

Environmental Assessment and Review Framework

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AZE: Multitranche Financing Facility Second Road Network Development Investment Program

Prepared by AzerRoadServices Joint Stock Company, Republic of Azerbaijan for the Asian Development Bank.

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LIST OF ABBREVIATIONS

ADB	–	Asian Development Bank
ARS	–	AzerRoadServices Joint Stock Company
DSC	–	Design and Supervision Consultant
EA	–	Executing Agency
EARF	–	Environmental Assessment and Review Framework
ECR	–	Environmental Complaints Register
EIA	–	Environmental Impact Assessment
EMP	–	Environmental Management Plan
GoA	–	Government of Azerbaijan
GFP	–	Grievance Focal Points
GRC	–	Grievance Redress Committee
IEE	–	Initial Environmental Examination
MENR	–	Ministry of Ecology and Natural Resources
MFF	–	Multi-tranche Financial Facility
PIU	–	Project Implementation Unit
REA	–	Rapid Environmental Assessment
SEE	–	State Policy on Ecological Expertise
SNIP	–	Soviet Technical Norms and Rules
SPS	–	Safeguard Policy Statement
TA	–	Technical Assistance
UNESCO	–	United Nations Educational, Scientific and Cultural Organization

A. INTRODUCTION

1. The Government of Azerbaijan (GoA) has requested the Asian Development Bank (ADB) to provide funding to support AzerRoadServices (ARS) to improve road infrastructure in Azerbaijan.
2. Following on from the initial Road Network Development Program, the Second Road Network Development Program (this investment program) will continue to promote regional cooperation and integration, and widen access to social and economic opportunities via improved road infrastructure in Azerbaijan. The program will also strengthen the governments' capacity in strategic planning, project preparation and implementation, maintenance and governance in the road subsector.
3. The Program will be financed by ADB through a Multi-tranche Financial Facility (MFF). There will be at least three tranches associated with the Program. Under the MFF loan procedures of the ADB, implementation of environmental safeguards is to be achieved by environmental assessment of every project to be undertaken following the ADB's Safeguard Policy Statement June 2009 (SPS 2009).
4. The initial two projects (Tranches 1 and 2) of the MFF involve construction of a continuous 64 km section of a new four lane motorway between Alat and Massali on the southern corridor. Environmental due diligence has been completed in respect of the initial two projects.
5. This Environmental Assessment and Review Framework (EARF) is applicable to all investments funded by this MFF, and particularly to projects included in subsequent tranches that have not yet been fully defined.

B. ASSESSMENT OF LEGAL FRAMEWORK AND INSTITUTIONAL CAPACITY

6. Environmental assessment of future projects will be undertaken with regard to complying with ADB and GoA policies, legislation, and requirements. This also includes complying with relevant international agreements.

1. Government of Azerbaijan Environmental Policies, Laws and Regulations

a. Laws, Regulations, and Policies

7. The important laws relevant to the proposed road sector project focusing on environmental impact assessment are:

- (i) Law on the Protection of Environment, 1999 The Law of the Republic of Azerbaijan on the Protection of Environment (1999) establishes the legal, economic and social bases for environment protection.
- (ii) The State Ecological Expertise (SEE): Mandates an EIA for infrastructure development projects.
- (iii) Regulation of Environmental Impact Assessment (1996): This Regulation defines the project types requiring Environmental Assessment (EA), contents of the document on EA roles and, responsibilities of applicant and responsible state organization, procedures, public participation and complaints.
- (iv) Azerbaijan Environmental and Safety Regulations: relevant national laws include:

- a. Azeri Law on Automobile Roads (2000)
- b. Soviet Technical Norms and Rules (SNIP) 2.05.02-85 Building Code & Regulations for Automobile Roads, Law on Environmental Protection – Ch 3
- c. The Law of the Republic of Azerbaijan on Sanitary and Epidemiological Safety, 1993 Section III: Responsibilities of State Bodies, Agencies, Companies on the Provision of Sanitary and Epidemiological Safety
- d. Safety Regulations for Construction, Rehabilitation and Maintenance of Roads 1978
- e. SNIP III-4-80 Norms of Construction Safety
- f. Guidelines for Road Construction, Management and Design (2000)
- g. BCH 8-89 Regulations on Environmental Protection in Construction, Rehabilitation and Maintenance of Roads
- h. Sanitary Norms Ch 2.2.412.1.8.562-96 (1997)
- i. Regulation 514-1Q-98 Regulation on Industrial and Municipal Waste

8. Other relevant laws, legislation and policies approved by Government are summarized and presented in Table 1.

Table 1: Relevant Laws, Legislations, and Policies in Azerbaijan

Sl. No.	Law / Regulation / Policy	Date of Adoption
1.	Law of the Republic of Azerbaijan on “Industrial and municipal wastes”	30.07.1998
2.	Law project on “Making changes and supplements to Law of the Republic of Azerbaijan on industrial and municipal wastes”	
3.	President Decree on the application of Law of the Republic of Azerbaijan on “Industrial and municipal wastes”	26.10.1998
5.	Law of the Republic of Azerbaijan on “Principles of town-building”	11.07.1999
8.	President’s Order on “Extra measures for the issues associated to the international conventions and agreements on environment protection in which the Republic of Azerbaijan has joined”	30.03.2006
9.	National Program of the Republic of Azerbaijan on “Environmentally sustainable social-economic development”	18.02.2003
10.	On “Measures for providing the implementation of the commitments, the Republic of Azerbaijan has adopted in accordance with the UNFCCC ratified by the Republic of Azerbaijan in January 10, 1995”	30.04.1997
11.	Law of the Republic of Azerbaijan on “Public awareness raising on environmental issues”	10.12.2002
12.	Law of the Republic of Azerbaijan on “Protection of environment”	08.07.1999
13.	Law of the Republic of Azerbaijan on “Obligatory ecological ensurance”	12.03.2002
14.	Law of The Republic of Azerbaijan on specially protected natural territories and sites	24.03.2000
16.	Law of the Republic of Azerbaijan on Protection of Atmospheric Air	21.03.2001
17.	President Decree on the application of Law of the Republic of Azerbaijan on “Protection of Atmospheric Air”	11.06.2001
18.	Law of the Republic of Azerbaijan on ‘Phyto-sanitary control”	21.05.2006
19.	President Decree on “Application of Law of the Republic of Azerbaijan on phyto-sanitary control”	06.02.2007
21.	State Program on “Social-economic development of regions”	
22.	National Program on “Reforestration and Forestration in Azerbaijan”	2003
26.	Law on “Energy production”	01.02.1999

Sl. No.	Law / Regulation / Policy	Date of Adoption
27.	Civil Code of the Republic of Azerbaijan	01.09.2000
28.	Law on “Environmental safety”	03.08.1999
29.	President order on “Ratification of the Complex Measures Plan on the improvement of ecological condition in the Republic of Azerbaijan for 2006–2010 years”	
30.	Assesment of impact on environment	1996

b. Environmental Assessment Process in Azerbaijan

9. Environmental assessment and review procedures in Azerbaijan, as stipulated in the SEE, do not include the categorization of projects. The project is either initially approved with few mitigation conditions, or the project must undergo a full Environmental Impact Assessment (EIA). If the activity is assessed by the EA to result in more than minor potential impacts, a full EIA is automatically required. Since categorization is absent under Azerbaijan environmental regulations, the ADB guidelines will be adopted for subproject categorization under the Investment Program.

