Initial Environmental Examination

KAZ: CAREC Corridor 2 (Mangistau Oblast sections) Zhetybai-Zhanaozen 0-73 km

Final version
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Prepared by the Committee of Roads under the Ministry of Investments and Development of the Republic of Kazakhstan

Content

Abbreviations

ADB	Asian Development Bank
Akimat	Akimat (Town Mayor Office)
CAREC	Central Asia Regional Economic Cooperation Program
CEAP	Construction Environmental Action Plan during construction phase, which includes EMP (Environmental Protection Plan) and EMP (Environmental Monitoring Plan), and other relevant Plans and documents required under legislation of RoK
km	Kilometer
CL	Center line (of carriageway)
FWC	Forestry and Wildlife Committee
CoR	Committee of Roads
dBA	Decibel
DE MO	Department of Environment for Mangistau Oblast
EA	Executing Agency
EARF	Environmental Assessment and Review Framework
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
ES	Executive Summary
FS	Feasibility Study
GoK	Government of Kazakhstan
IFI	International Financial Institution
IEE	Initial Environmental Examination
KazNIIPIDortrans	(DORTRANS) Design Consultant
LARP	Land Acquisition and Resettlement Plan
MFF	Multi-tranche Financing Facility
MOEP	Ministry of Environmental Protection
MOH	Ministry of Health and Social Development
MID/CoR	Ministry of Investments and Development, Committee of Roads
ME/ERCC	Ministry of Energy/ Environmental Regulation and Control Committee
NGO	Non-government organization
OM	Operational Manual (of ADB)
PC	Public Consultation
PMC	Project Managing Consultant
CSC	Construction Supervision Consultant
RE	Resident Engineer
RoW	Right of Way
DpoZZP	RSE “Department for Consumer Rights Protection at Transport of the Agency for Consumer Rights Protection of the Republic of Kazakhstan”
SPNA	Specially Protected Natural Areas
STD	Sexually Transmitted Diseases (such as HIV/AIDS)
TOR	Terms of Reference
WB	World Bank

Currency Exchange Rates as of 19 March 2015
1 US$ = 185.65 KZT (Kazakhstan Tenge)
($ refers in this report to US-Dollars)

EXECTUTIVE SUMMARY

PROJECT DESCRIPTION

1. The Project comprises upgrading of existing “Zhetybai – Zhanaozen – Fetisovo – border of the Republic of Turkmenistan” Road of the 3 category of national importance, which is under reconstruction for category 1-B, and within the limits of the interchange passes into the II category.
2. The necessity of road upgrading is related to the fact that the road characteristics at this international road route does not meet the up-to-date requirements of the traffic safety.
3. The Project will comprise upgrading section of 73 km of the road of the national importance between Zhetybai settlement and Zhanaozen town. The road crossed desert and steppe environment, but the project does not make provision for a new plan of the route, all works will be executed within the limits of the existing right of way (except construction of a bypass around Zhanaozen).
4. However, as mentioned above, the length of the road section in current conditions is 73 km, in design conditions it will be 63 km. The reduction of the road length is related to the creation of Zhanaozen town bypass of 5 km length and to reduction of total road length by 10 km due to this.
5. The project makes provision for installation of a new road heavy-duty pavement designed for A2 load on axis of 13 ton-force. In addition, there is provision made for filling-up and broadening of the roadbed, reconstruction and construction of a new constructive works: culvert pipes, construction of a new road interchange in two levels at the bypass of Zhanaozen, new overpass of a road interchange in two levels at the bypass of Zhanaozen and a new overpass through the railway at 175 km of PK4-50 of “Zhetybai-Zhanaozen” station-to-station block and also measures on occupied lands arrangement and reclamation.
6. Mangistau Oblast is situated in the west of Kazakhstan in the Caspian Depression and east part of Ustyurt Plateau. The road section under reconstruction passes through a desert and low population area, there are not any populated localities along the entire length from junction to Zhetybai to Zhanaozen. The projected road passes in the area where important communications are laid: railway from Aktau to Zhanaozen, main oil and gas pipelines, as well as high voltage power lines and optic fiber communication cable. The road crosses a great number of communications, i.e. gas pipelines, water pipelines and overhead transmission lines from 0.4 kV up to 220 kV and others along the entire length of the projected section.
7. Geomorphologically the project site represents an undulating plain with alternation of shallow ridges and flat plains. Vast areas with absolutely flat ground limited to broad-backed summits of rising grounds. There are swell-like small ridges and separate bald mountains of height up to 10 m standing out against their background. Wide arid trenches frequently having scarp slope and dry riverbeds of ancient and modern waterways are widely distributed in the project area.
8. Procedure for Environmental impact assessment (EIA) in Kazakhstan is presented in detail in a number of relevant legislative and regulatory documents. Chapter 6 of the Environmental Code is devoted to the subject and stipulates the EIA basic principles and bindingness. In addition to this Code the following regulations of the Kazakhstan environmental legislation contain the important provisions:
    a. Instructions for the impact assessment from the proposed economic and other activities on the environment when developing pre-plan, pre-project and project documentation, approved by the Minister of Environmental Protection, Order No. 68-p dated of 28.02.2004;

b. RD 211.3.02.05-96. Recommendations for assessment of impact from the proposed economic activity on the resources (soil, vegetation, and wildlife);

c. Guidelines for the detailed design “Environmental Protection” Section to the SNIP 1.02.01-85;

d. RD 211.3.02.01-96 “Temporary instruction on procedure for the conduct of the environment audit (environment and human health impact assessment - EHIA) for the existing enterprises in the Republic of Kazakhstan”, approved by Ministry of ecological and biological resources, RK 20.09.1996. Almaty, 1996.

Project Categorization

9. With consideration for the conducted research generally reflected in REA (Rapid Environmental Checklist, Annex 7 for this Report), the project can be considered as B Category Project, i.e., a Project having some negative impact on the environment, which can be levelled or mitigated through a set of special measures. Hence, the given Project requires that an Initial Environmental Examination to be provided (IEE).

10. The Project is a part of Tranche 2 road construction, which is considered as category B. This project does not require land acquisition and resettlement to be carried out, and therefore in accordance with existing ADB policies does not overcome established limitis and parameters of the B project categories for social direction.

11. Around the project area, no any specially protected areas (SPAs), and the project will not impact on environmentally sensitive habitats of the local biological species.

Physiographic conditions

12. In terms of relief conditions and natural historical conditions the territory under consideration is divided into Ustyurt Plateau and Mangyshlak Peninsula.

13. Ustyurt Plateau is located in the central part of oblast and occupies an area of 161 000 km2. It is represented by a high flat plain separated from adjacent plains of the Caspian Depression and Mangyshlak Peninsula by cliffs. The height of cliffs varies from 30 to 280 m; their shoulder is indented by narrows and deep gullies in many places.

14. Mangyshlak is located in western-most part of the oblast. The southern part of the peninsula represents a plateau plain and its northern part is occupied by low-mountain chains Karatau, Northern and Southern Aktau with separate peaks attaining height marks of 555 m (Besshoku mountain) and 531 m (Otpan mountain).

15. There is a deep deflation hollow Karagiye with a bottom lowest point 132 m below sea level in the western part of plain Mangyshlak.

16. There are sand massifs Ak-Tyube, Sausskiy and Kur-Kizil (Burlyuk-Kum) in the eastern part of the mountain Mangyshlak.

Climate

17. The climate[1] in the area of road construction is strongly continental and arid climate, main climate pattern of which are cold winter and hot summer with high daily temperature oscillations and high annual amplitudes. This is a typical climate for a vast desert and semidesert area.

18. Yearly temperature average in the region is +9.6 C. Absolute air temperature maximums (more than 50° C) can take place in July and August, while absolute minimum

[1] The meteorological information fixed at the territory of the project implementation is based on long-term observation of meteorological stations Tuchibek, Duken and Aktau (3).

temperatures reaches -30° C and -34° C in January in the area between Shetpe settlement and Sai Utes.

19. According to long-term data of observations of Aktau meteorological station average yearly air temperatures are +11,3°C; the hottest month (July) is characterized by average many-year temperatures +25,6°C, the coldest month, January, -2,9°C. The temperature of a coldest five day period with reliability of 0,98 is minus 19°C, with reliability of 0,92 is minus 17°C; the lowest daily temperature with reliability of 0.98 is minus 21°C, with reliability of 0,92 is 19°C.

Precipitation

20. The amount of precipitation in the area under consideration usually does not exceed 150 m annually. Precipitation mainly falls in the form of rain and in winter in form of snow. The integral snow cover at large areas usually lies only during some weeks in a winter period (January – March). On the basis thereof, road traffic conditions in these sections climatically are well enough throughout the year. The low precipitation at the project area results in extreme dry period during summer months. However, long duration of the warm period is favorable for construction works during the year. Hails, snowstorms and sandstorms are rare.

Wind

21. The wind regime of the area under consideration is a result of barometric circulation factors, orography and by its nature is various enough.

22. As a result of heavy gradients of the atmospheric pressure the highest average monthly velocities are registered in a cold season, and these velocities amount to 3.0-4.5 m/sec. in the conditions of a broke country and 4.5-6.5 m/sec. in the conditions of a flat country. The average monthly velocities on the shore of the Caspian Sea increase up to 7 m/sec.

23. Winds with velocity ≥15 m/sec. are registered commonly and in some months of the cold period their frequency on the seashore rate at 3-5% and 10-12%. The strong winds often are accompanied by snowfalls and may have long duration and occur continuously during a day and more. Sometimes wind velocity increases up to 20-25 m/sec. in the case of the cyclone passage. But the low and medium winds (up to 5 m/sec.) have the highest frequency averages at amount of 50-70%. The number of cases of windless weather is variable from 20-30% at the north-east of the territory up to 5-10% at the seashore.

24. The wind velocity has a well-defined diurnal variation, and as a rule, maximum velocities are present in the afternoon, and minimum velocities are present before the rising of the sun.

25. The average wind differential velocity at 13:00 and at 7:00 amounts to 0.3-0.6 m/sec. during the cold period of the year and 1-3 m/sec. during the warm period of the year..

Air Quality

26. In areas tested it was found that the parameters do not exceed the maximum concentration limit.

Noise

27. The results of noise pollution measurements made at different points of the route e.g. in October 2011 as part of works on preparation of documentation for Tranche 2, near hospital, Central Street, Zhetybai village allow us to conclude that nowhere in the checked areas the existing noise level does not exceed permissible level according to the norms of Kazakhstan (GOST 12.1.003-83 Noise. General safety requirements).

28. However, with the possible increase in traffic congestion on the highway associated with traffic increase after reconstruction of road, and also the likely technical modification of the vehicles in the future, the ultimate level possibly will be reached. On the other hand, reduction of technical measures, and speed limit can positively reduce the level of noise.

Structural properties of soils of the working layer and roadside

29. All roadside soils are characterized by low humidity and low density, which ranges widely and corresponds to the compaction factor:
    - Sandy loam EGE 1 = 0.65 - 0.93; sandy loam EGE 2 = 0.68 - 0.87; EGE loam 4-1 = 0.76;
    - Sand EGE 5 = 0.78 - 0.87; sandy loam EGE 3 = 0.60 - 0.83; loam EGE 4 = 0.67 - 0.79, which is below the standards of SNIP RK 3.03-09-2006 * “The Motor Road”.
30. The Quaternary soils at the roadside on most of it are saline. They have average sulphate and seldom low salinity. Salinity is absent in areas of silty sand deposits (EGE 5) sandy loam (EGE 2) resting in areas exalted of the microrelief forms.
31. The soils of eluvial genesis (EGE 3 sandy loam, EGE 4 and EGE 4-1 loam) are everywhere saline. Salinization of soils has a sulfate character, seldom chloride-sulfate or chloride. Salinity is mostly average, in rare cases, low and high (section 30 PK + 00 of approach to the Zhanaozen town).
32. When using soils for subgrade construction in areas of 2 Type the soil salinization must be considered when defining the height of embankment in accordance with the Note 3 to Table 7.2.1 of SNIP RK 3.03-09-2006 * “The Motor Roads”.
33. The road section according to its nature and degree of humidity is mainly referred to the first type of locality. The exceptions are areas of intersection of numerous closed depressions with drainage not provided, where the longitudinal slope is less than 2%. These road sections are referred to the 2nd Type of locality according to the nature and degree of hydration (water stagnation is possible in the ditch-reserves during rainfall and snowmelt period).

Seismicity

34. Although the geological map below shows two tectonic lines converging on the south-east of the Shetpe settlement (Figure 4), the examination of seismic zoning, specified in IEIA, defines the entire area as a “seismically inactive”. On the other hand, according to the Mangistau Oblast Department of Ecology under the Ministry of Environmental Protection in the Aktau city, seismic events up to intensity 5 on the Richter scale were recorded near the Shetpe for the past decades. Project Expert-engineers also believe that the seismicity is not a reason for concern in the implementation of the road construction project, arguing that the only locations of bridges are far from the above identified tectonic dislocations.

Hydrogeology

35. The project area is characterized by deep-laid groundwater on 20-60m, mostly bitter-salty. There are no vadose water and permanent streams. Available temporary water streams according to the feeding type are related to snow fed. Ground water all along the route is not available.
36. The presence of large areas those having no surface runoff is typical for most of the described territory with the desert climate and flat surface.
37. The groundwater is generally available only in the middle of deep aquifer. This ground water is often salty and water production for the project needs is not planned. Small springs provide very limited water supply, and will not be used as a source of water for the needs of the project.

Hydrology

38. There are no surface water bodies on the considered area where construction works will be carried out.

Soil Mantle and erosion level

39. The area of the alignment belongs to the desert zone. The gray-brown desert soils, very poor in humus are extensive in the region. Due to the low rainfall and high evaporation brown earth and gray soils are calcareous from the surface. Large amount of lime gives to soils a gray tint. The soil mantle is poorly formed, humus soil horizons also stands out weakly. Vegetation cover is of a desert type, rare, and represented by Anabasis salsa and sagebrush and Anabasis salsa associations. Removal of top soil within the road side (within the project roadside reserves) is not required. Humus horizon in them is underdeveloped, and the soil mantle is almost unformed. As a whole, level of soil erosion in the Oblast is considered to be medium, reaching in separate cases 20% of its total area. Below, there is a map demonstrating data of soil erosion level in Mangisatu Oblast.

Fauna

40. In accordance with reports, desert areas surrounding the Caspian Sea are occupied by 56 species of mammals, 278 species of birds and 18 species of amphibians and reptiles. Many varieties are classified as rare and endangered species. Such species include 7 species of mammals, 36 species of birds and 1 species of reptiles listed in the Red Book of Kazakhstan. Among the huntable animals the saiga has the great importance in the national hunting traditions.

Vegetation

41. Thin vegetation cover is rare and belongs to a desert type and is represented by biyurgun and absinthe- biyurgun associations.

42. The Southern desert is rich in bushes and shrubberies of variable species composition. The prevailing groups include Salsola gemmascens, absinthe of species Artemisia kemrudica and Artemisia kemrudica. A low importance is attributed to groups of plants related to species of Salsola arbusculiformis, whiteland absinthe (A. terrae-albae), which are typical plants in northern and central deserts. At newly developed sand areas grow Dimo absinthe (A. Dimoana), and Mausolea eriocarpa.

Special Protected Areas

43. There are not any protected natural features in the close proximity of the project area. The Karakiya-Karakol State Reserve and State Regional Nature Park “Kyzylsai” are located far away from the project area at some tens of kilometers and they will not impacted during construction works.

Species listed in the Red Book of Kazakhstan

44. There are not inhabitations of the species listed in the Red Book of Kazakhstan. But this territory is adjacent to habitats of some red-book animals and this fact should be taken into account during project activities.

Infrastructure around the project road

45. **Railroad**. Kazakhstan's rail network is well developed at national and regional level, but according to previous research, it needs major repairs and upgrades.

46. **Water transport**: Because of its favorable geographical position in the central part of the Caspian Sea, the sea port of Aktau has an important role as a transit point for passengers and goods to the countries of the Caucasus and South-Eastern Europe.

47. Air transport: Mangistau has only one major airport located in Aktau with cargo air transport is limited and currently cannot compete with the infrastructure and tariffs of road transport.

48. **Water supply system** in Mangistau Oblast remains one of the most pressing social problems. According to «NewTimes.kz» news agency as of November 2014, there are 60 populated localities in the oblast. Today centralized water supply is provided to 17 among of them and decentralized to 35. In other populated localities, because of the small number of residents arrangement of water supply system is impractical, thus imported water is

used. Aktau and Zhanaozen with surrounding settlements, as well as oil producers consume 93% of the total volume of water. The share of all others accounts for only 7%

49. **Wastewater disposal.** In 2012 Oblast has seven sewage treatment plants. The largest percentage of populated localities provided with sewage in Aktau accounts 95% and in Zhanaozen 85%. According to the Department of Statistics of Mangistau region, currently the percentage of living space provided with sewage in recent years has grown considerably.

50. **Solid municipal waste.** On the ground, there is no system for collection or disposal of solid waste; therefore, most of the areas around the settlements along the road is littered with plastic, household waste, glass bottles and broken glass. However, in the cities this system works even, though the percentage of coverage of this area is far from being complete and geographically uneven. For example, if in Aktau and Zhanaozen percentage of coverage of solid waste removal is 82-86%, in Shetpe - 5%, Akshukur - 13%. The main part of population does not enter into a contract with organizations for waste collection and is the reason of unauthorized landfills.

51. **Power supply**. In Kazakhstan 87.7% of all electricity is generated in thermal power plants, which is due to the specifics of resource base of the country e.g. availability of large amount of fuel resources and a relatively small share of hydropower resources, which provide 12.3% of electricity production in the country. The republic has 60 power plants, among them 8 power plants is of national importance, 52 regional power plants, 22 regional power grid companies (RRGCs).

52. The territory of Mangistau Oblast is fully covered by energy supply. Power lines laid in various capacities throughout its territory, providing a power supply with the capacity of 35 kV, 110 kV and 220 kV

53. In many places, the project road is crossed by various infrastructures: power transmission lines, pipelines, and power cables. During the design and construction work this may cause additional difficulties. Therefore, during preparation of design decisions particular steps must be considered with due diligence and taken so that objects of infrastructure would not be damaged.

Industrial sector

54. In general, it can be concluded that the industrial sector of Mangistau region is quite well developed. According to the Kazakhstan information resource LSIP Ltd[2]., the industrial sector in this region is represented by a large number of enterprises, summary data for which are shown in the table.

Condition of public health and common diseases

55. The relatively low standard of living, limited medical care in some parts of the region and dreary diet, health status of the population, in general, is unsatisfactory in almost all rural areas of the Mangistau Oblast.

56. One of the main problem areas in the field of public health is still high infant and maternal mortality. The main reasons of such cases among pregnant women and children under five are associated with anemia, diseases of the respiratory system and acute intestinal infections.

57. According to the local press, in Mangistau Oblast it is also observed a significant incidence of sexually transmitted diseases (syphilis) in some rural areas, such as, for example, Say-Utes.

Gender issues

[2] http://www.lsip.kz/npa/spisok-predpriyatiy-mangistauskoy-oblasti-po-otraslyam

58. Gender inequality is particularly evident when comparing the wages or access to higher education. Available data for Kazakhstan indicate that the average nominal wage of women is about 20% lower than men's wages at the comparable positions. According to WageIndicator Project in September 2014, the median hourly Gross wage in Kazakhstan is 577,37 KZT for men, and 461,89 KZT for women.

59. Women especially young rural women in remote areas of Kazakhstan, are increasingly targeted by traffickers and involved in prostitution, often associated with the development of roads and objects as points of transmission of STDs (e.g., to the main meeting point in Beyneu).

Archaeological and Historical Heritage

60. In general, according to the local dwellers there are no historical or archaeological sites, which might be exposed to any adverse impact of project activities in the project area. Several individual monuments (Kairak Yersary relating to XIV-XV centuries, 20 km north-eastward, and Karagan Bosaga, a monument of the XIX century, 80 km eastward of Zhanaozen) does not fall within the project impact area.

61. A survey of the project area has showed that along the road there are more than 30 memorial monuments of the road accident victims. When these monuments are situated on the borders of the road extension their transfer will be required. This in turn will lead to the need to consult with the relatives of the accident victims, particularly in respect of those monuments that still under care and have a place of visit. Then, in the framework of special steps the necessary procedures will be carried out for such cases. These steps should be considered as part of the work of sociologist group for this Project.

Land use and agricultural activities

62. Agricultural land use is limited along the road corridor due to harsh environmental conditions and the general shortage of water for irrigation. Groundwater mainly lie deep, water quality is poor due to high levels of salinity. In populated areas around the houses there are several household plots where vegetable crops are grown and irrigated with groundwater, which is obtained by hand pumps.

63. The lands are predominantly used for grazing, since there is almost unlimited resource of steppe areas. However, in most cases, the quality and availability of pastures and fodder plants are low.

64. However, there are two areas, at 27 and 37 km from Zhetibay, which were used by the local tenants for agricultural purposes. The land is state-owned. The area No.2 was used several years ago for the irrigated farming, supplied with water from the passing nearby water pipeline by the drop irrigation system. Currently, those areas are not used anymore and the land is state-owned.

Project Activities Impact

65. It is necessary to consider several types of impacts. These may include direct and indirect impacts during construction and operation, long- and short-term, immediate and delayed effects. The analysis showed that in the project area will be a direct impact rather limited and focus within the existing ROW.

66. Short-term effects, such as heavy equipment and machinery generated noise and gases, taking place during the road construction, usually do not have a long term impact. Because the project is limited to mostly rehabilitation works, repair of existing and construction of new sections of road on unbroken lands for 6 kilometers, there is only a small possibility that the long-term impact on the environment will occur.

67. Impacts arising during construction activities depend on several factors, including:

- the temporary use of land and its rehabilitation after the construction works termination;

- "Best practices" used for construction activities; coordination and cooperation with local authorities in terms of impact management, and
- monitoring for the strict implementation of environment protective measures included in the project documents and specifications for the tender, as well as observance of the comprehensive environmental management plan (EMP).

68. Environmental budget includes expenditures for all project work mitigation activities, monitoring and staff professional development and all of the expenses related to environmental aspects during all of the construction period. Total of environmental impact mitigation costs and cost of the monitoring on this project (Table 18) is initially estimated as about **1616830 $/** US Dollars/.

69. The Table of costs includes a number of expenditure items which are included into the total budget of the construction. In a likely way, these expenditures concerning activities on environmental protection measures are included into the Bill of Quantities. With this, all expenditures for the environmental mitigation measures specified in the EMP should be obligatory and executed in their full extent.

70. The proposed program of collection of air samples and noise pollution measurements at the stage of construction may be included into the work contracts and untrusted to the Contractor. In these cases the Supervision Consultant shall develop a proper sampling schedule and specify parameters with which a checking process should comply.

Grievance Redress Mechanism

71. Complaints consideration procedures for the project aim to provide an effective and systematic mechanism for the Projects in responding to queries, feedbacks and complaints from affected persons, other key stakeholders and the general public.

72. The Grievance Redress Mechanism (GRM) is available to people living or working in the areas impacted by the project activities. Any person impacted by or concerned about the project activities has the right to participate in the GRM, should have the easy access to it, and be encouraged to use it. The proposed GRM does not replace the public mechanisms of complaint and conflict resolution envisaged by the legal system of the Republic of Kazakhstan, but attempts to minimize use of it to the extent possible.

73. Overall responsibility for timely implementation of GRM lies with the CoR and Kazavtozhol supported by teams of consultants, such as PMC, Construction Supervision Consultants (CSC) involved in managing and supervising the civil works and other activities under the investment program, while Construction Contractors (CC) undertake the actual civil works. Relevant oblast, rayon and community Akimats, who are mandated by law to perform grievance redress related tasks, and mediators / non-governmental organizations (NGO), who are involved in facilitating amicable resolution of grievances are also included in GRM.

74. Grievance Redress Mechanism is aimed at: (i) reduction of conflicts, and risks of unnecessary delays and complications during project implementation; (ii) improving the quality of project activities and results; (iii) ensuring the rights of persons affected by the project activities; (iv) identifying and responding to the unintended consequences of projects on individuals; and, (v) to maximize participation, provision of support and benefits for local communities.

75. This GRM envisages two levels of grievance resolution for the road sector projects implemented under the supervision of the CoR: Grievance Redress Committees (GRC) at regional (oblast) and central (Astana) levels in accordance with the Guideline on Grievance Redress Mechanism on Environment and Social Safeguards for Road Sector Projects approved by the CoR in August 2014 (GRM Guideline). GRCs are composed of members nominated from CoR, Akimats, Kazavtozhol, PMCs, CSCs, CCs. GRCs at regional and central levels are chaired by the Heads responsible for the overall operation of GRM and its efficient and timely implementation, while the Coordinators are responsible

for involving the relevant parties and coordinating the works of GRCs at regional/central levels.

Public consultations

76. In accordance with the legislation of the RoK and ADB policy, the public consultations has been conducted on March 3, 2015 at Zhetybai and Zhanaozen. Preliminarily, in the course of preparation of these consultations the information on the event has been placed in local mass media (newspapers Mangystau No 28 (8754) dated on 10.02.2015 and Ogni Mangistau No 28 (11462) dated on 10.02.2015 and at the web-site of the Committee of Roads of MID of the RoK 15 days before the its execution. Scanned copies of these materials are attached to this report in Appendix 1.

77. The list of participants on the part of the local community of Zhetybai and Zhanaozen and the Agenda of this event are included into the Appendix 2. and Appendix 3. to this Report respectively.

78. The Vice-President of JSC KazdorNII **Yerbol Aitbayev** made a report concerning engineering and technical aspect that described technical issues of the road construction and told about design solutions related to road exits, junctions, crossroads and interchanges in Zhetibay and Zhanaozen. Yerbol Aitbayev told about categories of existing roads at this area and changes in road categorization included into the design documentation. The reports have been made on the basis of diagrams, maps and schemes

79. The reports concerning environmental issues has been made by **Djamilia Aitmatova,** international environmental consultant, who mentioned that impacts during the project activities will have both positive and negative character. The negative impact will be represented generally by increased noise impact from construction machinery movement and work as well as from dust generation. Additionally, there will be present air pollution because of exhaust gases of construction machinery. In this regard provision will be made for mitigation measures that will be included into the design documentation and will be fully complied with by relevant responsible organizations during the road construction period.

80. A local resettlement specialist **Kirill Ossin** has made the presentation on resettlement issues. The speaker described in his presentation main provisions of the Asian Development Bank's Safeguard Policy. The information about rights of the local citizens on allowances and compensations for the persons under the impact of the Project has been presented in details. He also called attention to the current work for preparation of the relevant Land Acquisition and Resettlement Plan.

81. In answering speeches of local residents a request for increasing of number of livestock driveways was heard. There were raised also questions concerning land acquisition for construction and questions on compensations and allowances. It was suggested that the Project has a great importance for the development of the district, oblast and all the country, not only with regard of economic relations, but also with regard of possibilities of getting job by the local residents during the period of construction works.

82. **Main conclusions on discussion results**: (1) Public consultations on consideration of the Initial Environmental Evaluation Project, feasibility study and working project taking into account an expected potential impact on the environment including mitigation measures and public consultations on social issues of Zhetybai-Zhanaozen road are to be considered as held; (2) projects of the Initial Environmental Evaluation are to be approved subject to taking into account the public opinion and comments made in compliance with all requirements of the environmental legislation of the RoK, fulfillment of which will be basis for the negative environmental impact reduction.

Introduction

83. The Republic of Kazakhstan (RoK) acting through the Ministry of Investment and Development (MID) proposes to undertake the upgrading of the “Zhetybai – Zhanaozen – Fetisovo – border of the Republic of Turkmenistan” Road (to Turkmenbashi) section km 0-73. The road of national importance is located in Mangistau Oblast and is a section of international road route from Turkmenistan into Russia. All works are intended to be funded by Asian Development Bank (ADB) through the Multitranche Financing Facility Investment Program (sections in Mangistau Oblast) for the Central Asia Regional Economic Cooperation (CAREC). This report focuses on the “Zhetybai – Zhanaozen – Fetisovo – border of the Republic of Turkmenistan” Road" (to Turkmenbashi) section km 0-73.

Project Description

84. The Project comprises upgrading of existing “Zhetybai – Zhanaozen – Fetisovo – border of the Republic of Turkmenistan” Road of the 3 category of national importance, which is under reconstruction for category 1-B, and within the limits of the interchange passes into the II category.

85. The necessity of road upgrading is related to the fact that the road characteristics at this international road route does not meet the up-to-date requirements of the traffic safety.

86. The Project will comprise upgrading section of 73 km of the road of the national importance between Zhetybai settlement and Zhanaozen town. The road crossed desert and steppe environment, but the project does not make provision for a new plan of the route, all works will be executed within the limits of the existing right of way (except construction of a bypass around Zhanaozen).

87. However, as mentioned above, the length of the road section in current conditions is 73 km, in design conditions it will be 63 km. The reduction of the road length is related to the creation of Zhanaozen town bypass of 5 km length and to reduction of total road length by 10 km due to this.

88. The condition of existing road is unsatisfactory – the roadbed does not meet SNiP (Construction standards and regulations) by its height and rates of slope. The road dressing is damaged and mixed with roadbed soil along the whole road length and cannot be repaired. There 18 pipe-culverts at the section and 2 pipe-culverts at the approach to Zhanaozen, the existing pipes are in unsatisfactory condition and cannot be repaired. There will be constructed a new pipes instead of these pipes, in particular at sections where melt waters passage was not ensured.

89. The route of projected road passes through lands of Mangistau Oblast, from PK 2+00 to PK 6+60 and from PK 95+50 to PK 501+50 – of Karakiya district, from PK 6+50 to PK 95+50 - of Mangistau district, from PK 501+50 to PK 614+76 and from PK 616+20 to ПК 636+83 – lands which are under the control of the Maslikhat of Zhanaozen. From PK ПК 614+76 to PK the route passes through railway lands. The start point of the section is accepted to be at PK 2+00, and assigned to the exit ramp of the road interchange at the place of junction of the road to Zhetybai.

90. At PK 569+60 provision is made for road interchange in two levels at the Zhanaozen bypass. Approach to Zhanaoznen, which length is 6400 meters also starts from PK 569+60. At PK 615+48 a railroad underbridge is planned.

91. It is provided that there will be 16 ramps for facilitating access to the infrastructure facilities and 1 road crossing (crossroad) throughout the projected road for ensuring transport communications of agricultural activities, as well as 3 cattle crossings for animals at the locations known for regular crossing by animals. New rest areas with a provision of a summerhouse, WC for two persons, installation of benches, tables, waste containers,

rubbish bins and overpass should be made at PK 103+46, PK 312+83 to the left and to the right of the center line.

92. Bus-stops with enclosed bus-stops corresponding to projected road parameters and standards are projected at PK 231+72, PK 369+90.

93. The project makes provision for installation of a new road heavy-duty pavement designed for A2 load on axis of 13 ton-force. In addition, there is provision made for filling-up and broadening of the roadbed, reconstruction and construction of a new constructive works: culvert pipes, construction of a new road interchange in two levels at the bypass of Zhanaozen, new overpass of a road interchange in two levels at the bypass of Zhanaozen and a new overpass through the railway at 175 km of PK4-50 of "Zhetybai-Zhanaozen" station-to-station block and also measures on occupied lands arrangement and reclamation.

