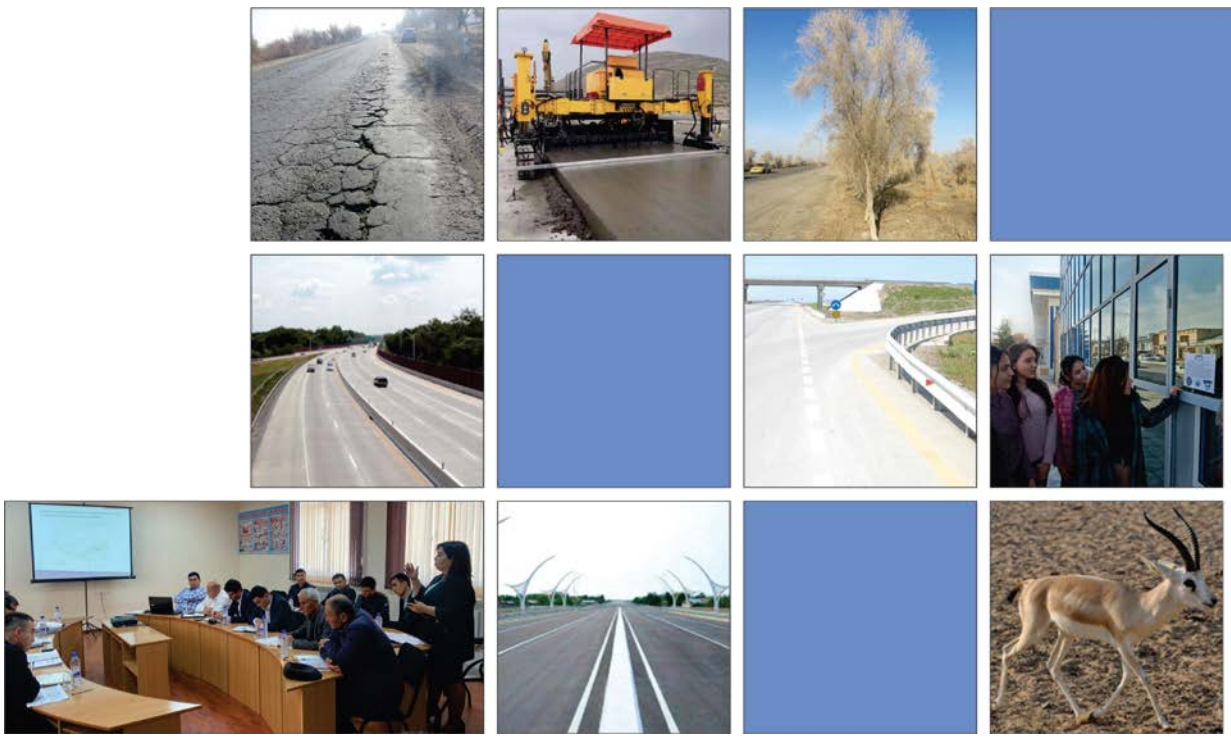
The Committee for Roads under Ministry of Transport of the Republic of Uzbekistan

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA)

BUKHARA ROAD NETWORK IMPROVEMENT PROJECT

PHASE I

(Reconstruction of the Highway A380 «Guzar-Bukhara-Nukus-Beineu» on a 78-km section from Sta 150+000 to Sta 228+000)



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EXECUTIVE SUMMARY

The Government of Uzbekistan (GoU) through the Road Committee (RC) under the Ministry of Transport, intends to undertake the first phase of Bukhara Road Network Improvement Project (BRNIP-I) involving reconstruction and improvement of the 78-kilometer (km) long segment of the international road A380, from km 150 to km 228 in Bukhara region. GoU seeks financial assistance from the Asian Infrastructure Investment Bank (AIIB) for this project. In order to address the adverse environmental and social impacts of this project and in compliance with the national regulatory as well as AIIB's Environmental and Social Policy (ESP), RC has conducted the present environmental and social impact assessment (ESIA) of Phase I of BRNIP (the proposed project).

Project Background

The total length of the transport network in the Bukhara region is about 4,012 km. Two international roads, A380 and M37, are crossing Bukhara region. The total length of the international roads is 486 km, including A380 – 333 km and M37– 153 km.

International roads A380 and M37 are the key arterial highways that pass through the territory of the Bukhara region. The A380 highway with a total length of 1,204 km connects four regions of the country and is the main route between north-west and south-east of Uzbekistan, an important international corridor between Afghanistan, Tajikistan, Turkmenistan, Kazakhstan and the Russian Federation. It enters the international corridors of Central Asia Regional Economic Cooperation (CAREC) Program 2 and 6, Asian Highway 63, Transport Corridor Europe-Caucasus-Asia (TRACECA) and European highways E40 and E60.

According to the state program, GoU plans to build and reconstruct 1,228 km of roads in 2018-2020, as well as bridges, overpasses and road interchanges on them. The improvement of road network in Bukhara has been included in the Uzbek national highway program. The proposed project of upgrading the road A380 from km 150 to km 228 is a key element of the GoU plans.