2. ADB Environmental Safeguard Requirements and Policies

10. Environmental assessment will be carried out to ensure that potential adverse environmental impacts are addressed according to the ADB Safeguard Policy Statement, 2009 (SPS 2009).

11. The SPS 2009 consists of three policy components: (i) Environment Safeguards, (ii) Involuntary Resettlement Safeguards, and (iii) Indigenous People Safeguards. The objectives of Environment Safeguards are to ensure the environmental soundness and sustainability of projects and to support the integration of environmental considerations into the project decision-making process. To help achieve the desired outcomes, ADB adopts a set of specific safeguard requirements that need to be achieved during the processing and implementation of projects financed by ADB. The environmental safeguard principles are stated in the Safeguard Policy Statement, which will guide environmental assessment process of projects.

12. SPS 2009 Policy Principles on Biodiversity: ADB requires that no project activities are implemented in the areas of critical habitats, unless (i) there are no measurable adverse impacts on the critical habitat that could impair its ability to function, (ii) there is no reduction in the population of any recognized endangered or critically endangered species, and (iii) any lesser impacts are mitigated. If a project is located within a legally protected area, additional programs should be implemented to promote and enhance the conservation aims of the protected area. In an area of natural habitats, there must be no significant conversion or degradation, unless (i) alternatives are not available, (ii) the overall benefits from the project substantially outweigh the environmental costs, and (iii) any conversion or degradation is appropriately mitigated.

13. The SPS establishes the format for the presentation of the environmental assessment.

14. ADB categorizes projects into categories A, B, C, and FI according to the significance of likely impacts. The categorization criteria are as follows:

- (i) **Category A.** A proposed project is classified as category A if it is likely to have significant adverse environmental impacts that are irreversible, diverse, or unprecedented. These impacts may affect an area larger than the sites or facilities subject to physical works. An environmental impact assessment is required.
- (ii) **Category B.** A proposed project is classified as category B if its potential adverse environmental impacts are less adverse than those of category A projects. These impacts are site-specific, few if any of them are irreversible, and in most cases mitigation measures can be designed more readily than for category A projects. An initial environmental examination is required.
- (iii) **Category C.** A proposed project is classified as category C if it is likely to have minimal or no adverse environmental impacts. No environmental assessment is required although environmental implications need to be reviewed.
- (iv) **Category FI.** A proposed project is classified as category FI if it involves investment of ADB funds to or through a Financial Intermediary.

15. Based on the Government's and ADB's environmental policies, the projects to be financed under the MFF will be subject to the following requirements:

- (i) A requirement for environmental assessment of each project depends on its potential impacts. Based on these potential impacts, and using ADB's Rapid Environmental Assessment Checklist (REA) Checklist, Attachment 3, each project will be assigned an environmental category. The Tranche is categorized based on the most sensitive component.
- (ii) For each Category A project, an EIA including an environmental management plan (EMP) is required. For each Category B project, an IEE including EMP is required.

3. Institutional Capacity

16. The principal national environmental agency charged with environmental protection responsibilities is the Ministry of Ecology and Natural Resources (MENR). This Ministry was established in 2001 to replace the former State Committee for the Environment, with an expanded mandate that includes geology, fisheries, and forests. MENR upholds all natural resources protection laws. The State Ecology Expertise (SEE) acts within this Ministry at the Program level in reviewing Environmental Impact Assessments (EIAs) of any developmental activities within the jurisdiction of Republic of Azerbaijan.

17. The major, even if indirect, role played in environment management by Government bodies other than MENR are the Ministry of Economic Development, Ministry of Agriculture (with its Committee for Land Improvement and Irrigation), Ministry of Fuel and Energy, Ministry of Health, Ministry of Education, Ministry of Interior, Ministry of Transport, and Ministry of Justice. The State Committee for Land and Mapping and State Committee for Architecture and Construction are also important. Each of these agencies has a unit (a department, division, center, or section) charged with the environmental dimension of their activities, attesting to a deliberate attempt by the Government to undertake environmental mainstreaming.

C. ANTICIPATED ENVIRONMENTAL IMPACTS

18. Potential environmental impacts of roads and highways projects may occur during preconstruction, construction and operational phases.

19. Preconstruction phase impacts are related to design decisions concerning the alignment and siting of facilities. Key potential impacts related to design may include:

- (i) Disturbance to ecologically sensitive areas
- (ii) Habitat fragmentation and barriers to wildlife
- (iii) Obstruction to rural connectivity and livelihoods
- (iv) Impacts on irrigation infrastructure

20. Other potential impacts during the design stage may include the siting of borrow pits, construction camps and asphalt plants etc, although these facilities may be decided during the construction phase. Nevertheless, the pre-construction phase is the time when the above potential impacts need to be reviewed within the context of a robust consideration of alternatives including public consultation, such that wherever possible impacts can be avoided through appropriate design and location of project components.

21. Most potential negative impacts may occur during the construction phase of the project. However, these will be temporary and can be mitigated to acceptable levels by carefully designed appropriate mitigation measures. Based on environmental studies and associated stakeholder consultations undertaken to date in respect of Tranche 1 and Tranche 2 projects the likely environmental and social impacts that could be expected for subsequent tranches are as follows:

22. Temporary Impacts:

- (i) Pollution of air (dust)
- (ii) Pollution of surface water bodies (suspended sediment from erosion of excavated areas, human effluent, spills of oil/petrol/hazardous substances used during construction)
- (iii) Pollution of groundwater human effluent, spills of oil/petrol/hazardous substances used during construction
- (iv) Noise from powered mechanical equipment
- (v) Traffic disturbance due to diversions and material transport
- (vi) Extraction, processing and haulage of huge quantities of fill material will have impacts that need to be managed
- (vii) Disruption of pedestrian access, non-motorised and agricultural vehicles and livestock
- (viii) Contractors yard and work camps may be further sources of potential environmental and socio-economic impact
- (ix) Solid and liquid waste produced during construction (inactive – concrete and rubble, and active – paint, oil, batteries, bitumen)

23. The above impacts are typical of road construction activities and will be managed through implementation of standard mitigation measures and internationally recognized good construction practice. In addition, consultations with affected communities throughout project implementation is proposed to ensure community concerns are properly addressed. This will be supported by a robust grievance redress mechanism.

