

E2090
V4

Republic of Kazakhstan

Ministry of Transport and Communications

Committee for Roads

Central Asia Regional Cooperation (CAREC) Corridors 1, 3, 6

Western China-Western Europe International Corridor

Reconstruction of the International Corridor from Korgos to Aktobe Oblast

Environmental Assessment Review Framework (EARF)

Cooperating International Financial Institutions:

**Asian Development Bank
(Zhambyl Oblast)**

**European Bank for Reconstruction and Development,
(Aktobe Oblasts)**

**Islamic Development Bank
(Zhambyl Oblast)**

**World Bank, South-West Corridor Road Project
(South Kazakhstan, Kzyl Orda Oblasts)**

June 14, 2008

DRAFT

TABLE OF CONTENTS

I.	INTRODUCTION	1
1.	Purpose of the EARF	1
II.	SCREENING LOAN TRANCHES	1
1.	The Loan Tranche	1
2.	The Projects	1
a.	ADB/ISDB Section: Zhambyl Oblast Section 480 km:	3
b.	EBRD Section: Western Russian Border at Aktobe: 100 km	3
c.	The World Bank Section: Aktobeo Kyzylorda-Shympkent: 1060 km.....	3
III.	COMMON IMPACTS: PRECONSTRUCTION, CONSTRUCTION AND OPERATIONAL PERIOD	6
1.	Preconstruction Period Impacts	6
2.	Construction Period Impacts	8
3.	Operating Period Impacts	10
4.	Indirect and Cumulative and/or Synergistic Impacts	10
IV.	COMMON MITIGATIVE MEASURES	12
1.	Planning and Design Phase	12
2.	Construction Period	14
3.	Operating Period	15
V.	MONITORING	17
1.	Compliance and Effects Monitoring	17
VI.	DONOR AND KAZAKHSTAN ENVIRONMENTAL ASSESSMENT PROCEDURES	18
VII.	GENERAL ASSESSMENT STAGES AND PROCEDURES FOR AVOIDING AND MITIGATING LIKELY IMPACTS	25
1.	Screening and Categorization	25
2.	Scoping	25
3.	Impact Assessment	25
4.	Reporting	26
VIII.	PROCEDURES TO BE APPLIED TO PROJECTS IN EACH LOAN TRANCHE	26
1.	Non-Negotiable Environmental Limits	26
2.	Selection Criteria	27
3.	Environmental Categories and Standards: Guiding Principles	27
4.	Category B and A Projects: The IEE and Full EIA	27
a.	Screening	27
b.	Scoping.....	27
c.	Identifying Baseline Conditions and Impacts	28
d.	Consultation.....	28
e.	Preparation of the Environmental Mitigation and Monitoring Plan (EMP)	29
f.	Assessing Institutional Capacity for EA Implementation.....	29
g.	Estimating Mitigation, Monitoring and Training Costs.....	30
h.	Reporting	30
5.	Category C Projects: The Standard Environmental Safeguard Procedures (SESP)	30
IX.	IMPLEMENTING THE ENVIRONMENTAL ASSESSMENT	30
1.	Environmental Clauses and Contract Specifications	30
2.	The Design Period (Preconstruction)	31
3.	The Construction Environmental Action Plan (CEAP)	31

4.	Compliance Monitoring and Reporting	32
5.	Operating Period Monitoring	32
X.	RESPONSIBLE AUTHORITIES AND REVIEW PROCESS	32
1.	The Proponent	32
2.	The Donor (ADB , EBRD, ISDB, World Bank)	34
XI.	STAFFING AND BUDGET	35
1.	Institutional and Technical Capacity Of The Proponent And Contractors	35
2.	Budget Requirements for Implementation of EARF	37

List of ANNEXES

The EARF contains a large number of Annexes (each Annex is paginated starting with page 1) since it is a guideline and ready access to examples of items required in a compliant assessment should help the government.

1. Roads, Highways Environmental Screening Checklist Template
2. Standard Environmental Safeguard Procedures for Cat. C Projects
- 3A & 3B Sample Table of Contents for EIA and IEE
4. Sample Monitoring Form
5. Sample EMP, including Separate Mitigation and Monitoring Matrix Tables
- 6A-6D Sample Safeguard Clauses for Category A and B Projects and Detailed Contract Specifications
7. Sample CEAP from World Bank 2008 Indonesia Infrastructure Development Project/

Acronyms and Special Terms

Term	Unit	Definition
Airshed		Refers to the area of air over the road- and most affected by pollutants
Akim		Town/District Mayor
ADB		Asian Development Bank
CAREC		Central Asian Regional Economic Cooperation
CEAP		Construction Environmental Action Plan
Code coliform	na	Codes are the specific standards supporting Kazakh regulations or norms A bacterial contamination indicator (plant and animal matter breakdown)
dBa		Decibels in the A-noise band (detectable by human ear)
DOE		Department of Environment (Oblast level)
EA		Environmental Assessment
EBRD		European Bank of Reconstruction and Development
EARF		Environmental Assessment and Review Framework
EMP		Environmental Management Plan
EIA		Environmental Impact Assessment
CFH		MOAg's Committee of Forestry and Hunting
FS		Feasibility Study
IEE		Initial Environmental Examination
IFI		International Financial Institution (like the ADB or ISDB)
ISDB		Islamic Development Bank
KAZDOPREKT		Preliminary Design Consultant (Almaty)
MEMR		Ministry of Energy and Mineral Resources
MTF		Multi-tranche Financial Facility
MOAg		Ministry of Agriculture
MOEP		Ministry of Environmental Protection
MOH		Ministry of Health
MOTC		Ministry of Transport and Communication
Norm		Norms are regulations supported by the standards or codes
Oblast		Province
PEIA		Preliminary EIA
PMC		Project Management Consultant or Contract Management Service
PPP		Public Private Sector Partnership (road operation privatization approach)
Proponent		The MOTC and responsible for all aspects the project
Rayon		District
RC		MOTC's Roads Committee
RK/GoK		Government of Kazakhstan
RoW		Right of Way
SE		Supervising Engineer
SEIA		Summary EIA
SES		Sanitary and Epidemiological Services of MOH
SESP/SOP		Standard Environmental Safeguard Procedures
ToC		Table of Contents
Tranche	\$ or Tenge	In banking terms one of several units/amounts of money transferred from the lender to the proponent
Synergistic Effects/Impact		Two or more impacts that have an effect greater than the sum of the two.

- **INTRODUCTION**

1. The Western China-Western Europe Transportation Project is an international program to provide year-round road transportation link from the border of Western China to Western Europe. The South –West Kazakhstan Corridor is a major element of this effort. Three donors are collaborating on providing loans valued at over USD 1.9 billion to the Republic of Kazakhstan (RK).

2. These loans have been packaged as Multi-Tranche-Financing-Facilities (MFF)¹, meaning that instead of three large loans there will be two with the ADB, two with the EBRD one with the Islamic Development Bank and two with the World Bank. These are referred to as tranches, and each will need separate documentation and specifications, although an over-arching agreement for the MFF package will be signed first between the Republic of Kazakhstan (RK) and the donors. Within each tranche there are from 1 to three projects each with their own safeguard requirements.

Purpose of the EARF

3. To assist the RK with future environmental assessments and to better meet donor requirements an Environmental Assessment Review Framework (EARF) has been prepared. The framework provides guidance on how a project environmental assessment is planned, executed, recorded and reviewed. Secondly the EARF defines steps on how to meet donor environmental safeguards requirements for the projects, while at the same time remaining as close to the RK's process as possible.

4. This EARF also defines what issues are likely to emerge and what measures are commonly applied to mitigate these effects.

- **SCREENING LOAN TRANCHES**

The Loan Tranche

5. The MFF loan as a whole will not be screened and categorized, rather each tranche will be screened and according to the classification of the projects being undertaken in that tranche a Tranche category will be assigned. If a tranche has three projects and one is a category A, then the entire tranche will become a category A loan.

6. The donors have examined all the projects within each tranche and have given them tentative classifications (Table 1). To facilitate the first tranche, only Category B projects were selected for early implementation.

The Projects

7. The four donors have a total of 12 road sections extending for >2800 km from the border with PRC to Russia north of the Caspian Sea. The ADB has five road sections, the EBRD two, the ISDB two and the World Bank two (Table 1) are mostly road improvements upgrades, new bypasses and some entirely new sections.

¹ The three banks have slightly different terms meaning the same thing; but for this report the ADB's terminology will be applied

Table 1. Loan Tranches and Known Projects To Be Assessed (May 4, 2008)

Donor	Loan Tranche	Projects No and Name	Chainage	Km	EA Category	Issues/Comments
ADB	1	3: Taraz-Kulan	1004-1109	86	B	12 km of new road rest just improvements
		6:Blagoveshenka-Korday	1225-1270	45.5	B	2-lane improvements no major works
	2	4:Kulan-Merke- Blagoveshenka	1123-1196	156	A	29 km of new road
		5: Blagoveshenka- Otar	1196-1325	76.7	A	All new road
		7:Korday-Kyrgyz Border	1270-1286	16	B	16 km bypass-9km new
ISDB	1	1:Zham.Oblast Border-Taraz	894-951	54.2	A	Karatau Massif Ntn'l Park & Kuyuk Mtn. terrain
		2:Terez Bypass	951-1004	60	A	53 km new road
EBRD	1	1: Russian Border – Hlebodarovka,	0-80	80	B	Rehabilitation to 2 lanes standard-Also MOTC requested the EBRD loan to be provided in one Tranche. Discussions to be held whether to split into two tranches for section.
		2: Hlebodarovka – Aktobe	80-99	10	B	reconstruction and widening to 4 lanes proposed but no agreed to technical standard
		3. Almaty-Khorgos		305	A	EBRD intends to assist GoK with preparation of this PPP toll road and complete the full EIA
World Bank	1	1: Kyzylroda / Aktobe Oblast Border to Kyzylorda City		570	B	Bypasses may require additional environmental survey (EIA Cat B)
		2: Kyzylorda City to Turkestan City		275	A	Bypasses will require additional environmental survey (full EIA)
	2	3:Turkestan City to Shympkent City		160	A	Bypasses will require additional environmental survey (full EIA)

Source: Consultation with the IFIs and specific inputs, May, June 2008.

Nearly all culverts and bridges are to be replaced. Since the ADB has the most new road sections all of Tranche 2 will be Category A works, even though one of the Tranche 2 projects is Category B. The ISDB has only Category A projects, the World Bank Category A and B works, and the EBRD, two Bs.

Republic of Kazakhstan's Actions

8. Subsequent to the completion of the PEIA by KAZDORPROEKT and its approval by the MOEP in late 2007, MOTC, the proponent, has embarked in the completion of EIAs for all 12 projects. Consultants have been appointed and EIAs are underway with completed and approved reports scheduled for late December 2008.

Geographic Variations

9. The Kazakhstan portion of the WUEC Transport Corridor Project passes through four geographically distinct areas each with their specific potentially sensitive conditions;

ADB/ISDB Section: Zhambyl Oblast Section 480 km:

10. This road section passes through the transition zone between foothills and steppes along the Khyrgyz Mountain Range with many dry but vegetated drainage channels giving the surface topography a scalloped and dendritic appearance. In this area periodic mudslides occur. The second topographic feature is the steep closely packed hills usually 20-25 km from the mountains, usually comprised of large rock outcrops in among lush green hills, transitioning in a few places to a massive set of outcrop rocks forming jagged walls and entire hills. The third type of topographic feature is the section where the road runs perpendicular to many spring melt water (from mountains) runoff channels, crossing many small streams and wetlands; most formed by this movement of surface and shallow subsurface flows from the mountains. Finally there are sections where the road passes through almost totally flat pasture and cash crop growing lands with large trees (35-45 years old) growing in several rows on both sides of the road sometimes appearing as a 'green tunnel' over the road.

11. In early June the ISDB agreed to provide funding for two of the ADB roads, namely Sections 1 and 2, both Category A roads. Given that these roads are within the 480 km section no special description is provided.

EBRD Section: Western Russian Border at Aktobe & Almaty-China Border: 395 km

12. The main EBRD section is the dry rolling desert topography, sparsely vegetated with saline soils in many places with a salt crust. The sparse vegetation is cropped by passing livestock herds, further reducing and stressing the vegetation. The area is subject to extreme temperatures and a great deal of wind leading to drifting sand and erosion. Flash flooding is common. The EBRD is also involved in providing assistance in the structuring of the concession of the Private-Public-Partnership (PPP) toll road for the Almaty to Khorgos section and will be one of the financiers. This section will involve major upgrading and some realignment through steppe and hilly lands to the border with China's Xinjiang Autonomous Region. It is an and heavily traveled road.

The World Bank Section: Aktobe-Kyzylorda-Shymkent: 1060 km

13. This 1060 km long stretch of road passes through two distinct eco-regions. The northern part, an approximately 800 km section from the Aktobe / Kyzylorda Oblast border to somewhere between Kyzylorda City and Turkestan City is characterized by arid, almost desert climate, sparse vegetation, hardly any year-round surface water courses (except Syrdaria) and large areas with (naturally) hyper-saline soils. Saksaul forests, which are adapted to dry, saline conditions with extreme temperature differences, play an important role in soil stabilization and erosion control, especially in the stretches between Kyzylorda City and the Aral Sea and northwards to the Aktobe Oblast border. They constitute an important ecosystem and soil protection and stabilization element, but are not expected to be negatively affected by the project.

14. The landscape is generally barren, hardly vegetated and prone to wind erosion, dust generation and moving sand dunes. Surface drainage functions mainly seasonally, when flash floods can occur and run-off waters can have a high erosion potential. The road roughly parallels the Syrdaria River² as it runs north to the Aral Sea. In fact the road crosses the river at several places, but in most parts in several km to 10s of km distance, staying well away from the irrigated farmlands along its shoreline. The landscape has a soft profile with wide valleys and basins, separated by slightly elevated plateaus. Land use is restricted to animal grazing, mostly camels, some cattle and horses, but with low intensity. Permanent settlements are extremely sparse and population density below 1 person / km². The southern section runs approximately 450 km from North of Turkestan southward to Shympkent City. This zone receives more precipitation, has a slightly more temperate and humid climate and is thus more productive and more densely populated (15-20 people/km²). The corridor section in this zone passes through wide, flat basins and gently rolling hills, which are getting progressively flatter towards the north.

15. The natural vegetation is steppe, dominated by grassland with small clusters of forest near rivers and in valleys. The climate is still generally dry with precipitation concentrated over relatively short time periods in the spring and fall. There are a number of small intermittent tributaries to the Syrdaria River, which cross the road corridor. The highway alignment is roughly 3-5 km north of and parallel with the Syrdaria River, then intersects with it near Turkestan and crosses several times further north. Between Shympkent and Turkestan the land is extensively used for agriculture and horticulture. North of Turkestan, the land use shifts to animal grazing as more arid conditions begin to prevail.

² The Syrdaria River is an international waterway and as such any major work over or in it would trigger full EIA under World Bank policy. All work to be undertaken will involve only bridge widening, working from the existing deck, thus no obstruction or safety considerations would trigger a full EIA.

Figure 1. Map of Entire project, showing road sections for ADB, EBRD and World



- **COMMON IMPACTS: PRECONSTRUCTION, CONSTRUCTION AND OPERATIONAL PERIOD**

16. Determining impacts their severity and duration is difficult and requires technical skill, experience and knowledge of the source of the impact, the impact mechanism and the affected ecosystem component. There are three types of impacts:

- direct impacts
- indirect impacts; and,
- cumulative impacts.

17. These can be broken down into another 6 subgroups depending on the whether the impact is positive or negative and its geographic extent, duration and severity. MOTC consultants and contractor not familiar with impact categories should study Chapter 6 of the Roads and Environment Handbook 1997 (www.worldbank.org).

18. Impacts are often quickly established through knowledge of the methods, procedures and operating guidelines applied during the development cycle of a program or project and the sensitive ecosystem components within the program/project impact zone identified during the scoping exercise. Moreover, many are standard impacts which are repetitive for almost every road project.

Preconstruction Period Impacts

19. It is during this stage that all EA documentation must be prepared and the plan for implementation of mitigative actions defined. By knowing where/what environmental hotspots exist or future issues are likely due to inappropriate or shortsighted planning, planners can avoid serious impacts by, inter alia, modifying a design condition, adjusting alignment segments, varying construction techniques, or modifying the earthworks plan. Therefore, knowledge of these hotspots is the cornerstone to technically sound and credible EA.

Policy and Process Related Impacts and Mitigation

20. More than during any other time, the pre-construction period is when policy or process related errors and oversights can cause problems for the life of the project. Addressing these early in the project cycle cannot be stressed enough. There are six common issues (Table 2) ranging from the most obvious of not providing enough copies of the environmental documentation to all key stakeholders, to preparing the contract specifications before the environmental assessment is complete therefore without the use of the EIA and its Environmental Management Plan.

21. Quite often, the contractor is left out of the document distribution circle completely, short-circuiting the entire EA process.

22. In addition to credible compliance monitoring, the best way to ensure that mitigation and monitoring takes place is to integrate the actions stated in the EMP into the contract specifications. This is achieved by simply appending the EMP as a set of environmental specifications or including general clauses that highlight the concerns and cross reference the EMP. A sample EMP and two sets of environmental clauses are included as Annex 5 and 6A/B of this EARF.

Table 2 Common Policy and Process Errors during Preconstruction Stage

IMPACT	SUGGESTED MITIGATIVE MEASURE
Inadequate knowledge of EA scoping by the unit conducting the EA, leading to missed potential impacts and lost opportunities to prevent impacts which save the environment and money.	In addition to having an up-to-date EIA license as prescribed by the Ecological Code of RK (2007), MOTC must request the outcome of the scoping activity from the consultant and fill in any missing bits before work can proceed. To ensure that the EIA is done in compliance with donor requirements, a specialist with solid experience in donor-EA process should be made available to guide the consultant in the preparation of compliant EAs.
Proponent fails to translate environmental documentation and to distribute enough copies to all key stakeholders.	A translation to Russian of the EA document and the environmental management plan in full needs to be distributed to the: Oblast DOT (1), Oblast MOE (2), Oblast SES (1 hard copy and soft), all relevant Akims (1), Oblast Forest and Hunting Committee (1 hard copy and 1 soft), contractor undertaking the work (1 hard copy and one soft)
Detailed design proceeding without access to Environmental Management Plan's identified mitigation and monitoring measures	As the detailed design is progressing the team should seek out the environmental assessment documentation and obtain at least to the EMP to define what impacts could be designed out of the project e.g., traffic management, livestock control, slope stabilization, fuel management systems, work camp protocol re waste, etc.
Team preparing the EA documentation does not have the technical skill and/or experience with donor procedures to prepare a compliant document and MOTC does not provide assistance.	MOTC needs to determine the capacity of the EIA consultant to prepared international level EAs and if not make available the appropriate on-the-job training
Design team prepares bid documents without inclusion of environmental clauses and a specific reference to the EMP mitigation and monitoring measures, and any mention of the links between environmental compliance and payment, essentially voiding much of the EMPs value.	The design team or whoever is preparing the bid documentation (specifications) cannot complete the work until the EMP has been reviewed and it is integrated into the clauses as required or simply referred to as a clause. A sample set of environmental clauses is included in Annex 6A and B of this EARF
Contract documentation does not include specific reference to the requirement of presence of environmental safeguards expertise with the contractor and that persons involvement in the preparation of the Construction Environmental Action Plan (CEAP)	A major road bid documents should specify this need, and quite the Kazakhstan regulation that requires this.

Environmental Impacts and Causes

23. Possible cause-effect scenarios associated with design and planning problems are illustrated in Table 3. Of these the most important relate to keeping land and asset losses to a minimum, making sure that drainage alterations will not affect the natural surface water system to the extent where long term chronic effects such as damming and desertification take place. Poor identification of valued ecosystem components leading to a focus on less important impacts and overlooking the real issues is a further pre-construction impact.

Table 3 Common Environmental Impacts and Causes: Design/Pre-Construction Stage

ALIGNMENT
Access Restrictions due to enlarged and fenced roadway, elevated sections, etc.
Land and asset losses due to unwillingness to make alignment adjustments
LAND
Call for excessive/extreme unprotected embankment slopes, due to attempts at cost savings
Use of unlicensed quarries and borrow areas, due to inadequate knowledge of regulations and/or misguided need to reduce costs per tonne of material extracted
EARTHWORKS AND RELATED
Inaccurate earthworks calculations leaving excessive fill or cut, requiring disposal plans and/or additional extraction leading to long-term impacts.
Poor design and planning of quarry, aggregate and other borrow areas, including development of access roads to these sites
WATER
Constriction, blockage or chronic degradation due to inadequate road and crossing structure design
Inadequate preparation for construction water needs, knowledge of local water balance and depletion of local resources
Storm and surface water drainage obstructed due to engineering errors e.g., wrong 'model-storm' used
FLORA AND FAUNA

Excessive and uncontrolled loss of roadside tree plantations during construction
Restriction or obstruction of wildlife movement/migration by enlarging road or placing of new component such as a bypass
Trespassing onto Reserve Forest, especially Saksaul forests performing important functions for erosion control and soil stabilization.
ENVIRONMENTAL QUALITY
Failure to note sensitive air quality sites such as hospitals and schools and reroute alignment around or away from these.
Unmanaged Air Quality issues
Same problem as above for identified noise-sensitive locations- Unmanaged Noise levels
CULTURAL HERITAGE
Unnecessary loss of cultural properties due to inappropriate road planning or failure to properly identify cultural heritage and archaeological sites.
BUILT ENVIRONMENT
Deficient planning for early relocation of utilities such as electrical power and water services prior to ground breaking
Insufficient provisions for alternated access and detours for affected households and businesses
Insufficient design considerations and designs for reduction in livestock vehicle collisions

24. In the context of Kazakhstan weak scoping is particularly relevant in relation to the roadside soils and airshed contamination by lead from fuels. Data suggest that due to the continuing use of lead in fuel lead levels in roadside soils are 10-20 times the Kazakhstan standard and in the roadside airshed, up to 3x the accepted levels. Given lead's well known effect on the young and their brains and motor functions and the fact that the most toxic (based on the modeling study) material will need to be handled during construction, a lead level survey should be undertaken for every national highway and any other road where traffic levels are over 1000 vehicles/day.

25. Pressing forward with a road widening project without knowledge of the toxicity of the soils and development of a better plan for the prevention of roadside land use for the production of food, could put construction workers and roadside residents at risk of construction-induced lead poisoning. Kazakhstan is pushing forward toward lead-free petrol but until that happens roadsides will continue to be contaminated and roadside communities within 50m of the shoulders face ongoing lead contamination dangers.

26. Accident data for Zhambyl Oblast (ADB and ISDB sections) for 2006 indicated that 0.6% of all accidents were vehicle animal collisions. IN other oblasts this has been reported as higher and a growing hazard.

Construction Period Impacts

27. Construction period impacts (Table 4) associated with the physical building of the roadway(s) and all associated infrastructure are very often linked to the most intensive short term effects, and, if not properly mitigated, can lead to chronic long term impacts and losses for both the biophysical and human environment. Well known of these relate to poor soil conservation, inadequate surface water drainage restoration and poor management of construction camp wastes. A contractor competent in implementing mitigative measures and a proponent committed to enforcement together can avoid most impacts (Annex 4).

Table 4 Common Environmental Impacts and Causes: Construction Stage

SOIL
Soil Erosion due to inadequate and immediate application of stabilization techniques
Illegal and excessive borrowing of Earth
Contamination of soil from fuel and lubricants
Contamination of soil from construction wastes and quarry materials
Soil compaction due to excessive enlargement of construction work area
Failure of contractor to complete basic environmental screening to identify sensitive issues for every quarry and aggregate site used
WATER
Damage to surface water resources used by local population, e.g. drainage of ponds and tanks.
Construction materials blocking drainage and run-off

Contamination of construction site surface runoff leading to pollution of receiving water bodies such as rivers, lakes and ponds
Contamination of water from fuel and lubricants
Inadequate treatment of sanitation and waste disposal in construction camps
AIR
Emission from construction vehicles, machinery, including generator-sets.
Construction related dust, from movement of vehicles at site and to sites from borrow and quarry sites, etc.
NOISE
Inadequate prevention of construction-related noise from vehicles, asphalt plants, crushing and batch plants and equipment
Noise from blasting operations
FLORA
Loss or damage to vegetation
Failure to properly manage/store topsoil, leading to degraded site rehabilitation, poor revegetation and often the introduction of non-native pioneering species.
FAUNA
Loss, damage or disruption to fauna due unnecessary and un-approved increases in construction work areas, failure of contractor to consult locally and establish any sensitive issues before opening a new quarry, and failure to control construction camp activities related to hunting and gathering of forest products, etc.
SAFETY AND ACCIDENT RISKS
Accident risks from construction activities
Loss of access / Traffic jam, poor management of traffic during construction of roads and bridges
Health issues related to adequate drainage and prevention of stagnant water which can act as mosquito breeding areas, leading to such diseases as malaria, yellow fever and encephalitis
Inadequate sanitation and first aid, leading to disease outbreaks and loss of productivity and even life.
CULTURAL PROPERTIES
Unaware or unconcerned contractors damaging, destroying or even looting religious /cultural/historical (archaeological) properties

28. Given the condition of the road infrastructure Kazakhstan nearly every culvert and bridge will need to be replaced. For example for ADB Tranche 1 roads >90 culverts and 13 bridges will be replaced. This can be very sensitive work and with that in mind a general guideline is provided as supplemental information (Appendix 7) to be appended to the contract specification as needed.

