



Environmental and Social Impact Assessment for the Kyzylorda Bypass, Kyzylorda-Zhezkazgan Road Project, Kazakhstan

NON-TECHNICAL SUMMARY

Rev02

Consultancy Services Contract № 2021.002133

July 2021



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Prepared for:

European Bank for Reconstruction and Development

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List of Abbreviations

ACBK	- Association for the Conservation of Biodiversity of Kazakhstan
ADCI	- Altyn Dala Conservation Initiative
EBRD	- European Bank for Reconstruction and Development
EEA	- European Economic Area
EIA	- Environmental Impact Assessment
EMEP	- European Monitoring and Evaluation Programme
E&S	- Environmental and Social
ESIA	- Environmental and Social Impact Assessment
ESMP	- Environmental and Social Management Plan
ESP	- Environmental and Social Policy
EU	- European Union
GHG	- Greenhouse Gases
GDP	- Gross Domestic Product
JSC	- Joint Stock Company
KZT	- Kazakhstan tenge
MASL	- Meter Above Sea Level
MPC	- Maximum Permissible Concentrations
NMVOG	- Non-Methane Volatile Organic Compounds
NTS	- Non-Technical Summary
OHS	- Occupational Health and Safety
OHSMP	- Occupational Health and Safety Management Plan
PIU	- Project Implementation Unit
PM	- Particulate Matter
PPE	- Personal Protective Equipment
PR	- Performance Requirements
RoK	- Republic of Kazakhstan
RSE	- Republican State Enterprise
SEP	- Stakeholder Engagement Plan
SPAN	- Specially Protected Areas of Nature
SPMP	- Spill Prevention and Management Plan
ToR	- Terms of Reference
TLV	- Threshold Limit Value
TMP	- Traffic Management Plan
WHO	- World Health Organization
WMP	- Waste Management Plan

Table of Content

1.	Introduction	5
2.	Background.....	5
2.1	Rationale of the Project	5
2.2	Compliance with National E&S Requirements	5
2.3	Compliance with the European Union and EBRD E&S Requirements	6
3.	Project Description.....	6
3.1	Project Alternatives.....	7
3.2	Associated Facilities	9
4.	Summary of Environmental and Social Baseline	9
4.1	Physical Environment.....	9
4.2	Cultural Heritage.....	12
4.3	Biological Environment	13
4.4	Socio-Economic Baseline.....	15
5.	Stakeholder Engagement.....	19
5.1	Public Consultations and Disclosure (prior to and during ESIA).....	19
5.2	Handling Grievances and Inquires	20
6.	Summary of Environmental and Social Benefits, Potential Adverse Impacts and Mitigation Measures	20
6.1	Environmental Impacts and Benefits, Mitigation and Management Measures	20
6.2	Social Impacts and Benefits, Mitigation and Management Measures.....	27
6.3	Conclusions on E&S impacts and benefits.....	32
7.	Environmental and Social Monitoring and Management.....	33

1. Introduction

The Government of the Republic of Kazakhstan ("the RoK") approached the European Bank for Reconstruction and Development ("EBRD" or the "Bank") with the request to provide a sovereign guaranteed loan to KazAvtoZhol NC JSC¹ (the "Client") for the urgent reconstruction of the 220 km section of the Kyzylorda-Zhezkazgan road and a construction of the 14.6 km Kyzylorda Bypass (four lanes).

The reconstruction of 220 km of the 427 km road² is categorised "B" in accordance with the EBRD Environmental and Social Policy ("ESP") (2019)³, and an Environmental and Social Due Diligence will be undertaken under the separate Terms of Reference ("ToR"). The reconstructed road will follow the alignment of the existing road: a two-lane, category III road constructed about 30 years ago.

The construction of the 14.6 km Kyzylorda Bypass (the "Project") is a greenfield Project that could result in potentially significant adverse future environmental and/or social impacts and the EBRD has categorised the bypass construction as "A" per its 2019 ESP, which means that a comprehensive Environmental and Social Impact Assessment ("ESIA") report and associated documents must be elaborated, followed by their public disclosure for a minimum period of 120 days. The Bank has engaged ATMS Solutions Ltd. (Armenia) as a consultant (the "Consultant") to carry out the ESIA of the 14.6 km Kyzylorda Bypass Construction Project (the "Assignment").

This **Non-Technical Summary** is an overview of the Project, its legal and regulatory framework, Environmental and Social ("E&S") baseline, impacts on physical, biological, social and cultural receptors and benefits for socio-economic resources, recommended mitigation, management and/or enhancement measures.

2. Background

2.1 Rationale of the Project

The Project is a part of the program aimed at urgent reconstruction of the 220 km section of the 427 km A17 Kyzylorda-Zhezkazgan road. Thus, the main objective of the Project is to improve the road infrastructure of the region, establish alternative transport connection between the M32 and A17 highways, decrease the traveling time, reduce the transportation expenses and air emissions, and increase road safety, including a decline in road accidents.

It should be noted that the Design Document (2020) for the Kyzylorda Bypass Construction Project also includes the "Reconstruction of Kyzylorda-Zhezkazgan Road km12+000 - km24+600 section" component. However, this component is out of the Project scope and is not discussed in this NTS Report.

2.2 Compliance with National E&S Requirements

As per the RoK Environmental Code (2007/2021⁴), the construction of roads requires conducting a full-scale Environmental Impact Assessment ("EIA"). The documentation developed should be submitted to the State Environmental Review ("SER") to be conducted by the Authorized State Body. When developing EIA materials for pre-design and design documentation, justifying economic and other activities, public opinion should be considered.

The Kyzylorda Bypass Construction Project underwent local EIA and SER with associated public consultation and public disclosure in accordance with the RoK Environmental Code and relevant legal and permitting requirements in 2020-2021. The positive SER Conclusion №01-0043/21 for the Project was issued by the Authorised State Body on 26.01.2021.

¹Joint Stock Company

²The remaining road sections to be financed by Asian Development Bank.

³Available at <http://www.ebrd.com/downloads/research/policies/esp-final.pdf>.

⁴New Environmental Code enters into force on 1 July 2021

2.3 Compliance with the European Union and EBRD E&S Requirements

The Project and the ESIA are being structured to meet the relevant EBRD's requirements, as set out in the EBRD's ESP (2019). In order to achieve sustainable outcomes when implementing the Project, the Client shall follow the specific E&S PRs:

- PR 1: Assessment and Management of Environmental and Social Risks and Impacts;
- PR 2: Labour and Working Conditions;
- PR 3: Resource Efficiency and Pollution Prevention and Control;
- PR 4: Health, Safety and Security;
- PR 5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement⁵;
- PR 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources⁶;
- PR 8: Cultural Heritage⁷;
- PR 10: Information Disclosure and Stakeholder Engagement.

As a signatory to the European Principles for the Environment⁸, EBRD is committed to ensuring that its projects meet the European Union ("EU") environmental principles, practices and substantive standards, where these can be applied at the project level, regardless of their geographic location. When host country regulations differ from EU substantive environmental standards, projects will be required to meet whichever is more stringent.

3. Project Description

The area selected for the construction of the 14.6 km Kyzylorda Bypass road is located on the lands of the City of Kyzylorda (Kyzylorda City Akimat) and Syrdarya District. Both administrative units are situated in Kyzylorda Region ('Oblast'). The bypass will connect the M32 (Samara/Uralsk-Shymkent) highway with the A17 (Kyzylorda- Zhezkazgan) road. The map of the proposed Kyzylorda Bypass with the associated components and neighboring facilities is presented in **Figure 1**.

The new Kyzylorda Bypass will start from the M32 (Samara/Uralsk-Shymkent) Highway at point km 1827+472 through the two-level transport junction and end at the intersection with the A17 (Kyzylorda- Zhezkazgan) road near the km 24+600. The total length of the road is 14.6 km, while the direct distance between the bypass starting and ending points is 12.8 km.

The engineering structures and transport interchanges/components of the Kyzylorda Bypass Construction Project are listed below:

- 1) Passway of the local road with overpasses for grazing animals;
- 2) Bridge over the channel Kokjide;
- 3) Two level interchange (connecting A17 highway with the Kyzylorda Bypass);
- 4) Two level interchange (connecting Kyzylorda Bypass with A17 road);
- 5) Rest area, consisting of three zones: parking for vehicles, rest area and sanitary-hygienic facility;
- 6) Storm water discharge system designed to install roadside trays along both sides of the bypass road and engineering structures;
- 7) Outdoor (street) lighting with a total length of lighting network of 38.54 km;
- 8) Concrete ditches for the Fiber-optic telecommunication line along the bypass roadside;
- 9) Road safety elements (road signs, guiding devices, roadside barriers, snow fences, road markings).

⁵Land acquisition issues can be raised when the land-plot allocation for the road lane enlargement is needed.

⁶Biodiversity impacts will occur due to the new land-plot to be allocated for road enlargement purposes.

⁷As earth / excavation works are required, archaeological, historic or cultural remains may be discovered.

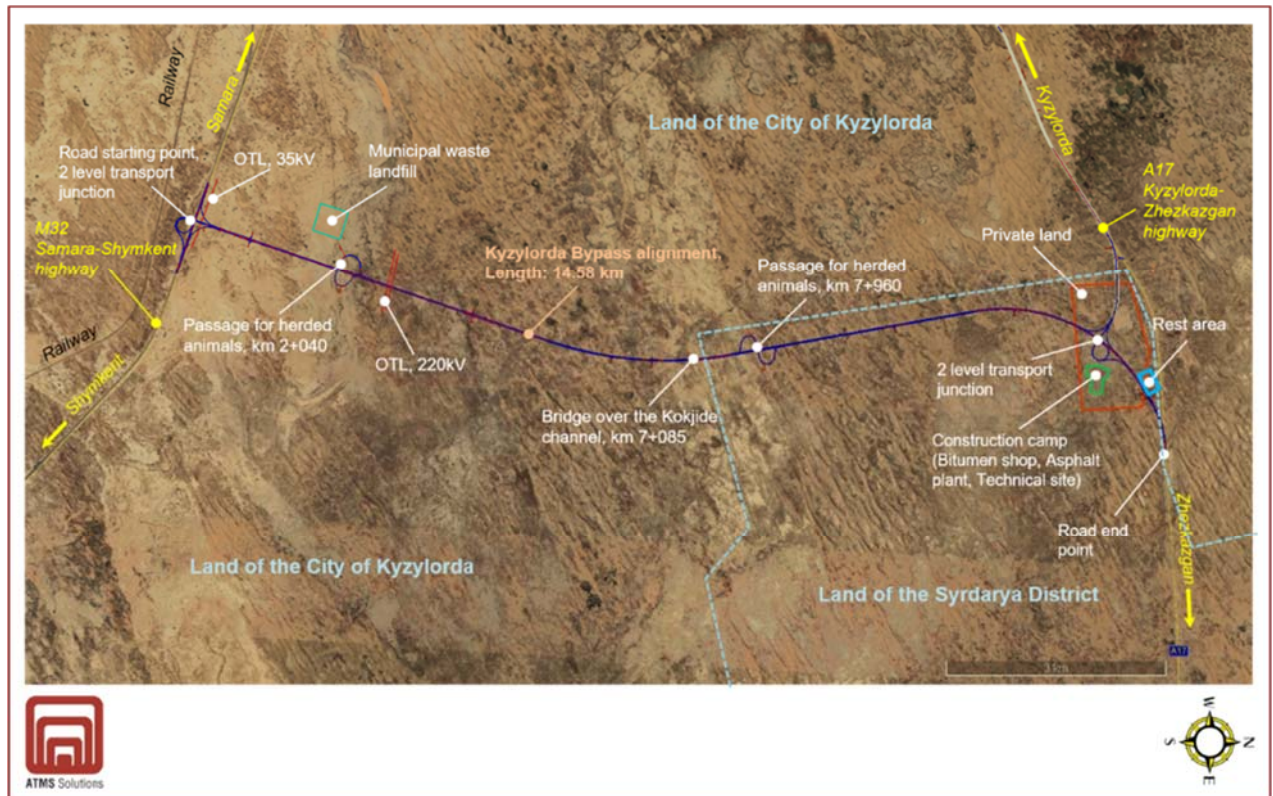
⁸The European Principles for the Environment (EPE) were adopted by the Council of Europe Development Bank, EBRD, European Investment Bank, Nordic Environment Finance Corporation and Nordic Investment Bank. The EPE is an initiative launched in response to the drive for increased harmonisation of environmental principles, practices and standards associated with the financing of projects.

To facilitate the Project implementation, it is envisioned to construct the technological earth road in parallel with the Kyzylorda Bypass (to be used during the construction stage) and to arrange a construction site consisting of a bitumen shop, asphalt plant and technical area (located close to the A17 Kyzylorda- Zhezkazgan road). The construction and auxiliary materials will be delivered through the railway up to the Belkol railway station and then by trucks to the Project area and construction site.

As per the Project Design, the construction of the Kyzylorda Bypass envisions the implementation of the following works/phases: preparatory works, earth/excavation works, construction/installation of engineering structures/elements, asphalt paving, re-cultivating and landscaping works.

The projected traffic intensity along the Kyzylorda Bypass for the 20-year perspective reaches 9,231 vehicles per day for the target year of 2042. The duration of the Project construction stage is 22 months.