Table 1. Main technical characteristics of the plan

1.	Road lenght, m	-	63683
	including: straights	-	57158.4
	curves	-	6524.6
2.	1 Sum of angles of curvature, grad. min.	-	17606 /
3.	Average angle of curvature, grad. min.		2921 /
4.	Mean radius, m	-	5800
5.	Quantity of angles of curvature, ea.		13
6.	Quantity of angles of curvature per km of road, ea.		0.20

94. There are following types of earth roadbed profiles accepted in the project:

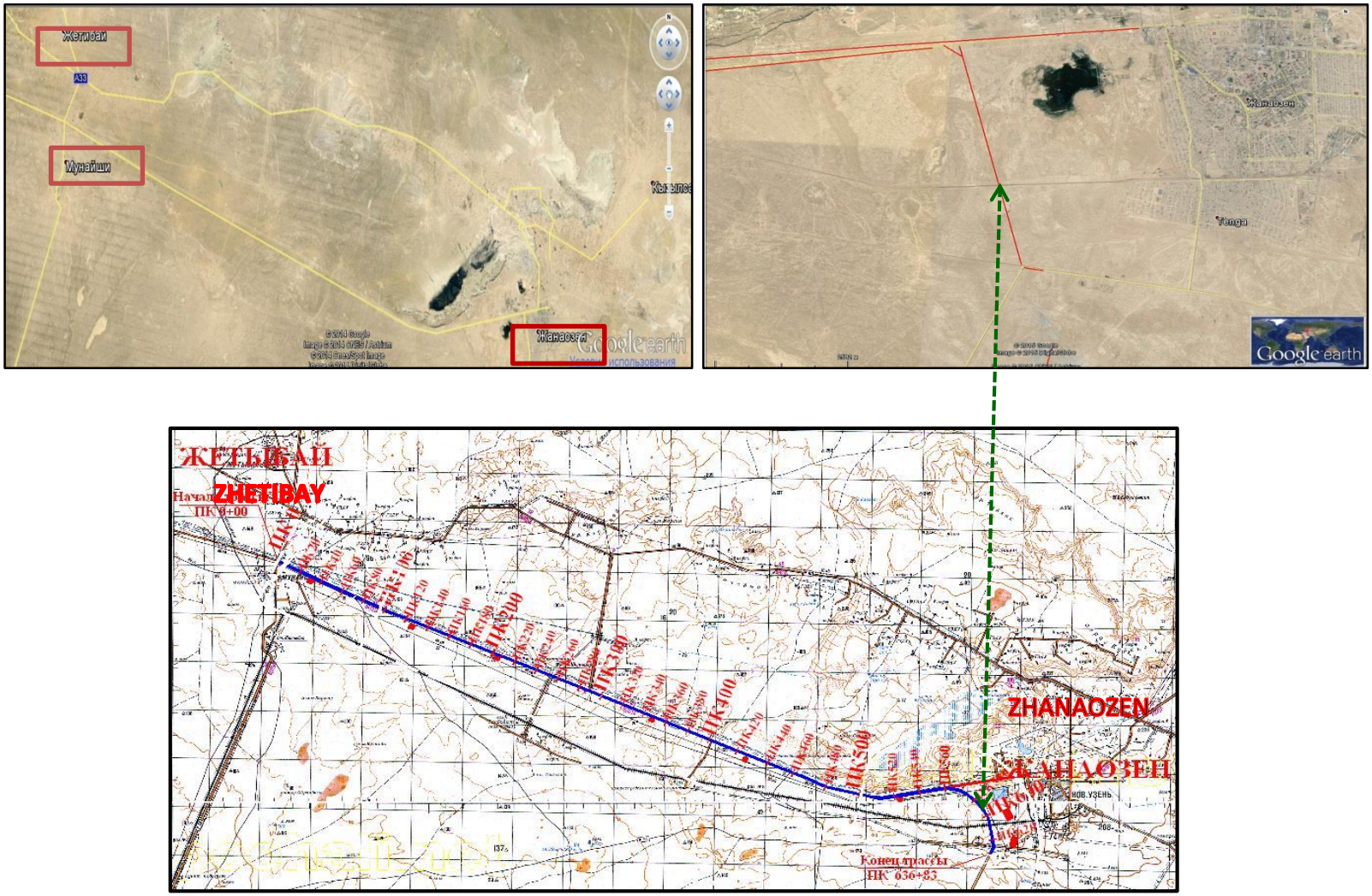
Table 2. Main road

Type 1 -	Embankment made of roadside borrow pits, with embankment height up to 3.0 m and slope grade 1: 4,	I – B category.
Type 2 -	Embankment of non-borrow pit profile made of imported earth of off-road borrow pits and earth cuts, with embankment height up to 3.0 m and slope grade 1: 4,	I – B category.
Type 3 -	Embankment of non-borrow pit profile made of imported earth of off-road borrow pits and earth cuts, with embankment height up to 3.0 m and slope grade 1 : 5,	I – B category.
Type 4 -	Borrow pit of depth up to 3.0 m, open for embankment with inner slope grade 1 : 4, outer slope grade 1 : 6, with ditch of depth by 0.3 m lower than bottom of the road dressing and width on the bottom not less than 0.5 m for ensuring surface water drainage,	I – B category.
Type 5 –	Embankment made partially of roadside borrow pits , with embankment borrow pits not less than 6.0 m and slope grade 1 : 1,5 – 1: 1.75,	II category.
Type 6 –	Embankment of non-borrow pit profile made of imported earth of off-road borrow pits and cuts, with embankment height from 3.0 m to 6.0 m and embankment slope grade 1 : 1.5,	II category.
Type 7 -	Embankment made of roadside borrow pits, with embankment height from 3.0 m to 6.0 m and slope grade 1 : 1.5,	II category.
Type 8 –	Embankment of non-borrow pit profile made of imported earth of off-road borrow pits and cuts, with embankment height up to 3.0 m and embankment slope grade 1: 4,	II category.
Approach to Zhanaozen		
Type 1P -	Embankment of non-borrow pit profile made of imported earth of off-road borrow pits and cuts, with embankment height up to 3.0 m and embankment slope grade 1: 4,	III категория.
Type 2P	Embankment of non-borrow pit profile made of imported earth of off-road borrow pits and cuts, with embankment height up to 6.0 m and embankment slope grade 1 : 1.5,	III категория.
Type 3P -	Borrow pit of depth up to 3.0 m, open for embankment with inner slope grade 1 : 4, outer slope grade 1 : 3, with ditch of depth not less than 0.3	III категория.

	m lower than bottom of the road dressing and width on the bottom not less than 0.5 m for ensuring surface water drainage,	

95. The schematic map of the objet and road rehabilitation is as follows.

Figure 1. The map of the Projected road



96. Mangistau Oblast is situated in the west of Kazakhstan in the Caspian Depression and east part of Ustyurt Plateau. The road section under reconstruction passes through a desert and low population area, there are not any populated localities along the entire length from junction to Zhetybai to Zhanaozen. The projected road passes in the area where important communications are laid: railway from Aktau to Zhanaozen, main oil and gas pipelines, as well as high voltage power lines and optic fiber communication cable. The road crosses a great number of communications, i.e. gas pipelines, water pipelines and overhead transmission lines from 0.4 kV up to 220 kV and others along the entire length of the projected section.

97. Geomorphologically the project site represents an undulating plain with alternation of shallow ridges and flat plains. Vast areas with absolutely flat ground limited to broad-backed summits of rising grounds. There are swell-like small ridges and separate bald mountains of height up to 10 m standing out against their background. Wide arid trenches frequently having scarp slope and dry riverbeds of ancient and modern waterways are widely distributed in the project area.

98. In the east, west and in most places in the north the Ustyurt Plateau is clearly limited in plan by a curving line of erosional steeps (cliffs), the height of which sometimes exceeds 200 m.

Policies, Administrative and Legislative Framework

General Provisions

99. The Republic of Kazakhstan is a country located in the center of the Eurasian continent. The major part of the country belongs to Asia, and the minor part - to Europe. Kazakhstan stretches from the shores of the Caspian Sea to the lower Volga region (Povolzhye), form the Ural and Siberia to China and Central Asia. The area of Kazakhstan is 2,725 thousand km^2, which allows the country to occupy the 9^{th} place among the countries of the world, and 2^{nd} place among the CIS countries (after Russia). Kazakhstan is bounded on the north and west by Russia, on the east by China, on the south by Kyrgyzstan, Uzbekistan and Turkmenistan. Administratively and territorially Kazakhstan consists of 14 provinces. Astana is the capital of the country, along with this, Almaty city has the official status of the southern capital. Both of these cities are of national significance and considered as separate administrative territorial entities. The country is headed by the President.

Legislative Power in Kazakhstan

100. According to the official website the Parliament of the Republic of Kazakhstan consists of two chambers, and is the highest representative body of the Republic performing legislative functions. Structure and functioning of the Parliament of the Republic of Kazakhstan, the legal status of its deputies are determined by the Constitution, the Constitutional Law “On the Parliament of the Republic of Kazakhstan and the Status of Its Deputies” and other relevant legislation.

101. The Parliament consists of two Houses: the Senate and the Mazhilis, acting on a permanent basis. The Senate is composed of elected deputies - two from each region, the city of republican subordination (Almaty) and the capital city of the country at joint sessions of all representative bodies’ members of respective regions, city of the republican subordination and the capital city of Kazakhstan. Fifteen deputies are appointed by the President of Kazakhstan with the view to ensure representation for all the national, cultural and other significant public interests. Half of the elected deputies of the Senate are elected every three years. The term of office of the Senate deputies is six years.

102. The Chairman of the Senate is a person elected by the Senate among the deputies who is fluent in the state language by a secret voting majority from the total number of deputies of the House. The candidature on the post of the Chairman of the Senate is nominated by the President of the Republic of Kazakhstan.

103. The Mazhilis consists of one hundred and seven deputies. Ninety eight deputies of the Mazhilis are elected from political parties according to party lists and a single nationwide district on the basis of universal, equal and direct suffrage by secret ballot. Nine Mazhilis deputies are elected by the Assembly of People of Kazakhstan. Regular elections of Mazhilis deputies shall be held two months prior to the end of the term of office of the current Parliament convocation. The term of office of the Mazhilis deputies is five years.

104. The Chairman of the Mazhilis is a person elected by the Mazhilis from the deputies who is fluent in the state language, by a secret voting majority from the total number of deputies of the House. The candidatures on the post of Chairman of the Mazhilis are nominated by the deputies of the House.

Executive Power in the Republic of Kazakhstan

105. The executive power in the country is represented by the Government and headed by the Prime Minister and First Vice-Prime-Minister. As well, the Prime Minister has one deputy. The Prime Minister is nominated by the President of Kazakhstan with the consent of the Mazhilis (Parliament). The Government framework is formed by Ministries and other central executive bodies of the Republic. The latter include the central executive

authorities which are not a part of the Government composition. Thus, while the Government composition is formed by officials in charge of the relevant executive bodies, the government framework is formed by the public authorities. The Government in its entire activity shall be responsible to the President of the Republic of Kazakhstan, and in cases stipulated by the Constitution, to the Mazhilis of the Parliament and the Parliament of the Republic of Kazakhstan.

106. In August 2014, the Government has been subjected to considerable reorganization and reduction. As a result of these changes the post of Deputy Prime Minister for Human Development has appeared in the Government framework. At present, the Government of Kazakhstan consists of 12 Ministries (which include 44 Committees) and one independent Agency:

- The Ministry of Culture and Sports
- Ministry of Health and Social Development
- Ministry of Energy
- Ministry of National Economy
- Ministry of Investments and Development
- Ministry of Finance
- Ministry of Foreign Affairs
- Ministry of Defense
- Ministry of Internal Affairs
- Ministry of Justice
- Ministry of Agriculture
- Ministry of Education and Science
- Agency of RK on Civil Service Affairs and Anti-Corruption.

Institutional Framework for Environment Protection

107. The power of the Kazakhstan Parliament to enact laws (Article 16) was determined by the Constitutional Act of October 16, 1995 No.2529 “On the Parliament of the Republic of Kazakhstan and the status of its deputies”. This Article, in particular, specifies that the supreme legislative body enacts laws that regulate the most important public relations, determines fundamental principles and standards relating to the environment protection, as well as education, health and social security.

108. Legislative institutions that are directly responsible for environmental issues include the appropriate Committees of both Houses of Parliament: the Senate and the Mazhilis, such as two Committees of the Mazhilis - (1) on Ecological Issues and the Environment Management, and (2) on Agricultural Issues and one Senate Committee - on Agricultural Issues, Environment and Rural Development.

109. After the Government frameworks had been reorganized, the role of the authorized body for environment protection was transferred to the Ministry of Energy. The functions of the former Ministry of Environment Protection were transferred to the Ministry of Energy as well. Among all those Ministries, the functions on environment protection and nature management are also included in the scope of responsibility of Ministries and Departments, and their Divisions and are presented in the Table 3 below.

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Table 3. Ministries and their Divisions for Environmental Issues

Ministry	No.	Division of the Ministry	Functions
Ministry of Internal Affairs of RK	**1**	Committee for Emergency Situations	Implementation of state policy in the field of prevention and liquidation of emergency situations of natural and man-made disasters, civil defense, fire and industrial safety
Ministry of Investments of RK	**1**	Committee for Geology and Subsoil Management	
	2	Committee for Roads	
Ministry of Foreign Affairs of RK	**1**	Committee for International Information	
Ministry of Education and Science of RK	**1**	Committee for Science	
Ministry of Energy of RK	**1**	Committee for Environmental Regulation, Control and State Inspection in Oil and Gas Sector	
Ministry of National Economy of RK	**1**	Committee for Statistics	Responsible for the collection and analysis of statistical information on the environment
	2	**Committee for Construction, Housing and Utility Services and Land Management**, which consists of a number of Offices, including: (1) technical regulation and standardization; (2) Office of state supervision over land use and protection, geodetic and cartographic control; (3) Office of the State Land Cadaster; (4) Office of the land management, monitoring and surveying of land relations; et al[3].	Monitoring and implementation functions: in architectural urban planning and construction, electricity, land management, surveying and mapping activities.
	3	Committee for Consumer Rights Protection	Responsible for sanitary and epidemiological supervision Отвечает за вопросы санитарно-эпидемиологического надзора
Ministry of Agriculture of RK	**1**	Committee for Water Resources	Implementation and monitoring functions in the use and protection of water resources to meet the needs of the population and industries to achieve and maintain environmentally sound and economically optimal level of water use.
	2	Committee for Forestry Management and Wildlife	

[3] http://www.minplan.gov.kz/economyabout/9251/58468/

Legislation on environmental issues of the Republic of Kazakhstan

110. The Republic of Kazakhstan made significant strides in development of the environmental legislation. Last years, some different law codes and also technical regulations, relating to the environment-oriented sphere have been developed and accepted. International legal acts, ratified by the Republic of Kazakhstan in ecosystem service sphere and environmental protection also are constituent parts of the environmental legislation.

111. Principal regulation of environment reflected in section 31 of the Constitution of the country, where it is noted that one of the goals of the government works is environmental protection, favorable for life and health of the population. Also regulation on labor protection reflected in Section 24 cl.5 of the Constitution of the Republic of Kazakhstan, which specifies that each citizen “has right to the labor condition”, responding to the requirements of security and hygiene”.

112. ***Environmental Code of the Republic of Kazakhstan***, which regulates relations in security, reconstruction and environmental conservation, use and reproduction of natural resources while implementing economic and/or other activity, connected with natural resources use and environmental impact within the territory of the Republic of Kazakhstan.

113. In Environmental code there are main concepts, connected with environmental protection, and objects of the environmental protection. Ecologic bases of the sustained development and main principles of the Environmental legislation of the Republic of Kazakhstan.

114. ***Water code of the Republic of Kazakhstan*** (dated July 9, 2003 №481-II) regulates relations in sphere of application and protection of inventory of water resources and hydrologic system, water supply and water removal, implementation of hydro land reclaiming works and works on security of hydrologic system and facilities or other water relations. Goals of the water legislation of the Republic of Kazakhstan are achievement and support of the ecologic secure and economic optimal level of water use and protection of the inventory of the water resources, water supply and water removal for conservation and improvement of the life conditions of the population and environment.

115. ***Land code of the Republic of Kazakhstan*** (dated July, 20, 2003. № 442-II), in task the tasks of the Land code are: regulation of the land relations for provision of the rational application and land protection, reproduction of fertility of soils, conservation and improvement of the natural environment; creation of conditions for equal development of all forms of economy; security of rights for the land of physical and legal entities of government; creation and development of the real estate market; reinforcement of legality in land relations sphere.

116. ***Forestry Code of the Republic of Kazakhstan*** regulates social relations on owning, application and instruction of the forestry resources and also sets legal bases of the security, protection, reproduction, increase of ecologic and resource potential of the forest resources, its rational application, on the principle that a forest is one of the most important components of the biosphere, which gas economic meaning.

117. ***Law of the Republic of Kazakhstan, “on security, reproduction and application of the wildlife”*** dated July 9, 2004 №593-II

- The law defines the main principles of the state administration in wildlife security, reproduction and application
- Provision of security, reproduction and sustainable application of the wildlife.
- Using of wildlife by ways that do not admit cruel treatment with animals in accordance with the principles of the humanity.
- Serviceability of the special application with wildlife.

- Necessity of responsibility for violation of legislation of the Republic of Kazakhstan in wildlife security, reproduction and application sphere.
- Participation of citizens and public associations in resolving tasks wildlife security, reproduction and use etc.

Law "On the subsurface resources and subsurface resources use"

118. The Law regulates social relations in the sphere of subsurface resources use and focused on protection of interests of the Republic of Kazakhstan, rational and complex survey and subsurface resources use. Essential condition of execution of right on subsurface resources use is provision of subsurface resources pollution prevention and reducing of harmful impact of subsurface resources use operations on environmental.

Law "On specially protected natural areas"

119. According to the Law of the RoK "On SPNA" (a. 43, i.3; a.48) "… in protected area of reservation, national or regional park one should provide and implement measures on preservation of living environment and reproduction conditions of flora and fauna objects, migration routes and places of animal concentration, assure inviolability of areas, having special value as living environment of wild animals, and also other objects of state natural – reserved fund".

Law "On architecture, town planning and construction activity in the Republic of Kazakhstan"

120. The Law regulates relations, arising between state organs natural and legal persons in a process of architecture, town planning and construction activity in the Republic of Kazakhstan, and focused on formation of full-fledged living environment of man, stable development of population centres and inter-settlement territories.

Law of RoK "On national security of the RoK", in particular articles 1, 24 and other

121. The Law is based on the Constitution of the Republic of Kazakhstan. One of types of national security is ecological security – condition of protection of live importance interests and rights of man and citizen, society and state from threatening, occurred in result of anthropogenic and natural impacts on environment. Ecological security, as part of national security, is an essential condition of stable development and acts as basis for preservation of natural systems and maintenance of proper environment quality.

122. Preservation and improvement of environment condition, rational usage of natural resources – one of the main national interests of the RoK.

Law of RoK "On civil protection" dated 11.04.2014 ref.No.188-V (Chapter 14. Provision of industrial safety)

123. The Law is focused on adherence of requirements of industrial safety, determinate in technical regulations, rules of industrial safety provision, instructions and other normative acts of the Republic of Kazakhstan.

- **Resolution of the Government of the RoK dated the 23th of August 2004 ref. No. 899 "On some questions of licensing and ecological audit implementation"**

124. Approves rules of ecological audit activity maintenance and implementation of ecological audit for environment protection.

- **Resolution of the Government of the RoK dated the 5th of January 2005 ref. No.2 "On approving of Rules of establishment of limits and proscription on use of fauna objects"**

125. Rules establish limits and proscriptions in aims of preservation and reproduction of fauna objects considering geographic, climatic peculiarities of ranges (distribution areas) of animals habitation.

- **By territoriality**: at all territory of the Republic of Kazakhstan, at interregional, basin level, in administrative borders of separate territorial units or their part, and also separate hunting areas, reservoirs and (or) sections;
- **By terms**: constantly (without terms of action) or in specified terms;
- **By application of methods**, ways and devices for capture of fauna objects, their parts and derivates.

The concept of the Republic of Kazakhstan establishing and maintaining a unified state monitoring system for the environment and natural resources for 2007-2015.

126. The concept is an information system that includes monitoring of the environment and natural resources, as well as analysis of the actual state of the environment and natural resources to ensure environmental safety, preservation, reproduction and rational use of natural resources of the Republic of Kazakhstan. It is designed to provide timely and reliable information on the state of the environment and natural resources for the development and adoption of best management solutions in the field of environment and natural resources by the government and other agencies, as well as facilitate the assessment of the effectiveness of conservation measures and contribute to the prevention of environmental emergencies.

127. Also there are laws relating to the project activities in the area of construction effective in the Republic of Kazakhstan:

(a) Health Protection

(b) On Radiation Safety of Population

(c) On Technical Regulation № 603-II (with amendments and additions as of 10.07.2012, the)

(d) On Sanitary and Epidemiological Welfare

(e) About emergency situations of natural and man-made

(f) On Mandatory Environmental Insurance.

(g) On the order of consideration of physical and legal entities as of 29.12.2014, the

(h) Technical Regulation "Safety requirements for the design of roads"

Other regulations pertaining to the Project implementation

128. The following regulations governing the basic physical and sanitary and epidemiological impact during the road construction are adopted in the Republic of Kazakhstan. The most important of them are:

(a) GOST 12.1.003 - 83 “Noise. General safety requirements”
(b) GOST 20444-85 Noise. Traffic flows. Methods of measuring noise characteristics.
(c) SIT 2.04 - 03 - 2005, “Noise Protection”.

129. Noise standards in the Republic of Kazakhstan conform to the relevant ADB requirements. Standards of the Noise Pollution Level in Kazakhstan are illustrated in the Table 4 below.

Table 4: Allowable Noise Levels

Activity Description / Category	**Leq**	**Lmax**
Areas immediately adjacent to hospitals and health centers ,	Day = 45 Night = 35	Day = 60 Night = 50
Areas immediately adjacent to residential buildings, clinics, dispensaries, recreational centers, libraries, schools, etc.	Day = 55 Night = 45	Day = 70 Night = 60

Areas, immediately adjacent to hotels and dormitories	Day = 60 Night = 50	Day = 75 Night = 65
Recreational areas of hospitals and health centers	35	50
Recreation areas on the territory of microdistricts, residential complexes, recreational and health centers, schools and nursing homes, etc.	45	60

Source: Ministry of Health of the Republic of Kazakhstan.

- Sanitary regulations "Sanitary and epidemiological requirements to air quality in urban and rural areas, soils and their safety, maintenance of urban and rural settlements areas, work conditions with the sources of physical factors affecting a human". These Regulations were approved by Kazakhstan Government Resolution No. 168 dated of 25.01.2012.
- RD 211.3.02.05-96 "Recommendations for conducting economic activity on resources (soil, vegetation, wildlife).
- And others.

INTERNATIONAL COOPERATION

130. Within the framework of international cooperation in the field of environment protection, the Republic of Kazakhstan is a party to and participates in a number of Conventions and Protocols as well as Contracts related to environmental issues. These documents are listed and briefly described below.

International Conventions and Protocols the Republic of Kazakhstan is a Party:

131. The brief descriptions of Conventions those relating to the Project are shown below. The other Conventions, ratified by Kazakhstan, but not relating to the impact of the project will be shown in the list below.

№	Name of the Convention	Characteristics/Purposes of the Convention
1.	Convention relating to Conservation of Migrant Species and Wild Animals which contributes in:	The convention is aimed at: - Prevention of danger of the migrant species extinction; - Implementation of the researches in migrant species area; - Protection of the migrant species.
2.	Convention relating to International trading in species of wild fauna and flora endangered	The Convention's goal is to ensure that international trade in the wild animals and plants does not threaten their survival; Agreement represents different protection levels for more than 33 000 species of animals and plants.
3.	Convention relating to access to information, public participation in decision-making and access to justice in environmental issues (Aarhus, June 25, 1998):	The Convention contributes in the protection of the rights of every person of present and future generations to live in an environment adequate for their health and well-being. Each Party to the present Convention shall guarantee the right of access to environmental information, public participation in decision-making regarding access to justice in environmental issues in accordance with the provisions of this Convention.
4.	Convention relating to International trading in species of wild fauna and flora endangered (Washington, March 3, 1973):	The Convention defines the rules for international trade in endangered species of wild fauna and flora endangered with extinction. Trade in specimens of these species must be strictly controlled in order not to endanger their survival, and it can only be allowed in exceptional circumstances.

5.	The United Nations Convention to Combat Desertification	This Convention's objective is to combat desertification and mitigate the effects of drought through an integrated approach aimed at achieving sustainable development in the affected areas, including improvement of land productivity, restoration, conservation, and sustainable use and management of land and water resources in order to improve the standard of living especially of communities.
6.	The Convention on Biological Diversity, Rio de Janeiro, June 5, 1992)	The objectives of this Convention are the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of benefits associated with the use of genetic resources, including through appropriate access to genetic resources and appropriate transfer of relevant technologies, considering all rights on those resources and technologies, as well as by appropriate funding
7.	Convention on the Protection of the World Cultural and Natural Heritage (Paris, November 16, 1972):	The Convention − Adopts a general policy which aims to give the cultural and natural heritage certain functions in public life and to integrate the protection of that heritage into comprehensive planning programs. − Establish, if they do not already exist, in its territory one or more services for the protection, preservation and promotion of cultural and natural heritage with an appropriate staff and the means to carry out their tasks. − Develop scientific and engineering solutions, working methods those allowing the state to eliminate the dangers that threaten its cultural and natural heritage. − Contributing in the establishment or development of national or regional centers for training in the protection, preservation and promotion of cultural and natural heritage and encourage scientific research in this area.
8.	The Kyoto Protocol to the UN Framework Convention on Climate Change (Kyoto, December 11, 1997).	Currently the Kyoto-2 Amendment has not been ratified in the Republic of Kazakhstan. Kazakhstan is not in the list of countries included in Kyoto Protocol Annex B. As for the quantitative greenhouse gas emissions in the Republic of Kazakhstan the National Allocation Plan for greenhouse gas emissions for 2014-2015 has been adopted (Decree of the Government of the Republic of Kazakhstan No. 1536 dated December 31, 2013). The Kyoto Protocol regulates: − Commitments to limit and reduce greenhouse gas emissions. − Implementation of policies and measures to improve energy efficiency, sustainable forms of agriculture, protection and quality enhancement for the greenhouse gas sinks and reservoirs.
9.	UN Framework Convention on Climate Change dated of May 9, 1992	This Convention's objective is achievement of stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system, in time sufficient for ecosystems to adapt naturally to climate change, allowing not jeopardize food production and to enable economic development on sustainable basis.

132. Kazakhstan is also a Party to the following International Conventions and Protocols:

- The Stockholm Convention on Persistent Organic Pollutants
- The Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade
- The Ramsar Convention on Wetlands
- The Framework Convention on the Protection of the Marine Environment of the Caspian Sea

- The Basel Convention on the Control of Transboundary Transportation of Hazardous Wastes and their Disposal
- The Convention on Long-range Transboundary Air Pollution
- The Convention on the Transboundary Effects of Industrial Accidents
- The Helsinki Convention on the Protection and Use of Transboundary Watercourses and International Lakes
- The Convention on Environmental Impact Assessment in a Transboundary Context (Espoo)
- Energy Charter Treaty
- The Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques
- The International Convention for the Prevention of Pollution from Ships
- The International Convention on Civil Liability for Oil Pollution Damage
- The Convention of the World Meteorological Organization
- The Vienna Convention for the Protection of the Ozone Layer
- The Montreal Protocol on Substances that Deplete the Ozone Layer

Legal framework of the Republic of Kazakhstan for the Environmental Impact Assessment

133. Procedure for Environmental impact assessment (EIA) in Kazakhstan is presented in detail in a number of relevant legislative and regulatory documents. Chapter 6 of the Environmental Code is devoted to the subject and stipulates the EIA basic principles and bindingness. In addition to this Code the following regulations of the Kazakhstan environmental legislation contain the important provisions:

- Instructions for the impact assessment from the proposed economic and other activities on the environment when developing pre-plan, pre-project and project documentation, approved by the Minister of Environmental Protection, Order No. 68-p dated of 28.02.2004;
- RD 211.3.02.05-96. Recommendations for assessment of impact from the proposed economic activity on the resources (soil, vegetation, and wildlife);
- Guidelines for the detailed design “Environmental Protection” Section to the SNIP 1.02.01-85;
- RD 211.3.02.01-96 “Temporary instruction on procedure for the conduct of the environment audit (environment and human health impact assessment - EHIA) for the existing enterprises in the Republic of Kazakhstan”, approved by Ministry of ecological and biological resources, RK 20.09.1996. Almaty, 1996.

ADB Safeguards

134. ADB Environmental and Social Safeguards are set out in the ADB Safeguard Policy Statement (2009), which aims at the analysis of the main threats to biodiversity, among which are the destruction of natural habitats and distribution of the species unusual for this environment, and rational use of natural resources. For this, a set of measures (actions) to prevent, minimize or mitigate the potential damage and risks are required to be developed. As a last possible remedy the appropriate compensatory measures in order to avoid the prevailing negative or positive impacts on biodiversity should be taken.

135. This Policy requires to: (i) identify and assess the potential impact at the early stages of the project cycle; (Ii) develop and implement plans to prevent, minimize, mitigate or compensate the potential negative impacts; and (iii) conduct consultations and provide information for all persons whose rights and interests are affected during the project preparation and implementation.

The Project Categorization

136. The ADB's "Environmental Provisions in ADB Operations" Guidelines, published in September 2006, provides definitions for different types of projects. With these calculations the Projects of Category B are characterized as:

"Projects that could have some negative environmental impacts, but are of less importance, in contrast to the Projects of Category A. An Initial Environment Examination (IEE) is required to determine whether the significant environmental impacts those being the basis for EIA are possible. In case an EIA is not required, the IEE will be considered as a final report on the environmental assessment".

137. With consideration for the conducted research generally reflected in REA (Rapid Environmental Checklist, Annex 7 for this Report), the project can be considered as B Category Project, i.e., a Project having some negative impact on the environment, which can be levelled or mitigated through a set of special measures. Hence, the given Project requires that an Initial Environmental Examination to be provided (IEE).

138. The Project is a part of Tranche 2 road construction, which is considered as category B. Besides, this project does not require land acquisition and resettlement to be carried out, and therefore in accordance with existing ADB policies does not overcome established limitis and parameters of the B project categories for social direction.

139. Around the project area, no any specially protected areas (SPAs), and the project will not impact on environmentally sensitive habitats of the local biological species.

Alternatives Analysis

140. During the period of road design, two alternatives were considered, including the "zero option" - "do nothing."

141. **A zero option** was rejected for a variety of reasons of economic and social nature. In addition, given that the above factors impact on the environment will not have a significant adverse effect, developers of design documents have been taken into account the following important considerations:

142. Continental position of Kazakhstan, a large area, low population density, huge reserves of mineral resources, remoteness of the country from the sea lanes, scattered areas of goods production and consumption cause a relatively large demand for land transportation means. Under the remoteness of settlements in Kazakhstan from each other, the reliability of roads is the basis of a normal life in the countryside, as increase in technical level enables improved access of rural populations to social services, administrative, cultural and business centers of the country, as well as other achievements of civilization. Currently, in Kazakhstan, over 90% of villages and district centers are connected to the cities only by motor roads. Therefore, it should be noted that lack of motor roads and their low technical condition represent one of the sources of social tension holding up in rural areas.

