	Contractor	CSC
Sewage Pollution/ Sanitation Hazard	• Provide hygienic sanitary facilities and sewerage system. The toilets and domestic waste water will be collected through a common sewerage. Provide separate latrines and bathing places for males and females workers with total isolation by wall or by location. The minimum number of toilet facilities required is one toilet for every ten persons. • Ensure the sanitary facilities are kept clean and without any odour. • Educate the workers of using the facilities.	Construction	Contractor	CSC
Solid Waste Pollution	• Organize disposal of all wastes generated during construction in an environmentally acceptable manner. • Minimize the production of waste materials by 3R (Reduce, Recycle and Reuse) approach. • Segregate and reuse or recycle all the wastes, as far as practical. • Prohibit burning of solid waste. • Provide refuse containers at worksite and worker camp.	Construction	Contractor	CSC

Environmental Impact	Mitigation Measures	Mitigation Cost (NRs.)	Institutional Responsibility	
			Implementation	Monitoring/ Supervision
	• Maintain the construction site in a cleaner, tidy and safe condition and provide and maintain appropriate facilities as temporary storage of all wastes. • Ensure proper collection and disposal of all wastes within the construction camp from where the municipal services will take by their truck and dispose at their dumping area. Insist on waste separation and store by source; organic wastes, inorganic wastes and recyclables in separate containers.			
Liquid waste	• Train the relevant construction personnel in handling of fuels and spill control procedures. • Make sure all containers and drums that are used for storage are in good condition and are labelled with expiry date. • Any container, drum that is dented, cracked, or rusted might eventually leak. Check for leakage regularly to identify potential problems before they occur. • Put containers and drums in permanent storage areas on an impermeable floor. • Take all precautionary measures when handling and storing fuels and lubricants, avoiding environmental pollution. • Ensure basic firefighting equipment is in place outside these storage areas in case of a fire.	Construction	Contractor	CSC
Occupational Health and Safety issue	• Awareness to safe work procedure • Use of safety equipment as helmet, gloves, boots, mask, earplugs net safety belt etc • Awareness to communicable diseases • Keep First aid box at site • Temporary toilet and bathroom will be made • No one outsider will be allowed to enter the construction zone	200,000.00	Contractor	PIU, CSC
Stockpiling of construction materials	• Haphazard disposal will be controlled • Construction materials, grease, paints will be properly arranged • Residual construction materials will be reused for other purpose		Contractor	CSC
Disturbance to the local Population and pedestrians	• The transportation vehicles will be parked within the premises of PD-ADB • Prohibit the parking of the transportation vehicles outside the construction site • Put hoarding board to inform the pedestrian and adjacent offices about the activities • Install barriers (GI sheets, geo-net) to shield from dust and aggregates	Contractor's BOQ	Contractor	PIU, CSC

Environmental Impact	Mitigation Measures	Mitigation Cost (NRs.)	Institutional Responsibility	
			Implementation	Monitoring/ Supervision
	• Provide adequate lighting at demolition site for the night to prevent accident			
Site selection for the disposal of waste and debris	• The disposal area will be selected with the consultation of Municipality authority • The disposal area will not be the environmentally sensitive area • The disposal area will be far from the water source and community area	Contractor's BOQ	Contractor	PIU, CSC
Camp site restoration	• Camp site to be restored to its original condition as per the rehabilitation plan • Restoration of top soil • Disposal at waste at designated locations • Cleaning of water channels • Removal of debris and disposal	Contractor's BOQ	Contractor	PIU, CSC
Operation & maintenance phase				
Change in Water Table/ Water Quality	• Rainwater harvesting technology will be • Rechargeable pits will be constructed to recharge ground water	Part of agency budget	PD-ADB	PD-ADB
Water Demand / Supply & Waste water Disposal	• Treated Water will be of Nepal's National standard • Only insufficient water will be extracted	Part of agency budget	PD-ADB	PD-ADB
Fire hazard and other emergency response system	• Smoke detection devices will be installed • Earthen and Electrification will be properly done • Fire extinguisher will be installed • Emergency reservoir tank will be made • National Building Code, 2005 will be followed	Part of agency budget	PD-ADB	PD-ADB
Movement of vehicles and parking	• Haphazard parking will not be allowed • Traffic signs will be placed • Speed limit of vehicle inside business complex will be maintained	Part of agency budget	PD-ADB	
Surface runoff and drainage systems	• Rechargeable pits will be installed • Greenery area will be maintained	Part of agency budget	PD-ADB	PD-ADB
Loss of open space and vegetation	Development of greenery area through landscaping and regular maintenance	Part of agency budget	PD-ADB	PD-ADB

Table 8: Environmental Monitoring Plan

Project Phase	Mitigation	Compliance Inspection Activities	Location	Frequency	Responsibility	Budget
Pre-construction	Update EMP based on the detailed design	Submission by the contractor and approval by the DOR site Project Office	PIU-Office	At least 30 days prior to commencement of work	Contractor and CSC	Part of construction cost
	Water supply arrangement, disposal for debris, ground staking of construction site	Clearances, permits, approvals to be submitted prior to construction	Posted onsite	Prior to commencement of construction	Contractor and CSC	Part of construction cost
Construction	Transportation arrangement, ground staking of temporary storage areas including signages	Submission of transport routes, on-site inspection of storage areas	On-site	Monthly during the construction phase	Contractor and CSC	Part of construction cost
	Stripping and storage of 150 mm topsoil	Site inspection of stripped and stored materials	On-site	During site clearing and excavation	Contractor and CSC	Part of construction cost
	Installation of proper fuel and lubricant storage area	Site inspection	On-site	Within 30 days after commencement of civil works	Contractor and CSC	Part of construction cost
	Installation of silt fence or interceptor drains around the project site to control silted runoff from flowing out	Site inspection	On-site	Within 30 days after civil works or 15 days before the on-set of monsoon	Contractor and CSC	Part of construction cost
	Dust and air pollution control – regular sprinkling of all exposed soils including storage piles	Visual inspection of dust, dust settlement on surrounding structures and vegetation, complaints. Measurement of SPM, PM_{10}, $PM_{2.5}$	On-site	Daily Twice a year during dry season	Contractor and CSC Measurement to be done by CSC	Part of construction cost
	Noise control –	Spot noise monitoring using	On-site and surround	Daily during when noise	Contractor and CSC	Part of

Project Phase	Mitigation	Compliance Inspection Activities	Location	Frequency	Responsibility	Budget
	consultation with the surrounding communities/offices in the schedule of works that will generate noise, provision of noise buffers around noise generating equipment and activities	applicable cell phone apps or noise monitoring equipment on sensitive areas. Complaints. Regular consultations with surrounding communities/offices.	community	generating activities or when equipment is operating	Noise measurement to be done daily by contractor	construction cost
	Occupational health and safety, materials handling, HIV/AIDs awareness	Spot and periodic inspection. Linkage with state health programs	On-site	Spot and weekly	CSC	Part of construction and DOR site Project Office monitoring contract
	Proper disposal and solid and liquid waste. Recycling and reuse of materials	Spot checking and periodic inspection	On-site	Spot and monthly	Contractor and DOR site Project Office	
Operation	Energy efficiency in building operation, waste minimization, recycling and reuse. Environment Friendly maintenance of air conditioners.	Energy and waste audits	On-site	Annual	PIU	Part of annual operating budget

C. Institutional Setting and Proposed Implementation Arrangement

1. Project Management

144. Both the EA and the IA have extensive experience in implementing ADB-financed road projects. The Project Directorate (ADB), established in 1987, will be maintained within DoR and serve as the Project Implementation Unit (PIU). The Project Director will have overall responsibility for all aspects of project implementation and management including procurement, contract administration, progress monitoring, financial management, reporting, land acquisition and resettlement. Implementation Arrangement (IA) has to be ensured for EMP implementation and for conducting meaningful environmental monitoring. Well defined roles and responsibilities and adequate institutional arrangements are crucial for effective implementation of the environmental safeguard measures outlined in Tables 7 and 8.

145. The Environment focal person of the Contractor will be responsible for implementation of the EMP during construction works and Construction Supervision Consultant (CSC) will be primarily responsible for supervision, and monitoring of the implementation of the EMP. The EMP and MoP specify the name of the organizations responsible for implementation and supervision of mitigation and monitoring activities**.** The contractor will be recommended to have one Environment, Occupational Health and Safety (EOH&S) Manager, who will closely work with the environmental staff of DSC and PD-ADB.