Figure 1. The map of the designed Kyzylorda Bypass road alignment



3.1 Project Alternatives

Three alternative routes for the Kyzylorda Bypass have been considered during the Project design stage (see **Figure 2**, red, blue and green lines). Two bypass options have been designed to start from the existing transport junction located on the M32 Samara-Shymkent highway at point km 1824. These options envision the reconstruction of the mentioned transport junction. The third option envisions the construction of a new two-level transport junction of a "Pipe" type on the M32 highway, 3 km away from the existing transport junction.

Blue bypass option

The main advantage of this option is its length that is 10.2 km. Another advantage is its proximity to Kyzylorda and the A17 road. The drawbacks of this alternative are: (i) many land-plots to be acquired / allocated for the road construction need, (ii) increased costs associated with the reconstruction of a transport junction at the crossing point at km 1824, and (iii) complicated intersection of the bypass with the M32 Samara-Shymkent highway that will lead to the disorientation of drivers.

Green bypass option

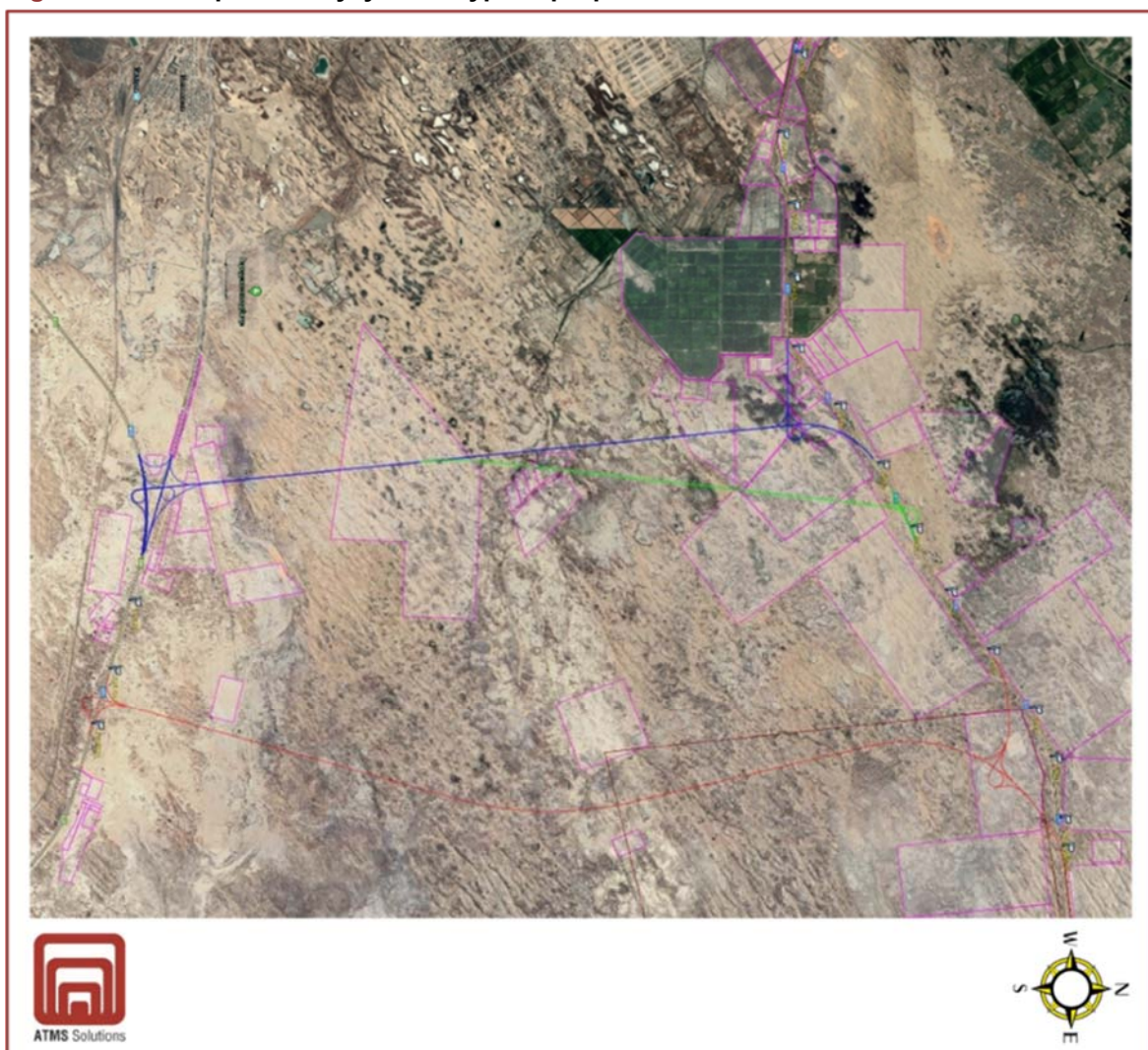
The total length of the green bypass option is 10.7 km. The starting section of this route coincides with the blue bypass option (see **Figure 2**), including the need to reconstruct the existing transport junction at the M32 Samara-Shymkent Highway. Then, the green bypass route turns to the right and crosses the A17 road through the transport junction to be constructed. The green route, compared with the blue option, requires less land-plots to be acquired for the Project, however, increases the cost of the Project associated with the construction of a new transport junction. Another disadvantage of the green option is a complicated intersection of the bypass with the M32 Samara-Shymkent highway.

Red bypass option

The main advantage of the red bypass option is that only one private land-plot will be acquired for the Project needs. Moreover, this option ensures simple and easy entrance to and exit from the new bypass through the two-level transport junctions. These transport junctions should be constructed at the crossing points of the Kyzylorda Bypass with the M32 and A17 roads. At the same time the existing transport junction located on the M32 Samara-Shymkent highway, at the km 1,824, will not be overloaded by the traffic flow of the Project. The abandoned / uninhabited area between the proposed bypass and Kyzylorda will trigger the future urban development of the city. The main disadvantages of this option are its length - 14.6 km, and the increased Project implementation costs caused by the construction of two transport junctions.

Taking into account the Kyzylorda City urban development perspectives, land acquisition/ allocation issues and simplicity of accessing the bypass that will increase the traffic/road safety level, the red bypass route has been selected as the preferred option for the construction of the Kyzylorda Bypass.

Figure 2. The map of the Kyzylorda Bypass proposed alternatives



3.2 Associated Facilities

Kyzylorda City is the capital of the Kyzylorda Region. It is located within the main "cluster" of settlements along the Syrdarya River basin. Due to its geographical location, the city has good transport connections with the Russian Federation, Middle Asia and the RoK regions. Moreover, the main railway route and international transport corridor "Western Europe - Western China" passes through the city. The RoK Government has initiated the urgent reconstruction of a 220 km section of the 427 km A17 Kyzylorda-Zhezkazgan road. If the A17 road is not reconstructed, the Project implementation can be assumed as partly unfeasible. Therefore, the A17 road and the Project bypass are associated with each other as the latter is a component of the Kyzylorda-Zhezkazgan road reconstruction program.

As per the Kyzylorda City Master Plan approved by the RoK Government resolution in 2009 (and updated in 2019), it is planned to create suburban areas around the city with rapidly growing block-houses and villages. The construction of the Kyzylorda Bypass can serve as a trigger for the urbanization of the abandoned area between the eastern border of Kyzylorda City and the planned bypass road as well as for the development of roadside services (construction of new refueling stations, shops, cafeteria, etc.). The supporting water, power, gas supply, and telecommunication infrastructure and local access roads will be required. These activities / new facilities (at least the commercial facilities along the bypass) will be implemented if the Kyzylorda Bypass road is constructed and therefore are deemed as associated with the Project.

4. Summary of Environmental and Social Baseline

4.1 Physical Environment

Geography and geomorphology

Administratively, the Project area is located on the lands belonging to the Kyzylorda City Akimat and Syrdarya District of the Kyzylorda Region. The Kyzylorda Region is located to the east of the Aral Sea, in the lower streams of the Syrdarya River, mainly within the Turan plain (50-200 MASL). The territories along the left bank of the Syrdarya River are occupied by the hilly-ridge sands of the Kyzyl-Kum that are occasionally divided by dry channels of the Zhanadarya and Kuandarya rivers. On the right bank of the Syrdarya River, the uplands (Yegizkara, 288 m), areas of sand (Aryskum), and shallow fosses occupied by salt marshes are met. The northern territories of the region are characterized by the masses of hillocky sands and the south-east border of the Kyzylorda Region reaches the offshoots of Karatau Mountain (1,619 MASL).

The major part of the region is occupied by sands that are almost devoid of vegetation. Part of lands are characterized by wormwood-fescue and saltwort vegetation. The brown, gray-earth sandy loam and solonchic soils in spring period are occupied by ephemeral vegetation. The Project area and its surroundings are located on a sub-horizontal accumulative plain at the absolute altitude of 120-130 m.

Climate and meteorology

Climatic parameters of the Project area according to the SP RoK 2.04.01-2017⁹, SN RoK 2.04-21-2004 and climatic regional data provided by the Republican State Enterprise ("RSE") "Kazgidromet" are as follows:

- Summers are usually long, hot and dry with the average maximum air temperature in July being +27.8°C and an absolute maximum air temperature reaching up to +45.6°C. Winters are usually cold and windy with an average minimum air temperature in January -7.7°C whereas absolute minimum air temperature of January can reach up to -37.2°C.
- Prevailing wind direction for cold (December-February) and warm (June-August) seasons is North-East.

⁹Code of Practice SP RoK 2.04.01-2017 "Construction climatology"

- Rainfall in the Project region varies from 86 mm in November-March to 715 mm in April-October.

Relief and landscape

The Kyzylorda Region is situated in the desert zone. The terrain of the region is predominantly characterized by flatlands mostly occupied by hilly-ridge sandy massifs of the Kyzyl-Kum, Aral Karakum and Aryskum. The absolute elevations of sand massifs range from 100 m to 160-170 m, with their greatest values being noted in the southern part of the region. The height of some ridges reaches 40-45 m. The mountain range that covers the north-west part of the Mt. Karatau ridge is located in the eastern part of the region. The surface is dissected by ravines and gorges, along which the rare and temporary water streams flow down in spring season after rainfall. The north-west part of the Karatau with the valleys of the Syrdarya and Shu Rivers is gradually replaced by sandy and sandy-clayey sediments is related to the piedmont flatlands.

The Project area is characterized by the semi-desert and semi steppe landscape with rare vegetation and sandhills/barkhans dominating in the northern part of the Project site (**Figure 3**).

Figure 3. Landscape of the Project area



Semidesert-semisteppe landscape

Barkhans covered by saxaul and tamarix dominating in the northern part of the site

View on the municipal waste landfill

Seismic stability and tectonics

As per Annex B of the SP RoK 2.03-30-2017, the seismic intensity in the region is 6 as per the MSK-64(K) OC3-2475 scale and 7 as per MSK-64(K) OC3-22475 scale. The type of soil conditions by seismic properties is III. The average values of the distribution velocity of transversal waves V_s , 10 = less than 230 m/sec and V_s , 30 = less than 270 m/sec.

Geology and soil

The geological structure of the area is characterized by alluvial deposits of the Middle-Upper Quaternary age (aQIV) represented by loams, sandy loams and clays of solid consistency, as well as by fine and silty sands.

Based on the desktop study of documents relating to the previously performed drilling works and results of laboratory testings of selected soil samples, nine engineering and geological elements (EGE) were identified in the operational layer and within the near-road zone/strip of the designed bypass¹⁰ (from light silty loam of solid consistency to silty sand saturated with water). The ground/soil of the operational layer and within the near-road zone is characterized by low humidity.

The Project area is not contaminated by spills and leakages of oil products and chemicals, however, polluted by the manure from the ungulate animals pasturing on the site and by waste/litter from the Municipal waste landfill.

The actual contamination of soil (content of Pb, Zn, Cu, organic substances) within Project area were below the Maximum Allowable Concentrations ("MAC") set by Order No. DSM-32 of the RoK Minister of Healthcare dated 22.04.2021 "On Approval of the Norms for the Safety of Habitats"¹¹ (for Pb) and

¹⁰EIA report for the Project "Reconstruction of the Motorway of Republican Importance Kyzylorda - Pavlodar - Uspenka - Border of Russian Federation, Kyzylorda-Zhezkazgan section km 12-424, section km 12+000 - 24+600, Construction of Kyzylorda Bypass", 2021

¹¹<https://adilet.zan.kz/rus/docs/V2100022595#z6>

by Sanitary norms of Commonwealth of Independent States ("CIS") countries, in particular of Russian Federation (for Zn, Cu and organic substances).

Surface water

The Project site belongs to the area of the Syrdarya River basin. The main water artery of the region is the Syrdarya River (total length 2,219 km, within Kazakhstan - 1,400 km), flowing through the central part of the region from the south-east to the north-west, with a highly shaping channel, variety of anabranches and extensive swampy delta and falling into to the Small (North) Aral Sea. The Syrdarya River flows 6 km south from the Project area. The nearest irrigation channel (Shireyli), starting from the Syrdarya River and flowing along the eastern border of Kyzylorda City, is 13.5 km away from the designed bypass road. The Kokjide Irrigation Channel crosses the proposed bypass at point km 4+085. This irrigation channel is not in working condition now, but can be operated in the future.

Groundwater

The drilled 6.5 m bore-holes along the bypass alignment did not detect the traces of ground water. During the site visits, the Consultant was informed that ground water horizons were dislocated at the depth of 100 m and deeper. Five sealed ground water wells were discovered during the site visit at the distance of 500 m to the bypass road alignment. The water for the Project needs is planned to be supplied from the ground water well located in the area of the Municipal Waste Landfill. As an alternative, the water from the Shireyli Irrigation Channel can be used.