24. Permanent Impacts could include:

- (i) Ground disturbance from earthworks and loss of topsoil

- (ii) Landscape modification associated with the operation and/or opening of new borrow pits and river gravel extraction
- (iii) Loss of biodiversity especially where roads are aligned through sensitive ecological areas including protected areas and internationally recognised sites of ecological importance
- (iv) Deforestation
- (v) Changes in hydrological regime of water bodies
- (vi) Modification of the existing irrigation/drainage network
- (vii) Loss of agricultural land from road alignment and haul roads used during construction

25. Typical mitigation measures used to reduce such impacts to acceptable levels include:

- (i) Topsoil to be stockpiled, stored and reused for rehabilitation and landscaping.
- (ii) Contractors required to source construction materials from existing or new borrow pits and will be required to obtain and adhere to all necessary licences and environmental management requirements associated with the operation and rehabilitation of such areas.
- (iii) Where and when necessary, project designs to include a range of specific mitigation measures to minimize the impacts on sensitive ecological areas using the principal of avoidance first, and when avoidance is not possible, minimize, mitigate and/or offset adverse impacts and enhance positive impacts by means of environmental planning and management. Such mitigation measures will be devised through consultation with government and non-government organisations (NGOs) associated with biodiversity conservation. In addition, contractors will be required to exercise careful management and control during construction through deployment of a full time, qualified and experienced environmental specialist with a specific mandate and authority to oversee construction activities in the sensitive areas so as to ensure that all mitigation measures are implemented effectively.
- (iv) Project designs will include incorporation of drainage channels, culverts and bridges to maintain existing irrigation and drainage flows and rural access ways. Such designs will be developed in consultation with communities during detailed design and construction.

26. Potential operational impacts could include the following;

- (i) Disruption of rural connectivity
- (ii) Run-off of small volumes of oils or fuels that could potentially discharge into ecologically sensitive areas
- (iii) Permanent habitat fragmentation
- (iv) Noise vibration and visual disturbance
- (v) Air pollution from vehicular emissions

27. Typical mitigation measures for operational impacts may include:

- (i) Project design to ensure existing rural connectivity is maintained through inclusion of bridges and underpasses where necessary
- (ii) Rain water treatment and collection run-off system in the vicinity of sensitive ecological areas

- (iii) Inclusion of “wildlife friendly” culverts and animal underpasses at strategic locations and Appropriate planting and landscaping on road margins and embankments to reduce effects of fragmentation
- (iv) Installation of permanent noise barriers where road alignments pass close to sensitive receptors such as residential areas, schools and hospitals

28. An EMP will be prepared as part of the IEE/EIA required for each subsequent tranche/project. The EMP describes all the mitigation measures including technical design requirements that will be implemented to reduce the environmental impacts to acceptable levels. In addition, the Contractor will be required to prepare a site specific EMP based on the general EMP prepared for the IEE/EIA, and implement it effectively. Implementation of the EMP will be monitored by ARS and ADB throughout the project and where non-compliance is identified the Contractor will be required to take corrective action.

D. ENVIRONMENTAL ASSESSMENT FOR SUBPROJECTS AND/OR COMPONENTS

29. The EARF outlines the policies, procedures, and institutional requirements for preparing subsequent subprojects. The Executing Agency (EA), AzerRoadServices (ARS), is responsible for preparing the required environmental assessments and obtaining ADB concurrence prior to implementation. These approvals must be in place prior to finalization of contracts and commencement of work.

1. Sub-project Selection Criteria

30. The following general criteria will be adopted for selection of the projects included in the MFF:

- (i) Subprojects will not be located in strict nature reserves, i.e., national parks, wildlife sanctuaries or wetlands, unless unavoidable for technical reasons (see attachment 1 for list of protected areas).
- (ii) Monuments of cultural or historical importance will be avoided. Care should be taken in working around such area with additional specific mitigation measures.

31. All subprojects will be subject to environmental assessment process (IEE or EIA). Environmental assessment is a generic term used to describe a process of environmental analysis and planning to address the environmental impacts and risks associated with a project.

2. Environmental Screening and Categorization

32. The Safeguard Policy Statement (2009) requires screening and categorisation of projects to determine the level of environmental assessment study required. The significance of a project's environmental impacts and risks determines the environmental categorization of the project (see Section B.2).

33. All subprojects to be included in the MFF will be screened to determine its environmental category based on the ADB's Rapid Environmental Assessment (REA) Checklist to be completed for each project. A template of ADB's Rapid Environmental Assessment Checklist for Roads and Highways is provided in Attachment 3.

34. ADB categorizes road projects into two categories A and B. Roads upgrading and rehabilitation projects are generally classified as B if they do not impact on sensitive ecological areas. New roads are generally classified as A.

3. Environmental Assessment and Environmental Management Plan Requirements

35. Following confirmation of project categorization by ADB, ARS will undertake, or arrange for consultants to undertake the appropriate level of environmental assessment (IEE for category B or EIA for category A). The IEE or EIA will commence at an early stage in the project preparation process and involve identification of potential direct, indirect, cumulative and induced environmental impacts on and risks to physical, biological, socioeconomic, and physical cultural resources, and determine their significance and scope, in consultation with stakeholders, including affected people and concerned NGOs.

36. For projects with potentially significant adverse impacts that are diverse, irreversible, or unprecedented, ARS will examine alternatives to the project's location, design, technology, and components that would avoid, and, if avoidance is not possible, minimize adverse environmental impacts and risks. The rationale for selecting the particular project location, design, technology, and components will be properly documented with various alternatives considered including the "no action" alternative.

37. Impacts and risks will be analyzed in the context of each project area that encompasses:

- (i) the primary project site(s) and related facilities;
- (ii) associated facilities that are not funded as part of the Program, and whose viability and existence depend exclusively on the project and whose goods or services are essential for successful operation of the project;
- (iii) areas and communities potentially affected by cumulative impacts of the Program, and other sources of similar impacts in the geographical area; and
- (iv) areas and communities potentially affected by impacts from unplanned but predictable developments caused by the project that may occur later or at a different location.

38. Environmental impacts and risks will be analysed for all relevant stages of the project cycle, including preconstruction, construction, operations, decommissioning, and post-closure activities such as rehabilitation or restoration.

39. ARS will prepare an EMP that addresses the potential impacts and risks identified by the environmental assessment. The EMP will include the proposed mitigation measures, environmental monitoring and reporting requirements, emergency response procedures, related institutional or organizational arrangements, capacity development and training measures, implementation schedule, cost estimates, and performance indicators.

40. ADB requires that the environmental assessment and presentation of the EMP is to follow the report structure outlined in Appendix 1 of the Safeguard Policy Statement. This outline is provided in Attachment 2.

41. ARS should ensure that ADB be given access to undertake environmental due diligence for all projects under the MFF. However, ARS has the main responsibility for undertaking environmental due diligence and monitoring the implementation of environmental mitigation

measures for all projects. Due diligence activities along with monitoring reports on implementation of the EMP need to be documented systematically.

42. Environmental monitoring will consist of routine systematic checking that the environmental management measures identified in the EIA and EMP have been implemented effectively during each stage of the project (see Attachment 2).

E. CONSULTATION, INFORMATION DISCLOSURE, AND GRIEVANCES REDRESS MECHANISM

43. IEEs and EIAs prepared for additional sub-projects will be translated into local language(s) and made available to the public, since English is not easily understood in AZE and the communities will not be able to understand the environmental impacts and mitigation measures.

1. Public Consultation

44. For any subproject subject to the EARF and where an EIA/IEE is required, formal and documented public consultation and information disclosure will be required in accordance with the ADB and government's consultation and information disclosure requirements. This will be done at an early stage during EIA/IEE preparation and is to inform stakeholders of the project components and to encourage input to identify possibly overlooked environmental issues. The information disclosed and feedback provided at the consultation sessions will be summarized, attendance recorded, and the document attached as an annex to the EIA/IEE.