Project Overview

The key elements of the BRNIP-I are listed below.

a. Civil works involving rehabilitation and modernization of road A380, for a total length of 78 km, from km 150 to km 228, involving concrete cement pavement and several bridges;

b. Consulting Services for Construction Supervision and Technical Audit/Review of the road A 380;

c. Project preparation for Phase II, involving: i) Conceptual Design and Preparation of Tender documents using innovative contracting methodology Output and Performance Based Road Contracts (OPBRC) for 78 km of the southern section of M37 and ii) Detailed Design and Preparation of Tender Documents for about 80 km of the north section of M37 using traditional input type of contracting;

d. Institutional Strengthening and Capacity Building involving: i) Institutional Strengthening (including support to environmental and social (E&S) aspects), ii) Project Implementation Unit (PIU) – establishment and its professional staff engagement for five years, iii) Review and Update of Current Design and Works Standards and Specification;

e. Equipment Purchase related to quality and quantity measurements for innovative contracting methodologies.

The proposed Project includes the reconstruction of a 78 km section of the A380 highway, consisting of the following three sections/lots: i) Lot 1 - between 150 and 188 km; ii) Lot 2- between 188 and 208 km; and iii) Lot 3- between 208 and 228 km. The project scope includes laying of cement concrete pavement mostly on the existing road axis; construction of 30 culverts, six bridges, five interchanges; and fixing of road devices.

Objectives of ESIA

The present ESIA aims to address the potentially adverse impacts of the project and its activities on the physical and biological environment as well as on socio-economic aspects – in order to make the project environmentally sustainable and socially acceptable. The present study has been carried out in response to the requirements defined by the national regulations as well as AIIB ESP.

Baseline Conditions

The project area is located in the Bukhara region, which is a large agro-industrial region of Uzbekistan, located in the south-west of Uzbekistan. It is bordered by Turkmenistan, Khorezm, Navoi and Kashkadarya regions and the autonomous republic of Karakalpakstan. The territory of the region consists of a desert plain with distinct hills. The total area of the territory is about 39,400 square kilometers. The region consists of 11 administrative districts, 11 towns, two urban townships and 107 kishlaks (villages). The administrative capital is the city of Bukhara. The old city of Bukhara is a UNESCO World Heritage Site, famous as a 'living museum' and a center for international tourism. There are numerous historical and architectural monuments in and around the city and adjacent districts. The project area falls in three districts of the Bukhara region namely Karaulbazar, Kagan, and Bukhara as well as Bukhara and Kagan cities.

The population of Bukhara, Kagan and Karaulbazar districts was 165,200, 77,500 and 18,200, respectively, as of 2019. The share of rural residents is more in Bukhara (77%) and Kagan (93%) districts in comparison with Karaulbazar district (43%). Bukhara city and Bukhara district constitute most of populated areas of the project area.

A large number of cultural heritage sites and buildings exist in Bukhara district however none of these sites or buildings are located along the A380 road segment proposed to be upgraded as part of the proposed project.

The road segment proposed to be upgraded passes through plain area. The key features along the project road include populated areas of Bukhara, Kagan and Karaulbazar districts, Jeyran Eco-center, desert area, and cultivated fields. A few industrial organizations are also situated in the project area. The project road crosses four canals, including Amu-Bukhara canal, Kuyumazar canal, Chor-Bakr canal, and Shokhrud canal. In addition, the road crosses a number of drainage water collector channels.

Jeyran Eco-center is located on both sides of the A380 road segment covered under the project. Established in 1977, Jeyran Eco-center is located in the southwest of the Kyzylkum desert, around 42 km from Bukhara and 12 km from the Karaulbazar city. This is a republican scientific-production center and a nursery for the breeding of rare species of animals. According to existing legislation, the Eco-center is a protected area of national importance with a strict regime for the protection of natural objects and complexes. It is intended for breeding rare species of animals, and preserving and studying typical ecological systems. The territory of the Jeyran Eco-center covers 16,522 hectares. It

consists of two sections: A) The first plot, with an area of 5,145 ha, is intended for animal breeding and research. This site belongs to the strict security zone. The territory is protected by a fence which is more than 2 m high. B) The second section of 11,377 hectares (planned to be increased to 26,008 hectares) is intended to transfer an excessive number of animals from the first section to the second and their adaptation to restore and maintain the structure of desert biosensors as well as the establishment of a protection regime and the cessation of the illegal use of biological resources and the development of ecotourism.

The key wildlife species in the Eco-center include Jeyran (*Gazella subgutturosa*), Kulan (*Equus hemionus kulan*), Przewalski's horse (*Eguus fernsprzewalskii*), and Bukhara mountain sheep (*Ovis orientalis bocharensis*).

Potential Impacts and Mitigation

The proposed project will generate socioeconomic benefits due to the improved condition of the road A380. The primary economic benefits of the investment program are cost savings from vehicle operation, reduction in travel time, and lower transaction costs related to transportation. This will lead to sustainable development, economic growth, integrity and national security, as well as improvement of living standards and livelihoods of local population. The project will also generate employment opportunities particularly during its construction phase.

The potentially negative impacts of the proposed project associated with its siting include acquisition of about 5.6 hectare (ha) of land belonging to three business entities and a forestry area, potential disturbance to wild species that exist in the Jeyran Eco-center, and felling of about 2,934 trees.

The potential impacts of the project's construction phase include soil erosion caused by excavation and vehicular traffic on unpaved areas; soil and water contamination caused by release of waste effluents from construction sites, accidental leakage of fuels and chemicals, and waste effluents from camps and offices; noise and air emissions generated by construction machinery and vehicles; blockage of canals and drainage channels during the construction of bridges and culverts; impacts associated with borrow areas required to obtain fill material; generation of solid waste, spoil, debris, and asphalt scrapings; disturbance and threat to wild species of the Eco-center caused by the construction activities; blockage of and damage to local roads and infrastructure; health and safety risks for local community particularly children and construction workers; and impacts associated with influx of construction workers.