Visual amenity

Due to the semi-desert and semi steppe terrain, the Project area is visible for travelers driving along the M32 (Samara/Uralsk-Shymkent) highway and A17 (Kyzylorda-Zhezkazgan) road as well as workers and attendees of commercial facilities (refueling stations, cattle farms, etc.) located along the roads. Some elements of the manmade activities, such as the Municipal waste landfill and treatment facility, 35 kV and 220 kV OTLs are observed on the site. Due to the improper operation of the Municipal waste landfill, the surrounding area is polluted by waste and litter. The land-plots situated close to the A17 (Kyzylorda-Zhezkazgan) road are used as pasture for ungulate animals.

Air quality

According to Order No.168 of the RoK Minister of Economy dated 28.02.2015 "On Approval of Hygienic Norms for the Atmospheric Air in Urban and Rural Residential Areas", the MACs of main air pollutants (CO, SO₂, NO₂ and dust) in the atmosphere are set out in **Table 1**.

Table 1. MACs for CO, SO₂, NO₂ and dust emissions in the atmosphere

№	Pollutants	Chemical formula	MAC, mg/m ³	
			Max	Daily average
1	Carbon oxide	CO	5.0	3.0
2	Sulphur dioxide	SO ₂	0.5	0.05
3	Nitrogen oxide	NO ₂	0.2	0.04
4	Dust	-	0.3	0.1

The Project area is not characterized by man-made activities. There are three sources of air emissions that may have influence on the air quality there. These sources are: the Municipal waste landfill and the road vehicles moving along the M32 (Samara/Uralsk-Shymkent) and A17 (Kyzylorda- Zhezkazgan) roads.

The results of the instrumental measurements conducted by an accredited laboratory show that the actual background concentrations of dust, NO₂, CO and SO₂ within the Project site are below the hygienic norms set for the residential areas (beside one measurement at location near the planned Technical Site, where the dust concentration exceeded the 0.3 mg/m³ MAC).

Noise and vibration

There are no significant man-made noise sources in and around the planned bypass alignment. Some noise can be emitted from the municipal waste landfill activities (located at the distance of 150 m from the proposed bypass) as well as at the starting and ending points of the bypass (the crossing points with the A17 and M32 roads accordingly). As noise limits, the Threshold Limit Values (TLVs) for the equivalent and maximum sound levels set by Order No 169 of the RoK Minister of National Economy dated 28.02.2015 "On approval of Hygienic Standards for Physical Factors Affecting Humans" as well as World Health Organization ("WHO") Guidelines for Community Noise have been applied (**Table 2**). The TLVs set for industrial and commercial facilities¹² have been applied for the assessment of noise actual levels.

Table 2. Threshold limit values for noise

№	Premises and territories	Threshold limit values (TLV), dBA		
		National		WHO
		Equivalent to sound level	Maximum sound level	One hour equivalent to sound level
1	Workplace	80	-	85
2	Industrial, commercial (shops, trading halls, etc.)	60	75	70
3	Residential and educational areas	55	70	55

According to the background noise measurements conducted by an accredited laboratory the actual level of equivalent noise in all five measurement locations were below the TLVs set by the RoK national hygienic norms (60 dBA) and WHO standards (70 dBA) for noise. Moreover, the noise actual equivalent levels were below the 55 dBA noise standard for the residential areas. No vibration sources were identified during the site survey of the Project area.

Traffic density

The projected traffic intensity along the Kyzylorda Bypass for the 20-year perspective reaches 9,231 vehicles per day for the target year (2042) that complies to the I-b category of the road as per the SP RoK 3.03.101-2013¹³.

Natural hazards

Kazakhstan is sensitive to a range of natural disaster risks due to its geography and landscape. The most typical natural disasters for the country are floods, earthquakes, mudflows, landslides, wildfires and droughts. In fact, about 200 thousand people annually suffer in the country from the consequences of earthquakes; and the damage caused by earthquakes to the Gross Domestic Product (GDP) of Kazakhstan can reach about 1 billion USD. Annually about 300 thousand people suffer from floods in Kazakhstan, and due to this the country's GDP loses up to 3 billion USD per year.

The climatic conditions also have significant influence on the size and severity of the natural hazards. As per the World Bank survey¹⁴, up to 26% of the country's territory, including the entire area of Almaty City is exposed to the threat of mudflows, meanwhile the agriculture can be significantly affected by the threat of drought. Flood is one of the natural hazards that can occur in the Kyzylorda Region. The risk of flooding depends on the terrain of the area and water level in the Syrdarya River.

4.2 Cultural Heritage

Cultural and historical context

The wider Project region is rich in cultural and historical heritage. As per the State Register of the historical and cultural monuments of local significance, approved by Decree No. 28¹⁵ of the Kyzylorda Region Akimat the cultural and historical heritage items, the City of Kyzylorda hosts mainly architectural

¹²It is assumed that the commercial facilities (shops, cafeterias, refueling stations, etc.) will be constructed along the planned Kyzylorda Bypass

¹³Code of Practice SP RoK 3.03.101-2013 "Motorways"

¹⁴<https://ru.sputnik.kz/economy/20190207/9197832/vsemirny-bank-kazakhstan-stihiya-sovet.html>

¹⁵<http://adilet.zan.kz/rus/docs/V20L0007411>

and art monuments of the later historical periods (XIX-XX). They are located at the 6 to 30 km distance from the planned Kyzylorda Bypass.

The Register for the Syrdarya District includes: (i) seven archeological sites of the ancient human settlements. These are Asanas, Kishiasar, Kos-Asar, Ulkenasar, Zhetimasar, Zangarkala; (ii) five urban and architectural monuments: Suybeba Mausoleum (XVIII), batyr Shalbas tower (XVIII-XIX), Kalzhan-akhun tomb, building of the railway station (1905) and a water tower (1905) in Terenozek settlement; and (iii) one sacral monument - mosque and madrasah of Kalzhan-akhun (XIX-XX). All monuments are located more than 20-30 km away from the planned Kyzylorda Bypass. The five UNESCO world heritage sites in Kazakhstan and 14 objects from the UNESCO tentative list¹⁶ are also located at a large distance from the Project site.

Results of 2019 archaeological survey

According to the conclusion of two archaeological surveys performed by "Archeological Expertise" Limited Liability Partnership ("LLP"), no archaeological monuments within the right-of-way¹⁷ or within the boundaries of the infrastructure facilities¹⁸ were found. Both conclusions were approved by the State Communal Institution "For the protection of historical and cultural monuments of the Kyzylorda Region" of the Kyzylorda Region's Department of Culture, Archives and Documentation.

Out of eight sacral sites of local significance identified within the wider *survey territory* one ethnographic period cemetery is located near the planned Bypass, at a distance of 143 m from it. The other identified objects are situated along the associated project - Kyzylorda-Zhezkazgan road section km 12+000-24+600.

4.3 Biological Environment

Vegetation and Flora

The Project area is located around 6 km to the north of the Syrdarya River. The regional landscape is classified as the desert zone of the Turan plain. Two types of landscape meet here - Aeolian hilly plain with cereal grass and gray-wormwood vegetation on sands and takyr-like soils and alluvial plain composed of sands and loams with biyurgun (*Anabasis salsa*), black wormwood and saltwort (*Salsola*) vegetation with black saxaul on sands and takyr-like soils. Manmade activities in the area and around have partly transformed the local landscape as there are such facilities as Municipal waste landfill, OTLs, irrigation channel.

As per the phyto geographic zoning, the Project area is located in the Aral Sub-region of the Kazakhstan desert province where large areas are occupied by wormwood and saltwort pastures and saxaul forests. Vegetation of the Project area is typical for desert and salted lands. Forests of the black saxaul (*Haloxylon aphyllum*) are widespread both in continuous massifs and in separate spots on saline soils; they are interspersed with *Tamarix* shrubs (**Figure 3**).

In addition to the mentioned species, the flora of the Project area is represented by species of wormwood (*Artemisia*), saltwort (*Salsola*, *Anabasis*), shrub psammophytes as for example zhuzgun (*Calligonum*), cereal grasses such as feather grass, and others. There is a possibility that some desert plant species included into the Red Data Book of Kazakhstan¹⁹ and Red Data Book of the Kyzylorda Region (2014) could inhabit the Project area and/or its surroundings (for example, endemic tulip of Borshchova, *Tulipa borszczowii*, were observed there)²⁰.

¹⁶For the included and tentative sites refer to <http://whc.unesco.org/en/statesparties/kz>.

¹⁷According to conclusion of the archaeological survey No. AEC-176 dated 31.10.2019, the studies were carried out within the right-of-way for the 12 km long road (20 m to the right and 20 m to the left of the road axis), and additionally captured 200 m to the right and 200 m to the left of the road axis (survey territory).

¹⁸According to the conclusion of the archaeological survey No. AEC-189 dated 06.12.2019, the studies were carried out within the boundaries of one asphalt concrete plant, one earth quarry, one construction camp, two technical sites, one bitumen base, two access roads; the survey territory amounted to 78.39 ha. Probably some of these facilities will be used for the Project needs.

¹⁹<https://www.plantarium.ru/page/redbook/id/42.html>

²⁰<https://www.plantarium.ru/page/view/item/39526.html>

The Flora field survey was conducted by the Consultant's flora expert team on 28-29 April 2021, during which the locations for survey were selected taking into account the coverage of the maximum diversity of phytocenoses, the vegetation cover was studied using the traditional methods of geobotanical research and special methodological techniques for assessing the state of vegetation. The results of the Flora field survey are given in details in Project's ESIA report.

Fauna

As per the Kazakhstan Zoo Geographic Zoning²¹ that was elaborated on the basis of mammals distribution, the Project area falls within the Betpakdalinskiy Zoo Geographic Area. Fauna of the area is deserted; there are different species of rodents: ground squirrels, jerboas, voles, sandy mouse; as well as steppe fox, hare, wolf. Some individuals of gazelles of Betpakdalinskiy population could move to the west (towards the wider Project area).

The Project area is located on the boundary of the Nature Protection Initiative "Altyn Dala" project territory for reintroduction of kulan and Przewalski's horse²².

The Project area falls within the Central Asia Flyway, accordingly some species of migratory birds could fly therein. Further, the Project area is situated within the boundaries of distributions of such rare birds as long-legged buzzards, lesser kestrel, saker falcon, and Macqueen's bustard²³. Thus, these species might be found in the Project area and/or its surroundings (especially it concerns birds that feed on rodents). The Project area falls into the boundaries of distribution of such reptilian species as tartar sand boa, dione snake, dice snake, Halis Pit viper^{24,25}, as well as some species of lizards.

According to the letter of the State Republic Institution "Committee for Forestry and Wildlife" of the Ministry of Ecology, Geology and Natural Resources of the RoK dated 08.01.2021 No. 27-1-25/3T-M-207, based on the data of the Kyzylorda Region Territorial Inspection for Forestry and Wildlife, there were no rare and threatened plants and animals found in the Project area. However, considering that the habitats of some protected species do cover the Project Area, the final conclusion about their presence were made based on the Fauna field survey conducted by the Consultant's fauna expert team on 28-29 April 2021 and summarized below.

One vulnerable species - Russian tortoise (*Agrionemys horsfieldi*) also known as Central Asian tortoise listed in CITES²⁶ II and in the IUCN Red List²⁷ under the VU (Vulnerable) category was found within the Project area. Another species from the CITES Appendix II is Tartar sand boa (*Eryx tataricus*) that as per the IUCN Red List²⁸ has NE (Not Evaluated) status. Detailed information related to the above noted species are given in Project's ESIA report.

Specially protected areas

Specially Protected Areas of Nature (SPAN) are established in Kazakhstan according to the Law No. 175 on Specially Protected Areas of Nature, dated 07.07. 2006²⁹. They assign SPANs with either republican or local status. As per the RoK Government Resolution No. 593 on Approval of the List of Specially Protected Areas of the Republican Importance³⁰, dated 26.09.2017, 116 SPANs of the republican status have been established. Of these, three protected areas are located in the Kyzylorda Region^{31,32} (**Table 3**). No information in relation to the local status SPANs is available.

²¹Afanasyev A.V. Zoogeography of Kazakhstan. Alma-Ata, 1960.

²²The Six National Report on Biological Diversity in the Republic of Kazakhstan, Astana, 2018 <https://www.cbd.int/doc/nr/nr-06/kz-nr-06-en.pdf>

²³<https://birds.kz/v2/taxon.php?s=124&l=ru>

²⁴<http://isca.kz/ru/analytics-ru/3122>

²⁵<https://reptilia.club/v2/checklist.php?l=ru>

²⁶Convention on International Trade in Endangered Species of Wild Fauna and Flora

²⁷<https://www.iucnredlist.org/species/21651/9306759>

²⁸<https://eunis.eea.europa.eu/species/316477>

²⁹http://adilet.zan.kz/rus/docs/Z060000175_#z31

³⁰<http://adilet.zan.kz/rus/docs/P1700000593>

³¹<https://www.protectedplanet.net/country/KAZ>

³²<http://adilet.zan.kz/rus/docs/P1700000593>

Table 3. SPANs located in the Kyzylorda Region

No	Specially protected natural area	Area, ha	Location
1	Barsakelmes State Nature Zapovednik (Reserve)	163,126	Aral District
2	Kargalinsk State Natural Zakaznik (Reserve) (zoological)	11,172.24	Shiyeliysk and Zhanakorgan Districts
3	Torangylsay State Natural Zakaznik (Reserve) (zoological)	17,900	Terenozeksk District

One additional SPAN of the republican status - South-Kazakhstan State Zapovednaya (Reserve) zone³³ - *partially* falls within the boundary of the Kyzylorda Region (Zhanakorgan District). All the mentioned SPANs are managed by the Committee of Forestry and Wildlife of the RoK Ministry of Ecology, Geology and Natural Resources.

