



European Bank
for Reconstruction and Development



**KAZAKHSTAN: BEINEU-BOZOY-SAKSAULSK
ROADS - PROJECT FEASIBILITY ASSESSMENT
PR 017140**

Non-Technical Summary

October 2026

REPORT ISSUE RECORD

PROJECT NAME	KAZAKHSTAN: BEINEU-BOZOY-SAKSAULSK ROADS – PROJECT FEASIBILITY ASSESSMENT
PROJECT REF	PR 017140
BENEFICIARY	JSC KZAVTOZHOL NC
COUNTRY	KAZAKHSTAN
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REPORT TITLE	Non-Technical Summary

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List of Abbreviations

AoI	- Area of Influence
API	- Air Pollution Index
BBS	- Beineu-Bozoy-Saksausk
BAT	- Best Available Technologies
CH	- Critical Habitat
CIA	- Cumulative Impact Assessment
CVRA	- Climate Change Vulnerability and Risk Assessment
EAAA	- Ecologically Appropriate Areas of Analysis
EHS	- Environmental, Health and Safety
EIA	- Environmental Impact Assessment
EU	- European Union
EBRD	- European Bank for Reconstruction and Development
EC	- European Commission
EIA	- Environmental Impact Assessment
ESIA	- Environmental and Social Impact Assessment
ESAP	- Environmental and Social Action Plan
ESMP	- Environmental and Social Management Plan
ESP	- Environmental and Social Policy
ESR	- Environmental and Social Requirement
FGD	- Focus Group Discussion
FS	- Feasibility Study
GAP	- Gender Action Plan
GBVH	- Gender-Based Violence and Harassment
GIP	- Good Industry Practice
IBA	- Important Bird Area
IBRD	- International Bank for Reconstruction and Development
IFC	- International Finance Corporation
ILO	- International Labor Organization
ITS	- Intelligent Transportation System
IUCN	- International Union for Conservation of Nature
JSC	- Joint Stock Company
KBA	- Key Biodiversity Area
LARF	- Land Acquisition and Resettlement Framework
NTS	- Non-Technical Summary
OHS	- Occupational Health and Safety
OTL	- Overhead Transmission Line
PBF	- Priority Biodiversity Feature
PCR	- Public Consultation Report
RoK	- Republic of Kazakhstan
RMU	- Road Maintenance Unit
RSE	- Republican State Enterprise
RoW	- right-of-way
SEP	- Stakeholder Engagement Plan
SI	- Standard Index
SPNA	- Specially Protected Nature Areas
TRACECA	- Transport Corridor Europe-Caucasus-Asia
TMP	- Traffic Management Plan
WB	- World Bank

1 Introduction

1.1 Background

The construction of the 559-km Beineu-Bozoy-Saksaulsk (BBS) Road to Category II technical standards will form part of the Transport Corridor Europe-Caucasus-Asia (TRACECA), transport corridor, facilitating overland trade between China and Western Europe via Kazakhstan. The BBS Road will enhance the transport and logistics potential of the Mangystau and Aktobe regions by improving the road's technical standards, increasing its capacity, and reducing travel times. As part of the "Centre-West" Transport Corridor, the road will also contribute to the development of modern transport infrastructure, thereby supporting improved regional connectivity and more efficient movement of people and goods.

The European Bank for Reconstruction and Development (the "EBRD" or the "Bank") has considered providing a sovereign-guaranteed loan to JSC¹ National Company "KazAvtoZhol" (the "Company", the "Client", or "QAJ"), a 100% state-owned national road operator in Kazakhstan, to finance the design, construction and maintenance of Lots 1 to 4 (km 0+000 to km 160+000; approximately 161.5 km) of the BBS Road Project, including its components (such as access roads, road maintenance units, and other ancillary infrastructure).

The Bank engaged a consultant (the "Consultant") to undertake the **Environmental and Social Impact Assessment (ESIA) and prepare the full ESIA disclosure package for Lots 1 to 7 (km 0+000 to km 286+000)** of the Project in accordance with the EBRD Environmental and Social Policy (ESP, 2024) and the Environmental and Social Requirements (ESRs). **Under a Reliance Letter agreed between EBRD, the Consultant² and the World Bank, the World Bank may rely on these ESIA deliverables, in the same way as EBRD, for its own financing, appraisal and supervision of Lots 5 to 7.**

The Project has the potential to result in significant adverse future environmental and/or social impacts. Accordingly, under the EBRD Environmental and Social Policy (ESP, 2024), it has been classified as a **Category 'A'** project. As such, **the Project is subject to a comprehensive ESIA, together with the preparation of associated environmental and social documentation.** The ESIA disclosure package will be made publicly available for a minimum period of 120 days prior to the Project being considered for approval by the EBRD Board of Directors.

The 559 km BBS Road is financed by the EBRD, the International Bank for Reconstruction and Development (IBRD) / World Bank, the Asian Development Bank (ADB), and the Republic of Kazakhstan, through the Development Bank of Kazakhstan (DBK), with the road divided into four financing sections (lot groups), each allocated to a different financier:

- EBRD: Subsections 1 to 4 (km 0+000 - km 160+000),
- IBRD / World Bank: Subsections 5 to 7 (km 160+000 - km 286+000),
- ADB: Subsections 8 to 10 (km 286+000 - km 410+000),
- DBK: Subsections 11 to 14 (km 410+000 - km 559+166).

¹Joint Stock Company

²SYSTEMA CONSULTING S.A.

2 Project Overview

2.1 Location

The alignment of the BBS Road and its planned connections to Kazakhstan's existing road network are shown in **Figure 1**. The proposed BBS Road traverses the Mangystau, Aktoobe, and Kyzylorda regions. **Figure 2** provides a more detailed overview of the Project Road alignment (km 0 - km 286), illustrating the main road components within the section (km 0 - km 160) financed by the EBRD.

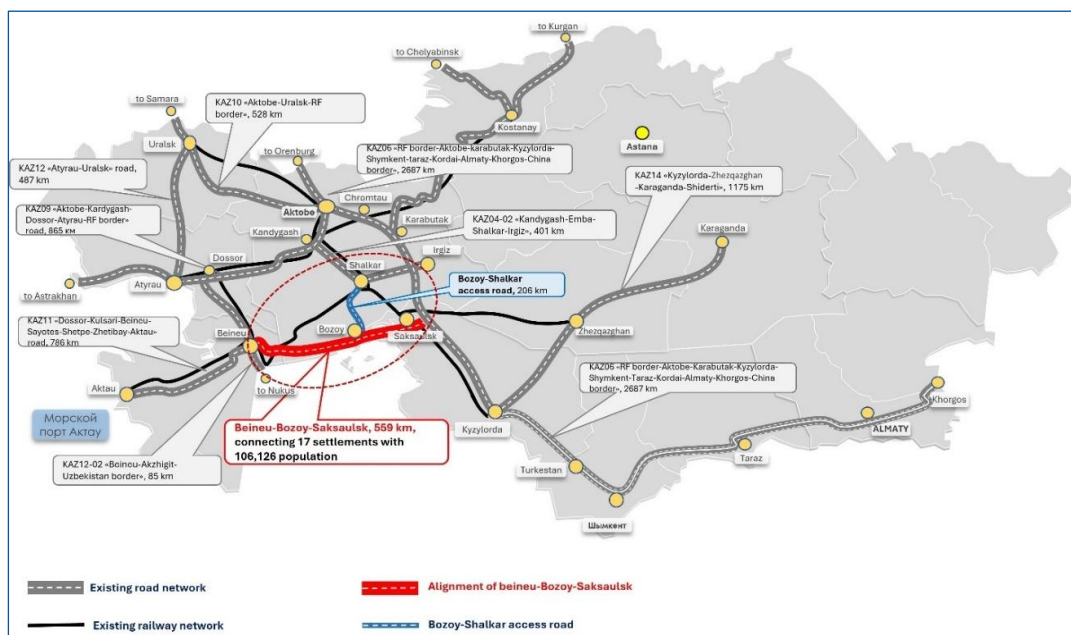


Figure 1 - Existing road network in the wider Project area and the location of the BBS road

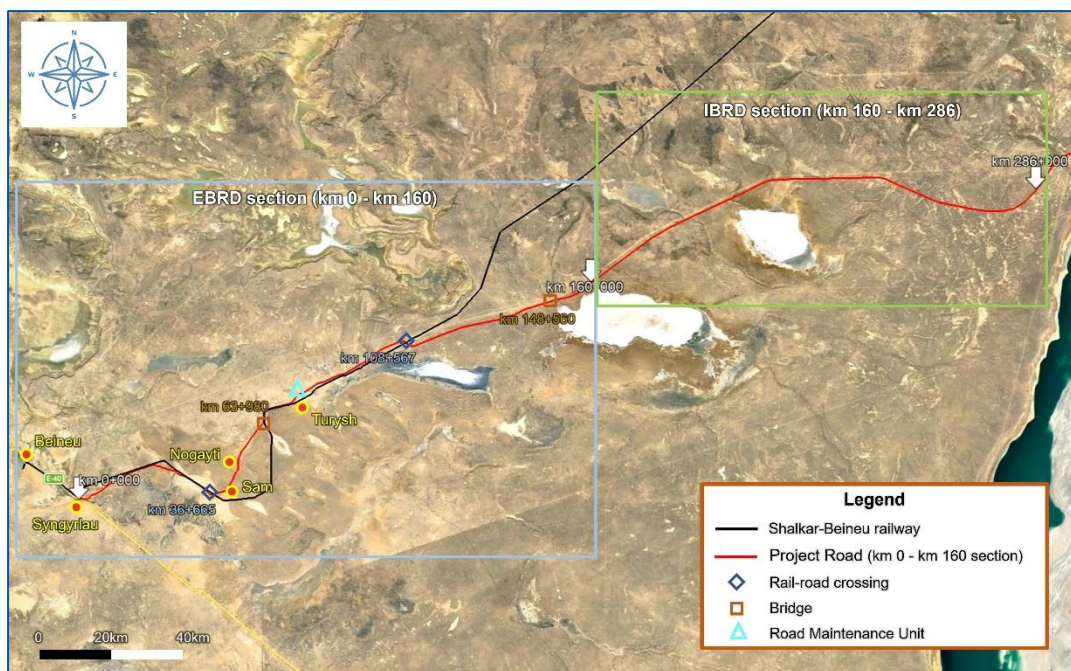


Figure 2 - Map illustrating Project Road alignment (km 0 - km 286) and main components within the EBRD financed section (km 0 - km 160)

2.2 Project Description

The local Feasibility Study envisages the construction of the Category II Beineu-Bozoy-Saksaulsk road. The 286-km Project Road section that is a subject of this ESIA study will traverse the Mangistau and Aktope regions of the Republic of Kazakhstan (RoK). The main Project components, including wildlife crossings proposed as a result of the ESIA study by the Consultant, and their locations, as well as the nearby settlements are outlined in **Table 1**.