The potential impacts associated with the operation and maintenance (O&M) of the project road include noise and air quality deterioration caused by the vehicular traffic, safety risks for the local population as well as for the O&M workers, and road hits as well as disturbance to the wild species in the Jeyran Eco-center.

Appropriate mitigation measures have been identified to address the above-described potential impacts of the proposed project. These include payment of compensation to the land owners for the land to be acquired for the project, tree plantation to compensate the tree felling; coordinating with the management of Jeyran Eco-center for protection measures such as fencing along the currently open section of the Eco-center; ensuring that no debris, spoil, or wastes are released in canals and channels; ensuring that the construction works do not block canals and channels; preparation and implementation of pollution prevention plan; preparation and implementation of waste management plan; undertaking measures to control soil erosion; treating waste effluents released from camps and offices;

implementing preventive measures to avoid leakage and spillage of chemicals and fuels; preparation and implementation of community and worker health and safety plans; preparing and implementing code of conduct for workers and raising their awareness regarding gender issues including gender based violence, communicable diseases, and social norms in the areas. The proposed mitigation measures for the O&M phase include tree plantation along the road where possible/appropriate, road signage to increase safety of population and wildlife, awareness raising of communities along the road, preparation of safety plan for community and O&M workers, and availability of emergency equipment and vehicles.

With the help of above-described mitigation measures, the potential impacts of the project will be mostly addressed and the significance of potential impacts is likely to be mostly negligible.

Environmental and Social Management Plan (ESMP)

An ESMP has been prepared as part of the present ESIA, in order to provide implementation mechanism for the mitigation measures described above. The key elements of the ESMP include institutional setup, mitigation plan, monitoring plan, reporting and documentation mechanism, grievance redress mechanism, and capacity building.

The overall responsibility of environmental and social performance of the project and effective ESMP implementation will rest with RC. RC will establish the Project Implementation Unit (PIU) to lead the Project implementation. The PIU will be headed by the Project Director (PD). An Environmental and Social (E&S) Specialist will be hired in PIU under PD's supervision. The E&S Specialist will be responsible for overall environmental and social management for the project and supervising the environmental and social performance of the project and oversee the Construction Supervision Consultant (CSC) and contractors. CSC and contractors will also engage dedicated staff for E&S management.

The Mitigation Plan lists all the potential impacts, the mitigation measures to address these impacts, and implementing and monitoring responsibilities for these measures – associated with each key activity of the project. The contractor will be required to implement the Mitigation Plan, in addition to preparing Site-specific ESMP (SSESMP) based upon the Mitigation Plan and then implement it.

Two types of monitoring, i.e. environmental quality monitoring (or effects monitoring) and compliance monitoring will be carried out during project construction phase. For the environmental quality monitoring, parameters like water contamination, dust and noise will be monitored by the contractors under the supervision of the Supervision Consultation.

Compliance monitoring will focus on the monitoring the compliance of various labor and environment, health and safety (EHS) requirements and implementation of mitigation measures identified in the SSESMP. Separate monitoring will be carried out for the implementation of the Abbreviated Resettlement Plan (ARP).

Third-party monitoring agencies will be engaged every half a year to conduct independent monitoring and develop semi-annual Environmental and Social Monitoring Reports. The Environmental and Social Monitoring Report will focus on the implementation of the ESMP and ARP. It will (i) verify the compliance to regulations, contract agreements, and ESMP, (ii) summarize the monitoring results of environmental quality, capacity building

and accidents, (iii) review the implementation of grievance redress mechanism (GRM); and (iv) recommend corrective actions or amendments in ESMP and SSESMP.

Grievance Redress Mechanism (GRM)

The existing mechanisms of addressing project related complaints in Uzbekistan has been reviewed. In addition to this, two separate Grievance Redress Mechanisms will be established for this project, one for the affected people and the other for workers, in accordance with AIIB's ESP. The GRMs are designed to promptly address concerns and complaints, using an understandable and transparent process that is gender-sensitive, culturally appropriate and readily accessible to all affected people in the Bukhara region as well as workers to be involved in this project.

The GRM for the affected people will have two tiers. The first tier will be at the field level, managed by a local Grievance Redress Committee (GRC). The second tier will be at the PIU level. The field level GRC will comprise CSC (with E&S staff in charge), representative of the Contractors, District Road Committee and head of the Makhalla Foundation. Aggrieved persons can contact either of them and they will be responsible for receiving, hearing and resolving the grievances. The second level GRC will be chaired by PIU PD, and will include representatives of the district khokimiyat and Bukhara regional Road Committee.

In addition to the above-described GRM, the Project-affected People's Mechanism (PPM) has been established by AIIB to provide an opportunity for an independent and impartial review of submissions from Project-affected people (PAP) who believe they have been or are likely to be adversely affected by AIIB's failure to implement its Environmental and Social Framework (ESF) in situations when their concerns cannot be addressed satisfactorily through Project-level GRM or AIIB Management's processes.

Consultations

Stakeholder consultation is a two-way process. For stakeholders, the consultation process is an opportunity to obtain project information, to understand its potential impacts, to raise issues and concerns, and ask questions. For the project proponents, the consultation process offers an opportunity to understand the stakeholders and their concerns about the project, their needs and aspirations, and also their suggestions that can potentially help shape the project and its design. Listening to stakeholders' concerns and feedback can be a valuable source of information that can improve project design and outcomes and help the project proponent to identify and control external risks. It can also form the basis for future collaboration and partnerships.