143. Freight density in Kazakhstan's economy is one of the highest in the world, and is mostly dependent on the transport complex. The quality of roads connecting various settlements and enterprises in such conditions is a major, if not decisive advantage in this sphere. Very poor condition of the roadway (on the road cover, there are lengthwise and transverse cracks, rutting, subsidence, edging) leads to an increased rate of depreciation of vehicles, increase in traffic accidents, reducing the goods delivery rapidity and other negative consequences.

144. **B.** An option associated with the construction of road across the previously untouched areas was dictated by the need to establish a bypass road with the shortest path from the main road. The map provided above shows that the deviation of the track to the left of the route through the new land will:

- save financial resources of the Project,

- reduce the time of construction,
- reduce the impact on the environment, as well as
- eliminate the need for passage of transit traffic through the town.

This leads to:

- the possibility of reducing congestion of city roads,
- reduction of urban air pollution in transit by road,
- reduction of noise pollution,
- reduction of the travel time of transport due to improved road conditions.

145. Possible negative impact on the environment can be therewith effectively mitigated and/or excluded through a specially designed set of measures during construction and operation of the facility.

146. On the contrary, laying tracks on the existing roadway will not allow to realize the above objectives. In this regard, the selected design decisions seems reasonable and justified.

PHYSICAL ENVIRONMENT

147. Stated parameters concerning environmental conditions at the project site are based on local reports, informational materials provided by local authorities and visits of project activities site.

Physiographic conditions

148. In terms of relief conditions and natural historical conditions the territory under consideration is divided into Ustyurt Plateau and Mangyshlak Peninsula.

149. Ustyurt Plateau is located in the central part of oblast and occupies an area of 161 000 km2. It is represented by a high flat plain separated from adjacent plains of the Caspian Depression and Mangyshlak Peninsula by cliffs. The height of cliffs varies from 30 to 280 m; their shoulder is indented by narrows and deep gullies in many places.

150. The north border of Ustyurt following westwards in almost latitudinal direction, between natural landmarks Masak and Manai, turns suddenly to the south and passes around Chagyrly sands and Shumyshtykol hollow from east and then from south, making ledges represented by Tyuya-muyuk-chappa and Myn-su-almas natural landmarks. Then a line of cliffs passes around Ashek-Tai-pak sor from the east and approaches Miortvyi Kultuk sor near Manasha gulley. Westwards cliffs of Ustyurt start with lining up Kaidak sor, then cross Mangyshlak Peninsula and go through Karyn-Yaryk trench to the northern coast of Kara-Bogaz-Gol. The southern and east borders of Ustyurt are located outside of the area under consideration.

151. The large structural low (with absolute elevation of 70-80 m), is located in the northern part of the plateau, where sands and Sam-Samatai solonchak are located.

152. The characteristic feature of Ustyurt relief, especially for its central and western part, is an interchange of valley-like structural lows and small structural denudation plateaus rising above axial region of the bottom of these lows by 5-6 m at average.

153. The flat ridge Karabaur lies in the central section of the plateau in almost latitudinal direction with marks up to 290 m. The highest section of Ustyurt join Mangyshlak in south-west. In general, the plateau surface has a plain character but in some places is dissected by huge deflation hollows, bottom of which is covered by solonchaks and takyrs.

154. Among largest of them are the following: Kara-tyulei, Kara-Yaryk, Kosbukak and others.

155. The most often the hollows have adjacent sand massifs: Sam sands, Karyn-Yaryk sands, Saigyr-kum sands and others and others, smaller sand massifs. The origin of these sands is unsufficiently determined. Apparently they are wind-blown sediments of ancient alluvial deposits of large rivers. Traces of quaternary and contemporary rivers in Ustyurt are lacking.

156. Mangyshlak is located in western-most part of the oblast. The southern part of the peninsula represents a plateau plain and its northern part is occupied by low-mountain chains Karatau, Northern and Southern Aktau with separate peaks attaining height marks of 555 m (Besshoku mountain) and 531 m (Otpan mountain).

157. There is a deep deflation hollow Karagiye with a bottom lowest point 132 m below sea level in the western part of plain Mangyshlak.

158. There are sand massifs Ak-Tyube, Sausskiy and Kur-Kizil (Burlyuk-Kum) in the eastern part of the mountain Mangyshlak.

Climate

159. The climate[4] in the area of road construction is strongly continental and arid climate, main climate pattern of which are cold winter and hot summer with high daily temperature oscillations and high annual amplitudes. This is a typical climate for a vast desert and semidesert area.

160. Yearly temperature average in the region is +9.6 C. Absolute air temperature maximums (more than 50° C) can take place in July and August, while absolute minimum temperatures reaches -30° C and -34° C in January in the area between Shetpe settlement and Sai Utes.

161. According to long-term data of observations of Aktau meteorological station average yearly air temperatures are +11,3°C; the hottest month (July) is characterized by average many-year temperatures +25,6°C, the coldest month, January, -2,9°C. The temperature of a coldest five day period with reliability of 0,98 is minus 19°C, with reliability of 0,92 is minus 17°C; the lowest daily temperature with reliability of 0.98 is minus 21°C, with reliability of 0,92 is 19°C.

Table 6. Characteristic periods based on air temperature

Average temperature of the period	Data on the period		
	beginning, date	end, date	Duration (days)
below 0°C	16.XII	7.III	79
below 8°C	3.XI	8.IV	157
below 10°C	26.X	15.IV	172

Precipitation

162. The amount of precipitation in the area under consideration usually does not exceed 150 m annually. Precipitation mainly falls in the form of rain and in winter in form of snow. The integral snow cover at large areas usually lies only during some weeks in a winter period (January – March). On the basis thereof, road traffic conditions in these sections climatically are well enough throughout the year. The low precipitation at the project area results in extreme dry period during summer months. However, long duration of the warm period is favorable for construction works during the year. Hails, snowstorms and sandstorms are rare.

163. The annual precipitation is 150-250 mm with a maximum in the area of mountain Mangyshlak.

164. As a rule, the maximum values of precipitation at the territory of Mangistau oblast are fixed in December (22-40 mm/month). The least precipitation falls in August-September (2-29 mm).

165. During the warm period (April-October) falls 50-75% of annual amounts of precipitation and only in the extreme south-west they make about 40% of annual precipitation. At the territory located to the east of Caspian Sea, the total of precipitation during the specified period changes from 75 to 125 mm, and its maximum falls on the area of the mountain Mangyshlak. The precipitation in central and northern areas during warm period amounts to 125-275 mm.

[4] The meteorological information fixed at the territory of the project implementation is based on long-term observation of meteorological stations Tuchibek, Duken and Aktau (3).

166. The duration of the rainless period in Mangistau oblast in some years is up to three months.

167. The highest amounts of precipitation per day have place commonly in July-August, and within a rain can fall up to 60 mm.

168. The average annual precipitation in the area under consideration is exceptionally low and amounts to 172 mm, including in cold period 61 mm. The thickness of the snow cover with exceedance probability is 20 cm.

Table 7. Table of data on number of days with certain meteorological conditions, important during road construction works:

Meteorological works in area of project works	Number of days
Hail	0,3 day
Glaze ice	6 days
Period with winds of velocity above 15 m/sec.	45 days
Period with mists	30
Period with snowstorms	18

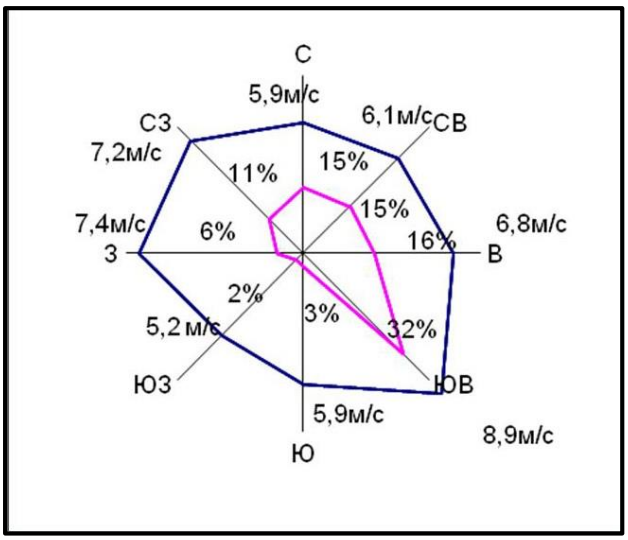
Wind

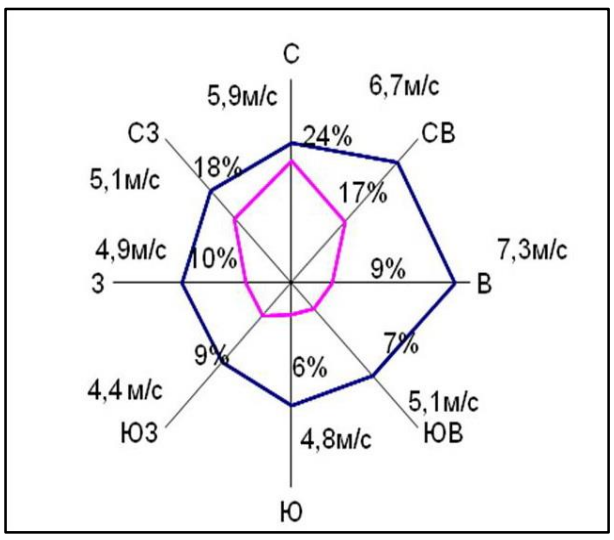
169. The wind regime of the area under consideration is a result of barometric circulation factors, orography and by its nature is various enough.

170. As a result of heavy gradients of the atmospheric pressure the highest average monthly velocities are registered in a cold season, and these velocities amount to 3.0-4.5 m/sec. in the conditions of a broke country and 4.5-6.5 m/sec. in the conditions of a flat country. The average monthly velocities on the shore of the Caspian Sea increase up to 7 m/sec.

171. Winds with velocity ≥15 m/sec. are registered commonly and in some months of the cold period their frequency on the seashore rate at 3-5% and 10-12%. The strong winds often are accompanied by snowfalls and may have long duration and occur continuously during a day and more. Sometimes wind velocity increases up to 20-25 m/sec. in the case of the cyclone passage. But the low and medium winds (up to 5 m/sec.) have the highest frequency averages at amount of 50-70%. The number of cases of windless weather is variable from 20-30% at the north-east of the territory up to 5-10% at the seashore.

Figure 2. Wind rose in January and July





172. Wind velocity in the transition period (April-May) remains significant. So, in May average monthly wind velocity varies within 4-6 m/sec. In summer, velocities decrease and, as a rule, reach their minimum values (about 3-4 m/sec.) in August-September due to more blurred baric field of velocity. The frequency of low and moderate winds in the warm period is great enough (70-80%); number of cases with a windless weather varies from 15-20% at average up to 5-10% at the seashore. The strong winds often lead to dust storms, which are typical for the territory of the Kazakhstan. As a rule, they are short-term (from 10-20 up to 40-50 min.), but in some cases the duration of dust storms exceeds 10 hours. At the offshore strip of a such a relatively large water body as Caspian Sea in summer there are local winds – breezes, where during the daytime the wind blows from the water body to the land and during the nighttime the wind blows from the land to the water body. There are mountain-and-valley-breezes at the mountain areas.

173. The wind velocity has a well-defined diurnal variation, and as a rule, maximum velocities are present in the afternoon, and minimum velocities are present before the rising of the sun.

174. The average wind differential velocity at 13:00 and at 7:00 amounts to 0.3-0.6 m/sec. during the cold period of the year and 1-3 m/sec. during the warm period of the year.

Table 8. Characteristics of the snow transport and wind conditions at the project area

Indicator name	Month	Unit of measurement	Compass points							
			N	NE	E	SE	S	SW	W	NW
Wind frequency	January	%	15	15	16	32	3	2	6	11
Average velocity	January	m/s	5.9	6.1	6.8	8.9	5.9	5.2	7.4	7.2
Wind frequency	July	%	24	17	9	7	6	9	10	18
Average velocity	July	m/s	5.5	6.7	7.3	5.1	4.8	4.4	4.9	5.1
Snow transport volume, Ak-Kuduk	January	m^3/lin.m	2	2	8	5	1	2	5	11
Snow transport volume, Kyzan	January	m^3/lin.m	8	7	26	12	9	1	42	10

175. In accordance with the SNiP (Construction Rules and Regulations) of the Republic of Kazakhstan dated on 2.04-01-2001 there were defined a climatic zone IV and a road building climatic zone V under the SNiP (Construction Rules and Regulations) of the Republic of Kazakhstan 3.03.09-2006*.

Air Quality

176. Air quality in the area of future works can be approximately assessed on the basis of measurements carried out in similar conditions or adjacent roads in Mangistau region. Within the framework of previous projects, in particular road construction in Tranche 2, the number of parameters has been measured, such as: carbon monoxide (CO), nitrogen dioxide (NO2), hydrocarbons (CH), sulfur dioxide (NO2) and suspended particles. In areas tested it was found that the parameters do not exceed the maximum concentration limit.

Table 9: Estimated air quality within 10 and 50 meters from the road shoulders (all measurement units are Mg/m^3)

Parameters Models	Ecological requirements in Kazakhstan	10 m far from road shoulder	50 m far from road shoulder
Carbon Monoxide	3.0	2.44	1.11
Nitrogen Oxide	0.04	0.51	0.07
Hydrocarbon	1.5	0.29	0.10
Total Suspended Particles (TSP)	0.15	0.036	0.016

(Source: EIA, prepared by Kazdorproject in 2010; estimates are based on Cost Estimate Model Program CREDO)

Noise

177. The results of noise pollution measurements made at different points of the route e.g. in October 2011 as part of works on preparation of documentation for Tranche 2, near hospital, Central Street, Zhetybai village allow us to conclude that nowhere in the checked areas the existing noise level does not exceed permissible level according to the norms of Kazakhstan (GOST 12.1.003-83 Noise. General safety requirements).

178. However, with the possible increase in traffic congestion on the highway associated with traffic increase after reconstruction of road, and also the likely technical modification of the vehicles in the future, the ultimate level possibly will be reached. On the other hand, reduction of technical measures, and speed limit can positively reduce the level of noise.

179. Since the starting of monitoring, there were some results that significantly reduce the potential impact: initially certain places where noise could adversely affect (Central Hospital in Zhetybai village) now are not the subject for concern due to the construction of bypass road around Zhetybai village and its location will pass through the uninhabited steppe and grassland.

GENERAL GEOLOGICAL STRUCTURE

180. District of reconstructed road section is located within the Ustyurt plateau.

181. The area considered has a diverse and complex geology structure. In general, it is the south-western outskirts of the Russian Platform, intricately linked with a younger Epihercynian platform formed on the northwestern outskirts of the Central Asian mountain structures. This area includes: the Ural folded region, the North Caspian depression, Ustyurt and Mangyshlak folded region.

182. Ustyurt plateau is formed with almost horizontal strata of Cretaceous and Tertiary deposits.

183. Geomorphologically, the project arean is an undulating plain with alternating flat ridges and flat plains. The vast areas with completely flat fields associated with the broad-backed summits of the plain rises. The swell-like ridges and some hills up to 10m stand out against their background. Extensive dry hollows often with steep slopes, dry beds of ancient and modern water streams are widespread in the project area.

184. Cretaceous sediments are exposed in the nuclei of shallow anticlinal structures are shown in the upper section of the calcareous and marlstone. Overlapping paleogene strata is composed of mainly sand-clays formations with total capacity of 500 m. In the upper part of the section of Paleogene rocks and in the lower Neogene the sand-clay formations prevail, which are higher in the sequence are gradually replaced by gypsum-bearing clay, lime, marl and lime-sandy sediments and seawater and saltwater fauna.

185. The total thickness of the Neogene strata rocks reaches 200-250 m; it increases in synclinal troughs, and decreases in structural uplifts.

186. Mangyshlak is a folded region, and attenuates in the western part of Ustyurt. In the folds nuclei the sand and shales of the Permian and Trias go out, which are unconformably overlain by Jurassic sand-clay coal-bearing deposits with the capacity of 150-340 m. The lower cretaceous sand-clay deposits up to 400 m and the upper cretaceous sandstones, marls, white chalk, with a total capacity about 600 m are imbedded upwards.

187. The Tertiary deposits are in the southern steppe part of Mangyshlak of the total capacity of up to 250 m, consisting of three complexes: the lower - lime-sandstone (Paleocene), medium - clay (Eocene-Oligocene) and upper - sandy-marly (Miocene).

Figure 3. Geological map of the Republic of Kazakhstan

188. Quaternary deposits, in both Ustyurt and Mangyshlak, are very poorly developed, since both these areas are areas of deflation processes that prevail here since the late Miocene.

189. In the east, west and in most northern places the Ustyurt is clearly limited by the winding line of breaks (cliffs) of erosional origin, the height of which sometimes exceeds 200 m.

190. The geological structure of the project area includes Sarmatian and partly Pontian deposits. Sarmatian deposits of Miocene are presented by the flag-like limestones with the interlayers of oolitic and shelly limestones and flag-like marls. Pontian deposits of the lower Pliocene are represented mainly by shelly limestone, detrital rocks, with interlayers of marl and less often of clay. A characteristic feature is the close proximity to the daylight

surface of half-rocks in the roof of which a weathering crust has developed in the form of “gypsum cap”, of usual capacity of 0.5-4m. This cap is a set of fragments of weathered shell limestone mixed with amorphous gypsum and sand-clay material. The quaternary deposits hood almost the entire territory with the cover from the first meters (positive forms of landscape) to the first tens of meters (in the valleys and depressions). Genetically the Quaternary deposits are alluvial, proluvial, eluvial and diluvial formations, lithological variety of sands (from silt to gravel), sandy loam, loam, and clay. The nature of depositing is predominantly horizontal.

Geologico-engineering conditions

191. The district of reconstructed road section is located within the plateau Ustyurt.

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Physical and mechanical soil properties of the subbase

195. According to the results of office study of the drilling works and laboratory testing results, the soils constituent the research area has been divided into engineering-geological elements (EGE) in the stratigraphic sequence of their occurrence.

Contemporary Formations (tQIV)

196. EGE 0 is man-made soil: sandy clay of solid consistence, artificially compacted – is present in the railway embankment.

Eluvial Quaternary Formations (eQ).

197. EGE 1 is the sandy loam of greyish - brown color and of solid consistence. It is deposited from the daylight surface with the capacity of 0.9 – 1.2 m.

Eluvial Mezo - Kainozoic Formations (eMz-Kz).

198. EGE 3 is the sandy loam of grayish - pink color and of solid consistency, with the inclusion of gruss and rock debris particles from 20 to 40%. It rests in the roof of the Neogene rocks and forms a dispersive zone of weathering crust on shelly limestone. Layer’s thickness is 0.5 ÷ 1.8 m.

Neogene Deposits (Ng1).

199. EGE 6 is shelly limestone of grayish-pink color, fractured, highly weathered – CWEATH = 0.43, of very low strength - tensile strength < 1 MPa (under mechanical impact it splits into grussy and detrital fragments with sandy loam filler). According to softening factor it is referred to soften ground – C SOFT = 0.69. The rock density refers it to the soft grounds. It was opened at the depth of 1.0 ÷ 2.8 m. The layer penetrated thickness is 16.7 ÷ 24.0m.

200. EGE 6-1 is grayish-white limestone, fractured, highly weathered - CWEATH = 0.56, of low strength - tensile strength < 3MPa (under mechanical impact it splits into detrital debris and boulders). According to softening factor it is referred to soften ground. It was opened on the section of the designed transport interchange from the depth of 19.2 ÷ 19.7 m. The layer penetrated thickness is 5.3 ÷ 5.8 m

201. Soils composing the upper horizon of the project section base are commonly exposed to frost heaving.

Structural properties of soils of the working layer and roadside

202. All roadside soils are characterized by low humidity and low density, which ranges widely and corresponds to the compaction factor:

- Sandy loam EGE 1 = 0.65 - 0.93; sandy loam EGE 2 = 0.68 - 0.87; EGE loam 4-1 = 0.76;
- Sand EGE 5 = 0.78 - 0.87; sandy loam EGE 3 = 0.60 - 0.83; loam EGE 4 = 0.67 - 0.79, which is below the standards of SNIP RK 3.03-09-2006 * “The Motor Road”.

203. The Quaternary soils at the roadside on most of it are saline. They have average sulphate and seldom low salinity. Salinity is absent in areas of silty sand deposits (EGE 5) sandy loam (EGE 2) resting in areas exalted of the microrelief forms.

204. The soils of eluvial genesis (EGE 3 sandy loam, EGE 4 and EGE 4-1 loam) are everywhere saline. Salinization of soils has a sulfate character, seldom chloride-sulfate or chloride. Salinity is mostly average, in rare cases, low and high (section 30 PK + 00 of approach to the Zhanaozen town).

205. When using soils for subgrade construction in areas of 2 Type the soil salinization must be considered when defining the height of embankment in accordance with the Note 3 to Table 7.2.1 of SNIP RK 3.03-09-2006 * “The Motor Roads”.

206. The road section according to its nature and degree of humidity is mainly referred to the first type of locality. The exceptions are areas of intersection of numerous closed depressions with drainage not provided, where the longitudinal slope is less than 2%. These road sections are referred to the 2nd Type of locality according to the nature and degree of hydration (water stagnation is possible in the ditch-reserves during rainfall and snowmelt period).

207. Within the road sections with transport interchange, according to the road classification and physical and mechanical properties of soils, three EGEs have been identified from the soil layers of different building properties. The upper horizon up to the depth of 2.2 ÷ 3.0 m is composed of the clay soils of eluvial formations (silt sandy loam and silt grussy sandy loam with remnants of the original rock, shelly limestone lenses of capacity of 20 ÷ 25 cm). The clay soils are characterized by low consolidation (CCONS is 0.68 ÷ 0.72) and low humidity. Compacting requires additional moisture when used in the working layer. The are no restrictions on the use of soil in the working layer, salinization of soils (average sulphate) will not affect the stability of the subgrade soil, as there are no groundwaters in areas of the road interchanges, and the drainage of surface water is provided by the landscape. The nature and degree of moisture of the areas are referred to the first type of locality.

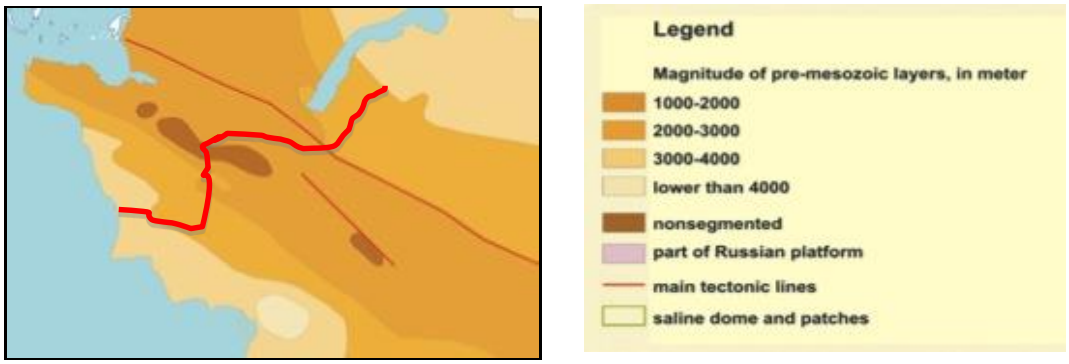
208. At the base of the section, in some areas, from the depth of 2.2 ÷ 2.8 m, the shelly limestone, fractured, strongly weathered, very weak, of grayish-pink color is opened.

According to the nature of formation and strength characteristics, shelly limestone has been referred to the half-rock soils. Considering the depth, the soil is not included in the core use.

Seismicity

209. Although the geological map below shows two tectonic lines converging on the south-east of the Shetpe settlement (Figure 4), the examination of seismic zoning, specified in IEIA, defines the entire area as a “seismically inactive”. On the other hand, according to the Mangistau Oblast Department of Ecology under the Ministry of Environmental Protection in the Aktau city, seismic events up to intensity 5 on the Richter scale were recorded near the Shetpe for the past decades. Project Expert-engineers also believe that the seismicity is not a reason for concern in the implementation of the road construction project, arguing that the only locations of bridges are far from the above identified tectonic dislocations.

Figure 4: The main tectonic lines



Hydrogeology

210. The project area is characterized by deep-laid groundwater on 20-60m, mostly bitter-salty. There are no vadose water and permanent streams. Available temporary water streams according to the feeding type are related to snow fed. Ground water all along the route is not available.

211. The presence of large areas those having no surface runoff is typical for most of the described territory with the desert climate and flat surface.

212. The groundwater is generally available only in the middle of deep aquifer. This ground water is often salty and water production for the project needs is not planned. Small springs provide very limited water supply, and will not be used as a source of water for the needs of the project.

Hydrology

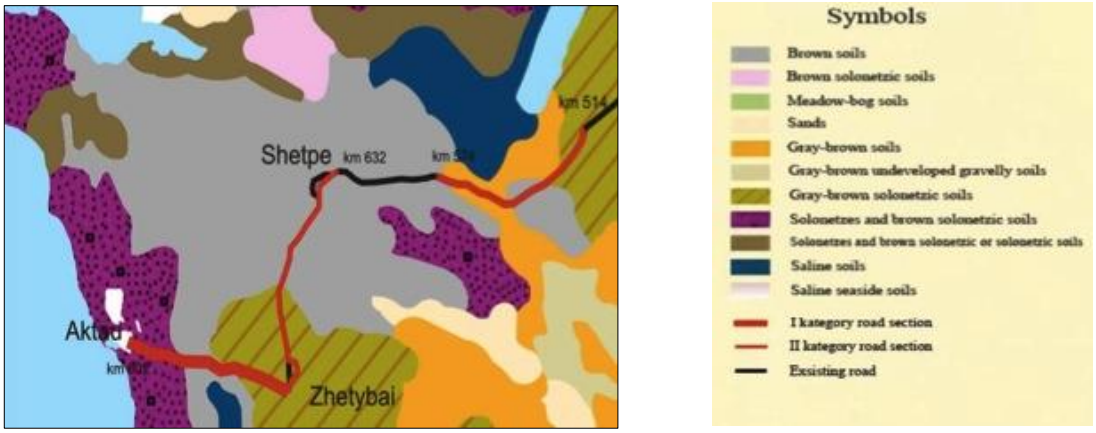
213. There are no surface water bodies on the considered area where construction works will be carried out.

Soil Mantle

214. The area of the alignment belongs to the desert zone. The gray-brown desert soils, very poor in humus are extensive in the region. Due to the low rainfall and high evaporation brown earth and gray soils are calcareous from the surface. Large amount of lime gives to soils a gray tint. The soil mantle is poorly formed, humus soil horizons also stands out weakly. Vegetation cover is of a desert type, rare, and represented by Anabasis salsa and sagebrush and Anabasis salsa associations. Removal of top soil within the road side (within the project roadside reserves) is not required. The gray-brown desert soils, very

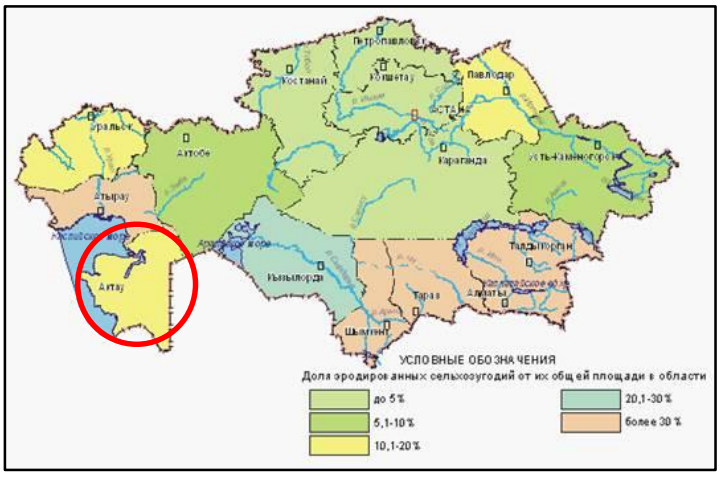
poor in humus are extensive in the region. Humus horizon in them is underdeveloped, and the soil mantle is almost unformed. Due to the low rainfall and high evaporation brown earth and gray soils are calcareous from the surface. Large amount of lime gives to soils a gray tint.

Figure 5: Map of regional soils



215. As a whole, level of soil erosion in the Province is considered to be medium, reaching in separate cases 20% of its total area. Below, there is a map demonstrating data of soil erosion level in Mangistau Province.

Figure 6. Map of erosion levels of the soils in Kazakhstan



Mangistau Province is circled in red with the level of soil erosion levels achieving 10-20%.

Ecological RESOURCES

Fauna

216. In accordance with reports, desert areas surrounding the Caspian Sea are occupied by 56 species of mammals, 278 species of birds and 18 species of amphibians and reptiles. Many varieties are classified as rare and endangered species. Such species include 7 species of mammals, 36 species of birds and 1 species of reptiles listed in the Red Book of Kazakhstan. Among the huntable animals the saiga has the great importance in the national hunting traditions.

217. Mammals. The representatives of the terrestrial fauna of shore areas of Caspian Sea species also are very various and include 56 varieties, 7 species of which are rare and endangered and listed in the Red Book of Kazakhstan. The last-mentionned category includes such varieties as fox, steppe polecat, wolf, saiga, as well as Eversmann's hamster. Generally, there are 30 species of mammals in the region and others have found

in small amounts at the desert landscapes in more vast Caspian region. There are some local species such as Brandt's hedgehog, Ustyurt mountain sheep, arenated rabbit, honeyeater and Caspian seal.

218. Red fox, steppe polecat and saiga are the species of mammals most used for commercial purposes and intended for hunting. Other more rare and more local varieties include wild boar, European otter and Raccoon dog.

219. Avifauna. As a whole, the Ustyurt desert area is characterized by a relatively great number of bird species. The known predatory and big varieties of birds are the following: short-toed snake eagle (Circaetus gallicus), golden eagle or berkut (Aquila chrysaetos), long-legged buzzard (Buteo rufinus), steppe eagle (Aquila nipalensis), Egyptian vulture (Neophron percnopterus), Saker falcon (Falco cherrug), Lesser kestrel (Falco naumanni), chukar partridge (Alectoris chukar), houbara bustard or North African houbara (Chlamydotis undulata), Eurasian stone-curlew (Burhinus oedicnemus), greater sand plover (Charadrius leschenaultii), Caspian plover (Charadrius asiaticus), European turtle dove (Streptopelia turtur), black-bellied sandgrouse (Pterocles orientalis) and Eurasian eagle-owl (Bubo bubo).

220. The important insect eating birds are the following: Alpine swift (Apus melba), blue-cheeked bee-eater (Merops superciliosus), desert white-headed raven (Corvus ruficollis), olivaceous warbler (Hippolais languida), Syke's warbler (Hippolais rama), Asian desert warbler (Sylvia nana), streaked scrub warbler (Scotocercs inquiela), black-necked chaffinch (Oenanthe finschii), black-eared wheatear (Oenanthe hispanica), desert wheatear (Oenanthe deserti), rufous-tailed scrub robin (Erythropygia galactotes), desert finch (Rhodospiza obsoleta) and various larks: crested lark (Galerida cristata), horned lark (Eremophila alpestris), bimaculated lark (Melanocorypha bimaculata), greater short-toed lark (Calandrella brachydactyla). Along the shore of the Caspian Sea the whooper swan (C.rufescens) is a habitual bird.