Table 1 - Project Road components and nearby settlements

EBRD: Subsections 1 to 4 (km 0 - 160)				IBRD: Subsections 5 to 7 (km 160 - 286)		
Mangistau Region			Aktope Region			
Subsection 1: km 0 - 40	Subsection 2: km 40 - 80	Subsection 3: km 80 - 125	Subsection 4: km 125 - 160	Subsection 5: km 160 - 200	Subsection 6: km 200 - 246	Subsection 7: km 246 - 286
• interchange at the beginning of the road with an overpass • 2 cattle crossings • railway overpass	• 4 overpasses for agricultural machinery crossing • cattle crossing • bridge • 9 culverts • 6 bus stops • 2 large rest areas	• RMU located north of Turysh village, • a 1.487-km Category V access road to Turysh village • cattle crossing • railway overpass • 10 culverts • large rest area	• bridge • 7 culverts • large rest area	• 7 culverts • large rest area	• 4 bridges • 3 culverts • large rest area	• 4 bridges • 4 culverts • large rest area
Proposed wildlife crossing for saiga						
Km 15+235 - 20+235	Km 45+120 - 50+120 Km 61+500 - 66+500	Km 115+500 - 120+500	Km 126+800 - 131+800 Km 142+000 - 147+000 Km 152+300 - 157+300	Km 172+700 - 177+700 Km 188+200 - 193+200	Km 203+600 - 208+600 Km 220+400 - 225+400	Km 245+300 - 250+300* Km 276+200 - 281+200
Nearby settlements / Distance from the Project Road alignment						
Syngyrlau / 1400 m	Sam / 138 m Nogayti / 207 m Turysh / 825 m	-	-	-	-	-

*Partially entered into Subsection 6

The proximity of the Project's auxiliary components to residential areas is as follows: (i) the Road Maintenance Unit (RMU) north of Turysh village is located 1,200 m and (ii) the access road to Turysh village is located 2,200 m from the nearest residential house.

The total construction period, assuming parallel implementation of the construction works and overlapping construction phases, is estimated at 34 months, including a 3-month preparatory period.

2.3 Associated Facilities

According to the EBRD ESP (2024), the 273 km section of the BBS Road (km 286 to km 559), to be financed by the ADB and DBK, together with its associated supporting infrastructure, including RMUs, access roads, and other auxiliary facilities is associated facility to the Project Road.

2.4 Project Alternatives

The zero alternative, alternative road alignments and their acceptability of alternative road alignments in relation to the Ustyurt saiga population, as well as alternative design options for road components, including different types of intersection have been reviewed during the ESIA study.

Currently, travel between Saksaulsk and Beyneu is only possible via the existing 1,460 km route: 'Saksaulsk-Irgiz-Karabutak-Khromtau-Aktobe-Kandyagash-Dossor-Kulsary-Beyneu'. In contrast, the proposed 559 km BBS road will provide a direct connection between these two settlements., therefore, will reduce the travel distance and time between Saksaulsk and Beyneu by around three times.

Three alternative road alignments connecting Beineu and Saksaulsk were assessed during the project feasibility study (**Figure 3**). Option 1 (shown in red), following the Beineu-Bozoy-Saksaulsk route and extending for 559 km, was identified as the preferred alternative. It was considered the most advantageous in terms of route length, connectivity to population centres, and overall technical and socioeconomic considerations.

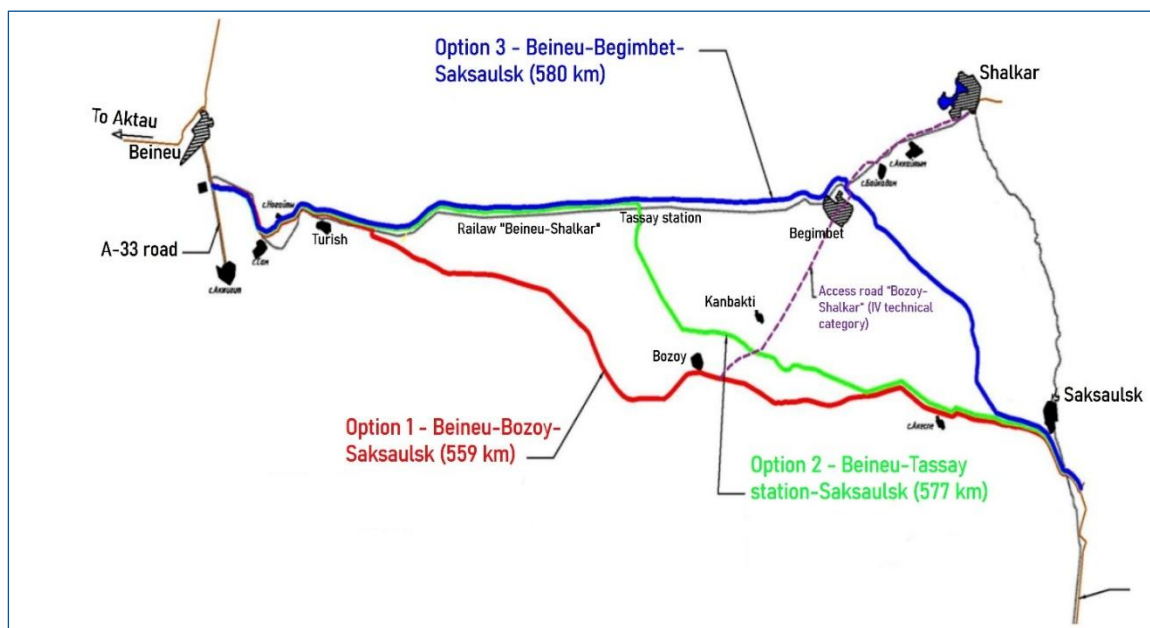


Figure 3 - Beineu-Saksaulsk road alignment options considered during the Feasibility Study

From the perspective of the Ustyurt saiga population, Option 1 appears to be the most favourable of the three alternatives under consideration. Its main advantage is that the proposed road would not run directly alongside the Shalkar–Beineu railway for an extended distance. This would help avoid the formation of a single, wider transport corridor and reduce the risk of exacerbating the railway's existing barrier effect.

Another important advantage of Option 1 is that it preserves open space between the proposed road and the railway. Maintaining this spatial separation between the two infrastructure corridors may allow saigas to continue approaching the railway and exploring it in search of potentially passable crossing points. This is particularly important for preserving the long-term potential to restore migration connectivity across the landscape.

Therefore, the Option 1 - 559 km BBS road alignment is considered the preferred option, offering advantages in terms of travel distance, journey time, connectivity to population centres, and overall technical and socioeconomic considerations, while also minimising potential impacts on the migratory movements of the Ustyurt saiga population.

3 Applicable Legal and Regulatory Framework

The environmental legislation of the Republic of Kazakhstan (RoK) establishes the legal framework for environmental protection, impact assessment, permitting, and sustainable natural resource management. The key instruments include the Environmental Code (2021), the procedures for conducting environmental impact assessments (EIA) and public hearings, regulations on facility environmental impact categorisation and environmental permitting, and the Law on Permits and Notifications (2014). The framework is further supported by the Water Code (2025), the Law on Soil Protection (2026), the Land Code (2003), the Code on Subsoil and Subsoil Use (2017), and the Forest Code (2003), which regulate the protection and use of land, water, soil, forests, and mineral resources.

The social legislation of the RoK provides the legal basis for protecting human rights, ensuring fair labour practices, promoting gender equality, safeguarding public health, and supporting social welfare. The principal instruments include the Constitution (1995), the Labour Code (2015), the Law on State Guarantees of Equal Rights and Equal Opportunities for Men and Women (2009), and the rules governing the assessment of workplace conditions. Other relevant legislation includes the Law on State Property (2011), the Social Code (2023), the Code on Public Health and Healthcare System (2020), the Law on Education (2007), and the Anti-Corruption Law (2015). Together, these instruments establish the regulatory framework for managing social risks and ensuring compliance with applicable labour, health, equality, and governance requirements.

The EBRD Environmental and Social Policy (ESP, 2024) requires clients to comply with the applicable Environmental and Social Requirements (ESRs) to ensure the effective management of environmental and social risks and impacts and achieve sustainable project outcomes. Based on the review of available information, the Project is subject to ESRs 1-10, covering environmental and social assessment and management, labour and working conditions, resource efficiency and pollution prevention, health and safety, land acquisition and involuntary resettlement, biodiversity conservation, Indigenous Peoples, cultural heritage, financial intermediaries, and information disclosure and stakeholder engagement.

The Project must also consider relevant European Union environmental legislation and standards, including the Environmental Impact Assessment Directive (2011/92/EU, as amended by 2014/52/EU), the Industrial Emissions Directive (2010/75/EU), the Birds Directive (2009/147/EC), the Habitats Directive (92/43/EEC), and the Waste Framework Directive (2008/98/EC). In addition, the EU directives on occupational exposure to noise (2003/10/EC) and vibration (2002/44/EC) are relevant to managing worker health and safety risks. Together, these requirements provide a framework for assessing and mitigating the Project's environmental and social impacts in line with applicable EBRD and EU standards.

The Project may also be subject to relevant international E&S conventions and protocols ratified by the Republic of Kazakhstan and incorporated into national legislation. These include the Convention on Biological Diversity and its Cartagena Protocol on Biosafety, the Aarhus Convention on access to environmental information, public participation in decision-making, and access to justice in environmental matters, as well as 26 International Labour Organization (ILO) conventions ratified by Kazakhstan, including 10 fundamental conventions addressing forced and child labour, freedom of association and collective bargaining, equal remuneration, non-discrimination, minimum working age, and occupational health and safety. These instruments establish important principles and obligations for biodiversity conservation, environmental governance, labour rights, and the protection of workers.

The Project's E&S assessment is guided by the EBRD's *Sub-sectoral Environmental and Social Guidelines: Building and Construction Activities* (2010), which identify typical E&S risks associated with the construction, operation, maintenance, and decommissioning of facilities. Other relevant EBRD and International Finance Corporation's (IFC) guidances addresses resettlement, forced labour, gender equality, non-discrimination, equal opportunities, workers' accommodation, and related E&S issues.

4 Environmental and Social Baseline

Geography, Geomorphology and Relief

The proposed Beineu-Bozoy-Saksaulsk road traverses the territories of the Beineu District of Mangystau Region, the Bayganin and Shalkar Districts of Aktobe Region, and the Aral District of Kyzylorda Region. The studied road section (km 0-286) extends from the settlement of Beineu in the Mangystau Region and terminates approximately 40 km before reaching the settlement of Bozoy in the Aktobe Region. Within Mangystau Region, the road corridor passes in the vicinity of Syngyrlau, Turysh, Nogayti and Sam settlements. The overall alignment of the Project Road follows a predominantly north-easterly direction.

The Project area is located within the southeastern edge of the Caspian Depression. The area is sparsely populated, with relatively few permanent settlements, while the extensive territories of the Ustyurt Plateau are used as grazing lands for livestock. In addition to livestock farming, the regional economy is characterised by a well-developed extractive industry, primarily oil and gas production, supported by associated operational infrastructure. This includes temporary workers' settlements, some of which subsequently evolve into permanent settlements.

The Project area is served by a network of paved and unpaved (earth) roads. During the dry season, the unpaved roads are generally passable for motor vehicles. However, the interdune depressions, the floors of which are occupied by salt flats (sors), are difficult to traverse and, in some locations, are completely inaccessible.