Special Conditions

(i) Desert Conditions

29. Some of the project roads pass through semi desert habitat where the issue is disruption and destruction of sparse vegetation such as saksaul, interference with flash-flood runoff and restriction of movement of grazing goats, sheep and camels.

MITIGATION: Prior to work starting, contractors should undertake a reconnaissance trip to talk local officials and create a sketch map, identifying the location of sensitive sites and section where caution during the construction period will be necessary. The contractor should discuss this plan with the Oblast Transport Department.

(ii) Unstable slopes and mudslide Conditions

30. At least three project roads pass through hilly and some mountainous steep sloped terrain, where new alignments are to be built and where soils are unstable and there are known mudslide areas. Construction in these areas, involving Roads 1,4, and 5 of the ADB roads (Table 1), must be planned in order to avoid potentially very serious problems. **MITIGATION:** In addition to having problems identified by the design team and marked in the drawings, the contractors will be required to confirm the local geology and subsoil stability in the deep cut areas and undertake the construction using these data and working closely with soils experts. Contractors should develop a step-by-step approach to working in difficult geological conditions, avoiding at all costs slope slippage.

31. Mudslide areas are known to exist in a few areas and can cause severe damage to the built environment. **MITIGATION:** Mudslide areas must be clearly marked on the design drawings and appropriate methods to detect and avoid them specified.

Operating Period Impacts

32. The operating period of a road starts at commissioning. Impacts are nearly all related to air and noise pollution due to motor vehicle operation, safety issues due to increased traffic volume and speed and the movement of hazardous and toxic materials on these roads, particularly through urban areas. Finally there is the issue of the maintenance and management of mitigative measures such as revegetation and tree planting schemes initiated during the construction period. Table 5 lists a number of the more common impacts stemming from the operation of new or upgraded roadways.

Table 5 Common Environmental Impacts and Causes: Operating Period

AIR AND NOISE
Increased traffic, poor road geometry, insufficient vehicle emission control, leading to air pollution in previously unaffected areas
Failure to implement noise abatement measures such as plantings, berm construction, noise barrier construction, noise abatement awareness program (incl. use of horns) and relocation of sensitive receptors such as hospitals and schools, leading to chronic noise pollution
STORMWATER RUNOFF
Unmanaged stormwater drainage from road surfaces drained directly into water courses leading to chronic contamination
Permitting ponding of water along roadsides, ditches/drains and for more than 48 hours, creating breeding grounds for mosquitoes and other insect-borne diseases.
FLORA AND FAUNA
Failure of contractor to prepare a mitigation completion report for hand-over to MOTC, leading to a collapse of the mitigation program.
lack of maintenance of revegetation and tree planting, leading to steady degradation
Inadequate treatment of roadside vegetation leading to excessive wildlife losses, i.e., roadside grazing of large herbivours, etc.
Inadequate Fencing and access controls along the roadways and at rest areas leading to trampling of vegetation, harvesting and animal-vehicle collisions.
HAZ. AND TOXIC MATERIALS
Contamination from spills due to traffic and accidents
Accidents involving hazardous materials without adequate spill contingency planning and clean up

Indirect and Cumulative and/or Synergistic Impacts

33. Frequently the most serious impacts of road construction and rehabilitation are not those directly related to the cause and readily observable, but rather the indirect impacts and those that arise due to a number of impacts working in a additive fashion or a number of impacts causing an effect that is synergistic or greater than the sum of the individual impacts combined (Table 6). These are complex and need to be considered only when projects involve:

- unusual and/or complex works such as deep tunneling,
- construction close to highly sensitive areas,
- construction as part of a serious of infrastructure works in the same geographic area, or along the same river system; or
- when the project is located in an area whose biophysical environment is know to be stressed and ecologically unstable, such as a polluted river system.

If any of the above four conditions are suspected, or have been reported during the consultation period, MOTC, contractors and/or consultants should review Table 6 then create their own cause effect diagrams, and build the appropriate mitigation plan around the predicted impacts. Consultation with a professional EA specialist is encouraged.

Table 6 Common Direct, Indirect and Cumulative/Synergistic Impacts from Road Construction

Sources of Impact	Direct Impacts	Indirect Impacts	Cumulative/Synergistic
Clearing of vegetation	→	Loss or degradation of habitat ,soil/wind erosion	→ air pollution, dust loss of topsoil → Decline in agricultural productivity
Right-of-way Clearing and widening	→	Fragmentation of habitat	→ Reduction in structural diversity, & habitat isolation → Reduction in population size and integrity
Construction and operation of roads	→	Increase air quality degradation → Increase in noise levels	→ Degraded living conditions Health effects → Degraded productivity and life expectancy Decline in income & living standard fueling social stress
Application of herbicides to along roadways	→	Transportation of chemicals to water bodies	→ Changes in wetland characteristics → Loss of habitat niche for dependent species, population decline
Road construction on unstable land.	→	Soil erosion	→ Siltation of water bodies Blockage of drainage Channels → Degradation of land/aquatic habitat Landslides and danger of loss of life
Traffic Increase and Continued use of Leaded fuel	→	increase in lead levels Contaminating soils & roadside air shed	→ Local health effects to people living near road → Lead into the foodchain ingestion and brain and motor function damage, leading to shortened lifespan
Increase in traffic volume	→	Increased in livestock vehicle accidents	→ long term loss to farmers and short term for vehicle owner → Generations of animals lost income affected
Channel relocation / constriction of flow	→	Alteration in direction and/or volume of water	→ Degradation of flooding & wetland → Threats to conservation of some wetland species → Diminished GW recharge → Localized drought reduced productivity → Increased flow in receiving streams → Reduced habitat suitability for some species, affecting species composition.
Road works across surface water courses	→	surface water qual. degradation & quantity changes	→ Water use narrowed aquatic habitat loss → Decline in habitat quality → Species stress/decline
Construction activities	→	Stressing human habitation living condition	→ economic losses in property value unanticipated costs → stress in livelihood and loss on investment
Construction of temporary access roads for quarries	→	Facilitation of public access	→ Eventual acceptance of road as permanent → loss of past use of land such as migrating bird resting areas
Deep excavation and Pile driving	→	contamination of groundwater aquifer	→ Water qual. Degradation wells rendered useless or degraded/dry → Overuse GW resource due to contaminated source reducing supply
Inadequate mgmnt. of construction wastes: sewage, garbage, oily wastes	→	contamination of surface water, groundwater aquatic resources contamin.	→ worker health problems sickness, epidemic reduced output → reduced profits, cost cutting, labor unrest

• **COMMON MITIGATIVE MEASURES**

34. When undertaking any type of highway work MOTC should examine the environmental features of the project area, determine if any of the four conditions described in Sect. III are likely, create a matrix using the factors listed in Tables 2 through 5 plus a limited cause effect diagram similar to the one in Table 6 and consider this a starting point for an impact checklist and later as part of an EMP. Referring to such a checklist when designing a project can lead to large savings in mitigation costs, since preventative actions can usually be taken to avoid impacts.

35. Often mitigative actions are less a function of the severity of the predicted impact and more based on the money and time available at the time and the amount of public/political pressure to mitigate the impact. Clearly this is not the environmentally responsible approach. MOTC should strive to first examine impacts, predict their severity and duration, estimated economic losses due to inaction, and then estimate the cost involved knowing of budget ceilings. If funds are in short supply mitigative measures should be prioritized in relation to impact severity and cost of doing nothing. However every effort should be made to prevent/avoid negative impacts, since the costs of prevention is nearly always much less than mitigation.

Planning and Design Phase

36. Mitigative measures associated with a project's Planning and Design Phase should be mostly preventative in nature (Table 7). By integrating mitigative measures into project planning and design elements, many impacts are avoided or reduced. Even though this action will cost a bit more there will be a net benefit.

Table 7 Common Mitigative Measures Applied During Project Planning and Design Phase

IMPACT	COMMON MITIGATIVE MEASURE
ALIGNMENT	
Access Restrictions due to enlarged and fenced roadway, elevated sections, etc.	<ul style="list-style-type: none"> ③ Provision of service roads. ③ Underpasses or grade separations.
Land and asset losses due to unwillingness to make alignment adjustments Uninformed choice of new road corridor/ alignment such as long bypasses	<ul style="list-style-type: none"> ③ Shift centerline of the road has been shifted / adjusted. ③ Adopt suitable cross-sections and adjustment of median width ③ Design retaining/toe walls to limit extent of widening and property loss ③ Realign corridor
LAND	
Call for excessive/extreme unprotected embankment slopes, due to attempts at cost savings	<ul style="list-style-type: none"> ③ At all critical slopes along the roadsides, turfing will be done to protect the slopes as per MOTC Guidelines.
Use of unlicensed quarries and borrow areas, due to inadequate knowledge of regulations and/or misguided need to reduce costs per tonne of material extracted	<ul style="list-style-type: none"> ③ Existing licensed quarries that are already in operation have been recommended. ③ Non-productive, barren lands, raised lands, riverbeds, waste lands have been recommended for borrowing earth materials; no productive land will be used for this purpose. ③ Through community consultation with the villagers and interactions with Forest and Hunting Committee of the Ministry of Agriculture, low lying areas, wastelands that have a potential of being developed into fish ponds have been recommended for borrow areas.
EARTHWORKS AND RELATED	
Sloppy earthworks calculations leaving excessive fill or cut, requiring disposal plans and/or additional extraction leading to long-term impacts.	<ul style="list-style-type: none"> ③ Optimization of cut fill estimations, considering needs for fill, haul distances, and general cut-fill balancing

IMPACT	COMMON MITIGATIVE MEASURE
Poor design and planning of quarry, aggregate and other borrow areas, including development of access roads to these sites	<ul style="list-style-type: none"> ③ Develop aggregate, borrow and any materials sites within the local, oblast and national regulations set out for that purpose. Avoid long access roads ③ No borrowing from river-beds.
WATER	
Constriction, blockage or chronic degradation due to inadequate road and crossing structure design	<ul style="list-style-type: none"> ③ Maintain the existing course of the river, streams and canals if at all possible. ③ Protect perennial community pond near highways by staying more than 20m away or with 2m high embankment
Inadequate preparation for construction water needs, knowledge of local water balance and depletion of local resources	<ul style="list-style-type: none"> ③ Through local consultation, establish water availability and a water use plan, including trucking water from outside the work area, in semi-desert areas such as Rajasthan and central Andhra Pradesh ③ Investigate and implement if possible groundwater recharging through water harvesting check dams, tanks (underground tanks created at the end of a natural / man-made slope) or to be trucked).
Storm and surface water drainage obstructed due to engineering errors e.g., wrong 'model-storm' used	<ul style="list-style-type: none"> ③ The natural drains will be suitably modified so that highway does not obstruct these cross drainage. ③ Provision of adequate size and number of drainage structures.
FLORA AND FAUNA	
Excessive and uncontrolled loss of roadside tree plantations during construction	<ul style="list-style-type: none"> ③ Trees saved by expanding the road on one side in uninhabited stretches and symmetrical in constricted places. ③ Trees will be removed with prior approval of FHC. Compensatory afforestation as per FHC instructions
Restriction or obstruction of wildlife movement/migration by enlarging road or placing of new component such as a bypass	<ul style="list-style-type: none"> ③ Signage and/ or fencing in high use and crossing areas ③ Enforcement of 50m exclusion rule ③ Keeping roadsides free of animal food sources, e.g. grasses and fodder ③ Provision for animal underpass at important travel routes
Trespassing onto Reserve Forest	<ul style="list-style-type: none"> ③ Signage and fencing ③ Posting of range of fines
ENVIRONMENTAL QUALITY	
Failure to note sensitive air quality sites such as hospitals and schools and reroute alignment around or away from these unmanaged Air Quality issues	<ul style="list-style-type: none"> ③ Design roads to reduce restrictions to a minimum and provide adequate passing and bypasses to urban congestion. ③ Plan for tree plantation on both sides of the road and in the median as soon as possible . These areas will be planted with shrubs of suitable species to reduce the air pollutant concentrations and to attenuate noise.
Same problem as above for identified noise-sensitive locations- Unmanaged Noise levels	<ul style="list-style-type: none"> ③ Pinpoint bottlenecks and relieve congestion in built-up stretches through improved design. ③ Improve design of junctions/intersections ③ Segregate of slow and fast moving traffic. ③ Include noise berms and plantations in design around sensitive sites or barriers
CULTURAL HERITAGE	
Unnecessary loss of cultural properties due to inappropriate road planning or failure to properly identify cultural heritage and archaeological sites.	<ul style="list-style-type: none"> ③ Thorough archaeological survey ideally prior to detailed design, when results still can be accommodated, and in any case prior to commencement of civil works ③ Based on public input and engineering limits, alignment will be suitably routed to avoid/minimize impact to cultural property ③ Elaboration and dissemination of chance find procedures, incl. clear instructions to Contractor and all subcontractors.
BUILT ENVIRONMENT	
Deficient planning for early relocation of utilities such as electrical power and water services prior to ground breaking	<ul style="list-style-type: none"> ③ Map out location of utilities and the extent of relocation needed. Prepare a timetable for relocation and reconnection suited to the Project-Affected-Households
Insufficient provisions for alternated access and detours for affected households and businesses	<ul style="list-style-type: none"> ③ Consult with local officials to establish an adequate detour plan and sufficient access to areas cut off or constrained by the work
Insufficient consideration for proximity of livestock to roadsides and growing collision rate	<ul style="list-style-type: none"> ③ The detailed design team needs to have Rayon officials provide data on locations of concentrations of livestock crossings and for these sections provide special signage and warnings to vehicles to slow down, as is often done in countries that have large ungulate populations. Further, it will be important for MOTC to enforce its 50m-roadside restricted use zone at all time, thus discouraging animal grazing near the road.

Source: Teleki, Geza C.. 2004. Environmental Assessment Handbook, Indian National Highway Administration. 2004. Part of ADB TA on National Highway Improvement Project.

Construction Period

37. Mitigative measures during the construction period (Table 8) are nearly all linked to contractors failing to carry out routine 'good housekeeping' tasks as part of the daily work routine. Some example are, not implementing a dust control program, permitting work camps to be located in areas where surface water contamination is possible, or inspecting earthworks inconsistently, allowing waste dumping and environmental damaged to occur.

38. Lack of proper control over borrow and aggregate extraction activities is often associated with the chronic long term impacts. Contracts often claim that they cannot be held responsible for development and operation of sites owned by others, thus these operations remain un-monitored. This is avoided by specifically including a contract clause requiring contractors to use only legally licensed operations.

Table 8. Common Mitigative Measures Applied During The Construction Period

IMPACT	COMMON MITIGATIVE MEASURE
SOIL	
Soil Erosion due to inadequate and immediate application of stabilization techniques	③ Revegetate barren areas, cuts and work areas as soon after the work has been completed as is practical.
Illegal and excessive borrowing of earth	③ No earth borrowed from within the ROW. ③ Non-productive, barren lands, raised lands, riverbeds, waste lands first choice as borrow areas ③ recultivation of borrow areas
Contamination of soil from fuel and lubricants	③ Construction vehicles and equipment will be maintained and refueled at protected refueling stations. ③ Fuel storage and refueling sites located away from drainage channels and important water bodies.
Contamination of soil from construction wastes and quarry materials	③ Contaminated or haz. waste such as bitumen waste to be dumped in selected & approved BY MOTC or its consultants.
Soil compaction due to excessive enlargement of construction work area	③ Identify work area boundaries with contractor (s) and describe system approvals for extensions and fines for violations
WATER	
Damage to surface water resources used by local population, e.g. drainage of ponds and tanks.	③ Degraded water sources/ponds etc. will be rehabilitated and compensated for, immediately; assuming road improvement planning and design not effective
Construction materials blocking drainage and run-off	③ All structures and channels must be kept clear of debris and immediately rebuilt if needed
Contamination of construction site surface runoff leading to pollution of receiving water bodies such as rivers, lakes and ponds	③ Drainage from all sites to be channeled to discharge via percolation area and for sensitive sites through a settling pond with a 24 hr retention period.
Contamination of water from fuel and lubricants	③ Waste petroleum products will be collected, stored and disposed off at the approved sites as per Sanitary and Epidemiological Services (SES) norms and standards.
Inadequate treatment of sanitation and waste disposal in construction camps	③ The construction camps will be located away from the habitation. ③ The sewage system for such camps will be properly designed and built so that no water pollution takes place. Such facilities will be decommissioned at end of construction period. ③ Solid waste (garbage) system must also be operational, including provision for recycling and reuse.
AIR	
Emission from construction vehicles and machinery	③ All vehicles, equipment and machinery used for construction will be regularly maintained to ensure that the pollution emission levels conform to the standards prescribed MOTC and SES standards.
Construction related dust, from movement of vehicles at site and to sites from borrow and quarry sites, etc.	③ All precautions to reduce the level of dust emissions from the hot mix plants, crushers and batching plants will be taken up. ③ Water will be sprayed in the lime/cement and earth mixing sites, asphalt mixing site and temporary service and access roads. ③ Vehicles delivering material will be covered.
NOISE	

IMPACT	COMMON MITIGATIVE MEASURE
Inadequate prevention of construction-related noise from vehicles, asphalt plants, crushing and batch plants and equipment	<ul style="list-style-type: none"> ③ The plants and equipment used for construction will strictly conform to MOEF noise standards. ③ Noise standards for industrial enterprises will be strictly enforced to protect construction workers from severe noise impacts. ③ Working hours/activities will be adjusted to avoid low-noise times
Noise from blasting operations	<ul style="list-style-type: none"> ③ Blasting as per Indian Explosives Act will be carried out. ③ People living near such blasting sites get prior information of operational hours. ③ Blasting will not be undertaken in night hours.
FLORA	
Loss or damage to vegetation	<ul style="list-style-type: none"> ③ Replanting plan to be developed as part Territorial FHC specifications.
Failure to properly manage/store topsoil, leading to degraded and substandard site reclamation and revegetation	<ul style="list-style-type: none"> ③ Clearly defined topsoil storage and handling in contract specs. and follow up with regular inspection/monitoring and reporting.
FAUNA	
Loss, damage or disruption to fauna due to unnecessary and unapproved increases in construction work areas, soil compaction and failure to control construction camp activities related to hunting and gathering of forest products, etc.	<ul style="list-style-type: none"> ③ Construction workers will be directed not to disrupt or damage the fauna. ③ Oblast rules for hunting (Wildlife Protection) will be adhered and rules for bird catching (Wildlife Protection) will be followed. ③ Off-limits fencing and signage where necessary
SAFETY AND ACCIDENT RISKS	
Accident risks from construction activities	<ul style="list-style-type: none"> ③ Construction safety to be followed as defined in FIDC contract specifications and ILO conventions
Loss of access / Traffic jam	<ul style="list-style-type: none"> ③ Temporary access will be built at interchange of highway and other roads and temporary diversions will be provided wherever necessary with proper drainage facilities.
Health issues related to adequate drainage and prevention of stagnant water which can act as mosquito breeding areas, leading to such diseases as malaria, yellow fever and encephalitis	<ul style="list-style-type: none"> ③ Health provisions to be supplied as defined in FIDC clauses.
Inadequate sanitation and first aid, leading to disease outbreaks and loss of productivity and even life.	<ul style="list-style-type: none"> ③ Adequate drainage, sanitation and waste disposal facilities will be provided at work places ③ First Aid station to be provided to workers
CULTURAL PROPERTIES	
Unaware or unconcerned contractors damaging, destroying or looting religious /cultural/historical (archaeological) properties	<ul style="list-style-type: none"> ③ Relocation of cultural properties ③ If archaeological relics found, stop work and contact oblast Archaeology Departments for advice (implementation of chance find procedures, incl. clear instructions to Contractor and all subcontractors).

Source: Teleki, Geza C.. 2004. Environmental Assessment Handbook, Indian National Highway Administration. 2004. Part of ADB TA on National Highway Improvement Project.

39. Consistent compliance monitoring, reporting and follow-up actions if non-compliance is detected are the three most important mitigative measures after the preparation of an Environmental Management Plan.

Operating Period

40. Mitigation during the operational period of a project (Table 9) most often has to do with installation of noise attenuation measures associated with traffic noise, the maintenance of roadside vegetation barriers designed to attenuate some of the emissions as well as the noise. Secondly measures that either failed or were not carried out, such as slope stabilization, are implemented at this time, usually at a considerable additional cost.

41. Essential yet nearly always overlooked is the requirement for the contractor to prepare an End-of-Work Mitigation Summary, providing the operator a guide to what was done where and when, making the planning delivery of the new mitigation program seamless and relatively easy. This summary, prepared by the contractor(s) or the monitor need not be

more than a matrix table with the mitigative measures as listed in the EMP down the first column and action information in a number of other columns (See Annex Table 4)

42. The End-of-Work Mitigation Summary should be on the contractors' final payment checklist, with funds released only after MOTC has checked for content³.

Table 9 Common Operating Period Impacts and Associated Mitigation Measures

IMPACT	COMMON MITIGATIVE MEASURE
HAZ. AND TOXIC MATERIALS	
Contamination from spills due to traffic and accidents	<ul style="list-style-type: none"> ③ The spills at the accident sites will be cleared immediately ④ The left over spills will be scrapped to small lined confined pits nearby, within the ROW
Accidents involving hazardous materials without adequate spill contingency planning and clean up	<ul style="list-style-type: none"> ③ The 'rules' as defined in Ecological Code 2007 will be complied. ④ Hazardous substances certificate/permits issued by transportation department namely permit license, driving license and guarding license will be required. ④ Oblast spill management plan to be followed
AIR AND NOISE	
Increased traffic, poor road geometry, insufficient vehicle emission control, leading to air pollution in previously unaffected areas	<ul style="list-style-type: none"> ③ Roadside tree plantation will be maintained ④ Vehicular emission control policy including engineering improvements, fuel conversions encouraged ④ Mandatory annual vehicle inspection for heavy vehicles encouraged ④ Regular maintenance of the road will be done to ensure good surface conditions
Failure to implement noise abatement measures such as plantings, berm construction, noise barrier construction, noise abatement awareness program (incl. use of horns) and relocation of sensitive receptors such as hospitals and schools, leading to chronic Noise pollution	<ul style="list-style-type: none"> ④ Undertake remedial planting and repair ④ Reduce use of horns ④ Monitor noise pollution and effectiveness of noise attenuation measures ④ Public awareness program will be launched.
STORMWATER RUNOFF	
Unmanaged stormwater drainage from road surfaces drained directly into water courses leading to chronic contamination	<ul style="list-style-type: none"> ③ The drainage system will be periodically cleaned ④ Undertake remedial drainage system repair including settling basins or interceptor runoff means(indirect route to receiving water) ④ Water quality will be monitored as per the monitoring plan
FLORA AND FAUNA	
Failure of contractor to prepare a mitigation completion report for hand-over to road operator: MOTC.	<ul style="list-style-type: none"> ③ Withhold final payment until such report is submitted to MOTC. Also MOTC to assist contractor with prep. Or the End-of-Work Mitigation Report.
lack of maintenance of revegetation and tree planting, leading to steady degradation	<ul style="list-style-type: none"> ④ Efforts will be made for proper maintenance of planted trees, shrubs and grasses will be done to maintain greenery and aesthetics through community contracts
Inadequate treatment of roadside vegetation leading to excessive wildlife losses, i.e. roadside grazing of large herbivores, etc.	<ul style="list-style-type: none"> ③ The replanting scheme to be repaired and strictly monitored for first 3 years
Inadequate Fencing and access controls along the roadways and at rest areas	<ul style="list-style-type: none"> ③ Examine value of fencing and appropriateness in relation to species involved—consult experts and take action
TRAFFIC SAFETY	
Improved road leads to higher traffic volumes and higher speeds resulting in accidents and safety issues	<ul style="list-style-type: none"> ③ Proper and frequent signage and enforcement are main deterrents as well provision for pedestrian crossings with lights

Source: Teleki, Geza C.. 2004. Environmental Assessment Handbook, Indian National Highway Administration. 2004. Part of ADB TA on National Highway Improvement Project.

³ The Kazakhstan EA process requires that a 1-year post operations safeguards audit be completed by the MOEP and the contractor's final payment released only after receiving a 'passing' grade.