During December 2019- January 2020, the ESIA team conducted two rounds of workshops and public consultations in the Bukhara region. The expressed views and comments of all stakeholders including vulnerable groups such as women, members of the low-income families, and students were recorded and included in the present report for addressing them in the project design and implementation.

The first reconnaissance mission was conducted in December 2019. The first workshop was conducted at the Bukhara region Department of Uzyolloyiha in December 2019. During first field survey, environment and social consultants conducted five in-depth interviews with representatives of the Jeyran Eco-center, Bukhara region Women Committee, and Bukhara region khokimiyat.

Most of comments received during the consultations were related to the difficulties being faced by the people because of poor transportation services and poor road condition, high

cost of transportation, lack of proper services such as toilets along the road, traffic safety issues, pedestrian safety issues, lack of separate bicycle lane, lack of employment opportunities, and need of bus stops,

During January 2020, the ESIA team conducted a workshop at the Jeyran Eco-center, which is located in Karaulbazar district at the section 180-190 km of the road A380. Director and staff of the Eco-center shared the historical information and current situation about the biodiversity and migration of the animals in the project area. The specialist of the Bukhara region Road Committee Department presented the draft design of the project. Participants of the workshop answered about the details of the project design related to safety and junction of the road near the Eco-center. The staff asked to put additional road signs for safety of animals.

The stakeholder consultation in the project aera and citizen engagement is an ongoing process and will continue throughout the project implementation. A framework has been developed for the consultations to be carried out during the project implementation; see **Table ES.1**.

Table ES.1: Consultation and Participation Framework during Project Implementation

Description	Target Stakeholders	Timing	Responsibility
Public awareness campaigns/ scoping sessions to share ESIA, SSESMPs and RPs with the PAPs, communities and other stakeholders. Location: 3 districts in Bukhara region including Bukhara and Kagan cities	Communities within project area, general public; and line departments/ agencies.	Commencing with the preparation of first SSESMP; to be continued there after	PIU /Design Consultants/ Supervision Consultants
Consultations with the communities during ESIA, SSESMP and ARP implementation Location: 3 districts in Bukhara region including Bukhara and Kagan cities	Communities at/around subproject area	Before commencement of project activities.	PIU / Supervision Consultants
Establishment of GRM and GRCs Location: 3 districts in Bukhara region including Bukhara and Kagan cities	Communities at/around project area	Before commencement of project activities.	PIU
Grievance redress Location: 3 districts in Bukhara region including Bukhara and Kagan cities	PIU staff; consultants; relevant line departments; and communities (as needed).	Project implementation Stage	PIU/ Supervision Consultants
Informal consultations and discussions.	Communities at/around project area	Project implementation Stage	PIU / Supervision Consultants; contractor

Description	Target Stakeholders	Timing	Responsibility
Location: 3 districts in Bukhara region including Bukhara and Kagan cities			
Consultations with the communities during internal monitoring Location: 3 districts in Bukhara region including Bukhara and Kagan cities	Communities at/around project area	Construction Stage	PIU / Supervision Consultants
Monthly meetings at project sites Location: District departments Road Committee	PIU staff; consultants; and communities (as needed).	Construction Stage	PIU / Supervision Consultants
Consultation workshops to review ESIA/ESMP/SSESMP and RP implementation, any outstanding issues and grievances, views and concerns of communities; and actions needed to address them. Location: District departments Road Committee.	Rural and Urban Communities at the project area; relevant line department; relevant NGOs	Six-monthly during implementation phase	PIU / Supervision Consultants
Consultations with the Communities relating to the leftover tasks Location: District departments Road Committee	Communities at/around project area	After completion of projects	PIU / Supervision Consultants
Consultations with the communities during the site visits by the AIIB Review Missions. Location: rural and urban communities and District departments Road Committee.	PIU; Communities at/around subproject area	Construction/ Operation Stage	PIU / Supervision Consultants

Disclosure

The draft ESIA document has been disclosed at the website of Ministry of Transport since March 26, 2020. The final ESIA will also be disclosed in a similar way. The executive summary of the ESIA will be translated in Russian and Uzbek languages and placed on the same website, in addition to being available locally at the project site (PIU office, contractor's office).

ESMP Implementation Cost

The ESMP implementation cost has been estimated to be United States Dollars ****. This includes cost of capacity building, environmental quality monitoring, and third-party monitoring.

Resettlement Policy Framework (RPF) and Abbreviated Resettlement Plan (ARP)

Objective of RPF. The overall objective of the RPF is to provide a policy framework for land acquisition and resettlement to be implemented under the BRNIP-I. The principles underpinning this resettlement framework are: i) either to avoid or minimize the involuntary resettlement impacts; ii) the persons affected by the projects will be better off, or at least not worse off than before involuntary resettlement; iii) their assets and livelihoods affected by the projects will be compensated at full replacement cost; and iv) affected persons will receive assistance to relocate and re-establish/recover their livelihoods. The detailed principles/procedures of the land acquisition and resettlement are outlined in AIIB SS2 for Involuntary Resettlement, and related laws of GoU.

This RPF is prepared based on the results of (a) Technical report; (b) Review of policies of Uzbekistan and AIIB on resettlement; (c) site survey and social impact screening of project areas to assess possible impacts of land acquisition and resettlement; (d) consultations and meetings with the Road Committee under Ministry of Transport of the Republic of Uzbekistan (RC), Bukhara regional department of RC, khokimiat of Karaulbazar district and local stakeholders.