Landscape

The region is characterised by desert and semi-desert landscapes that exhibit low resilience to anthropogenic impacts, as the prevailing climatic conditions are generally unfavourable for the formation and regeneration of soil and vegetation cover.



Figure 4 - Typical landscape in the Project area

Climate and Meteorology

According to SP RoK 2.04.01-2017³, the proposed Beineu-Bozoy-Saksaulsk (BBS) road is located within Climatic Zone IV, specifically Climatic Sub-region IVG (see **Figure 5**). Climatic Zone IV is characterized by mean January temperatures ranging from -15°C to -6°C, hot summers with intense solar radiation, and relatively short winters with a limited heating season.

The climatic characteristics of the road section were compiled using the results of long-term meteorological observations from the Beineu, Sam, Ayakkum and Shalkar meteorological stations.

³Code of Practice SP RoK 2.04.01-2017 "Construction climatology"

The Project area is characterized by frequent winds, predominantly from the east and southeast during the winter months and from the west and northwest during the summer months. The long-term average annual wind speed ranges from 2.5 to 4.1 m/s. The strongest winds typically occur during the winter months. During the summer, the prevailing winds are predominantly hot, dry winds, which are characteristic of arid and semi-arid regions.

The Project Road is located within the arid and semi-arid climatic zones of western Kazakhstan, traversing the Mangystau and Aktope regions. These regions are characterised by low annual precipitation, high evaporation rates, frequent droughts, strong winds, and large seasonal and diurnal temperature fluctuations. The climate is highly continental, with hot summers, cold winters, and generally low humidity.

Precipitation projections remain more uncertain than temperature projections. Climate models generally indicate relatively modest changes in annual precipitation totals across western Kazakhstan; however, precipitation is expected to become more variable, with an increase in the frequency and intensity of short-duration heavy rainfall events interspersed with longer dry periods.

The current terrain of the study area has evolved over a prolonged period of continental development that began following the regression of the Pontic Sea. Geomorphological processes continue to shape the terrain at the present time.

⁴Source: SP RK 2.04.01-2017 "Construction climatology"

- **Structural-Denudational Landform Type:** This landform type corresponds to the weakly dissected post-Pontic surface of the Ustyurt Plateau, which represents the oldest geomorphological unit within the study area. The morphology of the plateau is primarily controlled by the underlying tectonic structure.
- **Denudational Landform Type:** Within the study area, the denudational landform type is represented by two subtypes. The first comprises the Middle Pliocene-Quaternary erosional and landslide slopes (chinks), while the second consists of Quaternary and modern erosional landforms, primarily represented by gullies and ravines.
- **Accumulative Landform Type:** The accumulative landform type is represented by three subtypes within the study area. The first comprises the Khvalynian marine plain, the second consists of the modern proluvial piedmont apron, and the third is represented by the modern lacustrine-sor plain.
- **Deflation-Accumulative Landform Type:** This landform type is represented by Quaternary hummocky and ridge-shaped aeolian sands, including the Sam Sand Massif.

No hazardous physical-geological processes have been identified in the study area.

According to SP RK 2.03-30-2017 'Construction in Seismic Zones', the seismicity of the region is assessed at 5-6 points on the seismic intensity scale.

Underground and Soil Cover

The Project area is predominantly covered by desert calcareous soils with very low organic matter (humus) content and a high degree of salinisation and gypsification. The vegetation is characteristic of the desert zone and is dominated by saltwort-wormwood and wormwood-saltwort communities.

The study area is characterised by the presence of primitive marine saline (sor) soils, which lack a humus horizon and are unsuitable for agricultural use. The soils are highly saline, with sulphates being the dominant soluble salts, although significant concentrations of chlorides are also present.

The soil-vegetation layer is distributed throughout the study area and has a thickness ranging from 10 to 30 cm. It consists primarily of loam and sandy loam soils. The soils are hard, slightly moist, loess-like, loose, and saline, containing only sparse remnants of herbaceous plant roots. According to GOST 17.5.1.03-86, the soils within the surveyed area are classified as marginally suitable for topsoil stripping, storage, and subsequent land reclamation.

Hydrogeology

Groundwater in the Mangystau region occurs in various geological formations, including fractured Permian-Triassic rocks, carbonate deposits, sandy massifs, and deluvial-proluvial and marine sediments. Groundwater depth varies considerably, from approximately 0.5-10 m in shallow deposits and 1-40 m in sandy formations to 140-150 m or several hundred metres or more in deeper geological structures. Groundwater is predominantly unconfined, although confined (artesian) aquifers occur along the margins of mountain massifs and within deeper formations. Recharge occurs mainly through the infiltration of atmospheric precipitation, leakage from underlying aquifers, and inter-aquifer flow, supplemented by floodwaters and storm runoff in valleys in the central part of the Mangystau Peninsula.

Surface Water

Within Beineu District of Mangystau Region and Bayganin and Shalkar Districts of Aktope Region, no surface water bodies are located in the immediate vicinity of the proposed Project Road. The Project Road alignment is located outside the water protection zones and water protection belts of surface water bodies.

Ground Water

Groundwater within the wider Project area occurs in several aquifer systems associated with Permian-Triassic, Jurassic, Cretaceous, Paleogene-Lower Miocene, Middle Miocene-Lower Pliocene and

Quaternary deposits. Groundwater occurrence is controlled by the regional geological structure and varies considerably across the Project area. Shallow unconfined groundwater is generally encountered within Quaternary and younger sedimentary deposits at depths ranging from approximately 0.5 to 30 m below ground level (bgl), although depths of up to 40 m bgl may occur locally. Deeper groundwater occurs within confined or semi-confined aquifers associated with older geological formations, with groundwater typically encountered at depths of 50–400 m bgl and, in some locations, exceeding 1,000 m bgl. These deeper aquifers constitute the principal regional groundwater resources used for water supply.

Visual Amenity

An approximately 73 km earth road currently connects the town of Beineu with the village of Turysh, which is located approximately 825 m from the proposed Project Road alignment. In addition to Turysh, three rural settlements: Syngyrlau (approximately 1,400 m), Sam (138 m) and Nogayti (207 m), are situated at varying distances from the existing road. The road also provides access to several sites of cultural and spiritual significance.

No settlements are located along the Project route between km 73 and km 286, where the EBRD-study section terminates approximately 40 km before reaching the Bozoy settlement. There is currently no continuous road connecting these locations. However, a network of local unpaved access roads exists throughout this section of the Project area. These roads are primarily used to provide access to and maintain regional infrastructure, including the gas pipeline, compressor stations, overhead transmission lines (OTLs), and other utility assets.

Air quality

The baseline assessment of ambient air quality has been undertaken using monitoring data collected by the Republican State Enterprise (RSE) Kazhydromet through the national environmental monitoring network of the National Hydrometeorological Service.

According to data from the Beineu monitoring station, the ambient air quality was assessed as having a low level of pollution. This assessment was based on an Air Pollution Index (API) of 3 (low), a Standard Index (SI) of 1.8 (low), determined for hydrogen sulphide (H₂S), and a Highest Repeatability (HR) of 0% (low).

There are no ambient air quality monitoring stations located in the vicinity of the Project Road within the Aktobe Region. In general, ambient air quality in the region is influenced by emissions from a number of large industrial facilities, primarily associated with oil and gas production and processing. According to the 2025 ambient air quality monitoring data for the Aktobe Region, the level of air pollution was classified as very high, based on a SI of 16.1 (very high) and a HR of 3% (elevated), both recorded for H₂S.

Traffic Density

According to the traffic forecast presented in the local Feasibility Study (FS), the projected traffic volume for the BBS road section is estimated at 5,842 vehicles per day by 2045 (the 20-year design horizon), assuming an average annual traffic growth factor of 1.05, compared with 2,097 vehicles per day in the 2025 baseline year. When expressed in Passenger Car Units (PCUs), the projected traffic volume reaches 13,626 PCU/day, which is consistent with the design requirements for a Category II highway.

The traffic composition is dominated by passenger cars, which account for 58.01% of the total traffic volume. Trucks with trailers and semi-trailers represent 30.62%, while two- and three-axle trucks account for 10.21%. Buses comprise 0.95% of the traffic, with tractors and motorcycles contributing 0.18% and 0.03%, respectively.

Noise and Vibration

The Project area is characterised by a sparsely populated rural environment with generally low levels of anthropogenic noise. The existing acoustic environment is typically dominated by intermittent vehicle movements, agricultural machinery during seasonal activities, livestock, and natural sounds such as wind.

During the socio-economic consultation mission to the Project area in August 2026, the Consultant conducted 10-minute spot noise measurements at residential areas within the settlements of Syngyrlau, Sam, Nogayti, and Turysh using sound data loggers "General-DSM20". The results of these measurements are summarised in **Table 2**.

Table 2 - Project Road components and nearby settlements

Equivalent (average) noise levels, dBA			
Syngyrlau	Sam	Nogayti	Turysh
53	47	48	50

Ground-borne vibration sources are also limited under existing conditions. Occasional vibration may be generated by the passage of heavy agricultural machinery or trucks on local roads; however, these events are infrequent and short in duration. Consequently, baseline vibration levels in residential areas are negligible.

Natural Hazards

The Mangystau and Aktobe regions are generally characterized by low exposure to hydrological hazards but high exposure to climatic and geological hazards associated with their arid and semi-arid environments. The typical natural hazards and their relevance to the Project area are drought, strong winds, extreme heat, desertification, flooding, wildfires and earthquakes.

Cultural Heritage

The archaeological assessment of the BBS road corridor was carried out within the Beineu District of the Mangystau Region, the Bayganin and Shalkar Districts of the Aktobe Region, and the Aral District of the Kyzylorda Region. The assessment covered the 40 m-wide road right-of-way (RoW) (20 m on either side of the road centerline) along the entire 559 km road alignment, as well as a broader Study Area extending 100 m on either side of the road centerline.

The findings of the archaeological assessment are presented in Archaeological Assessment Report No. AES-521, dated 30.06.2025, prepared by Archaeological Expertise Limited Liability Partnership (LLP). In total, eight historical and cultural heritage sites were identified during the archaeological survey conducted within the Study Area. Of these, four sites are located within the study section of the Project Road (km 0.0 - km 286.0), while the remaining four sites are located within the ADB and DBK-financed sections (km 286.0 - km 559.0).

Protected Areas

Kazakhstan has 120 Specially Protected Natural Areas (SPNAs), covering more than 10% of the country's land area, with a total extent of approximately 29.3 million hectares (ha). The national protected area network comprises 10 State Nature Reserves, 14 State National Nature Parks, 7 State Nature Reserves (Nature Reserve Areas), 50 State Nature Sanctuaries (Zakazniks), 5 State Protected Zones, 6 State Botanical Gardens, 1 State Dendrological Park, and 25 State Natural Monuments of Local Importance.

According to Letter No. 02-08/360, dated 14 July 2025, issued by the Mangystau Regional Territorial Inspectorate of Forestry and Wildlife, and Letter No. 3T-2025-02130679, dated 10 July 2025, issued by the Aktobe Regional Territorial Inspectorate of Forestry and Wildlife, there are no SPNAs located within or in the vicinity of the Project Road alignment in the Mangystau and Aktobe regions.