- **MONITORING**

Compliance and Effects Monitoring

43. Monitoring is costly yet essential if MOTC is to gain experience from the mitigation effort. Monitoring commonly involves undertaking compliance checks, to confirm that MOTC, contractors and consultants have undertaken the mitigative action as defined in an EMP, or other mitigation instruction. A second form of monitoring is called effects monitoring and defines how well the mitigative action actually dealt with the impact. This includes defining whether the predicted impact actually occurred.

44. Monitoring is undertaken during the entire construction period and some of the operating period of the project. Considerations of available budget and the need to make certain that actions were taken will shape the scope of the monitoring program. Full EIAs and well prepared IEEs contain a monitoring plan, providing a starting point for implementing a monitoring program.

45. The simplest approach to monitoring is to use the EMP matrix as the basis of a monitoring checklist: deleting some of the columns and adding new ones referring to the compliance dates, further actions and responsibility. An actual monitoring form used on an ADB road project and prepared directly from an EMP is included as Annex 4 of this EARF.

46. Construction period monitoring, conducted by the Territorial/Oblast Environment Department or its consultant, usually focuses on construction period air quality and noise levels, surface water contamination, erosion control and work camp waste management. Where special considerations exist, such as roads passing through reserve forest tracts, monitoring of compliance with work in these areas is included. The monitoring schedule needs to be geared to the available funds and staff, but for a full EIA should not be less than 3X per construction year.

47. Non-compliance needs to be reported when it is detected in order to permit MOTC to take immediate action. Monitors or inspectors should file monitoring checklists with their regular monitoring reports.

48. Monitoring during the operating period, involved the post-1 year official audit by the MOEP, the MOTC, the road operator or a specialist consultant. This monitoring needs to focus only on those impacts considered to lead to potentially serious impacts. For example some roads may have serious issues related to the passage of an alignment (existing or new), within 1 km of a designated sensitive area. In this case monitoring of these areas, whether they be forest areas, wildlife, water quality or a wetlands, should be monitored until the full impact of the operation of the road is likely to be exhibited.

49. Common monitoring schedules require annual or semi annual monitoring sessions for the first three years of operation. However, it is far better to design the monitoring around the life history of affected fauna and flora, such that a number of key lifecycle events are repeatedly captured in the monitoring. Thus the monitoring could be every two years and repeated three times.

50. For any category A and B projects, the ADB requires semi-annual implementation progress reports and technically these include an environmental section⁴. The ISDB has agreed to follow the ADB's process, therefore no special considerations are necessary.

51. The EBRD includes the EMPM as legal requirement with the proponent and as such all monitoring actions defined in the plan must be implemented. Category A and B projects

⁴ In reality the inclusion of useable environmental compliance monitoring information in the semi-annual progress reports sent to the ADB rarely takes place, thus this aspect of EA implementation needs strengthening.

require annual EMP implementation progress reports, during the construction period of a project.

52. The World Bank also uses the EMP to establish an appropriate monitoring plan but has no known (documented) predetermined monitoring reporting schedule. It is agreed to with the proponent during loan negotiations using the EMP as a baseline.

- **DONOR AND KAZAKHSTAN ENVIRONMENTAL ASSESSMENT PROCEDURES**

53. Generally speaking the three donors have fairly comparable environmental safeguard processes, the significant difference being that the EBRD does not require consultation information disclosure but simply recommends it and usually agrees with whatever the proponent's legal requirements is (Table 10). All donors use the B-category process to investigate projects originally determined to be B but with potentially unknown conditions for which little evidence exists and for which the IEE can provide clearer information. Therefore Bs can be viewed as tentative classifications and bump up is possible. For the World Bank this is not possible and once classified a project is not bumped unless there are design changes, etc. The Islamic Development Bank (ISDB) is using the ADB's safeguard process.

54. Details for the Category A process and document contents vary somewhat among the donors in that the World Bank is particularly demanding about the analysis of alternatives (especially the "no project" alternative) while the EBRD is much less so and will not disqualify an EIA if such an analysis is missing.

55. For the ADB, EBRD and ISDB full EIAs always require primary data collection, ranging from noise, air quality to water quality at a number stations and for more than one period of time. Therefore they are time consuming. Depending on the availability of existing information World Bank EIAs may require primary data collection, but is not a basic requirement.

56. Generally speaking any credible simple full EIA should require not less than three months to complete, but commonly more than 4 months in duration with several people working. Some countries require primary survey during at least 2 seasonal periods, thus the time extends to 6 months.

57. More complex EIAs involving long stretches of new road, including river crossings and sensitive habitat or intermodal activities such as with ports, the time would be more like 4-5 months with several people involved.

58. IEEs are shorter, but for compliant results to be produced an average of 1.75 months is needed for regular B projects and more for B Sensitive.

59. One of the largest consumers of time is the consultations which require weeks to organize and many days to deliver once travel time is included.

60. Further, the ADB requires separate and stand alone summary documents of the EIA and IEE. For SEIAs, in addition to the summary of the assessment report, authors often include additional analytical points concerning the EIA's adequacy, filling in any minor gaps and defining necessary steps to filling any gaps or strengthening the assessment. The EBRD and World Bank do not use the summaries in this fashion.

61. The RK's (Table 10) EIA process is based on the principle of severity of danger to humans. Projects are categorized into 4 categories and a number of sub-classification reflecting the severity of the potential impacts to humans, as defined by the Sanitary and Epidemiological Service standards. Category 1 include 1st and 2nd class impacts and require a full EIA. Category 2 projects have 3rd class impacts and as such warrant a more general EIA (KAZ has no special terminology for this abbreviated EA). Category 3

involves 4th class impacts, equivalent to a C or minimal B category project. Category 4 projects involve 5th level impacts, with no further environmental considerations triggered.

62. Category 1 projects require a Preliminary EIA (PEIA) or Scoping study, which defines the extent of the EIA to follow and defined standards, limits and likely areas of concern. The PEIA goes through a review and approval process involving Oblast and national level environment and transport departments. The PEIA is a desk exercise. The EIA follow and is usually completed in parallel with the detailed design work. EIAs still tend to be prepared in a manner heavy on information collection and weak on relevant analysis and conclusions with a focus on understanding impacts and actions to avoid or mitigate them. Data collection often becomes disconnected from the objective of the EIA and the boundaries of the project.

63. Consultation and the information disclosure is discretionary and EMPs are general and prepared occasionally. The content includes only a description of generic mitigative and monitoring measures, minus location and responsibility details.

64. Standards seem to be used as thresholds above which pollution is permitted so long as payments are made. In other words, the use of standards to protect the environment is at times questionable.

65. Finally monitoring is strictly regulated by the Chief Prosecutors office, and as such the Oblast Environment Department must file an application to audit and can do that only once per year, giving the contractor 2 weeks notice of the upcoming audit. Although not written, contractors sometimes prepare quarterly monitoring reports which are then used by the auditors as a cross-checking mechanism. Efforts to find an actual case of this process being applied were not successful.

As presently practiced, the Kazak EA process does not comply with donor standards, while the many norms and standards provide adequate safeguard levels (in some cases needing updating) to humans.

Table 10. Donor Environmental Safeguard Requirements in Relation to the Government of Kazakhstan, May 2008.

EA Step	Kazakhstan	ADB/ISDB	EBRD	WB
Sources	RK 2007. Ecological Code Ministry of Environmental Protection Order 204-п, 28 June 2007: “The Instruction of Conducting the Environmental Impact Assessment during the preliminary planning, planning, preliminary design and full design documentation”	ADB 2003. Environmental Guidelines ADB 2006. Safeguards Policy	EBRD 2003. Environmental Policy; EBRD 2008. Env. Policy (in effect 11/’08)	World Bank Operational Policy 4.01
Basic Principles				
Most sensitive component rule	There does not appear to be a ‘most sensitive’ rule. The sensitivity of project is measured by the Sanitary Epidemiological (SE) classes of dangers. There are four categories and within each, one or more levels of danger,. A category 1 project has two levels of severity, either trigger a full EIA. A Category 2 project is considered a 3 rd level severity and as such a lesser assessment is undertaken, although still referred to as an Environmental Assessment. A category 3 and 4 project are considered 4 th and 5 th level severity and as such generally do not warrant an assessment.	Projects are categories according to the most sensitive component, e.g. of 6 of 7 components are not sensitive and one is the entire project becomes a Category A or B.		
Document Preparation	The planning and conduct of an assessment is the duty if the proponent, in this case MOTC. MOTC often retains a licensed consultant to do this work; and frequently a member of the team undertaking the Feasibility Study. The assessment must be preceded with a scoping study which must be approved before the EIA can begin. The EIA process has 5 stages: 1) Overview of Environmental Condition; 2) Preliminary EIA 3) EIA; 4) Chapter of Project Documentation “Environmental Protection”; 5) Post-project Analysis.		Usually EAs are required to be prepared by the country, and donors will request this. Often the proponent’s EA capacity is not there or funds are scarce, or the EA prepared is incomplete or non-compliant, in which case consultants help fill the gaps, undertake new studies on behalf of the proponent or assist national specialist to fill the gaps and improve the documentation. This is a proponent focused activity, with the requirement for close collaboration and ownership.	
Document Ownership	Category 1 projects are assessed by the MOEP in Astana, Category 2 and 3 by the Oblast or Regional Environment Department, and 4 at the rayon level.		When the donors prepare IEEs, SiEAs and EIAs <u>on behalf of</u> the country, these documents are always the country’s documents, and as such must be presented as if the country were preparing them. Where consultant recommendations are included, this must be made clear. Summaries of the IEEs and EIAs often contain review and comments by the donors or the donor’s consultants on behalf of the Banks	
The	As specified in Ecological Code		The EMP is required by all donors for A and B category projects, It is considered to be an integral but distinct part of the assessment document. It is	

EA Step	Kazakhstan	ADB/ISDB	EBRD	WB
Environmental Management Plan	Article 41 an environmental assessment documentation should include “10) Description of measures provided for preventing and mitigating impacts on environment, including proposal for ecologic monitoring”—more or less a partial EMP; This description does not comply with donor requirements	not a separate document, but the key summary of the mitigation and monitoring measures to be applied should extractable as a stand-alone section or set of Tables.		
Public consultation	Kazakhstan has a consultation process but it involves the public sector and rarely a common citizen	Public consultation is a requirement in varying degrees with all donors. The ADB, ISDB, and World Bank have a mandatory 2 sessions for full EIAs and 1 session for category B projects. For full EIAs the sessions are scheduled to coincide with early EIA planning and the preparation of the draft EMP or record of likely impacts. For the B -level projects a session during the impact definition stage is most useful, although exact timing is a function of the environmental issues emerging and the proponent’s wishes. The EBRD works with the country’s requirements. Consultations must be announces and for full EIAs advance notices of consultations and contact details must be published in the media for several weeks in advance of the session(s).		
Classification	Projects are classified by the 5 danger levels with 1 being the highest as defined by norms and standards developed by the Sanitary and Epidemiological Services, in relation to human health and safety. There is little reference to protection of the environment and e.g., forests and wildlife populations. As with the Banks, certain projects have been pre-classified, e.g. the road projects are mostly considered Category 1 of requiring a full EIA.	Using a Rapid Environmental Assessment (REA) checklist approach to projects categorized into A-C categories by the Bank project team. Sometimes consultants are asked to undertaken this on behalf of the Bank. The Bank has REA sector-specific checklists for use in project categorization.	EBRD uses the same A-C categorization scheme as the ADB and WB, however it has identified 26 project-groups that are automatic As. EBRD also has a checklist similar to the ADB’s although it does not seem specific to each sector.	Using a Screening approach similar to the ADB, the Bank completes an Integrated Safeguard Data sheet, where it examines general project effects in relation to relevant bank guidelines, called Operational Directives or Policies (e.g. OP 4.01 on Environmental Assessment). The categorization is based on these results. The Bank also has a list of automatic-A category projects.
Category C	A general equivalence for Category C would be KAZ Class 4 projects	Road Infrastructure project where construction of any kind takes place , must be Category B or higher, therefore there are no category C works being considered at this time.	No assessment needed other than reference to screening checklist and C designation	These are projects where impacts are considered at a low enough level that neither a full EIA nor IEE or Abbreviated EIA is needed. A statement regarding impact significance and category justification is however included in the ISDS. The ISDS needs to have a statement that no significant impacts were found and that Standard Operating Procedures (bank-developed basic environmental process for all projects) would be followed during the construction and operation of the project. For this loan there are no Category C projects
Document Form	Nothing specified other than a ‘minor environmental statement’	Short note included in the Feasibility study referring to the REA and any other special conclusions or documentation by the proponent to verify the C category	No documentation required	No specific documentation required, other than findings in ISDS
Summary Doc	None defined	None required	None required	None required
Consultation &	None specified	Not needed	Not needed	Not needed

EA Step	Kazakhstan	ADB/ISDB	EBRD	WB
Information Disclosure Timing Disclosure	None required	None required	None required	None required
Category B: Initial Environmental Examination (IEE); Initial Environmental Evaluation (IEA) or Simplified Environmental Assessment (SiEA),	A general equivalence for Category B would be KAZ Class 2 and 3 projects. Again there is no special name for this document other than the acknowledgment that it is at a lesser detail than for a Category 1 document and more detailed than a Category 4 document. The main difference is this document will be reviewed in the Oblast level of the Territorial Department of Environmental Protection. And this Category is not required (but recommended) to conduct the 5th stage of EIA process, namely the post-project analysis, 1 year after the end of project.	The IEE is applied when the REA indicates no serious impacts and those identified are well known and there is considerable certainty that standard mitigation measures work. If credible data are available the IEE does not require primary data collection. This approach is also used of a Cat A is possible but no evidence has been provided and the IEE can provide that. If B projects have any particularly sensitive issues that need extra investigation, such as a nearby protected area or e.g., a road interfering with a poorly understood migration route, a B-sensitive category is possible, triggering more intensive fieldwork . IEEs do not require an analysis of alternatives	IEEs are applied to EBRD funded projects using the same criteria as ADB. EBRD however includes an Audit check, in that a score of (0) indicates that the minor level of impacts does not require a Bank audit while a score of 1 indicates an audit is needed. IEEs do not require an analysis of alternatives	The Bank undertakes an Initial Environmental Analyses (IEA), or Simplified Environmental Assessment (SiEA) of projects classified during the ISDS activity as 'B'. The conditions for category B are basically the same as the ADB's. Cat. B projects must have their EIA and EMP disclosed prior to project appraisal both locally in the country and in the World Bank's InfoShop. SiEAs do not require an analysis of alternatives
Document Form	All environmental assessment documents are stand alone reports	A stand alone document, attached an an annex to the Feasibility Study	A section of the Feasibility Study	A section of the Feasibility Study
Summary Document	Each assessment document as its final section "Main conclusions of the EIA". No other summary was referred to in the Code or related standards	An SIEE is prepared by the Bank, which can include specific consultant opinions in addition to the	???	An executive Summary—but with no special designation
Consultation and Information Disclosure Timing	No consultation required	Required once during IEE preparation	Only requirement is to follow country consultation requirements; therefore if none; none required.	At least once during IEA/SiEA preparation
Disclosure	None required	The ADB is required to make the IEE and its summary available on its website as soon as it has been approved by the Bank and the Country, but there is no time restriction for proceeding with loan processing, nor a minimum posting requirement.	The proponent must notify people, officials in areas impacted by the project of assessment work and indicate the availability of documentation	All environmental assessment documentation is available on World Bank Information Center website and in the borrowing country office as well, but there is no formal public review.
Category A: EIA	EIA is required for projects of Sanitary and Epidemiological class 1, which will have significant impacts on the human safety. According to Section 26 of the EIA Instructions the third stage of EIA process – "Environmental	EIAs are required for projects where impacts are likely to have significant and difficult to mitigate impacts, and there could be permanent environmental degradation. In other words projects with serious potential environmental consequences. These are	While defined in slightly different terms than the ADB, the EBRD's category A projects have essentially the same distinguishing features which make them A projects. The EBRD also provides a list of 26 Category A project groups, automatically identifying the type of assessment to follow.	The World Banks Category A requirements are the same as the ADB's and EBRD's with one major difference. EIAs sometimes include environmental and social assessments. EIAs must also include a detailed analysis of alternatives, especially the "no project"

EA Step	Kazakhstan	ADB/ISDB	EBRD	WB
	Impact Assessment” requires detailed analysis in full volume on all aspects of environmental impact of the specified objects, and includes the following components: air, water, mineral resources, production wastes, physical impacts, soil, plants, animals, socio-economic condition, and ecological risks. The Category A is required to undertake the 5 th stage of EIA process, Post-project Analysis, 1 year after the end of project. The 5 th stage should be undertaken by different licensed organization than which conducted the EIA.	usually any green field or new location, such as a new road alignment, new airport or new sewage treatment plant.		alternative.
Document Form	Each stage of EIA process has its own stand alone document with prescribed format and the level of detail.	Stand Alone document with prescribed format and minimum level of detail	Stand Alone document with prescribed format and minimum level of detail	Stand Alone document with prescribed format and minimum level of detail
Summary Documentation	Each of 5 assessment stages has its own stand alone document; and each has a “Conclusions” section, which acts as a summary.	A stand-alone SEIA is prepared and which can contain consultant input and additions if minor	An executive summary is prepared and may be separate or attached to the EIA	An executive summary is prepared and is attached to the EIA but often used separately. Minimum 2x mandatory, with timing specified. Once with the TOR for the EIA, once to present the draft EIA. For the disclosure of the draft EIA, Category A projects must be allowed a 120-day period for stakeholder evaluation and comments between disclosure of draft EIA/EMP and project appraisal.
Consultation and Information Disclosure Timing	No information on specific consultations, except for public hearing as part of the EIA – the Instructions for Public Hearing are publish by the MOEP Order №135, 7 th May 2007.	Minimum 2x mandatory with timing specified	Consultation is advised, but based in proponent’s requirements. During project due diligence investigation by Bank, consultation may be required given project conditions.	
Disclosure	From the time a full environmental assessment is submitted to the local /oblast-level environment agency to the time it is reviewed by the central government is 60 days. During the first 30 days there is a theoretically a time for the “public” to comment. But since there is no real announcement this does not happen. Further, there is a ‘public debate/hearing’ held as part of the final EIA approval. Again, this is not transparent and the public are not involved. <u>There is no other disclosure</u>	EIA documentation must be announced that it is available and prepared in the local language, at convenient locations in country, at a published website and on the donor’s website for 120 days. Loan processing cannot be completed until this posting period is over.	For private sector projects there will be a minimum of 60 days between the date that the EIA is made available to the EBRD Board of Directors and the date of Board consideration. For public sector projects this period will be a minimum of 120 days. A longer disclosure period may be required by the Bank for more complex projects. In all cases, project sponsors are required to keep EIA-related documentation in the public domain for the duration of the Bank’s involvement with the project or at least until project completion. The start of the consultation period will be triggered by the acceptance of the EIA in the Bank for disclosure in the Bank Information Center provided that the documents have been released by the proponent.	The public must be informed about the availability of EIA documentation, which must be prepared in English and the local language (sometimes English, Russian and local language), and be accessible at convenient locations in country, at a published website and on the donors website (InfoShop) 120 days before project appraisal. Loan processing cannot proceed during this period
CIA	Does not undertaken CIA	Applies CIA to Program and MFF loans	Is considering applying CIA to MFF type loans	The Bank applies one of a number of

EA Step	Kazakhstan	ADB/ISDB	EBRD	WB
				strategic assessment methods including CEA (country environmental assessment) and SEA (strategic / sector environmental assessment), and Regional EIA.
Useful Web links	http://www.nature.kz/cute/index_2.php	www.adb.org/documents/guidelines/environmental_assessment/default.asp	http://www.ebrd.com/enviro/policy/standard.htm	http://go.worldbank.org/WTA1ODE7T0
	http://www.nature.kz/docs/eko_kodeks.php (Russian)		http://www.ebrd.com/about/policies/enviro/policy/review/index.htm	http://www.ifc.org/ifcext/enviro.nsf/Content/PAH (Pollution Prevention and Abatement handbook)
	http://www.nature.kz/eng/cute/index_eng.php (English)		http://www.ebrd.com/about/policies/enviro/policy/policy.pdf	http://www.ifc.org/ifcext/enviro.nsf/Content/EnvironmentalGuidelines
	http://www.nature.kz/ekolog/ekolog.php			

- **GENERAL ASSESSMENT STAGES AND PROCEDURES FOR AVOIDING AND MITIGATING LIKELY IMPACTS**

Screening and Categorization

66. While already completed by the donors, screening and classification is an important task and therefore is defined in this section and a sample form is provided in Annex 1. The screening form shown is designed to highlight any significant potential negative impacts. It is based on ADB’s screening form but incorporates the items found in similar EBRD and World Bank forms.

67. Therefore as a first step, the screening form should be filled in and comments provided, examined and a classification given, based on consensus. The outcome of this screening will determine the type of environmental assessment to follow.

Scoping

68. Once a project category has been assigned, the boundaries of the assessment must be established. For full EIAs the boundaries are established on a case by case basis, considering the geographic extent, duration, severity and reversibility of effects. Boundaries need to address how far in distance and time air quality, noise, effect on sensitive ecosystems, sensitive archeological and cultural heritage sites will be studied, etc.

69. Abbreviated EIAs or IEEs can use a more standardized approach, working with a table of boundaries (Table 11), adjusting for special conditions.

Table 11. Geographic Boundaries Template for Abbreviated EIA or IEE

Terrestrial Environment	Aquatic Environment	The Airshed	Acoustic Environment
200m on either side of the road.	50m upstream and 100m downstream of any project road crossing of river	200 m from CL of carriageway [<i>and rising 100m from the road centerline</i>]	200m from CL of road and extended on sensitive areas such as towns and viaducts over settled areas

Note: For any nationally significant or protected site, the impact zone extends to 1 km on either side of the carriageway centerline

It is also important to establish a time or temporal boundary for the assessment, namely how far into the future impact prediction are to be made. These boundaries are usually closely linked to the construction years and the operating period traffic projection milestones. In other words a project with three years of construction and traffic and economic projections for 20 years in to the future, would include prediction of impacts at least 10 years into the future (maybe year 5 and 10 into the operating period)⁵ and more if conditions were shown to be deteriorating.

70. These boundaries define the limit of the data collection and the necessary analysis for a credible environmental assessment.

Impact Assessment

71. Three types of assessment are possible; Category A requiring a full environmental assessment, Category B (and B-sensitive for ADB) requiring an abbreviated EIA or Initial Environmental Examination (IEE). The assessment involves the assembly of a baseline condition for the major components of the biophysical and socio-cultural environment, the identification of any special features, followed by an assessment of the likely impacts, and

⁵ Clearly, this is only useful for those parameters that can be reasonably accurately predicted such as air quality and noise.

mitigative measures needed. There are usually one or two consultation and information sessions where all stakeholders are first informed of the project and secondly encouraged to provide comments, advice and any statements related to the project and its effects on these people and communities.

72. The environmental management plan is the key environmental assessment output and is required for both the full EIA and the abbreviated EIA or IEE. It should be at a level of detail and quality to be convertible into concrete activities and positions in the works contract's specifications and Bill of Quantities, allowing diligent planning of these measures within the project implementation period, including allocation of staffing, equipment, time demand and financial resources.

Reporting

73. To ensure that all necessary elements of the assessment are recorded, EIAs and IEEs both have a specified format and Table of Contents (ToC). The ToC can also be used as a guide on what information will need to be collected and help steer the assessment. Sample Table of Contents are included as Annex 3A and 3B of this EARF. The samples are patterned more after ADB than the other donors, so authors are advised to review the ToC suggested by the other donors to be sure that the format is precise.

- **PROCEDURES TO BE APPLIED TO PROJECTS IN EACH LOAN TRANCHE**

74. Since the environmental safeguard procedures to be applied to all projects under this program must meet the requirements of the RK as well as the ADB, EBRD and World Bank, a hybrid process, taking elements from each of the donors as well as the RK, have been defined below. Following this process will yield compliant assessments and lead to effective mitigation, at a reasonable price. For projects requiring a full EIA or Category A, the base procedures as defined will be relevant but details will be dictated by the specific impacts triggering the A classification. For the World Bank section, if country-policy and World Bank standards are significantly diverging, the more stringent standards will be used.

Non-Negotiable Environmental Limits

75. All donors have a number of non-negotiable constraints which, if triggered, almost certainly mean delays or possibly a halt to the project until options can be found. Such constraining factors would include:

- Projects/subprojects activities potentially degrading precious environmental systems such as national parks, wildlife sanctuaries and nature reserves, or wetlands--- *unless the project represents a national priority and major benefit to local populations is documented.*
- Clearing of any existing primary (old growth) forests will not be permitted and alternate routes must be found;
- The relocation of blockages of natural high quality water courses will not be funded unless detailed studies prove that only minor and short term negative effects will result;
- A project potentially permanently degrading or damaging monuments, cultural or historically important features; and,
- Project directly or indirectly degrading the social fabric of communities.

Selection Criteria

76. All present projects in the loan tranches have been selected and classified by the donors and therefore this step is technically not necessary. However, In the event that additional projects are added or there are replacements the Annex 1 Screening Template should be used to arrive at a score and a project classification.