45. For each of the subprojects ARS will organize consultations with project affected people and other stakeholders. Consultation will be based on the following principles:

- (i) Early start in the project preparation stage and continuation throughout the project cycle;
- (ii) Timely disclosure of relevant information in a comprehensible and readily accessible to affected people format;
- (iii) Ensuring the absence of intimidation or coercion during public consultation;
- (iv) Gender inclusive and responsive with focus on disadvantaged and vulnerable groups, and
- (v) Enabling the integration of all relevant views of affected people and stakeholders into decision-making.

46. Invited attendees at EIA/IEE consultations will include government agencies and district authorities, community representatives, as well as NGOs. At least two week notice of consultation meetings will be given.

2. Information Disclosure

47. ARS and ADB agree that in disclosing environmental information for each of the projects to the public that:

- (i) ARS is responsible for ensuring that all environmental assessment documentation, including the environmental due diligence and monitoring reports, are properly and systematically kept as part of an ARS project specific record;

- (ii) all environmental documents are subject to public disclosure, and therefore be made available to public;
- (iii) For Category A projects, the draft EIAs will be disclosed at ADB's website 120 days prior to approval of the Periodic Finance Request for that particular tranche;
- (iv) For Category B projects the IEE has to be disclosed on ADB's website upon receipt; and
- (v) ARS will ensure that meaningful public consultations, particularly with project affected persons, are undertaken during the EIA/IEE preparation process for the future projects.

3. Grievance Redress Mechanism

48. In order to receive and facilitate the resolution of affected peoples' concerns, complaints, and grievances about the project's environmental performance an Environmental Grievance Redress Mechanism (GRM) will be established for each of the projects. Whilst the GRM is intended for addressing environment related grievances, in reality there is considerable cross over between environmental and social issues in relation to construction activities. Thus, it is recommended that the GRM established for environmental issues is also used to address social issues arising during project implementation especially where such issues directly involve construction activities (eg access for livestock across the ROW; damage to crops or private infrastructure etc.).

49. The GRM will be used for addressing any complaints that arise during the implementation of projects. In addition, the GRM will include a proactive component whereby at the commencement of construction of each subproject (prior to mobilization) the community will be formally advised of project implementation details by ARS, the design and supervision consultant (DSC) and the contractor (designs, scheduled activities, access constraints etc) so that all necessary project information is communicated effectively to the community and their immediate concerns can be addressed. This proactive approach with communities will be pursued throughout the implementation of each project.

50. The GRM will address affected people's concerns and complaints proactively and promptly, using an understandable and transparent process that is gender responsive, culturally appropriate, and readily accessible to all segments of the affected people at no costs and without retribution. The mechanism will not impede access to the Azerbaijan's judicial or administrative remedies.

4. GRM Establishment and Procedure

51. The GRM will be established at each project location as described below:

52. Prior to the contractor's mobilization to the project site ARS will assist affected communities establish a Grievance Redress Committee (GRC) and identify local representatives to act as Grievance Focal Points (GFP) for that community.

53. The **Grievance Redress Committee** (GRC) will comprise representatives from local authorities, affected parties, and other well-reputed persons from health or education sectors, as mutually agreed with the local authorities and affected persons. It will also comprise the Contractor's Environmental Specialist, DSC's Environment Specialist and ARS PIU Safeguards/Environmental specialist. The function of the GRC is to address the project related

grievances of the affected parties that are unable to be resolved satisfactorily through the initial stages of the GRM procedure.

54. The **Grievance Focal Points** (GFPs) are designated personnel from within the community who will be responsible for (i) acting as community representatives in formal meetings between the project team (contractor, DSC, ARS project implementation unit [PIU]) and the local community he/she represents and (ii) communicating community members' grievances and concerns to the contractor during project implementation. The number of GFPs to be identified for each project will depend on the number and distribution of affected communities.

55. A pre-mobilization public consultation meeting will be convened by ARS and attended by GFPs, contractor, DSC, ARS PIU representative and other interested parties (e.g. District level representatives, NGOs). The objectives of the meeting will be as follows:

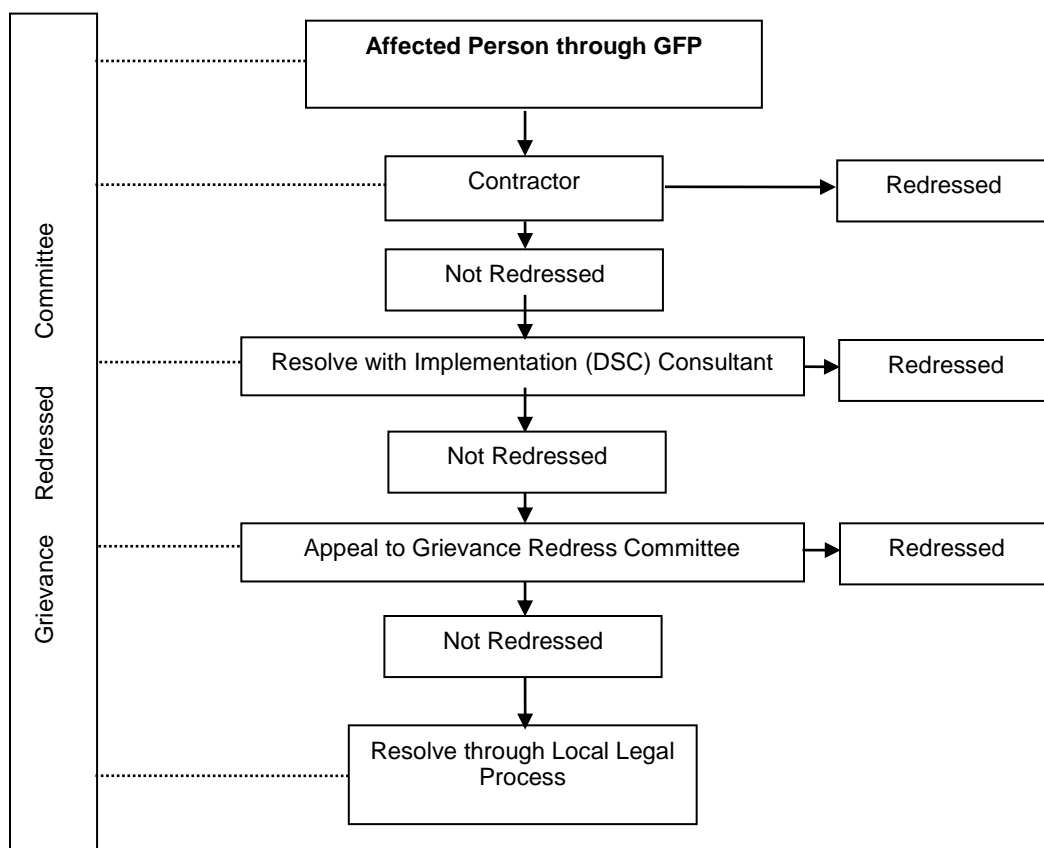
- (i) Introduction of key personnel of each stakeholder including roles and responsibilities;
- (ii) Presentation of project information of immediate concern to the communities by the contractor (timing and location of specific construction activities, design issues, access constraints etc.) This will include a brief summary of the EMP – its purpose and implementation arrangements;
- (iii) Establishment and clarification of the GRM to be implemented during project implementation including routine (proactive) public relations activities proposed by the project team (contractor, DSC, ARS PIU) to ensure communities are continually advised of project progress and associated constraints throughout project implementation;
- (iv) Identification of members of the Grievance Redress Committee (GRC);
- (v) Elicit and address the immediate concerns of the community based on information provided above.