There are 125 important sites for birds (IBAs/KBAs) that occupy 155,920 km² area, however, as a result of the desktop review the Project Road corridor does not penetrate into the IBAs/KBAs. There are no Alliance for Zero Extinction (AZE) sites in Kazakhstan. Kazakhstan has 10 Ramsar Sites; however, none

are located within the Mangystau Region. Only one Ramsar Site is located in the Aktobe Region, *Lakes in the Lower Reaches of the Irgiz and Turgai Rivers* (within the boundaries of Irgiz-Turgai State Nature Reserve and Turgai State Nature Sanctuary), which is situated approximately 200 km northeast of Saksaulsk.

Kazakhstan encompasses a substantial portion of the global range of the saiga antelope and represents one of the species' principal strongholds. Of the five extant saiga populations, three, the Ural, Ustyurt, and Betpak-Dala populations, occur within Kazakhstan, where they rely on the country's extensive steppe and semi-desert ecosystems for habitat and seasonal migration.

Biodiversity

The biodiversity study area includes the Beineu-Bozoy⁵ road section (km 0 - km 326), including its permanent footprint and a corridor extending approximately 500 m on either side of the road (comprising the Area of Influence (AoI)). For the habitat assessment, a 10 km buffer along the road was selected as sufficiently representative to display stages of vegetation, soil and ecosystem transformation.

Flora and vegetation

The Project Area is located within the Western Northern Turanian Subprovince of the Northern Turanian Province, in the Irano-Turanian Subregion of the Saharo-Gobi region. The road alignment in Mangystau and Aktobe Regions passes through the middle desert zone and, near the settlement of Bozoy, crosses into the northern desert zone.

The area, characterised by wormwood-boyalich and saltwort-boyalich vegetation, has traditionally been used as pasture for sheep, camels, goats, and horses. Livestock grazing and haymaking have therefore been the main historical drivers of land degradation. More recently, large-scale oil and gas exploration and development have added to these pressures. Currently, soil disturbance in the area ranges from moderate to severe. For example, in the vicinity of wells and wintering areas, extensive networks of unauthorised tracks have contributed to severe degradation of up to 30% of the pasture area. Clayey and loamy soils near roads are particularly susceptible to severe erosion, while roadside vegetation is sparse, stunted, and covered with dust. The recovery of disturbed areas is very slow.

The greatest floristic diversity occurs during the spring. By early June, however, the vegetation cover has almost completely dried out due to the onset of the hot, arid season. The flora of the higher vascular plants is presented by 376 species of 51 families. *Amaranthaceae* family is the largest family group with 68 taxa (18.1%), followed by *Asteraceae* with 51 taxa (13.6%), *Brassicaceae* with 42 taxa (11.2%), *Poaceae* with 40 taxa (10.6%), *Fabaceae* with 28 taxa (7.4%) and *Boraginaceae* with 21 taxa (5.6%). The five leading families account for about 60.9% of the analyzed flora, and the six leading families account for about 66.5%. At the genus level, *Astragalus* is represented by 15 taxa and *Artemisia* by 14; *Atriplex* has 8, *Caroxylon* 7, and *Stipa*, *Bassia* and *Lepidium* 6 each.

Fauna

The fauna of the northern deserts is characterized by high biological diversity, as it combines elements of desert, semi-desert, and steppe complexes. Along with xerophilous and desert species, species typical of more humid habitats are found here, including hygrophilous and intrazonal species, primarily confined to lowlands, river and lake valleys, and bodies of water.

An analysis of available sources identified 222 species of terrestrial vertebrates that could potentially be found in the study area and surrounding areas including 2 amphibians, 25 reptilians, 144 birds (in migration period) and 51 mammal species. All the mentioned systematic groups, with the exception of amphibians, include rare and protected species listed on national and international lists.

⁵Although the study area covers the km 0 - km 286 project road section, biodiversity studies were conducted for the wider km 0 - km 326 road section.

Of the 25 species of reptiles, the blotched snake *Elaphe sauromates* is listed on the RK Red Book (category III) and Central Asian Tortoise *Testudo horsfieldii* is on the IUCN Red List (category VU).

Ninety-four rare and protected bird species, including species protected under the Convention on the Conservation of Migratory Species of Wild Animals (CMS) can meet in the Project region. Most of the bird species are migrants through the Project area; since the Project area is surrounded by temporary water bodies that fill in spring and autumn (and turn into salt marshes in summer), the migratory route of many bird species, including water birds, passes through the Project Area.

Of the 51 species of mammals that potentially inhabit the Project area and surrounding areas, ten species are listed in the RK Red Data Book including three species classified as Vulnerable in the IUCN Red List.

According to the IUCN, the ranges of several protected mammal species intersect or overlap with the planned road right-of-way: *Equus hemionus*, *Ovis vignei*, *Felis margarita* and *Vormela peregusna*. The range of *Otocolobus manul* also extends into the Project area but, according to the IUCN, the species is "possibly extinct" in this part of its range. The range of *Caracal caracal* is located further south; one occurrence of caracal was recorded in 2019, 85 km to the south, in Uzbekistan (GBIF data⁶).

According to the IUCN, the range of the Goitered gazelle (*Gazella subgutturosa*), encompasses the Project area. During the ASBK⁷ group's regular field expeditions, conducted at different times of the year to study saigas and monitor the biodiversity of Northern Ustyurt as a whole in 2020-2025, Goitered gazelles were not observed in the areas of the planned road. However, the species could potentially inhabit these areas, given that the selected road route passes close to known habitats of the species in the northern part of Kyzylkum and the eastern part of the Aral Sea.

Saiga Antelope (*Saiga tatarica*) in Kazakhstan since 2023 is not included in the RoK Red Data Book but listed in the list of animal species whose numbers are subject to regulation⁸ and since 2025 - in the list of valuable animal species that are objects of hunting⁹. At the same time, the species is listed in the IUCN Red List as "Near Threatened"¹⁰.

The construction of the Shalkar-Beineu railway in Kazakhstan in 2015 divided the migratory range of the Ustyurt saiga population into two parts. This railway dramatically altered the population migration's conditions: after construction, saiga no longer have access to their wintering habitats located to the south, including a protected area in Uzbekistan (**Figure 6**). Consequently, saigas currently migrate only within the part of the species' range located north of the railway, occasionally moving southwest along the track.

Preliminary assessment indicates that at least 2,600 insect species could potentially be found in the study area and surrounding areas. The basis of the entomofauna is made up of representatives of eleven orders: beetles (*Coleoptera*), Hymenoptera (*Hymenoptera*), true bugs (*Hemiptera*), Diptera (*Diptera*), Orthoptera (*Orthoptera*), lepidopterans (*Lepidoptera*), Odonata (*Odonata*), net-winged insects (*Neuroptera*), mantises (*Mantodea*), cockroaches (*Blattodea*) and earwigs (order *Dermaptera*).

Most insects in the region exhibit a short period of seasonal activity, synchronized with the spring development of ephemeral vegetation. Peak species diversity is observed in April and May, when prey availability rapidly increases following precipitation. In summer, due to rising temperatures and drying soil, the activity of most phytophages significantly decreases, while the numbers of xerophilous beetles, ants, and a number of orthopterans remain relatively high.

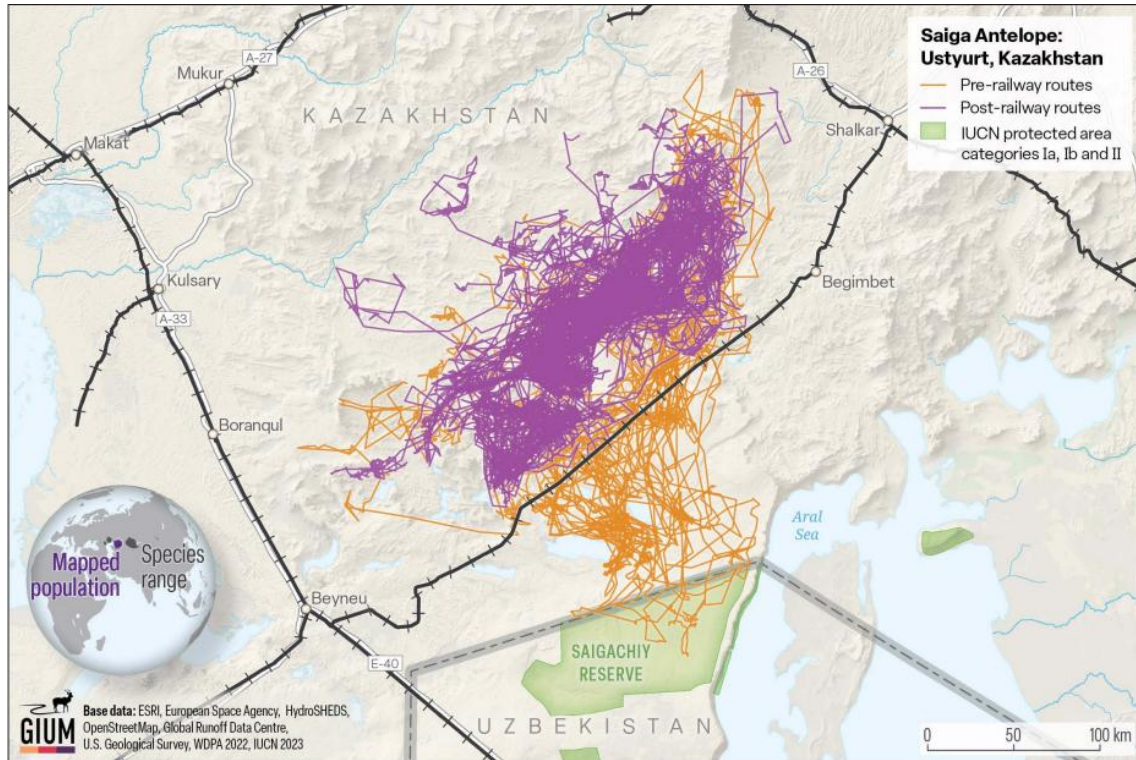
⁶<https://www.gbif.org/occurrence/search?taxonKey=QZRR&view=map>

⁷Association for the Conservation of Biodiversity of Kazakhstan

⁸<https://adilet.zan.kz/rus/docs/V2300033442>

⁹<https://adilet.zan.kz/rus/docs/V1500010494#z4>

¹⁰The saiga global population was critically reduced in 1993-2003 due to illegal killing; this caused the species to become Critically Endangered on the IUCN Red List. Thanks to strong conservation measures, the species has rebounded and, quite appropriately, it was reclassified as Near Threatened in the IUCN Red List in 2023 (source: Saiga Antelope: Ustyurt, Kazakhstan. Fact Sheet. CMS, GIUM. September 04, 2024).



Source: *Saiga Antelope: Ustyurt, Kazakhstan. Fact Sheet. CMS, GIUM. September 04, 2024*

Figure 6 - The migration range of the Ustyurt population of *Saiga tatarica tatarica*

Habitats classification and mapping

The ecosystems (habitats) identified within the study area have been classified into 15 types. A significant proportion of the Project footprint comprises anthropogenically transformed ecosystems. However, natural and semi-natural habitats, including salt marshes, occur adjacent to the Project footprint along the road alignment. In the absence of a national habitat (ecosystem) classification system and formally identified priority ecosystems in Kazakhstan, it is not currently possible to determine whether any priority ecosystems are present within the study area.