According to the results of field visit on January 24-26, requirement of land on five sites (one in Bukhara district and four in Karaulbazar district) will be acquired for Project needs. In two cases (one in Bukhara district and one in Karaulbazar district) land is owned by local khokimiats. In the remaining three sites (all in Karaulbazar district) involuntary land acquisition will be conducted. Based on the information provided by representatives of RC the total area of land on three sites to be acquired from current land owners is equal to 5.6 ha, and Bukhara regional khokimiat initiated the coordination process of the land acquisition with the Cabinet of Ministers and received resolution to start the land acquisition process.

While preparing the ARP, data has been updated to suit the project objectives and policies. This Resettlement Policy Framework will be updated when changes or amendments to the applicable laws and policies are made and based on implementation experience and lessons learned.

Entitlement. In accordance with the principles of the present RPF, all displaced households and persons will be entitled to a combination of compensation packages and resettlement assistance depending on the nature of ownership rights on lost assets and scope of the impacts including socio-economic vulnerability of the displaced persons and measures to support livelihood restoration if livelihood impacts are envisaged. The Entitlement Matrix given in **Table ES.2** summarizes the types of losses and the corresponding nature and scope of entitlements, and follows National Laws and ESS 2 of AIIB.

Table ES.2: Entitlement Matrix

No	Impact Category	Entitlements		Implementation Guidelines
Section I. TITLE HOLDERS - Loss of Private Property				
1	Loss of Land (agricultural, residential, commercial or otherwise including	a	Land for land compensation with a plot of equal value.	Compensation "land for land" is provided to all the PAPs in case of loss of their land by selection of the similar (equivalent) land plots of the equal value/productivity, of comparable

No	Impact Category	Entitlements		Implementation Guidelines
	resident & non-resident landlords)			location and additional agricultural means. Transaction costs including, valuation fee, stamp duty, and registration charges will be borne by the Road Committee.
		1.1 Agricultural land		
		a	Land for land compensation with a plot of equal value. OR Compensation to recover a new land to the pre-project condition.	Compensation based on market value for loss harvest equal the average annual income for past 3 years multiplied by 4 times (years). Unaffected portions of an affected arable plot will also be compensated if the same becomes unviable after impact.
		b	One-time subsistence allowance of equivalent to three months minimum wage income[1] for severely affected households	Households who are losing more than 10% of productive lands.
2	Loss of residential structure (inhabited structures)	2.1. Inhabited structures		
		a	In addition to Compensation for land listed above under S.No.1 advance notice to vacate the structures. Cash compensation at full replacement costs OR Provision of the alternative house of equal in adjacent territories. In case the alternative house's market value lower than an affected house, then additional cash compensation for the difference will be provided.	Payment of compensations is carried out by independent Valuation Service on the basis values in local markets in adjacent territories for the actual moment of compensation payment, considering inflation and market fluctuation in prices in the real estate sphere. Transaction costs including, valuation fee, stamp duty, and registration charges will be borne by the Road Committee. For partly affected structures, the PAPs will have the option of claiming compensation for the entire structure, if the remaining portion is unviable. Based on the preliminary study during the field visit on January 24-26, 2020 all 4 sites in Karaulbazar district where involuntary land acquisition will be conducted are free from any residential structures.
		b	Right to salvage affected materials	There will be no deductions for depreciation or for retention of salvaged

1 Since February 1, 2020 the minimum wage in Uzbekistan equals to 679,330 UZS, so one-time allowance is 2,037,990 UZS. This number is subject to corrections based on minimum wage rate at the time of census.

No	Impact Category	Entitlements		Implementation Guidelines
				materials in the calculation of compensation.
		c	One-time subsistence allowance of equivalent to three months minimum wage income[2] for project affected households who are required to relocate due to the project	Households who need to relocate are aided as part of livelihood restoration.
		d	One-time allowance of moving costs for those who have to relocate.	One-time allowance will be calculated during the census survey based on the actual market value in respective project areas.
		e	Rental allowance up to 24 months for affected households who gets cash compensation for affected residential structure OR Rental allowance for 1 month who gets an alternative house.	Monthly allowance will be calculated during the census of PAPs consisting of average market rental value in respective project areas. Information from Real Property Agencies or websites can be taken as reference. One-month allowance will be given to households who will be provided a ready alternative house to live.
		2.2. Losses of adjoining substructures to the residential houses such as fences, shed /tents etc.		
		a	Compensation at full replacement cost for affected structure/fixed assets free of depreciation and transaction cost	PAPs must have the right to salvage materials. Based on the preliminary study during the field visit on January 24-26, 2020 all 4 sites in Karaulbazar district where involuntary land acquisition will be conducted are free from any adjoining substructures.
3	Loss of Commercial structures	a	In addition to Compensation for Land and Assistance listed above under S.No.1 Cash compensation at full replacement costs OR Provision of the alternative commercial structure of	Payment of compensations is carried out by independent Valuation Service on the basis values in local markets in adjacent territories for the actual moment of compensation payment, considering inflation and market fluctuation in prices in the real estate sphere.

2 Since February 1, 2020 the minimum wage in Uzbekistan equals to 679,330 UZS, so one-time allowance is 2,037,990 UZS. This number is subject to corrections based on minimum wage rate at the time of census.