56. Following the pre-mobilization public consultation meeting, environmental complaints associated with the construction activity will be routinely handled through the GRM as explained below and shown schematically in Figure 1:

- (i) Individuals will lodge their environmental complaint/grievance with their respective community's nominated GFP.
- (ii) The GFP will bring the individual's complaint to the attention of the Contractor.
- (iii) The Contractor will record the complaint in the onsite Environmental Complaints Register (ECR) in the presence of the GFP.
- (iv) The GFP will discuss the complaint with the Contractor and have it resolved.
- (v) If the Contractor does not resolve the complaint within one week, then the GFP will bring the complaint to the attention of the DSC's Environmental Specialist. The DSC's Environment Specialist will then be responsible for coordinating with the Contractor in solving the issue.
- (vi) If the Complaint is not resolved within 2 weeks the GFP will present the complaint to the Grievance Redress Committee (GRC).
- (vii) The GRC will have to resolve the complaint within a period of 2 weeks and the resolved complaint will have to be communicated back to the community. The Contractor will then record the complaint as resolved and closed in the Environmental Complaints Register.

- (viii) Should the complaint not be resolved through the GRC, the issue will be adjudicated through local legal processes.
- (ix) In parallel to the ECR placed with the Contractor, each GFP will maintain a record of the complaints received and will follow up on their rapid resolution.
- (x) ARS will also keep track of the status of all complaints through the Monthly Environmental Monitoring Report submitted by the Contractor to the DSC and will ensure that they are resolved in a timely manner.

Figure 1: Grievance Redress Mechanism



F. INSTITUTIONAL ARRANGEMENT AND RESPONSIBILITIES

57. The main institutions that will be involved in environmental management activities are ARS the program executing agency (EA), the DSC, Contractor and line agencies including Ministry of Ecology and Natural Resources.

58. ARS has overall responsibility for all aspects of the investment program. A Project Implementation Unit (PIU) established within ARS will be responsible for the day to day management of the technical aspects of the program. Within the ARS organization structure there is one Safeguards Specialist who is attached to the PIU. The one Safeguards Specialist is responsible for management of the environmental and social aspects associated with development of all donor funded road sector projects for which ARS is the responsible EA.

59. In respect of ADB's requirements for implementation of the environmental safeguards component of the Second Road Network Development Project, the responsibilities of the EA are to:

- (i) Prepare environmental screening (REA) checklist and classify projects in consultation with MENR and other departments.
- (ii) Based on the environmental classification of projects, prepare terms of reference to conduct EIA/IEE studies.
- (iii) Hire an environmental consultant to prepare EIA/IEE reports including EMP for public disclosure.
- (iv) Ensure that an EIA/IEE is prepared in compliance with the requirements of the Government and ADB, and that adequate consultation with affected people is undertaken in accordance with ADB requirements.
- (v) Undertake review of the EIA/IEE and EMP reports to ensure their compliance with the requirements of the Government and ADB.
- (vi) Obtain necessary permits and/or clearance, as required, from MENR and other relevant government agencies, ensuring that all necessary regulatory clearances are obtained before commencing any civil work on the relevant sections.
- (vii) Submit to ADB the EIA/IEE, and EMP reports and other documents, as necessary.
- (viii) Ensure that any EMP including relevant mitigation measures needing to be incorporated during the construction stage by the contractor are included in the bidding documents.
- (ix) Ensure that contractors have access to the EIA/IEE and EMP reports of the projects.
- (x) Ensure that contractors understand their responsibilities to mitigate environmental problems associated with their construction activities and train their staff in implementation of the EMP.
- (xi) Ensure and monitor that an EMP including an environmental monitoring plan will be properly implemented.
- (xii) Ensure that the Contractor submits monthly Environmental Monitoring Reports to the supervision consultant.
- (xiii) Submit to ADB six monthly Environmental Monitoring Reports.
- (xiv) In case unpredicted environmental impacts occur during the project implementation stage, prepare and implement as necessary an environmental emergency program in consultation with MENR, any other relevant government agencies, and ADB.

60. It is considered that with only one safeguard specialist covering both environmental and social safeguards, ARS has insufficient capacity to meet ADB's requirements for implementing environmental safeguards for the Second Road Network Development Program.

1. PIU Capacity Building Requirements

61. The current PIU Safeguards Specialist has qualifications in mathematics and has approximately 6 years experience, primarily in social safeguards (resettlement) activities. The Safeguard Specialist has received some on-the-job training in social and environmental safeguards associated with implementation of donor funded projects (namely World Bank and European Union). However, it is understood that such training has been somewhat ad-hoc, and unsystematic such that there are significant gaps in the Safeguard Specialist's technical knowledge and understanding of environmental issues.

62. It is clear that the PIU (including ARS overall) does not currently have the necessary in-house capacity to effectively undertake its environmental safeguards responsibilities for the Second Road Network Development Program. This is a concern that needs to be addressed, particularly since the Program involves a new road alignment that passes through sensitive wetlands areas (Tranche 2).

63. It is proposed that in addition to provision for consultants to undertake the necessary EIA/IEE for subsequent tranches, the MFF loan agreement includes provision for capacity strengthening of the ARS PIU in environmental management. It is recommended that ARS recruit an appropriately qualified and experienced national environmental specialist as additional PIU staff to assist the current Safeguard Specialist undertake the PIU's environmental management responsibilities for the Second Road Network Development Project.

64. Furthermore, it is recommended that as soon as the proposed environmental specialist is recruited to the PIU, ADB provides the PIU (including both safeguards specialists) with in-house training on ADB environmental safeguards requirements. Preparation and delivery of such training could be included as part of the TOR for the International Environment Specialist of the Tranche 1 Supervision Consultant's Team. Alternatively such training could be coordinated with EAs of other sectors in Azerbaijan with which ADB is involved.

65. The indicative cost for a local environmental specialist to be recruited as staff for the PIU would be around USD34,000 per year.

2. ADB Responsibilities for Environmental Management

66. ADBs responsibilities in regard to implementation of environmental safeguards requirements for the Second Road Network Development Program are as follows:

- (i) Review EIA/IEE and Environmental Monitoring reports and the rapid environmental assessment (REA) checklist as a basis to issue approval for the project.
- (ii) Assign Category to new projects (Tranches) based on REA Checklist.
- (iii) Undertake periodic monitoring of the EMP implementation and due diligence as part of an overall project review mission.
- (iv) If required, provide advice to ARS in carrying out its responsibilities to implement the EMP for the project.