All protected areas are far from the designed bypass alignment, the closest one is the Torangylsay State Natural Zakaznik (Reserve) that is located about 23 km to the south-west of the Project road.

Ramsar Convention Sites

The Convention on Wetlands (Ramsar Convention) entered into force in the RoK on 02.05.2007. Kazakhstan currently has 10 sites designated as Wetlands of International Importance (Ramsar Sites). The closest to the Project area is the Ramsar Site No. 2083 Lesser Aral Sea and Delta of the Syrdarya River. It is located in the Kyzylorda Region, however very far from the project area (about 350 km away).

Important Bird Areas

127 Important Bird Areas (IBA) were identified in the RoK using the IBA criteria. The information about the IBAs is available on the BirdLife Data Zone managed by the Birdlife International³⁴. According to the Law of the RoK on Specially Protected Areas of Nature, IBAs have a reserve (zakaznik) regime. Four IBAs are located in the Kyzylorda Region. The closest to the Project site - IBA KZ068 Telikol Lakes is situated about 90 km to the north-east of the planned bypass³⁵.

Other Protected Areas and Ecological Network

Apart from the SPANs, there are different kinds of protected areas in the RoK including land-plots for health-improving and recreational purposes, State forest lands, water bodies and water protection zones, hunting grounds, and fishery waters. They are elements of the ecological network which are embedded in the Law of the RoK on Specially Protected Areas of Nature.

The Altyn Dala Conservation Initiative

The Altyn Dala Conservation Initiative («ADCI») aims to establish a network of protected areas within the historic boundaries of the Betpak-Dala saiga population to effectively protect saiga, their endangered steppe and semi-desert habitat, and other flagship species. The saiga (*Saiga tatarica*) is a migratory ungulate that exists in two subspecies and five major populations: three in Kazakhstan, one in Russia (Kalmykia) and one in Mongolia. The Project site is located beyond the ADCI, close to its south-eastern border.

4.4 Socio-Economic Baseline

The Kyzylorda Bypass is located within the area of the City of Kyzylorda, with its northern end within the Syrdarya District of the Kyzylorda Region. As of January 1, 2021, the Kyzylorda Region includes 7 districts, 4 cities, of which 2 are of regional significance and 2 are of district significance, 2 villages, and 230 rural settlements³⁶. The City of Kyzylorda (Kyzylorda City Akimat) includes not only the city of

³³https://ecokarta.kz/prot_area/show/114

³⁴<http://datazone.birdlife.org/country/kazakhstan/ibas>

³⁵<http://datazone.birdlife.org/site/factsheet/telikol-lakes-iba-kazakhstan>

³⁶ Bureau of the National Statistics of the RoK. Administrative-territorial units of the Kyzylorda Region. As of January 2021. https://stat.gov.kz/region/260099/statistical_information/industry/4361

regional significance (Kyzylorda), but also 2 villages and 13 settlements. The Syrdarya District encompasses 14 settlements.

The Project area within the territory of the City of Kyzylorda includes the following administrative units: Kyzylorda, Kosshinirau Rural Settlement, and Belkul Township Administration; and within the territory of the Syrdarya District - Amangeldi Rural Settlement. The distance from the proposed road to the closest residential development is 15 km (Kyzylorda), 20 km and 14 km (the settlements of Abay and Dosan, respectively, both in Kosshinirau Rural Settlement); 10 km (Belkul village), and 60 km (Amangeldi settlement of Amangeldi Auyl Sub-district).

Demography

According to the Bureau of National Statistics, the total population of the country, Kyzylorda Region, City of Kyzylorda and Syrdarya District has been gradually growing over the last five years³⁷. As of January 1, 2021, the population of the Kyzylorda Region is 814,461 people including 320,968 people living in the City of Kyzylorda and 38,559 people - in Syrdarya District. In January-April 2021 the rate of natural increase was 20.24‰, which is 2.33‰ higher than the natural increase rate of January-April 2020. The population of the Kyzylorda Region constitutes 4.3% of the country's total population.

In 2020, the population of Kosshinirau Rural Settlement was 3,396 residents, Belkul Township Administration - 4 622 residents, and Amangeldi Rural Settlement - 2 648 residents. Females make up nearly half of the region's population and the same ratio is applicable to all the settlements within the Project area. Over the last five years the region's rural population constantly exceeds the urban population by around 25%.

Ethnic minorities

The ethnic composition of the Kyzylorda Region's population as of the beginning of 2020 is dominated by the Kazakhs, whose share reaches 96%³⁸. The region has the highest percentage of Kazakhs in the total population among all regions of the RoK³⁹. Other ethnic groups in the region include Russians - 14,496 people (1.8%), Koreans - 7,345 people (0.9%), Turks - 1,638 people (0.2%), Tatars - 1,512 (0.2%), Uzbeks - 1,581 people (0.2%), etc. .

As per the 2009 National Census of the RoK, representatives of more than 50 nationalities and ethnic groups reside in the Kyzylorda Region⁴⁰. In 2020, in the City of Kyzylorda, 9,465 Russians (3% out of total city population), 5,815 (1.8%) Koreans, 1,186 (0.4%) Tatars and 1,129 (0.4%) Uzbeks represent the largest ethnic groups living there⁴¹. As for the Syrdarya District, two largest ethnic group include Russians - 304 (0.8% out of total district population) and Chechens - 134 (0.35%), with the district being the third most populated by Chechens administrative-territorial unit in the region .

There are no settlements of densely populated ethnic groups within the Project area.

Socio-economic indicators

Gross regional product (GRP) in the region in 2019 was 1 828 864.7 million KZT⁴² (around 4,753.1 million USD as of 2019), accounting for 2.63% of the country's GRP and ranking 12th out of 14 country's regions excluding the cities of Nur-Sultan, Almaty and Shymkent⁴³. The largest contributors to the Kyzylorda Region's GRP were the following sectors of economy: industry (34.16%), mining and quarry development (27.7%), transport and storage (13.58%), wholesale and retail trade; repair of cars and motorcycles (8.38%), and construction (7.74%)⁴⁴. In 2019 GRP per capita in the region was 2,289.1 thousand KZT (around 6,000 USD as of 2019), ranking 11th out of 14 country's regions

³⁷ Bureau of the National Statistics of the RoK. Population of the RoK by regions, cities, and districts. As of January 1, 2017, 2018, 2019, 2020, 2021. <https://stat.gov.kz/official/industry/61/statistic/5>

³⁸Ibid. The population of the Kyzylorda region by individual ethnic groups at the beginning of 2020. https://stat.gov.kz/region/260099/statistical_information/industry/4361

³⁹Ibid. Population of the RoK by individual ethnic groups at the beginning of 2020. <https://stat.gov.kz/official/industry/61/statistic/5>

⁴⁰Ibid. Kyzylorda region. Results of the 2009 National Census of the RoK. Volume 2. (in Russian)

⁴¹Ibid. The population of the Kyzylorda region by individual ethnic groups at the beginning of 2020. https://stat.gov.kz/region/260099/statistical_information/industry/4361

⁴²Kazakhstan tenge

⁴³ Bureau of the National Statistics of the RoK. The RoK GRP. 2019. <https://stat.gov.kz/official/industry/11/statistic/5>

⁴⁴Ibid.

excluding the cities of Nur-Sultan, Almaty and Shymkent; the national GRP per capita in the same year was higher - 3,755.7 thousand KZT (around 9,900 USD)⁴⁵.

In 2020, the highest average monthly nominal wage in the region was noted for the type of economic activity "Mining and quarry development" - 340,949 KZT (around 790 USD) and the lowest was in the sector "Fishing and fish farming" - 87,642 KZT (around 200 USD)⁴⁶. In 2020 average monthly nominal wage of employees in the region was 159,077 KZT (around 420 USD), which is 25% lower than the country's average monthly nominal wage - 199,328 KZT (around 527 USD)⁴⁷.

In the World Bank's Doing Business study (2019), the Kyzylorda Region ranked fourth in the country in terms of ease of doing business⁴⁸.

In January - December 2020, 52% of the region's total fixed capital investment accounted for the city of Kyzylorda, whereas the Syrdarya District had the highest share of investment among the region's districts - 12%⁴⁹. In the corresponding period the Syrdarya District had also the highest fixed capital investment per capita, amounting to 937.6 thousand KZT (2,248 USD), and significantly exceeding the region's per capita indicator - 360.8 thousand KZT (865 USD)⁵⁰.

The Kyzylorda Region's total gross output of agricultural produce (services) in 2020 amounted to the sum of 140,992,1 million KZT (around 338 million USD as of 2020), to which 61% was contributed by crop production and 37% - by animal husbandry⁵¹. In 2020 the region ranked 12th out of country's 14 regions, excluding cities of Nur-Sultan, Almaty and Shymkent, in terms of agricultural production. The share of the city of Kyzylorda in the region's total gross output of agricultural produce (services) in January-December 2020 was 6.6% and Syrdarya District's - 11.5%, with the latter ranking 4th out of region's 7 district in terms of agricultural production⁵². In the corresponding period the ratio of crop production and animal husbandry in the total gross output of agricultural produce (services) was approximately 65% and 33% respectively for both the city of Kyzylorda and Syrdarya District.

Transport infrastructure

The transport network of the Kyzylorda Region is dense: the main road, rail and waterways run in parallel to each other through all districts and the regional center, forming a transport artery, along which 85% of settlements are located hosting 93% of the region's population⁵³. The city of Kyzylorda forms a suburban area around itself with rapidly growing suburban villages.

The Kyzylorda Region's Comprehensive Plan for Socio-Economic Development for 2019 - 2022 among other sectors provides for the development of transport infrastructure and includes an activity to repair and reconstruct local roads so that up to 72% of the road network in the region is in good and satisfactory condition by the end of 2022⁵⁴.

Social infrastructure

As of 2019, there were 136 outpatient clinics and 36 hospitals in the Kyzylorda Region⁵⁵. In the corresponding period, there were 666 preschools organizations in the region, including 245 in urban

⁴⁵Ibid.

⁴⁶Bureau of the National Statistics of the RoK. 2021. Salaries of workers in the Kyzylorda region by main professions and positions. 2020. https://stat.gov.kz/region/260099/statistical_information/industry/4325

⁴⁷Bureau of the National Statistics of the RoK. Structure and distribution of wages of employees in the RoK. 2020. <https://stat.gov.kz/official/industry/25/statistic/5>

⁴⁸The World Bank. Doing Business. Kyzylorda – Kazakhstan. <https://www.doingbusiness.org/en/data/exploreconomies/kazakhstan/sub/kyzylorda>

⁴⁹Bureau of the National Statistics of the RoK. 2021. About the Fixed Capital Investment in the Kyzylorda Region. January – December 2020. https://stat.gov.kz/region/260099/statistical_information/industry/43161

⁵⁰Ibid.

⁵¹Bureau of the National Statistics of the RoK. 2021. RoK. Official Statistics. Statistics of Agriculture, Forestry, Hunting and Fisheries. January - December 2020. <https://stat.gov.kz/official/industry/14/statistic/6>

⁵²Bureau of the National Statistics of the RoK. 2021. Regions. Gross output of products (services) of agriculture, forestry and fisheries. Bulletins. January-December 2020. https://stat.gov.kz/region/260099/statistical_information/industry/4314

⁵³Decree of the Government of the RoK dated June 6, 2019 No. 375 on Adoption of Comprehensive Plan of Socio-Economic Development of the Kyzylorda region for 2019 – 2022. <http://adilet.zan.kz/rus/docs/P1900000375>

⁵⁴Decree of the Government of the RoK dated June 6, 2019 No. 375 on Adoption of Comprehensive Plan of Socio-Economic Development of the Kyzylorda region for 2019 – 2022. <http://adilet.zan.kz/rus/docs/P1900000375>

⁵⁵Open data. 2020. The number of medical organizations by regions and cities of Nur-Sultan, Almaty and Shymkent in 2018 - 2019. https://data.egov.kz/datasets/view?index=medicinskie_organizacii_v_razr

areas and 421 in rural areas; 314 general education schools, out of which 79 are in urban areas and 235 are in rural areas; 30 organizations of technical and vocational, post-secondary education and 3 higher education institutions⁵⁶.

Social infrastructure facilities located in the City of Kyzylorda, Syrdarya District, the Kosshinirau Auy Sub-district, Belkul village and Amangeldi Auy Sub-district include libraries, schools, kindergartens, rural outpatient clinics, cultural and leisure organizations, etc.

Gender issues

In 2019, the RoK Gender Development Index (GDI) was 0.980, which placed the country in Group 1 with a very high human development level⁵⁷. The gender inequality index (GII) in Kazakhstan in the period from 2008 to 2019 steadily decreased from 0.459 to 0.351⁵⁸. However, despite the high ranking among the countries of Central Asia, there is no further reduction in the gender gap in the country. Kazakhstan's low rankings in indices of women's political representation, female labor force participation, and gender pay gaps as measured by the World Economic Forum indicate further need to step up efforts to reduce gender inequality⁵⁹.

The same issues are also relevant for the Kyzylorda Region.