No	Impact Category	Entitlements		Implementation Guidelines
			equal in adjacent territories. In case the alternative structure's market value lower than affected structure, then additional cash compensation for the difference will be provided	Transaction costs including, valuation fee, stamp duty, and registration charges will be borne by the project For partly affected structures, the PAPs will have the option of claiming compensation for the entire structure, if the remaining portion is unviable. Based on the preliminary study during the field visit on January 24-26, 2020 all 4 sites in Karaulbazar district where involuntary land acquisition will be conducted are free from any commercial structures.
		b	Right to salvage affected materials	There will be no deductions for depreciation or for retention of salvaged materials in the calculation of compensation.
		c	One time grant equal to one year of wages for loss of trade/self-employment for the business owner	Provision of compensation will be based on tax declaration or official minimum salary.
		d	One-time subsistence allowance of equivalent to three months minimum wage income for owners of commercial structures who are required to relocate due to the project	Owners of Commercial structures who need to relocate are accepted as severely affected entities losing more than 10% of their production capacities.
		e	One-time allowance of moving costs for those who have to relocate	One-time allowance will be calculated during the census survey based on the actual market value in respective project areas.
		f	Rental allowance up to 3 months for lost income during the interruption.	Monthly allowance will be calculated during the census of PAPs consisting of average market rental value in respective project areas. Information from Real Property Agencies or websites can be taken as reference. Provision of rehabilitation assistance if required (assistance with job placement, skills training).
4	Impact to Tenants (Residential/ Commercial / Agricultural)	4.1 Residential		
		a	1-month notice to vacate the rental premises	Based on the preliminary study during the field visit on January 24-26, 2020 all 4 sites in Karaulbazar district where involuntary land acquisition will be

No	Impact Category	Entitlements		Implementation Guidelines
				conducted are free from any residential structures.
		b	Rental allowance for 1 month	Monthly allowance will be calculated during the census of PAPs consisting of average market rental value in respective project areas. Information from Real Property Agencies or websites can be taken as a reference
		c	One-time allowance of moving costs for those who have to relocate	One-time allowance will be calculated during the census survey based on the actual market value in respective project areas.
		4.2 Commercial		
		a	1-month notice to vacate the rental premises	Based on the preliminary study during the field visit on January 24-26, 2020 all 4 sites in Karaulbazar district where involuntary land acquisition will be conducted are free from any commercial structures.
		b	Rental allowance for 1 month	Monthly allowance will be calculated during the census of PAPs consisting of average market rental value in respective project areas. Information from Real Property Agencies or websites can be taken as a reference
		c	One-time allowance of moving costs for those who have to relocate	One-time allowance will be calculated during the census survey based on the actual market value in respective project areas.
		d	Commercial tenants will receive a one-time allowance for loss of trade/self-employment provided under 3(c) above in lieu to the owner	Provision of compensation will be based on tax declaration or official minimum salary
		4.3 Agricultural tenants		
		a	In case of agricultural tenants advance notice to harvest crops OR Compensation for the lost crop at the market value of the 1-year yield	Based on 1 year of production costs (inputs) plus an allowance equivalent to 1-year average net income based on the average income over the past 3 years determined by the Agricultural Department (AD) at respective districts of the project area

No	Impact Category	Entitlements		Implementation Guidelines
5	Impact to trees, standing crops, other properties, perennial and non-perennial crops	a	Three months (90 days) advance notification for the harvesting of standing crops OR A lump sum equal to the market value of the yield of the standing crop lost	Based on 1 year of production costs (inputs) plus an allowance equivalent to 1-year average net income based on the average income over the past 3 years determined by the AD
		b	Compensation for timber trees provided based on replacement cost.	Based on the market value of dry wood volume determined by the AD. Felled trees will be kept by affected households
		c	Compensation for fruit trees will be provided based on replacement cost.	Based on market value for loss harvest equal the average annual income for past 3 years multiplied by 4 times (years) plus input costs for trees to reflect the duration from planting to reach the productive stage
Section II. Additional assistance for Women headed households (Title and non-title holders)				
6	Loss of Land / house / shop		One-time subsistence allowance of equivalent to three months minimum wage for women-headed households who are required to relocate due to the project	Based on the preliminary study during the field visit on January 24-26, 2020 all 4 sites in Karaulbazar district where involuntary land acquisition will be conducted are owned by legal entities (State forestry unitary enterprise, farm and 2 LLCs). According to the survey results there are no Women headed households.
Section III. NON-TITLE HOLDERS - Impact to squatters / Encroachers				
7	Impact to Squatters	7.1 Loss of house		
		a	Cash compensation at market value for the structures OR Provision of comparable alternative structures	Based on the preliminary study during the field visit on January 24-26, 2020 all 4 sites in Karaulbazar district where involuntary land acquisition will be conducted are free from any residential structures.
		b	Right to salvage the affected materials	
		c	One-time subsistence allowance of equivalent to three months minimum wage income for project affected households who are required to relocate due to the project	

No	Impact Category	Entitlements		Implementation Guidelines
		d	One-time allowance of moving costs for those who have to relocate	
		e	Assistance in the legalization of title	Transaction costs including, valuation fee, stamp duty, and registration charges will be borne by the Road Committee.
		7.2 Loss of shop, repair shop		
		a	Cash compensation at full replacement costs for the structures OR Provision of comparable alternative structures	Based on the preliminary study during the field visit on January 24-26, 2020 all 4 sites in Karaulbazar district where involuntary land acquisition will be conducted are free from any commercial structures.
		b	Right to salvage the affected materials	
		c	One-time subsistence allowance of equivalent to three months minimum wage income for project affected households who are required to relocate due to the project	
		d	One-time allowance of moving costs for those who have to relocate	
		e	Assistance in the legalization of title	
		7.3 Loss of standing crops		
			Three months (90 days) advance notification for the harvesting of standing crops OR A lump sum equal to the market value of the yield of the standing crop lost	
8	Impact to Encroachers	8.1 Loss of Standing crops		
		a	2-month notice to harvest standing crops or market value of compensation for standing crops, if notice is not given.	Market value for the loss of standing crops will be decided by the PIU in consultation with the Agriculture Department at respective districts.
		8.2 Structure		