G. MONITORING AND REPORTING

67. Throughout implementation of the MFF, the Government and ADB will monitor the implementation progress and impact of projects. Overall, the EMP for each project will be implemented by the PIU within ARS. In consultation with ARS and ADB, the PIU will establish a system for preparing six monthly reports on environmental performance monitoring, issues resolution, and corrective action plans.

68. The supervision consultants will be responsible for monitoring the implementation of the EMP by the contractors and the PIU will be responsible for overall management and coordination of the EMP. Progress on the preparation and implementation of an EMP will be included in the periodic project progress reports. Specific monitoring activities defined in the EIAs/IEEs and EMPs will be carried out by the contractors and supervised by the supervision consultant's Environmental Specialists (international and national) and monitored by the PIU's Safeguards team. ARS will submit six monthly Environmental Monitoring Reports on EMPs implementation for ADB's review.

69. In general, the overall extent of monitoring activities, including their scope and periodicity, should be commensurate with the project's risks and impacts. ARS is required to implement safeguard measures and relevant safeguard plans, as provided in the legal agreements. At a minimum, ADB will require ARS to:

- (i) establish and maintain procedures to monitor the progress of implementation of EMPs;
- (ii) verify the compliance with environmental measures and their progress toward intended outcomes;
- (iii) document monitoring results and identify necessary corrective and preventive actions in the periodic monitoring reports;
- (iv) follow up on these actions to ensure progress toward the desired outcomes;
- (v) submit bi-annual Environmental Monitoring reports on compliance with the EMP.

70. ADB will carry out the following monitoring actions to supervise project implementation:

- (i) conduct periodic site visits for projects with adverse environmental or social impacts;
- (ii) conduct supervision missions with detailed review by ADB's safeguard specialists/officers or consultants for projects with significant adverse social or environmental impacts;
- (iii) review the bi-annual monitoring reports submitted by ARS to ensure that adverse impacts and risks are mitigated as planned and as agreed with ADB;
- (iv) work with ARS to rectify to the extent possible any failures to comply with their safeguard commitments, as covenanted in the legal agreements, and exercise remedies to re-establish compliance as appropriate; and
- (v) prepare project completion reports that assesses whether the objective and desired outcomes of the EMPs have been achieved, taking into account the baseline conditions and the results of monitoring.

71. The PIU will review the EIA or IEE and corresponding EMP for each project to ensure that mitigation measures and monitoring plans proposed in that document are in compliance with ADB's and national requirements. According to the reports and reviews during its missions, ADB, in consultation with the Government, will confirm compliance. For this purpose, the PIU

will provide ADB with access to information on any projects. The information on implementation of an EMP, as well as that on environmental and social safeguard compliance, will be systematically documented and reported to ADB as part of the regular progress reports.

72. Monitoring plans will be prepared for each project and will be part of each EIA/IEE.

- (i) An Environmental Specialist in ARS PIU will be responsible for reviewing and updating the monitoring program to ensure that it meets the intention of the EMP and for carrying it out.
- (ii) The Environmental Specialist will prepare a bi-annual Environmental Monitoring Report on the subproject EMP implementation and submit it to ADB. The report will outline where work has not complied with the EMP and what steps have been taken to rectify it; format of the Monitoring Report is attached as Attachment 4.
- (iii) After one year the Environmental Specialist will arrange to review the monitoring program and make any adjustments to it as required. The Environmental Specialist will inform the ADB and ARS of any changes that are recommended to be made prior to implementing the changes.

ATTACHMENT 1: LIST AND MAP OF PROTECTED AREAS OF AZERBAIJAN

List of the Specially Protected Nature Areas of the Republic of Azerbaijan

National Parks

No	Name of the SPNA	Administrative Territory	Area	Date of Establishment
1	Zangazur NP named after Academician H.Aliyev	Nakhichevan AR	42,797,4	2003
2	Shirvan NP	Garadagh district of Baku city, Salyan and Neftchala regions	54,373,5	2003
3	Aghgol NP	Aghjabadi and Beylagan regions	17,924	2003
4	Hirkan NP	Lankaran and Astara regions	40,358	2004
5	Altiaghaj NP	Khizi and Siyazan regions	11,035	2004
6	Absheron NP	Azizbayov district of Baku city	783	2005
7	Shahdag NP	Guba, Gusar, Ismayilly, Gabala, Oghuz and Shamakhy regions	130,508,1	2006
8	Goygol NP	Goygol, Dashkasan and Goranboy regions	12,755	2008

State Nature Reserves

No	Name of the SPNA	Administrative Territory	Area	Date of Establishment
1	Gizilaghaj SNR	Lankaran region	88,360	1929
2	Zagatala SNR	Zagatala and Balakan regions	47,349	1929
3	Turyanchay SNR	Aghdash, Oghuz, Yevlakh and Gabala regions	22,488	1958
4	Shirvan SNR	Salyan and Neftchala regions	6,232	1969
5	Basitchay SNR	Zangilan region	107	1974
6	Garayazi SNR	Gazakh region	9,658	1978
7	Ilisu SNR	Gakh region	17,381,6	1987
8	Garagol SNR	Lachin region	240	1987
9	Eldar shami SNR	Samukh region	1,686	2004
10	Mud volcanoes SNR	Baku and Absheron peninsula	20,000	2007
11	Korchay SNR	Goranboy region	4,833,6	2008

State Nature Sanctuaries

No	Name of the SPNA	Administrative Territory	Area	Date of Establishment
1	Lachin SNS	Lachin region	20,000	1961
2	Korchay SNS	Goygol and Goranboy regions	15,000	1961
3	Bandovan SNS	Salyan region and Garadagh district	4,930	1961
4	Shaki SNS	Shaki region	10,350	1964
5	Gusar SNS	Gusar region	15,000	1964
6	Shamkir SNS	Shamkir region	10,000	1964
7	Gil island SNS	Gil island	400	1964
8	Garayazy-Aghstafa SNS	Aghstafa region	10,000	1964
9	Barda SNS	Barda and Aghdam regions	7,500	1966
10	Zuvand SNS	Lerik, Yardimly regions	15,000	1969
11	Ordubad SNS	Ordubad region	27,869	1969
12	Ismayilli SNS	Ismayilly and Gabala region	23,438	1969
13	Qubadli SNS	Qubadli, Lachin region	20,000	1969
14	Lesser Gizilaghaj SNS	Lankaran region	10,700	1978

No	Name of the SPNA	Administrative Territory	Area	Date of Establishment
15	Dashaltı SNS	Shusha region	450	1981
16	Qızıljı SNS	Gedebey region	5,135	1984
17	Arazboyu SNS	Zangilan region	2,200	1993
18	Gabala SNS	Gabala region	39,700	1993
19	Gakh SNS	Gakh region	36,836	2003
20	Hirkan SNS	Lankaran and Astara regions	1,553	2005
21	Arazboyu SNS	Nakhichevan AR	9,118	2005
22	Zagatala SNS	Zagatala and Balakan regions	6,557	2008
23	Arpachay SNS	Nakhichevan AR , Sharur region	68,911	2009
24	Rvarud SNS	Lerik region	510	2009

Source: Ministry of Ecology and Natural Resources of Azerbaijan Republic
<http://www.eco.gov.az/en/b-xm-tb.php>

ATTACHMENT 2: FORMAT AND CONTENT OF IEE/EIA

This outline is part of the Safeguard Requirements 1. An environmental assessment report is required for all environment category A and B projects. Its level of detail and comprehensiveness is commensurate with the significance of potential environmental impacts and risks. A typical EIA report contains the following major elements, and an IEE may have a narrower scope depending on the nature of the project. The substantive aspects of this outline will guide the preparation of environmental impact assessment reports, although not necessarily in the order shown.