Vegetation

221. Thin vegetation cover is rare and belongs to a desert type and is represented by biyurgun and absinthe- biyurgun associations.

222. The semideserts occupy vast areas of the southern part of the Caspian Depression, Ustyurt Plateau and plain part of the Mangyshlak peninsula.

223. The main plants of the Ustyurt Plateau are biyurgun, absinthe, white salsola, Salsola gemmascens usually grow in the form of the pure thicket with small addition of other plants or form complexes. The main role in the last-mentioned plays biyurgun that occupies vast areas at the Ustyurt, particularly in its southern part.

224. The vegetation complex at the northern part of Ustyurt is complicated by presence of sections occupied by white salsola.

225. In addition to vegetation areas typical for every vegetation area there are psammophytic variants of vegetation communities on the sand massifs and petrophytic variants on the rocky hills and tops of upland massifs in the area of the folded Mangyshlak and halophytic vegetation communities on the saline soils.

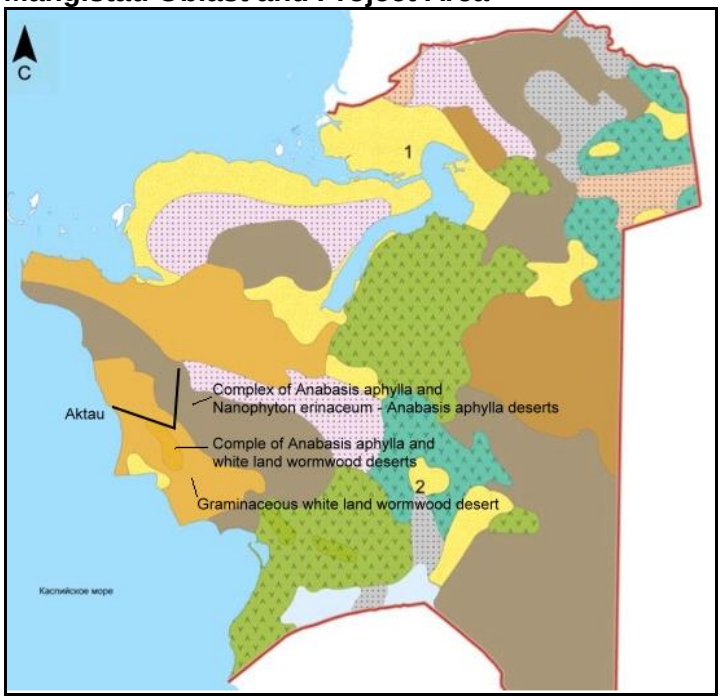
226. The territory where the Zhetybai-Zhanaozen road is situated, is essentially rich in salsola (62 %) – anabasis-salsa, Salsola arbusculiformis, Nanophyton erinaceum, Eastern salsola (Salsola orientalis), and also in absinthe – such species as whiteland absinthe (Artemisia terrae-albae), and mixed-absinthial type A. Turanica. At the sand areas usual vegetation species are halophytes, for the most part, saxaul (black saxaul, white saxaul); in other words, the characteristic feature is richness in psammophil bushes, among which are Calligonum, Ephedra, sand acacias (Ammodendron), Ceratoides papposa and varieties of absinthe (Artemisia santolina, A. kelleri, A. songarica, A. terrae-albae). The hard grasses such as Siberian wheatgrass (Agropyron fragile), Caspian Stipa (Stipa caspia), and Hohenacker's stipa (S. hohe-nackeriana) grow in groups on sand

altitudes. The last-mentioned groups of plants can grow on the sand depressions, for example in the Karkiya-Karakol hollow.

227. The Southern desert is rich in bushes and shrubberies of variable species composition. The prevailing groups include Salsola gemmascens, absinthe of species Artemisia kemrudica and Artemisia kemrudica. A low importance is attributed to groups of plants related to species of Salsola arbusculiformis, whiteland absinthe (A. terrae-albae), which are typical plants in northern and central deserts. At newly developed sand areas grow Dimo absinthe (A. Dimoana), and Mausolea eriocarpa.

228. The last-mentioned varieties form groups of psammophilous bushes and “bushes under the bushes” including sand acacias (Ammodendron), goat’s-wheat (Atraphaxis), Astragalus and a great number of species of short grasses (small globe thistle (Echinops ritro), Séguier’s spurge (Eurphorbia seguieriana), Syrenia siliculosa, which have been found along all of the road corridor. At the areas having less cohesive sand cover there is the absinthe of species Artemisia tschernieviana, at the sections where surface sand is often blown away by the wind. In such habitats there is a typical plant known as a giant ryegrass (Leymus racemosus).

Figure 7. The map of vegetation areas of the Mangistau Oblast and Project Area



Special Protected Areas

229. There are not any protected natural features in the close proximity of the project area. The Karakiya-Karakol State Reserve and State Regional Nature Park “Kyzylsai” are located far away from the project area at some tens of kilometers and they will not impacted during construction works.

Species listed in the Red Book of Kazakhstan

230. There are not inhabitations of the species listed in the Red Book of Kazakhstan. But this territory is adjacent to habitats of some red-book animals and this fact should be taken into account during project activities. The following species of the local fauna are under the state protection.

Table 10. Red-listed animals living in the project area

No	Species name	Scientific name
1.	Ustyurt mountain sheep	Ovis vignei arkal
2.	Goitered gazelle	Gazella subgutturosa
3.	Cheetah	Acinonyx jubatus
4.	Manul (Pallas's cat)	Felis manul
5.	Sand cat	Felis mardarita
6.	Caracal	Lynx caracal
7.	Marbled polecat	Vormela peregusna

Socio-economic conditions

Infrastructure around the project road

231. Part of the road is laid on the territory of Mangistau and Karakiya Raions of Mangistau Oblast and on the lands belonging to Maslikhat of Zhanaozen.

232. **Railroad**. Kazakhstan's rail network is well developed at national and regional level, but according to previous research conducted by ADB's experts on vehicles in 2010, it needs major repairs and upgrades. One main rail link runs over long distances (Shetpe – Say-Utes and further to Beyneu). Rail transport is expensive, slow, and hampered by huge bureaucratic red tape, particularly when dealing with cross-border transportation of industrial goods. Taking into account all the facts and aspects, rail transport is not competitive for Beineu-Aktau road, with the exception of bulk cargos such as ore, coal, building materials and oil.

233. **Water transport**: Because of its favorable geographical position in the central part of the Caspian Sea, the sea port of Aktau has an important role as a transit point for passengers and goods to the countries of the Caucasus and South-Eastern Europe. With the growing importance for regional traffic, maritime transport routes do not offer an alternative connection by land to travel to other destinations in Central and Eastern Asia. Number of passenger ferries departing from Aktau to neighboring destinations across the Caspian Sea is limited.

234. **Air transport:** Mangistau has only one major airport located in Aktau with cargo air transport is limited and currently cannot compete with the infrastructure and tariffs of road transport.

235. **Water supply system** in Mangistau Oblast remains one of the most pressing social problems. According to «NewTimes.kz» news agency as of November 2014, there are 60 populated localities in the oblast. Today centralized water supply is provided to 17 among of them and decentralized to 35. In other populated localities, because of the small number of residents arrangement of water supply system is impractical, thus imported water is used. Aktau and Zhanaozen with surrounding settlements, as well as oil producers consume 93% of the total volume of water. The share of all others accounts for only 7%.

236. However, it should be noted that the number of settlements with centralized water supply is gradually increasing. Thus, only from 2011 to 2013 the total amount of funding for this program was $ 9.1 billion KZT. With these funds local water lines were constructed in in several localities, including in Zhetybai village, Rahat 2 and 3 districts in Zhanaozen, and others. The total length of water lines constructed during this period is 158.4

kilometers.[5] According to akim of Mangistau Oblast on the construction of local water lines and water treatment plants, and missing water supply lines at the station of Zhetybai, the village of Munaishy and the village of Zhetybai, as well as water supply system from national budget was allocated 4.2 billion KZT in 2014.[6]

Table 11. Level of drinking water provision

Name of territory	Total population	Provision of drinking water										Coefficient of water demand	
		piped water				decentralized source of water		Surface water body (irrigation ditch)		imported water		towns	village
		open source of water		underground source of water									
		Number of population	%	Number of population	%	Number of population	%	Number of population	%	Number of population	%		
Total	544584	370170	68,0	77617	14,3	65472	12,1	0	0	31325	5,75	180-200	70-90
incl.													
towns	281798	268272	95,0	11672	4,20	0	0,00	0	0	1854	0,7	180-200	
raions	262786	101898	38,8	65945	25,2	65472	25,1	0	0	29471	11,2		70-90

237. **Wastewater disposal.** In 2012 Oblast has seven sewage treatment plants. The largest percentage of populated localities provided with sewage in Aktau accounts 95% and in Zhanaozen 85%.[7]

238. According to the Department of Statistics of Mangistau region, currently the percentage of living space provided with sewage in recent years has grown considerably, and its dynamics is as follows:

Table 12. Provision of the population with the waste water disposal services

Year	2009	2010	2011	2012	2013
Percentage of area provided with sewage (%)	69,5	69,5	53,6	68,3	82,2

239. **Solid municipal waste.** On the ground, there is no system for collection or disposal of solid waste; therefore, most of the areas around the settlements along the road is littered with plastic, household waste, glass bottles and broken glass. However, in the cities this system works even, though the percentage of coverage of this area is far from being complete and geographically uneven. For example, if in Aktau and Zhanaozen percentage of coverage of solid waste removal is 82-86%, in Shetpe - 5%, Akshukur - 13%. The main part of population does not enter into a contract with organizations for waste collection and is the reason of unauthorized landfills.

[5] http://newtimes.kz/eshche/regiony/item/8352-v-mangistauskoj-oblasti-reshayutsya-voprosy-vodosnabzheniya

[6] http://bnews.kz/ru/news/post/221120/

[7] http://kaznmu.kz/press/2013/03/13/окружающая-среда-регионов-мангистау/

240. **Power supply**. In Kazakhstan 87.7% of all electricity is generated in thermal power plants, which is due to the specifics of resource base of the country e.g. availability of large amount of fuel resources and a relatively small share of hydropower resources, which provide 12.3% of electricity production in the country. The republic has 60 power plants, among them 8 power plants is of national importance, 52 regional power plants, 22 regional power grid companies (RRGCs)[8].

241. Infrastructure development, primarily electrical energy industry in Mangistau Oblast, one of the fastest growing regions of Kazakhstan, has a direct impact on the development of oil and gas companies operating in this area in large numbers. Among the largest companies in the sector is "Mangistau Atomic Energy Combine - Kazatomprom" (MAEC) the largest diversified energy company of Kazakhstan, which is the part of "Samruk-Kazyna" group and is the only source of power in Mangistau Oblast, occupying a dominant position on the market of electricity, natural monopoly holder for production of heat and water.[9]

242. The territory of Mangistau Oblast is fully covered by energy supply. Power lines laid in various capacities throughout its territory, providing a power supply with the capacity of 35 kV, 110 kV and 220 kV.

Figure 8. Power transmission lines at the distance more than 1 km from the project road

Figure 9. Power transmission lines along the project road

243. In many places, the project road is crossed by various infrastructures: power transmission lines, pipelines, and power cables. During the design and construction work this may cause additional difficulties. Therefore, during preparation of design decisions particular steps must be considered with due diligence and taken so that objects of infrastructure would not be damaged.

[8] http://madeinkzclub.com/energeticheskaya-otrasl-kazahstana

[9] https://ru.wikipedia.org/wiki/Мангистауский_атомно-энергетический_комбинат_—_Казатомпром

Figure 10. Gas pipeline near project road

Figure 11. Gas pipeline near project road

Housing development and communications

244. The significant growth in housing is planned for the next few years throughout Mangistau region with a focus on the expansion of existing urban areas. Almost every second urban dweller has a mobile phone, television and personal computer. The use of mobile phones and signal coverage are provided almost throughout Mangistau region.

Demography and populated localities

245. With a total number of 607,000 people Mangistau Oblast is the least populated in Kazakhstan, on average 3,6 people per km^3. Every second person lives in cities, the majority live in the port city of Aktau (214,175 inhabitants), in the urban-type settlement Zhetybai (12,000), Zhanaozen (25,000) [10]. The demographic structure in all areas, which are crossed by the project road is highly dynamic, especially in connection with the current trend of mass migration of people from rural to urban areas. The percentage of population growth in cities is much higher in rural areas. For example, the city of Aktau was founded only 53 years ago, and now is the largest city in the Oblast. On the other hand vast steppes of Ustyurt platform rarely inhabited by a permanent population.

Ethnic and religious groups

246. In the project area, there are no ethnic minorities, which in everyday life would preserve ethnic characteristics and habits. All ethnic minorities that had emerged in Kazakhstan as a result of various historical processes and events, have gradually integrated into the Kazakh society, and now live among the local population, without any isolation within individual settlements or communities. Precedently nomadic Kazakh population also transferred to a sedentary lifestyle.

247. Historically and currently, the region is inhabited by many ethnic groups: Kazakhs (87%), Russians (8%), Tatars (0,8%), Armenians (0,7%), Azeris (1%), and Uzbeks (1.5%), Ukrainians and Lezgins (1%), Tatars (0,3%) and other minor, but well-integrated groups of only 1,5%. The latter group includes the descendants or resettled people from the Caucasus, Belarus, Korea and Germany.

248. Most residents (85%), both urban and rural are Muslims. Small ethnic groups have their own faith, and are Orthodox, Catholics and Jews.

[10] Sourse: Statistics Committee, Aktau, Mangistau Oblast (2014)

Quality of life

249. Daily life in settlements is severe characterized by the harshness of the environment. Most households do not have heating system that meets the requirements, no piped drinking water, privies are used, also in winter there is no service on clearing snow or maintenance of dirt roads. Number of educational and health facilities is limited.

250. As a result of shortcomings and gap in economic development, poverty is a common feature in the region. Official statistics mentions 49 villages in Mangistau Oblast and most of them are classified as "poor".

Markets and economically active population

251. As for the economically active population in Mangistau Oblast, statistics show that the majority of people (39%) are employed in the industrial sector (mainly in oil and recovery sectors) and in general service sector (57%). Unemployment is particularly high in rural areas, where there are no oil recovery industry nearby. The relatively low number of people (5%) are actively engaged in the agricultural sector, indicating the possibility of low income related to agriculture and domestic livestock breeding, as discussed in the previous section.

Condition of public health and common diseases

252. The relatively low standard of living, limited medical care in some parts of the region and dreary diet, health status of the population, in general, is unsatisfactory in almost all rural areas of the Mangistau Oblast.

253. One of the main problem areas in the field of public health is still high infant and maternal mortality. The main reasons of such cases among pregnant women and children under five are associated with anemia, diseases of the respiratory system and acute intestinal infections.

254. However, information on child and maternal mortality, presented in bi-annual report of akim of Mangistau Oblast in July 2014 shows that in this area there is a positive trend: infant mortality rate decreased from 12.35 to 9.5 per thousand live births (figure for the country - 10.6); maternal mortality - from 12.2 to 11 per 100,000 live births, which is lower than the national average.[11]

255. Also, there is a positive trend in the overall health care system: the incidence of tuberculosis has decreased by 9% and amounted to 32.5 per 100 thousand people (country-wise - 34.1); incidence of circulatory system decreased by 23% and amounted to 615.5 per 100 thousand population. This has led to an increase in average life expectancy, which increased from 68.5 to 71.5 years. There is an increasing network of health care organizations through the construction of outpatient clinics, medical and obstetric centers and clinics.

256. According to the local press, in Mangistau Oblast it is also observed a significant incidence of sexually transmitted diseases (syphilis) in some rural areas, such as, for example, Say-Utes.

Educational Institutions

257. Since the Soviet period, the school system is relatively well developed and diversified throughout the region, ranging from pre-school / kindergarten and primary schools to secondary schools. Attendance at school is compulsory until 18 years of age.

258. There are a number of colleges, universities and vocational training centers in the region. Most opportunities for university education are concentrated in Aktau city. A

[11] http://ogni.kz/rubrika/akim-oblasti/otchet-akima-oblasti-za-1-polugodie-2014-goda.html

decrease in the number of students in universities for the past 6 years has been noted, while the number of students attending vocational training centers has increased.

Minerals, Mineral Resources and Industry

259. The region is rich with the deposits of various minerals. In the early 1950-s the richest deposits of uranium and rare earth elements were discovered. Mineral reserves are unique in its diversity, capacity of deposits, and the availability of development. The richness of the region's mineral deposits to a large extent determines the economic development.

260. The mining industry is recognized as the third in the country in terms of total volume of production, thus oil and gas are the main products, with an annual production of 17 billion tons of oil in 2008. Most of the deposits are concentrated near Zhanaozen town and Buzachi peninsula.

261. In Mangistau region 59 oil and gas deposits have been explored. The explored oil reserves are expected to make more than 3 billion tons. In addition, geologists suggest that there are significant reserves of oil to be discovered in the Caspian Sea.

262. The oil produced is supplied through pipes to the local market (refinery in Atyrau city) and is exported (by pipeline Aktau-Samara and the sea through the port of Aktau). Mangyshlak industrial complex for nuclear power is a division of KazAtomprom which supplies the region with nuclear energy and water and includes a water-purifying complex.

263. Shell deposits used for construction purposes, is widespread in the region: up to date 30 deposits have been explored with total balance reserves of > 200 million m3. On the territory of Mangistau there are also 7 deposits of high-quality limestone with common proven reserves of > 10 million tons. Limestone is used in construction, agriculture, animal feed, for preparing the paint, putty paste, drill cuttings, and other purposes.

264. Mangistau region is rich with rare earths and metals: Mangyshlak Peninsula is one of the few regions in the world with the great source of high quality strontium12. These mountainous regions also include one manganese deposit with proven reserves of 2.7 million tons of copper and various rare mineral salts (mirabilite, thenardite).

265. Mangistau processing industry is mainly located in urban centers, including processing (food) industry (dairy products), textile and sewing industry, manufacture of rubber and plastic products, machinery, chemical industry, production of other non-metallic mineral raw materials, as well as other industrial sectors. In recent years, the annual output of industrial products as a whole amounted to about KZT 600 billion.

266. In general, it can be concluded that the industrial sector of Mangistau region is quite well developed. According to the Kazakhstan information resource LSIP Ltd13., the industrial sector in this region is represented by a large number of enterprises, summary data for which are shown in the table below:

Table 13. Industrial sector in Mangistau region:

No.	Industry Title	Number of Enterprises in the Region	Field of Activities, Geographic Location
1.	Machine Industry	3	Aktau, Industrial area, Zhanaozen, Zhetybai
2.	Metal Structures	4	Fabrication and repair of oil and gas equipment; fabrication and repair of oil preheaters; repair of drilling

[12] Strontium average amount in the local ores is up to 20%.

[13] http://www.lsip.kz/npa/spisok-predpriyatiy-mangistauskoy-oblasti-po-otraslyam

3.	Metallurgy	2	equipment; production of reservoir equipment; construction and installation works
4.	Tubular Goods	3	
5.	Chemical Industry	2	
6.	Power and Heat Power Production	1	MAEK-Kazatomprom Aktau, Industrial area
7.	Energy Industry, Equipment	1	Aktau, Industrial area
8.	Construction Materials Industry	15	Aktau, Zhetybai Concrete products; sand and gravel extraction; construction and installation works; paving slabs; wall panels; building plastics; shells; subsoil management; construction materials; road bitumen; plastic products
9.	Consumer Goods Industry	3	Aktau, Industrial area Sewn products, shoes, animal production and processing of animal products, consumer goods, stationery
10.	Food Industry	15	Aktau, Zhanaozen Production of bakery and dairy products; Production and sales of sausages; Production of confectionery: sweets, biscuits, fruit jellies; Production and sale of drinking water.
11.	Transport Services	11	Aktau, Industrial area Transportation of all types of cargo, crude oil and petroleum products, containers, passengers, animals; construction, operation and repair of all types of vessels, barges, floating docks; services for transportation of cargo and passengers by rail and road transport; repair and maintenance of motive power and vehicles
12.	Oil and Gas Services	35	Zhanaozen, Aktau Drilling, well workover, geophysical services, geology, oil products warehousing, etc.
13.	Electric Installation Works	2	Aktau, Industrial area
14.	Printing Works	4	Aktau, Industrial area

Gender issues

267. Gender inequality is particularly evident when comparing the wages or access to higher education. Available data for Kazakhstan indicate that the average nominal wage of women is about 20% lower than men's wages at the comparable positions. According to WageIndicator Project in September 2014, the median hourly Gross wage in Kazakhstan is 577,37 KZT for men, and 461,89 KZT for women.

268. Rural women make up the group with a higher risk of poverty (UNDP, 2002), and their number prevails among recipients of social benefits. The reasons for the low level of funds avalable for women classified as "poor", especially for married women in rural areas of Mangistau, are estimated by UNDP as follows:

- General lack of access for women to high-paying jobs, the national budget cuts for social services, the former women's sphere of employment;
- Limited opportunities for sale of agricultural products or vegetable gardening products, which is usually women's sphere of activity;
- This lack of capacity is significantly caused by poor development of the road network and missing of a reliable bus transport system;
- Limited opportunities for employment in catering and restaurant business (e.g., lack of cafes and restaurants along the road);
- Overburdening with housework and child care[14];
- Severe limitations in obtaining medical services, these services, as such, are limited in some rural areas;
- Limited access and benefits from social services;
- Lack of awareness of the legal rights of people in a society dominated by men.

269. Women especially young rural women in remote areas of Kazakhstan, are increasingly targeted by traffickers and involved in prostitution, often associated with the development of roads and objects as points of transmission of STDs (e.g., to the main meeting point in Beyneu).

Archaeological and Historical Heritage

270. In general, according to the local dwellers there are no historical or archaeological sites, which might be exposed to any adverse impact of project activities in the project area. Several individual monuments (Kairak Yersary relating to XIV-XV centuries, 20 km north-eastward, and Karagan Bosaga, a monument of the XIX century, 80 km eastward of Zhanaozen) does not fall within the project impact area.

271. A survey of the project area has showed that along the road there are more than 30 memorial monuments of the road accident victims. When these monuments are situated on the borders of the road extension their transfer will be required. This in turn will lead to the need to consult with the relatives of the accident victims, particularly in respect of those monuments that still under care and have a place of visit. Then, in the framework of special steps the necessary procedures will be carried out for such cases. These steps should be considered as part of the work of sociologist group for this Project.

272. Kazakhstan existing legislation related to these monuments, the Government Decision in particular states that since 2007 the installation of such monuments closer than 100 meters from the road has been prohibited.

273. The Table 14 below provides a list of monuments identified by PMC "Zhol-Sapa" Environmental Specialists in the course of the road survey in November 2014.

Table 14. The list of monuments identified along the project road

No.	Kilometers from the Road Kilometer Zero	Approximate Distance from the Road Shoulder, m	Road Side: right / left (going from Zhetybai to Zhanaozen)
1	5.4	16.5	Right
2	9.5	13.5	Right

[14] More than 10,000 mothers in Mangistau have four and more children.

3	14.0	11.25	Right
4	17.8	26.25	Left
5	18.4	18.75	Right
6	22.7	24	Right
7	26.1	15	Right
8	29.2	36	Left
9	29.4	15	Left
10	31.1	37.5	Right
11	31.3	39.75	Right
12	38.1	16.5	Right
13	38.0	16.5	Left
14	38.2	27.75	Left
15	38.6	6.75	Left
16	38.6	26.25	Left
17	38.9	16.5	Right
18	41.9	18.75	Right
19	43.6	37.5	Right
20	43.8	45	Left
21	47.2	15	Right
22	48.3	48.75	Right
23	49.0	37.5	Right
24	52.0	42.75	Left
25	52.0	45	Left
26	52.0	41.25	Left
27	52.4	15	Right
28	53.3	7.5	Right
29	57.0	11.25	Right
30	57.8	16.5	Right
31	60.3	22.5	Left

Land use and agricultural activities

274. Agricultural land use is limited along the road corridor due to harsh environmental conditions and the general shortage of water for irrigation. Groundwater mainly lie deep, water quality is poor due to high levels of salinity. In populated areas around the houses there are several household plots where vegetable crops are grown and irrigated with groundwater, which is obtained by hand pumps.

275. The lands are predominantly used for grazing, since there is almost unlimited resource of steppe areas. However, in most cases, the quality and availability of pastures and fodder plants are low.

276. However, there are two areas, at 27 and 37 km from Zhetibay, which were used by the local tenants for agricultural purposes. The land is state-owned. Several years ago there was a trial to use one of areas, the area No. 2 for the irrigated farming, supplied with water from the passing nearby water pipeline by the drop irrigation system. Currently, those areas are not being used, but fences are still remaining along the entire perimeter and in some places there are strained barbed wires. It may also be noted that farness of these fences from the edge of the road under reconstruction is more than 50 m in the former case and in the latter case. The above mentioned areas was returned to the state

at own requests of lessees due to unprofitability of their use. Currently, these areas are not used.

277. In the area of Zhetybai prevailing form of land use is industrial exploration of oil and gas.

Area No. 1

Fig.12.

Inside of the fencing of the area

Fig.14. Fencing at the area

Area No. 2

Fig.13

Plastic pipes for drop irrigation inside of the fencing of the area

Fig.15. Fencing at the area

Project Activities Impact

Methodology

278. Each environmental factor, which could be affected by implementation of the project has been addressed, and the scope and importance of each potential environmental impact has been assessed. The following definitions of significance of impact have been used in the environmental impact screening.

- No impact - a potential impact is assessed as having no impact if the project activity is physically removed in space or time from the environmental component, or if the impact is so small as to be un-measurable (i.e. negligible). No mitigation measures are required for project activities;
- Minor impact (positive or negative) - if an impact occurs but does not meet the criteria for a major impact it is considered minor. For minor negative impacts, appropriate mitigation measures have been identified;
- Major impact (positive or negative) - an impact is major if the project has the potential to affect an environmental component. The following criteria are used to determine whether an impact is major; (i) spatial scale of the impact (site, local, regional, or

national/ international); (ii) time horizon of the impact (short, medium, or long term); (iii) magnitude of the change in the environmental component brought about by the project activities (small, moderate, large); (iv) importance to local human populations; (v) compliance with international, national, provincial, or district environmental protection laws, standards, and regulations; and (vi) compliance with guidelines, policies, and regulations of Kyrgyz Republic and ADB. Where potential major negative impacts are identified, mitigation measures are developed to reduce them to acceptable levels. Where this is not possible, major negative impacts can act as a trigger for further detailed environmental impact assessment; and

- Unknown impact - the potential impact of the project will be assessed as being unknown if the magnitude of the effect cannot be predicted for any of the following reasons; (i) the nature and location of the project activity is uncertain; (ii) the occurrence of the environmental component within the study area is uncertain; (iii) the time scale of the effect is unknown; or (iv) the spatial scale over which the effect may occur is unknown. Where possible mitigation measures are identified for impacts categorized as 'unknown impacts'.

279. Mitigation measures have been developed according to the following hierarchy:

- The first priority is to make changes to the subproject design or location during the pre-construction phase to avoid the potential impact;
- The second priority is to make changes to the subproject design or location, or to implement other measures to minimize the scale or magnitude of the impact, or confine it to less sensitive areas;
- The third priority is to implement measures to mitigate any residual impacts to an acceptable level of impact; and
- The fourth and final priority is to compensate any residual impacts through 'in kind' compensation or monetary compensation.

Impacts of the road rehabilitation and maintenance

Type of the estimated impacts

Impacts of the construction works on the Physical Environment

280. It is necessary to consider several types of impacts. These may include direct and indirect impacts during construction and operation, long- and short-term impacts, immediate and delayed impacts. The analysis revealed that in the project area direct impact will be rather limited and focused within the existing RoW.

281. Short-term impacts such as noise and gases produced by heavy equipment and machinery, which take place during road construction, usually do not have a lasting impact. As the project is limited to small-scale rehabilitation works, repair of the existing road, as well as roads construction on formerly untouched lands along 6 kilometers; there is only a small possibility of occurrence of the long-term impact on the environment.

282. Impacts arising during construction activities depend on several factors, including

(1) temporary use of land and its rehabilitation after the completion of these works;

(2) "best practices" that are used for construction activities; coordination and cooperation with the local authorities in managing the impact, and

(3) strict monitoring of the implementation of environmental conditions included in project documents and specifications for the tender, as well as a comprehensive Environmental Management Plan (EMP).

Results of preliminary screening

283. Much of the terrain adjacent to the road alignment is either barren or covered with sparse vegetation (grasses) that are used by grazing animals (horses, cattle, sheep, goats and camels) and that given the vastness of the land available for pasture and raising livestock, there is little concern that the future rehabilitation works will affect the livelihood and income of local residents.

284. During this initial phase of the Project the Design Planners took a number of potential impacts into consideration, such as: topographic changes, clearing of roadside vegetation, land-acquisition and demolition/dysfunction of existing structures and utilities, passages for herds and agricultural machinery, potential changes in local flora and fauna, campsite location, potential hydrological changes, potential edaphic changes, quarry site selection and preparative measures, construction of access and diversion roads, public and traffic hindrances due to restricted access, social conflicts and imbalances due to foreign labor influx, noise and air pollution from nearby/new bypass alignments, change in local land values, potential impacts on social and religious life, potential impacts on archaeologically or historically significant objects.

Physical Impacts & Mitigation – Soils & Geology

285. Sand, aggregates, gravel and bitumen are available in sufficient source quantities and qualities at several locations along the Project Road. Reinforced concrete products and pre-cast structures (such as pipe culverts) and other more special road construction materials will need to be transported by rail from specialized enterprises in Kazakhstan, and possibly from Russia. A railway line provides good access for these materials to the Project Area.

286. The selection and operation of borrow pits and quarries needs to be carried out with all due considerations to avoid any impact on the existing natural and human environment, and to make provisions that no secondary impacts such as soil and aquifer pollution will occur. As stated above initial assessments have analyzed the potential locations of these proposed facilities. The final choice of the location of the borrow pits and the quarries used will be confirmed with the Contractor, CSC and the PMC. Contract provisions shall specifically prohibit new borrow pits and quarries within one kilometer of the Protected Areas. The Contractor shall also be responsible for preparing a borrow pit management plan as part of his CEAP.

Physical Impacts & Mitigation - Air Quality

287. The final site selection of the camp sites (by now, only one construction lot is envisaged; due to this plan there will be the only permanent camp established; however, if a decision to divide the road section into two lots is made, the number of construction camps will be increased up to two), and particularly the positioning of impact-generating machineries like the Asphalt Mixing Plant, crushers and concrete batchers should follow a careful consultation of the local wind conditions (see wind roses, Figure 2), in order to choose locations that are always in sufficient distance on the leeward side of the prevailing local winds. The final approval of the construction camp locations should be determined by the Contractor/CSC in conjunction with PMC/COR. Siting work camp sites, both temporary and permanent, or emission-generating machineries and yards in a distance shorter than 500m from sensitive spots like schools, hospitals and recreational facilities, and the Game Reserve should be prohibitive.