Environmental Categories and Standards: Guiding Principles

77. Environment Category 1 or A and 2 or B and B-sensitive projects must comply with donor 120-day disclosure policy. This process requires that all EIAs/ and B-sensitive IEEs and their EMPs be translated into the local language and made available at (i) Project Site office; (ii) relevant local government line agencies; and (iii) MOTC before a final report is submitted for MFF Tranche processing. Further, the documents must be made available for public review on the donor website for 120 days, before loan processing can be completed.

78. In determining appropriate technical environmental standards for donor funded projects, all assessments will follow the standards and approaches as laid out in the World Bank's Pollution Prevention and Abatement Handbook found on the World Bank website. It describes in detail generally accepted pollution prevention and abatement measures and emission levels. WB emission thresholds/limits as defined in the Handbook will be applied only when the RK does not have one or if RK rules are less stringent than those found in the Handbook.

Category B and A Projects: The IEE and Full EIA

Screening

79. Proponents often view the analysis of alternatives at the start of an EA as unrealistic since by the time preliminary loan discussions have taken place, the preferred solution to the transportation problem has been agreed to, based on politics, cost, engineering, resources available and any complex safeguard obstacles. By the time the EA starts a general alignment or certainly corridor has been selected. Therefore, the screening of alternatives usually involves examining certain bypass options, bridge versus viaduct construction, minor deviations or optional methods such as cast-in-place versus piled bridge piers. Much of the screening at the start of the EA process should be done using a screening checklist considering not only safeguard factors but economic social, engineering and cost issues. It should be a team effort with different specialists and the proponent involved in the exercise.

80. Only full EIAs have a requirement for the examination of alternate and this should be completed by first documenting how the technology applied to solve the transportation problem , i.e. road versus rail, etc., was decided on and secondly comparing the severity of impacts generated by each alternative alignment change such as via bypasses and their effects on households, loss of forest lands, etc. This screening also needs to examine major optional construction methods and assess severity of effects, e.g. drilling versus pile driving of bridge piers, standard engineering versus bioengineering erosion and slope stabilization methods, etc.

81. The screening should yield the preferred alternative on which the rest of the assessment is focused.

Scoping

82. The single largest technical gap in environmental assessment is the failure of professionals to adequately scope the potential impact issues, thereby either vastly underestimating or overestimating the scope of work required. Any Category A or B project

should begin with a scoping exercise. Under Kazakhstan rules (Ecological Code 2007) this is a mandatory step yielding the preliminary EIA (PEIA), however is more closely linked to a listing of norms and codes to apply, than a determination of the extent of the assessment and the major likely effects. Scoping should focus on identifying those components of the environment likely significantly affected by the project based on past documented experience, the potential likely geographic and time-related extent of the effects, and the measurements or thresholds to be used to assess significance.

83. Also essential is the use of a clear topographic map showing the project road(s) in relation to topography, water courses, settlement areas and preferably landuse (GOOGLE maps are often excellent).

84. These data are then collectively applied to define the boundaries of the assessment.

85. Scoping is often under-budgeted and therefore insufficient. A serious scoping exercise should involve at least the proponent, the consultant and the environment agency over a ½ to 1 day period.

Identifying Baseline Conditions and Impacts

86. With the screening and scoping results in hand, planning of the field program (usually field work is required only for Category A or full EIAs or Category B Sensitive projects) becomes relatively easy, however does need the involvement of an experienced environmental assessment practitioner.

87. **The first step** is to establish the baseline conditions for the components of the environment likely affected by the project. This baseline will become the measure against which any change is measured. These data must be collected in such a manner that their source can be traced by anyone who picks up the document.

88. **The second step** is to predict likely change as a result of major construction activities and operation of the road, by relating cause and effect such as changes in traffic volume, fleet makeup and traffic patterns to air quality and noise effects. The scoping output should identify how far into the future predictions are to be made and therefore setting clear boundaries on the work to be undertaken. The locations where based data were collected, where ongoing monitoring takes place and the timing of these activities should be remain uniform or at least easily traceable, permitting analysis of technical credibility. While following strict scientific method in EIA is far too costly and time consuming, every effort should be made make the entire study transparent and traceable. Table 3 through Table 9 should provide a good basis for selecting the impacts and mitigative measures to include in the assessment report, including the EMP.

Should the chance of cumulative impacts be significant, Section III(4) and Table 6 should be reviewed and steps followed to identify the extent of the effects.

Consultation

89. **The third step** is to present the findings on impacts and benefits during a consultation and information session to inform key stakeholders of the issues identified and to invite comments and corrections. For a full EIA consultation is required at least twice during the EIA:

- first as part of the screening stage to define the project and to get feedback in options; and,
- secondly after the draft EMP has been prepared.

90. Internationally compliant public consultations include public announcement of the proposed project and announcement with at least 2 weeks lead time including brief project

description, location and specific contact data (including telephone numbers). Often a project website is created and link information is provided. Further, the proponent, working with the consultant should prepare a list of important participants and send emails or letters of invitation providing details including dates for both consultations.

91. Consultation sessions must have minutes and attendance sheets prepared and included as part of the EIA documentation.

92. For Abbreviated EIAs or IEEs, nearly all conditions as defined above are the same except there is only 1 consultation session and invitations and public announcements are not needed. Often, the consultation session takes place as the EMP is being prepared.

Preparation of the Environmental Mitigation and Monitoring Plan (EMP)

93. **The Fourth Step** is the preparation of the EMP, the most important output of an environmental assessment. The EMP must be practical, specific and systematic, such that it can be easily converted to mitigative and monitoring actions proponents and contractors can undertake: activities that monitors can track and activities that can be translated or simply referenced in contract specification as environmental clauses. Therefore each mitigative measure needs to be matched with a monitoring activity. This is best accomplished using matching matrix tables.

94. Over the past decade, EMPs have slowly evolved from lengthy texts discussing general mitigation actions, to detailed self explanatory tables laying out mitigation and monitoring actions during the three project development stages.

95. Good EMPs not only identify the source of the impact, the effect in the biophysical environment and the monitoring action to be taken, but also where, how often, when and who should implement each mitigative and monitoring action and who is responsible (EMP example Annex 5). This is the same for both EIAs and IEEs.

96. Under Kazakh law, a contractor wanting to establish a new aggregate extraction site or quarry must complete an environmental screening, identifying any sensitive habitat, proximity to people and a set of actions to mitigate noise, dust and visual intrusion, plus rehabilitation of the site and access roads once the construction is finished. This report is submitted to the Akim's office in the district where the extraction is to take place and approval is given to proceed.

97. For ADB/ISDB funded projects the Project Implementing Consultant of Project Management Consultant is required to review and update the EMP as soon as the contractor has been appointed and the mobilization date is established.

Assessing Institutional Capacity for EA Implementation

98. **The Fifth Step** involves the identification of the agencies and units at the national and oblast level that will likely be involved in the implementation and supervision of the mitigation and monitoring actions as well as the general management of the EMP from preconstruction through the operating period. Creating a diagram showing the EIA approvals and implementation process through the operational period is an excellent way of clarifying who is involved and when. The EMP is also useful in that it identifies the lead implementing and supervising agency involved in each mitigation and monitoring action. For Kazakhstan this would mean the MOEP, MOAg, MOH and the MEMR and their oblast-level departments. Since the rayon or district governments get involved in the environmental approval of aggregate development sites, a basic knowledge of the capacity at that level is needed. The analysis, using mostly the interview approach, should be short and focused, identifying needs based on obvious gaps, such as lack of experience in any international-level assessments or lack of experience with preparation and implementation of EMPs. Careful interviews will almost always result in those needing assistance identifying what they need. Finally the

needs are assessed in terms of longer term capacity building and short term training and workshops in relation to realistic budgetary limits and a capacity building and training is proposed. Since the contractors play such an important role in EMP implementation, they must not be left out of the analysis and a general approach to strengthening their safeguards skills must be included in the analysis.

Estimating Mitigation, Monitoring and Training Costs

99. **The Sixth Step** involves costing of each of the mitigative and monitoring actions as well as the institutional capacity building. This is not done for Kazakh EIAs and rarely completed for anything but multilateral and some bilateral donor projects. Costing details must be systematic and include rates and unit costs and an indication of actions that, while referred to as environmental, are normally found in other budget items, for example slope stabilization, revegetation, fuel handling and storage protocols and work camp waste management. A sample Excel spreadsheet for calculating mitigation and monitoring costs is provided as Annex 8 of this EARF.

Reporting

100. **The Seventh Step** is preparation of the assessment document according to a prescribed format and level of details. The generally accepted format and sample Table of Contents (ToC) of the IEE and Full EIA have been provided as Annex 3 of this EARF. Having a detailed ToC ready at the start of the assessment is a great help in organizing the information needs and for dividing up the work among the team, and ultimately compiling a compliant document.

Category C Projects: The Standard Environmental Safeguard Procedures (SESP)

101. Projects that require neither an EIA nor an IEE still must comply with environmental safeguards. These safeguards are often referred to as SESP or Standard Environmental Operating Procedures (SEOP) and are comprised of reminders for pre-construction actions designed to prevent later impacts and good housekeeping reminders for the contractor as well as guidelines on the management of garbage, sewage and oily wastes, plus the management of earthworks operations and quarries. This approach is now regularly applied to World Bank and EBRD projects, but not ADB project, since any works involving construction is a minimum Category B, and not at all in Kazakhstan. None of the road projects proposed to date qualify as category C.

102. Therefore any future Category C projects should include the SESP as environmental clauses in contract documents and be monitored in the same manner as if they were EIA or IEE mitigation measures. A sample set of SESP is attached to this EARF as Annex Table 2. For an ADB, ISDB and World Bank funded road project, any road rehabilitation work would be a automatic Category B and an EMP would need to be prepared.

- **IMPLEMENTING THE ENVIRONMENTAL ASSESSMENT**

Environmental Clauses and Contract Specifications

103. The preparation of environmental contract clauses beyond the usual boiler plate statements is often difficult since the timing of EA completion and contract specification preparation are not coordinated. Since clauses are really the only way to hold contractors accountable, this is essential and must be done as specifically as possible. The suggested approach for category A and B projects is that proponents use the baseline clauses included as Annex 6A and 6B, and cross reference the EMP from the impact assessment reports.

Annex 6C and 6D are detailed World Bank contract specifications prepared for two specific projects. These can also be used as base documents, taking care to eliminate any non-relevant sections.

104. For Category C project the SESP as shown in Annex 2 should be included in any EBRD and World Bank-funded projects. Any ADB and ISDB road development projects are always category B or higher.

105. The bid documents should be prepared with the EMP in hand and that a relevant and practical set of environmental clauses find their way into the contract specifications. Typically, the donors' loan agreement with the proponent includes a covenant stating that the proponent agrees to follow the EMP as included in the EIA/IEE.

The Design Period (Preconstruction)

106. In the context of the Kazakh environmental assessment process the detailed design period is essential since it is during this time that the environmental assessments for Category 1 and 2 (A and B under donor classifications) are undertaken. This is problematic in that international practice calls for EAs to be completed as part of the feasibility study using best available data, permitting the detailed design team to integrate findings into the project design. Any significant changes based on the detailed design are adjusted as part of the tasks associated with the preparation of mitigation and monitoring action plan by the proponent and the contractor before construction mobilization. This document is referred to as the Construction Environmental Action Plan or CEAP.

107. Much of the CEAP must be prepared by the contractor since it is this preparation that forces consideration of environmental matters, but guidance must be given by the proponent, namely MOTC, its oblast offices and/or the project implementing consultant.

The Construction Environmental Action Plan (CEAP)

108. Kazakh law requires that contractors use the environmental documentation for any Category 1 or 2 project and prepare a CEAP, defining in detail how the mitigation and monitoring during the construction years will be implemented. This must be done at or soon after mobilization by a licensed environmental specialist retained by the contractor for the duration of the construction period.

109. With knowledge of what engineering works are ahead, e.g. excavation, vegetation clearing, dewatering, blasting, storage of fuels at a construction camp, etc, the contractor must obtain permits to undertake each of these special tasks. Once these are obtained and the CEAP is in place, what remains is the accurate recording of the implementation of the measures defined in the CEAP and the EMP (unless the CEAP incorporates all aspects of the EMP).

110. The requirement of the CEAP is a welcomed safeguard measure by all donors and Kazakhstan is encouraged to continue to apply this process and fully integrate it onto all development project safeguards management.

111. Given the importance of the CEAP as not only an implementation guide but also a monitoring framework and the fact that Kazakhstan has little technical expertise in preparing the CEAP in a form that is internationally acceptable, the MOTC is urged to provide international assistance to its contractors in CEAP preparation. A base template for a CEAP taken from another project is included as Annex 8.

Compliance Monitoring and Reporting

112. There is an undocumented arrangement (could not be verified by the consultant) that contractors submit quarterly progress reports on a work undertaken. Theoretically this includes the progress on the implementation of environmental safeguards as defined in the CEAP. Such quarterly reporting, including a section on environmental safeguard would be ideal for reducing the considerable concern of the donors, surrounding the insufficient monitoring method now on place (namely the single annual, pre-announced audit). The quarterly reports could be used during the annual audit to check progress and examine safeguards implementation credibility. To that end the MOTC is urged to make quarterly reporting a specification in the contracts and to specify the need to report on safeguard implementation.

113. Failing that, the MOTC would need to initiate its own monitoring program, then alert the MOEP's oblast Inspection Departments if serious issues were found, thus triggering an unscheduled audit (in addition to the annual official inspection)⁶.

114. Monitoring during the construction period ends with a final monitoring summary prepared by the contractor and the 1-year post commissioning audit of the road operations.

Operating Period Monitoring

115. Monitoring during the operating period is the responsibility of MOTC and the road operator, and must follow essentially the same audit and reporting process as undertaken by the contractor.

- **RESPONSIBLE AUTHORITIES AND REVIEW PROCESS**

116. It is important to remember that EIAs IEEs and indeed the Category C environmental documentation prepared by consultants are actually the borrowing government's submissions. This is true for the donors as well as the GoK. The consultant is the surrogate author and therefore what is said and agreed to in an EIA and IEE is government policy. There is considerable confusion regarding this and proponents often refer the EIAs or IEEs as consultant or bank documents. EA actions should always indicate what 'will' be done as opposed to what should be done by the proponent.

The Proponent

117. Road Transport Projects are the responsibility of the MOTC's Roads Committee (RC). The RC is supported in environmental matters by its Scientific and Technical Council on special matters, but must rely on the MOEP for approvals. After a project has been formulated a feasibility consultant is appointed and is also charged with preparing the preliminary EIA (Figure 1). This contravenes the World Bank's requirement that the EIA be conducted by a unit independent of the Feasibility Study Team.

118. The PEIA is a desk study but undergoes reviews at the oblast and central levels by the environment, health and agriculture ministries; mostly to check that the correct list of norms and codes have been listed. The PEIA has to be approved by the MOEP after which the full EIA can begin. In their revised Ecological Code (2007) for the conduct of EIAs, Kazakhstan has categorized some types of undertakings as requiring full EIAs. All road projects where there is widening by two lanes and more than 10km of new road, full EIAs are necessary.

⁶ IN essence the MOTC would be filing a complaint with MOEP's Inspection Department, an action needed to hopefully trigger a special audit (but at the discretion of the Inspection Department)

119. Often it is the PEIA authors who undertaken the specific EIA(s), which include more or less about 70% of the items found in compliant donor EAs.

120. Completed EIAs receive the same review as PEIAs, with the MOTC making the final decisions on revisions and alterations. Again the Ecological Expertise Department of MOEP and the SES of the Ministry of Health have the greatest say and must sign off for the EIA to

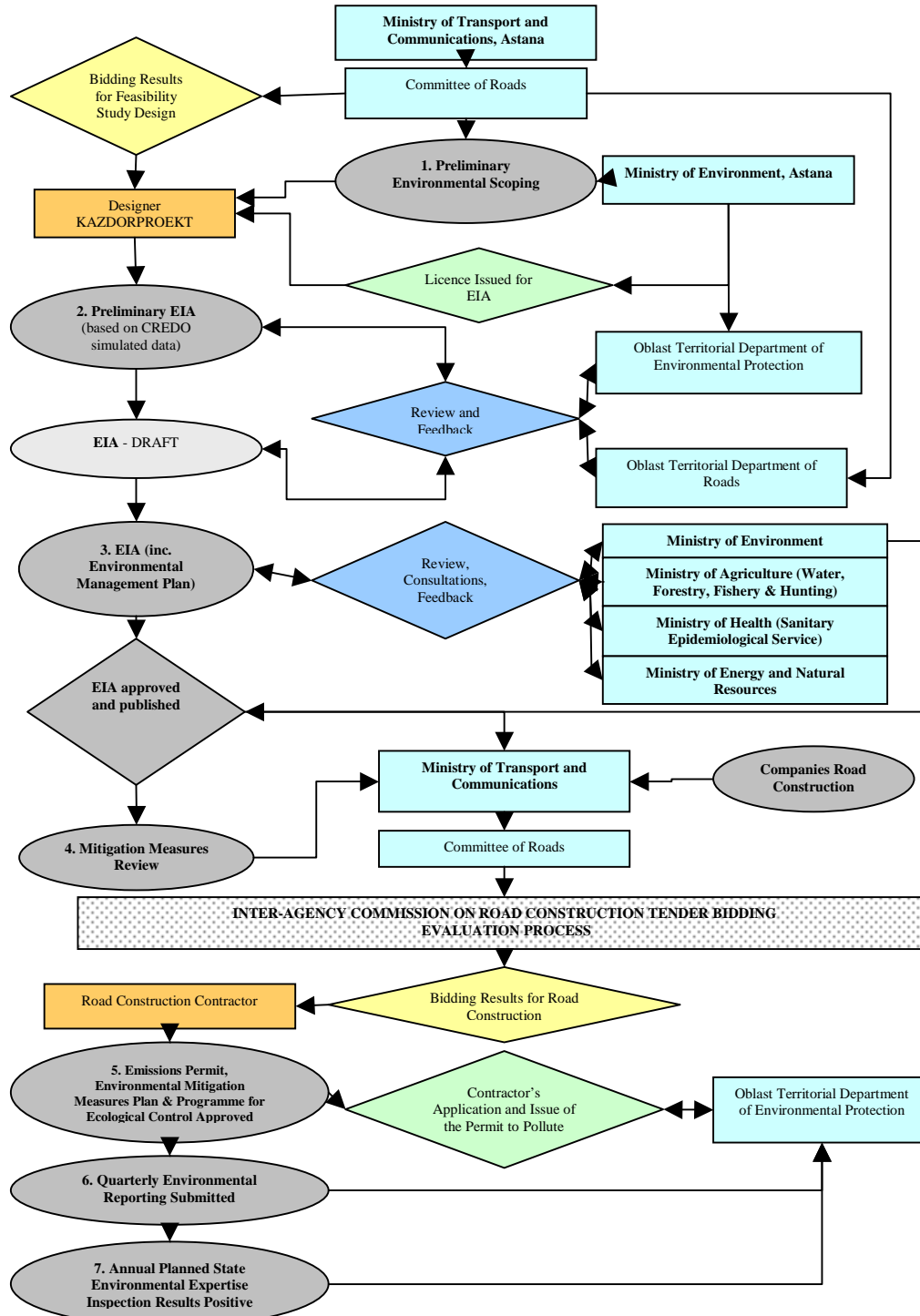


Figure 1. Kazakhstan's Environmental Assessment Decision Making, Outputs and organizations Involved

be approved. The reviews have a time limit of 30 days, after which the document and comments must be received by MOTC Astana.

121. Consultation is not mandatory and is generally internal to the public sector. Private citizens are not involved. This is in contrast with the donors where consultation is mandatory for the ADB, ISDB and the World Bank, with only the EBRD following the proponent's process.

122. Once approved the EIA is certified and the proponent can proceed with construction. This however does not restrict the preparation of all contract specifications without use of the EIA. The EIA is an umbrella approval which is followed by the application for set of permits to undertake the work, including emissions and discharges required 'as part of the project'. The emissions or discharge levels can exceed standards so long as payments are made. It is the contractor's responsibility to establish their emission and discharge rated and apply for permits to pollute to that level. There are of course other permits for tree cutting and resource extraction, blasting, water diversion, etc. To undertake these tasks each contractor must have full time environmental expertise working on the project.

123. Once a year the Inspection Unit of the Oblast Environment Department (DOE) conducts an environmental audit of the road within the Oblast. And contractor payments are linked to acceptable audit results. The final audit occurs one year into the operation of the road and is led by the Oblast Environmental Inspection Unit of the DOE.

124. Kazakhstan EIAs have not required monitoring beyond this period, such that international requirements for several years of operating period monitoring have no precedence and would be difficult to implement.

125. Records of the various reviews and comments are not kept in a central location but only with each institution that conducted the review, thus there could be as many as 15 different sets of comments in 15 different offices.

126. Category 2 or B level project reviews stop at the Oblast level Environment Departments. This is problematic since, while specific technical expertise exists, understanding of environmental assessment in a holistic sense, and experience with undertaking EIA is almost non-existent. Category B projects also do not require the annual audits.

The Donor (ADB, EBRD, ISDB, World Bank)

127. The involved IFIs are ultimately responsible to their lenders and/or shareholders and the three Banks' guidelines were prepared according to the level of environmental and social due diligence deemed appropriate by their leadership, which for World Bank, ADB and EBRD aspires to international best practice as desirable, and good practice as the acceptable minimum. Each IFI / donor has to ensure that environmental and social safeguards are met for each project to each institution's specific guidelines, which are:

- Environmental Assessment Guidelines and The Safeguard Operational Policy by the ADB (www.adb.org).
- The Islamic Development Bank is adopting the ADB's Safeguards for this project.
- Environmental Policy by the EBRD (www.ebrd.org); and,
- Operational Policies and Guidelines by the World Bank (www.worldbank.org)

128. All of these are all available free of charge at the bank websites.

129. For Full EIAs and (in case of ADB) B Sensitive IEEs this involves a 120 day public review period where any outside interests have the right to comment on any aspect of the work and expect to receive answers. Other IEEs, as well as category B EIAs (under e.g. World Bank OP 4.01) and Cat. C project are not subject to the 120 day review but still require scrutiny by the IFIs to ensure compliance and adequate environmental protection. ADB has a special safeguards panel that reviews all EIAs and provides comments on compliance. IEE are generally not reviewed in this manner. The World Bank has regional safeguards units headed by a regional safeguards coordinator (RSC) which perform the same function. All safeguards documentation is submitted to and reviewed by the RSC under World Bank practice.

130. Both IEEs and EIAs are examined by specialist retained by the donor and their evaluations are submitted to the key stakeholders, then discussed with the proponent and proponent and an agreement on the final text and the details of the EMP are decided. Assuming that these decisions do not cause a serious deviation from the assessment results, the assessment is signed and the project loan can be finalized. It is at this stage that EMP elements are integrated into the loan agreement, including the requirement of environmental contract clauses based on the EMP.

131. Each of the Banks has variations on this theme, but all must keep their institution's specific guidelines in mind while trying to work within the donors' boundaries. This becomes difficult when certain key items such as public disclosure and consultation are missing. In such cases, projects must comply with donor guidelines or standards. EBRD follows the country's standard.

132. Once the EIA's are completed by the proponent (or their consultant)⁷ the IFIs often have a consultant examine these and prepare a Summary EIA. These are donor evaluations, often used to fill information and analytical gaps, which are intended to bring projects into full compliance. In other instances they define specific additional work.

The donors strongly encourage compliance monitoring for both A and B category project and in fact also Category C projects, at the appropriate level of effort (Under World Bank practice Cat. C projects have no or minimal environmental impact and generally require no measures or monitoring during implementation). To that end donors expect both A and B category project to have active monitoring and reporting programs in place.

- **STAFFING AND BUDGET**

Institutional and Technical Capacity Of The Proponent And Contractors

133. Overall Kazakhstan's environmental institutions' experience with international level environmental assessment is limited. The institutions have great technical depth and a sufficient array of very capable specialists, but little experience with focused ecosystem-based or risk-based environmental assessment practiced with the overarching premise of public disclosure, transparency and that prevention not mitigation as the first priority. The process on paper is very logical and well planned (Figure 1) but at the same time highly bureaucratic and often disconnected from real conditions.

⁷ Sometimes the Banks commission full EIAs when borrower resources are judged to be insufficient.

134. Responsibility is divided up in such a way that holistic analyses are almost impossible without cumbersome large interagency committees. A good example is the Forest and Hunting Committee of the Ministry of Agriculture, charged with managing forest extraction and hunting and at the same time wildlife protection, but not biodiversity or habitat protection.

135. There is also no real consultation, other than the so called public debate at which the environmental assessments are discussed at a virtually un-advertised session, mostly among government officials. There really is no consultation and mitigation and monitoring costs are rarely if ever estimated.