2. Supervision Consultant

146. The PD-ADB currently as design consultants on board who will assist them with the detailed design of the building. Further the PD-ADB will hire Construction Supervision Consultant (CSC) under the SHIP project to supervise the construction of civil works, and also make arrangement of supervision and monitoring of EMP implementation through environment specialist. The Environmental specialist, in coordination with PIU, will ensure the implementation of environmental management and monitoring plan at each stage of the project.

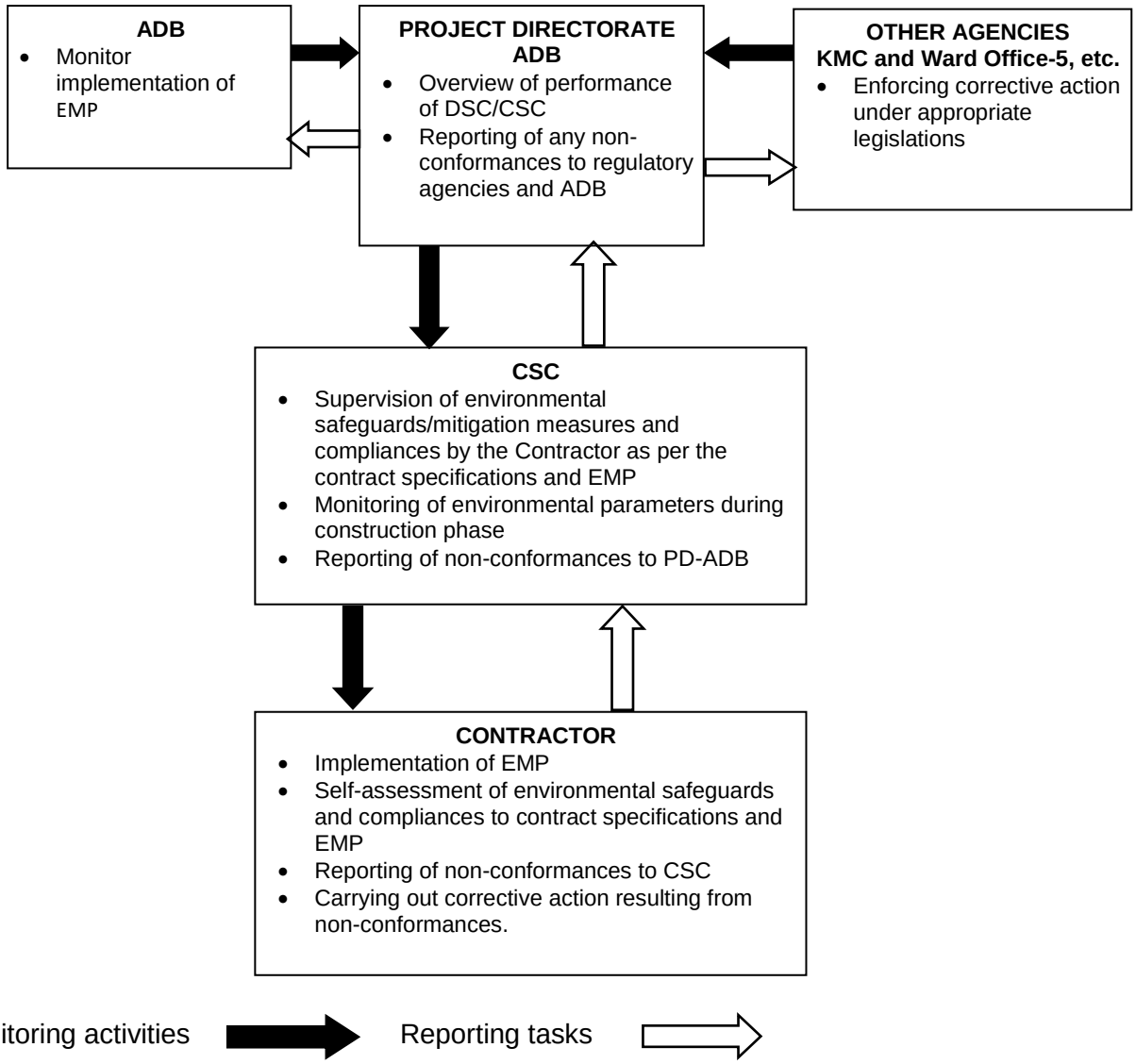
147. The main tasks of the Environmental Expert will include, but not limited to, the following:

- Oversee implementation of the EMP of the project;
- Evaluation of construction related environmental impacts and modifications of the EMP as necessary for adaptation/changes during the project implementation; and
- Preparation of periodic progress reports, QPR and ESMR and submit to PD(ADB)/DoR and ADB.

3. Project Organization

148. The overall organization structure of the project is shown in the succeeding Figure 12. MoPIT will be the Executing Agency (EA) and DoR will be the Implementing Agency (IA) for the project. More specifically, the Project Directorate (ADB) PIU under DoR will be the key institution for the successful implementation of the project and ensure compliance to ADB safeguards as contemplated in the environmental management and monitoring plans.

Figure 12: EMP Implementation Organogram



D. Estimated Environmental Cost

149. The costs of the monitoring and mitigation will comprise: air, water, noise quality monitoring through sample collection, measurement and laboratory analysis. The total cost for implementation of the EMP and monitoring has been estimated as about USD 2,000 during construction phase.

IX. CONCLUSION AND RECOMMENDATIONS

A. Conclusions

150. The findings of Environment Assessment of Project Directorate-ADB office building indicates that impacts are unlikely to cause any significant environmental impacts. Most of the impacts are likely to occur during construction stage, are temporary in nature, and can be mitigated with minor to negligible residual impacts. Operation phase impacts are related to proper sanitation system and waste disposal.

151. The sites/designs were selected based on availability of government land in the urban centre on existing office premises to avoid private land acquisition and related resettlement issues, and environmental concerns relating to sensitive habitats. Accordingly, the proposed building site is not near protected or sensitive areas or of any historical or archeologically protected areas. Similarly, there is no need for cutting trees as the siting of the building has been done to avoid it.

152. Considering the proposed site is not environmentally sensitive and the scale and scope of work are limited, the project is categorized as category B as per ADB Safeguard Policy Statement 2009. No categorization is made under environmental legislation of Nepal, since these small areas do not require any environmental clearance in accordance to Environment Protection Act, 1997 and Environment Protection Rules, 1997 amended till date.

153. The impacts identified are mostly related to demolition of existing building, land clearing, shifting of utilities, establishment of construction camp or material storage areas, occupational health and safety, dust and noise as the site is located in an institutional or commercial zoned area, disruption of utilities, generation of construction debris, and transportation of materials. All identified impacts are either eliminated or minimized through design consideration and suitable mitigation measures.

154. The EMP including monitoring plan has been formulated to eliminate or reduce the above mentioned negative impacts and enhance the positive impacts during pre-construction, construction and operation stages of the PD-ADB Office Building. The EMP including MP has been formulated to eliminate or reduce the above mentioned negative impacts and enhance the positive impacts during pre-construction, construction and operation stages of the PD-ADB Office Building. Total budget for implementation of EMP is approximately USD 2,000.

B. Recommendations

155. Based on the findings of this study, the following items are recommended:

- Nepal National Building Code (NNBC) planning and norms should be followed strictly during planning, design, construction and operation of PD-ADB Office Building;
- Solar panel installation on the roof top of the PD-ADB Office Building can be done for environmentally friendly power;
- Rainwater harvesting and groundwater recharge provision shall be included in the building design features
- Ensure that the proposed mitigation measures including occupational and community H&S will be included in the contract document and implement accordingly.

- With incorporation of the updated baseline data, the EMP will need to be updated during detailed design of the PD-ADB Office Building.

156. Considering that this project is not under any category under GoN and category B under ADB SPS, this IEE is sufficient as the environmental assessment for this project. Other than updating the EMP during detailed design, no further detailed studies are required.