Physical Impacts & Mitigation – Water Quality

288. Construction works require large amounts of water, both for supply of drinking water for the labor forces and the operation of the camp sites, and for all technical purposes relating to construction activities. Drinking water for construction workers will be provided by bottled water. Technical water supply source will be provided by the water station of Zhanaozen and the water separator near Zhanaozen. The Contractor will be responsible for sourcing other water for general construction camp use, such as washing,

cleaning, etc (estimated to be around 4m3 per day per camp). If the Contractor is to use these sources he must first obtain a permit / approval from the relevant authority to utilize these sources. The PMC and COR should review the permit/approval before any water extraction begins. Non-approved extraction of large amounts of water from the local aquifer may result in a number of secondary impacts, most of them prone to cause ecological issues and social conflicts, as well as delays for the project. Therefore, the extraction permits/approvals need meticulously be observed and monitored.

Physical Impacts & Mitigation – Topography

289. The visual appearance of the landscape along the Project Area will change to some extent because of construction of structures such as (elevated) embankments, interchanges, culverts, crossway passages, roadside plantations etc. Visual changes to the topography will be of permanent and minor negative in nature and do not require mitigation measures, except that the Project design should consider aesthetic concerns. The latter refers particularly to roadside plantations and re-installation of borrow sites, as and if applicable. However, many of the anticipated quarry sites are already long-time in operation, so there will be hardly any need to further aim for specific mitigation measures in these sites. The selected quarry sites are all located more than 500 meters away from human settlements.

Impact of the construction activities on the ecological resources

Biological impacts: Flora & Fauna

290. **Flora** - Roadside shelterbelt areas are a rare and valuable natural asset in the generally uniform steppe landscape dominating the road corridor. Because of their intrinsic ecological benefits and values, roadside plants (especially large bushes) should be maintained to the maximum extent possible, as they act as natural barriers absorbing sand and dust impacts, as well as natural barriers against snow storms, sand storms and noise. Both authorized and un-authorized cutting of roadside vegetation in this area will have minor effects on the local ecological properties, expressed in habitat degradation and biodiversity losses. It will be medium-termed and moderate given the fact that the vegetation is relatively sparse and mostly set back more than ten meters from the edge of the existing roadway.

291. **Fauna** - Along certain sections of the road, particularly in the vicinity of human settlements domestic animals can be noted. Road accidents caused by collisions with livestock animals (camels and sheep) are among the major concerns of both Traffic Police and Road Managers. The problem is primarily due to unattended large herds or single animals crossing the road, whereby the accident risk increases during nighttime. In the open terrain, shepherds commonly cross the roads with their herds without taking specific preventive care. Frequent movement of animals over the carriageway will further result in surface and embankment damage and soiling of the pavement, which eventually contributes to increased driving hazards.

292. To address such risks and subsequent problems, 3 above-mentioned cattle crossings (paragraph 91) have been incorporated into the road design at locations known for regular animal crossing. The locations are noted as follows (indicated existing distance from Aktau):

Table 17. Location of cattle passages (distance form Aktau)

1 cattle passage (4m*2.5m)	2 cattle passage(4m*2.5m)	3 cattle passage(4m*2.5m)
102.18 km	**115.27 km**	**141.3 km**

293. Regarding the locations of the cattle passages, there were consultations with the local population. Due to the fact that during the Public Hearings in Zhanaozen the local people expressed their desire to have more cattle passages than it was planned initially.

Adequate dimensioning and lateral fencing are of paramount importance, as under-dimensioned underway passages being less than 2m in width are usually not accepted by most domestic animals, resulting in escapes to the adjacent embankment and road surface. It is therefore mandatory to include a sufficiently dimensioned fence of a minimum length of 150m on each side along the embankment, guiding the animals safely into the proposed passage.

Biological Impacts & Mitigation - Protected Areas

294. Nearby the road under construction, there are no any Special Protected areas. Due to this fact, this question in the Impact Section and EMMP is not considered.

Impacts on socioeconomic sphere

Socio-economic Issues & Mitigation - Health and Safety

295. At this stage of the Project, the following measures have been taken to make provisions for increasing the general traffic safety for the new/rehabilitated road and address the present and future risks for traffic accidents

- Identification of accident-prone localities ('black spots') all along the alignment;
- Check of the existing highway parameters for their compliance with valid norms and standards;
- Adopted proven safety design measures as they have been successfully included in other (similar) road projects, namely in other CAREC sections;
- Addressing special accident risks associated with the collision danger involving animals on the road, and designing adequate animal underpasses;
- Analysis of the suitability of existing and commendable signage and road markings for adopting a better design; and
- Taking the concerns and recommendations of the participants of Public Consultations into the design considerations.

Socio-economic Issues & Mitigation – Construction Camps

296. The location of the Constructor's campsite is often crucial in planning for environmental safeguards, particularly in view of protecting the public general as well as the work force from adverse impacts, nuisances and health hazards. In addition, the location of construction camps within or in vicinity to an existing settlement (like in Zhetibay and/or Zhanaozen) can result in a number of other impacts and conflicts, such as shortage and competition for amenities, food and water

297. Construction camps can evoke short to medium-term impacts, although most of these impacts are manageable. For establishment of work campsites, most if not all of the potential impacts can be set off by choosing a location in sufficient far distance from existing settlements, as long as electricity and water supply can be managed. As stated above, the location of the camps is the decision of the Contractor, however this should be approved by CSC and endorsed by the PMC and COR to avoid potential social conflicts over land use, resources and labour.

298. All planned and ongoing activities associated with construction camps, including storage facilities, workers dormitories, sanitary installments and safety measures are subject to the recommendations presented in the EMP. In line with the Kazakhstan legislative framework the principal tool to ensure an environmentally sound execution of all construction works, including the provision for work camps and facilities, is the preparation of a site management plan – in Kazakhstan terminology recognized as 'Construction Environment Action Plan (CEAP)'. This CEAP will be prepared based on approved EMP and IEC, and will include additional steps and measures on occupational safety and health during construction works to be approved by PMC/COR. This CEAP,

subject to approval by various agencies, is the essential warrant that all work activities will be carried out in an environmentally sound manner, aiming at eliminating or minimizing potential impacts identified in this document. Compliance will be strictly monitored by the PMC, and the Contractor will be held liable for any non-compliance.

Socio-economic Issues & Mitigation – Traffic Diversions and Hauling

299. The bypasses will not separate or dissect existing communities as they bypass residential areas. Provision for suitable signage is an important planning tool for addressing potential accident risks. In addition, hauling and other access road to construction sites shall be planned to cause minimal hindrance and/or nuisance to public life.

300. Special planning needs to be devoted to ensure that the local railway lines (e.g. at Shetpe bypass construction) will not be interrupted without liaising with the railway authorities.

301. Potential risk of human being trafficking, often associalted with large scale road construction projects also should be taken into account.

Socio-economic Issues & Mitigation – Infrastructure

302. Prior to the start of construction works existing structures may need to be demolished and utilities removed or replaced. The Contractor shall ensure that all demolition waste be disposed of at certified dump-sites. In addition, a work plan for timely and fully functional substitution for any public utility that needs to be removed shall be prepared by the Contractor including any required certificates or permits from local authorities / utilities.

Anticipated Impacts & Mitigation during the Construction Phase

Institutional Issues

303. If the Contractor fails to retain an environmental specialist to prepare the CEAP and to implement all mitigation and monitoring measures as specified in the EMP the Contractor will have severe difficulties ensuring all of the environmental provisions are adequately managed and monitored. As specified by law, the Contractor will be required to employ a licensed expert to prepare the CEAP and obtain all relevant permits. The contractor will not be permitted to mobilize workers without an approved CEAP and the appropriate permits in place.

Physical Impacts & Mitigation – Soils

304. Borrow Pits – Borrow pit sources have been pre-defined. Unauthorized extraction at other sites or deviating from established extraction quota would be subject to explanation, obtaining of PMC approval and all appropriate permission documentation.

305. In case borrow sites are required outside long-established quarries, the potential site will require mitigation measures to be applied, as follows:

- Avoid sites with known contamination and/or erosion problems;
- Avoid to generating steep cut slopes;
- Provide suitable locations for storage of the excavated material, ensuring that the local drainage will not be hampered and no excessive siltation may occur;
- Install adequate fencing to prevent unauthorized access and intrusion by livestock;
- Avoid damage to adjacent lands while providing for haulage roads;
- Store, protect and re-use topsoil for re-instating the pit. Shape and compact slope before applying former topsoil layers;

306. Quarries management plan includes all the planned operations, volumes, measures to transport construction materials and safety measures. The plan should provide full information for environmental protection, especially protecting local water resources and appropriate decommissioning process.

307. The given management plan should also describe options for recultivation using local herbaceous plants and shrubs, implementing functions of soil stabilization and preventing further erosion, selection of the right season and methods to guarantee good growth and application of bioengineering methods.

308. Given the generally uninhabited nature of the Project Area it is considered unlikely that the selection and operation of borrow pits may result in land disputes or major losses of agricultural or ecologically valuable land. Local authorities may consider the further use of dry borrow pits as sanitary landfill sites, or ask to restore them to serve any other purpose.

309. Quarries: No specific mitigation or management actions are recommended for these facilities as long as they operate within the terms of a valid license.

310. Soil Erosion – All rehabilitation and rectifying works on embankments, as well as cut and fill operations, shall be strictly adhere to the longitudinal and cross-section profiles described in the Technical Drawings. All excavation activities are subject to directives and approvals by the CSC and PMC.

311. In addition, during construction, the Contractor will be responsible for ensuing material that is less susceptible to erosion will be selected for placement around bridges and culverts. In addition he shall ensure re-vegetation of exposed areas including; (i) selection of fast growing and grazing resistant species of local grasses and shrubs; (ii) immediate re-vegetation of all slopes and embankments if not covered with gabion baskets; (iii) placement of fiber mats to encourage vegetation growth. The PMC, CSC and the Contractor will be responsible for ensuring that embankments are monitored during continuously during construction for signs of erosion.

312. Soil Contamination – Potential soil contamination is a possibility resulting from poorly managed fuels, oils and other hazardous liquids used during the project works. Accordingly, the Contractor, under direction of the CSC and with oversight from the PMC, shall ensure that:

- All fuel and chemical storage (if any) shall be sited on an impervious base within a bund and secured by fencing. The storage area shall be located away from any watercourse or wetlands. The base and bund walls shall be impermeable and of sufficient capacity to contain 110 percent of the volume of tanks.
- The construction camp maintenance yard shall be constructed on impervious hardstanding with adequate drainage to collect spills, there shall be no vehicle maintenance activities on open ground.
- Filling and refuelling shall be strictly controlled and subject to formal procedures. Drip pans shall be placed under all filling and fuelling areas. Waste oils shall be stored and disposed of by a licensed contractor.
- All valves and trigger guns shall be resistant to unauthorized interference and vandalism and be turned off and securely locked when not in use.
- The contents of any tank or drum shall be clearly marked. Measures shall be taken to ensure that no contaminated discharges enter any soils.
- No bitumen drums or containers, full or used, shall be stored on open ground. They shall only be stored on impervious hardstanding.
- Areas using bitumen shall be constructed on impervious hardstanding to prevent seepage of oils into the soils.

313. In so doing, it is necessary to take into account that:

- Historically low traffic volume along this road corridor,
- Phasing out of sale of leaded fuel since 4 years,
- Extreme low precipitation in the entire region, and
- Very deep aquifers indicate low risk of soil and groundwater pollution originating from leaded fuel sources.

Physical Impacts & Mitigation – Hydrology

314. Technical water supply source for construction works under the project is water station in Zhanaozen and water separator near Zhanaozen. Permits and approvals for the use of their water supply during the construction period should be obtained by the Contractor and presented for the consideration of CSC/PMC. Accordingly, there will be no impacts to local water supplies resulting from technical water needs.

315. To prevent impacts to surface and ground waters in the event of accidental spills or leaks, the Contractor shall ensure:

- 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.
- 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'.
- All fuel use areas where spills and leakage is possible, e.g. the generator, must have drip basins installed to pre-vent leakage. All recovered materials must be recycled.
- A fuelling areas must be equipped with proper fuel nozzles and means for preventing accidental spills.
- 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.
- 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 once/yr.
- 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. Records must be handed over without delay to the PMC.

Mechanical Impacts & Mitigation – Air Quality

316. Air pollution is likely to occur in this Project during the construction phase, originating from a variety of sources:

- Work shops, stone crushers and asphalt mixing plants;
- Frequency and magnitude of movements of construction machinery;
- Dust emissions due to various construction and borrowing activities;
- Uncontrolled burning of waste.

317. Air pollution is known to cause a variety of health risks to both the workers and the public general. Emissions from crushers and quarry sites can cause health impacts ranging from coughing, influenza, respiratory ailments, to irritation in eyes and reduction in visibility. Children are at particular risk for such negative impacts which, however, are most of the time temporary and localized.

318. The Contractor shall include all necessary measures to reduce air pollution and dust development that would impact the public health, by:

- Providing dust masks to operating personnel;
- Regular water spraying at hauling and access roads to borrow pits;
- Equipping asphalt, hot mix and batching plants with fabric filters and/or wet scrubbers to reduce the level of dust emissions;
- Building access and hauling roads at sufficient distances from residential areas, particular, from local schools and hospitals;

- Burning of construction waste material or other materials without authorization of the Engineer shall be impermissible.
- Construction vehicles and machinery shall be kept in good working order, regularly serviced and engines turned off when not in use.
- Vehicles with an open load-carrying case, which transport potentially dust-producing materials, shall have proper fitting sides and tail boards. Dust-prone materials shall not be loaded to a level higher than the side and tail boards, and shall always be covered with a strong tarpaulin.
- In periods of high wind, dust-generating operations shall not be permitted within 200 m of residential areas.

Biological Impacts & Mitigation – Flora and Fauna

319. Large and long linear structures like highways are often the reason for separating animal populations and their habitats. In addition, loss of roadside vegetation may result in habitat changes and losses in local flora and fauna. Careful planning and execution of works are essential in minimizing undesired effects, particularly on the local fauna.

320. Disturbance to local wildlife, such as illegal hunting activities by work forces are common problems associated with road construction projects in remote areas. The EMP therefore provides a number of mitigation measures to address such likely impacts.

321. Local wildlife and plants along the road embankment are seasonally impaired by the application of relative high doses of de-icing chemicals during winter conditions – especially in the vicinity of steep pass sections. Not only the structure and properties of soils and plants are impacted by such procedures, many animals along the roadside are killed as a result of salt poisoning. It is therefore recommended to eliminate further use of salt during winter conditions and replace these applications with fine and environmentally neutral friction materials.

Biological Impacts & Mitigation – Protected Areas

322. In the vicinities of the project road there are no any special protected areas. No any mitigation measures are required.

Socio-economic Issues & Mitigation – Public Access, Utilities and Services

323. As already indicated above, along the road, there are two fenced areas that were previously used for irrigated agriculture, but lately have been abandoned due to the fact that drop irrigation, laid there, did not lead to the expected results. The land is owned by the state and have been used by the local residents several years ago on a rental basis. Due to the fact that at the areas no any work has been taking place for quite a long time, and the former tenants abandoned them due to unfavorable conditions in the region, we can say that, in this sense, no impact is expected for the local agricultural activities and factor of social impact in this case can be excluded.

324. It is the Contractor's responsibility to locate and confirm the details of all public services and that may potentially be affected by the works. This is particularly important in view of public utilities (water pipes, gas pipes, electric cables, phone lines) which may need to be removed due to widening the carriageway, or for any other construction reason. All utilities subject to removal need to be fully replaced15 before disconnecting the existing service. The PMC shall give approval in this regard, and the local authorities shall be fully informed well ahead of time before the actual commencement of site works.

325. Best practice for alleviating any forthcoming problems with local residents include (i) timely public announcement of near-future planned construction activities (ii) strict

[15] In most cases the Contractor needs to employ specialist enterprises with proven skill and technology to carry out such works

observance of working hours and speed limits as determined in the Technical Specifications, and (iii) involving as much as possible local residents in work contracts to secure their satisfaction and community support.

326. Any damage or hindrance/disadvantage to local businesses caused by the premature removal or insufficient replacement of public utilities is subject to full compensation, all at the full liability of the Contractor who caused the problem. The Contractor shall also maintain unhindered access and use of social, cultural and religious sites (e.g. mosques, cemeteries, cultural gathering places, sports facilities). Should damage to private properties occur, including livestock and homestead gardens, the Contractor will be held fully liable to compensate and rectify the inflicted damage.

Socio-economic Issues & Mitigation – Construction Camps

327. Temporary and permanent camps can often be poorly maintained, lack proper sanitary facilities, are marred with stagnant waters and poor waste management, thus providing ideal conditions for vermin and other vectors of diseases, which multiply and infect both workers and the surrounding local communities. Therefore, the Contractor shall meet all requirements to prevent such conditions and observe the following standards, to be regularly monitored by the CSC and PMC. Mandatory mitigation actions, many of them also aiming to avoid conflicts with local systems and resources, include:

328. All contracted labor shall undergo a medical examination which should form the basis of an (obligatory) health/accident insurance and welfare provisions to be included in the work contracts. The Contractor shall maintain records of health and welfare conditions for each person contractually engaged.

329. The contractor shall seek his own electric supply system, preferably separated from the public grid.

330. The Contractor shall provide adequate and functional systems for sanitary conditions, toilet facilities, waste management, labor dormitories and cooking facilities. To the extent possible, he shall provide imported food items for the workers to alleviate potential burdens from scarce local market resources. Work camps should also adhere to basic principles of aesthetics and landscaping. They equally shall include sport facilities for managers, foremen and laborers.

331. The camp sites and particularly the fuelling area shall be equipped with special wastewater collectors combined with separator basins. The camp site needs to have its own sealed containers for sludge disposal from septic tanks.

332. The problem of overburdening the local health facilities can be best solved by organizing a well-equipped own ambulance station at the camp sites, and to engage qualified medical personnel for the entire duration of the work phase. Such personnel should also be trained in conducting regular awareness campaigns among the workers, focusing on the prevention and control of communicable diseases (e.g. STDs) and drug abuses.

333. The camp site should be secured against unauthorized access. Special precaution measures are required for securing and storing hazardous materials.

334. The Contractor shall construct, maintain and completely remove after work completion his own sewage management system. He will also be fully responsible for safe transport, storage and security to dispose all hazardous materials used in work processes.

335. To encounter possible social conflicts, the Contractor shall seek good relationship with the local communities and engage in local social welfare and education programs. He shall offer, to the maximum possible, employment opportunities to local residents, particularly for unskilled labor.

336. The Contractor shall reinstate the land provided for diversions to a condition similar to that prior to the commencement of construction. Photographic records may be used by the PMC to determine if the reinstatement of diversions has been satisfactorily carried out.

Socio-economic Issues & Mitigation – Health and Safety

337. The Contractor will be requested to prepare an approved Construction Environmental Action Plan (CEAP), which will, among others, delineate all work safety aspects he intends to apply. Focal points of the CEAP will relate to means, type and number of protective clothing, safety precautions at specific work sites, first aid, rescue plans, work hours, and all intended measures for avoiding or proper clearance of hazardous substances, including fueling operations, transport and handling of hazardous materials and explosives, securing measures etc. The CEAP will further explain methods and volumes for using any local resource, and how to address common risks associated with public safety, crimes, STDs and prostitution.

338. Construction works and activities bear frequent accident and health risks for both the laborers and the public general, with varying direct and indirect consequences. Therefore, the CEAP needs to make provision for specific medical services, workers insurance policies and indemnities, emergency provisions and a rescue/evacuation plans in case of major accidents.

339. The Contractor will be obliged to carry out, at regular intervals, training sessions with all work forces addressing the following aspects:

- General aspects on work safety and environmental awareness building;
- Worker's responsibilities in case of emergency and spills;
- General work safety in relation to common work risks, demonstration and use of protective equipment (first aid, fire extinguishers, handling explosives);
- Work hours and speed limits, environmentally harmful activities;
- First aid assistance and medical assistance in emergency cases;
- Emergency/rescue action training, incl. use of towing equipment;
- Alerting on the problem of conveying sexually transmissible diseases (e.g. Syphilis and HIV/AIDS) between work forces and local residents;
- Avoidance of conflicts with local communities, maintaining good relationship with local residents and authorities;
- Actions required in case of detecting archaeological or historical items during work.

Socio-Economic Issues – Noise and Vibration

340. Impacts of construction noise on the sensitive receptors are limited due to the fact that the project road crosses uninhabited territories for almost its entire length. Construction works of bypass roads will be implemented at the large distance from the populated areas (about 8 km), where there are no any sites requiring special attention. Terefore, the following measures shall be made:

- Provision of the construction workers with appropriate hearing protection (ear muffs);
- Avoid vehicle idling.

Potential Impacts related to Specific Construction Activities

341. The operation of asphalt mixing plants (AMP) frequently causes a number of environmental impacts. Although short in time, the corresponding impacts may result in substantial health risks for the public general and for the workers. Main concerns relate to the plant's smoke development containing a variety of carcinogenic substances, and causing irritations in the respiratory system.

342. The best mitigation measure is to pre-select the site for installing the AMP at a location in sufficient distance (2-5 km) from any residential settlement. Of particular importance for an appropriate site selection is the consultation of the local meteorological station that will reveal the likelihood of carrying the smoke plume in distinct directions. For

the sake of public health it is therefore strongly recommended to consider the siting of the AMP at good distance to the north east of Shetpe and towns. Equally, the placing of an AMP near the Zhetibay junction would have detrimental consequences for nearby residents.

343. **Bitumen Works**: Such works, including coat layering with asphalt concrete, may cause a number of risks and impacts that need to be addressed in the mitigation framework. The prime risks are associated with work safety and ambient pollution. Bitumen works cause a number of health and safety concerns for both the public and the laborers. Bitumen is highly flammable and great care is required when utilizing rapid-curing cut-back bitumen together with volatile solvents. The latter rank among highly hazardous pollutants, especially when getting in contact with humans and with water resources.

344. Precautionary measures, being the full responsibility of the Contractor, include: Hot bitumen shall not get in contact with water and dust, bitumen and solvents shall not be spilled on ground, ditches or water courses. If this happens, spills need to be removed immediately and disposed in a safe site that is protected from public access. No waste material shall be burned in connection with hot bitumen. All manual works while handling bitumen require special protective clothing (boots and gloves). Bitumen works shall not be carried out in winter, rainy or stormy weather conditions. Trucks used for hauling asphalt mixture shall be adequately equipped. Surfacing works should not occupy more than one single traffic lane at a time.

345. **Concrete Works**: Concrete is prone to become damaged when cast at unsuitable ambient temperatures. This refers particularly to the maintenance of minimum safety standards for bridge constructions where concrete will be the predominant material. Casting concrete structures such as culverts at site may cause spread and contamination by cement dust, which in turn will negatively affect soil and surface water qualities. It will also result in detrimental effects on the surrounding vegetation.

346. Dust development at site shall be managed by suitable covers (canvas) and/or regular water spraying. When casting concrete structures under water, provisions shall be made to utilize cofferdams. Spray waters used for slowly curing the new-cast concrete structures shall not contaminate adjacent surface or groundwater resources.

347. Stockpiles of materials, if wrongly sited and/or protected, may cause long-term environmental problems in terms of dust development, leaching of harmful substances into soil and water resources, erosion and siltation. Therefore, stockpiles shall be short-termed, and placed in sheltered and guarded areas near the actual construction sites or within the fenced camp sites. Placing shall be at minimum distances, away from sensitive areas and residential areas. Stockpiles of friable material shall be covered with clean tarpaulins, and spray water shall be applied during dry and windy weather conditions. Stockpiles of material or debris shall be dampened prior to their movement. Stockpiles shall not contain any harmful soluble substances.

Socio-economic Impacts & Mitigation – Waste Management and Disposal, Hazardous Materials and Explosives

348. Construction works include transport, handling and storage of a number of hazardous materials, some of them bearing critical health risks for humans, drinking water and food items when being contaminated. In this project, commendable countermeasures include:

- Development of a waste management plan;
- Development of a management plan for transport[16], handling and storing hazardous material;

[16] Adhering to the national regulations, restrictions and required permits

- Preparation of a contingency plan[17] in the event of an accident involving hazardous material. Such emergency plan needs to be consulted and coordinated with the local health facilities.

All mentioned risk management plans need to be approved by the PMC.

Socio-economic Issues & Mitigation – Decommissioning of Work Sites

349. To achieve proper decommissioning of all work sites, the Contractors will be obliged to present their activities and solutions on the proper execution of such tasks as outlined in the CEAP. It is also strongly recommended that both the PMC and Contractor keep photographic records of each work site before commencement of works. These photographic evidences shall serve as basis for the later approval that the respective sites have been re-instated to satisfactory conditions. If necessary, the Contractor may be requested to include additional enhancement or rehabilitation activities, such as slope compaction and stabilization with recommended plants, landscaping, special protection of local water resources, and safe disposal of all hazardous material, including the excavation of soil patches contaminated with fuel and lubricants.

350. The Contractor shall ensure tidy clearing of all sanitary and waste management facilities, removal and excavation of oil-contaminated patches, grading the soil to natural ground levels, re-establishment of natural vegetation. Otherwise, such sites often remain a long-lasting source of environmental problems, and a public eyesore. Options need to be explored which would allow the use of workers dormitories, fuel station, workshops, drainage facilities etc. for later and other purposes, as suggested by local leaders.

Socio-economic Issues – Historical and Cultural Heritage

351. Given the fact the Project is rehabilitation of an existing roadway the risk of loss of historical or cultural relics is highly unlikely. However when constructing bypasses, 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 PMC, to the Mangistau Oblast Culture Department and all construction work stopped until authorities have issued clearance to go on.

352. Wherever roadside markers of accident victims are along road sections, obelisks removal requires a process of consultation with the local Akim as well as the victim's family to possibly move the monuments to another appropriate site.

Addressing Potential Impacts during the Operational Phase

Mechanical Impacts – Air Quality and Noise Pollution

353. Traffic-generated air and noise pollution is inherent to road projects, and can cause substantial health and other impacts on both the local human and biotic environment. On the other hand, the improved road condition and smoother traffic flow will result in less wear and tear to vehicles. This will, in turn, also result in less fuel consumption and emissions.

354. Due to the anticipated increase in traffic volume, air pollution and noise is expected to increase at locally confined zones. This impact is permanent and negative, but its significance is reduced due to the realignment of the road around the main villages by two bypasses.

355. To address such potential impacts in future, possible mitigation measures include:

- Adjust driving speeds in accordance with needs and acceptable standards;
- Provision of adequate noise barriers such as hedges and indigenous tree species will reduce the noise in those areas where human settlements are in close vicinity (e.g. in

[17] Plans usually cover also natural disaster events, fire, earthquakes, flooding, and include respective evacuation and medical care plans.

some sections of bypasses). Where the planting of such natural noise barriers may be impossible, structured noise barriers and shields may be considered as alternatives.

Biological Impacts – Fauna and Flora

356. Intensive salt applications in winter months for deicing the road surface will invariably result in additional salt deposits along the roadside, hampering vegetation growth and potentially killing existing plants that are essential for slope protection, which in turn may result in embankment erosion damages. It is therefore recommended to consider the use of environmentally neutral friction material in case of adverse winter conditions on the road, and to consider bio-engineering methods in locations where embankment protection will be required with local species tolerant to the dry summer conditions. In addition, it is possible that increased traffic volumes may lead to increased accidents involving camels. To reduce this impact it is recommended that protective fences are placed in areas where camels are present in high numbers and that warning signs are placed along the road to make road users aware of the risk of collisions with camels. These actions, combined with enforcement of speed limits should reduce the potential for vehicle collisions with camels.

Socio-economic Issues – Traffic Safety

357. According to an internal analysis of the Dept. of Road Police the causes for such high accident level in the country are:

- Poor road conditions causing hazardous driving conditions[18];
- Lack of drivers' awareness for perils, resulting in risky driving habits and pervasive non-observance of traffic rules;
- Inadequate training of drivers, resulting in inexperienced drivers;
- Poor vehicle condition and maintenance status, particularly in older vehicles;
- Inadequate (modern) traffic control equipment;
- Inadequate drivers license controls and penalties for traffic rule violators;
- Driving under influence of alcohol and drugs;
- Inadequate signage and warning systems in case of hazardous road conditions.
- Unexpected road crossing of large herds of domestic animals
- Inadequate and insufficient medical and ambulance facilities along the road

358. Appropriate road signage, traffic monitoring and control, human capacity development, review of the driving license issuing system and a wise application of penalties seem to be the most likely responses. The installation of an early warning electronic and radio system in case of bad road conditions ahead may also considerably contribute to improve the road safety. Spontaneous roadside vending should be prevented even at small initial stages, as the presence of street vendors adjacent to the road shoulder will invariably contribute to safety issues and accident risks. In cases where local street vending activities may be developed, and where the topographic situation permits (e.g. at bypass sections of Zhetibay), special roadside bays may be introduced. Such bays need to have safe access, signage, and should be equipped with basic toilet facilities, segregated for gender. Ideally, such vending sites might be combined with local bus stops.

Socio-economic Issues – Social Integrity and Public Health

359. The development of long-term transit routes bears specific risks affecting the social fabrics and the public health of the entire Project Area. Increased traffic movements will

[18] The PEIA (2010) indicates that about one third (38,000 km) of Kazakhstan's highway net is in poor road condition.

likely entail an increase in the transmission and spread of sexually transmitted diseases (STDs), including amongst others, HIV/AIDS. The potential impacts are permanent and negative in nature. Local public awareness campaigns, information leaflets, media programs etc. focusing on STD transmission need to be considered as counteractive measures. These initiatives are best carried out in concerted efforts involving a number of governmental and non-governmental agencies.

360. A public awareness program is proposed focusing on human and drug trafficking, aimed at raising public awareness and encouraging civil society engagement to protect potential victims of trafficking and aid efforts to detect and scare off traffickers. As with the STD awareness program these initiatives are best carried out in concerted efforts involving a number of governmental and non-governmental agencies.

Socio-economic Issues – Hazardous Material

361. Although the risk is extremely small since most such materials are transported by rail, it is possible that there may be an increased risk of hazardous material spills due to increased traffic volume and provision of larger capacity bridges and stronger road surfaces, inviting large trucks to use the road. Methods to mitigate this risk include:

- Insure that all trucks carrying hazardous materials are marked according to GoK norms;
- Enforce traffic controls;
- Set speed limits for trucks carrying hazardous material to maximum 85kph or according the GoK norms and codes;
- Restrict all truck carrying hazardous material from passage through towns and villages where bypasses exist; and
- Assist Mangystau 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.

Assessment of Potential Cumulative Impacts

362. Zhetibai-Zhanaozen road is a part of a larger strategic plan in the context of the CAREC program to transport needs in Kazakhstan. It therefore needs to be viewed in conjunction with other road improvement projects and regional development activities. The concept of Cumulative Impacts, however, goes beyond such strategic considerations and includes impacts on the environment that result when the effects of implementing this Project's activities and adding them to effects of other past, present and reasonably foreseeable future actions. Cumulative impacts are important because impacts of individual projects may be minor when considered in isolation, but significant when the projects are viewed collectively

363. Apart from programs aiming at improvement of the national and regional road net, key industrial sectors (mining, oil, construction and services) and regional housing programs are likely to grow which will, on one hand, benefit from better road conditions and connectivity, on the other hand will curb certain risks and impacts associated with road development.