136. The Kazakh environmental management plan is a generic document focusing on listing norms and standards and is of little use to contractors.

137. Environmental audits are bound by special rules set by the Chief Prosecutors Office, requiring permits and a two-week notice of the intent to audit. Un-announced audits are possible but based on the discretion of the Oblast DOE Inspection Unit, even if a complaint is filed.

138. Finally there are the contractors who have neither environmental technical capacity nor experience in implementing EMPs.

139. The need for capacity building is considerable and should begin with training of major line agencies such as the MOTC in the conduct of Environmental Assessment as defined for example by the International Association of Impact Assessment (www.iaia.org).

140. The training should include:

- screening and scoping methodology;
- focused survey planning;
- EMP implementation;
- monitoring and reporting; and,
- reporting and documentation.

141. The target audience should encompass all who are involved in EA from planning through to the implementation of operating period mitigation and monitoring. These would include inter alia:

- decision makers,
- technical specialists and advisors;
- Consultants and Firms actually undertaking EA work
- Contractors.

142. The key units or committees within at least five ministries should also be involved are the Ministry of Transport and Communication, Ministry of Environmental Protection, Ministry of Health, Ministry of Agriculture and Ministry of Energy and Mineral Resources. There are special institutions in Kazakhstan such as the State Expertise in Environment and several environmental think tanks that should participate as well.

143. Finally, it is critical that the training should not only target the central government, but rather focus largely on oblast-level capacity building, specifically the oblast offices of the national agencies.

144. Without this training the EA process in Kazakhstan will struggle to meet even minimal international safeguard standards.

Budget Requirements for Implementation of EARF

145. Bringing Kazakhstan's EA process into compliance with international standards will require considerable resources, with technical and environmental assessment training at the central and oblast level, starting in the oblasts were project pass through. Budgets for each oblast would likely be no less than USD 50,000-75,000 all inclusive and assuming at least one international safeguards person is involved full time. Oblasts trainees would number between 15 to 20 people over a two day period (some of their costs paid by the proponent). Sessions would be undertaken during the preconstruction period and if non compliance seems to be a standard occurrence, again near the end of the construction period. Essential would be the establishment of a specific website and CD of the training session and any outputs, establish an ongoing learning opportunity for Oblast-level specialists. Given that there are five oblasts involved a total budget of USD 250,000-375,000 would be required.

ANNEX 1

Project Screening And Categorization Form

Instructions: 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.

Suggested Category Divisions: “YES” answers for A-1, A-2(8), B-1(14) or more than 10 any other questions, the project should be Category A. “YES” answers to between 7 and 10 questions (except A-1 and A-2(8) and B-1(14)), the project will be at least a Category B, undertaking. Less than 7 (except A-1 and A-2(8) and B-1(14)) and the project is Category C. The specialists are encouraged to provide comments that would help explain the reason for the category.

Note: Answering Yes to any of the questions in red means an automatic B Sensitive category

Project Name:

SCREENING QUESTIONS	Yes	No	REMARKS/MITIGATION
A. Project Pre-Construction and Sighting			
A-1: Is the project corridor as defined by the Road RoW and the boundary specifications within 2 km of any of the following environmentally sensitive areas?			
1. cultural heritage site			
2. buffer zone of a protected area			
3. significant wetland providing important habitat			
4. Old-growth forest			
5. special area for protecting biodiversity			
A-2: Is the Project area ...			
6. in densely Populated district(s)?			
7. in potential Conflicts with other Development Activities			
8. inside or very close to boundary of a tribal or indigenous people area			
A-3: Will 10 Bridge Rehabilitation designs and 1 replacement location lead to:			
9. loss of agricultural lands			
10. deterioration of local environmental conditions			
11. require temporary crossings thus degrading land in vicinity of crossings			
B. Project Construction and Operating Periods			
B-1: Will a project lead to:			
Construction Period			
12. encroachment on historical/cultural areas;?			
13. disfiguration of landscape by road embankments, cuts, fills and quarries?			
14. encroachment on precious ecology (e.g. sensitive or protected areas)?			
15. alteration of surface water hydrology of waterways crossed by roads, resulting in increased sediment in streams/canals affected by increased soil erosion at construction sites?			
16. increased pollutant discharges into streams, including oil and fuel wastes, plus spilled cargo as well as construction materials spilled into the waterway during construction?			
17. deterioration of surface water quality due to silt runoff and sanitary wastes from worker-based camps and chemicals used in			

construction?			
18. increased local air pollution due to rock crushing, crushing, cutting and filling work, and volatile chemicals discharged into the air from asphalt production?			
19. noise and vibration due to ANY civil works?			
20. dislocation or involuntary resettlement of people			
21. other social concerns relating to inconveniences of living in project corridor during construction and operating period			
22. hazardous vehicle movement conditions where construction interferes with pre-existing road network?			
23. poor sanitation and solid waste disposal in construction camps and work sites, and possible transmission of communicable diseases from workers to local populations?			
24. creation of temporary breeding habitats for insect-borne diseases, by poor management of standing water, and waste construction materials, used equipment etc?			
Operating Period			
25. increased risk of accidents associated with increased traffic volume leading to greater no. of spills of toxic and Haz. Materials and loss of life?			
26. increased noise and air pollution resulting from traffic volume increases?			
27. significant increase in risks of environmental losses due to the need for large number of new bridges and other water crossings?			
Score Total			
Additional Comments			
Environmental Assessment to be Undertaken			
Completed By			

ANNEX 2

ENVIRONMENTAL STANDARD OPERATING PROCEDURE FOR ROAD CONSTRUCTION

(Adapted From World Bank Jakarta Office, and 2008 Aceh Infrastructure Construction Project)

I. Introduction

All projects that are Category C should include the set of Standard Environmental Operating Procedure (Env. SOPs) as part of the environmental safeguard procedure from project planning through operation. The should be added to the contract specifications.

II. Objective

146. The objective of this environmental SOP is give environmental safeguard consideration (physic, biology, social, health) during the planning, construction and operating/maintenance stages of any Category C Project.

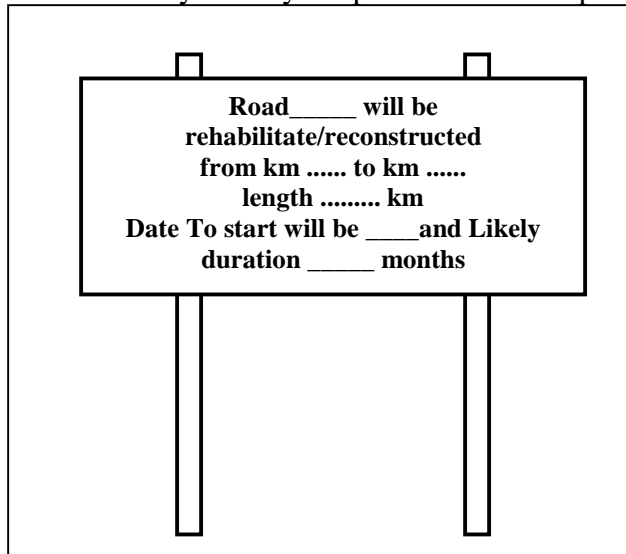
III. The Standard Environmental Operating Procedures

147. The procedures are far from exhaustive and are designed to trigger environmentally friendly thinking in terms of project design and construction.

1. Pre-construction Stages

a. Proper Project Announcement and Information Distribution

A very basic action should be the announcement of the project on a roadside sign, at a location easily read by the public. For examples :



b. Provision of information on the construction activity to local Akims is also very important.

2. Construction Stage

Table: Environmental SOP on Construction Stage (for Contractor)

No	Environmental safeguard	Standard Operating Procedure During The Construction Stage
1	Job opportunities for local communities	<ul style="list-style-type: none"> - In the worker recruitment, the contractors must give priority to the local communities which meet the requirement or who able be trained.
2	Existing underground utilities	<ul style="list-style-type: none"> - Before any soils works, contractor must identify all underground utilities which may exist in the around project location (pipe, cable, water channel). - If there are underground facilities in the project impact zone, the contractors must coordinate with the utilities owner before soils work can start. The contractor cannot damage the utilities but if an accident occurs, the contractor must repair according to the request of the owner.
3	Safeguards at quarry sites	<ul style="list-style-type: none"> - The contractors must obtain materials from a legally licensed quarry and must avoid getting materials from important natural resource areas such as protected forests, rivers, etc.
4	Keep good social relation with local communities	<ul style="list-style-type: none"> - In order to minimize conflict with local communities, contractors need to involve local communities in construction activities; especially when marking the RoW boundary and construction work limits.
5	Avoid damage to existing road through use of overloaded vehicles .	<ul style="list-style-type: none"> - The tonnage of material hauled must not exceed the road capacity. - If the material mobilization causes damage of the road, then contractor must repair it.
6	Prevent erosion along sensitive roadside areas.	<ul style="list-style-type: none"> - Protect exposed sloping construction areas with a cover crops. - Repair sloping area which damage during construction (with replanting). - Minimize trees cutting during construction. - Do not put material in waterways or on exposed slopes.
7	Safeguard river water quality (from erosion mud).	<ul style="list-style-type: none"> - Intercept any silt laden runoff from construction site via the use of settling ponds or filter fabric barrier..

No	Environmental safeguard	Standard Operating Procedure During The Construction Stage
----	-------------------------	--



8	Keep drainage water flowing/avoid damming and stagnant water conditions	<ul style="list-style-type: none"> - Keep drainage water flowing during construction - Do constructions work in dry season – if possible. - Keep contour in project location in same condition or better than for preconstruction conditions. - In sloping waterways, can be built stone structure in order keep waterways formation.
9	Safeguard to aquifer	<ul style="list-style-type: none"> - If there are wells affected by the projects, the contractor must replace them with new ones as agreed with the owner(s).
10	Replanting and safeguarding roadside natural resource.	<ul style="list-style-type: none"> - Keep trees in road side as much as possible. - Replanting trees cut as part of construction work. - It is recommended use trees indigenous tree species, that is those used to the local weather and soil/water conditions. - Trees planted with enough distant to road side. - Tree planting must be done by a qualified person. - Trees or others landscape features damaged by equipment operation, must be repaired to preconstruction or better conditions. - Use manual in place of machinery to make these repairs to natural resources, especially in the sensitive natural areas, such as roadside wetlands.
11	Maintain traffic flow and safety during construction	<ul style="list-style-type: none"> - Traffic at construction sites must be maintained and with safety in mind kept moving to avoid traffic jams. At any time construction can block a maximum of 50% of the existing roadway. - If there construction-related traffic jam are likely, the contractor must get permit from Oblast Transport Department. - Should excavation for location of utilities, etc. occur on the existing carriageway, such holes must be filled again in the same day, preventing accidents.
12	Safeguard air quality	<ul style="list-style-type: none"> - Contractor use equipment and vehicles that have emission inspection certificates. - Maintain all machines and generators in order to minimize

No	Environmental safeguard	Standard Operating Procedure During The Construction Stage
		<p>emission</p> <ul style="list-style-type: none"> - Covering material pile with plastic or canvas. When transporting material (soil, sand, and stone) by truck use covers to prevent spills and blowing materials. - Place asphalt mixing plant far from sensitive areas (school, hospital, important habitat); i.e. no less than 1000m. - Wet-down dusty areas – <i>figure below</i>. <div data-bbox="712 501 1192 835" style="text-align: center;"> </div> <ul style="list-style-type: none"> - Plant shelter belt trees and shrubs along open roadsides, especially area between road and housing.
13	Minimize noise impact	<ul style="list-style-type: none"> - Contractor use well maintained equipment with minimum noise emission. - Control noise emissions at its source - Pay attention (with organizing signage) to mitigate noise impact particularly in the vicinity of sensitive receptor such as school, hospital, clinics, and near churches/mosques during times of worship. - Promoting community awareness through notification and appropriate signage. Incorporate design features such as signs and speed reduction zones to minimize noise during sensitive hours. - Worker use safety equipment (provide ear protection for activities that exceed 85 dBA). - Use properly sound insulated (mufflers) construction equipment, portable generators and diesel equipment, and impose noise limits and curfew times when construction activity is to occur near sensitive receptors between 1800 and 0700. - Locate heavy truck and equipment staging areas at least 500 m from sensitive noise receptors. - Monitor short-term noise impacts. Result from field measures will be compared with applicable standard.
14	To minimize impacts to flora and fauna	<ul style="list-style-type: none"> - Minimize disturbance to vegetation, in particular forested areas and wetland vegetation. - Prevent and minimize disturbance to habitat and protected areas.

No	Environmental safeguard	Standard Operating Procedure During The Construction Stage
15	Safeguard to environmental sanitation	<ul style="list-style-type: none"> - Properly design, site, and maintain temporary construction camps to ensure adequate water and sanitation facilities, to minimize stagnant water through proper drainage, and to avoid water contamination. - Provide toilet (with collection tanks) in field. - Treat wastewater discharge to a receiving water body enough to avoid adversely affecting sensitive aquatic life. Use Norms and codes as thresholds.. - - Test treated wastewater at the discharge location during construction every 2 months for sanitary engineering parameters, including BOD 5 and fecal coliform bacteria, to assure that the water meets appropriate wastewater discharge standard. - Prevent the contamination from bitumen and fuel spill in handling and storage areas by providing proper concrete collection floors and spill interceptors which can be cleaned. - Contractors must not bury contaminant from material and other solid waste without permission from Territorial Environment Department. - Contractors must not dump waste or dangerous material (chemical, oil waste) to waterways/drainage. - After construction complete, the working area must be clean and in a condition equal to or better than pre-construction.
16	Safeguard to health	<ul style="list-style-type: none"> - Provide good sanitation facilities, including waste disposal in project location and worker settlement. - Locate potable water wells, to the extent feasible, at least 200 m from toilets, wastewater tanks, or other land use activities and facilities that may degrade groundwater supplies. - Properly label hygiene kits and water-purification tablets and solutions in the native language and provide appropriate orientation for proper use.
17	Safeguard to riverbank	<ul style="list-style-type: none"> - After bridge construction complete, make sure that the river/streambank is stable by planting a cover crop, or using bioengineering stabilization methods. - If the riverbank sloping is 1:3 and the water flow is swift, the riverbank around bridge should be protected with concrete revetment or a tested bioengineering treatment. Refer to <i>Bioengineering for Streambank Erosion Control</i>----in http://el.ercd.usace.army.mil/elpubs/pdf/trel97-8.pdf or http://www.wsdot.wa.gov/eesc/design/Roadside/SB/pdf/Soil%20bioeng.pdf
18	Safety for	<ul style="list-style-type: none"> - Provide safety equipment for worker (hat, boot, safety

No	Environmental safeguard	Standard Operating Procedure During The Construction Stage
	community and worker	<p>clothes).</p> <ul style="list-style-type: none"> - Ensure the sloping of temporary excavated area is able to shore up structure or machines located within a 20m radius and if not <i>shoring</i> and <i>bracing</i> must be undertaken. - contractor must provide support to strengthen surrounding structure in danger of structural damage from the excavation. - Heavy equipment is not permitted within 2 meter from side of excavated area. - Control access to excavation areas by using fencing. - Excavation areas near any existing road must be clearly marked with flashing red or yellow lamp signal or white drum beginning at least 25m before the work site. - Explosive material must be stored according the regulation and handled only be trained and licensed personnel. - Provide fire extinguisher, appropriate fence and signals, access control to open work sites, appropriate lighting and periodic training for worker on safety and first aid . - Provide first aid equipment in project location.

ANNEX 3A

Sample Table of Contents for Abbreviated Environmental Assessment of Initial Environmental Examination (IEE)

List of Acronyms and Common Terms (on a separate page before ToC)

1. Introduction
 - 1.1 Purpose of The IEE
 - 1.2 Identification of the Project and Project Proponent
 - 1.3 The Nature, Size, Location and Importance of the Project
 - High Quality Map Showing The Project Area**
 - 1.4 Assessment Boundaries
 - 1.5 Legal and Administrative Framework for Environmental Protection
 - 1.6 Methodology Applied
 - 1.7 Acknowledgement
2. Description of the Project
 - 2.1 Type of Project
 - 2.2 Category of Project
 - 2.3 Need for Project
 - 2.4 Location and Size of Operation
 - 2.5 The Screening Results
 - 2.6 Proposed Schedule of Implementation
 - 2.7 Project Layout and Components of the Work
3. Description of the Environment
 - 3.1 Physical Resources
 - 3.1.1 Climate
 - 3.1.2 Air Quality and Noise
 - 3.1.3 Topography, Geology and Soils
 - 3.1.4 Surface Water Quantity and Quality
 - 3.1.5 Groundwater
 - 3.2 Ecological Resources
 - 3.2.1 Forests, Wildlife, and Rare and Endangered Species
 - 3.3 Human and Economic Development
 - 3.3.1 Population and Community
 - 3.3.2 Infrastructure and facilities (water supply, sewerage, drainage control)
 - 3.3.3 Industries and Employment
 - 3.4 Transportation (road, rail air)
 - 3.5 Landuse and Terrain
 - 3.6 Quality of Life Values
 - 3.6.1 Education
 - 3.6.2 Public Health
 - 3.7 Archaeological, Historical and Cultural Treasures
 - 3.8 Recreational Resources and Development
 - 3.9 Cultural Values
 - 3.10 Human Settlement in the RoWs

- 4. Screening of Potential Impacts and Mitigation Measures
 - 4.1 Impacts
 - 4.1.1 Pre Construction
 - 4.1.2 Construction Period Impacts
 - 4.1.3 Operating Period
 - 4.2 Mitigation Measures
 - 4.2.1 The Environmental Management Plan (EMP)
 - 4.2.2 Social Impact Assessment and Resettlement
 - 4.3 Community Perspective
 - 4.4 Economic Impact
 - 4.5 HIV/AIDS
 - 4.6 Poverty Impact
 - 4.7 Resettlement and Land Acquisition

- 5 Institutional Requirements, Monitoring and Costs
 - 5.1 Institutions and Their Strengthening
 - 5.2 Monitoring
 - 5.3 Mitigation and Monitoring Costs

- 6 Public Consultation and Information Disclosure
 - 6.1 Logistics and Delivery
 - 6.2 Use of Consultation Results
 - 6.3 Follow up Program

- 7 Findings and Recommendations

- 8 Conclusions

ANNEX????
CONSULTATION AND INFORMATION SESSION
RECORD
Start on new page—

ANNEX ??
ENVIRONMENTAL MITIGATION AND
MONITORING PLANS
Start on new page

ANNEX 3B

Sample EIA Table of Contents: ADB GMS Southern Coastal Road Corridor Project Preparation: Environmental Impact Assessment (EIA)

(ToC Taken from EIA prepared by G. Teleki for ADB, 2006-07)

1. Introduction
 - 1.1. The Proponent and Purpose of the EIA
 - 1.2. Project Status and Documentation (Feasibility Study)
 - 1.3. Extent and Boundaries of the EIA Study
 - 1.4. Content of the EIA and Methodology Applied
 - 1.5. Applicable ADB Guidelines and Government of _____ Legislation
2. Description of the Project
 - 2.1. Type of Project and Category
 - 2.2. Need for Project
 - 2.3. Location
 - 2.4. Size and Magnitude of Operation
 - 2.5. Schedule For EIA Approval, EMP Implementation in Context of Project
Include government and donor approval system
 - 2.6. Project Layout and Components of the Work
Use maps and text, from Feasibility Study and other materials
3. Description of the Environment
 - 3.1. Physical Resources
 - 3.1.1. Climate
 - 3.1.2. Topography, Geology and Soils
 - 3.1.3. Surface Water
 - 3.1.4. Groundwater
 - 3.2. Ecological Resources
 - 3.2.1. Flora and Fauna
 - 3.2.2. Fisheries and Aquatic Biology
 - 3.3. Social and Cultural Conditions
 - 3.3.1. Population, Communities and Land Planning
 - 3.3.2. Agricultural and Mineral Development.
 - 3.3.3. Infrastructure and facilities (water supply, sewerage, drainage/control)
 - 3.3.4. Transportation (road, rail air)
 - 3.3.5. Power Sources and Transmission

- 3.3.6 Industries and Employment
- 3.3.7 Institutions
- 3.4. Quality of Life Values
 - 3.4.1. Socioeconomic Profile
 - 3.4.2. Public Health
 - 3.4.3. Air Quality and Noise
 - 3.4.4. Recreational Resources and Development
 - 3.4.5. Cultural Values
- 3.5 Human Settlement in the RoW
- 3.6 Archaeological and Historical Treasures

- 4. Examination of Alternatives
 - 4.1 Alternative Solutions
 - 4.2 Alternative Designs
 - 4.2.1 Comparison of the two Options
 - 4.2.3 The Preferred Option
- 5. Potential Impacts and Mitigative Measures for the Selected Option
 - 5.1. Environmental Effects Due to Project Location and Design
 - 5.1.1 Impacts
 - 5.1.2 Mitigating Adverse Effects

 - 5.2. Environmental Effects Associated with Construction
 - 5.2.1 Effects
 - 5.2.2 Mitigating Adverse Effects

 - 5.3. Environmental Effects Associated with Project Operations
 - 5.3.1 Effects
 - 5.3.2 Mitigating Adverse Effects

 - 5.4 Irreversible and Irretrievable Impacts
 - 5.5. Proposed Environmental Enhancements
 - 5.6 Additional Considerations
 - 5.7 Social Impacts Assessment
 - 5.7.1. Social Impacts
 - 5.7.2. Poverty Impact
 - 5.7.3 Resettlement

- 6.0 The Environmental Management and Monitoring Action Plan
 - 6.1 Environmental Mitigation
 - 6.2 The Environmental Monitoring
 - 6.3 Adding Covenants and Environmental Clauses

- 6.4 Institutional Capacity Building Needs

- 7.0 Environmental and Social Costs and Benefits
 - 7.1 Costs of Environmental Impacts; No Mitigation
 - Preconstruction Period

- Construction Period
- Operational Period
- 7.2 Costs of Measures to Mitigate Impacts
 - Preconstruction Period
 - Construction Period
 - Operational Period
- 7.3 Benefits of Mitigative Measures Applied
 - Preconstruction Period
 - Construction Period
 - Operational Period
- 7.4 Environmental Benefits Versus Costs: Summary
- 7.5 Social Development Program and Resettlement Costs
 - 7.5.1 Social Development
 - 7.5.2 Resettlement
- 8. Public Consultation and Information Disclosure
 - 8.1 Logistical Details
 - 8.2 People Delivering the Workshop and Information Disclosed
 - 8.3 Summary of Comments by Participants
 - 8.4 Summary of Reply by Workshop Team
 - 8.5 Use of Consultation Results
 - 8.6 Follow Up Program
- 9. Conclusions and Recommendations
- 10. References

ANNEX????
CONSULTATION AND INFORMATION SESSION
RECORDS

Start on new page—

ANNEX ??
ENVIRONMENTAL MITIGATION AND
MONITORING PLANS

Start on new page

ANNEX 4**SAMPLE MONITORING CHECKLIST AND FORM; From Laos Shifting Cultivation Project
(Taken from report prepared by G. Teleki for ADB 2003)**CONTRACT NO &
LOCATION:

MONITOR (S) NAME:

CONTRACTOR NAME

MONITORING DATES:

START: _____ FINISH: _____

CONSTRUCTION

START DATE: _____

(Must be done Quarterly; Start Sept., 07)

DD/MM/YY

DD/MM/YY

DD/MM/YY

Please fill in all blank columns, and correct information in any cell as required

Environmental Impact/Issue	Mitigative Measures(MM) ⁸	Specific Date Item MONITORED (dd/mm/yy)	Location ⁹ (Specify)	Time Frame ¹⁰	Responsibility		Compliant Yes/No	Reasons	Follow-Up Actions Needed
					Implementation	Supervision			
COMPLIANCE MONITORING									
1. PRE-CONSTRUCTION PHASE (Was this done or is this in contract documents being prepared?)									
1.1 Removal of Trees	Trees will be removed from the Work Area ¹¹ (or, site) before commencement of Construction only with prior approval of the Proj. Engineer & Dept. of Forestry. Work Areas should be clearly marked, such that contractors do not cut trees unnecessarily.		The work Area	Before Construction starts.	Construction contractor Survey Team	PIU, For. Dept. and Proponent			
1.2 Property	All relocation and rehabilitation activities must be reasonably completed before any		The work Area plus	Before constructio	Detailed Design	PIU and Proponent			

⁸ Some of the mitigative measures are preventive in nature while some others include additional measures in terms of environmental conservation and involve physical and construction work.⁹ Unless otherwise stated, the Project Site may cover areas beyond the Work Area and/or the RoW, such as borrow areas, access roads, service roads and equipment storage sites .¹⁰ Time frame refers to the time period during which the mitigative measures need to be taken.¹¹ The Work Area is defined as the width in which the contractor is permitted to operate. This work Area, in terms of indirect impacts from the work will extend at least 10 m beyond the immediate construction area.