Poverty and social allowances

In 2020, the unemployment rate in the Kyzylorda Region was 4.9%, which is equal to the national unemployment rate for the corresponding period⁶⁰. The unemployment rate in 2020 in the City of Kyzylorda is 4.7% and Syrdarya District - 5.1%, thus the former being lower than the regional indicator, while the latter exceeding it⁶¹.

Overall, unemployment rates in 2020 were slightly higher in the districts than in the cities of regional significance, mainly due to less jobs available in rural areas. 66% of employed population in the region are wage-earners and 33.5% are self-employed with the number of working men exceeding the number of working women in both employment statuses⁶².

According to the 2020 household survey data, the share of the population with incomes below the subsistence level in the Kyzylorda Region amounted to 5.8%, including 4% in urban areas and 7.2% in rural areas⁶³. For comparison, the national indicator for in the corresponding period was 5.3%, including 3.7% in urban areas and 7.6% in rural areas. The indicators of the depth and severity of poverty in the region in 2020 were 0.8% and 0.2%, respectively, thus being the same as the country's indicators⁶⁴.

As of 2020, number of households below the poverty line in Kosshinirau Rural Settlement was 44 (out of the total 725 families) and included 199 family members. 25 persons (19 women and six men) out of 3,396 persons living in the rural settlement were unemployed. In the corresponding period there were 5 unemployed persons in Belkul Township Administration, which is 0.2% of unemployment level. As for the Amangeldi Rural Settlement, 63 persons were unemployed in the same period, and the level of unemployment was 5.1%.

⁵⁶Bureau of the National Statistics of the RoK. Education Statistics.

https://stat.gov.kz/region/260099/statistical_information/industry/4362

⁵⁷United Nations Development Programme. Human Development Reports. Gender Development Index (GDI).

<http://hdr.undp.org/en/content/gender-development-index-gdi>

⁵⁸Bureau of the National Statistics of the RoK. Gender Inequality Index.

https://gender.stat.gov.kz/page/frontend/detail?id=105&slug=-87&cat_id=12&lang=ru

⁵⁹Asian Development Bank. Kazakhstan: Country Gender Assessment. 2018. <https://www.adb.org/sites/default/files/institutional-document/501696/kazakhstan-country-gender-assessment-ru.pdf>

⁶⁰Bureau of the National Statistics of the RoK. Main labor indicators of the RoK. 2020. <https://stat.gov.kz/official/industry/25/statistic/5>

⁶¹Ibid. Main Labor Indicators of Kyzylorda Region. 2020.

https://stat.gov.kz/region/260099/statistical_information/industry/4325

⁶²Ibid. Main indicators of the labor market by districts of the Kyzylorda Region. 2020.

https://stat.gov.kz/region/260099/statistical_information/industry/4325

⁶³Ibid. Main indicators of income differentiation of the population of the Kyzylorda Region. 2020.

https://stat.gov.kz/region/260099/statistical_information/industry/4364

⁶⁴Ibid.

5. Stakeholder Engagement

5.1 Public Consultations and Disclosure (prior to and during ESIA)

The procedure for granting access to environmental information on the EIA and decision-making process is provided for in the **Rules on Access to the Environmental Information Related to the EIA (OVOS) Procedure and Decision-Making Process**⁶⁵ and in the **Rules for Conducting Public Hearings**⁶⁶. Thus, according to the national legislation requirements public hearings through open meetings were conducted. First public hearing took place on February 18, 2020 in the City of Kyzylorda regarding the Environmental Impact Assessment (EIA) section to the design document "Reconstruction of the Motorway of Republican Importance Kyzylorda - Pavlodar - Uspenka - Border of RF, Kyzylorda-Zhezkazgan section km 12-424, section km 12+000 - 24+600, Construction of Kyzylorda Bypass". The event was organized by the State Enterprise Department of Natural Resources and Environmental Management of the Kyzylorda Region and KazAvtoZhol NC JSC. 37 persons attended the public hearings, of whom eight were women. A total of 23 questions were asked during the public hearing. Whereas the second public hearing was conducted on the above-mentioned 2020 EIA, as well as on EIA documents for five different sections of the Kyzylorda - Zhezkazgan road on February 19, 2020 in the Syrdarya District, in the settlement of Terenozek. 32 persons attended the public hearing, of whom eight were women. In total four questions were asked during the public hearings.

The Minutes of Meetings of both public hearings are attached to the Project National EIA Report⁶⁷. The Minutes of Meetings include a list of participants of the public hearings, announcements of holding public hearings in the local newspapers as well the screenshot with the corresponding announcement on the official website of State Enterprise Department of Natural Resources and Environmental Management of the Kyzylorda Region.

As part of the initial stakeholder engagement within the Project, on 26 March 2021 the Consultant met with the Deputy Head of the Department of Passenger Transport and Highways of the Kyzylorda Region (a department is a subdivision of the regional akimat) - K. Abusultanov and other representatives of state authorities such as Department of Land Cadastre and Department for Registering Land Resources and Preparation of Proposals for the Provision and Withdrawal of Land-plots of the Department of Land Relations of the Kyzylorda Region, Non-Profit State Corporation Government for Citizens JSC of the Kyzylorda Region, Department of Ecology of the Kyzylorda Region, and others.

On 26-28 April 2021, the Consultant's team conducted the second ESIA field visit and held stakeholder meetings/consultations in the City of Kyzylorda and Syrdarya District. The key issues discussed and outcomes of the second visit are summarised as following:

- The officials of the City of Kyzylorda and Syrdarya District akimats welcomed the Kyzylorda Bypass construction Project that will increase the transport flows across the Kyzylorda Region, will improve the road connections and communication between the settlements of the region and will support the regional development.
- The leaseholder⁶⁸ agreed to return the leased agricultural land to the Syrdarya District Akimat and instead to accept and lease an equivalent land-plot with the same area (1,500,000 m²) that will be out of the Project impact area. He declared that was interested in the implementation of the Project since after the completion of the construction works the proposed land plot will be located next to the bypass and will make it more attractive commercial asset.

⁶⁵Order of the Minister of Environmental Protection of the RoK dated July 25, No. 238-p on the Approval of the Rules for Access to Environmental Information related to the EIA Procedure and the Decision-Making Process for Planned Economic and Other Activities. <http://adilet.zan.kz/rus/docs/V070004876>

⁶⁶Order of the Minister of Environmental Protection of the RoK dated May 7, 2007 No. 135-p on Approval of the Rules for Conducting Public Hearings. <http://adilet.zan.kz/rus/docs/V070004687>

⁶⁷EIA report for the Project "Reconstruction of the Motorway of Republican Importance Kyzylorda - Pavlodar - Uspenka - Border of Russian Federation, Kyzylorda-Zhezkazgan section km 12-424, section km 12+000 - 24+600, Construction of Kyzylorda Bypass", 2021

⁶⁸Only one plot out of the affected lands is provided for temporary paid land use (lease). This land belongs to the State and is leased for 20 years. The remaining affected lands are State property under the authorized use of Kyzylorda City and Syrdarya District.

- The owners of the land-plots situated near/along the planned bypass area were concerned with the Project's potential impacts (air and noise emissions during the both construction and operation stages, etc.), however, were interested in future business opportunities.
- Part of the Project area is illegally used as pastures by the nearby farms. However, there were alternative grazing areas available near the Project site.
- The representatives of the regional environmental authorities discussed the concerns and suggestions during the national EIA stage in 2020 and had no additional comments regarding the Project implementation.

Further stakeholder engagement and disclosure of information about the Project during its construction and operation stages will be conducted by the Client as per the Project's **Stakeholder Engagement Plan ("SEP")**.

5.2 Handling Grievances and Inquires

According to the national legislation, appeal of an individual and (or) a legal entity, for the consideration of which it is not required to obtain information from other subjects, officials, or an on-site check, is considered within fifteen calendar days from the date of receipt⁶⁹. The appeal of an individual and (or) a legal entity, for the consideration of which it is required to obtain information from other subjects, officials, or an on-site check, is considered and a decision is made on it within thirty calendar days from the date of receipt by the subject, official. In cases where additional study or verification is required, the review period is extended by no more than thirty calendar days, which is communicated to the applicant within three calendar days from the date of the extension of the review period⁷⁰.

In order to enable the potentially affected or any other interested stakeholders to submit their grievances and/or suggestions about the Project's activities the **Grievance Mechanism** is established by the Client as specified in the Project's **SEP**.

The contacts persons of the Client responsible for addressing the environmental and social concerns and suggestions related to the Project are:

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6. Summary of Environmental and Social Benefits, Potential Adverse Impacts and Mitigation Measures

6.1 Environmental Impacts and Benefits, Mitigation and Management Measures

Transboundary impact

The construction of the Kyzylorda Bypass will not have transboundary impacts in terms of the provisions defined by the Espoo Convention⁷¹. The Project components and features are not included into the list of activities determined by Appendix 1 of the Convention. The analysis of the Project against

⁶⁹ RoK Law dated January 12, 2007 No. 221 On the Procedure for Considering Appeals from Individuals and Legal Entities. https://adilet.zan.kz/rus/docs/Z070000221_#z37

⁷⁰Ibid.

⁷¹The RoK signed the Convention on Environmental Impact Assessment in a Transboundary Context (Espoo Convention) in 2000.

the criteria (according to Appendix III of the Espoo Convention) for the determination of environmental significance of activities not listed in Appendix I, shows that the bypass construction activities will not have significant adverse effect on the environment of the Project area, including health and safety of population, flora, fauna, soil, air, water, climate, landscape, historical monuments, etc.

Impact on geology

During the construction works the main impacts on the geological structure within the Project area include landslides, mass movements and other erosion processes due to excavation / earthworks. Another impact that the Project can have on the geological erosion processes is the temporary influence of disturbed soils as a result of precipitation and surface runoff generation. The impacts on soil and the resulting reshaping of the topography may create situations where detrimental erosion and sedimentation temporarily may occur.

The slope gradient, the characteristics and compositions of the roadbed layers as well as the compaction of the roadbed are the main parameters that can influence the geological erosion processes. The Project design documentation defines the combination of the noted parameters ensuring the stability of the geological structures within the Project area.

During the operation stage impact on the geological structure during the bypass operation is unlikely to occur, as the Project design is developed based on the results of the engineering and geological investigations and acting construction norms - Code of Rules SP RK 3.03-101-2013 "Motorways" and Guidelines for the construction of roadbeds for the motorways of general use. Likelihood of triggering hazardous geological processes during the operation stage will be low.

Impact on soil

As per the Project design, 103.5 ha area shall be cleared from the shrub vegetation (haloxylon) and 366,170 m³ of topsoil will be removed from the area envisioned for the planned bypass. The topsoil will be stored separately in a designated locations, covered by waterproof canvas, uncompressed and so that to preserve its fertile characteristics. If it remains open for some time its surface will be covered by vegetation. The responsibility for the proper storage of topsoil should be assigned.

During the excavation / earthworks, some small piles of subsoil may be generated. These piles will be temporary as the subsoil will be re-laid on the ground by bulldozers, watered, compacted and served as a basis for the bypass roadbed. No mitigation measures will be required for the subsoil protection.

Accidental spills of friable materials and leakages of oil products and other liquid chemicals during their transportation, storage and utilization will inevitably occur and will contaminate the soil. Improper waste management also will lead to the littering and soil contamination. Hence, the handling of hazardous materials shall be well managed. The operation of old and improper construction equipment and trucks for the Project needs shall be prohibited. The transportation of the friable materials will be performed by the trucks equipped with the waterproof canvas. The oil products and chemicals shall be stored separately, in special drums / tanks laid on the secondary containments or trays. While refilling of oil, fuel and other chemicals the special protective berms shall be used. The facilities and heavy trucks that dealing with the oil products and chemicals must be furnished with the relevant spill-kits (**Figure 4**). The construction and other friable materials shall be stored in separately allocated areas, fenced and covered with waterproof tent. All the mentioned measures can be summarized in the Spill Prevention and Management Plan ("SPMP").

Figure 4. Recommended tools and kits for prevention or mitigation of spillages and leakages



During the operation stage, the soil can be contaminated by heavy metals in the zones neighbouring to the both sides of the bypass. Pollutants settling in soil within the roadways may impair vegetation

growth and increase the risk of erosion. Impact on soil may result from blockage of the drainage system which may cause flooding and/or erosion of soil. Another impact is the pollution with litter. The impact on soil during the operation is more difficult to manage as the sources of impact in this stage will be the "users" of the bypass.

Impact on water resources

Currently two technical water supply sources are considered for the Project needs. The first option envisions the water delivery from the Shireyli Irrigation channel. However, in this case before usage the delivered water shall be preliminary treated (purified). The second option is to use the artesian water from the bore holes. On 29.07.2020 the positive Conclusion No. KZ71VDC00082019 of the State Environmental Expert Examination for the groundwater bore hole with 49 m³/day water consumption limit was issued. However, the noted volume may not cover the Project's needs for technical water. The Client (or Construction contractor) shall increase the limits of groundwater from the noted bore hole and get a special Water Use Permit for it or shall apply to the relevant bodies for additional groundwater sources.

During the construction stage, the runoff contaminated with the oil products and sediment can be generated as a result of rainfall. Then, the runoff streams will flow to the Project surrounding environment contaminating it. No special actions will be required to manage the runoff provided that the measures recommended for the mitigation of soil impacts (also applicable for the mitigation of impacts on water resources) are undertaken.