364. Almost all of the long-term beneficial impacts analyzed in the given report will result in secondary benefits for the social fabrics, including public health conditions, be it in association with locally improved road conditions and connectivity, better ambient air quality, noise reduction, access to services and markets, facilitating social connections, swifter emergency response, and improved road controls. Some landowners possessing private land near the new bypass alignment will benefit from increased land prices.

365. An improved and more efficient transport will invariably trigger the expansion of local industries and the expansion of existing markets for local products. With increasing traffic volume and expanding economic opportunities it is assumed that additional development may be attracted to the area. This is even more the case in view of the

expansion potential for the oil industries in and around the region of Zhetibay as well as Zhanaozen.

366. With implementation of the planned environmental awareness campaigns among labor force and in addressing the public general, the Project is likely to result in various secondary and cumulative benefits by enhancing public behavior toward general environmental safeguard principles, waste avoidance and management, and protection of natural assets and functionsций.

367. The proposed safeguard actions, warning systems, training and awareness programs aiming at decreasing the current road accident rates will have multifold beneficial consequences, reflected in medical costs, insurance costs, expenditures on rescue operations, environmental compensation costs, easing individual suffering and human losses. The proposed animal underpasses, in junction with adequate roadside fencing, will substantially reduce accident risks caused by collisions with livestock and wild animals.

368. Given the sparse population in the Project Area social tensions, if appearing at all, are unlikely to persist beyond the construction period. Attraction of new industrial complexes and in-migration of various businesses to the newly established road corridor could result both in positive and negative side-effects if not effectively addressed. Successful mitigation must include thoughtful planning in close consultation with the local authorities, as outlined in the EMP. Once the proposed planning, monitoring and policing actions are implemented, there remains little if any residual impact risk for adverse spin-offs.

Environmental Management Plan

Objectives and Summary of the EMP

369. The Environmental Management Plan, presented in tabular form in this Section, aims to assist MID/COR in (1) adequately addressing the foreseen adverse environmental impacts of the Project, (2) enhancing the Project's overall benefits and (3) introducing standards of good environmental practices. The primary objectives of the EMP are therefore to:

- Pre-identify and scope all potential (positive and negative) impacts associated with the road construction and rehabilitation activities, in sequence with the project phases;
- Define the responsibilities of Project proponents in accordance with the Project phases;
- Providing technical details of each project-related impact, and proposing an implementation schedule of the proposed mitigation measures;
- Define a monitoring mechanism and identify monitoring parameters to ensure that all proposed mitigation measures are completely and satisfactorily put into action;
- Identify the resources required to implement the EMP and outline corresponding financing arrangements for all proposed actions;
- Providing a cost estimate for all proposed environmental mitigation and monitoring actions.

370. The EMP makes special provisions to address and mitigate potential impacts that might affect the existing areas of special protective legal status. It is also important to make the EMP fully available to the prospected Contractors. Therefore, the EMP (translated into Kazakh/Russian) shall be included within the Technical Specifications, both in the bidding documents and in the work clauses of the Contracts. The EMP shall also serve as guiding basis for the elaboration of the Construction Environmental Action Plans (CEAP) for which the contractors have a contractual obligation.

EMP Responsibilities

371. For ensuring the implementation of the proposed mitigation measures by the Contractor during the construction period the Employer shall undertake the following:

(i) clear determinate Contractor's responsibilities to implement environmental impact mitigation measures in its tender and contract documentation as specified in the Environmental Management Plan (EMP), should be attached to the Contract Specifications;

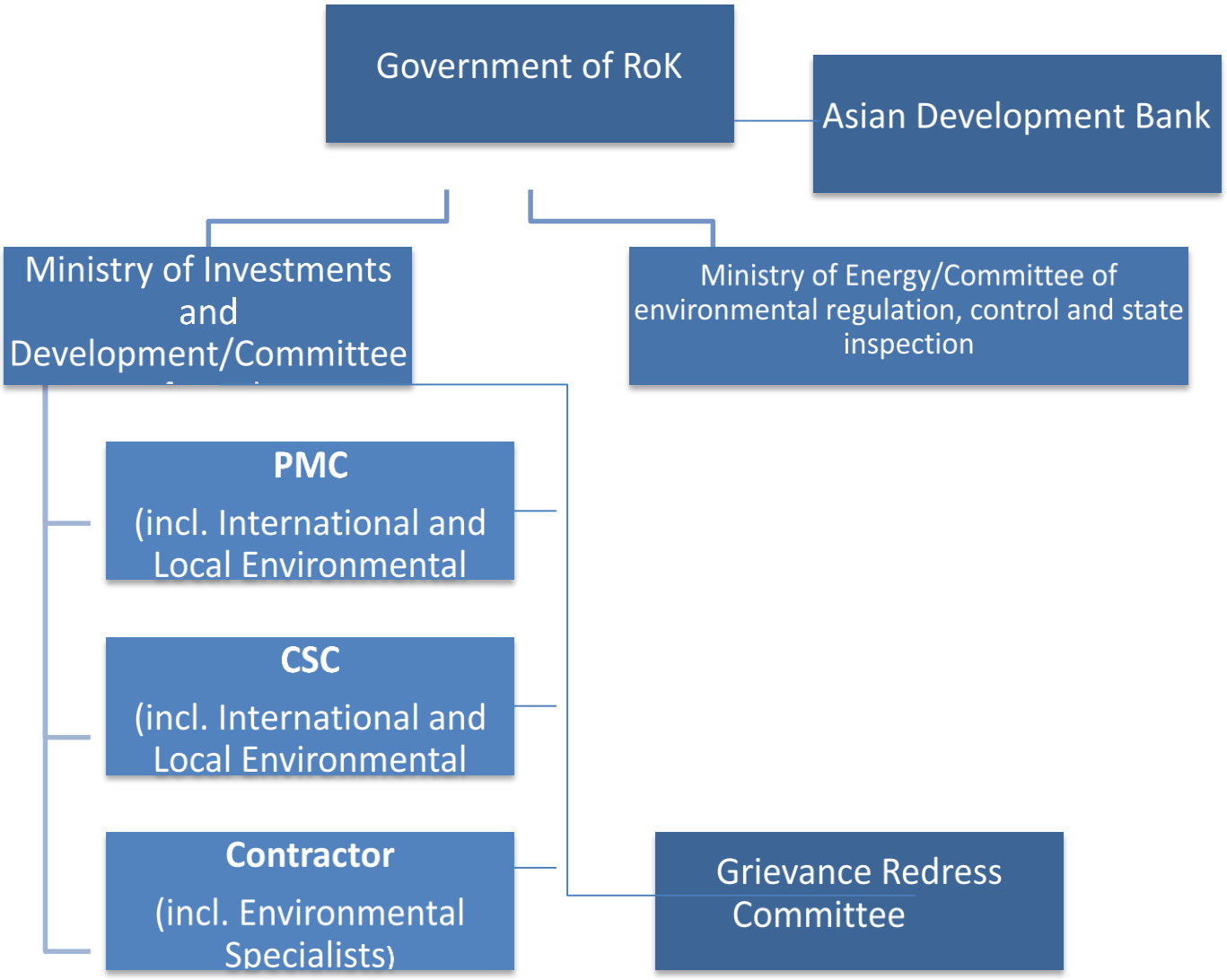
(ii) clearly require the Contractor to employ an environmental specialist.

372. The Contractor should employ an environmental specialist for preparation the EMP during the construction works and obtain approval from COR and ADB prior to the beginning of the construction, as well as be responsible for the implementation of environmental impact mitigation measures and coordinate its activities in this context with PMC and CSC. The Contractor should appoint a responsible specialist for the Grievance Redress Mechanism (described below) and comply with the requirements of Guideline on Grievance Redress Mechanism on Environment and Social Safeguards for Road Sector Projects (ADB 2014) during the entire implementation of the project. During the project implementation COR/PMC and CSC should control compliance with the provisions of the EMP by the Contractor.

373. CSC should employ a local environmental specialist and an international environmental specialist for providing support in supervision of the environment condition in the area of the project execution. The international environmental specialist shall prepare semiannual /quarterly reports on the environmental monitoring for MID/COR and ADB on the progress status of mitigation measures carried out by the Contractor. In addition, the environmental specialists of the CSC shall prepare monthly and quarterly reports on work progress for COR

including environmental section with obtaining PMC approval through environmental consultants of local and international level specially employed for this.

374. During the implementation of the project the MID/COR shall submit monthly report on project work progress on the base of the monitoring provided by the environmental specialists of CSC and Contractor to ADB through an employee of the MID/COR.



Environmental Management Cost

375. Environmental budget includes expenditures for all project work mitigation activities, monitoring and staff professional development and all of the expenses related to environmental aspects during all of the construction period. Total of environmental impact mitigation costs and cost of the monitoring on this project (Table 18) is initially estimated as about **1616830 $/** US Dollars/.

376. The Table of costs includes a number of expenditure items which are included into the total budget of the construction. In a likely way, these expenditures concerning activities on environmental protection measures are included into the Bill of Quantities. With this, all

expenditures for the environmental mitigation measures specified in the EMP should be obligatory and executed in their full extent.

377. The proposed program of collection of air samples and noise pollution measurements at the stage of construction may be included into the work contracts and untrusted to the Contractor. In these cases the Supervision Consultant shall develop a proper sampling schedule and specify parameters with which a checking process should comply.

Table 18. EMP implementation costs

Activity/Item	EMP	Unit of measurement	Qty of units	Cost per unit, $	Cost per activity, $ IEE Zhetybai-Zhanaozen	Notes
Regular water spraying at the bypass roads and approach roads to quarries	**A 2.6 A 2.19**		300	500	15 000	Construction budget
Cattle crossings	**Para-graphs 91 and 292 IEE**	pcs	**3**	125340	376 020	Construction budget
Rehabilitation of roadside and off-road borrow pits	**A 2.2**	m2	372000	0,14	52 080	Construction budget
Removal of pavement for the further use, storage (temporary warehousing)	**A 2.2**	m3	64810	18	1 166 580	Construction budget
Containers for collection and storage of the solid domestic wastes and industrial wastes	**A 2.12**	pcs.	10	65	650	Cost amounts are not fixed. The Contractor can distribute money in its discretion in accordance with the budget specified in the contract for environmental protection measures as needed.
Provision of construction workers with special special protective clothes (footwear and gloves), hearing protection equipment (earmuffs), dust respirators	**A 2.6 A 2.8 A 2.11 A 2.15**					
Warning signs	**A 3.1 A 3.3 A 3.5**	pcs.		27		
Installation of canvas covers in all lorries conveying dusty road construction materials	**A 2.6**	pcs.	100	65	6500	

Installation of the specialized oil collectors, barrels or oil catchers for the collection of fuel and lubricants	**A 2.12**					
Monitoring of air and soil quality, noise level		In accordance with the developed program agreed with PMC and CSC				
Total:					**1 616 830**	

Environmental Management Plan (PART A)

A.1: Pre-Construction (Design) Phase

Environmental Impact/ Issue	Mitigation Measures	Location	Time Frame	Responsibility		Costs / Budget
				Implementation	Supervision / Monitoring	
A.1.1 Site Selection for Borrow pits	Project Documentation Development Contractor to prepare a Borrow Pit Plan	N/A	Prior to the start of construction	Detailed Design Consultant MID/COR/PMC	MID/COR/PMC	Will be included in the Project Costs.
A.1.2 Site selection for large construction camps, asphalt plants and concrete batching facilities.	1. Proper site selection, observing criteria which primarily protect the public general, including: 1. Observe a minimum distance of one kilometer between campsite and nearest residential area. 2. Observe local wind conditions to reduce nuisances. 3. Planning for independent water and electric supply and a medical service station at the site. 4. Ensure activities are approved by landowner.	At selected camp / plant locations.	At early design stage.	Detailed Design Consultant.	MID/COR/PMC	Will be included in the Project Costs.
A.1.3 Water supply	1. Prior approval for water extraction should be given by the relevant authorities.	At all new water extraction points.	During the detailed design stage.	Detailed Design Consultant	MID/COR/PMC	Will be included in the Project Costs.
A.1.4 Planning for structure, memorials / obelisks demolishing/relocation and removal of utilities for widening the RoW	1. Planning for timely and fully functional substitution for any public utility that needs to be removed or relocated, and obtaining certificates from local authorities and specialized departments. 2. Obtaining approval for obelisks relocation with relatives of road accidents victims, local authorities (akimats), subject to the relevant construction regulations and standards of RK	At all sites where utilities need to be relocated	At early design stage.	Detailed Design Consultant	Local authority responsible for public utility and supervision; relevant departments, proprietaries MID/COR/PMC	Will be included in the Project Costs.

A.1.5 Gender Issues	The Contractor shall be obliged to pay special attention to common gender issues, and to overcome disproportional discriminations of women by the provision of sufficient and fairly-paid work contracts.	N/A	Prior to the start of construction	Detailed Design Consultant	MID/COR/PMC	Will be included in the Project Costs.
A.1.6 Traffic diversions and Hauling	Hauling and other access road to construction sites shall be planned to cause minimal hindrance and/or nuisance to public life. This is particularly important in locations with sensitive structures, such as schools and hospitals. Special planning needs to be devoted to ensure that the local railway lines (e.g. at Shetpe bypass construction) will not be interrupted without liaising with the railway authorities. To ensure these issues are managed, the Contractor shall prepare a traffic management plan for construction transport considering the schedule of railway transport including signage, haul routes and methods to reduce impacts to existing infrastructure.	For the entire project alignment.	During pre-design phase	Detailed Design Consultant shall prepare a traffic management plan	MID/COR/PMC	Will be included in the Project Costs.
A.1.7 Risks of collision and road accidents with domestic animals.	Planning for the relevant safeguards as: Preliminary public consultations to identify areas where mitigation measures are required Detailed design should ensure incorporation of the proposed animal crossings and the proposed protective fences of adequate length and strength 1. Planning for cattle crossings of sufficient size considering the specific behavioral aspects for the safe use by various types of livestock 2. Designs should include provisions for warning signs indicating presence of domestic animals	In the areas selected with the local shepherds after the public consultations	During the detailed design stage Before bid documents are completed.	Detailed Design Team - after the site inspection and consultations with the stakeholders and in consultation with the Aktau Ecology Department Detailed Design Consultant	MID/COR/PMC	Fences will be included in the Project Costs.

A.2: Construction Phase Mitigation

Environmental Impact/ Issue	Mitigation Measures	Location	Time Frame	Responsibility		Costs / Budget
				Implementation	Supervision / Monitoring	
A.2.1 Contractor fails to retain an ecological expert to prepare the EMP (Environment Management Plan) for construction works and to implement all mitigation and monitoring measures as specified in the EMP	As specified by law, Contractor will be required to employ an ecological expert to prepare the EMP for construction works and obtain approvals of COR and ADB and obtain all relevant permits. The Contractor will not be permitted to mobilize workers for construction works without approved EMP in place.	Entire contract section for which the EMP and IEC for construction works will be prepared.	Prior to the start of the construction work.	Contractor, International Environment Specialist	MID/COR/PMC/ CSC	Will be included in the Project Costs.
A.2.2 Borrow Pits	No borrow pits are allowed within the protected areas. 2. In case borrow sites are required outside long-established quarries, the potential site will require mitigation measures to be applied, as follows: • Avoid sites with known contamination and/or erosion problems; • Avoid to generating steep cut slopes; • Provide suitable locations for storage of the excavated material; • Install adequate fencing to prevent unauthorized access and intrusion by livestock; • Avoid damage to adjacent lands while providing for haulage roads; • Store, protect and re-use topsoils for re-instating the pit. • Shape and compact slope before applying former topsoil layers; • Develop a Management Plan for the borrow pit operation, including all planned operations, quantities, hauling arrangements and security precautions.	At potential borrow pit locations.	During construction	Contractor Environment Specialist	COR/PMC/CSC Environment Specialist	Will be included in the Project Costs.

	The plan shall provide full details on environmental protection measures and proper decommissioning the sites. • This Management Plan shall also describe the intended reshaping and re-installation of the pit. Rehabilitation options may include revegetation of the site as specified by the Forest and Hunting Committee of Mangystau, using local herbaceous plants and shrubs that fulfill soil stabilizing functions and prevent further erosion washouts; • Choose the right season and methods to ensure good revegetation, and use bio-engineering solutions as applicable.					
A.2.3 Soil erosion	All rehabilitation and rectifying works on embankments, as well as cut and fill operations, shall be strictly adhere to the longitudinal and cross-section profiles described in the Technical Drawings. 2. The Contractor will be responsible for ensuing material that is less susceptible to erosion will be selected for placement around bridges and culverts. In addition he shall ensure re-vegetation of exposed areas including; (i) selection of fast growing and grazing resistant species of local grasses and shrubs; (ii) immediate re-vegetation of all slopes and embankments if not covered with gabion baskets; (iii) placement of fiber mats to encourage vegetation growth.	1. At cut and fill locations. 2. At bridges and culverts.	During construction	Contractor Environment Specialist	COR/PMC/CSC Environment Specialist	Will be included in the Project Costs.
A.2.4 Failure to properly manage petroleum products such as fuel, lubricants and bitumen, potentially resulting in spillage and contamination.	The Contractor will be required to have the following spill prevention measures in place at all work sites: • Designated fueling must be equipped with suitable fuel injectors and the means to prevent accidental spills.	At all construction sites, and within camps and storage facilities established	Throughout construction works, including decommissioning phase.	Contractor Environment Specialist	COR/PMC/CSC Environment Specialist	Will be included in the Project Costs.

	• All fuelling to be done on a concrete surface provided with oil spill catch basin or oil catch pans. • 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 once/yr.. • 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. • Any spills must be cleaned up safely according to class of hazard as well as GoK norms and regulations for petroleum waste management in the Republic of Kazakhstan. • Occurred spills records must be handed over without delay to the PMC, CSC and Environmental Specialist.					
A.2.5 Deficit or untimely supply of potable and / or industrial water can lead to an incorrect implementation of the construction works and the problems of domestic nature and negative impacts on the health of workers	The Contractor shall agree upon the timely supply of potable and industrial water to construction sites.	At all locations where groundwater extraction	During the construction period	Contractor Environment Specialist	Organizations which are suppliers of drinking and technical water, COR, PMC, CSC Environment Specialist	To be included in the Project Costs.
A.2.6 Impacts to air quality.	The Contractor shall include all necessary measures to reduce air pollution and dust development that would impact the public health, by: 1. Providing dust masks to operating personnel; 2. Regular water spraying at hauling and access roads to borrow pits;	At all construction locations	During construction.	Contractor Environment Specialist	MID/COR/PMC/ CSC Environment Specialist	Will be included in the Project Costs

	3. Equipping asphalt batching plant with fabric filters and/or wet scrubbers to reduce the level of dust emissions; 4. Mounting protective canvasses on all trucks which transport material that could generate dust; 5. Construction vehicles and machinery shall be kept in good working order, regularly serviced and engines turned off when not in use. 6. Vehicles with an open load-carrying case, which transport potentially dust-producing materials shall not be loaded to a level higher than the side and tail boards; 7. In periods of high wind, dust-generating operations shall not be permitted within 200 m of residential areas. Special precautions need to be applied in the vicinity of sensitive areas such as schools, kindergartens and hospitals.					
A.2.7 Potential Impacts associated with asphalt concrete plant (ACP)	Site selection for ACP (including, for crushers) not less than 2 km from the nearby settlements, and always on the leeward side, taking into account the existing wind rose.	At all construction sites located nearby settlements	Throughout the construction period.	Contractor Environment Specialist	COR/PMC/CSC Environment Specialist	To be included in the Project Costs.
A.2.8 Potential Impacts associated with asphalt works	The Contractor shall ensure the following: 1. To constantly avoid contact of asphalt with water and dust; 2. Asphalt and solvents should not be spilled on the ground, in ditches or water courses. If this happens, spills need to be removed immediately and disposed in a safe site that is protected from public access. 3. No waste material shall be burned in connection with hot asphalt. 4. All manual works while handling asphalt require special protective clothing (shoes and gloves). 5. Asphalt works shall not be carried out in winter, rainy or stormy weather conditions.	At all construction sites	Throughout the construction period.	Contractor Environment Specialist	COR/PMC/CSC Environment Specialist	To be included in the Project Costs.

	6. Trucks used for hauling asphalt mixture shall be adequately equipped. 7. Surfacing works should not occupy more than one single traffic lane at a time.					
A.2.9 Potential Impacts associated with concrete works	The Contractor shall ensure the following: 1. Avoid concrete works during windy, icy or very hot conditions. 2. Dust development at site can be managed by suitable covers (canvas) and/or water spraying. 3. Use spray waters for slowly curing and make all precautions to avoid contamination of adjacent surface or groundwater resources. 4. While working with additives (e.g. anti-corrosive mixtures) special care needs to be applied, following the general and specific precaution prescriptions described in the Contractor's work safety guidelines.	At all construction sites	Throughout the construction period.	Contractor Environment Specialist	COR/PMC/CSC Environment Specialist	To be included in the Project Costs.
A.2.10 Public hindrances due to traffic diversions and hauling routes	1. The Contractor shall prepare a site-specific traffic diversion management plan, including precautionary measures such as signage, working hours, public awareness, preparation of emergency plans, and proper decommissioning of such temporary roads. 2. Liaison with railway authorities for obtaining the required approvals at the time of construction works in the area of its location	For project construction locations	Throughout the construction period.	Contractor Environment Specialist	COR/PMC/CSC Environment Specialist	To be included in the Project Costs.
A.2.11 Noise and vibration impacts, generated by construction activities, potentially causing impacts to health of workers and local dwellers	The Contractor shall take all necessary steps to ensure: 1. Selection of modern and well-serviced equipment and plants with reduced noise level ensured by appropriate silencing devices. 2. Confining excessively noisy work and movement of heavy machinery to specified daytime working hours (this relates especially to stone crushers and percussion hammers), in particular nearby residential areas;	At all construction sites, especially those located nearby settlements	Throughout the construction period.	Contractor Environment Specialist	COR/PMC/CSC Environment Specialist	To be included in the Project Costs.

	3. Providing the construction workers with suitable hearing protection (ear muffs); 4. Avoid vehicle idling. 5. Timely public announcements of works.					
A.2.12 Failure to adhere to construction related good housekeeping practices, including solid and sanitary waste management.	The Contractor will adhere to standard good house-keeping practices including: 1. Management of construction waste and water. 2. Equipment lubricants and fuel, including management and collection of waste oils and fuel particularly related to refueling depots, maintenance areas and diesel generator sets. 3. Sewage caissons or latrines (if available) will require complete clean up after the construction is complete. 4. Garbage will be collected and properly disposed, in accordance with GOK norms and Ecological Code of Kazakhstan. Unauthorized burning of construction waste is subject to penalties for Contractors and withholding of payments. 5. 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 and will need to certify this in the safety log prior to the start of the construction works. 6. Once the site is no longer needed the contractor must fully decommission it, with emphasis on waste removal /clean up of any spills or hazardous materials plus any necessary revegetation.		Throughout the construction period.	Contractor Environment Specialist	COR/PMC/CSC Environment Specialist	To be included in the Project Costs.
A.2.13 Loss of cultural or archaeological heritage, including cemeteries and roadside graves/markers of accident victims	1. Wherever roadside markers of accident victims are along road sections, their removal to another appropriate site beyond RoW requires a process of consultation with the local Akim as well as the victim's family (where possible).	At any markers or sites that would indicate archaeological/historical items at construction sites, including	1. During the construction period and ahead of ex-cavation at any such site	Contractor Environment Specialist	COR/PMC/CSC Environment Specialist Any authority issuing a Cultural	To be included in the Project Costs.

	2. Any chance finds must be reported to the PMC, to the Oblast Cultural Heritage Department and all construction work stopped until authorities have issued clearance to go on.	newly established hauling roads.	2. Prior to earth moving in these areas		Heritage Expertise	
A.2.14 Impacts on Public Utilities, Access and Services	1. It is the Contractor's responsibility to locate and confirm the details of all infrastructure objects providing public services and that may potentially be affected by the works. 2. All utilities subject to removal need to be fully disconnected before replacing the existing service. 3. Any damage or hindrance/disadvantage to local businesses caused by the premature removal or insufficient replacement of public utilities is subject to full compensation, all at the full liability of the Contractor who caused the problem. 4. The Contractor shall also maintain unhindered access and use of social, cultural and religious sites (e.g. mosques, cemeteries, cultural gathering places, sports facilities). 5. Should damage to private properties occur, including livestock and homestead gardens, the Contractor will be held fully liable to compensate and rectify the inflicted damage.	Throughout the Project Corridor	During the construction period	Contractor Environment Specialist	COR/PMC/CSC Environment Specialist	To be included in the Project Costs.
A.2.15 Health and Safety of Workers	1. The Contractor will be requested to prepare an approved Construction Environmental Action Plan (CEAP), which will, among others, delineate all work safety aspects he intends to apply. Focal points of the CEAP will relate to means, type and number of protective clothing, safety precautions at specific work sites, first aid, rescue plans, work hours, and all intended measures for avoiding or proper clearance of hazardous substances, including fueling operations, transport and handling of	N/A	During the construction period	Contractor Environment Specialist	COR/PMC/CSC Environment Specialist	To be included in the Project Costs.

	hazardous materials and explosives, securing measures etc. 2. The CEAP will further explain methods and volumes for using any local resource, and how to address common risks associated with public safety, crimes, STDs and prostitution.					
A.2.16 Decommissioning of Works Site	The Contractor shall ensure that all permanent and temporary construction camps are re-instated to the satisfaction of the PMC, including the removal of any contaminated materials.	Construction camps, temporary and permanent.	End of Construction	Contractor Environment Specialist	COR/PMC/CSC Environment Specialist	To be included in the Project Costs.
A.2.17 Hazardous Materials and Explosives	1. The Contractor shall develop a management plan for transport, handling and storing hazardous material and a contingency plan in the event of an accident involving hazardous material. Such emergency plan needs to be consulted and coordinated with the local health facilities. 2. Explosives need be treated with specific care and arrangements for restricted uses and safety measures.	N/A	During the construction period	Contractor Environment Specialist	COR/PMC/CSC Environment Specialist	To be included in the Project Costs.

A.2.18 Improper management of excavation, transportation and storage procedures; adverse impacts as a result of the activities leading to the dust development and air contamination	1. Controlling bypass roads; if necessary, ensuring of these roads are improved to an acceptable level and the possibility of its use in all weathers; 2. Providing supporting documents confirming that the high-quality fuel is used by the Contractor for its vehicle fleet, specified in the technical specifications; 3. The use of dust suppression means (regular watering); 4. Trucks operators and special machinery must strictly adhere to the specified speed limits; 5. Vehicles downtime must not exceed 2 minutes.	At sites of excavation and when transporting road construction materials	During the construction period	Contractor and Sub-contractor	COR/PMC/CSC Environment Specialist	To be included in the Project Costs.
A.2.19 Dust development in borrow pits as a result of excavation and backfill material	Supplier of construction materials at the borrow pit will use the equipment to produce the road construction materials, and a fenced area for storage of fine-grained materials; continuously sprayed water will be at the outlet of this equipment to suppress dust; equipment will be provided with the other effective dust control technology.	Borrow pits	During the construction period	Contractor and Sub-contractors Environment Specialist	CSC Environment Specialist	To be included in the Project Costs.

A.3: OPERATIONAL PERIOD

Environmental Impact/ Issue	Mitigation Measures	Location	Time Frame	Responsibility		Costs / Budget
				Implementation	Supervision	
A.3.1 Adhering to the basic requirements of road safety	Recommended actions include: Appropriate traffic signs, traffic control and monitoring, review of driving documents for violations and a wise application of penalties	At identified black spots where regular road accidents occur.	Continuous	Contractor during 2 years of defects notification period in collaboration with Traffic	MID / COR Traffic police	Republican Budget Environmental budget

				police. After the defects notification period is expired - Traffic police only		
A.3.2 Increased risk of pedestrian accidents within settlement areas due to improved roads, faster speeds and greater traffic volume	To manage these problems administrative measures will be applied such as: - enforce speed limits through increased 'radar' surveillance and increased speeding fines - better and more frequent signage	In every settled area and at junctions	Continuous	Traffic police	MID / COR KazAvtoDor	Republican Budget Environmental budget
A.3.3 Inadequate management of traffic-generated air pollution	1. Adequate signage and awareness measures forwarded by Traffic Police, to improve the flow of traffic, reduce deceleration-acceleration cycles and idling periods, all measures that will lead to the overall reduction in the emission levels, despite the predicted increase in the overall traffic volume.	Where applicable and required, nearby human settlements	To be defined	COR	MID / COR KazAvtoDor	Republican Budget Environmental budget
A.3.4 Increased risk of hazardous material spills due to increased traffic volume	1. Although the risk is extremely small, the road operator will: • Insure that all trucks carrying hazardous materials are marked according to GoK norms. • Enforce traffic controls. • Set speed limits for trucks carrying hazardous material to max. 85kph or according the GoK norms and codes.	Along the entire road	Continuous	Traffic police	COR and Department for Ecology	Republican Budget
A.3.5 Increased risk of collisions with domestic animals.	Enforcement of speed limits should reduce the potential for collisions with domestic animals on the road.	Along the entire project road	Continuous	Traffic police	COR	Republican Budget

Environmental Monitoring Plan (PART B)

B. CONSTRUCTION PERIOD				
Monitoring plan	**Monitoring Activity / Details / Outputs**	**Timing**	**Executing Unit**	**Reporting Responsibility**
B.1 Availability of permission documents to carry out EAP during construction period jointly with Contractor	Ensure that Contractor in the beginning of construction period has appropriate licensed environmental specialist: check CV and license certificate(s). Discuss with contractors/sub-contractors implications of all mitigation measures included in EMP.	At time of each contractor and sub-contractor appointment	PMC, CSC	MID/ CoR
B.2 Lack of good housekeeping practices at both camp sites and work sites, including solid domestic waste management	Using agreed monitoring checklists, confirm that the items as listed in the CEAP and Industrial Environmental Monitoring (IEM) in the Technical Specifications are fully implemented.	Throughout the construction period, monthly	CSC	CoR, PMC
B.3 Earthworks and material handling processes, including aggregate sites (gravel, sand), haul roads to quarries or processing sites	Using a checklist confirm the following: 1. haul road upgraded so it becomes an all weather road; 2. Aggregate sites are operating legally with permissions and approved documents 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.	CSC	CoR, PMC
B.4 Side borrow operations potentially causing erosion, and landslide	To undertake inspections to determine the type of borrow operations the contractor should file request and conform that roadside borrowing is not taking place and quarries are located in a particular distance from the road as required by Construction Rules and Instructions. Also, routine methods to prevent erosion are observed.	Throughout the construction period, monthly	CSC	CoR, PMC
B.5 Earthworks - transport and storage; managing of dust, noise	Undertake, as part of the construction inspection, regular confirmation that earthworks are carried out 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 along the haul road sections, and that a speed limit of 30 km/hr is strictly enforced to avoid accidents involving trucks.	Every day, throughout the construction period	CSC	CoR, PMC
B.6 Potential bitumen/asphalt and concrete production spills and pollution.	Ensure that technical specification for asphalt and concrete plants are compliant to norms and requirements. Storage and handling of bitumen and asphalt concrete should be done without spillage and soil pollution.	Throughout the construction period, monthly	CSC	CoR, PMC

B.7 Contractors and sub-contractors constantly monitor dealing with oil and lubricants to be performed without spills and soil pollution	Targeted inspections for all working places, construction camps, checking of areas with diesel-generator and areas for fuel storage. Any pollution must be eliminated immediately.	Quarterly inspections, unannounced	CSC	CoR, PMC
B.8 Air pollution caused by exhaust gases of construction machinery and equipment	1. Prohibition of no-load operation of construction vehicles; 2. Using of sound equipment, quality fuel in accordance with the technical specifications 3. Timely delivery of technical inspections of equipment	Ongoing throughout the project as part of the construction inspection	CSC	CoR, PMC
B.9 Damage or loss of cultural or archaeological heritage, including roadside obelisks /monuments in the memory of road accident victims.	Contractor based on inventory and consultations with raion authority and with family members of victims of accidents should confirm that all roadside objects are moved to a distance as per Construction Norms and Instructions. This fact needs to be registered in relevant documents and submitted to CoR, PMC and CSC.	Each time of construction commencement of a new road section	CSC, working close with local authorities	CoR, PMC

Grievance Redress Mechanism

378. Complaints consideration procedures for the project aim to provide an effective and systematic mechanism for the Projects in responding to queries, feedbacks and complaints from affected persons, other key stakeholders and the general public.