Environmental Impact/Issue	Mitigative Measures(MM) ⁸	Specific Date Item MONITORED (dd/mm/yy)	Location ⁹ (Specify)	Time Frame ¹⁰	Responsibility		Compliant Yes/No	Reasons	Follow-Up Actions Needed
					Implementation	Supervision			
Acquisition and People Relocation	construction activity starts. Based on the design drawings these sites and relocations are:		5m from the edge of the road	n starts in any sub-section of roads.	Contractor, PIU and Gov				
1.3 Utility Relocation	If it is found that residences, commercial establishments, etc. have illegally drained sewage or grey water into roadside drains, these are to be recorded and removed. As well, a solution to the disposal problem needs to be provided at a cost to the owner. This 2 nd step must be a part of this action		Based on survey completed and verifiable sketches prepared.	Before construction starts.	Detailed Design Contractor	PIU and DTCB			
1.4 Removal of Community Utility	All community utilities such as community source of water will be replaced at appropriate and suitable locations. Replacements will be reasonably complete before construction starts.		survey and verifiable sketches prepared.	Before construction starts.	Detailed Design Contractor	PIU and Proponent			
2: CONSTRUCTION PHASE									
2.1: SOIL									
2.1.1 Generation of excess soil, and debris	Earth, if required will be dumped in areas selected and approved by the engineer, for such purpose. Residual spoils shall be used, as directed by the Engineer, to fill up the borrow areas as per clause 2.1.2 below. All arrangement for transportation during construction including provision, maintenance, dismantling and clearing debris where necessary will be considered incidental to the work and should be planned and implemented as approved and directed by the Engineer.		Throughout Project Areas.	During Construction.	Contractor.	Supv. Engineer ¹² and PIU.			
2.1.2 Loss of Topsoil	For work in any productive soil areas, the topsoil from all areas to be permanently converted to urban infrastructure use shall be stripped to a specified depth of about 200mm and stored in stockpiles of height not exceeding 2m, and protected from the weather. Such stockpiled topsoil will be returned to cover the disturbed area and cut slopes or used in any replanting areas. Residual topsoil will be made available at no charge to local communities.		Throughout Project Areas and all borrow areas.	During Construction.	Contractor.	Supv. Engineer and PIU.			

¹² The reference to “the engineer” or “supervising engineer”, means the chief engineer in charge of the project with the responsibility to sign off on all aspects of the work.

Environmental Impact/Issue	Mitigative Measures(MM) ⁸	Specific Date Item MONITORED (dd/mm/yy)	Location ⁹ (Specify)	Time Frame ¹⁰	Responsibility		Compliant Yes/No	Reasons	Follow-Up Actions Needed
					Implementation	Supervision			
	Topsoil will not be unnecessarily moved either before stripping or when in stockpiles. Stockpiles will not be surcharged or otherwise loaded and multiple handling will be kept to a minimum.								
2.1.3 Loss of Soil Stability	Construction vehicle, machinery and equipment shall move or be stationed in the designated area (RoW or Work Area, as applicable) only. The contractor shall ensure that he does not adversely affect the stability of excavation or fills by the method of stockpiling materials, use of plants or siting of temporary buildings or structures.		AT all Project work areas/ contracts and all areas temporarily used.	During Construction.	Contractor.	Supv. Engineer and PIU.			
2.1.4 Borrowing of Earth	Borrowing within the RoW is generally prohibited-under these contracts, unless it is part of the specified 'cut' operation. However, earth available from excavation for roadside drains as per design, may be used as embankment material, subject to approval of the Supv. Engineers. Arrangement for locating the source of supply of material for embankment and sub-grade, excavation and borrow areas must all times be in compliance with DOE's Environmental Rule and RHD's requirements. The Contractor shall facilitate inspection of all borrow areas by the PIU and satisfy the Engineer (or MONITOR) that environmental compliance was maintained. Any non-compliance shall be rectified by the Contractor at his own cost with direction from the Engineer.		All borrow areas.	During Construction.	Contractor.	Supv. Engineer and PIU.			
2.1.5 Degradation of Borrow Areas	The location, shape and size of the designated borrow areas shall be as approved by the Engineer. No new borrow area shall be opened without permission of the Engineer. If borrow pits are permitted along the road, these shall conform to specifications of the DOE's Environmental Rule.		All borrow areas.	During Construction.	Contractor.	Supv. Engineer and PIU.			
2.1.6 Soil Erosion	On road embankment slopes, vegetation will be planted as soon as construction activity in that immediate area has been completed.		In all project areas, all borrow areas, service roads and equipment storage sites, etc.	During Construction.	Contractor.	Supv. Engineer and PIU.			
2.1.7 Contamination	Vehicle/machinery and equipment maintenance		Throughout Project	During Construction.	Contractor.	Supv. Engineer,			

Environmental Impact/Issue	Mitigative Measures(MM) ⁸	Specific Date Item MONITORED (dd/mm/yy)	Location ⁹ (Specify)	Time Frame ¹⁰	Responsibility		Compliant Yes/No	Reasons	Follow-Up Actions Needed
					Implementation	Supervision			
of Soil by Fuel and Lubricants	and refueling shall be carried out in such a fashion that spillage of fuels and lubricants do not contaminate the ground. If needed, an “oil interceptor” will be provided for wash down and refueling areas. Fuel storage shall be in proper bermed areas, with fire control, signage as per Nat’l. regulations. All spills and collected petroleum products shall be disposed off in accordance with DOE and WPC guidelines. Fuel storage and refilling areas shall be located at least 100m from all cross drainage structure and important water bodies, or as directed by the Engineer. Washing of any construction vehicles directly in the a natural water body will be forbidden at all times		Areas, all access roads, sites temporarily acquired and all borrow areas.						
2.1.8 Contamination of Soil by Construction Wastes	All spoils ¹³ shall be disposed off in the manner as defined in Clause 2.1.1. No new disposal site shall be created as part of the project, which is not treated as per clause 2.1., except with prior and express approval of the Engineer. If dumping of waste on temporary acquired land is envisaged, this area will be dealt with in the manner as defined in mitigative measures 0- 0. Any claim arising from improper waste disposal shall be made good by the contractor, at his cost.		Throughout Project Areas, all active construction-related areas, sites temporarily acquired and all borrow areas.	During Construction.	Contractor.	Supv. Engineer,			
2.2 WATER									
2.2.1 Loss of Minor Water Bodies	Natural minor surface water bodies shall not be encroached on unless permitted by the engineer. Fish ponds and the like, if altered will be compensated by digging an equal volume of soil for water storage. Such dug-up soil shall be dealt as per mitigative measures 0 through 0. Wherever digging is undertaken at the water’s shoreline, the banks shall be protected by means as designed or as approved by the Engineer. As far as practical, and as approved by the Engineer, excavation for replacement of water bodies shall be at the closest possible place/location, with respect to the original water body or part thereof consumed by filling.		Based on design drawings and other sketches provided by PIU	Whenever Encountered During Construction.	Contractor.	Supv. Engineer and PIU			
2.2.2 Loss of Other Water Sources	Any source of water (potable or otherwise) for communities, e.g. springs etc, incidentally lost shall be replaced immediately. The location and		Throughout Project Areas, all	Whenever Encountered During	Contractor.	Supv. Engineer and PIU			

¹³ Spoils refers to excess earth, soil and rock materials resulting from the construction activity

Environmental Impact/Issue	Mitigative Measures(MM) ⁸	Specific Date Item MONITORED (dd/mm/yy)	Location ⁹ (Specify)	Time Frame ¹⁰	Responsibility		Compliant Yes/No	Reasons	Follow-Up Actions Needed
					Implementation	Supervision			
	siting of the replaced source of water shall be as per design, or as directed by the Engineer who must closely consult with the village/community affected. In general, there should be only lateral displacement (of the new site from the old). Such replacements shall be ready prior to demolition/ dismantling of the existing source. This sub-clause covers the identified sources of water in the pre-construction stage.		access roads, sites temporarily acquired and all borrow areas.	Construction.					
2.2.3 Flooding	In addition to having an acceptable design, the contractor shall take all necessary measures and, as directed by the Engineer, to prevent temporary or permanent flooding of the site or any adjacent area. This is particularly true of site preparation for the construction down time during the monsoon season.		Throughout Project area, all access roads, temporarily use areas and all borrow areas.	During Construction and the contractors liability period.	Contractor.	Supv. Engineer and PIU.			
2.2.4 Siltation into Water Bodies	Siltation of water bodies will be prevented as far as possible. The contractor will take all reasonable measures as per mitigative measures No. 0 Construction materials containing fine particles shall be stored in an enclosure such that sediment laden water does not drain into nearby watercourses.		Throughout Project area, all access roads, sites temporarily acquired and all borrow areas.	During Construction.	Contractor.	Supv. Engineer and PIU.			
2.2.5 Construction Area Run-off	No trees or vegetation, other than that found in the construction work area as shown in the design drawings will be cut. The contractor shall construct temporary/permanent devices to prevent water pollution (due to siltation and increase of turbidity) from areas where natural vegetation has been disturbed.		Throughout Project area, all access roads, sites temporarily acquired and all borrow areas.	During Construction.	Contractor.	Supv. Engineer and PIU.			
2.2.7 Alteration of Drainage	All necessary measures shall be taken to prevent earthwork, stonework, materials and wastes as well as the method of operation, from impeding cross-drainage at rivers, streams, water canals and existing irrigation and drainage systems.		Throughout Project Area, all access roads, temporarily used lands and all borrow areas.	During Construction.	Contractor.	Supv. Engineer and PIU.			
2.2.8 Increased Run-off	No tree or vegetation (except those 'cleared' for cutting by the Forestry Department and the Engineer) and those within the designated construction work area will be disturbed or damaged. Only trees and shrubs that impinge directly on the permanent works or on necessary temporary works, will only be cut/removed on approval of the Engineer, who will have		Entire Project Site.	During Construction.	Contractor.	Supv. Engineer and PIU. In consultation with Forestry Dept.			

Environmental Impact/Issue	Mitigative Measures(MM) ⁸	Specific Date Item MONITORED (dd/mm/yy)	Location ⁹ (Specify)	Time Frame ¹⁰	Responsibility		Compliant Yes/No	Reasons	Follow-Up Actions Needed
					Implementation	Supervision			
	consulted with Forestry Dept. authorities. The Engineer will issue such approval in writing.								
2.2.9 Contamination of Water from Construction Wastes	All measures will be taken by contractors to prevent the wastewater produced during construction from entering directly into streams, water bodies or the irrigation system. Construction work close to the streams or water bodies shall be avoided during monsoon and measures as per mitigative measures No. 0- 0 will be taken. All waste arising from the project is to be disposed off by recycling, reuse and finally burying of remaining waste. Burning of anything other than wood and paper products should not be permitted.		Throughout Project Area, all access roads, temporarily used lands and all borrow areas.	During Construction.	Contractor.	Supv. Engineer and PIU.			
2.2.10 Contamination from Fuel and Lubricants	All waste petroleum products must be collected, stored and taken to approved disposal sites and to the entire satisfaction of the Engineer. Disposal will be monitored in relation to equipment use on-the job.		Throughout Project Area, all access roads, temporarily used lands and all borrow areas.	During Construction.	Contractor.	Supv. Engineer and PIU.			
2.2.11 Sanitation and waste disposal in construction camps	All worksites will have operating and regularly serviced toilet facilities. Compliance with the Municipal Health Dept. regulations shall be strictly adhered to. Garbage bins shall be provided at the construction site and regularly emptied and the garbage disposed off in a hygienic manner, to the satisfaction of the relevant norms and the Engineer. Once construction is completed all toilet facilities, if temporary pit privies, must be completely cleaned up and removed. Only paper and wood fiber products are to be burned, plastics are to be collected and recycled or reused.		All Construction Workers Camps including Immediate vicinity.	During construction period.	Contractor.	Supv. Engineer and PIU.			
2.3 AIR POLLUTION									
2.3.1 Generation of Dust	All vehicles delivering materials to the site shall be covered to avoid spillage of materials. All existing paved roads used by vehicles of the contractor, or any of his sub-contractor or suppliers shall be kept clean and clear of all dust/mud or other materials dropped from such vehicles or their tires. Cleaning will be done immediately by any means required to completely remove all dust, mud and other debris on the pavement surface. Additionally, if		Throughout Project Area, all access roads, temporarily used lands and all borrow areas.	During Construction.	Contractor.	Supv. Engineer, PIU.			

Environmental Impact/Issue	Mitigative Measures(MM) ⁸	Specific Date Item MONITORED (dd/mm/yy)	Location ⁹ (Specify)	Time Frame ¹⁰	Responsibility		Compliant Yes/No	Reasons	Follow-Up Actions Needed
					Implementation	Supervision			
	so directed by the Engineer, the road surfaces shall be hosed or watered using necessary equipment. Construction roads and temporary bypass roads, will be regularly swept (or watered if earth or gravel surface) and so as to restrict dust as much as possible. Contractors will maintain a sweeping log. Machinery and equipment shall be so handled so as to minimize the generation of dust. All earthwork shall be protected such that the generation of dust is minimized.								
2.3.2 Emission from Construction Vehicles, Equipment and Machinery	The vehicle emission standards promulgated by DOE ¹⁴ shall be strictly adhered to. All vehicles, equipment and machinery used for construction shall conform to these standards. All vehicles, equipment and machinery used for construction shall be regularly maintained to ensure that vehicles comply (within reason) with permitted air emission levels defined by DOE. These standards will be enforced by the Supv. Engineer.		Throughout Project Area, all access roads, temporarily used lands and all borrow areas.	During Construction.	Contractor.	Supv. Engineer and PIU.			
2.4 NOISE POLLUTION									
2.4.1 Noise from Vehicles, Plants and Equipment. (use portable noise meter)	The plants and equipments used in construction (including the agg. crushing and hot mix plants) shall strictly conform to the accepted noise standards. All vehicles and equipment used in construction shall be fitted with exhaust silencers/mufflers. The effectiveness of exhaust silencers (mufflers) shall be checked during each maintenance cycle and if found to be defective shall be replaced. Under no circumstances will noise level from any item exceed the relevant legislation found in the DOE's Rule. Failing this a maximum continuous level of 75dB(A) will be used as the level above which equipment emitting such noise shall be removed from the site.		Throughout Project Area, all access roads, temporarily used lands and all borrow areas	During Construction.	Contractor.	Supv. Engineer and PIU.			
2.5 IMPACT ON FLORA									
2.5.1 Loss or Damage to Vegetation	See Mitigative Measure No.0		Entire Project Site.	During Construction.	Contractor.	Supv. Engineer, PIU. DCTB			
2.5.2 Compaction of Vegetation	Disruption to vegetation shall be minimized as per MM No. 0, 0 and 0		Entire Project Site.	During Construction.	Contractor.	Supv. Engineer and PIU.			

¹⁴ Vehicle Emission Standards for Laos have been developed as part of this project, but have not been transformed into a regulation.

Environmental Impact/Issue	Mitigative Measures(MM) ⁸	Specific Date Item MONITORED (dd/mm/yy)	Location ⁹ (Specify)	Time Frame ¹⁰	Responsibility		Compliant Yes/No	Reasons	Follow-Up Actions Needed
					Implementation	Supervision			
2.6 DISRUPTION TO USERS									
2.6.1 Loss of Access	The Contractor shall provide safe and convenient passage for vehicles and pedestrians to and from side roads and property accesses connecting the project road/area. Work that affects the use of side roads and existing accesses shall not be undertaken without provision of adequate alternate routes; to the prior satisfaction of the Engineer. The works shall not interfere unnecessarily with access to, and use of public roads and any other access footpaths to or from properties whether public or private.		All Project Areas.	During Construction.	Contractor.	Supv. Engineer and PIU.			
2.6.2 Traffic Diversions and Access dust	Temporary bypasses will be constructed with the approval of the Engineer. The temporary traffic detours shall be kept free of dust by frequent sweeping or application of water.		All Project Areas.	During Construction.	Contractor.	Supv. Engineer and PIU.			
2.7 PREVENTION OF INSECT-BORN DISEASES									
2.7.1 Stagnant Water bodies and Insect-born diseases	Contractors will be required to conduct rigorous inspections of the work sites to be sure that there are no stagnant waters. This will include removal of all old tires with water in them, drums containing stagnant water and filling in of any ponded areas created as part of the construction presence and where water can stagnate. These are all breeding grounds for malaria , encephalitis and dengue fever mosquitoes.		All Project Areas and surroundings	Throughout the construction period	Contractor	Supv. Engineer and PIU			
2.8 OCCUPATIONAL HEALTH AND SAFETY									
2.8.1 Inadequate Footwear and protective Clothing	Contractor must provide protective footwear for all workers handling heavy materials, and working with caustic and hazardous materials such as concrete and asphalt.		All construction sites	Through construction period	Contractor	Supv. Engineer DTCB & RHD			
2.8.2 Lack of medical assistance facility on site	Contractor must have first aid services available to all staff and workers at all times; Contractor must have at least one emergency treatment specialist on call at all times and available for emergency treatment as required.		All construction sites and surroundings affected	Through construction period	Contractor	Supv. Engineer DTCB & RHD			
2.8.3 Improper storage, handing and use of haz. materials	handling of all caustic and petroleum based materials must be done, wearing protective footwear and clothing as well as protection against fugitive dust Storage of such materials must be protected from the weather and safe from potential tampering and theft.		All construction sites and surroundings affected	Through construction period	Contractor	Supv. Engineer DTCB & RHD			
2.8.4 No Provision of	Contractor must provide sanitary toilet for all full-time workers on the construction site and		Construction camp(s)	Through construction	Contractor	Supv. Engineer,			

Environmental Impact/Issue	Mitigative Measures(MM) ⁸	Specific Date Item MONITORED (dd/mm/yy)	Location ⁹ (Specify)	Time Frame ¹⁰	Responsibility		Compliant Yes/No	Reasons	Follow-Up Actions Needed
					Implementation	Supervision			
sanitary toilet facilities at all times	make sure it is serviced daily Contractor must provide sanitary and private, shower/washing areas for all work camp staff			period		DTCB & RHD			
2.8.5 improper control of movement of large equipment and handling of construction items	Large vehicle safety equipment such as reverse alarms, the provision of assistants when vary large equipment is moved on the construction site must be adhered to at all times		All construction sites and surroundings affected	Through construction period	Contractor	Supv. Engineer DTCB & RHD			
2.8.6 Child Labour	No Children (less than 14 year of age) can work on any contract		All construction contracts	Through construction period	Contractor	Supv. Engineer DTCB & RHD			
2.8.7 Records of Safety and Health	The Contractor shall maintain such records and make such reports concerning safety, health, and welfare of persons and damage to property available for inspection as the Engineer may from time to time prescribe		All construction sites	Through construction period	Contractor	Supv. Engineer DTCB & RHD			
2.8.8 Reporting of Accidents	The Contractor shall report to the Engineer details of any accident as soon as possible after its occurrence. In the case of any fatality or serious accident, the Contractor shall, in addition, notify the Engineer immediately by the quickest available means		All construction sites	Through construction period	Contractor	Supv. Engineer DTCB & RHD			
2.8.9 Provision of Potable Water	The contractor shall provide potable water to all staff working on the worksite and at all times		All construction sites	Through construction period	Contractor	Supv. Engineer DTCB & RHD			
2.8.10 Provision of Basic Housing	Contractor shall provide sanitary, safe, ventilated housing to all workers as per direction from the Proj. Mgr. as specified in Contract Clause 6.0.7.2.1		Any work camp	Through construction period	Contractor	Supv. Engineer DTCB & RHD			

NOTES

Appendix Table 5A. Environmental Management Plan: Mitigative Measures

Source: Kazakhstan Tranche 1 IEE,

Environmental Impact/Issue	Mitigative Measures	Location ²	Time Frame	Responsibility	
				Implementation	Supervision
PRE-CONSTRUCTION PERIOD					
1.1 Lack of any capacity to understand and implement environmental mitigative measures	MOTC will operationalize the Environmental mitigation and monitoring measures as defined in the IEE and provide the necessary instructions to the contractor and the oblast level agencies responsible and conduct such a session either in Almaty or Taraz	In Taraz or Almaty	Within 1 week of the start of contractor mobilization	Specialists from within the PMC or retained experts to plan and deliver this training	Project Management Consultant (PMC) and the MOTC Roads Committee (RC)
1.2 No provision for translation of IEE and related documents for use by Oblast Inspectors, and for use in Bid documents (at least the EMP)	MOTC RC will provide the successful contractor with the translated IEE , including the EMP, with instructions on how the mitigative measures and monitoring are to be undertaken, making provision for assistance to the contractor in preparing the Construction Environmental Action Plan (CEAP). Secondly, the Site Engineer assigned will provide the DOEP inspectors with the EAI EMP and any supporting reports for use in their inspection process. Given the uncertainty of inspection qualifications MOTC and the PMC will organize 1-day workshop in Taraz field for technical inspectors to review environmental compliance monitoring and reporting, and fill any gaps arising from this session.	Not applicable	Translate during detailed design stage and provide instructions prior to contractor field mobilization.	MOTC RC	MOTC RC
		As part of 1.1 a Workshop will be held in Taraz	To be determined	MOTC RC	MOTC RC
1.3 Bid documents prepared without access to or use of the IEE and particularly this EMP	No bid documents will be prepared without the authors have read and having a copy of the mitigation and monitoring plans found in the IEE. These tables plus sample environmental clauses together help formulate the safeguard clauses to include in the contract specifications.	Almaty	Before the bid documents for Section 3 and 6 contracts are completed	Detailed Design Consultant and MOTC Specialist	MOTC and PMC with advice from MOEP
1.4 Failure of designers to include design measures that will prevent later impacts such as: livestock crossing management, poor traffic management and excessive tree removal	During detailed design the design team will consult with MOEP-EEC team and develop best practice means for: <ol style="list-style-type: none"> 1. management of livestock crossing the road 2. minimizing the removal of mature trees from roadsides during widening operations; 3. planning for optimum traffic management during construction operations 4. provision of step-by-step guidance on environmentally acceptable bridge and culvert replacement methods 	1. At any sites along Sect. 3 and 6 where crossings are frequent 2. At any locations where mature trees will be cut down 3. At all sites along an existing road 4. N A	1. Interviews with local people and shepherds 2. Initially at preconstruction planning and then prior to work starting in a treed stretch. 3.Continuous 4.Early in the construction period before any bridge building tasks place	1. Detailed Design team to visit field 2. Detailed Design team in consultation with Forestry and Hunting Committee (FHC) to prepare tree removal and replanting scheme for heavily treed sections of road, such as No. 6 3. Transport Planners prepare a protocol. 4. Detailed Design Team with help of ecology. expertise	MOTC RC
1.5 Failure to carry out a roadside soil testing program to establish lead and possible chromium +6 contamination.	MOTC in cooperation with the SES of the Ministry of Health will undertake a roadside sampling program for lead and Chromium, establish the distance from the pavement edge and depth of dangerous contamination including a treatment plan and map of locations and depths. Testing or products such as milk and foods such as lettuce melons and cucumbers derived from this area will also be tested. Testing must take place at least 6 sites on both sides of the pavement and replicated at least twice. These data will form a lead management protocol	Anywhere where roads shoulders are to be work in/on along the road	During the detailed design stage	MOTC and SES of Ministry of Health	MOTC and RC
CONSTRUCTION PERIOD					
2.1 Contractor fails to retain a ecological expert to prepare the CEAP and to implement all mitigation and monitoring measures, leading to a failure to implement the EMP	As specified by law, contractor will be required to retain an ecologic expert with EIA experience to prepare the CEAP and obtain all relevant permits. The contractor will not be permitted to mobilize the workers without an approved CEAP and the appropriate permits in place	Prior to the start of the construction work.	NA	Contractor	MOTC and PMC
2.2 Improper management of earthworks transport and Storage procedures, including cleaning; leading to dust and air	Large volumes of quarry rock, aggregate and sand will be transported and stored in the airport work site. These operations and storage areas will be constantly exposed to the elements and will create primarily dust during the frequent windy conditions. Dust will be managed by daily use of watering trucks.	Throughout the construction period	Anywhere where there is material moved, earthworks cutting and filling	Contractor	MOTC and PMC