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APPENDIX 1: RAPID ENVIRONMENTAL ASSESSMENT (REA) CHECKLIST

Country/ Project Title : NEP: PD-ADB Office Building

Sector Division : Department of Roads (DoR/ ADB)

SCREENING QUESTIONS	YES	NO	REMARKS
A. Project Siting: Is the project area adjacent to or within any of the following areas?			
• Underground Utilities		√	
• Densely populated?	√		
• Heavy with development activities?	√		
• Adjacent to or within any environmentally sensitive areas?		√	
• Cultural heritage site		√	
• Protected Area		√	
• Wetland		√	
• Buffer zone of protected area		√	
• Special area for protecting biodiversity		√	
B. Potential Environmental Impacts Will the Project cause…			
• Encroachment on historical/cultural areas?		√	
• Encroachment on precious ecology (e.g. sensitive or protected areas)?		√	
• impacts on the sustainability of associated sanitation and solid waste disposal systems.		√	
• dislocation or involuntary resettlement of people		√	
• degradation of land and ecosystems (e.g. loss of wetlands and wild lands, coastal zones, watersheds and forests)?		√	
• Disproportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable groups?		√	
• Accident risks associated with increased vehicular traffic, leading to loss of life?		√	
• degradation of cultural property, and loss of cultural heritage and tourism revenues?		√	
• water resource problems (e.g. depletion/ degradation of available water supply, deterioration for surface and ground water quality , and pollution of receiving waters?		√	
• Increased noise and air pollution resulting from increased traffic volume?		√	Deterioration in ambient air quality will be localized and temporarily during the construction phase. Mitigation measures are: • Sprinkling water during construction activities • Covering construction materials and • Managing demolition wastes

SCREENING QUESTIONS	YES	NO	REMARKS
• Occupational and community health and safety risks?	√		During the project construction safety risk may arise. However, by adopting the mitigation measures proposed in the EMP, it shall be mitigated
• social conflicts between construction workers from other areas and local workers?		√	Most of the workers will be hired for work and will not stay at construction site after work
• road blocking and temporary flooding due to land excavation during rainy season?		√	
• noise and dust from construction activities?	√		
• traffic disturbances due to construction material transport and wastes?		√	May cause traffic disturbance in traffic if operated at day time hence, movement of loaded vehicle will be done in night time
• temporary silt runoff due to construction?		√	May result siltation if construction performed at monsoon, hence land levelling and construction of foundation will be done before/after monsoon. Furthermore, release of drain directly to the sewer will be prohibited during construction
• hazards to public health due to ambient, household and occupational pollution, thermal inversion, and smog formation?		√	
• water depletion and/or degradation?		√	
• overpaying of ground water, leading to land subsidence, lowered ground water table, and salinization?		√	Provision of ground water recharge and rainwater harvest/utilization will be made
• contamination of surface and ground waters due to improper waste disposal?		√	
• Community safety risks due to both accidental and natural hazards, especially where the structural elements or components of the project are accessible to members of the affected community or where their failure could result in injury to the community throughout project construction, operation and decommissioning?		√	The project area is protected by compound wall from the direct access of the public.
Based on the above assessment the project may be categorized as "B" as per SPS, 2009.			

The following questions are not for environmental categorization. They are included in this checklist to help identify potential Climate and Disaster risks.

Screening Questions		Score	Remarks[1]
Location and Design of project	Is siting and/or routing of the project (or its components) likely to be affected by climate conditions including extreme weather-related events such as floods, droughts, storms, landslides?	0	The project site is at low from landslides and flooding.

Screening Questions		Score	Remarks[1]
	Would the project design need to consider any hydro-meteorological parameters level, (e.g., sea-peak river flow, reliable water level, peak wind speed etc)?	1	The project site has a low risk for flooding.
Materials and Maintenance	Would weather, current and likely future climate conditions (e.g. prevailing humidity level, temperature contrast between hot summer days and cold winter days, exposure to wind and humidity hydro-meteorological parameters) affect the selection of project inputs over the life of project outputs (e.g. construction material)?	0	The increase in temperature, precipitation, and flooding will not likely affect the selection of construction materials.
	Would weather, current and likely future climate conditions, and related extreme events likely affect the maintenance (scheduling and cost) of project output(s)?	1	Increased precipitation in future may require more maintenance works of the project road to ensure they are usable particularly during incidents of heavy rain and flash floods
Performance of project outputs	Would weather/climate conditions, and related extreme events likely affect the performance (e.g. annual power production) of project output(s) (e.g. hydro-power generation facilities) throughout their design life time?	0	The design life of the project, particularly the approach roads will be shortened if the required maintenance works are not undertaken.

Options for answers and corresponding score are provided below:

Response	Score
Not Likely	0
Likely	1
Very Likely	2

Responses when added that provide a score of 0 will be considered low risk project. If adding all responses will result to a score of 1-4 and that no score of 2 was given to any single response, the project will be assigned a medium risk category. A total score of 5 or more (which include providing a score of 1 in all responses) or a 2 in any single response will be categorized as high-risk project.

Result of Initial Screening (Low, Medium, High): **MEDIUM**
Other Comments:_____
Prepared by**:**

[1] If possible, provide details on the sensitivity of project components to climate conditions, such as how climate parameters are considered in design standards for infrastructure components, how changes in key climate parameters and sea level might affect the siting/routing of project, the selection of construction material and/or scheduling, performances and/or the maintenance cost/scheduling of project outputs.

APPENDIX 2: AMBIENT NOISE LEVEL LIMITS (in Leq dB (A), Nepal)

Environmental Setting	Typical Range of Ldn, dBA	Average Ldn, dBA
High Traffic Area	64-86	74.36
Old Residential Area	59-73	66.28
New Residential Area	48-69	62.00
Commercial Cum Residential Area	69-75	72.75
Commercial Cum Tourist Area	59-76	69.25

Source: Nepal Health Research Council, 2003

Guideline values for community noise in specific environments

Specific Environment	Critical health effect(s)	LAeq [dB]	Time base [hours]	LAmax fast [dB]
Outdoor living area	Serious annoyance, daytime and evening	55	16	-
	Moderate annoyance, daytime and evening	50	16	-
Dwelling, indoors	Speech intelligibility and moderate	35	16	
	annoyance, daytime and evening			
Inside bedrooms	Sleep disturbance, night-time	30	8	45
Outside bedrooms	Sleep disturbance, window open (outdoor	45	8	60
	values)			
School class rooms	Speech intelligibility, disturbance of	35	during	-
and pre-schools, indoors	information extraction, message communication		class	
Pre-school	Sleep disturbance	30	sleeping	45
Bedrooms, indoors			-time	
School, playground	Annoyance (external source)	55	during	-
outdoor			play	
Hospital, ward	Sleep disturbance, night-time	30	8	40
rooms, indoors	Sleep disturbance, daytime and evenings	30	16	-
Hospitals, treatment	Interference with rest and recovery	#1		
rooms, indoors				
Industrial,	Hearing impairment	70	24	110
commercial,				
shopping and traffic				
areas, indoors and				
Outdoors				
Ceremonies, festivals	Hearing impairment (patrons:<5 times/year)	100	4	110
and entertainment				
events				
Public addresses,	Hearing impairment	85	1	110
indoors and outdoors				
Music through	Hearing impairment (free-field value)	85 #4	1	110
headphones/				
Earphones				
Impulse sounds from	Hearing impairment (adults)	-	-	140 #2
toys, fireworks and				
firearms	Hearing impairment (children)	-	-	120 #2
Outdoors in parkland	Disruption of tranquility	#3		
and conservation areas				

Source: WHO, 1999

APPENDIX 3: NATIONAL AMBIENT AIR QUALITY STANDARDS (NAAQS) FOR NEPAL

Parameters	Units	Averaging Time	WHO Guideline	Concentration in Ambient Air, maximum	Test Method
TSP (Total Suspended Particulates)	µg/m^3	Annual	120-230	-	HVS 24-hour sampling (one week sample on 2 road side station
		24-hours*		230	
PM10	µg/m^3	Annual	70	-	Light Volume Sampling
		24-hours*		120	
Sulphur Dioxide	µg/m^3	Annual	125	50	Diffusive sampling based on weekly average
		24-hours**		70	
Nitrogen Dioxide	µg/m^3	Annual	150	40	Diffusive sampling based on weekly average
		24-hours**		80	
Carbon Monoxide	µg/m^3	8 hours**	100000	10,000	To be determined before 2005
		15 minutes		100,000	Indicative sampler
Lead	µg/m^3	Annual	0.5-1.0*	0.5	Atomic absorption spectrometry analysis of PM_{10} samples
		24-hours		-	
Benzene	µg/m^3	Annual	-	20****	Diffusive sampling based on weekly average
		24-hours		-	

Source: Nepal Gazette B.S. 2060/4/19 (4 August, 2003)

Notes:

*24 hourly values shall be met 95% of the time in a year. 18 days per calendar year the standard may be exceeded but not on two consecutive days,

**24 hourly standards for NO_2 and SO_2 and 8 hours standard for CO are not to be controlled before MOPE has recommended appropriate test methodologies. This will be done before 2005,

***If representativeness can be proven, yearly averages can be calculated from PM_{10} samples from selected weekdays from each month of the Year,

****To be re-evaluated by 2005.

APPENDIX 4: NEPAL'S DRINKING WATER QUALITY STANDARDS & WATER QUALITY FOR IRRIGATION

Group	Parameter	Unit	Maximum Concentration Limits
	Turbidity	NTU	5 (10)**
	pH		6.5-8.5*
	Color	TCU	5 (15)**
	Taste & Odor		Would not be objectionable
	Total Dissolved Solids	mg/l	1000
	Electrical Conductivity	µc/cm	1500
	Iron	mg/l	0.3 (3)**
Physical	Manganese	mg/l	0.2
	Arsenic	mg/l	0.05
	Cadmium	mg/l	0.003
	Chromium	mg/l	0.05
	Cyanide	mg/l	0.07
	Fluoride	mg/l	0.5-1.5*
	Lead	mg/l	0.01
	Ammonia	mg/l	1.5
	Chloride	mg/l	250
	Sulphate	mg/l	250
	Nitrate	mg/l	50
	Copper	mg/l	1
Chemical	Total Hardness	mg/l	500
	Calcium	mg/l	200
	Zinc	mg/l	3
	Mercury	mg/l	0.001
	Aluminum	mg/l	0.2
	Residual Chlorine	mg/l	0.1-0.2*
Micro Germs	E-Coli	MPN/100ml	0
	Total Coli form	MPN/100ml	95 % in sample

Source: Ministry of Physical Planning and Works (Nepal Gazette (B.S. 2063/03/12)

Notes:

* These standards indicate the maximum and minimum limits.

** Figures in parenthesis are upper range of the standards recommended.

APPENDIX 5: GUIDELINES FOR WORKERS' SAFETY DURING CONSTRUCTION

S. No.	Stage and Nature of construction Hazard	Safety measures expected to be taken by the contractors and site Engineers
1	Excavation in soft, loose & slushy soil above 2m depths sliding of earth or collapsing of sides.	The Excavation beyond 1.5m to 2m to be done in steps of minimum 500mm offsets and also planking and strutting should be done.
2	Excavation in slippery area (water logged) -the labour may fall or machinery on site may slip.	Try to dewater the area and spread minimum 150mm thick sand layer to avoid slipping
3	Excavation in rock where chiselling involved – The fall of hammer may injure the hand, small rock pieces may injure the eyes and legs.	For hammer work, only experienced and skilled labour should be employed. Chisel should not be allowed to be held by hand, while hammering but chisel holding clamp should be provided. The labour should be provided with goggles and leg cover to protect eyes and legs, from injuries due to small rock pieces.
4	Excavation in Rock where blasting is involved – careless handling may lead to injury to worker or a passerby.	The work of blasting should be entrusted to only experienced persons. Provide sufficient length of fuse to give ample margin of time from the time of lighting to the time of explosion. A danger zone at least 180m diameter is to be flagged off 10 minutes before actual firing. All workmen should be sent way from danger zone except the firing man, who should be provided with a whistle.
5	Excavation for drain across road or manhole adjacent to a road – chances of a passer by falling into the excavated portion.	The area should be well barricaded & a red lamp provided at night. A watchman should be deputed to prevent any movement of persons or vehicles.
6	Centering and scaffolding – formwork collapse while concreting or just before concreting or just before concreting especially when wooden ballies are used.	Many a times ballies joined together give way due to weak joint. Hence the use of joined ballies should be restricted. Only 2 joined ballies out of 8 ballies should be allowed. In case of double staging for a slab at a height, utmost care should be taken to see that the top balli rests on the bottom balli. Particular care that should be taken during each concreting, operating of slabs and beams is that one carpenter and two helpers with spare ballies, nails etc. should be deputed below the slab/beam that is being concreted to watch any disturbance in the supports of the form-work below, during concreting and in case of any doubt concreting should be stopped immediately and the form work to be strengthened. Never allow bricks below a balli to make up the required height. This is most dangerous.
7	Form- work for beams and slabs – opening the form – work accident due to fall of materials during removing the forms.	In fact, this is a most dangerous work. One should be very careful while formwork is removed. Only trained carpenters should be deputed for the work. A safe resting place outside the area of slab as a temporary measure should be constructed from where the slab can be removed safely. Removal of form-work during night should not be permitted under any circumstances.
8	Scaffolding – Fall of work–man, supervision staff, standing on challis not tied properly or toed only at one end. (Challis mainly made of Bamboos)	This is a very common negligence on the part of labour who does scaffolding work. The Challis on which they work either span over its complete length or is tied loosely and many a times at one end only.

S. No.	Stage and Nature of construction Hazard	Safety measures expected to be taken by the contractors and site Engineers
		Hence, care must be taken that the challis do not span over the full length but some middle support should be provided and also the same is tied properly on both ends.
9	Ladders - Balli or bamboo ladders – The horizontal member breaks and the person falls. Sometimes the top face just rests on wall and the whole ladder tilts causing an accident.	The ladders should be strong enough to bear the weight of a labour with materials on head. As for as possible a hand rail should be provided at one end. The horizontal member should be preferably fixed with bolt & nuts or strong nails. When the ladder is placed across a wall the top portion should be tied firmly to a strong support so that the ladder does not move laterally.
10	Dismantling – Dismantled materials may fall on passerby or the person engaged in dismantling work may fall due to slipping. The dismantled materials may fall on persons working below.	When work of demolition is to be taken up the area should be closed for all outsiders. No one should be allowed up to 50m from the place of demolition. The workers engaged in demolition should be asked to wear safety belts. Helmets must be worn by all the workers engaged in dismantling work. The place should be strictly guarded at night with red lights at prominent places, and watchman should be posted.
11	Electrical connections/ cables etc., - HT / LT electric wire passing near the slab structure – while bending, lifting or tying reinforcements the bar benders may sustain the electric shock, causing fatal injury.	The work in such places should not be allowed to the workers themselves, but in such position the work must be executed under the strict supervision of a responsible Foreman or a Supervisor.
12	Electric- connections/cables, etc., - cables below ground may get punctured during excavation & thus electrocute the labour working. Similarly, when connecting is in progress the punctured cable may prove to be fatal to the labour.	Before taking up the work all available drawings should be studied, local enquiry to be made to know the position of cables and work in such area should be got executed under strict supervision of an experienced Foreman or a supervisor.
13	Electric connections/cables etc.,- Temporary Electric lines near damp walls, near joinery stretched on a considerable length – There is every chance that the wire may get cut due to usage and may develop short circuits/leakages etc. and may electrocute the person touching the wire accidentally.	The Electric wires should be maintained by an electrician who should regularly check-up the insulation of wires especially placed near steel items & damp areas. The temporary wiring should be supported properly. As far as possible a good quality wire should be used which may not get damaged easily.
14	Electric and gas welding work – Drilling, polishing work – Done by temporary cables used on a number of works – Due to the fact that the wires are old & when they come in contact with water even in the process of curing the surrounding area may get affected due to leakage in the electric current thus causing damage to the workers & supervision staff.	All wiring works to be inspected by experienced electrician. All wires to be properly insulated and fixed at height on temporary poles. No welding work should be permitted near damp area. The welders to be provided with welder's goggles & gloves. As far as possible machine in good condition should be used.
15	Construction machinery – Concrete mixers – Safety precautions. A mixer with hopper tried to be operated by a helper could not release brake in time thus causing injury to the person near hopper – sometimes fatal one.	The Mixers with hopper should be operated by an experienced mixer operator and such mixers should not be allowed to be handled by a helper or a labour.

S. No.	Stage and Nature of construction Hazard	Safety measures expected to be taken by the contractors and site Engineers
16	Water storage Tank for general use and curing - chances of children of workers falling in the tank with fatal accident.	The water tanks constructed on site should be protected by at least 1.0m high walls on four sides, so that the children do not fall.
17	Site cleaning – Cleaning top floors of buildings – Upper portion of any structure – throwing waste materials broken concrete pieces, brick bats, sand etc., straightway from top to ground injuring person below or even a passerby.	This dangerous practice should not be allowed at all. The materials should be brought to the ground with the help of lift or the use of rope over pulley with a bucket, thus bringing down materials safely.
18	Bar bending work – Helpers of bar benders to follow short cut method, throw surplus steel pieces from top floors to ground and may cause fatal injuries.	This is a very bad practice. The helpers should bring the rods to ground with help of lift or rope and pulley.