During the bypass operation, the runoff from the roadbed generated as a result of precipitation will flow through the roadside slopes to the drainage ditches that are connected to the discharge culverts (canals). The Project design does not envision any wastewater and runoff treatment facilities for the Kyzylorda Bypass operation stage. Thus, the Consultant recommends furnishing the drainage culverts with the meshes in order to catch the sediment and debris washed off from the roadbed of the bypass during the precipitation. It is also proposed to regularly clean and maintain the noted meshes.

In general, no significant impacts on water resources during the Project implementation are expected. Some influence on water resources can occur when the runoff from the bypass road contaminated with the debris and sediment flows to the discharge culverts.

Impact on landscape and visual amenity

The visual impacts during the bypass construction stage are associated with the presence of equipment, heavy vehicles and workers operating on the ground, onsite and offsite traffic, construction camp, parking areas, etc. as well as with unfinished parts of the engineering structures (junctions, passages, bridge, OTL pillars, etc.). Landscape visual impact will also be due to the removal of vegetation and topsoil as well as availability of topsoil, subsoil and waste storage areas. The sites for stockpiling materials and dimensions of the piles must be selected in a manner to avoid significant visual impacts. The locations for the topsoil, excavated subsoil and generated waste storages as well as parking areas within the Project site should be selected well away from the A17 and M32 roads so that to be invisible from there. The impact during construction will be unavoidable, however short-term (restricted to the duration of construction), local and reversible.

The modification of landscape visual properties due to the appearance of the new infrastructure facilities and movement of vehicles along the planned Kyzylorda Bypass can be considered as two main visual aesthetic aspects during the operation stage. These aspects are irreversible and can influence on drivers and passengers traveling along the A17 and M32 roads. At the same time, the visual aspects are not deemed as significant as the Project area and vicinities are already burdened with manmade infrastructures and facilities. The change in aesthetic view of the Project area can be mitigated by the implementation of proper recultivation and landscaping measures. It is proposed to create the green protective zones consisting of aboriginal (site specific) trees and shrubs (mainly haloxylon) on both sides of the bypass taking into account that part of the Project site during the preconstruction stage will be cleared from the haloxylon vegetation.

Traffic impact

Traffic intensity is one of the key factors that determine the significance of the Project's noise and air emissions impacts on sensitive receptors. As per the Project design document, the traffic intensity along the planned Kyzylorda Bypass will be rather high.

The traffic intensity along the A17 and M32 roads during the construction stage will be increased. The most of the construction and auxiliary materials (cement, bitumen, gravel, reinforced structures, pillars, etc.) will be delivered through the railway to the Belkul railway station and then driven by trucks via the M32 highway to the Project construction site and camp. It is assumed that the drivers and visitors along the A17 and M32 roads may experience nuisance due to increased traffic density. There will be a need for Traffic Management Plan ("TMP") to maintain the traffic flow near the crossing points of the planned bypass with the A17 and M32 roads.

As per the Project design document, the annual 6% traffic increase was considered to calculate the traffic flow along the planned Kyzylorda Bypass for the 20-year perspective (2042). The increase in traffic flow will have direct effect on the volumes of air emissions and magnitude of noise levels during the bypass operation. At the same time, it should be stated, that the length of the Kyzylorda Bypass is 14.6 km; meanwhile the distance between the start point and end point of the bypass through the existing route is approx. 30 km. So, the designed bypass will cut the current mileage in half.

Greenhouse Gases (GHG) emissions

Emissions of GHG during the construction stage were estimated in line with the Guidelines for National Greenhouse Gas Inventories (IPCC⁷², 2006). According to the Guidelines, combustion of diesel fuel generates the following specific GHG emissions (**Table 2**).

Table 2. Specific GHG emission values

Fuel	GHG emissions factor, t/t ⁷³ of fuel		
	CO ₂	CH ₄	N ₂ O
Diesel fuel	3.13	0.000129	0.000026

Consumption of diesel fuel by construction equipment (bulldozers, excavators, graders, cranes, loaders, vibrorollers, etc.), heavy trucks and construction camp to be operated during the Kyzylorda Bypass construction stage is estimated as 4,133 tonnes⁷⁴ for the whole construction period (22 months) or 2,254 tonnes/year, which corresponds to 7,078.7 tonnes of annual GHG emissions of CO₂ equivalent. The annual GHG emissions during the construction stage will be below the reporting level of 25,000 tonnes of CO₂ equivalent and as per EBRD PR3 and the Project will be not subject to quantification in accordance with the EBRD's Protocol for Assessment of Greenhouse Gas Emissions (2017). The road construction activities will not lead to any significant climatic changes.

GHG emissions for the Kyzylorda Bypass operation stage will be generated as a result of (i) emissions from the traffic along the bypass, (ii) emissions from the bypass technical maintenance and repair activities, and (iii) emissions associated with the power energy consumption for bypass lighting during the night time.

Taking into account that the lighting of the bypass will be performed by the energy efficient LED lamps and the Kyzylorda Bypass technical maintenance works will be short-term, the GHG emissions from these components may be neglected. As per the calculations carried out based on the EMEP/EEA Air Pollutant Emission Inventory Guidebook (2019)⁷⁵, the GHG emissions from the traffic along the Kyzylorda Bypass will be 44.11 t/day or 16100 t/year. However, in the regional context, the GHG impact is not considered as negative; since new bypass will shorten the mileage compared with the existing route nearly twice (from 30 km to 14.6 km).

⁷²The Intergovernmental Panel on Climate Change (<https://www.ipcc.ch>)

⁷³tonne

⁷⁴Calculated based on the data provided in the national EIA report

⁷⁵<https://www.eea.europa.eu/publications/emep-eea-guidebook-2019>

Impact on air quality

During the construction stage the following activities / operations are considered as potential sources (stationary and mobile) of air emissions:

- Earth / excavation works,
- Loading, transportation and unloading of friable materials,
- Welding works and painting works,
- Drilling works (for the installation of OTL pillars),
- Preparation of asphalt mixture and asphalt pavement,
- Operation of construction equipment and machinery.

The air emissions to be generated during the bypass construction works from the stationary and mobile sources as well as their volumes calculated pursuant to the Methodology for Determination of Emissions' Norms to the Environment⁷⁶. The calculated air emissions for the 22 months construction period were 234.2 tonnes and approved by the Permit No. KZ94VDD00159027 dated 21.01.2021 issued by the Department of Natural Resources and Environmental Management of the Kyzylorda Region.

The air emissions dispersion forecast were modelled via "Era" (version 2.5) software in order to determine the concentrations of the air pollutants from the construction activities in the ground layer of the atmosphere. The results of air emissions dispersion modelling showed that the concentrations of air pollutants did not exceed the "MAC" set by the Hygienic Norms GN 2.1.6.695-98⁷⁷.

Anyway, the proper operations of the construction equipment and machinery as well as implementation of the measures set out in the Project's **Environmental and Social Management Plan ("ESMP")** will mitigate the adverse impact on sensitive receptors within the area of the Project's direct influence to the "low" degree.

The air emissions (CO, NO_x, SO₂, NH₃, PMs⁷⁸, NMVOC⁷⁹) from the traffic along the bypass during the operation stage were calculated based on the EMEP/EEA Air Pollutant Emission Inventory Guidebook, 2019 and considering the traffic increase projection (6% of annual growth and the calculated 9,231 vehicles per day for the target 2042 year). The calculated annual air emissions are 364.4 tonnes for the year of 2042. These calculations were performed considering that currently, the used vehicles comply with the Euro III or Euro IV standards. It is obvious, that during the years, in parallel with the economic growth in Kazakhstan, the current fleet will be gradually replaced with modern and more efficient Euro V or Euro VI standards' vehicles/engines that will lead to the reduction of air emissions to the atmosphere. In the regional context, the bypass impact on the air quality will be low.

Waste generation and impact

The main types and volumes of wastes to be generated during the Project implementation stage are associated with the construction works and maintenance services of the used equipment (including Bitumen shop and Asphalt plant).

The following types of wastes will be generated during the Project construction stage:

- Household waste,
- Constructon waste (including remains of ferrous and non-ferrous scrap),
- Remains of welding electrodes,
- Empty containers of paints,
- Oily rugs,
- Remains of vegetation clearance,
- Excavated materials/subsoil.

The volumes of the mentined wastes for the 22 months construction period have been calculated in the national Environmental Impact Assessment ("EIA") report and equal to 33503.0 tonnes (including construction wastes). The calculated volumes of the noted wastes were approved by the Permit No.

⁷⁶Approved by the Order No110-e of the RoK Minister of Environment, dated 16.04.2012

⁷⁷Hygienic Norms GN 2.1.6.695-98 "Maximum allowable concentrations (MACs) of pollutants in the air of residential areas"

⁷⁸Particulate Matter

⁷⁹Non-Methane Volatile Organic Compounds

KZ94VDD00159027 dated 21.01.2021 issued by the Department of Natural Resources and Environmental Management of Kyzylorda region for the Project.

The wastes to be generated in the course of the construction operations should be properly managed through the Waste Management Plan ("WMP"). The WMP shall be prepared and put into the effect by the Construction contractor specifically for the Project. The set of measures to minimize and mitigate the adverse impact of generated wastes on the environment is given in Project's **ESMP**.

The roadside litter / waste may be improperly collected (accumulated) in household waste containers and around during the Kyzylorda Bypass operation stage that can contaminate the nearby area and surrounding environment. This can happen when the number of household containers are not enough or the waste collection and disposal services are not provided properly. The main sources of the litter generation are drivers and travelers moving along the bypass, workers of trading centers, cafeterias, refueling stations that will be constructed in future on both sides of the bypass. The litter is predominantly consists of food waste, plastic / PET⁸⁰ bottles, glass and paper that people fly-tip. The scattering of litter along the road sides are also performed by the street dogs and birds.

The littering along the highway is rather difficult to manage. One way of its reduction is awareness raising of population. Other mitigation measures are listed Project's **ESMP**.

Noise and vibration impacts

The impact from the noise exposure during the construction and operation stages depends on the intensity and other traffic characteristics (type of vehicles, speed limits, road quality, etc.), as well as availability of sensitive receptors within the Project's area of influence. The dominant source of noise from the majority of construction equipment is the engine, usually operating on diesel, without sufficient muffling. In some cases processes that generate noise prevail over the equipment noise.

There are no residential areas located in the vicinity of the Project site, therefore the construction noise and vibration will not affect the local population. Some minor noise impact on the population of Belkul settlement may take place when the heavy trucks transport the construction and other materials from the Belkul railway station to the Project site and construction camp. The workers of the Construction Contractor may experience the construction noise and vibration. Several mitigation measures, including the provision of workers with Personal Protection Equipment ("PPE") should be undertaken. These measures also will help to reduce the noise exposure on the animals habitating in the vicinity of the Project site.

The analysis of similar projects and the experience of the Consultant shows that the construction vibration impact is localized and limited within the 40 m from the source of generation. Taking into account that the nearest residential house and/or commercial facility is located in Belkul village and well away from the Project site, it can be concluded that there are no vibration impact on sensitive receptors. Nor will the construction vibration affect seismic stability of the existing buildings and structures.

As per the instrumental measurements performed in and around the Project site in May 2021, the equivalent noise actual levels there were between the 48 dBA and 53 dBA, which are below the 55 dBA and 60 dBA national hygienic norms set for the residential areas and industrial / commercial facilities respectively. The actual noise level along the bypass during the operation stage will increase. At the same time, as noted previously, the planned bypass surrounding area is neither residential nor commercial. So, at least at the beginning stage (first 1-2 years) of the Kyzylorda Bypass operation, the traffic noise will not affect sensitive receptors. Some noise impact can be on fauna species living in the area surrounding the bypass, but it is expected that during the construction stage they will gradually migrate to the neighbouring habitats free from manmade activity.

It is expected that the bypass will attract the entrepreneurs to establish business facilities (trading centers, cafeteria, refueling stations, etc.) along the roadsides. In such cases, the noise dispersion modeling shall be projected in order to assess its influence on the personnel of the commercial facilities

⁸⁰Polyethylene terephthalate

to be potentially established. If required, the noise protection measures should be designed and implemented by the Client.

Impact on flora

Vegetation cover is one of the least protected components that will be inevitably affected as a result of the Project implementation. Around 23% of the allocated 443.2 ha land is occupied by white saxaul (*Haloxylon persicum*) with a small amount of *Artemisia terae-albae*, forage kochia (*Kochia prostrata*) and *Salsola orientalis* in the lower tier, as well as *Allium sabulosum*, *Allium caspium*, *Scorzonera pubescens*, *Sedobassia sedoides*. Some areas with saline dense soils within the Study area are occupied by black saxaul (*Haloxylon aphyllum*) with the mixture of *Tamarix laxa* and with the participation of *Astragalus turczaninowii* and *A. paucijugus*, *Alhagi pseudalhagi*. During the Flora field study (April 2021) no rare plants listed in the RoK Red Book were discovered within the Project area.

As per Letter No. 03-15_1624 of the RoK Forestry and Wildlife Committee, the clearance of saxaul vegetation should be compensated in line with the provisions of Order No. 18-02/132 of the RoK Minister of Agriculture at a rate of 32,800 KZT per hectare ($103.5 \times 32,800 = 3,394,800$ KZT or 6,660 euro).

According to the Project design, after the completion of the bypass construction, the temporarily allocated lands shall be recultivated and the vegetation cover must be recovered. In general, the vegetation cover can recover by itself, however, if the relevant care is ensured, it will take place many times faster. To preserve the landscape and vegetation of the area, the temporarily allocated lands shall be mainly planted with the saxaul (*Haloxylon*) species. The measures recommended to mitigate the Project impact on vegetation are set out in the Project **ESMP**.