Levels and Procedure for Grievance Redress

379. The Grievance Redress Mechanism (GRM) is available to people living or working in the areas impacted by the project activities. Any person impacted by or concerned about the project activities has the right to participate in the GRM, should have the easy access to it, and be encouraged to use it. The proposed GRM does not replace the public mechanisms of complaint and conflict resolution envisaged by the legal system of the Republic of Kazakhstan, but attempts to minimize use of it to the extent possible.

380. Overall responsibility for timely implementation of GRM lies with the CoR and Kazavtozhol supported by teams of consultants, such as PMC, Construction Supervision Consultants (CSC) involved in managing and supervising the civil works and other activities under the investment program, while Construction Contractors (CC) undertake the actual civil works. Relevant oblast, rayon and community Akimats, who are mandated by law to perform grievance redress related tasks, and mediators / non-governmental organizations (NGO), who are involved in facilitating amicable resolution of grievances are also included in GRM.

381. This GRM envisages two levels of grievance resolution for the road sector projects implemented under the supervision of the CoR: Grievance Redress Committees (GRC) at regional (oblast) and central (Astana) levels in accordance with the Guideline on Grievance Redress Mechanism on Environment and Social Safeguards for Road Sector Projects approved by the CoR in August 2014 (GRM Guideline). GRCs are composed of members nominated from CoR, Akimats, Kazavtozhol, PMCs, CSCs, CCs. GRCs at regional and central levels are chaired by the Heads responsible for the overall operation of GRM and its efficient and timely implementation, while the Coordinators are responsible for involving the relevant parties and coordinating the works of GRCs at regional/central levels.

GRM: Regional (Mangystau Oblast) Level

382. At the first stage, the resolution of grievance will be attempted through GRC at regional level through the following steps.

383. *Grievance registration*: complainants or concerned individuals can visit, call or send a letter or e-mail or fax to community Akimat, grievance focal point at CCs and PMC, GRC Coordinator at Kazavtozhol regional branch. Receipt of grievances lodged in person, via phone, through a letter or e-mail or fax will be acknowledged. GRC at the regional level also considers the anonymous complaints, in case the complainant refuses to provide contact details or no contact information is available in the grievance received by e-mail / mail / fax. Grievances will be recorded in a standard format, provided in the Annex 3.

384. *Grievance processing*: Queries and complaints that are clarified and resolved at the intake point are closed immediately. Cases requiring further assessment and action are considered by the GRC at regional level. The GRC at regional level: (i) holds meetings on bi-monthly basis, however special ad hoc meetings can be arranged, as needed; and (ii) discusses the grievance case within ten working days and recommend its settlement to parties. GRC Coordinator at regional level circulates relevant information among the members of GRC, prepares Minutes of GRC meeting and progress reports, and ensures that actions and decisions are properly documented.

385. *Feedback provision*: Receipt of grievances lodged in person or via phone will be acknowledged immediately. Receipt of grievances received through a letter or e-mail or acknowledged through a letter / e-mail / fax within 3 working days upon receipt by GRC coordinator at regional level. In case the grievance is not related to project activities or impacts generated due to the project implementation and cannot be considered under this GRM Guideline, the feedback will be provided to the complaining party specifying to which entity (community / rayon / oblast level Akimat, as relevant) it has been forwarded.

386. If grievance was resolved at regional level, the complaining party will be informed of the outcome. If grievance was not resolved at the regional level and was passed to the GRC at the central level for consideration and resolution, appropriate information will be provided to the complaining party, including the date when the case was passed to GRC at the central level and the date by which the outcome at the central level is expected.

387. In case of anonymous complaints, the printed response will be posted at the information board of the Kazavtozhol's respective regional branch, as well as at the information board of the relevant Akimat, so as the complaining party can approach and review the feedback.

GRM: Central Level

388. Following unsuccessful consideration of grievance by GRC at the regional level, complaint resolution will be attempted at a central level through following steps.

389. *Grievance processing*: If grievance cannot be resolved by the GRC at the regional level, it will be forwarded for consideration by the GRC at the central level, including all relevant documents. The GRC at central level: (i) holds meetings on monthly basis, however special ad hoc meetings can be arranged, as needed; and (ii) discusses the grievance case within twenty working days and recommend its settlement to parties. GRC Coordinator at central level circulates relevant information among the members of GRC, prepares Minutes of GRC meeting and progress reports, and ensures that actions and decisions are properly documented.

390. *Feedback provision*: If the grievance was resolved, the complaining party will be informed on the outcome of grievance resolution. If grievance was not resolved by the GRC at central level, appropriate information will be provided to the complaining party, including details why the case was not resolved, as well as recommendation to seek for resolution through the RoK legal system.

391. For anonymous grievances or in cases when the complainant refused to provide contact details, the information on status of grievance redress and outcomes of resolution process will be posted on the information boards of relevant regional branch of Kazavtozhol and relevant community / rayon / oblast Akimats.

GRM: Legal System

392. If after the intervention and assistance from the GRCs at both regional and central levels, no solution has been reached, and if the grievance redress system fails to satisfy the complaining parties, the case will be referred to the court for resolution in accordance with the RoK legislation.

393. In the meantime, it should also be emphasized that the GRM Guideline does not limit the right of the complaining party to submit the case to the court of law in the first stage of grievance process

Grievance Focal Points

394. DPs or other concerned individuals may visit, call or send a letter or fax to GRC at the regional level for Mangystau Oblast.

GRC Contact Details:

Address: SE «Kazakhavtodor» building, 22 microdistrict, Aktau,
Mangystau Oblast, Kazakhstan
Tel: +7 (7262) 60-58-51, 60-58-52;
Fax: +7 (7262) 60-58-51
E-mail: mouad@mail.ru

395. The regional GRC for Mangystau Oblast includes the following members:

- Head of GRC: Krykbaev N., Deputy Director of the Branch of JSC “NC KazAvtoZhol”;
- Coordinator of GRC: Janysheva E. - Chief Specialist of the Regional Branch;
- Members:
    - Ossin K., Local Expert on Public Relations, PMC, Zhol Sapa;
    - Novossadova N., Local Expert on Environmental Protection;
    - Spanov T., Deputy Head of the Department of Passenger Transport and Automobile Roads of Mangystau oblast;
    - Kaliev A., Acting Head of the Department of Passenger Transport and Automobile Roads of SE "Mangystau Rayon Department of Housing and Communal Services";
    - Santay R., Chief Specialist of Department on Department of Passenger Transport and Automobile Roads of SE "Karakia Rayon Department of Housing and Communal Services";
    - Abdikhalyk B., Chief Specialist of Department on Department of Passenger Transport and Automobile Roads of SE "Munaily Rayon Department of Housing and Communal Services";
    - Zeynabilov M., Director of Branch of the JSC "Cengiz Insaat Sanayi ve Ticaret Anonim Shirketi".

396. At the Central GRC the key persons are:

- Head of GRC: Kalymov E. - Heal of Department of Investment Projects Implementation;
- Coordinator of GRC: Akhmetov B. - Leading Specialist of Department of Investment Projects Implementation;
- Coordinator of GRC: Ibrayeva D. - Leading Specialist of Department of Projects Preparation

Disclosure of the Grievance Process

397. The complaints resolution process for this LARF was and will continue to be disseminated through information brochures and posted to the community / rayon / oblast Akimats and the EA (or regional level representative of the EA). Grievance redress mechanism will also be presented during the public consultations and informal meetings at Project area by PMC representatives, Kazavtozhol and/or regional level representative of the EA. The information of grievance resolution will be summarized in EA/CoR progress reports to be submitted to ADB.

PUBLIC CONSULTATIONS

398. In accordance with the legislation of the RoK and ADB policy, the public consultations has been conducted on March 3, 2015 at Zhetybai and Zhanaozen. Preliminarily, in the course of preparation of these consultations the information on the event has been placed in local mass media (newspapers Mangystau No 28 (8754) dated on 10.02.2015 and Ogni Mangistau No 28 (11462) dated on 10.02.2015 and at the web-site of the Committee of Roads of MID of the RoK 15 days before the its execution. Scanned copies of these materials are attached to this report in Appendix 1.

399. The list of participants on the part of the local community of Zhetybai and Zhanaozen and the Agenda of this event are included into the Appendix 2. and Appendix 3. to this Report respectively.

400. An interpreter translating from Russian into Kazakh and from Kazakh into English has been invited in order to ensure complete understanding of the discussed issues by the local community, international consultants and ADB representatives. Thus, participants representing different groups of population and organizers of the public consultations, as well as international and design organizations had not any incommodities with regard to language barriers during discussion of important problems of the local community.

401. Booklets in Kazakh and Russian with information on the project and expected negative and positive impacts during various stages of the project activities (Appendix 4.) have been distributed among the participants of the Public consultations at both localities. Furthermore, the booklets included data concerning proposed mitigation measures with regard to negative impacts, especially at the stage of construction, and contact details of PMC Zhol-Sapa at Aktau.

402. **Zhetybai**. Number of participants of the Zhetybai consultations was 65 persons. The event commenced at 10 AM in the building of the Akimat.

403. The meeting was opened by the Public consultations Moderator **Sain Temirkhanuly Demessin,** head of RSE “Mangistauzhollaboratory” who informed participants about purposes and objectives of this event as well as about their rights enshrined in the Rules for conducting of the public consultations. He introduced employees of the Committee for Roads of MID of the RoK, PMC specialists and ADB representatives and event participants to the public.

404. Then he proposed to elect a chairman and a secretary of this meeting. Sain Temirkhanuly Demessin has been elected chairmen of the public consultations by the joint decision of the participants and Kirill Ossin, a representative of the PMC sociologists team, has been elected secretary.

405. The Vice-President of JSC KazdorNII **Yerbol Aitbayev** made a report concerning engineering and technical aspect that described technical issues of the road construction and told about design solutions related to road exits, junctions, crossroads and interchanges. Yerbol Aitbayev told about categories of existing roads at this area and

changes in road categorization included into the design documentation. The report has been made on the basis of diagrams, maps and schemes.

406. The report concerning environmental issues has been made by **Djamilia Aitmatova,** international environmental consultant, who mentioned that impacts during the project activities will have both positive and negative character. The negative impact will be represented generally by increased noise impact from construction machinery movement and work as well as from dust generation. Additionally, there will be present air pollution because of exhaust gases of construction machinery. In this regard provision will be made for mitigation measures that will be included into the design documentation and will be fully complied with by relevant responsible organizations during the road construction period.

407. These measures include, inter alia, execution of construction works during the daytime which will reduce impact of disturbance factor. The dusting problem will be resolved by permanent watering of road as well as by covering of heavy trucks transporting dusting materials (soil).

408. Djamilia Aitmatova mentioned also that impacts on the vegetable and animal world will be minimal because of the fact that migratory paths of wild animals do not cross this road section and the vegetation is represented by small communities of Artemisia which are not places of birds nesting. The live stock will be cross the road through specially organized drive ways. The impact on the water resources including ground waters is not expected. There are not any waterways near the site and the ground waters underlay at the very deep depth.

409. Construction and household waste generation will be controlled by the contractor that organizes its collection and disposal in accordance with requirements of the Environmental Code of the RoK.

410. The spokesperson also informed participants of the event that within the framework of the exists so called Complaints resolution mechanism that allows local public to turn to the Complaints Resolution Team which will be created intentionally for cases where Project activities will unexpectedly impact in any way on the life of the local community with regard to environmental and social areas.

411. A local resettlement specialist **Kirill Ossin** has made the presentation on resettlement issues. The speaker described in his presentation main provisions of the Asian Development Bank's Safeguard Policy. The information about rights of the local citizens on allowances and compensations for the persons under the impact of the Project has been presented in details. He also called attention to the current work for preparation of the relevant Land Acquisition and Resettlement Plan.

412. He called attention to the liability of the borrower for the fulfillment of the Safeguard Policy's terms and conditions which includes the Environmental Assessment and society assessment, consultations with persons who are in the area of the impact of the project, preparation and implementation of the safeguards execution plans, monitoring of these plans implementation, preparation and presentation of report on monitoring results.

413. He also described ADB functions: explanation of requirements and terms of the safeguard policy to borrowers, provision of assistance in development of potential necessary for the fulfillment of these requirements and terms during the project preparation and implementation, supervision over their proper execution, execution of monitoring and guidance.

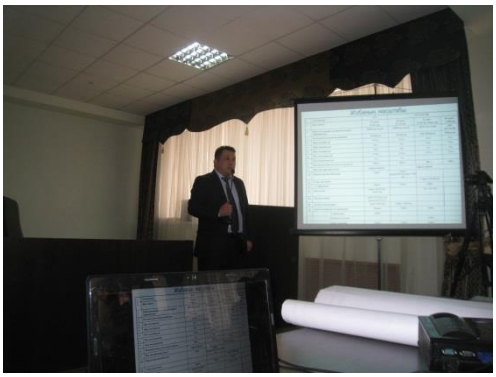
414. Categories of persons whose issues will be considered in the Land Acquisition and Resettlement Plan for needs of the Project (i.e. all persons under resettlement and persons losing their lands; owners of buildings, planted vegetation, trees or other objects

present at the land area where road construction works will be carried out; and persons under resettlement who temporarily or continuously lose their business, income and salary) have been introduced to the participants of the consultations.

415. Continuing the topic started by the previous speaker Kirill Ossin noticed once again that Complaints keeping and resolution mechanism on the project work will be formed during the Project work and local citizens will be familiarized with this mechanism. In addition to the above local citizens can address to the Project Management Consultant "Zhol-Sapa" (its address is given in the booklets). Executive officers on complaints consideration will receive a complaint and render assistance in resolution or transfer of complaints received from persons under the resettlement and community.

416. In answering speeches of local residents a request for increasing of number of livestock driveways was heard. There were raised also questions concerning land acquisition for construction and questions on compensations and allowances. It was suggested that the Project has a great importance for the development of the district, oblast and all the country, not only with regard of economic relations, but also with regard of possibilities of getting job by the local residents during the period of construction works.

417. The local residents gave also following **questions, propositions and comments:**



418. **Local resident, Zhetkizbay Myrzakulov:** "I have my livestock and my grazings near the 104 km. You must make provision for the livestock driveways in that place. Generally I support the project. The road is very important for our region and our people. Good luck".

419. **Answer:** Don't worry. There is a proposition made for three livestock driveways at the Zhetybai-Zhanaozen road section. And one of them is located just at the km 104.

420. **Local resident: "**Thanks to the head of our country for his attention to us. We have been waiting for this road for a long time and I hope that it will be built soon. And I have a question: Will local residents work in the road construction and how many people will be resettled?".

421. **Answer:** After the completion of all procedures and determination of Contractor the Akimat of the district will advise Contractor to use local staff. As regards a number of people to be resettled: it will be determined after completion of preparation of the Land Acquisition and Resettlement Plan.

422. **Zhanaozen.** 50 participants attended the Public Consultations in Zhanaozen. As in the previous case, a chairman of the meeting **(Sain Temirkhanuly Demessin,** head of RSE RSE "Mangistau zhol laboratory"**)** and a secretary (**Kirill Ossin**, resettlement specialist of PMC) have been elected, **Yerbol Aitbayev,** representative of the Project Institute, made a report on technical and engineering issues, **Djamila Aitmatova,** international environmental consultant, has made a report on environmental issues, and **Kirill Ossin,** local resettlement specialist, has made a presentation on resettlement. The meeting was attended by representatives of ADB Headquarters (Philippines) as well as employees of the Representative Office of ADB in Kazakhstan and responsible executives of the Committee for roads, local environmental specialist and international specialist on LARP (Land Acquisition and Resettlement Plan).

423. Also during the discussions the floor has been taken by the expert team leader of PMC **Krishna Chakhun.** He mentioned in his speech that the road construction has a great importance for the district and oblasr development. He informed that there are not any decisions taken concerning the financing for the time being, but this issue will be considered by the Board of Directors of ADB in the nearest time.

424. The meeting with the local community passed lively. There were questions concerning possible land acquisition, compensations and discomfort during the construction works. Also local residents expressed their disagreement to the fact that the number of livestock driveways along the entire road length is only three and requested to increase the number of livestock driveways.

425. **Local resident:** "There are grazings around the town. You should take into account their presence." **Answer:** In accordance with the project the provision is made for three livestock driveways which have been recommended by relevant competent authorities. If you know where is necessary to place additional livestock driveways, we are ready to consider a possibility of their placement subject to technical feasibility of the project.

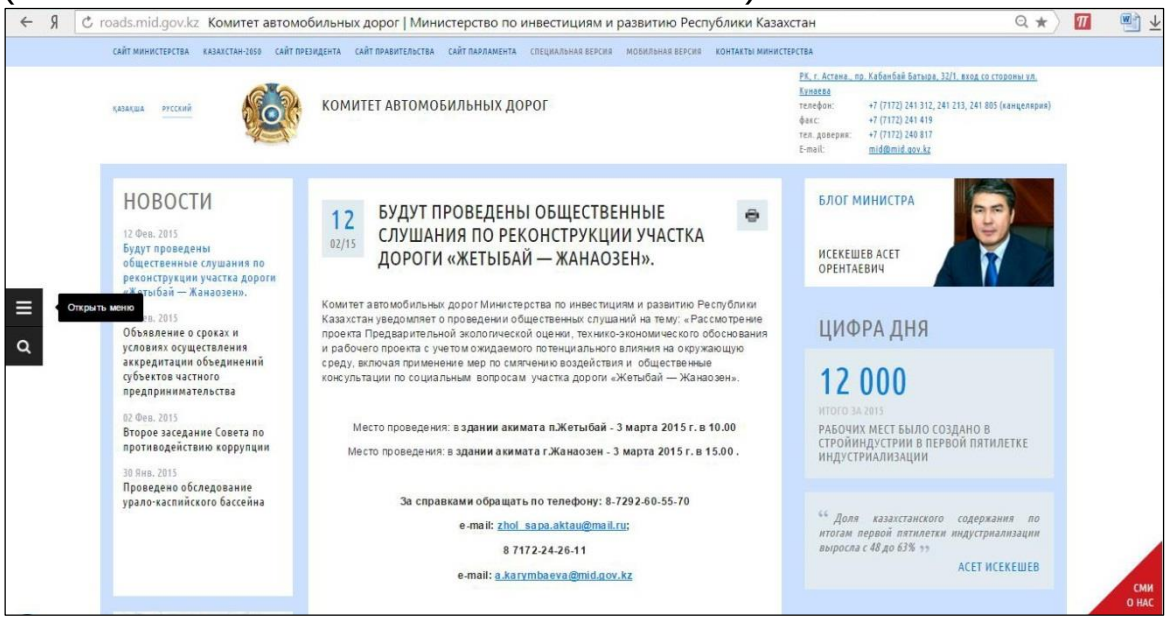
426. **Local resident:** "The money has been allocated. How will it be distributed at this project and who will be responsible for this?". **Answer:** The money has not been allocated. This issue is under consideration and consultations between the Government of the RoK and ADB. Once all procedures have been fulfilled the Government of the RoK will announce a tender and assign a Contractor.

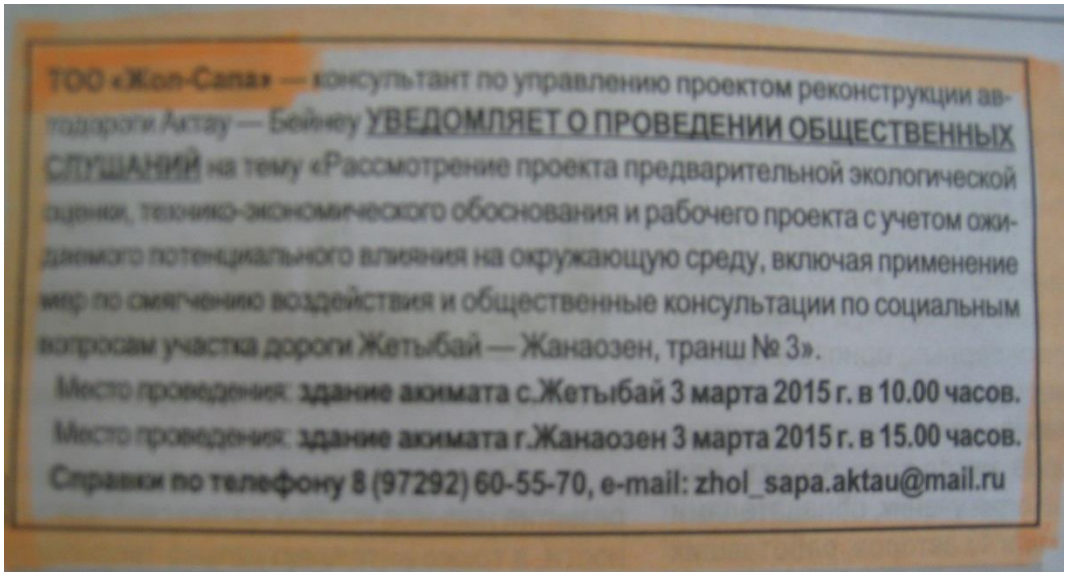
427. Generally in relation to the both Public consultations we can say that the local residents understand the importance of the road construction and express gratitude to the Government of RoK in relation to that such construction will be started soon and this will improve the economic situation of the localities because of reduction of travel time, reduce of vehicles breakdowns related to bad condition of the road, reduce dusting and also will make conditions of travel from one locality to another more comfortable.

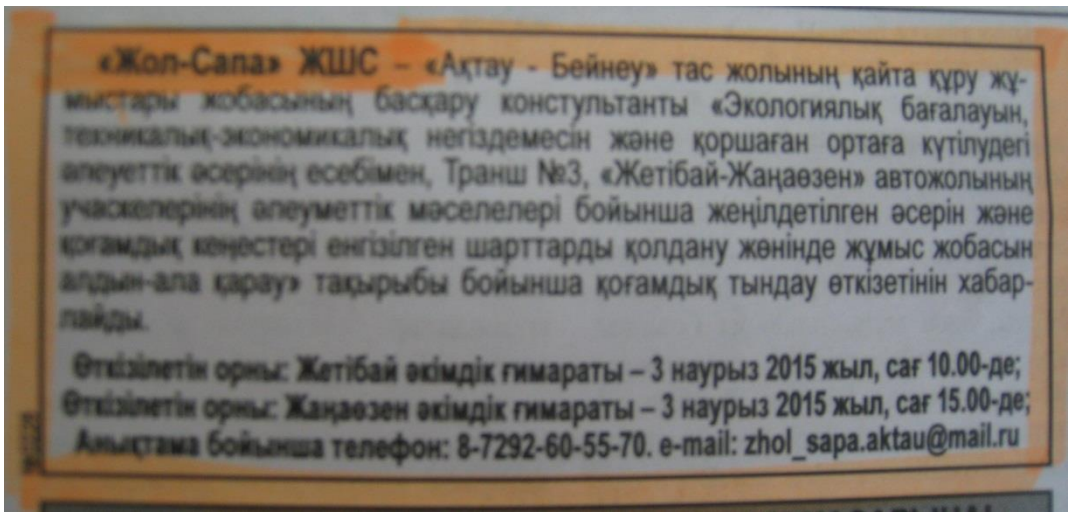
428. **Main conclusions on discussion results**: (1) Public consultations on consideration of the Initial Environmental Evaluation Project, feasibility study and working project taking into account an expected potential impact on the environment including mitigation measures and public consultations on social issues of Zhetybai-Zhanaozen road are to be considered as held; (2) projects of the Initial Environmental Evaluation are to be approved subject to taking into account the public opinion and comments made in compliance with all requirements of the environmental legislation of the RoK, fulfillment of which will be basis for the negative environmental impact reduction.

Appendix 1.

(Announcements in mass-media and internet)







МАҢҒЫСТАУ 11

«ҚазТрансГаз» АҚ Маңғыстау және Ақтөбе облыстарында газбен қамтамасыз ету жұмыстарын белсендіреді

ҰСТАЗЫ ЖАҚСЫНЫҢ – ШӘКІРТІ ҮЗДІК

КЕСТЕСІ

ХАБАРЛАНДЫРУ!

ЕСКЕ АЛУ

«Жол-Сапа» ЖШС – «Ақтау - Бейнеу» тас жолының қайта құру жұмыстары жобасының басқару консультанты «Экологиялық бағалауын, техникалық-экономикалық негіздемесін және қоршаған ортаға күтілетін әлеуметтік әсерінің есебімен, Транш №3, «Жетібай-Жаңаөзен» автожолының учаскелерінің әлеуметтік мәселелері бойынша жөнелдетілген әсерін және қоғамдық кеңестері енгізілген шарттарды қолдану жөнінде жұмыс жобасын алдын-ала қарау» тақырыбы бойынша қоғамдық тыңдау өтізетінін хабарлайды.

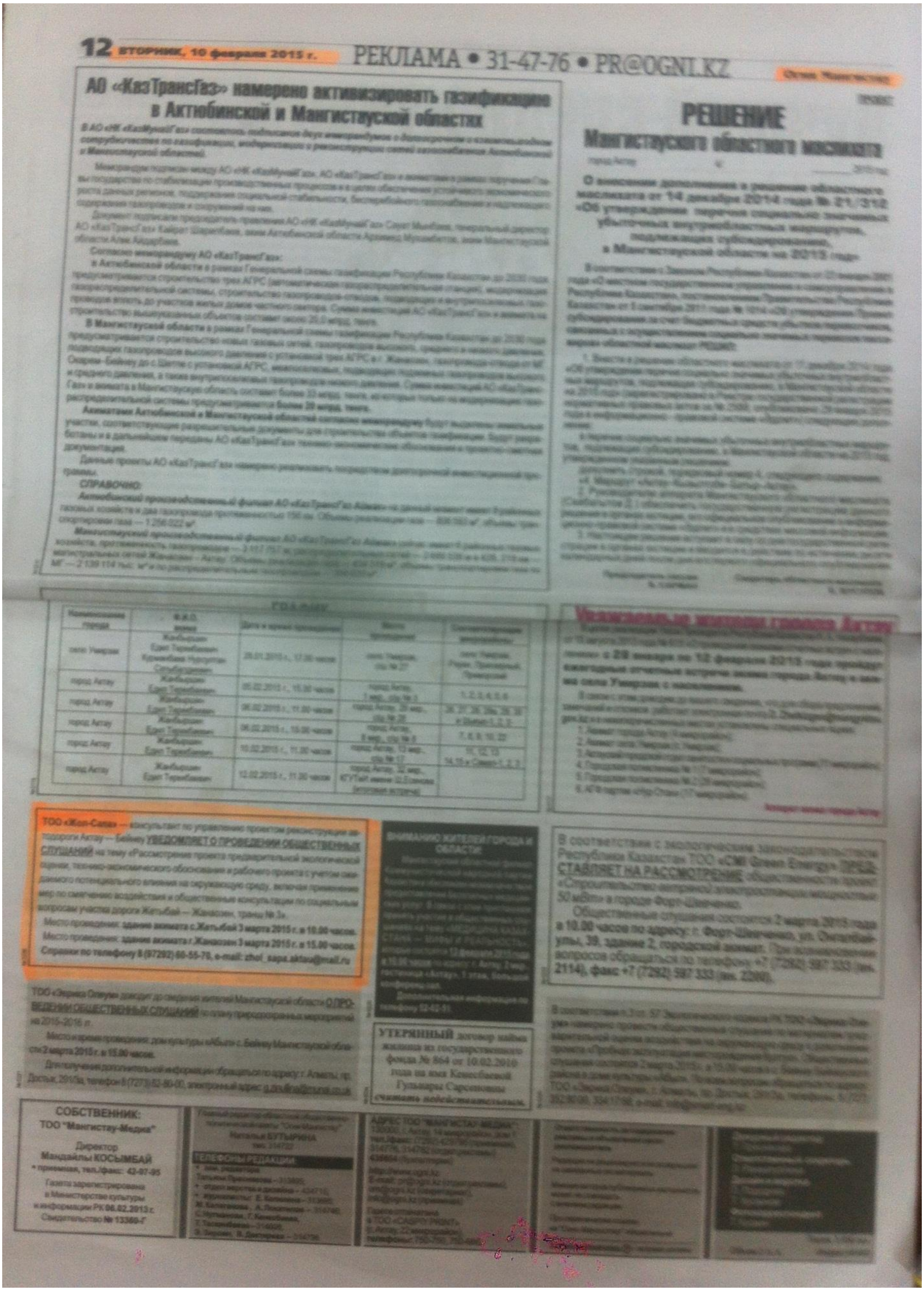
Өткізілетін орны: Жетібай әкімдік ғимараты – 3 наурыз 2015 жыл, сағ 10.00-де;
Өткізілетін орны: Жаңаөзен әкімдік ғимараты – 3 наурыз 2015 жыл, сағ 15.00-де;
Анықтама бойынша телефон: 8-7292-60-55-70, e-mail: zhol_sapa.aktau@mail.ru

ҚАЛА ЖӘНЕ ОБЛЫС ТҰРҒЫНДАРЫНЫҢ НАЗАРЫНА!

«Қазақстан Коммунистік Халық партиясы» қоғамдық бірлестігінің Маңғыстау облыстық филиалы тегін медициналық қызмет көрсетудің төмен сапасына алаңдаушылық білдіреді.

Қосымша ақпараттар мына телефон бойынша: 52-62-51

ХАБАР АЙТУ



12 вторник, 10 февраля 2015 г. РЕКЛАМА • 31-47-76 • PR@OGNI.KZ

АО «КазТрансГаз» намерено активизировать газификацию в Актюбинской и Мангистауской областях

РЕШЕНИЕ
Мангистауского областного маслихата

ТОО «Жол-Сапа» — консультант по управлению проектом реконструкции автодороги Актау — Бейнеу **УВЕДОМЛЯЕТ О ПРОВЕДЕНИИ ОБЩЕСТВЕННЫХ СЛУШАНИЙ** на тему «Рассмотрение проекта предварительной экологической оценки, технико-экономического обоснования и рабочего проекта с учетом ожидаемого потенциального влияния на окружающую среду, включая применение мер по смягчению воздействия и общественные консультации по социальным вопросам участка дороги Жетыбай — Жанаозен, транш № 3».