A. Executive Summary

This section describes concisely the critical facts, significant findings, and recommended actions.

B. Policy, Legal, and Administrative Framework

This section discusses the national and local legal and institutional framework within which the environmental assessment is carried out. It also identifies project-relevant international environmental agreements to which the country is a party.

C. Description of the Project

This section describes the proposed project; its major components; and its geographic, ecological, social, and temporal context, including any associated facility required by and for the project (for example, access roads, power plants, water supply, quarries and borrow pits, and spoil disposal). It normally includes drawings and maps showing the project's layout and components, the project site, and the project's area of influence.

D. Description of the Environment (Baseline Data)

This section describes relevant physical, biological, and socioeconomic conditions within the study area. It also looks at current and proposed development activities within the project's area of influence, including those not directly connected to the project. It indicates the accuracy, reliability, and sources of the data.

E. Anticipated Environmental Impacts and Mitigation Measures

This section predicts and assesses the project's likely positive and negative direct and indirect impacts to physical, biological, socioeconomic (including occupational health and safety, community health and safety, vulnerable groups and gender issues, and impacts on livelihoods through environmental media [Appendix 2, para. 6]), and physical cultural resources in the project's area of influence, in quantitative terms to the extent possible; identifies mitigation measures and any residual negative impacts that cannot be mitigated; explores opportunities for enhancement; identifies and estimates the extent and quality of available data, key data gaps, and uncertainties associated with predictions and specifies topics that do not require further attention; and examines global, transboundary, and cumulative impacts as appropriate.

F. Analysis of Alternatives

This section examines alternatives to the proposed project site, technology, design, and operation—including the no project alternative—in terms of their potential environmental impacts; the feasibility of mitigating these impacts; their capital and recurrent costs; their suitability under local conditions; and their institutional, training, and monitoring requirements. It also states the basis for selecting the particular project design proposed and, justifies recommended emission levels and approaches to pollution prevention and abatement.

G. Information Disclosure, Consultation, and Participation

This section:

- (i) describes the process undertaken during project design and preparation for engaging stakeholders, including information disclosure and consultation with affected people and other stakeholders;
- (ii) summarizes comments and concerns received from affected people and other stakeholders and how these comments have been addressed in project design and mitigation measures, with special attention paid to the needs and concerns of vulnerable groups, including women, the poor, and Indigenous Peoples; and
- (iii) describes the planned information disclosure measures (including the type of information to be disseminated and the method of dissemination) and the process for carrying out consultation with affected people and facilitating their participation during project implementation.

H. Grievance Redress Mechanism

This section describes the grievance redress framework (both informal and formal channels), setting out the time frame and mechanisms for resolving complaints about environmental performance.

I. Environmental Management Plan

This section deals with the set of mitigation and management measures to be taken during project implementation to avoid, reduce, mitigate, or compensate for adverse environmental impacts (in that order of priority). It may include multiple management plans and actions. It includes the following key components (with the level of detail commensurate with the project's impacts and risks):

- (i) Mitigation:
 - a. identifies and summarizes anticipated significant adverse environmental impacts and risks;
 - b. describes each mitigation measure with technical details, including the type of impact to which it relates and the conditions under which it is required (for instance, continuously or in the event of contingencies), together with designs, equipment descriptions, and operating procedures, as appropriate; and
 - c. provides links to any other mitigation plans (for example, for involuntary resettlement, Indigenous Peoples, or emergency response) required for the project.

- (ii) Monitoring:
 - a. describes monitoring measures with technical details, including parameters to be measured, methods to be used, sampling locations, frequency of measurements, detection limits and definition of thresholds that will signal the need for corrective actions; and
 - b. describes monitoring and reporting procedures to ensure early detection of conditions that necessitate particular mitigation measures and document the progress and results of mitigation.
- (iii) Implementation arrangements:
 - a. specifies the implementation schedule showing phasing and coordination with overall project implementation;
 - b. describes institutional or organizational arrangements, namely, who is responsible for carrying out the mitigation and monitoring measures, which may include one or more of the following additional topics to strengthen environmental management capability: technical assistance programs, training programs, procurement of equipment and supplies related to environmental management and monitoring, and organizational changes; and
 - c. estimates capital and recurrent costs and describes sources of funds for implementing the environmental management plan.
- (iv) Performance indicators: describes the desired outcomes as measurable events to the extent possible, such as performance indicators, targets, or acceptance criteria that can be tracked over defined time periods.

J. Conclusion and Recommendation

This section provides the conclusions drawn from the assessment and provides recommendations.

ATTACHMENT 3: REA CHECKLIST

Rapid Environmental Assessment (REA) Checklist

ROADS AND HIGHWAYS

Instructions:

- ☐ This checklist is to be prepared to support the environmental classification of a project. It is to be attached to the environmental categorization form that is to be prepared and submitted to the Chief Compliance Officer of the Regional and Sustainable Development Department.
- ☐ This checklist is to be completed with the assistance of an Environment Specialist in a Regional Department.
- ☐ This checklist focuses on environmental issues and concerns. To ensure that social dimensions are adequately considered, refer also to ADB checklists and handbooks on (i) involuntary resettlement, (ii) indigenous peoples planning, (iii) poverty reduction, (iv) participation, and (v) gender and development.
- ☐ Answer the questions assuming the "without mitigation" case. The purpose is to identify potential impacts. Use the "remarks" section to discuss any anticipated mitigation measures.

Country/Project Title:

Sector Division:

SCREENING QUESTIONS	Yes	No	REMARKS
A. Project Siting			
Is the Project area adjacent to or within any of the following environmentally sensitive areas?			
▪ Cultural heritage site	<input type="checkbox"/>	<input type="checkbox"/>	
▪ Protected Area	<input type="checkbox"/>	<input type="checkbox"/>	
▪ Wetland	<input type="checkbox"/>	<input type="checkbox"/>	
▪ Mangrove	<input type="checkbox"/>	<input type="checkbox"/>	
▪ Estuarine	<input type="checkbox"/>	<input type="checkbox"/>	
▪ Buffer zone of protected area	<input type="checkbox"/>	<input type="checkbox"/>	
▪ Special area for protecting biodiversity	<input type="checkbox"/>	<input type="checkbox"/>	
B. Potential Environmental Impacts			
Will the Project cause...			
▪ encroachment on historical/cultural areas; disfiguration of landscape by road embankments, cuts, fills, and quarries?	<input type="checkbox"/>	<input type="checkbox"/>	