During the bypass operation stage, the main influence on the flora and vegetation is expected from (1) the exhaust emissions from the vehicles moving along the bypass, (2) improper diversion of runoff generated during the rainfall, and (3) poor management of household waste and litter collection services. The 2nd and 3rd influences can be managed through the implementation of the relevant measures proposed in the Project's **ESMP**. The air exhaust emissions will inevitably occur, however, their impact on the flora and vegetation is assessed as low.

Impact on fauna

The destruction of the habitats of amphibians and reptiles is the main factor affecting their population decline. Amphibians and reptiles are sedentary and are not able to move quickly over the long distances and when disturbed they sheltered in burrows or vegetation. The Project's direct impact is expected on the population of small sedentary animals of ground and underground behaviour and life. These species are mainly represented by the Insectivora and Rodentia that are not able to move quickly for the long distances and when disturbed are sheltering underground or in surrounding vegetation. Mammals such as *Carnivora* and *Leporidae* will leave the territory during the construction works and will move to safe places, so the likelihood of their death is minimal. Bats, also, with any disturbance factor, are able to leave the construction site.

Due to the Kyzylorda Bypass construction, the natural habitat of the animals within the lands allocated for the Project will be completely changed. To minimize the mortality of the animals during the construction, it is recommended to avoid the excavation and earthworks during the breeding season, i.e. between the mid of March and June, and ideally after the hibernation time that starts in October. When the nests of big birds are found, the construction works should be stopped to give them time and possibility to leave the site.

There is a risk of small animals' access to the roadbed of bypass and potential collisions with the vehicles. The same risk is also relevant to the ungulates grazing on pasture land around the Project site, and two passages for herded animals at km 2+040 and km 7+960 are envisioned by the Project design. In addition, there is a possible disturbance to animals from the bypass lighting especially during the night time, as well as the vibration and noise related disturbance that may scare off the animals from within 150-400 m zones along the bypass. Relating to the VU category Russian tortoise (*Agrionemys horsfieldi*) and the Central Asian tortoise (which is not vulnerable, but listed in CITES), it is recommended before the construction works to develop a Biodiversity Action Plan ("BAP") which has to envisage capturing the tortoises and boas and relocating them to similar biotopes in the

surrounding territories. The relocation has to be done in April-May when the animals get out of hibernation but before beginning their coupling and nesting. It is also proposed to perform monitoring as per the BAP as well as a 5-year monitoring of the fauna species, in the areas along the bypass as well as on the recultivated lands (294.34 ha) temporarily allocated for the Project needs (preferably in spring season). If risks to or deaths of animals are detected, explore the reasons and take preventive actions (e.g., additional fencing or installation of warning signs).

Impact on protected areas

From the three Specially Protected Areas of Nature (SPAN), located within the Kyzylorda Region, the Torangylsay State Natural Zakaznik (Reserve) is the closest protected site to the Project area. It is located at the distance of 23 km to the southwest, on the left bank of the Syrdarya River. The rest of the SPANs are located far away from the Kyzylorda Bypass. Therefore, the Project will not have any impact on the protected areas of the Kyzylorda Region.

The closest Ramsar Site No. 2083 Lesser Aral Sea and Delta of the Syrdarya River is located 350 km away from the Project site. The closest International Bird Area (IBA) KZ068 Telikol Lakes is situated at the distance of 90 km to the north-east of the Project area. None of them will be affected as a result of Project implementation.

As stated, the Project area is located beyond the area of the Altyn Dala Conservation Initiative (habitate of saiga tatarica). The 10,000 ha area bounded by the eastern border of the City of Kyzylorda, the A17 and M32 roads and the planned bypass is burdened by manmade activities. The saiga antelope (*Saiga tatarica*) is known to be very wary of manmade activities/developments and hence, it is unlikely that someone can meet saiga there. Moreover, as a result of the fauna field investigations and desktop study the biodiversity team of the Consultant has concluded that the saiga tatarica has never found within the Project site and vicinities, and the area can not be a saiga habitate. These conclusions were also discussed and agreed with the representative of the Association for the Conservation of Biodiversity of Kazakhstan ("ACBK").

Impact on cultural heritage

As per the Conclusions No. AEC-176 and AEC-189 of the "Archeological Expertise" LLP, no archaeological monuments were found within the RoW of the bypass and the boundaries of the area allocated for the Project's infrastructure facilities (Construction camp, access roads, etc.). However, to be in line with the requirements of the national legislation, in particular, the Law of the RoK "On Protection and Use of the Objects of Historical and Cultural Heritage" No. 1488-XII, several prevention measures have been recommended in the noted conclusions and supplemented by the Consultant.

6.2 Social Impacts and Benefits, Mitigation and Management Measures

Socio-economic Impacts/Benefits

In the frames of the Project, the overall socio-economic impact has been assessed for both Kyzylorda-Zhezkazgan road reconstruction and Kyzylorda bypass construction components, since both components constitute a part of an investment project for reconstruction of "Kyzylorda-Pavlodar-Uspenka- Russian Federation border" road (the section "Kyzylorda-Zhezkazgan" km 12-424)⁸¹.

The implementation of the Project will lead to the improvement of transport and operational characteristics of road network, will contribute to Kyzylorda and Karaganda provinces socio-economic development characteristics, such as performance of road sector, business performance, investments potential as well as living standards of population. Additional employment opportunities will be created for the local population.

With regards to regional and national socio-economic effects, the following major impacts/benefits could be highlighted:

- Improvement in populations' living standards and social environment,

⁸¹The national program of infrastructural development of the Republic of Kazakhstan for 2020-2025 "Nurly Zhol" approved through a RoK Government Decision No. 1055 dated 31 December 2019.

- Stepping up of the regional and national economy, contribution in development of new territories and resources, expansion of target markets,
- Reduction of transport component in costs of goods and services,
- Improvement of transportation services for agriculture,
- Elimination of off-road conditions in rural areas owing to construction of access roads to rural settlements,
- Employment creation.

The total investments of around 466,4 million KZT are returned through operational income generated from the Project's operations (road charges deducted by operational costs) as well as socio-economic benefits, such as reduction of travel time (594.2 million KZT), employment creation (30.1 million KZT) and reduction of road traffic accidents (75.2 million KZT). In other words, the investments made from the public budget are converted into the direct revenues for the public budget as well as indirect socio-economic benefits.

Impacts on the local/regional economic growth, employment and business / investment opportunities

The economic impact of the Project during the construction stage will consist of certain growth of construction material production and construction work services Kyzylorda Region and namely Kyzylorda and Syrdarya Districts and the City of Kyzylorda. Moreover, the local road building companies can also take part in the tender for the Project construction works and services. It is expected that the workforce demand during the construction of Kyzylorda Bypass will be high. The main providers of the local workforce will be the settlements situated near the Project area (city of Kyzylorda, Belkol, Abay and Dosan villages).

The constructed bypass will ensure better communication and transportation links which will make the region more attractive for investors. Furthermore, the Project implementation will contribute to the improvement of transport links in Kyzylorda Region and in Kazakhstan as well. Moreover it will lead to recreation and tourism development, namely further development of so called farmstays in the region.

The Project will have positive influence on Belkul, Abay and Dosan settlements and the City of Kyzylorda as it will support to the creation of new permanent jobs at the roadside services (trading centers, cafeteria, refueling stations, etc.) during the bypass operation. New business development opportunities associated with the bypass operation will be established for the entrepreneurs of the mentioned settlements as well as materials and service providers.

Impacts on public facilities and infrastructure

The following public facilities and infrastructure were identified by the Consultant within the Project area (**Figure 5**):

- 20 km sections of the A17 and M32 roads that cross the starting and ending points of the Kyzylorda Bypass (see **Figure 5**, red lines),
- Municipal waste landfill,
- Two OTLs (220 kV and 35 kV) that cross the planned bypass,
- Railway running at the distance of 500 m from the starting point of the planned bypass (see **Figure 5**, black dotted line),
- Shireyli irrigation channel (see **Figure 5**, light blue line).

The negative impacts associated with the traffic limitations along the A17 and M32 roads during the construction works will be short-term and can be neglected, conditional upon having the effective TMP in place. The construction materials will be delivered by railway to the Belkul railway station and then driven by trucks via the M32 highway to the Project Construction Site. We think that these 7 km will not fall under specific pressure as the road is quite wide and can accommodate this additional traffic.

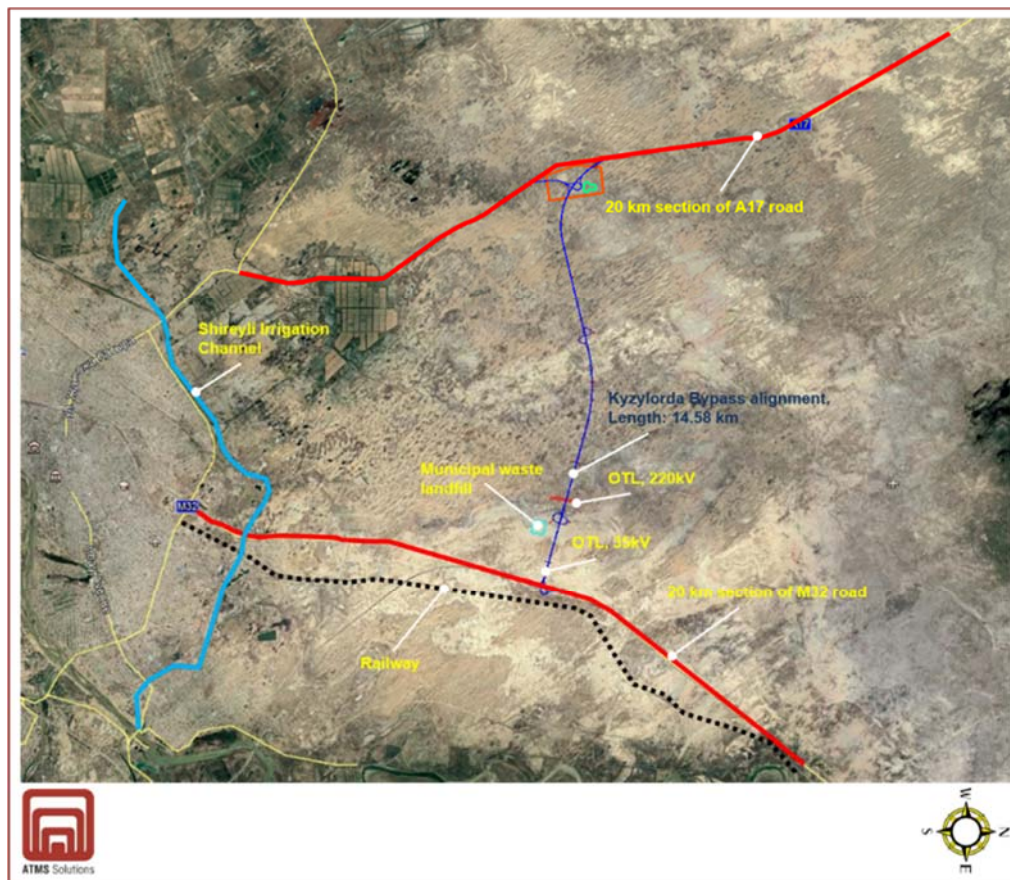
It is envisioned by the Project design documentation to dismantle and reallocate 2 towers of the 220 kV OTL and 2 towers of the 35 kV OTL situated close to the bypass alignment. This will lead to the planned disruptions of power supply and will affect the users of the mentioned OTLs. However, these

disruptions will be for several hours with an advance notification of the population, and can be neglected as well.

The municipal waste landfill located at the distance of 150 m from the planned Kyzylorda Bypass alignment will be negatively affected due to the traffic limitation as well as air pollutants and noise emissions, especially during the excavation and other earthworks. However, as noted, the impact will be temporary and may be mitigated by the effective TMP.

No negative impacts are expected from the Project on the existing railway track. There are no social infrastructure facilities located in close proximity to the construction site, so no impact on social infrastructure is expected in the course of the bypass construction. The Shireyli irrigation channel is situated well away and could not be physically impacted by the Project implementation.

Figure 5. Map of the public facilities and infrastructure of the Project area



Impact on Community Health and Safety

There are no communities located within the area of Project’s direct influence. The distances from the planned bypass to the nearest residential areas are 15 km (Kyzylorda), 20 km and 14 km (the settlements of Abay and Dosan, respectively, both in Kosshinirau Rural Settlement) and 7.5 km (Belkul village). Taking into account that the closest residential areas are located well away from the Project site, it is unlikely that the physical factors, such as air and noise emissions, soil contamination, runoff generation and discharge, etc. may affect on health and safety of population of the noted settlements.

A Construction camp to accommodate 50 persons will be constructed and used by the managers and skilled workers (most probably foreign civil engineers) of the construction contractor. The City of Kyzylorda has enough capacities and labour resources to cover the workforce demand in terms of semi-skilled and unskilled workers. Thus, there will be likely no need to "absorb" a considerable influx of workers in the Project area. However, in some circumstances (for instance the Contractor’s policy to use employee workers only) a considerable influx of workers could be expected. The influx of workers might lead to some sexual harassment and abuse impacts to the residents of Project adjacent

communities. At the tender dossier elaboration stage the Client is to conduct a Gender based Violence and Harassment ("GBVH") assessment to Project affected persons and communities and to elaborate specific measures to prevent and address the potential GBVH impacts. Moreover, the Client is to ensure that the GBVH prevention and addressing measures are cascaded down into the Project's construction contractors and sub-contractors' scope of work through inclusion into the tender documentation and agreements.