APPENDIX 6: WORKERS' SAFETY IN COMMON OPERATIONS AND DURING CONSTRUCTION

HOUSEKEEPING PRACTICES

- Maintain washrooms and canteens clean
- Keep all walkways clear and unobstructed at all times
- Ensure that no spillages of oil and grease occurs in the construction camp
- Stack raw materials and finished products clear of walkways or out of roads
- Do not leave tools on the floor or in any location where they can be easily dislodged
- Keep windows and light fittings clean
- Maintain the workplace floors dry and in a non-slippery condition
- Provide and maintain proper drainage system to prevent stagnant water.
- Use metal bins for oily and greasy rags and store all flammable materials in appropriate bins, racks or cabinets. Ensure that the meal bins for storing oily and grease rags should be covered with lids.
- Ensure that protruding nails in boards or walls are removed or bent over so that they do not constitute a hazard to people
- Make sure that hazardous/dangerous chemicals are kept in the stores with the appropriate labelling, display of the material-safety-data-sheet (MSDS) and other precautionary measures
- Display "no smoking" signs in areas with high fire risks such as paint stores, wood working areas, etc.

SAFE LAYOUT IN THE CONSTRUCTION PLANT, CAMP AND QUARRY AREAS

- Arrange perimeter fencing for construction plant
- Ensure good visibility and safe access at site entrances
- Provide adequate warning signs at the entrance and exit and where ever necessary
- Provide adequate space/area for loading, unloading and storage of materials, plant and machinery
- Display emergency procedure and statutory notices at conspicuous locations
- Consider provision of welfare facilities required
- Provide areas for dumping garbage and other waste materials, and also arrange their regular clearance and safe disposal
- Arrange storage, transport and use of fuel, other flammable materials and explosives in lines with the license requirements to be obtained from appropriate authorities
- Plan emergency assembly points, fire escape routes and location of fire-fighting equipment
- Provide access roads and plant movement areas within the site.
- Ensure the availability of first aid facilities and display notices to show the location of these facilities
- Provide proper drainage and sewage facilities

TREE FELLING

- Use hard hats during tree felling works
- Ensure that tools such as axes are in good condition
- Determine proper foot and body position while using the axe
- Wear appropriate foot protection while felling trees

- Carry a first aid kit to the site
- Determine possible hazards in the area, with reference to electrical or telephone or other utility lines
- Determine the safest direction for the tree fall prior to felling
- Determine the proper hinge size before directing the tree fall.

NOISE HAZARDS AND ITS CONTROL

- Observe the indications of noise levels
- Use sound level meters to measure. If the sound level exceeds 85 dB(A), then preventive and protective measures should be taken
- Make personnel aware of noisy areas by using suitable warning signs and insisting that ear protective devices should necessarily be worn.
- Reduce noise at source by improved maintenance, replacing noisy machines, screening with noise absorbing material, making changes to the process/equipment, controlling machine speeds, ensuring that two noise-generating machines are not running at the same time, using cutting oils and hydraulic breakers.
- Appoint a competent person to carry out a detailed noise assessment in the site, designate ear protection zone, and give instructions on the necessary precautionary measures to be observed by site personnel, including the use of suitable type of ear protections.
- Wear and maintain ear muffs and ear plugs as required
- In construction or repair works, noise should be kept to a low-level bearing in mind the disturbance to local residents.

ELECTRICAL HAZARDS IN CONSTRUCTION AREAS

- Treat all wires as live wires
- Never touch dangling wires but report them to the manager
- Unless you are a qualified electrician do not attempt electrical repairs
- Never use electrical equipment if your hands are wet or you are standing in water
- If electrical equipment is sparking or smoking, turn the power off and report the condition to the supervisor
- Never use electrical wires having physical damage
- Never allow equipment or traffic to run over the electrical wires.

USE AND STORAGE OF GAS/LPG

- Store filled gas/LPG cylinder in an open area or outside the building
- Transport, store, use and secure cylinders in upright position
- Ensure proper ventilation at the ground level where the gas/LPG is in use
- Avoid physical damage to the cylinder
- Never weld or cut on or near the cylinder
- Store empty cylinders secured and in upright position.
- Make sure that the cylinder is closed immediately after use.
- Investigate immediately if there is the smell of LPG or gas.
- Never use detached gas/LPG on site.
- Make sure that there is no fire in the vicinity of the cylinder.

OPERATION OF EXCAVATORS

- Ensure that excavators are operated by authorized persons who have adequately trained.
- Prevent unauthorized movement or use of excavators
- Check regularly and maintain the machine thoroughly
- Ensure that all relevant information, including those related to instruction, training, supervision and safe system of work are provided to the operators.
- Ensure that the operation and maintenance manuals, manufacturer's specifications, inspection and maintenance log books are provided for the use of machines to service engineers or other safety personnel during periodic maintenance, inspection and examination.
- During tipping or running along the trenches, excavators must be provided with stop blocks.
- Excavators must be rested on firm ground during operation.
- Avoid operating the machine too close to an overhand, deep ditch or slope.
- Locate and identify underground utility services by checking with all utility companies before the excavations.
- Ensure that all excavations are supervised by experienced and competent persons.
- When reversing or in case the operator's view is restricted, adequate supervision and signalling should be provided.
- Ensure that the type and capacity of the excavator are properly chosen for the intended purposes and site conditions. Never use a machine for any purposes other than it is designed for.
- Check and report for excessive wear and any breakage of the bucket, blade, edge, tooth and other working tools of the excavator.
- Check that all linkages/hinges are properly lubricated and ensure that the linkage pins are secured. Never use the improper linkage pins.
- Never get down or climb a moving machine
- Ensure adequate ventilation and lighting in the working place.
- Ensure that the protective front screen of the driving cabin is fixed in position during excavations to avoid eye injury to the operator.
- Ensure to switch-off the unattended vehicle.

OPERATION OF TRUCKS AND DUMPERS

- Ensure that only trained, authorized and licensed drivers operate the vehicles.
- Provide the help of another worker before reversing the vehicle.
- Switch-off the engine of an unattended vehicle.
- Lower the tipping bodies when the machine is unattended, but if it is necessary to leave them in the raised position they should be blocked to prevent their fall.
- Wear safety boots or shoes to avoid injuries during loading and unloading.
- Carryout periodic servicing to the manufacturer's requirements. All records of maintenance and repairs should be in writing and kept in the site.
- Keep the vehicle tidy and its cabin free from tools and materials which might obstruct the controls.
- Do not exceed speed limits.
- No passenger should be carried on a dumper except the driver
- Never drive the vehicle across a slope
- Provide stop blocks when the vehicle is tipping into or running towards excavations

- Do not overload the vehicle.
- Carry only well secured loads.
- Park only on level ground, in neutral with the parking brake applied.
- Never climb or get down from a moving vehicle.

GAS WELDING

- Use the following personal protective equipment during welding
  - Face or hand shield fitted with filters,
  - Goggles, particularly while chipping slag,
  - Gloves long enough to protect wrists and forearms against heats, molten metal and radiation,
  - High-top boots to prevent sparks from burning foot.
- Screen the work area with sturdy opaque or translucent materials as glare can cause eye injury.
- Key for opening the acetylene cylinder valve must be kept ready while the cylinder is in use so that the cylinder valve may be immediately shut-off in an emergency.
- Ventilate the workplace using air blowers and exhaust fans to remove poisonous fumes and gases that are being used during welding
- Take precautions against flying spark and hot slag where welding is being done near flammable materials and check the area before leaving.
- Do not weld the material degreased with solvents until it is completely dry.
- Do not use gas cylinders for supporting work or as rollers.
- Do not use oil/grease on oxygen cylinder fittings.
- Do not use cylinders with damaged valves.
- Do not use too much force if valves are stuck.
- Replace valve caps after use
- Search for leaks in equipment by using a solution of soap water.
- Shut the cylinder valve if acetylene from a cylinder catches fire at the valve or regulator due to leakage at a connection.
- Treat all gas cylinders as “full” unless you are sure otherwise.
- Never attempt to transfer acetylene from one cylinder to another or attempt to refill an acetylene cylinder.
- Keep portable fire extinguishers near the welding area
- Secure all cylinders against accidental displacement.
- Always lift gas cylinders. Do not slide them along the ground or drop them from trucks.
- Keep gas cylinders in vertical position both in store and when it is in use.
- Keep the work place dry, secure, free from combustible materials and obstruction.
- Store the acetylene and oxygen cylinders separately and in a proper store.
- Keep the gas cylinders away from source of heat, flammable materials, corrosive chemicals and fumes.