Место проведения: **здание акимата с. Жетыбай 3 марта 2015 г. в 10.00 часов.**

Место проведения: **здание акимата г. Жанаозен 3 марта 2015 г. в 15.00 часов.**

Справки по телефону 8 (87292) 60-55-78, e-mail: zhol_sapa.aktau@mail.ru

Appendix 2.

Lists of participants

Zhetybai

List of Participants of the Public Consultation for project on reconstruction of road Zhetybay – Zhanaozen – Fetisovo – border with the Republic of Turkmenistan

Список участников общественных слушаний по проекту реконструкции дороги «Жетыбай – Жанаозен – Фетисово – граница Республики Туркменистан»

«Жетібай – Жаңаөзен – Фетисово – Түрікменістан Республикасының шекарасы» жолын қайта құру жобасы бойынша қоғамдық тыңдаудың қатысушыларының тізімі

Zhetybay, March 3, 2015 Жетыбай, 3 марта 2015 года, Жетібай 3 наурыз 2014 ж.

№	Name, Surname Ф. И.О. А.Т.Ж.	Occupation Место работы Жумыс орны	Contact details (phone, e-mail) Контактные данные (тел. эл. адрес) Байланыс ақпарат (тел., эл. мекен-жайы)	Signature Подпись Қолы
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2	Асанов Куаныш	Жетібай №4 о/м	87293520141	[illegible]
3	Толегенов Әбдікалық	жер бөлімі	872937 21800	[illegible]
4	Мырзакулов [illegible]	[illegible]	87015378406	[illegible]
5	Сраманов Сарсен	Спорт мектебі	87015261483	[illegible]
6	Бекболаев Кайрат	Жетібай спорт мектебі	87011816577	[illegible]
7	Капанова Жанат	«Айналайын» б/б	87786004483	[illegible]
8	Кулмебекова Райхан	«Айналайын» б/б	87785730415	[illegible]
9	[illegible]	«Жетібай [illegible] спорт мектебі»	87756404856	[illegible]

№	Name, Surname Ф. И.О. А.Т.Ж.	Occupation Место работы Жұмыс орны	Contact details (phone, e-mail) Контактные данные (тел. эл. адрес) Байланыс ақпарат (тел., эл. мекен-жайы)	Signature Подпись Қолы
10	Әділханова Ғалия Қилымбайқызы	зейнеткер 140 қ	87758811633 9.7 26 276 Жетібай кенті 108 үй 2 пәтер	[signature]
11	Кенжебай Жанар Кенжебайқызы	Өнер мектебі өнер мектеп а.мұғ.	Ж. Мыңбаев 11-1	[signature]
12	Дунанова Аяш Жалонхановна	«Атамасай» ББ	Жағалау көшесі 56 а үй 21-үй	[signature]
13	Байтабетова Алтын Қайратқызы	«№4 о.м.» м.м.	Алаколь көшесі №3 үй	[signature]
14	Касиеман Гулим [illegible]	№4 орта мектеп	Насыров 272-1	[signature]
15	Шахантаева Анамгул	№4 орта мектеп	м/4 111-2	[signature]
16	Ескалиева Оңайхан	«Атамасайбек»	Куржиманұлы №38-2	[signature]
17	Даукеева Қарагөз	«Атамасайбек»	Жаңа құрылыс №190-2	[signature]
18	Жексенбаева Базаргул	«Атамасайбек»	Аэропорт №34	[signature]
19	Шорбаев Малик	Әкімшілік	2 қаз/аул 49	[signature]
20	Өтекешова. Нәсібелі	«Өнер мек»	Жаңабаев №65	[signature]
21.	Көптілеуова Сәнбибі	«Өнер мек»	Ч/Ф №26-2	[signature]
22.	Маутбаева Қарлыға	«Өнер мек»	Ш. Айтмұханбетұлы 8-1	[signature]
23.	Бекмаганбетов Бауыржанбай	Ст. мастер КазТрансГаз/Аймак	Новостройка	[signature]
24.	Халилаев Айдына	в.о. мастер КазТрансГаз/Аймак	Новостройка	[signature]

List of Participants of the Public Consultation for project on reconstruction of road Zhetybay – Zhanaozen – Fetisovo – border with the Republic of Turkmenistan

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Zhetybay, March 3, 2015 Жетыбай, 3 марта 2015 года, Жетібай 3 наурыз 2014 ж.

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4	Суминов Магзан	Каз ТРАНС ГАЗ Аймак	26-8-70	[signature]
5	Шамиянов Айжарык	Каз Транс Газ Аймак	26-8-70	[signature]
6	Шынбергенов Талғат	Каз Транс Газ Аймак	26-8-70	[signature]
7	Бабаназаров Айбалат	N8 орта мектеп	26-1-90	[signature]
8	Нуров Нұржан	N8 орта мектеп	26-1-90	[signature]
9	Сайтен Алдан.	N8 орта мектеп	26-1-90	[signature]

№	Name, Surname Ф. И.О. А.Т.Ж.	Occupation Место работы Жумыс орны	Contact details (phone, e-mail) Контактные данные (тел. эл. адрес) Байланыс ақпарат (тел., эл. мекен-жайы)	Signature Подпись Қолы
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17	Z. Abbas	ADB Environmental Specialist	zabbas@adb.org	[signature]
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20	Новосадова Наталья	КУП. Жол-Сапа"	zhol-sapa_aktau@mail.ru	[signature]
21.	Николаевич Георгий	КУП	8 777 0 777 229	[signature]
22	Айтмаганбетова Джамиля	КУП Жол Сапа	8 771 269 2228	[signature]

Ж.сем

List of Participants of the Public Consultation for project on reconstruction of road Zhetybay – Zhanaozen – Fetisovo – border with the Republic of Turkmenistan

Список участников общественных слушаний по проекту реконструкции дороги «Жетыбай – Жанаозен – Фетисово – граница Республики Туркменистан»

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Zhetybay, **March 3, 2015** Жетыбай, **3 марта 2015 года,** Жетібай **3 наурыз 2014 ж.**

№	Name, Surname Ф. И.О. А.Т.Ж.	Occupation Место работы Жумыс орны	Contact details (phone, e-mail) Контактные данные (тел. эл. адрес) Байланыс ақпарат (тел., эл. мекен-жайы)	Signature Подпись Қолы
12	Шауменова. И.	№3 мектеп	26-2-30	[signature]
13	Смешбекова. А.	№3 мектеп		[signature]
14	Жолдыбаева. Э.	№3 мектеп		[signature]
15	Курбангалиева. К.	№3 мектеп		[signature]
16	Нуртаева. Ф.	№3 мектеп		[signature]
17	Аманбаева. З.	№3 мектеп	26-0-74	[signature]
18	Каирбаев. Р.	№3 мектеп		[signature]
19	Кузьмухов. С.	№3 мектеп		[signature]
20	Айдабергенова. А.	№3 мектеп		[signature]

№	Name, Surname Ф. И.О. А.Т.Ж.	Occupation Место работы Жумыс орны	Contact details (phone, e-mail) Контактные данные (тел. эл. адрес) Байланыс ақпарат (тел., эл. мекен-жайы)	Signature Подпись Қолы
1	Нурмамбетова Б.	поликлиника	26-0-18	[signature]
2	Бурханова Ж	-	-	[signature]
3	Жонасбаева М	-	-	[signature]
4	Жрабаева Х	-	-	[signature]
5	Резнова Г	-	-	[signature]
6.	Кокейова Б	-	-	[signature]
7	Абдиева Р	скорая помощь	26-8-03	[signature]
8	Болмуханова М	— / —	26-1-03	[signature]
9	Рахимова А	аурухана	26-0-03	[signature]
10	Себенова М	аурухана	26-3-13	[signature]
11	Жанаисова М	Жұмыс - Сервис мед	26-2-95	[signature]
21.	Ермеков С.	N3 мектеп.	26-2-30.	[signature]
22.	Жайрамбаев Д.	N3 мектеп	26-2-30.	[signature]
23.	Джалгасов Р.	N4 мектеп	50-1-70	[signature]
24.				

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Zhetybay, March 3, 2015 Жетыбай, 3 марта 2015 года, Жетібай 3 наурыз 2014 ж.

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1	Кулсариев Арын	Жетібай өнер мектебі	Жетібай 872935 26305	[signature]
2	Асанов Куаныш	Жетібай №4 о/м	872935 20141	[signature]
3	Толегенов Абдикалык	жер бөлімі	872937 21800	[signature]
4	Мырзахметов Жетікізген	к/х Мирас жер бөлімінің шаруашы	87015378406	[signature]
5	Сражанов Сарсен	Өнер мектебі	87015261483	[signature]
6	Бекбосаев Кайрат	Жетібай спорт мектебі	87011816577	[signature]
7	Жапанова Жанат	«Айналайын» б/б	87786004483	[signature]
8	Кулмбекова Райхан	Айналайын б/б	87785730415	[signature]
9	Бегімбетова Дариғаш Бекболатқызы	«Жетібай БЖСМ» спорт мектебі	87756404856	[signature]

№	Name, Surname Ф. И.О. А.Т.Ж.	Occupation Место работы Жумыс орны	Contact details (phone, e-mail) Контактные данные (тел. эл. адрес) Байланыс ақпарат (тел., эл. мекен-жайы)	Signature Подпись Қолы
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13	Байтөбетова [illegible]	№4 о.м. м.м.	[illegible] №3 үй [illegible]	[illegible]
14	[illegible]	№4 орта мектеп	[illegible] 272-1	[illegible]
15	Шалкамбаева [illegible]	№4 орта мектеп	м/4 111-2	[illegible]
16	Ескалиева Оңайхан	«Айналайын»	Құрманғазы [illegible] №38-2	[illegible]
17	Даукеева Қарагөз	«Айналайын»	Жаңа құрылыс №190-2	[illegible]
18	Жексенбаева Бадагүл	«Айналайын»	Аэропорт №34	[illegible]
19	Шорбасов Малик	Акимчик	2 Қазақ ауыл 49	[illegible]
20	Өтекенова. Несібелі	«Өнер мек»	Жаңажол №65	[illegible]
21.	Коптилуова Санбибі	«Өнер мек»	с/ф №16-2	[illegible]
22.	Маутбаева Жазира	«Өнер мек»	Ш. [illegible] 8-1	[illegible]
23.	Бекмаганбетов [illegible]	[illegible]	Новостройка	[illegible]
24.	Халилаев [illegible]	[illegible]	Новостройка	[illegible]

Zhanaozen

03

List of Participants of the Public Consultation for project on reconstruction of road Zhetybay – Zhanaozen – Fetisovo – border with the Republic of Turkmenistan

Список участников общественных слушаний по проекту реконструкции дороги «Жетыбай – Жанаозен – Фетисово – граница Республики Туркменистан»

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Zhanaozen, March 3, 2015 Жанаозен, 3 марта 2015 года, Жаңаөзен 3 наурыз 2014 ж.

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4	Токбосов Бауыржан Ямангельдиевич	Акимат	53-843	
5	Джилкибаев Бакытжан Жолдасулы	Село Тенге	21-302	
6	Тышканбаев Саламат Бердіханулы	Акимат г. Жанаозен	53843	
7.	Меркашев Билере	жұмыспен қамту бөлімі	42-9-88	
8.	Папашвили Георгий	ТОО Жол-Сапа	87770777229	
9	Атимасова Джамила	ТОО Жол Сапа	87712692228	

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	Новосардова Ж.Б.	ТОО „Жол-Сапа"	87022689808	
	Осин Кирилл	Жол-Сапа	87014153161	
	Armine Simonyan	Zhol-Sapa, Consultant	armine@simonyans.com	
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	Z. Abbas	ADB, Environmental Specialist	zabbas@adb.org	

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List of Participants of the Public Consultation for project on reconstruction of road Zhetybay – Zhanaozen – Fetisovo – border with the Republic of Turkmenistan
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Zhana-Ozen, March 3, 2015 Жана Узень 3 марта 2015 года, Жаңа-Өзен 3 наурыз 2014 ж.

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3	Бекжумиев Сарсенбай	Зейнеткер	21.7 56	[signature]
4	Мустафаев Көбдаулет	зейнеткер.	–	[signature]
5	Таксымк. А	зейнеткер	87784308841	[signature]
6	М. Хасанов	Өзенжөндеу МКК	35-8-64	[signature]
7	М.Б. Абдуллаев	„ГКП„ Озен жөндеу"	31-550	[signature]
8	У.Б. Амиров.	„ГКП" Озен тазу"	31-550	[signature]
9	Дандыбаев + С	ГКП. Озенинвест	31-5-50	[signature]

№	Name, Surname Ф. И.О. А.Т.Ж.	Occupation Место работы Жумыс орны	Contact details (phone, e-mail) Контактные данные (тел. эл. адрес) Байланыс ақпарат (тел., эл. мекен-жайы)	Signature Подпись Қолы
10	Таушбаев Ауесбай	АКСК „ОТС"	87758120271	[signature]
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20	Оспанова Оразгуль	МКК „Тазалық"	87026851779	[signature]

03

List of Participants of the Public Consultation for project on reconstruction of road Zhetybay – Zhanaozen – Fetisovo – border with the Republic of Turkmenistan
Список участников общественных слушаний по проекту реконструкции дороги «Жетыбай – Жанаозен – Фетисово – граница Республики Туркменистан»

«Жетібай – Жаңаөзен – Фетисово – Түрікменістан Республикасының шекарасы» жолын қайта құру жобасы бойынша қоғамдық тыңдаудың қатысушыларының тізімі

Zhana-Ozen, March 3, 2015   Жана Озен, 3 марта 2015 года,   Жана Озен 3 наурыз 2014 ж.

№	Name, Surname Ф. И.О. А.Т.Ж.	Occupation Место работы Жұмыс орны	Contact details (phone, e-mail) Контактные данные (тел. эл. адрес) Байланыс ақпарат (тел., эл. мекен-жайы)	Signature Подпись Қолы
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13	Джолдасбаева Бибихан	КСК №8 Келешек	мкр 2-16117-8	[signature]
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Appendix 3.

Agenda

AGENDA OF THE PUBLIC CONSULTATIONS AT ZHETYBAI VILLAGE

10.00 – 10.30 AM	Registration of participants of the public consultations within 10-15 minutes before the beginning of the public consultations. Distribution of materials in Kazakh and Russian languages. Speech of the moderator of the public consultations. Safety training for participants.
10.30-10.55 AM	**Opening of the public consultations / Opening speech Representative of local executive authority** Head of RSE "Mangistauzhollaboratory" **Mr. Sain Temirkhanuly Demessin**
10.55-11.00 AM	Election of the chairman and the secretary of the public consultations, approval of the agenda of the public consultations and time limits.
11.00 – 11.20 AM	Speech of the representative of the Designer JSC "KazdorNII", Yerbol Aitbayev Presentation of the project. Technical issues of the project (bridges, pipes, livestock driveways, road exits, road widening).
11.20 – 11.30 AM	Speeches of specialists of PMC on environmental issues on environmental impact level and mitigation measures taken and to be taken; **Ms Dzhamilia Aitmatova,** **Ms Nataliya Novossadova**
11.30 – 11.40 AM	Speeches of specialists of PMC on social issues (Entitlement and compensation matrix, resettlement issues, Complaints keeping and resolution mechanism) **Ms Armine Simonyan** **Mr. Kirill Ossin**
11.40 AM – 12.00 PM	Questions – answers
12.00 – 12.10 PM	Closing of the public consultations

ORDER OF THE PUBLIC CONSULTATIONS AT ZHANAOZEN TOWN

Project of agent

3.00 – 3.30 PM	Registration of participants of the public consultations within 10-15 minutes before the beginning of the public consultations. Distribution of materials in Kazakh and Russian languages. Speech of the moderator of the public consultations. Safety training for participants.
3.30-3.55 PM	**Opening of the public consultations / Opening speech Representative of local executive authority** Head of RSE "Mangistauzhollaboratory" **Mr. Sain Temirkhanuly Demessin**
3.55-4.00 PM	Election of the chairman and the secretary of the public consultations, approval of the agenda of the public consultations and time limits.
4.00 – 4.20 PM	Speech of the representative of the Designer JSC "KazdorNII", Yerbol Aitbayev Presentation of the project. Technical issues of the project (bridges, pipes, livestock driveways, road exits, road widening).
4.20 – 4.30 PM	Speeches of specialists of PMC on environmental issues on environmental impact level and mitigation measures taken and to be taken; **Ms Dzhamilia Aitmatova, Ms Nataliya Novossadova**
4.30 – 4.40 PM	Speeches of specialists of PMC on social issues (Entitlement and compensation matrix, resettlement issues, Complaints keeping and resolution mechanism) **Ms Armine Simonyan Mr. Kirill Ossin**
4.40 – 5.00 PM	Questions – answers
5.00 – 5.10	Closing of the public consultations

Appendix 4.

Booklet (Handout materials)

"Zhetybai – Zhanaozen – Fetissovo –Republic of Turkmenistan Border"
Road Reconstruction Project 0-73 km Section

General Information on the Project and Environmental Impacts

Expected Financing by:

Asian Development Bank (ADB)

Responsible for preparation of documentation and carrying out public consultations :
Zhol-Sapa PMC, Astana

Employer: **Committee of Roads, Ministry of Investment and Development**

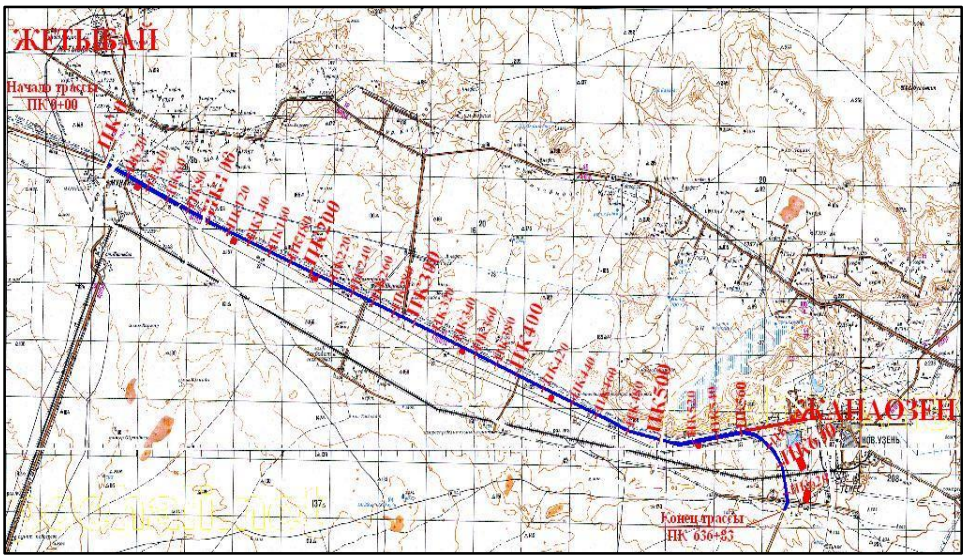
1. Project Brief Overview

The Republic of Kazakhstan by Ministry of Investment and Development (MID) plans to carry out "Zhetybai-Zhanaozen-Fetissovo-Republic of Turkmenistan Border" Road Reconstruction (to Turkmenbashi), "Zhetybai-Zhanaozen" Section 0-73 km. This road of republican importance is situated in Mangistau Oblast and represents a section of the international road route from Turkmenistan to Russia. The funding of all works is expected with the participation of Asian Development Bank (ADB) by means of Central Asia Regional Economic Cooperation (CAREC) Multitranche Financing Investment Program (Mangistau Oblast Sections) of "Zhetybai-Zhanaozen-Fetissovo-Republic of Turkmenistan Border" 0-73 km road section. (Zhetybai-Zhanaozen Section).

The reconstruction project for the above mentioned road of republican importance has been developed by "KazdorNII" JSC Institute and PII "Kazdorproject" PII" LLP. The main road direction at the site of the new construction and III road category have been taken in accordance with existing Terms of Reference.

The Project includes reconstruction of existing "Zhetybai-Zhanaozen-Fetissovo- Republic of Turkmenistan Border" road of republican importance of 3 category, Section 0-73 km, which is under reconstruction for 1B category and within a transport interchange changes into the II category.

Road length in current conditions is 73 km and in design conditions is 63 km. The decrease of road length is related to arrangement of Zhanaozen bypass of 5 km length and subsequent reduction of total road length by 10 km.



The working project scope includes the following:

- road construction, approach to Zhanaozen.

- transport interchange construction in two level at the bypass of Zhanaozen.

- overpass construction in two level at the bypass of Zhanaozen.

- construction of an overpass through the railway at the "Zhetybai-Ozen" railway haul.

- construction of industrial complex of buildings and constructions at the Road Maintenance Facility in Zhanaozen.

- oil and gas pipelines reconstruction and protection.

Currently the preparation works are in progress for providing relevant documentation to the Asian Development Bank. Contractor for project works will be chosen after execution of all necessary procedures concerning approval and arrangement of design estimate documentation and also approval of documents related to measures of rehousing and land allocation.

2. Environmental impact

In general, environmental impact will have limited scope: all works will be limited by acquisition line and related to transportation of road construction materials and elements, and connected to these short-term impacts, such as noise, vibration, dust and exhaust gases. Also, in areas affected by Project will be constructed asphalt mixing plant and construction camp, which will have a limited impact on the environment.

Environment protection measures

Components of the environment	Characteristic and types of impacts	Measures to mitigate the adverse impacts

Impact on atmospheric air	The most negative indicators for road transport are the following: - specific emissions of pollutants into the atmosphere, i.e. specific emissions of pollutants (carbon monoxide, nitrogen oxides, sulfur dioxide SO_2); - "particulate matters" i.e. dust of wear rubber, brake pads, clutch plates, products of petroleum and oil evaporation from the road surface. - dust contamination of the air during the reconstruction works on subgrade, shoulders, during transportation of road-building materials, and asphalt mixing plant operation.	- watering of dusty surfaces; - using tarpaulins during transportation of road-building materials; - construction of pavement on temporary bypass roads and construction sites (made of cold asphalt concrete); - using personal protective equipment by personnel; - using of dust collectors (dust precipitation chambers, single cyclones, fabric and gravel filters)
Noise impact	The impact of traffic noise on the environment, including on human environment. Regular noise exposure causes a state of irritation, fatigue, stress, sleep disturbance. During rehabilitation works the noise produced by large dump trucks and other specialized equipment, in such conditions, where their speed capabilities are limited and overall time of their idle work is plenty, these factors poses the greatest nuisance for sensitive facilities nearby.	- regulation of vehicular traffic by means of traffic management, e.g. installation of speed limit signs on the road sections in the area of populated localities up to 60 km / h, which will reduce noise by 7 dB; - perform major works in the daytime; - stationary units (compressors) to be positioned in special sound-proof tents or soundproof cabins, which reduce noise up to 70%; - placement of stationary construction camps during construction period on the outskirts of populated locality with the mandatory arrangement of buffer zones around construction sites.
Impact on surface and ground waters	Pollution of surface waters as a result of industrial and domestic effluents discharges, transfer into water chemical and mechanical pollutants from the road due to filtering effluents from the ground surface, and by the discharge of water without treatment from roads into aquifers. Amongst common pollutants, the greatest concern is of oil-products transfer into the water.	- construction sites for placement of road machines and mechanisms must be situated remotely far from water sources. - fueling and oil filing of cars, tractors and self-propelled machinery should be carried out on stationary gas station;
Impact on soil cover, land resources, and subsurface resources	Roadside soil contamination takes place as a result of accumulation of toxic components of car exhaust gases, mainly, it includes lead compounds, as well as due to atmospheric fallout of hard finely divided and silt fractions of particles brought by car wheels from roads and tire and coating scuffing products. Soil contamination may occurre due to spill of fuels, lubricants and bitumen during the construction period.	It is necessary to bank-up construction sites to reduce damage maximally in order to prevent fuel and oil entry into the water and adjacent agricultural lands. During road reconstruction provision is made for recultivation of lands, which are temporary used for bypass road, construction sites and off-road borrow pits.
Impact on plant and animal life	- Rodents, reptiles, insectivores inhabiting in right-of-way frequently become victims of vehicles moving on the road. - When exposed to deicing salts, structure and condition of soil changes, and plant tissues are exposed to damage, also as a result of salt poisoning animals and birds die. - Dust contamination of air takes place during many construction works and has an adverse impact on the roadside planted vegetation.	- installation of light-reflecting metal fence may serve for animals as a scaring from the road. - construction of 3 animal-driving installations - refuse to use salts in operation of road and their replacement to frictional materials. - using of soil with an adequate humidity that almost does not generate dust when exposed to wind.

Impact on social environment	Generally impact of construction and repair of transport facilities on socio-economic environment is evaluated on the basis of quantitative indicators of pollution by vehicles, land acquisition for road and shelter belts, demolition of buildings, disruption of existing infrastructure.	- Improvement of performance and transport indicators of road transport will reduce road accidents. - Measures to reduce the negative effects of road reconstruction envisaged by project to reduce toxic emissions, noise, harmful effects on flora and fauna, prevention of pollution of watercourses and are directly related to the health, social and public life of the population.
Wastes	Municipal solid waste generates during object operation as well as during cleaning of indoor premises and areas.	- develop and implement plans for collecting, storing, processing, recycling and disposal of waste, - collection of waste with temporary storage in dumpsters on specially provided area with further picking up to places of authorized solid municipal waste dumps/ landfills on a contractual basis with the contractor.
Impact on heritage buildings and landmarks	There are more than 30 memorial obelisks dedicated to the memory of the victims of road accidents along the road. It will be necessary to ensure their relocation in cases, where these stones are located at the borders of road expansion. 	There are no historical, cultural or archeological monuments found at the area of road location. Memorial obelisks located in acquisition line for construction works must be transferred to a distance required by norms. Transfer must be agreed (where feasible) with relatives of the victims of traffic accidents and the representatives of local authority and administration.

Conclusions:

With increase of cargo traffic and improvement of transport and operational performance of road as a result of road reconstruction, the role of "Zhetybai-Zhanaozen" road in social and economic development of the region and quality of life of population will be significantly increased. Time expenditures for transportation of both cargoes and people will be reduced, additional enterprises and new work places will be created.

The reconstructed road will contribute to improvement of transport communication, both within Republic of Kazakhstan and foreign countries.

Feel free to send your offers and wishes to the address below:

22 microdistrict, building of JSC "NC "KazAvtoZhol", Aktau

Responsible contact persons of PMC "Zhol-Sapa" LLP authorized by CoR:
- Ms. Dzhamila Aitmatova, International Environmental Specialist
- Ms. Natalia Novossadova, Local Environmental Specialist

tel: 8/7292/60-55-70, **e-mail:**: zhol_sapa.aktau@mail.ru
03.03.2015

Appendix 5.

Photos of Public Consultations

Zhetybai

Zhanaozen

Appendix 6

A Rapid Environmental Assessment (REA) Checklist
Instructions:

i. The project team completes this checklist to support the environmental classification of a project. It is to be attached to the environmental categorization form and submitted to the Environment and Safeguards Division (RSES), for endorsement by Director, RSES and for approval by the Chief Compliance Officer.
ii. This checklist focuses on environmental issues and concerns. To ensure that social dimensions are adequately considered, refer also to ADB's (a) checklists on involuntary resettlement and Indigenous Peoples; (b) poverty reduction handbook; (c) staff guide to consultation and participation; and (d) gender checklists.
iii. Answer the questions assuming the "without mitigation" case. The purpose is to identify potential impacts. Use the "remarks" section to discuss any anticipated mitigation measures.

Country/Project Title:
Kazakhstan "Zhetybai-Zhanaozen-border of Turkmenistan" road reconstruction", section km 0-73 located within Mangistau and Karakiya districts of Mangistau oblast. MFF CAREC Transport corridor 2 (Mangistau oblast sections) Investment program

Sector Division: Ministry of investments and development of the Republic of Kazakhstan, Central and West Asia Department

Screening questions	Yes	No	Remarks
A. Project siting Is the project area adjacent to or within any of the following environmentally sensitive areas? ▪ Cultural heritage site	□	×	
▪ Protected area	□	×	
▪ Wetland	□	×	
▪ Mangrove	□	×	
▪ Estuarine	□	×	
▪ Buffer zone or protected area	□	×	
▪ Special area for protecting biodiversity	□	×	
Б. Potential environmental impacts Will the project cause…			
▪ encroachment on historical/cultural areas; disfiguration of landscape by road embankments, cuts, fills, and quarries?	□	×	During construction phase in the project area of construction works piles of soil and gravel will be generated, which will be temporary and will be removed during construction.
▪ encroachment on precious ecology (e.g. sensitive orprotected areas)?	□	×	

▪ alteration of surface water hydrology of waterways crossed by roads, resulting in increased sediment in streams affected by increased soil erosion at construction site?	□	×	
▪ deterioration of surface water quality due to silt runoff and sanitary wastes from worker-based camps and chemicals used in construction?	□	×	
▪ increased local air pollution due to rock crushing, cutting and filling works, and chemicals from asphalt processing?	×	□	Construction works will create a **temporary** dust pollution of air as a result of crushing of rocks, excavation and backfilling of soil, as well as the use of chemicals that are the components of asphalt concrete.
▪ risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during project construction and operation during project construction and operation? ▪ noise and vibration due to blasting and other civil works?	□ □	× ×	Noise and vibration of construction equipment will be **temporary**
▪ dislocation or involuntary resettlement of people?	□	×	Dislocation or involuntary resettlement is not expected due to absence of the owners / leaseholders and the project area is state owned.
▪ dislocation and compulsory resettlement of people living in right-of-way? ▪ disproportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable groups? ▪ other social concerns relating to inconveniences in living conditions in the project areas that may trigger cases of upper respiratory problems and stress?	□ □ □	× × ×	
▪ hazardous driving conditions where construction interferes with pre-existing roads? ▪ poor sanitation and solid waste disposal in construction camps and work sites, and possible transmission of communicable diseases (such as STI's and HIV/AIDS) from workers to local populations?	□ □	× ×	There is a little risk. The Awareness Program is required.

▪ creation of temporary breeding habitats for diseases such as those transmitted by mosquitoes and rodents?	□	×	
▪ accident risks associated with increased vehicular traffic, leading to accidental spills of toxic materials?	□	×	
▪ increased noise and air pollution resulting from traffic volume? ▪ increased risk of water pollution from oil, grease and fuel spills, and other materials from vehicles using the road? ▪ social conflicts if workers from other regions or countries are hired?	□ □ □	× × ×	There is a risk. The Contractor shall pay a particular attention to staff recruitment. Involvement of nonresident specialists should be used as a last choice.
▪ large population influx during project construction and operation that causes increased burden on social infrastructure and services (such as water supply and sanitation systems)?	×	□	Due to scarce water resources in the area issues related to water supply to construction camps should be carefully examined
▪ risks to community health and safety due to the transport, storage, and use and/or disposal of materials such as explosives, fuel and other chemicals during construction and operation?	□	×	
▪ community safety risks due to both accidental and natural causes, especially where the structural elements or components of the project are accessible to members of the affected community or where their failure could result in injury to the community throughout project construction, operation and decommissioning.	□	×	