Various anthropogenic impacts were identified within the surveyed area, including grazing, power lines, dirt roads, quarries, land grading and other pre-construction road works, as well as oil and gas infrastructure (Figure 7). These sources of impact are dispersed across a vast, predominantly flat landscape and are generally located at considerable distances from one another. The area potentially affected by each source may extend several hundred metres from the source itself.



Figure 7 - The areas of anthropogenic impact along the road route

Critical Habitat Assessment Findings

Preliminary screening for triggers of a CH/PBF determination was conducted following the most recent EBRD ESR 6 (2024) and its accompanying Guidance Note (November 2025) issued by the EBRD. The Project area does not contain any highly unique or threatened ecosystem types or distinctive evolutionary processes that could result in a CH determination under EBRD Criterion 1 "Threatened ecosystems/habitats" see Table 1 of the EBRD ESR 6 Guidance Note. Consequently, the CH screening was accordingly limited to individual species, and multi-species groupings.

An assessment of the species, identified during the desktop study as potentially occurring in the study area, did not reveal any range-restricted species (Criterion 3 "Range-restricted species"). These species were then assessed based on the IUCN Red List, the Red Data Book of the Republic of Kazakhstan, and the Convention on the Conservation of Migratory Species of Wild Animals (CMS). This resulted in lists comprising 7 plant species, 2 reptile species, 94 bird species, 10 mammal species, and 24 invertebrate species (insects) (Tables 17, 19, 20, and 21).

For the final Critical Habitat Assessment (CHA), these lists were assessed against the following two criteria (Table 1 of the EBRD ESR 6 Guidance Note):

Criterion 2: Threatened Species: a) IUCN Global Red List Vulnerable (VU), Endangered (EN) or Critically Endangered (CR) species; b) c. IUCN national or regional Red List EN or CR species (or an analogous national listing).

Criterion 4: Migratory and Congregatory Species: a) All migratory species; b) All congregatory species.

The final results of the CHA comprise 103 species, including 5 plant species and 98 animal species (1 reptile species, 89 bird species, 4 mammal species, and 4 insect species). CHs include one ungulate species - saiga (*Saiga tatarica*).

Administrative Setting of the Project Corridor

The EBRD- and IBRD-financed sections covered by this ESIA extend for approximately 286 km across Mangystau and Aktope Regions in western Kazakhstan. The EBRD-financed section comprises approximately 125 km in Beineu District, Mangystau Region, and 35 km in Baiganin District, Aktope Region. The IBRD-financed section comprises approximately 86 km in Baiganin District and 40 km in Shalkar District, both in Aktope Region. Accordingly, the sections covered by this ESIA extend across two regions and three districts, with Baiganin District encompassing both EBRD- and IBRD-financed sections of the Project.

Social and Socio-Economic Environment

Mangystau Region is a major industrial and logistics hub in western Kazakhstan, with an economy dominated by oil and gas, supported by transport, port operations, construction and manufacturing. Its strategic importance stems from the Caspian ports of Aktau and Kuryk and its role in the Trans-Caspian International Transport Route. Beineu District, located in the north-eastern part of the region, serves as an important transport and logistics hub connecting western Kazakhstan with Aktope Region, Uzbekistan and other Central Asian countries. Its economy is less industrialised than that of Mangystau Region overall, relying primarily on livestock farming, oil and gas-related activities, local mineral extraction, trade and public services. The rural settlements of Syndyrlau, Nogayty, Sam and Turysh are characterised by low population density and livelihoods largely dependent on extensive livestock farming, including sheep, goats, cattle, horses and camels. Limited economic diversification and varying road accessibility constrain access to markets, employment and public services.

Aktope Region has a more diversified economy based on mining, metallurgy, oil and gas, manufacturing, agriculture and transport. It is an important transport hub connecting western Kazakhstan with central and northern parts of the country and the Russian Federation. The Project alignment traverses Baiganin and Shalkar Districts, both of which contain predominantly sparsely populated areas along the road corridor. Baiganin District's economy is heavily dependent on oil and gas extraction, which accounts for

approximately 98% of its industrial output, while livestock farming, public services and small-scale trade support rural livelihoods. Shalkar District has a more balanced industrial structure, with mineral extraction and manufacturing contributing almost equally to industrial output, alongside agriculture and railway transport.

The proposed Beyneu–Saksaulsky highway is expected to strengthen regional connectivity, improve access to markets and the Caspian ports, reduce transport distances and support economic development and diversification. Within the ESIA corridor in Baiganin and Shalkar Districts, the road alignment does not pass near settlements, and land use is predominantly characterised by open, sparsely vegetated areas with limited agricultural activity. Consequently, the main socioeconomic considerations along these sections relate to land use, livestock grazing, transport infrastructure and potential effects on access and mobility, rather than direct impacts on residential settlements.

Demography

Kazakhstan has a population of approximately 20.5 million people across 2.725 million km², resulting in a low average population density of around 7.5 persons/km². Mangystau Region covers 165,600 km² and has approximately 819,500 residents, with settlements concentrated mainly in Aktau, Zhanaozen and district centres. Aktobe Region, the country's second-largest region by area, covers approximately 300,629 km² and has a population of around 955,300, with a particularly low density of 3.2 persons/km². Population is concentrated primarily in Aktobe City, while southern districts, including Shalkar, are characterised by small, widely dispersed rural settlements. Accordingly, the Project corridor traverses sparsely populated areas in both regions.

Beineu District in Mangystau Region has a distinctly rural demographic profile, with all 72,009 residents living in rural settlements and a population density of only 1.73 persons/km², approximately one-third of the regional average. Unlike Mangystau Region, which has experienced continued population growth, Beineu District recorded a population decline of 1.14% during the reporting period, potentially reflecting demographic challenges such as rural out-migration. These demographic characteristics highlight the importance of transport connectivity and access to essential services in supporting the socioeconomic development of rural communities. Key demographic indicators for Mangystau and Aktobe Regions are presented in [Table 3](#) and [4](#).

Table 3 - Key Demographic Indicators for Mangystau Region and Beineu District as of January 2026

Region / District	Population total, persons	Urban, %	Rural %	Population density, persons/km	Population growth rate 2025-2026, %
Mangystau Region	819,824	46.8%	53.2%	4.95	1.82
Beineu District	72,009		100.0%	1.73	-1.14

Table 4 - Key Demographic Indicators for Aktobe Region, Baiganin and Shalkar Districts as of January 2026

Region / District	Population total, persons	Urban, %	Rural %	Population density, persons/km	Population growth rate 2025-2026, %
Aktobe Region	955,970	76.3%	23.7%	3.18	0.68
Baiganin District	22,286		100.0%	0.37	-1.78
Shalkar District	41,116	66.4%	33.6%	0.67	-2.08

Poverty and Unemployment, Incomes and Expenditures

Mangystau Region has one of the highest income levels in Kazakhstan, primarily reflecting the concentration of the oil and gas industry. In the fourth quarter of 2025, average per capita nominal income reached KZT 285,674 (approximately EUR 500), around 12% higher than the national average of KZT 254,446 (approximately EUR 445). Despite these relatively high income levels, the regional unemployment rate was 5.0%, slightly above the national average of 4.8%. Furthermore, 8.0% of the regional population lived below the subsistence minimum in 2024, compared with the national average

of 5.1%. These figures suggest that income generated by the oil and gas sector is unevenly distributed across the population. The relatively high cost of living in Mangystau Region further constrains the purchasing power of lower-income households.

As comparable district-level income statistics are unavailable, average monthly wages were used as a proxy indicator for assessing relative living standards in Beineu District of Mangystau Region and Baiganin and Shalkar Districts of Aktobe Region. In 2025, average monthly wages in Beineu District amounted to KZT 306,676 (approximately EUR 557), substantially below the regional average of KZT 623,059 (approximately EUR 1,133). This difference reflects the concentration of high-paying jobs in the oil and gas sector and related industries, primarily located elsewhere in the region. Gender-based wage disparities also differed considerably: at the regional level, female employees earned approximately 52.5% less than male employees, reflecting the influence of male-dominated, high-wage industries, particularly oil and gas. In Beineu District, the gender wage gap was narrower, with female employees earning approximately 13.8% less than male employees, consistent with a more diversified rural employment structure encompassing transport, services, trade and agriculture.

Ethnic Minorities

Kazakhs are the predominant ethnic group in both Mangystau and Aktobe Regions, accounting for approximately **91%** and **83%** of the population, respectively. The remaining population comprises a number of ethnic groups, including Russians, Uzbeks, Ukrainians, Tatars and others, each representing a relatively small proportion of the regional population. These communities are generally well integrated into the social and economic life of the regions and are not geographically segregated or concentrated in distinct settlements. Based on the available baseline information and stakeholder consultations undertaken to date, no ethnic groups have been identified as being disproportionately vulnerable to the Project or requiring specific mitigation measures on the basis of ethnicity.

Existing Infrastructure and Facilities along the Project Corridor

In Beineu District of Mangystau Region, the Project Road section begins at the junction of the E40 highway and the KR-BG-2 district road, with a roadside café and hostel located approximately 150 m from the junction and the nearest houses in Syngyrlau rural settlement approximately 1,400 m away. Near Sam rural settlement, the proposed alignment passes approximately 50 m from structures associated with local farms, while the nearest residential house is approximately 350 m away. In Nogayty, the nearest residential house is also located approximately 350 m from the alignment. Within Turysh village, the alignment is sufficiently distant from residential buildings and social infrastructure. Several burial sites and religious structures have been identified near the road alignment along the Syngyrlau–Turysh section.

The alignment also passes near a high-voltage electrical substation and intersects or runs parallel to the Shalkar–Beyneu railway line at several locations. It crosses existing power transmission lines and water supply pipelines in several places. From Turysh to the administrative boundary between Mangystau and Aktobe Regions, and onwards through Baiganin and Shalkar Districts, the alignment follows an unpaved track through sparsely populated, largely undeveloped areas. No settlements are located in the immediate vicinity of these sections, and built development is very limited.

Community Infrastructure and Services

The Project-affected settlements of Syndyrlau, Sam, Nogayty and Turysh in Beineu District, Mangystau Region, have basic social infrastructure, including secondary schools, kindergartens and primary healthcare facilities. Schools generally have sufficient capacity to accommodate current enrolment: Syndyrlau has 111 students, Sam more than 120, and Turysh 121. Educational services are generally considered adequate for local needs, and schools are accessible within the settlements. However, poor transport connectivity and road conditions constrain access to educational events, examinations and professional development opportunities outside the settlements.

Healthcare services are limited to primary care and are typically provided by two healthcare workers in each settlement. Key constraints include staffing shortages, the absence of ambulances and limited access to specialised medical services. Poor road conditions, long travel distances and adverse weather can further delay access to district and regional healthcare facilities, particularly for patients requiring emergency or specialised treatment. All four settlements have full coverage of potable water supply, electricity and natural gas, indicating that basic utility services are widely available despite limitations in transport and public service provision.