Environmental Impact/Issue	Mitigative Measures	Location ²	Time Frame	Responsibility	
				Implementation	Supervision
pollution (Also see 2.5)	All topsoil needs to be collected and reused to rehabilitate/revegetate the areas disturbed.				
2.3 Inadequate erosion control and slope stabilization leading to land slip and chronic erosion at cuts and water crossings.	Contractor will be required to know the subsoil materials that are being cut into and excavated and have ready appropriate plans to stop land slippage and erosion, particularly in the valleys of Section 3. At water crossings where structures are to be replaced careful replacement and use of gabions with culverts and bioengineering methods for rapid revegetation and slope stabilization will be used.	Based in a analysis of soils conditions by contractor and consultation with KAZHYDROMET	Throughout the construction period	Contractor	MOTC and PMC
2.4 Side borrow operations leading to erosion, landslide and destruction of landscape	While not strictly forbidden, the practice of taking fill material from the side of the road, creating a landscape of craters is not acceptable to MOTC and therefore should not be done, unless complete landscaping and erosion control follows. Any such borrow areas should not intrude visually on the road, meaning it should be out of eyesight from the road with proper site re-contouring and replacement of topsoil. The traditional method of scooping materials and leaving craters will not be permitted.	During construction period along any stretches where road will be raised and fill is needed, particularly in areas with long visual distances	Throughout the construction period	Contractor	MOTC and PMC
2.5 Failure to maintain the earthworks and materials handling process, including aggregate sites, haul roads to quarries/agg. processing sites including management of dust, noise, drainage during haulage of materials	Mitigation will involve <ol style="list-style-type: none"> 1. upgrading the haul road so it becomes an all weather road; 2. enforcing a speed limit of 30 KMP within 500m of any village and the use of chemical dust suppressants at least on road for 500m on either side of a village, Same approach is to be taken if the other site is used. 3. restricting operating hours through roadside villages and settlements to between hours of 0800 and 1730. 4. Aggregate sites will require permits and contractors will be required to mark the boundaries, work within them and fully rehabilitate and stabilize the site as part of decommissioning. 	1-3. All access roads and haul routes for materials movement, particularly through settlement areas, villages and towns 4. Define restricted locations as anywhere within a 1 km distance of a settlement area, with a preference for sites downwind of settlements.	Throughout the construction period	Contractor	MOTC and PMC
2.6 Inadequate handling of lead and possibly Chromium contaminated roadside soils	Should the tests during the preconstruction period indicate consistently contaminated soils and these need to be excavated, the contractor must treat these soils as hazardous materials, seek proper disposal permits and get expert advice on how and where to dispose or decontaminate these soils.	Any road shoulders where excavation is planned	Prior to any road shoulder excavation or clearing	Contractor and SEC of the Min of Health as well as MOEP	MOTC and PMC
2.7 Failure to adhere to construction related good housekeeping practices, including solid and sanitary waste management	Contractors will adhere to standard good housekeeping practices as defined in the contract Terms & Conditions and Contract Specifications . Special considerations will be given to <ol style="list-style-type: none"> 1. management of construction waste and water 2. equipment lubricants and fuel, including management and collection of waste oils and fuel particularly related to refuelling depots, maintenance areas and diesel generator sets (See further details in 2.13) 3. Sewage will require latrines or chemical toilets with complete clean up after the construction is complete. 4. Garbage will be collected and properly disposed of after recycling and sorting. <p>This work will be completed in accordance with GOK norms and codes which the contractor will be expected to know, based on the completion of the CEAP. Also, the contractor shall orient all construction workers in basic sanitation and health care issues, particularly as related to ticks which carry in southern Kazakhstan carry encephalitis, general health and safety matters, and on the specific hazards of their work and will need to certify to that effect at the start of the construction period.</p> <ol style="list-style-type: none"> 5. Once the site is no longer needed the contractor must fully decommission it, with special emphasis on waste removal and clean up of any spills or hazardous materials plus any necessary revegetation. 	All work camps, construction maintenance yards and any other areas operated by the contractor and involved in the project	Throughout the construction period	Contractor	MOTC and PMC
2.8 Failure of contractor to manage bitumen/asphalt and concrete production facilities	Siting and operation of the asphalt and concrete batch plants will require permits, including information in sighting and environmental controls. The contractor will be required to locate an asphalt plants at least 1 km from any existing or old water course and at least 3 km away from any residential or commercial dwelling, preferable down-wind. Concrete batch plants will have the same limits and must	At bitumen storage area, particularly at mobile asphalt plants where bitumen is loaded into boiler and	Throughout the construction period	Contractor	MOTC and PMC

Environmental Impact/Issue	Mitigative Measures	Location ²	Time Frame	Responsibility	
				Implementation	Supervision
	have dust suppression equipment installed. Operating periods for such facilities will be 0700-1500 Monday through noon Saturday.	heated for mixing			
2.9 Modification of surface drainage during culvert and bridge replacement and raising of horizontal road alignment without repair and rehabilitation after construction is finished	When modifying or interfering with surface drainage of any sort the contract will have to undertake the following: <ol style="list-style-type: none"> All culverts must be sized at or larger than the one being replaced and with care about slope and erosion protection at inflow and outflow. All construction materials in the channel must be removed so as not to provide any obstruction. Culvert removal and replacement will be done when there are low flows or no water in the channel and during the dry months of the year. Bridges will be repaired and widened and as such there will be machinery at least at the water edge. Maximum care is needed to avoid degradation of the river, stream shore and to undertake excessive excavation at the shore and in the water (at least not when there is water in the stream). Demolition must be done in a way that prevents large junks of material from falling into the river. Stabilization of disturbed crossing banks must take place as part of the construction work and include filter fabric, gabions and preferably bioengineering techniques. Where roadways are elevated to reduce flooding, extra care is needed to be sure that all drainage channels have a means to get under the road to the other side. To achieve this the contractor must undertake a surface drainage inventory of the future raised road sections and map out where existing and needed new culverts are to go. There may be cases where old culverts need to be relocated. 	<ol style="list-style-type: none"> At all existing culvert sites and where new culverts are specified in the design drawings At all bridges which will need widening and repair Along any road sections where vertical alignments are to be raised via the addition of fill material. 	Throughout the construction period	Contractor	MOTC and PMC
2.10 Excessive construction-period air pollution	Emissions will be kept to a minimum by: <ol style="list-style-type: none"> ensuring that the contractor's fleet of vehicles are properly maintained and use acceptable fuel and haul loads within specified limits. Vehicle idling time limits to no more than 2 minutes and equipment maintenance specifications will be imposed through construction inspection and regular reporting, Dust control at the construction site will be particularly stringently controlled by watering, setting strict speed limits of no more than 30kph in an near settled areas, and clean up of paved haul roads. Equipment such as the diesel generator will be included in the emission control program and will be and regularly tuned to prevent excessive TPM pollution. 	Anywhere at construction sites where vehicles of the contractor or under the contractors control (including paying for services), such as subcontracted trucks hauling materials	Throughout the construction period	Contractor and all subcontractors as directed by the Contractor	MOTC and PMC
2.11 Loss of Cultural/Arch. Heritage, including cemeteries and roadside graves/markers of accident victims	There are a number of roadside graves/markers of accident victims along sections 3 and 6 and are often located within a few meters of the carriageway. To move these will require a process of consultation with the local Akim as well as the victim's family in order to move the grave to an appropriate site. Since all the work is basically in previously disturbed soil the risk of loss of historical or cultural relics is highly unlikely. However when widening roads in villages and towns, contractors will have to meet with local Akims to consult about any possible past relics or foundations of old buildings along the road. Any finds must be reported to the Oblast Cultural Heritage Department and all construction work stopped until authorities have inspected the site.	At any gravesites Within 200m of any town or village located along the roads to be widened	During the construction period and ahead of excavation at any such site Prior to earth moving in these areas	Contractor Contractor and Oblast Cultural Heritage expertise	PMC, MOTC and any needed help from the Cultural Heritage Expertise
2.12 The lack of technical capacity in CEAP implementation and reporting leading to the collapse of the environmental safeguards tasks defined in the EIA and GoK Norms and Codes	The MOTC will hire a consultant to deliver a 1.5 day training workshop to the Oblast and Rayon level in Zhambyl Oblast government agencies involved and the contractor. Focus will be in the complete understanding of the EMP, the mitigation and monitoring tasks, responsibility of the stakeholders and proper documentation. Approximately 12-13 people will be involved, plus three people delivering the workshop.	Taraz	Prior to the start of construction but after the contractor has been named and has appointed an ecological expertise	MOTC-PMC and any specialized consultant	MOTC and PMC
2.13 Contractor undertakes an excessive and unnecessary tree removal program damaging the old trees and shelter belt plantings along roadsides	For each section of the road, contractors are required to develop a sketch map of the location number and species of trees along the roadside that are located within the area likely to be cleared. In areas where there are large trees creating a long green tunnel, designers will be contacted and alternative designs, such as narrowing the carriageway and transforming this area into a roadside rest area should	Along any section of the road where trees are encroaching into the area to be cleared for widening	Prior to any clearing taking place	Contractor, with advice from the Oblast FHC	PMC and MOTCP

Environmental Impact/Issue	Mitigative Measures	Location ²	Time Frame	Responsibility	
				Implementation	Supervision
	discussed and an option found that requires the minimum tree loss. Any tree removed will be replaced by replanting several (>2) young trees of the same species.				
2.14 Failure to properly manage petroleum products such as fuel, lubricants and bitumen, leading to spill and contamination.	<p>Contractor will be required to have the following spill prevention measures in place at all work sites:</p> <ol style="list-style-type: none"> 1. all fuelling to be done on a concrete surface provided with spill catch tank that can be cleaned and all spilled fuel recovered and recycled based on discussions with fuel supplier. 2. All repair and maintenance work must either be done on a concrete surface with oil spill catch basin or oil catch pans must be provided at all service areas and training provided to all 'mechanics'. 3. All fuel use areas where spills and leakage is possible, eg the generator, must have drip basins installed to prevent any leakage. These recovered materials must be recycled. 4. A fuelling areas must be equipped with proper fuel nozzles 5. All fuel tanks must have means for containment of accidental spills. 6. All bitumen handling must not permit any material from leaking to the ground, including transfer areas and any areas where bitumen is transported in drums. 7. Bitumen drums must be stored in a dry covered secure place where no leakage to water or ground is possible. Drums must be recycled at least 1X/yr. 8. Any spills must be cleaned up according to GoK norms and codes within 24 hours of the occurrence, with contaminated soils and water treated according to GoK norms and codes. 	At any work camps, maintenance yards and any other areas that the contractor uses or subcontractor use during the construction period	Throughout the construction period	Contractor and all subcontractors as directed by the Contractor	MOTC and PMC
OPERATING PERIOD					
3.1 Inadequate management of traffic-generated air pollution	The improvements of the road surfaces and widening, will improve the flow of traffic, reduce deceleration-acceleration cycles and idling periods, therefore leading to the overall reduction in the emission levels, despite an increase in the overall traffic volume. The expected annual growth in traffic will be 6% after construction is completed, or a 2% increase over pre construction levels, not enough to be significant project-related emission.				
3.2 Inadequate management of Traffic related noise					
3.3 Inadequate control of roadside farming, leading to lead ¹⁵ and heavy metal contamination in is such items as any leaf crops, melons and milk from roadside grazers	<p>The road operator will undertake a heavy metal testing of grasses and crops grown within 50m of the carriageway and establish lead and heavy metal levels.</p> <p>National roads have a 50m farming restriction zone and the road operator will enforce this where possible should the data suggest that there are problems. Lead levels will be estimated for future traffic conditions and contamination predicted and appropriate action taken</p>	At 20 sites with steady existing traffic and grazing and crop growing within 50m of the carriageway edge.	This will be done at 20 random sites where traffic volumes are known and for at least roadside soil as well as grass, and food crops such as lettuce, cucumbers and tomatoes grown near the road and milk of goats and sheep grazing along the roadside.	Operator, in collaboration with KAZHYDRO-MET	MOTC
3.4 Increased risk of pedestrian accidents due to improved roads, faster speeds and greater traffic volume	To manage these problems the operator will enforce speed limits through increased 'radar' surveillance, better and more frequent signage and increased speeding fines. In villages at crossing the owner will improve the signage and include amber lights were possible. As many town bypasses as possible are planned and should reduce project generated traffic through towns and villages.	In every village and town where the road will be upgraded	Planned during the detailed design stage and installed during the construction period then completed at the start of operations		
3.5 Increased risk of haz. materials spills due to increased traffic volume and provision of larger capacity bridges and stronger road surfaces, inviting large trucks to use the road.	<p>Although the risk is extremely small since most such materials are transported by rail, the road operator will:</p> <ol style="list-style-type: none"> 1. Insure that all trucks carrying haz. materials are marked according to GoK norms and codes 2. Enforce speed limits for trucks carrying haz. material to <= 85kph or according the GoK norms and codes. 3. Restrict of all truck carrying haz. material from passage through town and villages where 	In Taraz	Within the first year of the road being in operation	Road Operator	MOTC and Oblast Transport Committee, with help from MOEP

¹⁵ Between 75% and 85% of gasoline powered vehicles in Kazakhstan still use leaded fuel

Environmental Impact/Issue	Mitigative Measures	Location ²	Time Frame	Responsibility	
				Implementation	Supervision
	bypasses exist; 4. Assist Zhambyl Oblast to prepare a rapid spill response and clean up protocol so that in the event of a spill the appropriate people and equipment are quickly notified and action can be taken.				

EEC-Environmental Expertise Committee of the MOEP

GoK or RK-refers to the government of Kazakhstan or Republic of Kazakhstan

MOTC-Ministry of Transport and Communication

PMC- Projects Management Consultant-a unit proposed by the donors to assist the government implement the project and at the same time train nationals who would eventually for the critical mass of a Transport Agency, replacing the Roads Committee (RC)

MOEP-Ministry of Environmental Protection

FHC-Forest and Hunting Committee of the Ministry of Agriculture

SES- Sanitary and Epidemiological Services of the Ministry of Health

WRC-Water Resources Committee of the Ministry of Agriculture

EIA-Environmental Impact Assessment

IEE-Initial Environmental Examination

EMP-environmental management plan (a key output of the environmental assessment document)

Appendix Table 5B. Environmental Management Plan: Monitoring Measures

ITEM	Monitoring Details	Timing	Executing Unit	Reporting Responsibility
1. PRE-CONSTRUCTION (DESIGN) PERIOD: all written confirmation and reports submitted to MOTC and PMC with copies to Oblast-Env. Department				
1.1 Lack of any capacity to understand and implement environmental mitigative measures	Collect written material indicating that MOTC has provided instructions for the contractors to use to better use the IEE output	During Detailed Design Period	MOTC	MOTC
1.2-1.3 No provision for translation of IEE and related documents for use by Oblast Inspectors, and for use in Bid documents (at least the EMP)	Confirm that Kazakh/Russian version of IEE and EMP are with the Zhambyl Oblast Inspectors Confirm that bid documents contain environmental clauses tailored to the project conditions as well as a general set	During Detailed Design Period	MOTC	MOTC
1.4 Failure of designers to include design measures that will prevent later impacts such as: livestock crossing management, poor traffic management and excessive tree removal	Confirm by reviewing design documents and discussion with design team that 1) livestock crossings in Section 3 have been addressed 2) a plan to protect roadside trees as much as possible has been prepared; 3) There is step-by-step protocol for traffic management during construction (as opposed to ad hoc, hap hazard existing system); and 4) a environmentally friendly bridge and culvert replacement guide has been prepared	During Detailed Design Period	Detailed Design Team under the direction of MOTC	MOTC
1.5 Lead contamination of roadside soil testing program	Monitor to verify that soil and local food stuffs, particularly goats and sheep milk is tested for lead contamination and that a management protocol is being developed with the participation of the SES of the MOH.	During Detailed Design Period	Specialist consultant hired by MOTC	MOTC and SES of MOH
2. CONSTRUCTION PERIOD -prepare and use this section as construction monitoring checklist				
2.1 ecological expert to prepare the CEAP and to implement all mitigation and monitoring measures with contractor	Confirm ecological expertise is with contractor at start of construction period: obtain name and CV.	At time of contractor appointment	PMC	MOTC
2.2 Earthworks transport and storage monitoring	Undertake, as part of the construction inspection, regular confirmation that earthworks are handled in an environmentally acceptable manner and dust control is undertaken at all time, including the use of tarpaulins by trucks hauling fine materials, as well as watering and use of chemical suppressants along the haul road sections for 1 km at villages, AND THAT A SPEED LIMIT OF 30KPH IS ENFORCED.	Every day, throughout the construction period	PMC Monitor	PMC and MOTC
2.3 erosion control and slope stabilization TO PREVENT land slip and chronic erosion at cuts and water crossings is being applied.	Undertake regular inspection to confirm that slope stabilization and standard erosion protection method are being used by the contractor for all work where there is clearing of topsoil, cutting and filling	Every day, throughout the construction period	PMC Monitor	PMC and MOTC
2.4 Side borrow operations leading to erosion, landslide and destruction of landscape	Undertake inspections to determine the type of borrow operations the contractor is applying and ensure that roadside borrowing is not taking place and is always out of the visual field from the road.	Throughout the construction period and monthly	PMC Monitor	PMC and MOTC
2.5 Environmentally acceptable earthworks and materials handling process, including aggregate sites, haul roads to quarries/agg. processing sites ; managing of dust, noise, drainage during haulage of materials	Using a checklist confirm the following: <ol style="list-style-type: none"> 1. haul road upgraded so it becomes an all weather road; 2. speed limit of 30 KMP within 500m of any village and the use of chemical dust suppressants at least on road for 500m on either side of a village is enforced. The same approach is to be taken if the other site is used. 3. haulage through roadside villages and settlements is restricted to between hours of 0730 and 1730. 4. Aggregate sites are operating legally and contractors have marked the boundaries, work within them, and fully rehabilitate and stabilize the site as part of decommissioning. 	Start of Construction period and thereafter monthly until use of roads/sites is finished.	PMC Monitor	PMC and MOTC
2.6 Contractor is following protocol related to the excavation of roadside lead contaminated soils (See No. 1.5)	The excavation of every roadside area needs to be matched with reasonable proof that the materials are not severely contaminated with lead and/or Chromium and if contamination exists, confirmation of proper handling and treatment	At every shoulder excavation site, anywhere where lead contamination is shown to be high	PMC Monitor	PMC and MOTC

ITEM	Monitoring Details	Timing	Executing Unit	Reporting Responsibility
2.7 Contractor is adhering to construction related good housekeeping practices, including solid and sanitary waste management	Using a monitoring checklist, confirm that the items as listed in the EMP; Mitigation Measures Table: Item 2.6 [1-5] are fully implemented.	Throughout the construction period and monthly	PMC Monitor	PMC and MOTC
2.8 Preventing bitumen/asphalt and concrete production spills and pollution	Confirm that sighting specification for both asphalt and concrete plants are according to norms and codes but also that are at least as far away from settlement areas as defined in the mitigation table. Bitumen storage and handling is done without spillage	Throughout the construction period and monthly	PMC Monitor	PMC and MOTC
2.9 Monitoring of surface drainage at construction area	The PIU will inspect and verify that adequate consideration and drainage works and protection have been provided: specifically that the 3 mitigative measures defined in 2.9 of the mitigation table are fully implemented in a timely manner.	5X during the construction period, once to confirm that sites have been identified and 2X during each rainy season for at least through 2010.	PMC Monitor	PMC and MOTC
2.10 Controlling construction-period air pollution	Using a monitoring checklist confirm that the six mitigative actions defined in 2.9 of the Mitigation Table are being implemented	Ongoing throughout the project as part of the construction inspection	PMC Monitor	PMC and MOTC
2.11 Loss of Cultural/Arch. Heritage, including cemeteries and roadside graves/markers of accident victims	Confirm that all roadside graves (based on an inventory of sites) are dealt with in a dignified and legal manner including viewing records of consultation with Akims and with family members and reviewing the process being taken for check the possible presence of cultural relics.	Ongoing with specific checks each time a construction inspection takes place	PMC Monitor working with local authorities	PMC and MOTC
2.12 Contractor has provided the capacity for CEAP implementation and reporting as defined in the defined in the project EIA, GoK Norms and Codes and this IEE	Meet with contractor's ecological expertise and discuss all issues and to confirm experts period on the job throughout the construction period	At start of the construction period	PMC Monitor	PMC and MOTC
2.13 Tree removal program damaging the old trees and shelter belt plantings along roadsides kept to a absolute minimum	Inspection of cutting plan and confirmation of consultation with FHC, then review and record re-planting/revegetation efforts.	Throughout the construction period (quarterly) and before cutting is to start in densely treed sections	PMC Monitor on cooperation with the FHC of the Oblast and Rayon were cutting is likely	PMC and MOTC
2.14 Management of petroleum products such as fuel, lubricants and bitumen, without spills and contamination being practiced by contractor and all subcontractors.	Using the monitoring checklist the 8 specific spill and contamination prevention measures listed in item 2.13 of the Mitigation table will be assessed and reported on. Any non-compliance will be rectified immediately	Quarterly inspections at all work sites, work camps, diesel generators, maintenance yards and fuel and bitumen storage facilities	PMC Monitor	PMC and MOTC
3. OPERATING PERIOD				
3.0 Conduct the 1-year post construction operational audit	The owner of the road must organize and undertake a complete audit of the project. This audit is to be undertaken by the Oblast-level DOEP and for this the owner (MOTC will cooperate fully). Findings must be reported within 15 days of completion of the field inspection and actions to repair any non compliance conditions started within 5 days of notification by the Inspection Department. All such actions must be completed or be well underway within 30 days.	No more than 13 months after the operating period has fully started.	MOTC. And MOEP	MOTC and Oblast-level Department of Env. Inspection Unit.
3.1 Management of traffic-generated air pollution	Should traffic growth exceed the projected 2%/year monitoring at sensitive areas such as roadside towns and villages will be required	Monitoring 1X/year for 2 continuous 24 hour period during the non-winter season at 9 station for Sect. 3 and 3 stations for Sect. 6	MOTC in cooperation with KAZHYDRO-MET	MOTC

ITEM	Monitoring Details	Timing	Executing Unit	Reporting Responsibility
3.2 Management of traffic-generated noise	Noise is an existing problem in roadside communities, particularly during the peak traffic season from about April through October. The improvements are expected to marginally affect noise levels and in some cases reduce noise through the use of bypasses and enforcement of speed limits for trucks and buses. A smoother road will also reduce noise. However noise will be monitored at sensitive sites	Monitoring will take place 1X/year during peak traffic periods over 2 24 hour continuous monitoring periods at 9 stations for Sect. 3 and 3 for Sect. 6	MOTC in cooperation with Ministry of Health's Sanitary and Epidemiological Service	MOTC
3.3 Control of roadside farming minimizing the ingestion of lead ¹⁶ and heavy metal contamination in is such items as any leaf crops, melons and milk from roadside grazers—due to leaded fuels	Conduct a testing program to establish the lead levels in products coming from roadsides in the corridor. Goat and cattle milk is to be tested as well as crops grown within 50 m of the road, including lettuce tomatoes and cucumbers and melons. If the tests show dangerous levels, discuss the enforcement of the 50m-rule with MOTC and ensure that this or similar measure are being undertaken	Monitoring to be completed on milk and at least 3 products coming from plots within 50m of the road. Testing is to be done during the construction period at 10 roadside sites and for at least 3 animal heard known to use roadside pasture	MOTC working closely with the Ministry of Health's Sanitary and Epidemiological Service to establish the sampling design and with KAZHYDRO-MET for sampling program	MOTC
3.4 Manage risk of pedestrian accidents due to improved roads, faster speeds and greater traffic volume	Traffic volume due to the project of 2% per year is not expected to affect the accident rate, however the increased speeding will and to that end signage and enforcement will be essential. bypasses will help considerably and restriction of bus speed in town will help. Aside from aggressive enforcement, the best method will be to significantly improve speed limit signage, highlighting school and other high pedestrian use zones, and provide more cross walk lighting.	Undertake annual safety check and review statistics of pedestrian-vehicle accidents and address those areas where problems occur	MOTC working with Oblast and Rayon level authorities	MOTC
3.5 Reduce risk of haz. materials spills due to increased traffic volume and provision of larger capacity bridges and stronger road surfaces, inviting large trucks to use the road.	Using a monitoring checklist annual inspection to confirm the implementation of 4 mitigative measures as define in Mitigation Table item 3.5 will be required	Undertake an annual audit of these conditions and actions	MOTC working with Oblast and Rayon level authorities	MOTC

EEC-Environmental Expertise Committee of the MOEP

GoK or RK-refers to the government of Kazakhstan or Republic of Kazakhstan

MOTC-Ministry of Transport and Communication

PMC- Projects Management Consultant-a unit proposed by the donors to assist the government implement the project and at the same time train nationals who would eventually for the critical mass of a Transport Agency, replacing the Roads Committee (RC)

MOEP-Ministry of Environmental Protection

FHC-Forest and Hunting Committee of the Ministry of Agriculture

SES- Sanitary and Epidemiological Services of the Ministry of Health

WRC-Water Resources Committee of the Ministry of Agriculture

EIA-Environmental Impact Assessment

IEE-Initial Environmental Examination

EMP-environmental management plan (a key output of the environmental assessment)

¹⁶ Between 85% and 90% of gasoline powered vehicles in Kazakhstan still use leaded fuel

ANNEX 6.
SAMPLE ENVIRONMENTAL CLAUSES FOR CONTRACT SPECIAL
CONDITIONS: IEE AND EIA

Source: Teleki, Geza C. and Seyler, Peter. 2006. Project Special Terms and Condition Contract Clauses for ADB Road Development in Indonesia, Banda Aceh, Indonesia

DIVISION 1

GENERAL

For All projects which have IEE or Full EIA (for this change IEE to EIA in text)

SECTION 1.17

ENVIRONMENTAL AND SOCIAL SAFEGUARDS

1.17.1 ENVIRONMENTAL SAFEGUARDS

1.17.1.1 Contractor's Understands of Safeguards

A. The Contractor will confirm an understanding of the environmental impact that may occur due to construction activities and of the methods for preventing or mitigating these impacts; as identified in the clauses to follow and as directed by the IREP IV Supervision Consultant (SC) Engineer, and the site engineer (SE) responsible, with guidance from the Environmental and Social Safeguards Team (ESST). The project PPK will also be involved at all times

B. An IEE document, compliant with the Government of Indonesia's environmental laws has been prepared and is included as an attachment to the contract documentation. Its contents and sections relevant for the construction period must be fully understood and applied, taking into consideration the clauses as defined in this section.