MANUAL HANDLING AND LIFTING

- Use mechanical equipment in place of manual handling as far as possible.
- Assess the manpower required to handle or lift the load safely and arrange the manpower accordingly.
- While handling hazardous materials, the workers shall be informed of the hazards and safety precautions.
- All relevant persons shall be trained on proper methods of lifting and carrying.

- Where team work is required, select the persons whose ages and physical builds are compatible for teaming up. Coordinate the actions of the team members by giving necessary instructions.
- Always lighten or suitably shape the load for manual handling. As far as possible keep a look for splinters, sharp edges, loose banding and nails.
- Clear path or obstruction and tripping hazards.
- Stack and secure goods safely on trucks, otherwise they fall off and injure passers-by.
- Use personal protective equipment such as gloves, safety shoes, etc.
- Adopt the following procedure when you lift a load.
    - Stand close to the object, have a firm footing with feet spread on either side of the road.
    - Bend the knees and keep your back as straight as you can.
    - Grasp object firmly & be sure grip will not slip
    - Breathe in and throw the shoulder backwards.
    - Straighten the legs, continuing to keep the back as straight as you can.
    - Hold the object firmly & close to the body
    - Always lift smoothly, avoid jerky motions and turn with feet instead of twisting the back.

FIRST AID

- Provide first aid boxes at every site.
- Ensure that training on the use of first aid box is provided to a handful of staff working in the site.
- Display the list of persons who are trained on providing first aid.
- Ensure that every first aid box is marked plainly “First Aid” in English and local language.
- The responsible person or first aider should replenish the contents of the first aid box as necessary.

PERSONAL PROTECTIVE EQUIPMENT

List of personal protective equipment (PPE)

Sl. No.	Part of the body	Personal protective Equipment
1	Eye	Safety glasses, Goggles
2	Face	Face shields
3	Nose	Nose masks
4	Head	Helmets
5	Feet	Safety shoes
6	Hands and Arms	Gloves
7	Body	Vests
8	Hearing	Earplugs, Earmuffs

General:

- Ensure that sufficient personal protective equipment are provided and that they are readily available for every person who may need to use them.
- The management should ensure that all persons make full and proper use of the personal protective equipment provided.
- Provide instruction and training on the proper use and care of protective equipment.

- Do not wilfully misuse, interfere with or ill-treat any protective clothing and equipment provided.
- Ensure that the personal protective equipment are in good condition. Report immediately any damage to the management for replacement. Always keep the personal protective equipment as clean as possible.

Eye Protection

- Issue eye protection equipment where there is a foreseeable risk of eye injury.
- Ensure an adequate supply of goggles/shields is available.
- Keep the goggles clean and make sure they fit well.
- Do not watch welding operations unless your eyes are protected.

Head Protection

- No person shall enter a construction site unless he is wearing a suitable safety helmet
- Wear a safety helmet:
- When there is the risk of being hit by falling objects
- While on or near a construction site
- During adverse weather conditions
- When in any area designated as a “hard hat” area.
- Provide identification labels to all helmets in some way to prevent random exchange among wearers, with one helmet exclusive to each person.
- Inspect helmets for cracks, sign of impact or rough treatment before each usage and replace defective or damaged helmets.

Hearing Protection

- Provide ear plugs or ear muffs as required. Use re-usable ear plugs when the reduction required (15-25 dB (A) is not excessive. Use ear muffs where a large attenuation of up to 40 dB (A) is demanded.
- Do not use dry cotton wool for hearing protection because it cannot provide protection.
- Provide disposable ear plugs for infrequent visitors and ensure that they are never re-used.
- Provide re-usable ear plugs for those who need to work continuously for a long period in a high noise area.
- Use ear muffs with replaceable ear cushions because they deteriorate with age or may be damaged in use.
- Avoid wearing spectacles with ear muffs.
- Use soap and water or the recommended solvent for cleaning ear muffs.
- Provide ear muffs for those who may need to get in and out of a high noise area frequently.

Respiratory Protective Equipment

- Wear suitable respirable mask for protection against small particles entering the lungs, e.g. while emptying of cement bags.
- Provide training to all persons using the respirators for their correct fitting, use, limitations and symptoms of exposure.
- Clean and inspect all respirators before and after use.
- Store respirators properly when it is not in use.

Safety Footwear

- Wear suitable footwear while working.
- Use safety footwear on site or in dangerous areas.
- 3) Wear suitable safety shoes or ankle boots when working where there is a high risk of foot injuries from slippery or uneven ground, etc.
- All Safety footwear including safety shoes, ankle boots and rubber boots should be fitted with steel toecaps.
- Avoid wearing flip flops, high heeled shoes, slippers, light sport shoes in situations where there is a risk of foot injury.
- Keep shoe lace knots tight.

Hand Protection

- Wear suitable gloves for activities such as welding & cutting and manual handling of materials & equipment.
- Do not wear gloves where there is a risk of them becoming entangled in moving parts of machinery.
- Wash hands properly with disinfectant soap before eating & drinking. Wash hands immediately after each operation on site & when the situation warrants.

FIRE PREVENTION, FIGHTING AND EQUIPMENT

Before fire breaks out

- Store flammable material in proper areas having adequate fire protection systems.
- Display sufficient warning signs.
- Train selected personnel to use these fire extinguishers.
- Inspect fire extinguishers regularly and replace as necessary.
- Fire escape route should be kept clear at all times and clearly indicated.
- Know the escape route and assembly point.
- Display escape route maps prominently at prominent places.
- Carryout fire drill regularly. Designate fire Officers.
- Install fire alarm wherever required and test regularly.
- Provide sufficient exit signs at prominent locations for directing people to the escape route.