Gender Issues

Gender-related differences in employment opportunities and income levels are an important social consideration in rural settlements across Mangystau and Aktobe Regions. Local employment opportunities are limited and largely shaped by the prevailing economic structure. Women are predominantly employed in education, healthcare, public administration, retail and other service sectors, while higher-paid jobs in mining, construction and livestock production are largely held by men. Seasonal and rotational employment in the oil and gas sector provides additional income opportunities for men but is less accessible to women. Focus group discussions (FGDs) with women in Turysh confirmed that formal employment opportunities are limited and concentrated mainly in local schools, kindergartens and healthcare facilities. Women outside formal employment commonly undertake unpaid household and childcare responsibilities. Self-employment is generally limited to small-scale household production and sales of dairy, bakery and other agricultural products, with access to finance, start-up capital and potential employers identified as key constraints.

Limited transport connectivity further restricts women's economic participation and access to essential services. Women in Turysh and Bozoy reported relying primarily on taxis or private vehicles to reach district centres for healthcare, administrative services, shopping and other needs. Poor road conditions, high travel costs and adverse winter weather can increase travel times and, in some cases, disrupt transport connections. In Bozoy, taxi services to Shalkar were reported to operate generally no more than once daily, at a cost of approximately KZT 3,500 per person. Access to specialised healthcare is particularly challenging, as neither settlement has such services locally and no ambulance was reported to be available at the time of the FGDs. Unreliable mobile communications and limited internet access further restrict access to electronic public services. Overall, the findings highlight the combined effects of limited local employment, restricted entrepreneurship opportunities, unpaid care responsibilities and transport and communication barriers on women's economic participation, mobility and access to essential services.

Land Use Issues

The EBRD- and IBRD-financed sections of the BBS Project extend through Beineu District in Mangystau Region and Baiganin and Shalkar Districts in Aktobe Region. Based on the local Feasibility Study and ESIA field surveys, no residential buildings, commercial facilities or other permanent structures have been identified within the proposed land acquisition corridor. Preliminary estimates indicate land requirements of approximately 535 ha in Beineu District, including 491 ha of state reserve land and 45 ha leased to farming enterprises, and 498 ha in Baiganin District, entirely comprising state reserve land. In Shalkar District, approximately 520 ha may be required, including 420 ha of state reserve land and 100 ha leased to farming enterprises. However, this estimate covers both the IBRD-financed section within the LARF scope and the ADB-financed section outside its scope, and the available data do not distinguish between them.

Land use characteristics vary along the Project corridor. In Baiganin and Shalkar Districts, the alignment predominantly traverses saline, sparsely vegetated land with limited suitability for livestock grazing and little current agricultural use. Consequently, significant impacts on existing agricultural livelihoods are not anticipated in these sections, based on the information currently available. In Beineu District, however, the new road sections through Sam and Turysh Rural Districts will affect pastureland leased to farming enterprises. In Sam, approximately 20,760 ha of the 21,682 ha of pastureland is leased, while the

remaining 922 ha is classified as state reserve land and includes the existing KR-BG-2 unpaved road corridor. In Turysh, approximately 15,000 ha of pastureland is leased to farming enterprises.

Leased pastureland in Beineu District is used mainly for grazing horses and camels and, to a lesser extent, cattle. Some leaseholders have established improvements to support livestock farming, including artesian wells, watering facilities, fencing, livestock wintering shelters and accommodation for farm workers. Overall, land within the Project corridor falls primarily into two categories: state reserve land with little or no current economic use, and pastureland leased for livestock grazing, in some cases with associated infrastructure and improvements. The precise extent of land acquisition and the nature of affected assets will be confirmed during detailed design and subsequent land and asset surveys.

Socially Less Protected / Vulnerable Population

In accordance with the Social Code of the Republic of Kazakhstan, socially vulnerable groups may include persons with disabilities, low-income households, elderly persons requiring social assistance, large and single-parent families, unemployed persons and others requiring social support. Within the Project area, vulnerability may also arise from limited or unstable income, scarce employment opportunities, restricted access to transport and specialised healthcare, and additional household or caregiving responsibilities. Information provided by rural administrations indicates that, in Turysh, there are 20 persons with disabilities and five unemployed persons, while in Sam Rural District, which includes Sam and Nogayti settlements, there are 12 persons with disabilities, 74 large families, six single-parent families and 14 unemployed persons. No recipients of targeted social assistance were reported in either area at the time the information was collected. In Syngyrlau, the settlement population is 554, including 46 pensioners and 203 persons under 18 years of age; the economically active population comprises 217 persons, and registered unemployment stands at 2.68%.

Consultations with representatives of vulnerable groups in Syngyrlau, Sam and Turysh, including members of large and single-parent families and elderly persons living alone, highlighted financial pressures associated with food, transport, utilities, healthcare and education. Participants also identified limited local employment opportunities and poor transport connectivity as significant constraints on household well-being and access to essential services, markets and administrative facilities. These challenges are particularly relevant for households with limited financial resources, persons with disabilities and elderly people living alone, who may face additional difficulties accessing services outside their settlements. Overall, vulnerability within the Project area is associated with a combination of demographic, socioeconomic and accessibility-related factors, with the nature and severity of impacts varying according to individual household circumstances.

5 Summary of Environmental and Social Benefits, Potential Adverse Impacts, Mitigation and Management Measures

Transboundary Impact Assessment

The BBS Road Project is located entirely within the territory of the Republic of Kazakhstan and comprises the construction and operation of a road corridor extending from the vicinity of Beineu in the Mangystau Region to the vicinity of Saksaulsk in the Kyzylorda Region. Based on the assessment undertaken for the Project, no significant adverse transboundary environmental impacts are anticipated during either the construction or operational phases.

The Project has been screened against the provisions of the Convention on Environmental Impact Assessment in a Transboundary Context (Espoo Convention). The Project components and activities do not fall within the categories of activities listed in Appendix I of the Convention for which a transboundary environmental impact assessment is required.

Summaries of the Project's impacts on the physical, social and cultural environments, as well as on community and occupational health and safety and proposed management and mitigation measures, are provided in **Tables 5-8**.

Impacts on Biodiversity

The impacts of the Project on biodiversity will occur during both construction and operation phases. The construction phase includes construction of the road, the operation phase - traffic and road maintenance.

Potential impacts on biodiversity derive from activities during:

1. Construction phase, and include:
 - Destruction (loss) of habitats (vegetation clearance, excavation, top-soil removal, grading, transportation),
 - Flora species loss (vegetation clearance, excavation, top-soil removal, grading and transportation),
 - Disturbance to fauna species by noise, vibration and light pollution (construction machinery, traffic, lighting of the building area),
 - Loss of sedentary animals' habitats and associated risk of mortality (excavation, top-soil removal, grading and transportation),
 - Loss of foraging habitats for medium and large mammals (excavation, top-soil removal, grading),
 - Loss of foraging and resting habitats for birds (excavation, top-soil removal, grading, transportation),
 - Loss of breeding, foraging and wintering habitats of invertebrates and a risk of death of their overwintering stages (vegetation clearance, excavation, top-soil removal, grading and transportation),
 - Barrier effect of the road building for migrating mammals (ungulates, predators)
2. Operational phase, and include:
 - Disturbance to fauna species due to noise, vibration and light pollution associated with road traffic¹¹,
 - Animal mortality due to vehicle collisions
 - Barrier effect of the road for migrating mammals (ungulates, predators)
 - Increased access to areas along the road.

¹¹According to the ESIA, the Projected Traffic Volume for the Design Year 2046, Expressed in Passenger Car Units (PCU/day), adopted for the road (II category), is 13,626

The assessment was conducted for each predicted impact during the construction and operation phases and for each group of biodiversity receptors, which were grouped based on their ecological characteristics. Where possible, impacts on individual species were also assessed.

Construction Phase

Destruction (loss) of habitats

Along almost all the Beineu-Bozoy road right-of-way the planned route follows existing dirt roads, while in other sections existing dirt roads run parallel to the route or cross it. Within roughly 2-3 km of the route there is a high concentration of dirt roads, detours, and other disturbances. Therefore, almost all habitats beneath the planned right-of-way have already been partially destroyed. However, in areas adjacent to the road right-of-way, there are natural or semi-natural habitats.

Land clearance, excavation and grading, topsoil removal, and followed embankment construction will completely destruct the habitats within the road footprint (with a total area up to 10.55 km²).

Priority habitats have not been identified in Kazakhstan; this makes it impossible to identify priority habitats (ecosystems) in the road right-of-way.

Flora species loss

Land clearance, excavation, grading, top-soil removal and followed embankment construction will result in vegetation clearance in the same areas where habitats will be partly destructed (see above), including primarily wormwood and saltwort communities as well as some shrubs, semi-shrubs and tree shrubs, as black saxaul.

According to the baseline desktop analysis, seven rare and protected species can be found in the road right-of-way and to the north of it; some of these are recorded¹² in the 10 km “sensitive zone”, including point of growing of *Tulipa biflora* directly in the road right-of-way or in the immediate vicinity

Disturbance to fauna species

Existing traffic on dirt roads along the planned route is already having some negative impact on animals. Most have either left the area or visit it only occasionally. However, some sedentary species such (for example, rodents) may still be present, most likely, in areas located near the road right-of-way.

Terrestrial mammals, identified in the baseline study, can be classified into three groups based on size and lifestyle. The first group includes permanent residents of the area, such as small - and medium-sized species, mainly rodents, insectivores, and small predators. The second group includes temporary visitors that transit through the area, such as predators, mainly canids and martens, and ungulates, which also graze there. The third group comprises flying mammals – bats.

Small permanent residents (rodents, insectivores) usually hide (in burrows, for example) in response to disturbances, they do not run away from their homes. This behaviour in the context of the Project is dangerous because it results in death of the animals due to the destruction of their homes; potential impacts on this group of animals are considered in the sub-section below.

Second mammal group of temporary visitors usually move away or avoid disturbance areas. Bats will also move away because the noise of the sonic spectrum has a deterrent effect on bats¹³.

Identified birds are classified in two groups - i) using the area as part of their foraging range, and ii) passing the area during the seasonal migration (given to flooded salt-marshes in spring that could be

¹³Domhnall Finch, Henry Schofield, Fiona Mathews, Traffic noise playback reduces the activity and feeding behaviour of free-living bats, Environmental Pollution, Volume 263, Part B, 2020, 114405, ISSN 0269-7491, <https://doi.org/10.1016/j.envpol.2020.114405>

used for stopover). They all will also move away or avoid disturbance zones. We believe that nesting in this area is unlikely due to existing dirt roads, and other anthropogenic impacts; however, a definitive conclusion can only be made following a targeted field survey during the appropriate season.

Identified reptiles and amphibians are permanent residents; they would choose the same hiding strategy as the small sedentary mammals (see above), so they will be in danger of dying. Potential impacts on this group of animals are considered below.