Most of the impacts associated with the Project construction stage will not be applicable once the road is commissioned. The operations risks will be related to the traffic flow increase and technical conditions of the Project infrastructure, which if not satisfactory, can lead to traffic accidents and increase emissions of pollutants. The significance of the community health and safety impact during the operation stage will be low if the measures listed in Project's **ESMP** are implemented.

Land Tenure Impacts

Both permanently and temporarily occupied lands to be allocated for the Project needs belong to the State, i.e. Kyzylorda City and Syrdarya District. Part of the noted land-plots located near the A17 road is currently used for pasturing by the farms situated in the vicinity of the Project site. Only one affected land-plot (150 ha) with the cadastral No. 10-153-018-4217 located within the administrative boundaries of Syrdarya District was provided for the temporary paid land use (lease) for 20 years, however it remains in state ownership. No improvements were done on the leased land and it has not been used so far. The leaseholder planned to establish a farm business on the land in the future.

It was proposed by the leaseholder and agreed by the Syrdarya District officials to replace the affected land plot with an equivalent plot located just next to the affected land. The leaseholder stated that the proposed compensation was acceptable for him. He also noted that he was interested in the implementation of the Project since after the completion of the construction works the proposed land plot will be located next to the bypass and will make it a more attractive commercial asset.

Several affected illegal land users were identified during the ESIA study, who use the project lands as pastures for their ungulates animals. However, the loss of pasture lands for the illegal land users and affected communities is minor as the alternative grazing site are available in the environs. It is recommended to fence the Project area to eliminate the access of the ungulate animals to the construction site and camp areas. Further the involuntary resettlement / physical displacement is not triggered within the Project.

No Project impacts on land tenure are expected during the Kyzylorda Bypass operation stage.

Impacts on Accessibility and Local Connectivity

The planned bypass will connect the A17 "Kyzylorda- Zhezkazgan" and M32 "Samara/Uralsk-Shymkent" roads through the uninhabited and unindustrialized area. However, during the site visit, the Consultant has discovered some objects (cemetery, OTLs, grazing land, etc.) located in the vicinities of the Project site that can have accessibility and connectivity limitations during the bypass construction stage.

The Project design envisions construction of the technological ground road to be used during the construction works to deliver the equipment, machinery, materials and workers to the Project site and construction camp. This earth road will be constructed on the left side of the bypass and will ensure access to the OTLs, ethnographic cemetery and pasture land located on the western side from the bypass. To ensure farmers' access to the pasture land located on the right side of the bypass, it is recommended to negotiate with the Client and Construction contractor and determine the locations of temporary passages and timelines (period of times during the day) when the herdsmen convoy the ungulates to the grazing lands and back. The Construction contractor shall ensure the safe convoy of the ungulates through the relevant passages.

In general, in terms of local connectivity and accessibility the operation of the planned bypass will have positive effect on sensitive receptors⁸² within the regional and the social area of influence. It is expected that the connectivity for the transportation of goods and materials, provision of services and communication of people among the settlements within the City of Kyzylorda and Syrdarya district.

Impact on Vulnerable Groups

The socio-economic impacts, benefits and opportunities of the Project are mostly gender neutral i.e. both men and women will influence and benefit equally from the Kyzylorda Bypass construction and operation stages.

Although the unemployment rate among the women of the Project region is rather low, the Project implementation will create new employment opportunities especially for women living in Belkul village (the closest settlement to the planned bypass). It will give them opportunity to find jobs close to their residence instead of working in the City of Kyzylorda. The latest is of crucial importance for women with young children (both married and single/divorced).

The Project implementation is not expected to negatively affect vulnerable groups of the population (women headed families / rural women in general). Residents/households belonging to the general "vulnerable" categories will benefit commensurately with the non-vulnerable population. It can be expected that during the bypass operation the impact on vulnerable groups will be positive taking into account that potential employment opportunities will be created for local women and possibly men and youth above 18.

Occupational Health and Safety, Workers Rights and Working Conditions Related Impacts

The construction works must be performed in accordance with a Occupational Health and Safety Management Plan ("OHSMP"). This document should be elaborated by the Construction Contractor in order to prevent accidents / incidents, personal injuries, near misses, and damage to the property, to promote health and well-being of all persons in the workplace and to achieve the ultimate goal of "zero injuries and incidents". The OHSMP must include the requirements of the relevant national legislation, EBRD's PR4 and good international practice and should be in line with the provisions of approved construction and working design documents.

The Kyzylorda Bypass road maintenance / repair activities will be carried out regularly by the Client or its contractors. In the course of road maintenance activities the OHS-related issues of the engaged staff must be addressed. It is recommended to elaborate a simplified Health and Safety Management Procedure for the road maintenance works based on the OHSMP of the Construction Contractor and considering the lessons learned from the OHS performance of the bypass construction operations and overall Client's experience. The residual OHS impact during the operation / maintenance stage will be negligible.

Workers' rights and working conditions related impacts during the Project implementation are associated with potential violations of fundamental principles and rights of workers⁸³. The specific measures shall be implemented to prevent violations of workers' rights to the extent possible through setting requirements to follow the provisions of national labour legislation, the ILO conventions and the EBRD PR2 in the Project construction contractor's tender documentation and construction contract. Meanwhile, to identify and eliminate workers' rights violations, third party labour audits shall be conducted throughout the construction stage.

It is recommended to contractually oblige the Project's construction contractor and subcontractors to adopt and follow a Code of Conduct for non-discriminatory employment, including (i) ensuring equal opportunities and fair treatment in employment relationships, (ii) prevention and addressing any form of gender-based violence, (iii) establishing both formal and confidential discrimination grievance mechanisms, (iv) mechanisms for reporting of GBVH incidents to the Client and the EBRD, etc. To

⁸²The sensitive receptors (beneficiaries) are companies using the A17 and M32 roads for transportation of goods and materials and passengers, people living in settlements adjacent to the Project region, visitors and travelers.

⁸³As guided by both the national legislation and the fundamental ILO conventions

ensure proper quality and management of the accommodation and provision of services quality it is also proposed to develop a Worker Accommodation Management Plan.

COVID-19 Preventive Measures

Depending on the COVID-19 current situation in Kazakhstan, the requirements of the Sanitary Rules "Sanitary and epidemiological requirements against the organizations and fulfillment of the sanitary-antipeidemic and sanitary-preventive measures to prevent the threats of the spread of coronavirus infection"⁸⁴, approved by Order No. KR DSM-78/2020 of RoK Ministry of Healthcare dated 05.07.2020 shall be applied during the bypass construction and operations stages. In addition, the EBRD briefing note on workplace risk assessment in respect of COVID-19⁸⁵ and the provisions of the World Health Organization ("WHO") Considerations for public health and social measures in the workplace in the context of COVID-19⁸⁶ ("WHO guide") dated 10.05.2020 should be taken into account as well.

The workplaces to be engaged in and/or to be created within the Project implementation shall be assessed in terms of their exposure to the COVID-19 (low, medium and high exposure risks) via the WHO guide and the COVID-19 preventive measures for managers, workers, contractors, customers and visitors must be undertaken. Rights, duties, and responsibilities of workers and managers shall be defined.

6.3 Conclusions on E&S impacts and benefits

The impacts on physical and biological environment during the bypass construction and operation stages are mostly negative, but largely of local influence, and can be avoided / minimized / mitigated through the implementation of measures recommended in Project's **ESMP**. Where the magnitude of impacts is unclear, the relevant measurements and monitoring must be envisioned.

The most significant impacts from the construction works are expected to be on flora and vegetation. 443.2 ha of pasture land should be cleared from vegetation for the Project needs, including 103.5 ha covered with the saxaul (Haloxylon) species. After completion of the Kyzylorda Bypass construction, the vegetation of the 148.86 ha land (temporary occupied land) must be recovered and landscaped as per the . The clearance of saxaul vegetation should be compensated in line with the provisions of Order No. 18-02/132 of the RoK Minister of Agriculture at a rate of 32,800 KZT per hectare or 3,394,800 (6,660 euro) KZT in total.

The Russian tortoise (*Agrionemys horsfieldi*) also known as Central Asian tortoise ranked as Vulnerable as per the IUCN Red List and Tartar sand boa (*Eryx tataricus*) from the CITES Appendix II also can meet within the Project area and shall be managed through a Biodiversity Action Plan ("BAP") to be developed before the start of the construction works. The saiga antelope (*Saiga tatarica*) is known to be very wary of manmade activities/developments and hence, it is unlikely that someone can meet saiga there. Moreover, as a result of the fauna field investigations and destop study the biodiversity team of the Consultant has concluded that the saiga tatarica has never found within the Project site and vicinities, and the area can not be a saiga habitate.

For the construction stage, where relevant and applicable, it is recommended to the Project's Construction Contractor to develop specific environmental and social management and monitoring plans (see **Chapter 7**) in accordance with the requirement of the national legislation, EBRD PRs and good international practices. These documents will establish a set of actions / measures aimed at prevention, minimization and / or mitigation of adverse impacts on sensitive receptors / resources.

The adverse environmental impacts of the construction works are more significant compared with the operation stage, however they are short- and middle-term and can be mitigated down to "low" grades provided that the recommended measures as per the Project's **ESMP** are followed.

The Project impacts on the socio-economic receptors of the Project area are mostly positive during both construction and operation stages. While performing the road rehabilitation works some temporary

⁸⁴<https://adilet.zan.kz/rus/docs/V2000020935>

⁸⁵<https://www.ebrd.com/covid19-workplace.pdf>

⁸⁶[Considerations for public health and social measures in the workplace in the context of COVID-19 \(who.int\)](https://www.who.int/publications/m/item/considerations-for-public-health-and-social-measures-in-the-workplace-in-the-context-of-covid-19)

(mostly non-qualified) employment opportunities will be created for the population of Belkul and other accessible neighbouring villages and the City of Kyzylorda. The influx of the Contractor's staff to the construction site will lead to an increase in turnover of the local service providers, such as surrounding stores, catering and hospitality facilities. At the operation stage an increase in traffic load along the bypass will contribute to establishing roadside services (cafeteria, trading centers, refueling stations, etc.).

The construction of the Kyzylorda Bypass and its supporting facilities will lead to the permanent (148.86 ha) and temporary (294.34 ha) land acquisition. The affected lands are state-owned under the authorized use of Kyzylorda City and Syrdariya District. Only one affected plot is leased out. This land plot also belongs to the state and is leased for use to a lease-holder for 20 years. The key principles and methodology for managing the land acquisition and livelihood restoration impacts are given in the Project's **Livelihood Restoration Framework**.

The specific measures shall be implemented to prevent violations of workers' rights to the extent possible through setting requirements to follow the provisions of national labour legislation, the ILO conventions and the EBRD PR2 in the Project construction contractor's tender documentation and construction contract.

7. Environmental and Social Monitoring and Management

Overall Management and Supervision

Supervision of the Contractor's⁸⁷ activities during the Project construction stage shall be performed by the Client's Project Implementation Unit ("PIU"). Day-to-day management of the Environmental, Health and Safety and Social ("EHSS") activities of the Contractor during the construction works shall be performed by its assigned Environmental, Health and Safety ("EHS") staff. Overall supervision of the Project implementation works will be carried out by KazAvtoZhol NC JSC.

The provisions of the EHS standards and regulations during the Kyzylorda Bypass operation, including road maintenance works shall be implemented by the Kyzylorda Regional Branch of KazAvtoZhol NC JSC and monitored by the EHS officers of KazAvtoZhol NC JSC.

Management and Monitoring of E&S Impacts during the Construction Stage

Impacts to be generated during the construction activities must be managed and monitored by the Contractor's EHS staff through the implementation of the following:

- 1) EHS requirements of the relevant national legislation,
- 2) PRs of the EBRD Environmental and Social Policy (2019), EHS provisions of good international practice, and
- 3) The measures and in particular the specific management and monitoring plans proposed in the Project ESIA and summarized in **ESMP**⁸⁸ and Environmental Monitoring Programme⁸⁹.

The Consultant recommends a set of specific operation, management and monitoring plans, which should be prepared by the Construction Contractor and implemented during the Project implementation to effectively manage the E&S impacts. The proposed operation, management and monitoring plans as a minimum shall include:

- Soil Quality Monitoring Plan,
- Traffic Management Plan,
- Waste Management Plan,
- Noise, Vibration and Air Quality Monitoring Plan,
- Spill Prevention and Management Plan,
- Occupational Health and Safety Management Plan,
- Contractor Management Plan,
- Camp Management Plan,

⁸⁷To be selected for the Project implementation

⁸⁸Elaborated by the Consultant and submitted to the Client as a standalone document

⁸⁹Presented in the Project's ESIA report

- Worker Accommodation Management Plan.

Environmental and Social Monitoring during the Operation (Maintenance) Stage

The road maintenance works are conducted by the Kyzylorda Regional Branch of KazAvtoZhol NC JSC. The monitoring of the E&S is performed by KazAvtoZhol NC JSC EHS officers according to the procedures elaborated within the Company's E&S management systems.

Monitoring of Compliance with the EBRD's EHSS Requirements

KazAvtoZhol NC JSC as the PIU will annually prepare monitoring reports for EBRD to report on its EHSS performance and the progress with the ESMP implementation.