When fire breaks out

- Alert all persons.
- Put off the fire with appropriate fire extinguishers when you are sure that you are safe to do so.
- Escape if you are in danger through the fire escape route to assembly point.
- Fire officers should carryout head count at the assembly point
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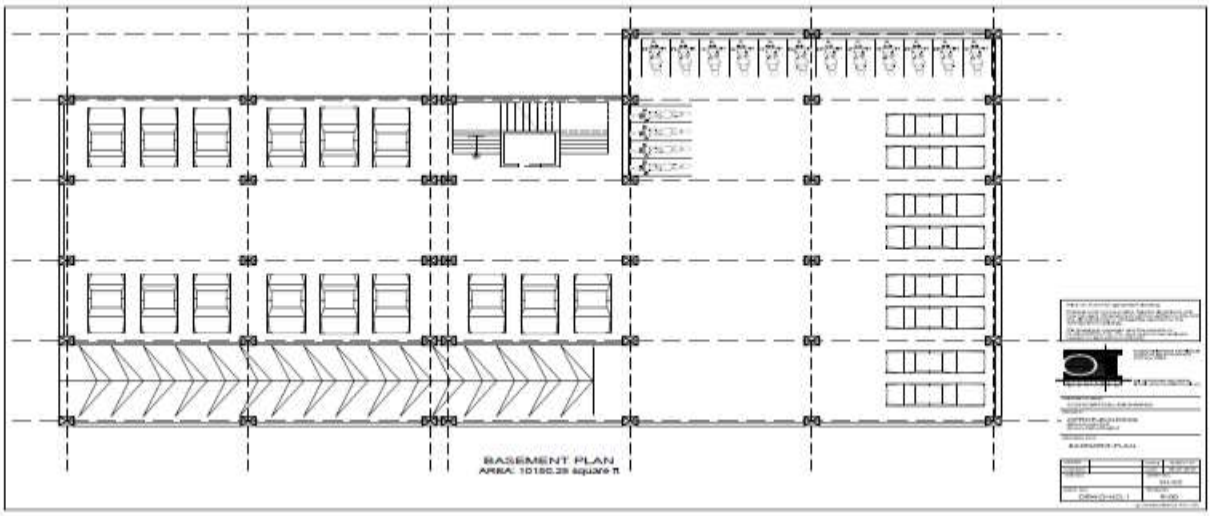
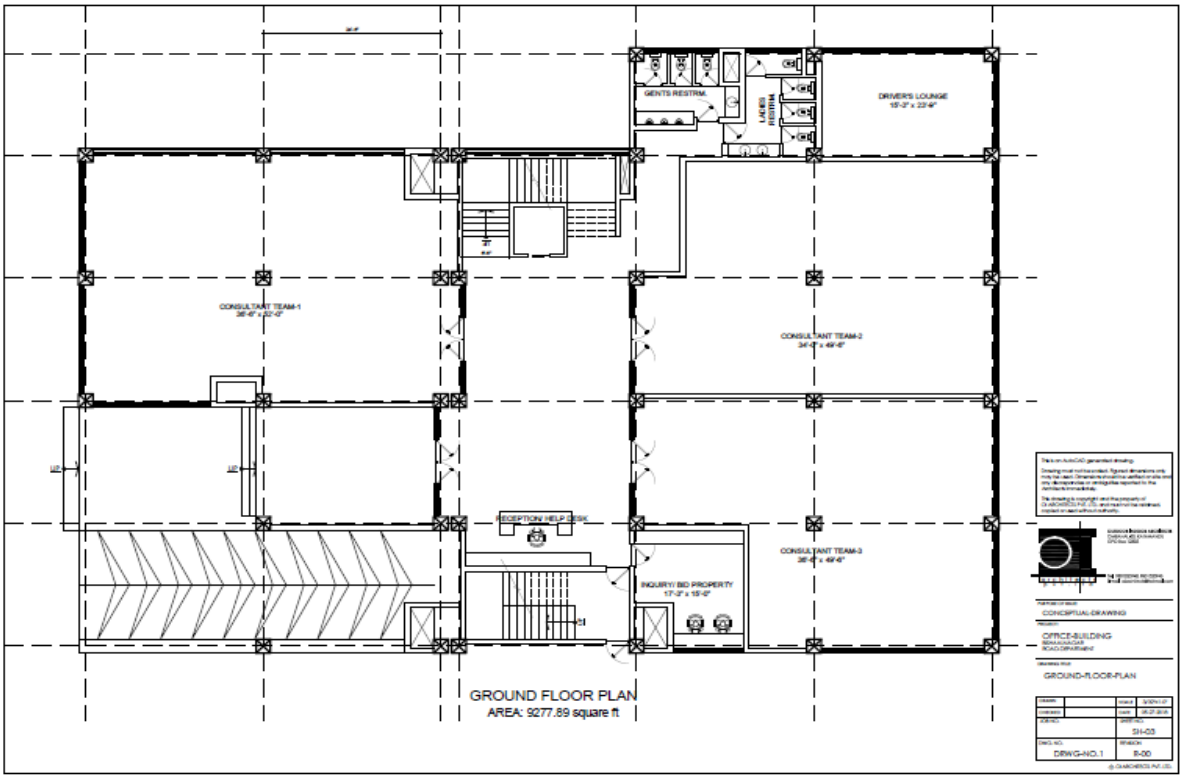
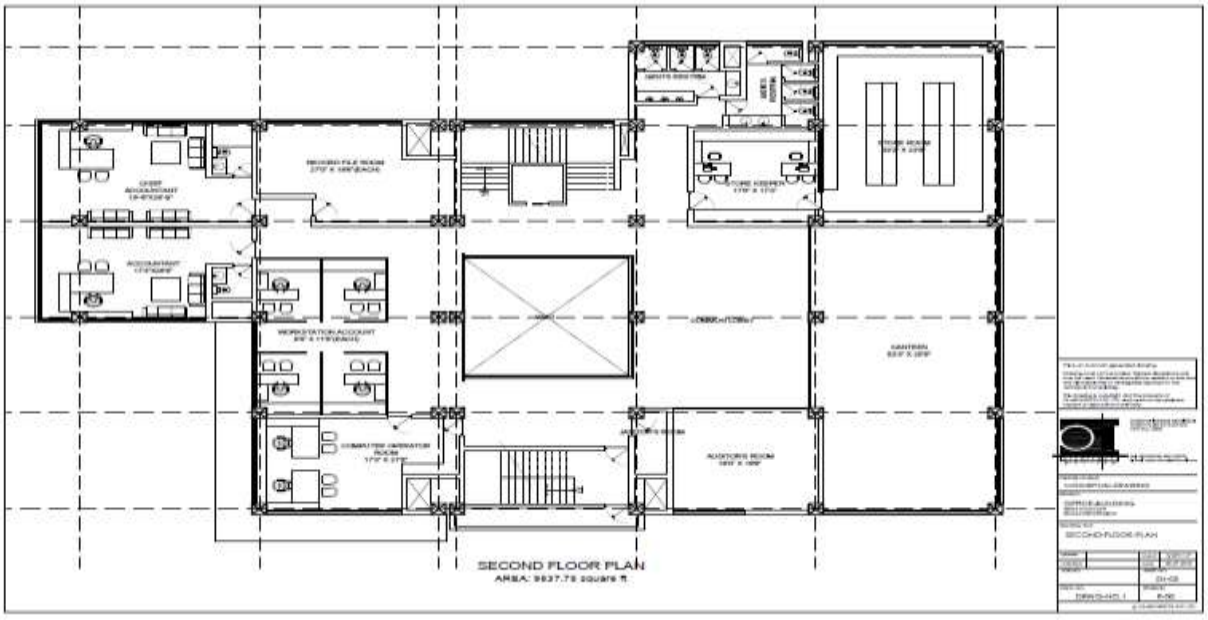
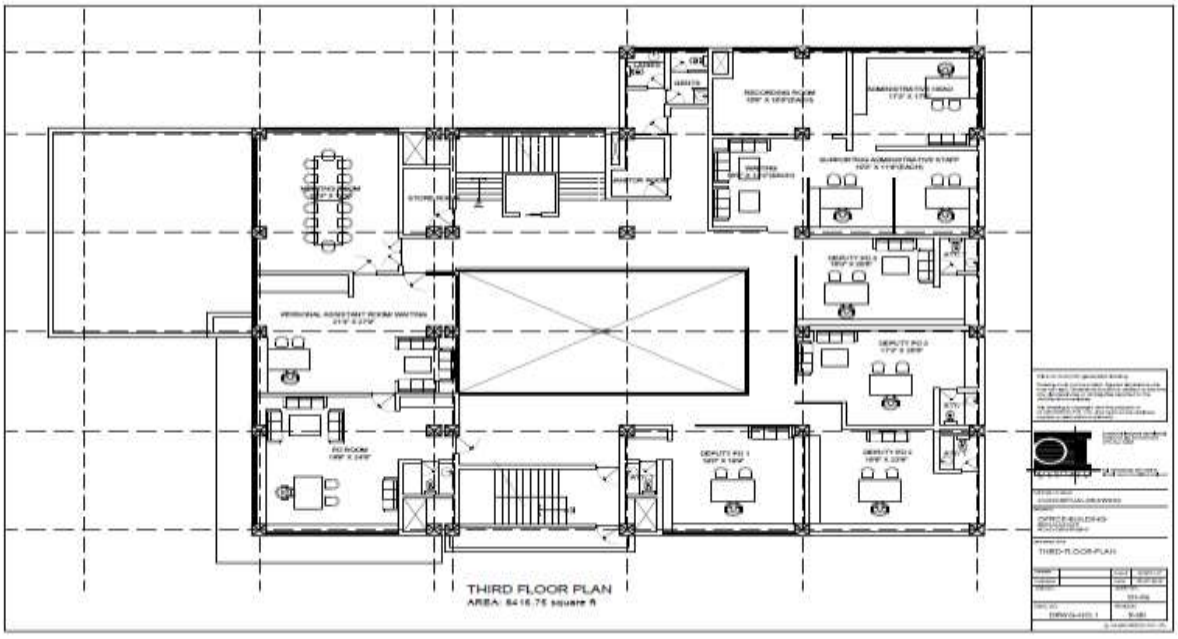
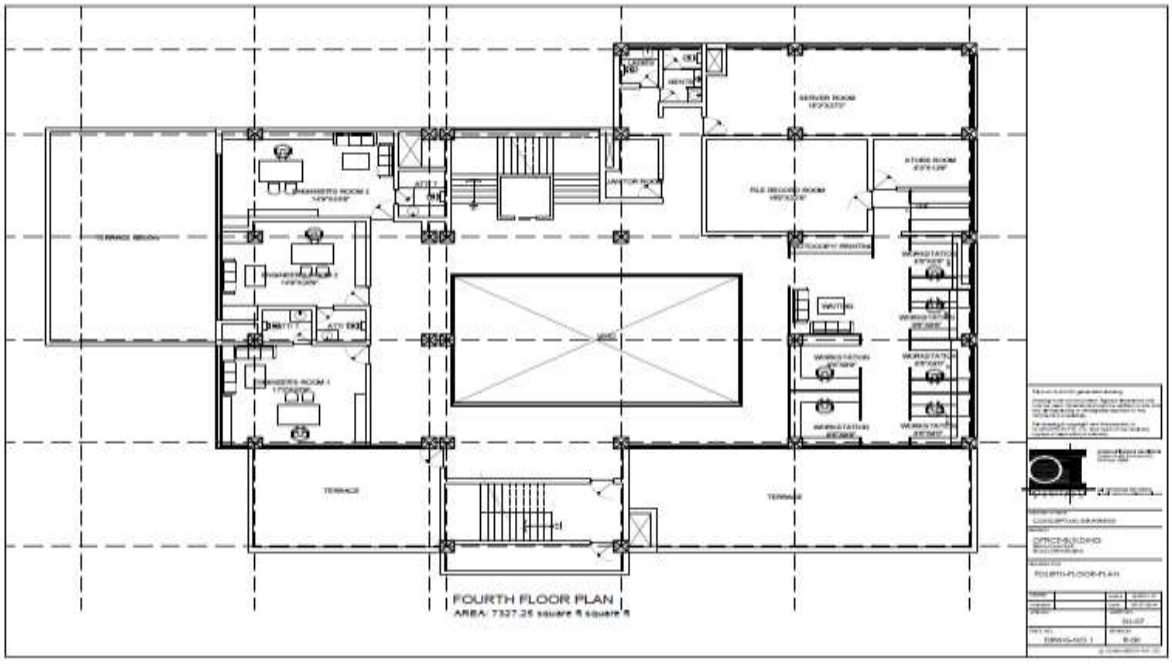
APPENDIX 7: FLOOR PLANS OF PROPOSED BUILDING