Loss of sedentary animals' habitats and associated risk of mortality

There are two groups of permanent residents which were identified - small mammals (rodents, insectivores), and reptiles and amphibians. Both groups of animals use certain type of shelters (e.g., holes, rocks, hollows, etc.) and hide there in case of danger or disturbance. Such impact as noise will make them hide. Intensive vibration can drive animals out of their shelters, but they will not run far away trying to find temporary shelter and come back when the impact disappears.

Thus, these two groups are mostly likely to be affected during construction works in the road right-of-way and adjoined territories; similar impacts can also be expected at the locations of temporary structures such as access roads, spoil storage and disposal areas, construction camps, asphalt and concrete batching plants.

Loss of foraging habitats for medium and large mammals

Animals of the mammal group of temporary visitors will move away or avoid disturbance once the land planning and construction work start. The main deterrent impacts are noise and lighting.

Predators pass through the area, and may occasionally hunt birds and rodents there. These species are expected to shift their foraging areas during construction works; no significant impacts on foraging are predicted for these species.

Ungulates pass through the area and may graze there. Since these animals have established migration routes and pastures, road construction may force them to change their routes and use alternative grazing areas. Under harsh climatic conditions, such changes could have additional negative impacts on the animals. However, there is insufficient field data to confirm the presence of these species in the area, as well insufficient information on the importance of the area for their feeding. A field survey is therefore needed to clarify these issues and develop mitigation measures, if necessary.

Loss of foraging and resting habitats for birds

Vegetation clearance and land planning will lead to the loss of foraging habitats for herbivores bird species such as Pallas's sandgrouse. The destruction of rodent colonies will also lead to the loss of foraging habitats of birds of prey. These losses are not expected to be critical to these species as existing habitats around can compensate the losses.

The construction will lead to the loss of some wet habitats used by waterbirds for stopover and resting during migration seasons, primarily in spring. However, these losses can easily be compensated for by other extensive salt-marches located north and south of the road right-of-way.

Loss of breeding, foraging and wintering habitats of invertebrates and a risk of death of their overwintering stages

Land planning and topsoil removal will completely eliminate insect habitats closely related to vegetation and top-soil. Since there is no data on the presence of rare and protected insect species in and around the 10 km buffer zone, it is recommended to conduct the pre-construction field survey during the appropriate season (April-May). If protected insect species are discovered and their habitats are at risk of being destroyed by road construction, the loss of these habitats should be compensated for through the protection of suitable natural habitats, which should be combined with the conservation of habitats of protected plant species.

Barrier effect of the road construction for migrating mammals (ungulates, predators)

Given the existing dirt roads along the route and the Shalkar-Beineu railway, that runs in close proximity to the planned route in its western section, a barrier effect already exists. Construction of the road will intensify this effect (only for animals inhabiting to south from the Shalkar-Beineu railway) and further hinder the movement of actively moving animals, including canines, possibly felines, and ungulates, in the central and eastern sections of the route; the animals will avoid the construction areas.

There are no data on the migration routes of canines; the planned route fragments the ranges of two feline species - the Afro-Asiatic Wildcat *Felis lybica* and the Steppe Cat *Felis margarita* (although, there are no field data confirming the presence of these species in the area).

Among ungulates, the planned route fragments the range of Goitered gazelle, and crosses the edges of the ranges of Urial and Asiatic Wild Ass. Again, there are no recent field data confirming the presence of these species in the area.

An additional specific impact is exerted on the Central Asian tortoise, as the species sometimes migrates short distances (up to 1-2 km per day). If the species inhabits the Project area and its surroundings, road construction could lead to habitat fragmentation and a loss of connectivity between habitat areas. As a result, a barrier effect may emerge during the construction stage and persist during the operation of the road.

Operation Phase

Disturbance to fauna species due to noise, vibration and light pollution associated with road traffic

Traffic impact distance (for noise) can vary from about 100 m to 500 m and more, depending on species sensitivity. Consequently, the impact stripe on biodiversity along the road can be as wide as 1 km. Most animals avoid busy roads because of noise and light, except for certain groups of animals and under certain conditions / during certain periods (see below).

Animal mortality due to vehicle collisions

Animals may be killed when they enter the road in search of food (e.g., insectivores or birds of prey), or when crossing the road (e.g., ungulates and predators). In addition, Central Asian Tortoises are often hit by vehicles when they enter the road.

To prevent such fatal incidents, a range of mitigation measures is needed, including ecologically appropriate underpasses, overpasses and at-grade crossings, barriers, speed reduction and traffic management.

Barrier effect of the road for migrating mammals

The barrier effect of the road, which became apparent at the construction phase (see above) will persist throughout the entire operational life of the road. In addition to predators and ungulates, this barrier effect could adversely affect the Central Asian tortoise, hindering its migrations and, consequently, contributing to habitat fragmentation and a loss of connectivity.

Regarding the Saiga, the construction of the Shalkar-Beineu railway in 2015 became a critical obstacle to the southward migration of these animals. After 2015, Saiga were no longer observed south of the railway, including within the Project area. Given this, road construction and operation are not expected to have a direct impact on Saiga, as these animals are not currently present in the Project area.

On the other hand, the road right-of-way will further divide the species' range: together, the railway and the road together will divide the range into three fragments. Therefore, the road's operation will have a long-term impact on the Ustyurt population of Saiga tatarica, through a cumulative effect when combined with the Shalkar-Beyneu railway.

To reduce this long-term effect, comprehensive mitigation measures should be implemented along both linear infrastructure corridors, including crossings (at-grade passages), underpasses and overpasses

adapted for different animal groups. Fourteen road crossings in the Mangistau and Aktope regions have already been identified as part of the national ESIA, and were confirmed during the field study in August, 2026, as a part of this assessment. The locations of these crossings were determined by specialists from the state regional forestry and wild animals inspectorates, the state enterprise "Okhotzooptom", and ACBK, based on previously obtained data on Saiga migrations, an ecological assessment of the territories including the terrain, and presence or absence of the other anthropogenic objects nearby.

Increased access to areas along the road

The new paved road will provide easier access to sparsely populated semi-desert areas. Given that these areas are habitats of such ungulates as goitered gazelle, saiga, urial, poaching in the areas adjacent to the road is highly likely.

Impact assessment and mitigation measures

For each receptor, appropriate mitigation measures were developed; the significance of residual impacts was assessed using the same method described above. Residual negative impacts evaluated as being of minor or negligible significance are considered environmentally acceptable. Conversely, residual negative impacts evaluated as being of moderate or major significance are considered environmentally unacceptable and require offsetting. An offsetting framework was developed to provide a basis for subsequent offset projects; this framework is included into the Biodiversity Management Plan (BMP).

Cumulative Impact Assessments

Cumulative Impact Assessments (CIA) carried out for the Project Road section considering the E&S impacts of the Project, as well as those of other projects or activities that are currently being implemented or planned in the foreseeable future within the Project's areas of influence. The CIA considers human developments for which sufficient publicly available information exists to identify potential interactions with the Project over time and/or space and to assess the resulting cumulative effects.

Table 5 - Summary of Project impacts on physical environment and proposed management and mitigation measures

Impacts	Project phase	Impact significance / footprint	Sensitive receptors	Management and Mitigation measures included in the ESMP and ESAP	Residual Impact
Impact on air quality	Construction	Moderate / 250 m corridor on either side of the road	Nearby settlements, workers, farmers, air basin, soil and water resources, flora and fauna	• Air Quality Monitoring Plan • Air emissions and dust control and monitoring measures	Low
	Operation (maintenance)	Moderate / 250 m corridor on either side of the road	Nearby settlements, farmers, air basin, soil and water resources, flora and fauna	• Operation phase air emissions control and monitoring measures	Low
Climate Change Resilience	Construction	Moderate / RoW, construction and accommodation camps, access roads, road other auxiliary components	Road users, infrastructure, nearby settlements, road drainage and surrounding land, biodiversity and natural habitats	• Adoption of asset management practices • Emergency planning • Climate Resilience Action Plan	Low
	Operation (maintenance)	Moderate / road formation, embankments, cuttings, shoulders, drainage structures and RMUs		• Dynamic Operations-Phase Climate Resilience Action Plan • Operational Emergency Response Plan for Weather Extremes and Wildfires	Low
Impact on geology, soil and water resources	Construction	Moderate / 200 m corridor on either side of the road	Water and soil resources, flora and fauna	• Topsoil Management Plan • Spoil Management Plan • Hazardous Materials Management Plan • Spill Prevention and Management Plan • Soil Quality Monitoring Plan • Erosion and soil stability control measures	Low
	Operation (maintenance)	Moderate / 200 m corridor on either side of the road	Water and soil resources, flora and fauna	• Operation phase erosion and soil stability control as well as wastewater management measures	Low
Visual Impact	Construction	Moderate / 1000 m corridor on either side of the road	Population of Sam, Nogayti and Turysh villages, farmers	• Establishment of tree belts for road sections passing in close proximity to the Sam and Nogayti settlements	Low

Impacts	Project phase	Impact significance / footprint	Sensitive receptors	Management and Mitigation measures included in the ESMP and ESAP	Residual Impact
				• Install visual screening (e.g., solid screens, hoarding or fencing) around the perimeter of construction camps, active construction areas and parking areas. • Other visual Impact and Landscape Management Measures	
	Operation (maintenance)	Moderate / 1000 m corridor on either side of the road	Population of Sam, Nogayti and Turysh villages	• Implement landscaping of the sanitary protection zone around the RMF (DEU) in Turysh settlement in accordance with the requirements set out in the Project FS document	Low
Waste Generation and Management	Construction	Moderate / RoW, construction and accommodation camps, other auxiliary infrastructure and facilities	Workers, nearby population, soil and water resources, flora and fauna	• Waste Management Plan (WMP) for the construction phase • Waste Management Programme and Waste accumulation limits as per the Environmental permit required by the RoK Environmental Code • Agreements with waste handling licensed companies • General waste management measures for waste collection, transportation and disposal operations	Low
	Operation (maintenance)	From low to moderate / Road pavement, shoulders, culverts, parking and rest areas	Workers, nearby population, soil and water resources, flora and fauna	• WMP for the operation phase • Agreements with waste handling licensed companies • General waste management measures for waste collection, transportation and disposal operations	Low

Impacts	Project phase	Impact significance / footprint	Sensitive receptors	Management and Mitigation measures included in the ESMP and ESAP	Residual Impact
Noise and Vibration Impact	Construction	From low to moderate / 100 m corridor on either side of the road	Population of the affected settlements (Sam and Nogayti), farmers	• Conduct noise modelling for the areas where the road alignment passes in close proximity to the Sam and Nogayti settlements • Noise Monitoring Plan • Noise and vibration control measures	Low
	Operation (maintenance)	Moderate / 100 m corridor on either side of the road	Population of the affected settlements	• Implement the mitigation measures specified in the Project design documentation, including the installation of noise barriers near the Sam and Nogayti settlements, where required	Low
Impact on Traffic Density	Construction	Moderate / Earth roads along the Project road alignment, access roads	Materials and service suppliers, Drivers and passengers, Construction contractor, Population of nearby settlements	• Traffic Management Plan (TMP), that will be approved by the Supervision engineer as well as relevant regional authorities and road police	Low
	Operation (maintenance)	From low to moderate / BBS road	Drivers, visitors and passengers travelling along the BBS road	• Maintain road safety through appropriate speed limits, signage, road markings, safety features, and regular inspection and maintenance of the road infrastructure; ensure safe access to settlements, etc.	Low