No	Impact Category	Entitlements		Implementation Guidelines
		a	1-month notice to demolish the encroached structure	
		b	Compensation at market value for structures without depreciation for the affected portion of the structure	
Section IV. Loss of Livelihood Opportunities				
9	Loss of employment in non-agricultural activities or daily agricultural wages or other wage workers		One-time subsistence allowance of equivalent to three months minimum wage income.	Only agricultural laborers who are in fulltime / permanent employment of the landowner, or those affected full-time employees of the business, will be eligible for this assistance. Part -time employees will be compensated at the prorated rate.
Section V. Impact on Vulnerable Households				
10	Vulnerable Households (Women headed household, Low-Income household, a household headed by elderly with no support and household headed physically challenged people)	a	Inclusion in existing safety net programs to ensure the continuation, or increase, of previous income.	One adult member of the displaced household, whose livelihood is affected, will be entitled to skill development. The census team will identify the number of eligible vulnerable displaced persons based on the 100% census of the displaced persons and will conduct training need assessment in consultations with the displaced persons so as to develop appropriate training programs suitable to the skill and the region. Suitable trainers or local resources will be identified by BRNIP PIU in consultation with local training institutes. It is recommended to involve local NGOs in this process
		b	One-time subsistence allowance equivalent to three months minimum wage income	
		c	Priority for employment in project-related jobs, training opportunities, self-employment, and wage employment assistance.	
Section VI. Unforeseen Impacts				
Any unanticipated impacts identified during Project implementation will be compensated in full at replacement cost and the entitlement matrix shall be revised if required in case major unanticipated impacts occur during detailed and final design.				

Resettlement Impacts. The involuntary land acquisition is identified on three sites in Karaulbazar district. The total area of land to be acquired from current land owners is equal to 5.6 ha. A summary of the resettlement impacts and the associated compensation is provided in **Table ES.3**.

Table ES.3: Summary of land acquisition impact and compensation provided to PAPs.

PAPs	Total land owned by PAPs	Land acquired for project needs	Share of acquired land in total land owned by PAPs	Employed people	Compensation for					Remarks
					Land	Standing crops	Agricultural works in progress	Foregone (lost) profit	Employment issues	
"ABC Qorovulbozor" LLC	82 ha	1.9 ha (at 152 km of A380 road)	2.3%	n/a established in 2019	cost of the land is determined by soil bonitet (appraisal)	No standing crops, land allocated in November 2019	cost of agricultural work in progress is calculated according to primary accounting documents	the amount of lost profit is determined as the sum of the average annual net income for the last three years received from the land plot excluded from agricultural production multiplied by four years	n/a established in 2019	The social and economic impact is low, the owners has no demand for land to land compensation due to low impact to its activities
"Alisher Marjona" farming unit	68 ha	0.9 ha (at 159 km of A380 road)	1.3%	30 permanent 25 seasonal	cost of the land is determined by soil bonitet (appraisal)	Cost of apricot trees will be calculated by valuation company	cost of agricultural work in progress is calculated according to primary accounting documents	the amount of lost profit is determined as the sum of the average annual net income for the last three years received from the land plot excluded from agricultural production multiplied by four years	No impact on employment	The social and economic impact is low, the owners has no demand for land to land compensation due to low impact to its activities

PAPs	Total land owned by PAPs	Land acquired for project needs	Share of acquired land in total land owned by PAPs	Employed people	Compensation for					Remarks
					Land	Standing crops	Agricultural works in progress	Foregone (lost) profit	Employment issues	
"Agro Food" LLC	30 ha	1.0 ha (at 159 km of A380 road)	3.3%	6 permanent 50 seasonal	cost of the land is determined by soil bonitet (appraisal)	Cost of vinery will be calculated by valuation company	cost of agricultural work in progress is calculated according to primary accounting documents	the amount of lost profit is determined as the sum of the average annual net income for the last three years received from the land plot excluded from agricultural production multiplied by four years	No impact on employment	The social and economic impact is low, the owners has no demand for land to land compensation due to low impact to its activities
"Neftchi" state forestry	19000 ha	1.9 ha (at 178,5 km of A380 road)	0.01%	53 permanent 10 seasonal	cost of the land is determined by soil bonitet (appraisal)	Cost of saxaul bush trees will be calculated by valuation company	cost of agricultural work in progress is calculated according to primary accounting documents	the amount of lost profit is determined as the sum of the average annual net income for the last three years received from the land plot excluded from agricultural production multiplied by four years	No impact on employment	The social and economic impact is low, the owners has no demand for land to land compensation due to low impact to its activities

List of Acronyms

ADB	Asian Development Bank
AIDS	Acquired Immune Deficiency Syndrome
AIIB	Asian Infrastructure Investment Bank
AOI	Area of Influence
ARP	Abbreviated Resettlement Plan
BOQ	Bill of Quantities
BRNIP	Bukhara Road Network Improvement Project
CAREC	Central Asia Regional Economic Cooperation
CSC	Construction Supervision Consultant
DSEI	Draft Statement of the Environmental Impacts
E&S	Environmental and Social
ECP	Environmental Codes of Practice
EIA	Environmental Impact Assessment
ESF	Environmental and Social Framework
ESHS	Environment, Social Health and Safety
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESP	Environmental and Social Policy
ESS	Environmental and Social Standards
FGD	Focus Group Discussion
FGFO	Foreign Government Financial Organizations
GBV	Gender-Based Violence
GHG	Greenhouse Gases
GoU	Government of Uzbekistan
GRC	Grievance Redress Committee
GRM	Grievance Redress Mechanism
HIV	Human immunodeficiency virus
IFI	International Financial Institutions
ILO	International Labor Organization
IR	Involuntary Resettlement
IUCN	International Union for Conservation of Nature