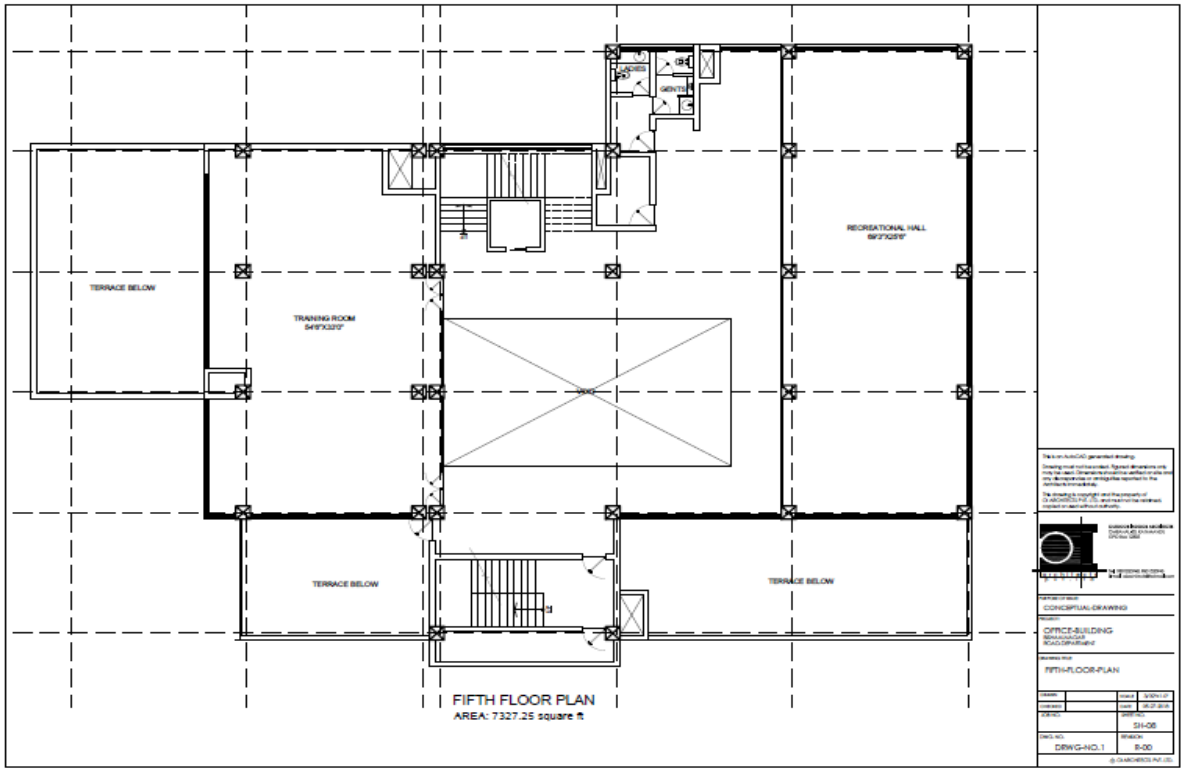





SECOND FLOOR PLAN
AREA: 9837.75 square ft


THIRD FLOOR PLAN
AREA: 8416.75 square ft


FOURTH FLOOR PLAN
AREA: 7327.25 square ft square ft


RECREATIONAL HALL
TERRACE BELOW
TRAINING ROOM
TERRACE BELOW
TERRACE BELOW
FIFTH FLOOR PLAN
AREA: 7327.25 square ft

APPENDIX 8: PHOTOGRAPHS

Photo 1: Entry point of proposed building

Photo 2: Existing PD-Building in the proposed site

Photo 3: Existing parking area and staff quarter of the Directorate

Photo 4: Barren land located north side of the existing building

Photo 5: Briefing the project to Consultation with Ward Chairman and Engineer by consultant and PD representatives

Photo 6: Preparation of Minute for collecting suggestions of Consultation Meeting

Photo 7: Ward representative reflecting women participation

APPENDIX 9: MINUTES OF CONSULTATION MEETING

आज मिति २०६४।१।८ गतेका दिन नेपाल सरकार सडक विभाग अन्तर्गतको आयोजना निर्देशनालय (ए.डि.बि) प्रस्तावक रहेको हाल विशाल नगर अवस्थित पुरानो भवन लाई हटाएर यसको ठाउँ सेवाहरु समेत लाई अटाउने गरि एशियाली विकास बैंकको लगानीमा निर्माण गर्ने प्रस्ताव गरिएको भवनको प्रारम्भिक वातावरणीय परिक्षणका लागि काठमाडौं महानगर पालिका को वडा नं. ५ को आयोजनामा छलफल कार्यक्रम संचालन गरियो। उक्त छलफल कार्यक्रममा निम्न महानुभावहरुको उपस्थितिमा विविध विषय उपर राय सुझाव उपलब्ध गराईयो।

उपस्थिति

१. रमेश डंगोल - वडा अध्यक्ष (वार्ड नं. ५) 9851041001
२. सुमन बहादुर श्रेष्ठ - इन्जिनियर 9851051278
३. मिना सिंह - वडा सदस्य
४. कान्छा भाइ डंगोल - स्थानिय वासी
५. कुबेर नापित - स्थानियवासी
६. सानु श्रेष्ठ - स्थानियवासी
७. नारायण अधिकारी - स्थानियवासी
८. प्रकाश दहाल - वातावरणविद् आयोजना निर्देशनालय
९. रोशन भट्टराई - समाजशास्त्री " "
१०. शिव शंकर कार्की - वातावरण विज्ञ टोलि प्रमुख
११. सविन गैरवाल - स्थानियवासी

छलफलका विषयहरु एवं सरसुझावहरु

१. प्रस्तावित भवन निर्माणको विषयमा जानकारी उपलब्ध गराइयो।
२. भवन निर्माणमा वातावरण मैत्री, ~~एवं~~ साथै महिला एवं अपाङ्ग मैत्री तवरले निर्माण गरिनु पर्नें।
३. भवन निर्माणका समयमा यातायातको आवश्यक समन्वय गरिनु पर्ने।
४. भवन निर्माणको क्रममा स्थानियवासीहरुलाई न्यून प्रभाव पर्ने गरी गरिनु पर्ने।

मिति – २।२।१