C. Prior to initiating physical activities on any site, the Contractor shall prepare a Construction Environmental Action Plan (CEAP) as defined in Subclause 1.17.2.7. This plan of actions will be submitted for approval to the SE, in consultation with the ESST.

D. As part of the bid submission, the contractor is required to provide the following sentence in the covering letter accompanying the bid and which is signed by a responsible company representative. *"We have read and understand the contents of all environmental clauses and conditions contained in the bid documentation and will abide by these requirements. Any non compliance, as identified by an inspector will be rectified at our cost within 5 working days, and will not be included as charges to the Employer."*

1.17.1.2 Compliance with All Laws, Regulations and Standards

The Contractor shall observe and comply with all National Laws, Government Regulations, Presidential Decrees, and Ministerial Regulations pertaining to environmental protection, pollution control, waste management and biodiversity protection. In conducting the construction activities the Contractor shall take all necessary precautions to minimize environmental disturbance to the project area and surroundings and to prevent the escape of polluting substances into streams, water courses,

and groundwater. The Contractor shall also utilize all necessary practicable methods and devices as are available to prevent and otherwise minimize atmospheric emissions or discharges of air contaminants. By providing the signed statement as defined in item D above, it is assumed that contractor is fully aware of all Indonesian regulations and standards to be adhered to.

1.17.1.3 Pollution of Water Resources

A. The emission of polluting liquids or other waste into drains, water courses, or groundwater shall not be permitted. No concrete or cement washings from the works or drainage from the Contractor's concrete batching and mixing areas, asphalt (hot mix) plants, or other manufacturing or production facilities shall be allowed to discharge into streams or drains without passing through an adequate system of settling ponds.

B. Storage of fuels, fuelling and maintenance of plant and vehicles, etc. shall take place only on sites and under conditions that do not allow spilt fuels to be discharged to water bodies. Fuel storage and fuelling areas shall be equipped with adequate protective measures to confine and retain/collect accidental spillages. No drainage from fuel store and plant maintenance depots shall be allowed to be discharged without passing through an adequate arrangement of oil traps and separators.

C. Adequate sanitary waste control facilities shall be provided in site offices and workers camps, and sewage waste shall be collected regularly and disposed in accordance with relevant environmental legislation.

D. The Contractor shall accordingly be responsible for the installation, operation and maintenance of a comprehensive drainage system to all areas of the Works as prescribed in the IEE matrix tables contained in the IEE documentation. The Contractor shall be responsible for maintaining the system to the satisfaction of the SE and the SC, and all costs of providing the system shall be deemed to be included in the various rates and lump sum items for the works included in the priced Bill of Quantities.

1.17.1.4 Air Pollution

A. The Contractor shall take all necessary steps to minimize air pollution resulting from his operations. Except where stipulated in these Specifications, the disposal of natural vegetation, organic materials from clearing operations by burning and the disposal of waste materials, particularly oil and petroleum wastes, rubber, plastics and similar material, by burning, will not be permitted.

B. During the performance of the work required under the Contract or of any related operations, whether on the Project Site or elsewhere, the Contractor shall take all steps necessary, and shall furnish all labour, equipment, materials and means required to reduce dust nuisance from the Works. The Contractor will prevent dust originating from construction operations from damaging crops, orchards, cultivated fields, and dwellings; or causing a nuisance to persons. The Contractor shall be held liable for any damage resulting from dust originating from his operations including on

Government roads, rights-of-way or elsewhere. Dust levels, measured as total particulate matter, must be in compliance with relevant air quality standards specified in Indonesian law.

C. The emission of dust into the atmosphere, beyond those acceptable under Indonesian emissions standards, shall not be permitted during the manufacture, handling and storage and handling of cement and of concrete aggregates (rock crushing plants), and the Contractor shall use such methods and equipment as are necessary for the prevention, or the collection and disposal, of dust during such operations. All truck loads of loose materials shall be covered during transportation.

D. Concrete batching and mixing areas, asphalt (hot mix) plants, or other manufacturing or production facilities shall be sited at least 500m downwind from the nearest habitation. Emission outlets shall be fitted with pollution control devices in compliance with relevant current Indonesian emission control legislation. The management of bitumen loading facilities and empty bitumen drums will be strictly controlled and no bitumen is to spill on the ground or in the surrounding waters of any worksite which a part of the project.

E. The cost of spraying water on haul roads, access roads, government roads, aggregate stockpiles, etc.; or of any other methods of reducing the formation of dust; and the cost of furnishing and applying materials to maintain the works areas, adjacent areas, and roads in a dustless condition shall be deemed to be included in the various rates and lump sum items for the works included in the priced Bill of Quantities (see Sub Clause 1.17.1.2-B).

1.17.1.5 Noise Pollution

The Contractor shall take all necessary precautions to minimize the amount of noise and vibrations coming from construction activities, as defined in the IEE or EIA documentation. The mitigative measures will be monitored as defined in the monitoring table provided in the IEE or EIA document and redefined in the CEAP, and it will be the contractors responsibility to coordinate such monitoring with the SE and the ESST.

1.17.1.6 Damage to Property, Crops and Vegetation

A. The Contractor shall limit the movement of his employees and equipment within the project area and on adjacent land, including access routes approved by the Employer's Construction Supervisor, so as to minimize damage to natural vegetation, crops and property, and shall endeavor to avoid any damage to land.

B. The Contractor shall preserve existing trees, plants and other vegetation that are to remain within or adjacent to the Works and shall use every precaution necessary to prevent damage or injury thereto. Trees or shrubs shall only be felled or removed where they impinge directly on the permanent works or necessary temporary works areas; and where such is approved by the Employer's Construction Supervisor.

C. On completion of the Works all areas disturbed by the Contractor's construction activities shall be restored by the Contractor to their original condition, or as may be acceptable to the Employer and as specified in the CEAP (and derived from the appropriate IEE or EIA report sections).

D. The Contractor shall be responsible directly to the Employer for any excessive or unnecessary damage to crops or lands arising from his operations, whether within the project area, on lands adjacent thereto, or adjacent to approved access roads: and deductions will be made from the payment due to the Contractor to cover the cost of such excessive or unnecessary damage, as determined by the Employer.

1.17.1.7 Public Safety and Traffic Management

Special consideration shall be given in the preparation of the Traffic Control Plan to assure that traffic continues to move efficiently during the construction activity and that an adequate and trained number (at least two) of traffic control officers are assigned to each construction site, where stop and start conditions will be required.

1.17.1.8 Health and Insect-born Diseases

Given that all projects are in malaria and dengue mosquito zones and that construction sites have been shown to contribute very significantly to the rise in these insects locally through the creation of water collection sites and depressions from heavy equipment use and stagnant water collected in stored construction materials, an insect control program will be required at each construction site and any work camps. During the wet season, contracts will be required to conduct checks once every two days to insure that construction work has not left small ponds and depressions where water has collected. Old tires and containers placed in open storage areas are favourite breeding grounds for mosquitoes. Any such stagnant water areas will need to be cleaned up immediately (mosquito hatching from egg to insect takes only 2-3 days), with each check to be logged by the contractor.

1.17.1.9 The Environmental Mitigation and Monitoring Plans

A. The requirements of this clause and attendant sub-clauses on Environmental Protection and Pollution Control notwithstanding; the Contractor shall observe and comply with all relevant environmental protection and mitigation, monitoring, and reporting requirements in the IEE matrix tables, as attached to the Technical Specification, and as discussed in the project IEE document. In the event of any conflict between the foregoing sub-clauses and the environmental protection and mitigation measures and pollution control requirements as defined in the IEE documents, the more strict measure(s) shall take precedence.

B. The Contractor shall prepare and submit to the Employer's Construction Supervisor a Construction Environmental Action Plan(CEAP) demonstrating the manner in which the Contractor will comply with the requirements of the foregoing sub-clauses on Environmental Protection and Pollution Control, actions defined in the IEE/EIA matrix tables and any particular environmental mitigation measures as stipulated in the Technical Specifications (as referenced in Section 1.17) forming part of the Contract Documents.

C. The CEAP shall be submitted within 15 working days of the Contractor receiving the Notice to Proceed with the Works, and shall include a note detailing procedures for waste management for the site, covering all solid, liquid and gaseous waste materials and emissions, and ensure that no significant damage is caused to the environment.

D. The CEAP form and IEE/EIA EMP matrix tables will be used to create an audit form to check that mitigative measures have been undertaken as prescribed in the IEE or EIA environmental management plans. Completed CEAP monitoring checklists will form a part of the monthly environmental reporting requirement.

1.17.1.10 Basis Of Payment

The Contractor will be fully compensated for carrying out the Environmental Protection and Pollution Control measures as described in Sections 1.17.1, and in compliance with relevant environmental specifications found in the contract sections listed in Clause No. 1.17.1.11. Compliance with national law, decrees and regulations is a legal requirement and will not be compensated. Payments will be further verified through the submission of timely inputs to the monthly project monitoring report program. Payment will be made under:

<u>Pay Item Number</u>	<u>Description</u>	<u>Unit of Measurement</u>
1.17.1	Implementing the Construction Environmental Action Plan Management Work Plan (CEAP) based on the Mitigation and Monitoring Plans as found in the Safeguard documents and as may be specified in the contract.	

1.17.1.11 Other Sections Addressing Environmental Conditions

The following list of sections contained in the bid documentation provides a reference to work which has environmental implications and needs to be considered in the execution of the environmental safeguards defined on the CEAP (as derived from the IEE or EIA tables) and clauses 1.17.2.1-7. Further cost associated with any environment-related measures specified in the Sections listed in Sub Clause 1.17.1.15, and which are beyond those included for Sect. 1.17.1, will be included in the engineering costs as Pay Items associated with each section

(a)	General Conditions of Contract	: Relevant Clauses
(b)	Mobilization	: Section 1.2
(c)	Field Offices and Facilities	: Section 1.3
(d)	Transportation and Handling	: Section 1.5
(e)	Maintenance of Traffic Flow	: Section 1.8
(f)	Materials and Storage	: Section 1.11
(g)	Cleaning	: Section 1.16
(h)	Ditches and Waterways	: Section 2.1
(i)	Culverts and Concrete Drains	: Section 2.3
(j)	Excavation	: Section 3.1
(k)	Fill	: Section 3.2
(l)	Pavement Widening	: Section 4.1
(m)	Aggregate Base	: Section 5.1
(n)	Unsealed Road Base	: Section 5.2
(o)	Prime Coat and Tack Coat	: Section 6.1
(p)	Hot Asphaltic Mixtures	: Section 6.3

- (q) Reinstatement of Existing Shoulders on Sealed Roads : Section 8.2
- (r) Reinstatement of Ditches, Drains, Cuttings,
Embankments and Replantings : Section 8.3
- (s) Road Furniture and Traffic Control Devices : Section 8.4
- (t) Reinstatement of Existing Bridge Structures : Section 8.5
- (u) Routine Maintenance of Pavement, Shoulder, Drainage,
Road Furniture and Bridges : Section 10.1
- (v) Special environmental clauses and Specifications [contract specific]

ENVIRONMENTAL CONSTRUCTION CONTRACT SPECIFICATIONS

Samples of environmental construction specifications are available from the World Bank at wpohl@worldbank.org for the following two 2007 projects:

- Azerbaijan Highway Project, Upgrade of 15 km and Rehabilitation/Reconstruction of 107.4 km of Baku – Shamakhi/Muganli Road
- Azerbaijan Highway Project, Alyat – Astara 22km

These specifications are not reproduced here as they are quite long and detailed. Only selected relevant items should be taken for inclusion in the specifications.

ANNEX 7 CONSTRUCTION ENVIRONMENTAL ACTION PLAN (CEAP): ROADS

This sample CEAP can be used as a monitoring checklist by replacing the time frame and responsibility columns with two columns with heading of Time and Action Taken.

Source: Teleki, Geza. C. and Sawat, Rambat. 2008. Indonesia Infrastructure Rehabilitation Project. World Bank Multi-donor fund. Aceh Indonesia

A Construction Environmental Action Plan.: Mitigation Measures

Environmental Impact/Issue	Mitigative Measures	Location ²	Time Frame	Responsibility	
				Implementation	Supervision
PRE-CONSTRUCTION PERIOD					
1.5 No plan for provision of IEE, related documents and training in EA and EMP implementation, monitoring and reporting to IREP4 and SE and the Contractors	<p>PPK and /or IREP 4 will provide the successful contractor with the translated ANDAL, its RKL/RPL, with instructions on how the mitigative measures and monitoring are to be undertaken, as defined in a work plan prepared by IREP4 consultants.</p> <p>Secondly, the Site Engineer will provide its inspectors with copies of the ANDAL and all supporting reports for use in their inspection process. The inspectors, who will be required to undertake inspection during construction, <u>have no training in this area</u>. IREP4 will organize 1-day workshop in BA or the field for technical inspectors to train them in environmental compliance monitoring and reporting, etc.</p>	Workshops to be held in BA or field (to be determined)			
CONSTRUCTION PERIOD					
2.1 Improper management of earthworks transport and Storage procedures, including cleaning; leading to dust and air pollution	<p>Large volumes of quarry rock, aggregate and sand will be transported and stored in the airport work site. These operations and storage areas will be constantly exposed to the elements and will create primarily dust during the frequent windy conditions. Sediment laden drainage water will be an issue and detention pond(s) capable of retaining all drainage for a 24 hour period will be constructed. Dust will be managed by daily use of watering trucks.</p> <p>All topsoil needs to be collected and reused to rehabilitate/revegetate the areas disturbed.</p>				
2.2 Side Casting Operations leading to destruction of land, habitat and water bodies					
2.3 Side borrow operations leading to erosion, landslide and destruction of landscape					
2.4 Improper or failure to maintain haul roads to quarries/agg. Processing sites including management of dust, noise, drainage during haulage of materials	<p>Mitigation will involve a) upgrading the road so it becomes an all weather road; b) enforcing a speed limit of 30 kph within 500m of any village and the use of chemical dust suppressants at least on road for 500m on either side of a village. Same approach is to be taken if the other site is used.</p> <p>To limit noise through roadside villages, haulage will be restricted to between hours of 0730 and 1730.</p>				
2.5 Failure to adhere to construction related good housekeeping practices, including solid and sanitary waste management	<p>Contractors will adhere to standard good housekeeping practices as defined in the contract Terms & Conditions and Contract Specifications. Special considerations will be given to management of construction waste and water, equipment lubricants and fuel. Sewage will require latrines or chemical toilets with complete clean up after the construction is complete. Garbage will be collected and properly disposed of after recycling and sorting, and will be done in accordance with BAPEDALDA requirements; which the contractor will be expected to know. Also, the contractor shall orient all construction workers in basic sanitation and health care issues, general health and safety matters, and on the specific hazards of their work.</p>				
2.6 Failure of contractor to manage insect-borne	<p>Contractor must insure at all times that stagnant water on the site, including in old tires and any equipment that can</p>				

Environmental Impact/Issue	Mitigative Measures	Location ²	Time Frame	Responsibility	
				Implementation	Supervision
diseases sites	collect even small amounts is cleaned and made safe, preventing malaria and dengue fever mosquitoes from laying their eggs.				
2.7 Modification of surface drainage without repair and rehabilitation after construction is finished					
2.8 Excessive construction-period air pollution	Emissions will be kept to a minimum by ensuring that the contractor's fleet of vehicles are properly maintained and use acceptable fuel and haul loads within specified limits. Vehicle idling time limits (no more than 2 minutes) and equipment maintenance specifications will be imposed through construction inspection and regular reporting. Dust control at the construction site will be particularly stringently controlled by more than twice daily watering and clean up of paved haul roads. Equipment such as the diesel generator will be included and regularly tuned to prevent excessive TPM pollution.				
2.9 Loss of Cultural/Arch. Heritage, including cemetery					
2.10 The lack of technical capacity in CEAP implementation and reporting leading to the collapse of the environmental safeguards tasks defined in the AMDAL	The BRR will hire a consultant to deliver a 1.5 day training workshop to the provincial government, district government and contractor. Focus will be in the complete understanding of the EMP, the mitigation and monitoring tasks, responsibility of the stakeholders and proper documentation. Approximately 12-13 people will be involved, plus three people delivering the workshop.				
2.11 Contractor does not prepare Mitigation Completion report and SE fails to provide an Operating stage mitigation timetable for operating unit	The contractor is required to prepare a Mitigation/Monitoring Completion Report, which must be submitted to the Site Engineer and the operating unit in order that they can follow up with mitigative measures such as revegetation, initiated by the contractors. Should this not take place, the entire mitigation and monitoring program is in jeopardy. The IREP4 consultant and BRR are committed to making certain that the contractor carries out this task and will provide guidance. Measures to be carried out will be the maintenance of revegetation areas and confirmation of the record of the decommissioning of any work areas, toilet areas, work camp sites including waste dumps, etc.				
2.12 No Quarry UKL/UPL document, required for any quarry operated and maintained by the contractor	A Quarry UKL/UPL must be prepared for any quarry where <=250,000 m ³ of material is extracted annually (more than that and a full ANDAL is needed): This UKL/UPL must be submitted to the local BAPEDALDA for approval. No extraction can begin until this work has been completed				
2.13 Failure to properly manage petroleum products such as fuel, lubricants and bitumen, leading to spill and contamination	Contractor will be required to have the following spill prevention measures in place at all work sites: <ol style="list-style-type: none"> 9. All fuelling to be done on a concrete surface provided with spill catch tank that can be cleaned and all spilled fuel recovered and recycled based on discussions with PERTAMINA. 10. All repair and maintenance work must either be done on a concrete surface with oil spill catch basin or oil catch pans must be provided at all service areas and training provided to all 'mechanics'. 11. All fuel use areas where spills and leakage is possible, eg the generator, must have drip basins installed to prevent any leakage. These recovered materials must be recycled. 12. A fuelling areas must be equipped with proper fuel nozzles 13. All fuel tanks must have means for containment of accidental spills. 14. All bitumen handling must not permit any material from leaking to the ground, including transfer areas and any areas where bitumen is transported in drums. 15. Bitumen drums must be stored in a dry covered secure place where no leakage to water or ground is possible. Drums must be recycled at least 1X/yr. 16. Any spills must be cleaned up according to 				

Environmental Impact/Issue	Mitigative Measures	Location ²	Time Frame	Responsibility	
				Implementation	Supervision
	BAPEDALDA methods within 24 hours of occurrence, with contaminated soils and water treated according to BAPEDALDA methods. Or ones obtained from PERTAMINA.				

B. Construction Environmental Action Plan: Monitoring Measures

ITEM	Monitoring Details	Timing	Executing Unit	Reporting Responsibility
1. PRE-CONSTRUCTION (DESIGN) PERIOD: all written confirmation and reports submitted to IREP4 and BRR for the record				
1.5 Confirmation that EMP and ANDAL summary has been translated and distributed to the contractor, site Engineer and BAPEDALDA in charge	Prepare a pre-construction completion checklist on the safeguard measures defined in the RKL/RPL matrix tables	Just prior to Contractor mobilization		
2. CONSTRUCTION PERIOD -prepare and use a monitoring checklist				
2.1 Earthworks transport and storage monitoring	Undertake, as part of the construction inspection, regular confirmation that earthworks are handled in an environmentally acceptable manner and dust control is undertaken at all time, including the use of tarpaulins by trucks hauling fine materials, as well as watering and use of chemical suppressants along the haul road sections for 1 km at villages. Confirm that settling basin to contain runoff from construction site is built, in operation and functioning, via inspection within 1 month of the start of rainy season and monthly thereafter.	Every day, throughout the construction period		
2.2 Side Casting Operations leading to destruction of land, habitat and water bodies				
2.3 Side borrow operations leading to erosion, landslide and destruction of landscape				
2.4 Monitoring of Quarry Operations	To confirm the proper operations of the Quarry and Aggregate site the Site Engineer (SE) will , prior to the start of use by the contractor inspect the site, take at least 3 photos of the area and comment in the level of dust and general maintenance of the site. Subsequently, the inspector will be required to make monthly visits to the site and file short compliance reports including at least two photos.	Start of Construction period and thereafter monthly until use of site.		
2.5 Monitoring construction period air pollution, Dust and noise along haul roads	Dust suppression along the quarry access road must be monitored. Inspectors must confirm that dust is being suppressed along the haul roads for at least 1 km where the road passes a residential or living area at all times during the dry season. Speed limits of 30 km/h at least within 1 km of each village will be enforced and signs erected. Inspectors must report on the placement of the signs and speed limit compliance (based on observations) at least once/month. Noise will be controlled through the enforcement of the speed limits and limit of haul hours to between 0800 and 1730. Construction inspectors will record observations and require log books to record times in and out from quarry trucks. FOR THE ABOVE THREE ACTIVITIES VILLAGE OFFICIALS WILL BE ENCOURAGED TO REPORT NON COMPLIANCE TO SE and or BAPEDALDA office FOR IMMEDIATE ACTION. Vehicle idling while not in use anywhere in the construction areas, will be restricted to 2 minutes. Vehicles left idling longer will be reported and warning given. A second and each further offence will mean a fine to be defined by the contractor. Each violation will be reported, including record of license plates and owners name. Such documentation will be filed with the SE.	Inspection as part of the weekly construction inspection, with records kept of observations with the PIU and DCA. The four activities must be reported on and each village grievance must also be recorded and note on actions taken included.		
2.6 Construction-related good housekeeping tasks monitoring such as waste water and solids	Undertake regular good housekeeping tasks as defined in the RKL/RPL and contract clauses and provide monthly monitoring checklist to SE, PPK and, BAPEDALDA. Use this CEAP as the basis for the checklist. The monitoring must report on the management of sewage and garbage as well as hazardous materials (diesel, bitumen) , at the construction site,	Every day throughout construction period with input to monthly progress reports		

ITEM	Monitoring Details	Timing	Executing Unit	Reporting Responsibility
2.7. Management of Worksite Petroleum products	SE will require contractor to inspect daily all areas where contractor stores, uses, dispenses fuels, bitumen and lubricants, and where service takes place and report on any spillage and instruct the contractor to clean up and report operation in a letter to SE and BAPEDALDA. The 8 mitigative items should be the focus of the monitoring.			
2.8. manage insect-borne diseases sites	SE to inspect Work camps worksites and aggregate processing sites for standing water in all areas, including tires and abandoned equipment and require immediate clean up.	Daily or at least every 5 days		
2.9 Monitoring of surface drainage at construction area	The PIU will inspect and verify that adequate consideration and drainage works and protection have been provided, namely the drainage channels and catch basins to allow an suspended materials to settle out and any spilled pollutants to be collected. The facilities installation and operation must be reported on at least 2X during each rainy season	5X during the construction period, once to confirm that sites have been identified and 2X during each rainy season for at least through 2010.		
2.10 Monitoring of revegetation program of any areas cleared during construction or filled.	Inspectors will examine the revegetation program for the hill reduction area as well as the airport cleared area, by providing an accounting of the stabilization work and planting ongoing and the apparent success level in terms of new green vegetation, plus the location and survival rate at each site per inspection cycle. Reports are to go to SE, PPK and BAPEDALDA and be available for inspection by the donor(s).	Inspection is to take place		
2.11 Monitoring of completion of consultations regarding land acquisition , noise , dust and other disruptive practices taking place	The SE will undertake to confirm in writing that special consultations with properties affected and any consultations have been completed by the contractor.	Prior to any work starting at this site		
2.12 Contractor's final Monitoring report submission	Contractor must list, in tabular form, all mitigative actions completed, their timing and location, and then indicate their status as % completed and the need for any future action(s).	At least 2 months before end of construction period		
2.13 Inspection of Construction Period Mitigation	Based in mitigation completion report prepared by the contractor, an inspection by the SE/PPK of how well the measures were implemented will be prepared. This summary will be in the form of a checklist and will be completed before final payment to the contractor	Within 3 months of the start of the operating period.		
2.14 A Quarry UKL/UPL completed and approved by the environmental agency	Prior to mobilization the SE must confirm with the contractor that the UKL/UPL has been prepared or is nearing completion and that approval process is understood and that no extraction can take place until this requirement has been met	After contract award but before start of physical construction		