Table 6 - Summary of Project impacts on / benefits from social and socio-economic environment and proposed management and mitigation measures

Impacts	Project phase	Impact significance and extent	Benefits / Impacts	Management and Mitigation measures included in the ESMP and ESAP	Residual impact
Regional socio-economic benefits of the Project	Construction	-	Temporary increase in economic activity in Mangystau and Aktoke Regions by creating additional demand for construction materials, equipment, transport, fuel and supporting services, thereby providing business opportunities for regional contractors, subcontractors, suppliers, transport and logistics companies.	-	-
	Operation (maintenance)	-	Improved regional and inter-district connectivity, reduced travel times and transport costs, and improved reliability of road transport, improving the movement of people, goods and agricultural products and access to regional and national markets.	-	-
Local economy and employment impacts	Construction	-	Creation of approximately 7,211 direct jobs in construction and related activities, of which around 50% are expected to be filled by Kazakhstani nationals, alongside an estimated 6,522 indirect jobs in supporting industries, resulting in a total of approximately 13,733 jobs. Stimulation of the local economy: Local businesses and households may benefit from opportunities to provide goods and services to the construction workforce.	-	-
		Moderate	Potential risks include inadequate employment contracts, excessive working hours, delayed payment of wages, discrimination, poor working and accommodation conditions, and limited access to effective worker grievance mechanisms.	Local Employment Programme (LEP). Labour Management Plan (LMP) addressing employment conditions, workers' rights, migrant worker welfare, grievance mechanisms and subcontractor compliance.	Low
	Operation (maintenance)	-	Long-term local economic benefit of the Project is expected to arise from improved access to markets	-	-

Impacts	Project phase	Impact significance and extent	Benefits / Impacts	Management and Mitigation measures included in the ESMP and ESAP	Residual impact
			and increased economic activity associated with the new road.		
Community Services and Infrastructure	Construction	-	Impact the accessibility and delivery of community services in settlements along the Project corridor, particularly education and healthcare services.	Contractor's Traffic Management Plan, including specific measures to ensure the safety of schoolchildren and maintain safe and uninterrupted access to schools and healthcare facilities during construction.	-
	Operation (maintenance)	-	Long-term positive impact on access to education and healthcare services.	-	-
Gender Impacts GBVH and Community Safety	Construction	-	Creation of temporary employment and income-generating opportunities for women in the Project-affected settlements.	Gender Action Plan (GAP) setting out specific measures and procedures to promote women's participation in Project-related employment and business opportunities.	-
		Moderate	Potential GBVH risks may arise both within the construction workforce and through interactions between workers and nearby communities.	GBVH Prevention and Response Plan, including mandatory Codes of Conduct for workers and subcontractors, GBVH prevention training addressing harassment and abuse of authority, confidential reporting and response procedures accessible to workers and local communities, etc.	Low
	Operation (maintenance)	-	Long-term positive gender impact, principally through improved mobility, access to services and increased employment and income-generating opportunities.	-	-
Impacts on Vulnerable Groups	Construction	Moderate	Impact on vulnerable persons and households, particularly those with limited income, reduced mobility or limited access to alternative transport as a result of temporary construction related disruptions. Temporary employment and income-generating opportunities for vulnerable households. Interviewed participants expressed interest in Project-related employment and service provision.	Facilitate vulnerable households' access to Project-related employment and small-scale business opportunities through targeted communication of available opportunities and inclusive local recruitment and procurement practices.	Low

Impacts	Project phase	Impact significance and extent	Benefits / Impacts	Management and Mitigation measures included in the ESMP and ESAP	Residual impact
	Operation (maintenance)	-	Long-term positive impact on vulnerable groups through improved accessibility and economic opportunities	-	-
Land Tenure/Land Use Impacts	Construction	Moderate	Permanent land acquisition is preliminarily estimated at approximately 1,554 ha, including 145 ha of pastureland leased to farming enterprises. The estimated land loss represents approximately 0.15-1.5% of individual affected leased plots and is generally expected to have minor direct economic impacts. However, where the road divides pastureland into separate portions, land fragmentation may restrict livestock movements and access to grazing areas, artesian wells, wintering facilities and other livestock infrastructure, potentially disrupting established grazing practices and limiting the use of the remaining pastureland.	Prepare and implement a Land Acquisition and Resettlement Plan (LARP) in accordance with the Project LARF and EBRD ESR 5. Ensure that all Project-related land acquisition and restrictions on land use, including impacts on pastureland, other land uses, assets and improvements, are identified and appropriately compensated or mitigated.	Low
	Operation (maintenance)	Moderate to Low	During the operation phase, changes in livestock grazing patterns and movements may create a need for additional cattle crossings or other access arrangements. Furthermore, inadequate maintenance of existing cattle crossings may affect their functionality, potentially restricting access to grazing areas, watering points and livestock infrastructure. Furthermore, the development of roadside infrastructure and services following the commissioning of the road may require additional land acquisition and changes in existing land use. Such developments may affect agricultural land and existing land users, potentially resulting in further loss of land, restrictions on access or disruption of established land use practices.	Ensure proper maintenance of cattle crossings and other access arrangements throughout the operation phase. Where additional crossing needs or access restrictions are identified during road operation, assess and implement appropriate measures, including additional cattle crossings where necessary, in consultation with affected land users. Ensure that land acquisition for Project-related roadside developments under the control or influence of QAJ is conducted through fair and transparent negotiated settlements, avoiding or minimising impacts on land users. Where involuntary land	Low

Impacts	Project phase	Impact significance and extent	Benefits / Impacts	Management and Mitigation measures included in the ESMP and ESAP	Residual impact
				acquisition or economic displacement occurs, comply with EBRD ESR 5.	

Table 7 - Summary of Project impacts on cultural environment and proposed management and mitigation measures

Impacts	Project phase	Impact significance / footprint	Sensitive receptors	Management and Mitigation measures included in the ESMP and ESAP	Residual Impact
Cultural heritage impacts	Construction	Moderate / 100 m corridor on either side of the road	Nearby settlements, site visitors, custodians	- Cultural Heritage Management Plan (CHMP) for the Project, to be agreed upon by the supervision engineer, the Client, the Bank and the authorized state body - Chance Find Procedure (CFP)	Low
	Operation (maintenance)	No impact anticipated	Nearby settlements, site visitors, custodians	-	-

Table 8 - Summary of Project impacts on community and occupational health and safety and proposed management and mitigation measures

Impacts	Project phase	Impact significance / footprint	Sensitive receptors	Management and Mitigation measures included in the ESMP and ESAP	Residual Impact
Occupational health and safety impacts	Construction	Singificant / construction and accommodation camps, other auxiliary infrastructure and facilities	Residents of the settlements located along the planned road alignment and the Project delivery routes, local farmers	Construction Health and Safety Management Plan (CHSMP)	Low to moderate
	Operation (maintenance)	Moderate / BBS road, RMUs	Workers of maintenance operator, including contractors and subcontractors	Operation Health and Safety Management Plan (OHSMP)	Low to moderate
Community health and safety impacts	Construction	Moderate / settlements nearby the project road alignment (Sam, Nogayti, Turysh, Syngyrlau)	Local communities near construction camps and/or worker accommodation facilities	- Community Health, Safety and Security Plan, - Construction Camp Management Plan, - Noise and Air Quality Monitoring Plan for affected settlements, - Traffic Management Plan (TMP).	Low to moderate

Impacts	Project phase	Impact significance / footprint	Sensitive receptors	Management and Mitigation measures included in the ESMP and ESAP	Residual Impact
	Operation (maintenance)	Moderate / settlements nearby the project road alignment (Sam, Nogayti, Turysh, Syngyrlau)	Users of the Project road section and residents of the settlements along the Project road section	Monitor the technical conditions of the road during its operational phase, provide timely maintenance, if necessary, apply appropriate traffic and work-zone safety measures	Low
Emergency preparedness and response	Construction	Moderate / Project road corridor, work zones, camps, access roads and auxiliary facilities, nearby settlements	Affected population, flora and fauna, workers	Develop and implement site specific Emergency Preparedness and Response Plan (EPRP) identifying credible emergency scenarios, response responsibilities, notification procedures, escalation arrangements and coordination with external emergency services.	Low
	Operation (maintenance)	Moderate / RoW, road drainage and safety infrastructure, RMUs, and other permanent auxiliary components	Population of nearby settlements, travellers, drivers	Establish operational-phase procedures for accident reporting, emergency access, incident scene management, traffic control, road closures, hazardous-material incidents and coordination with emergency services.	Low

6 Public Consultations and Disclosure

Stakeholder engagement has been undertaken throughout the ESIA process to inform the identification and assessment of potential environmental and social impacts and the development of appropriate mitigation and enhancement measures in accordance with the principles of *EBRD Environmental and Social Requirement (ESR) 10: Information Disclosure and Stakeholder Engagement*. Engagement activities included consultations conducted during the ESIA scoping stage, followed by targeted consultations, interviews and focus group discussions undertaken as part of the main ESIA stage.

The engagement process involved regional, district and rural public authorities, representatives of Project affected communities, land users, farmers, vulnerable groups, women, educational and healthcare institutions, and local businesses and service providers. Different engagement methods were applied depending on the stakeholder group and the purpose of the consultation, including meetings, semi-structured interviews, focus group discussions and consultations with potentially affected land users.

Stakeholder engagement will continue during the ESIA disclosure stage, including meetings with relevant regional and district public authorities to present and discuss the ESIA findings, as well as public consultation meetings with Project-affected communities and other stakeholders. The disclosure consultations are currently planned to be conducted in November 2026. The results of all stakeholder engagement activities undertaken as part of the environmental and social studies for the Project Feasibility Study, including the ESIA scoping, main ESIA and disclosure stages, will be consolidated and presented in the Public Consultation Report (PCR).

At the regional level, disclosure stage consultation meetings are planned with the Mangystau and Aktoobe Regional Akimats, with participation of relevant regional departments, representatives of the Beineu, Baiganin and Shalkar District Akimats, QAJ and the ESIA Consultant. The meetings will present and discuss the principal ESIA findings relevant to each region, including key environmental and social impacts, proposed mitigation and enhancement measures, land acquisition and land-use issues, community and infrastructure considerations, and arrangements for subsequent Project implementation.

At the community level, public consultation meetings are planned in Syngyrlau, Sam, Nogayti and Turysh, which are the settlements located in the vicinity of the Project alignment. The consultations will present the Project and the key findings of the ESIA and provide local residents, land users, businesses and other interested stakeholders with an opportunity to raise questions, provide comments and discuss the proposed mitigation and enhancement measures. Particular attention will be given to issues identified during the earlier consultations, including land use and livestock access, construction traffic and community safety, local employment and business opportunities, and access to community services.

The Project **Stakeholder Engagement Plan (SEP)** provides the framework for stakeholder engagement, information disclosure and grievance management throughout the Project lifecycle, including the design, construction and operation stages.

Grievances and inquiries can be addressed to the KazAvtoZhol using the contact details below:

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