SCREENING QUESTIONS	Yes	No	REMARKS
▪ encroachment on precious ecology (e.g. sensitive or protected areas)?	<input type="checkbox"/>	<input type="checkbox"/>	
▪ alteration of surface water hydrology of waterways crossed by roads, resulting in increased sediment in streams affected by increased soil erosion at construction site?	<input type="checkbox"/>	<input type="checkbox"/>	
▪ deterioration of surface water quality due to silt runoff and sanitary wastes from worker-based camps and chemicals used in construction?	<input type="checkbox"/>	<input type="checkbox"/>	
▪ increased local air pollution due to rock crushing, cutting and filling works, and chemicals from asphalt processing?	<input type="checkbox"/>	<input type="checkbox"/>	
▪ noise and vibration due to blasting and other civil works? ▪ dislocation or involuntary resettlement of people	<input type="checkbox"/>	<input type="checkbox"/>	
▪ other social concerns relating to inconveniences in living conditions in the project areas that may trigger cases of upper respiratory problems and stress?	<input type="checkbox"/>	<input type="checkbox"/>	
▪ hazardous driving conditions where construction interferes with pre-existing roads?	<input type="checkbox"/>	<input type="checkbox"/>	
▪ poor sanitation and solid waste disposal in construction camps and work sites, and possible transmission of communicable diseases from workers to local populations?	<input type="checkbox"/>	<input type="checkbox"/>	
▪ creation of temporary breeding habitats for mosquito vectors of disease?	<input type="checkbox"/>	<input type="checkbox"/>	
▪ dislocation and compulsory resettlement of people living in right-of-way?	<input type="checkbox"/>	<input type="checkbox"/>	
▪ accident risks associated with increased vehicular traffic, leading to accidental spills of toxic materials and loss of life?	<input type="checkbox"/>	<input type="checkbox"/>	
▪ increased noise and air pollution resulting from traffic volume?	<input type="checkbox"/>	<input type="checkbox"/>	
▪ increased risk of water pollution from oil, grease and fuel spills, and other materials from vehicles using the road?	<input type="checkbox"/>	<input type="checkbox"/>	

Climate Change and Disaster Risk Questions The following questions are not for environmental categorization. They are included in this checklist to help identify potential climate and disaster risks.	Yes	No	Remarks
▪ Is the Project area subject to hazards such as earthquakes, floods, landslides, tropical cyclone winds, storm surges, tsunamis or volcanic eruptions and climate changes (see Appendix I)?			
▪ Could changes in precipitation, temperature, salinity, or extreme events over the Project lifespan affect its sustainability or cost?			

<ul style="list-style-type: none"> ▪ Are there any demographic or socio-economic aspects of the Project area that are already vulnerable (e.g. high incidence of marginalized populations, rural-urban migrants, illegal settlements, ethnic minorities, women or children)? 			
<ul style="list-style-type: none"> ▪ Could the Project potentially increase the climate or disaster vulnerability of the surrounding area (e.g., increasing traffic or housing in areas that will be more prone to flooding, by encouraging settlement in earthquake zones)? 			

Appendix I to REA: Environments, Hazards and Climate Changes

Environment	Natural Hazards and Climate Change
Arid/Semi-arid and desert environments	Low erratic rainfall of up to 500 mm rainfall per annum with periodic droughts and high rainfall variability. Low vegetative cover. Resilient ecosystems & complex pastoral and systems, but medium certainty that 10–20% of drylands degraded; 10–30% projected decrease in water availability in next 40 years; projected increase in drought duration and severity under climate change. Increased mobilization of sand dunes and other soils as vegetation cover declines; likely overall decrease in agricultural productivity, with rain-fed agriculture yield reduced by 30% or more by 2020. Earthquakes and other geophysical hazards may also occur in these environments.
Humid and sub-humid plains, foothills and hill country	More than 500 mm precipitation/yr. Resilient ecosystems & complex human pastoral and cropping systems. 10–30% projected decrease in water availability in next 40 years; projected increase in droughts, heat waves and floods; increased erosion of loess-mantled landscapes by wind and water; increased gully erosion; landslides likely on steeper slopes. Likely overall decrease in agricultural productivity & compromised food production from variability, with rain-fed agriculture yield reduced by 30% or more by 2020. Increased incidence of forest and agriculture-based insect infestations. Earthquakes and other geophysical hazards may also occur in these environments.
River valleys/deltas and estuaries and other low-lying coastal areas	River basins, deltas and estuaries in low-lying areas are vulnerable to riverine floods, storm surges associated with tropical cyclones/typhoons and sea level rise; natural (and human-induced) subsidence resulting from sediment compaction and ground water extraction; liquefaction of soft sediments as result of earthquake ground shaking. Tsunami possible/likely on some coasts. Lowland agri-business and subsistence farming in these regions at significant risk.
Small islands	Small islands generally have land areas of less than 10,000 km ² in area, though Papua New Guinea and Timor with much larger land areas are commonly included in lists of small island developing states. Low-lying islands are especially vulnerable to storm surge, tsunami and sea-level rise and, frequently, coastal erosion, with coral reefs threatened by ocean warming in some areas. Sea level rise is likely to threaten the limited ground water resources. High islands often experience high rainfall intensities, frequent landslides and tectonic environments in which landslides and earthquakes are not uncommon with (occasional) volcanic eruptions. Small islands may have low adaptive capacity and high adaptation costs relative to GDP.
Mountain ecosystems	Accelerated glacial melting, rockfalls/landslides and glacial lake outburst floods, leading to increased debris flows, river bank erosion and floods and more extensive outwash plains and, possibly, more frequent wind erosion in intermontane valleys. Enhanced snow melt and fluctuating stream flows may produce seasonal floods and droughts. Melting of permafrost in some environments. Faunal and floral species migration. Earthquakes, landslides and other geophysical hazards may also occur in these environments.
Volcanic environments	Recently active volcanoes (erupted in last 10,000 years – see www.volcano.si.edu). Often fertile soils with intensive agriculture and landslides on steep slopes. Subject to earthquakes and volcanic eruptions including pyroclastic flows and mudflows/lahars and/or gas emissions and occasionally widespread ashfall.

ATTACHMENT 4: FORMAT OF BI-ANNUAL ENVIRONMENTAL MONITORING REPORT

Table of Contents

Part I Introduction

- Construction activities and Project Progress during previous 6 months
- Changes in project organization and Environmental management team
- Relationships with Contractors, owner, lender, etc.

Part II Environmental Monitoring

- Environmental monitoring summary – summarize the previous six months monitoring data and provide explanations of any instances where environmental standards or guidelines are exceeded. Typically this will cover:
 - Noise and Vibration
 - Water Quality
 - Air Quality
 - Flora and fauna monitoring
- Recommendations are required to show how any exceedences will be prevented in the future.
- Graphs can be used in this section to show trends, however large tables of data or multiple graphs should be attached as an appendix.

Part III Environmental Management

- EMS, SSEMP and work plans. Report on delivery of documents, required amendments etc.
- Site Inspections and audits – summarize the number and type of site visits
- Non-compliance notices – summarize the details on the number of notices given out and the issues covered. Summarize the ranking of issues.
- Corrective action plans - report on timeliness of preparation and completion
- Consultation and complaints – report on any consultation undertaken and list any complaints received.

Annexes

- Monitoring data
- Photographs
- Implementation report on EIA/IEE mitigation requirements

Reference	Requirement	Action to date	Action required/comment