LAR	Land Acquisition and Resettlement
LC	Land Code
MSDS	Material Safety Data Sheets
NGOs	Non-Governmental Organizations
O&M	Operation and Maintenance
OHS	Occupational Health and Safety
PAP	Project Affected Persons
PD	Project Director
PIU	Project Implementation Unit
PPE	Personal Protective Equipment
PPM	Project-affected People's Mechanism
R&R	Resettlement and rehabilitation
RAC	Rural Assemblies of Citizens
RC	Road Committee
RP	Resettlement Plan
RPF	Resettlement Planning Framework
SCEEP	State Committee for Ecology and Environmental Protection
SEC	Statement on Environmental Consequences
SEE	State Environmental Expertise
SEI	Statement of the Environmental Impacts
SIA	Social Impact Assessment
SSESMP	Site-specific ESMP
SUE	State Unitary Enterprise
TMP	Traffic Management Plan
TRACECA	Transport Corridor Europe-Caucasus-Asia
WBG	World Bank Group

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1. INTRODUCTION

The Government of Uzbekistan (GoU) through the Road Committee (RC) under Ministry of Transport, Republic of Uzbekistan, intends to undertake the Bukhara Road Network Improvement Project (BRNIP) in Bukhara region and seeks financial assistance from the Asian Infrastructure Investment Bank (AIIB) for this purpose. In order to address the adverse environmental and social impacts of this project and in compliance with the national regulatory as well as AIIB's Environmental and Social Policy (ESP), RC has conducted the present environmental and social impact assessment (ESIA) of Phase I of BRNIP (the proposed project).

BRNIP Phase I (or BRNIP-I) comprises reconstruction and improvement of 78-km long stretch of A380 highway, from kilometer (km) 150 to km 228.

1.1. Project background

1.1.1. National road strategy

Transport is vital to the well-functioning of economic activities and a key to ensuring social well-being and cohesion of populations. Transport ensures everyday mobility of people and is crucial to the production and distribution of goods. Adequate infrastructure is a fundamental precondition for transport systems.

International practice shows that inadequate development of transport systems at the national level leads to unreasonably high costs in production and provision of services and constrains the economic development in almost all sectors. The rational use of transport opportunities stimulates the accelerated development of related industries and sectors of the economy.

Improving the road transport infrastructure and their operation helps to increase productivity, security and national progress, as well as mobility, which constantly improves public access to activities, goods and services through the preservation, improvement and expansion of the road transportation system, and the branching of operational capabilities.

According to the state program, it is planned to build and reconstruct 1,227.8 km of roads during 2018-2020. The improvement of road network in Bukhara has been included in the Uzbek national highway program and the BRNIP Phase I (the proposed project) is included in this program.

1.1.2. Transport network of Bukhara region

According to data from the Design Institute - Uzyolloyiha - of RC, the total length of the transport network in the Bukhara region is 4,012 km. Two international roads, A380 and M37, are crossing Bukhara region. The total length of the international roads is 486 km, including A380 – 333 km and M37– 153 km. The length of the state and local roads is 1,120 and 2,406 km respectively.

International roads A380 and M37 are the key arterial highways that pass through the territory of the Bukhara region. The A380 highway with a total length of 1,204 km connects four regions of the country and is the main route between north-west and south-east of Uzbekistan, an important international corridor between Afghanistan, Tajikistan, Turkmenistan, Kazakhstan and beyond the Russian Federation. It enters the international corridors of Central Asia Regional Economic Cooperation (CAREC) Program 2 and 6,

Asian Highway 63, Transport Corridor Europe-Caucasus-Asia (TRACECA) and European highways E40 and E60.

The government pays special attention to the international highways and at present most of the sections of the A380 highway have been reconstructed. With the involvement of funds from international financial organizations, similar works are being carried out or planned in various areas.

The Bukhara Road Network Improvement Project (BRNIP) focuses on the rehabilitation of segment of road A380 which starts from km 150 in Karaulbazar district and ends up at km 228 in Bukhara district; a length of 78 km. This segment of the road A380 passes through three districts and two cities of the Bukhara region.

1.2. Location of BRNIP I

The proposed project is located in Bukhara region, which is located in the western part of Uzbekistan. It borders the Navoi region in the north and east, the Kashkadarya region in the southeast, the Republic of Turkmenistan in the south, and the Khorezm region and Karakalpakstan in the west.

The territory of the Bukhara region covers about 40.32 thousand square kilometers, where more than 1.89 million people live. The administrative center is the Bukhara city. Bukhara is divided into following 11 administrative districts: Bukhara, Vobkent, Jondor, Kagan, Alat, Peshku, Romitan, Shofirkan, Karaulbazar, Karakul, Gijduvan. Among the large cities of the Bukhara region include the cities of Bukhara, Kagan, Gijduvan, Karakul, Vobkent, Shofirkan and Romitan (see **Figure 1.1**). The 78 km long section of A 380 proposed for reconstruction under BRNIP-I passes through Karaulbazar, Kagan, and Bukhara districts and Bukhara, Kagan cities.

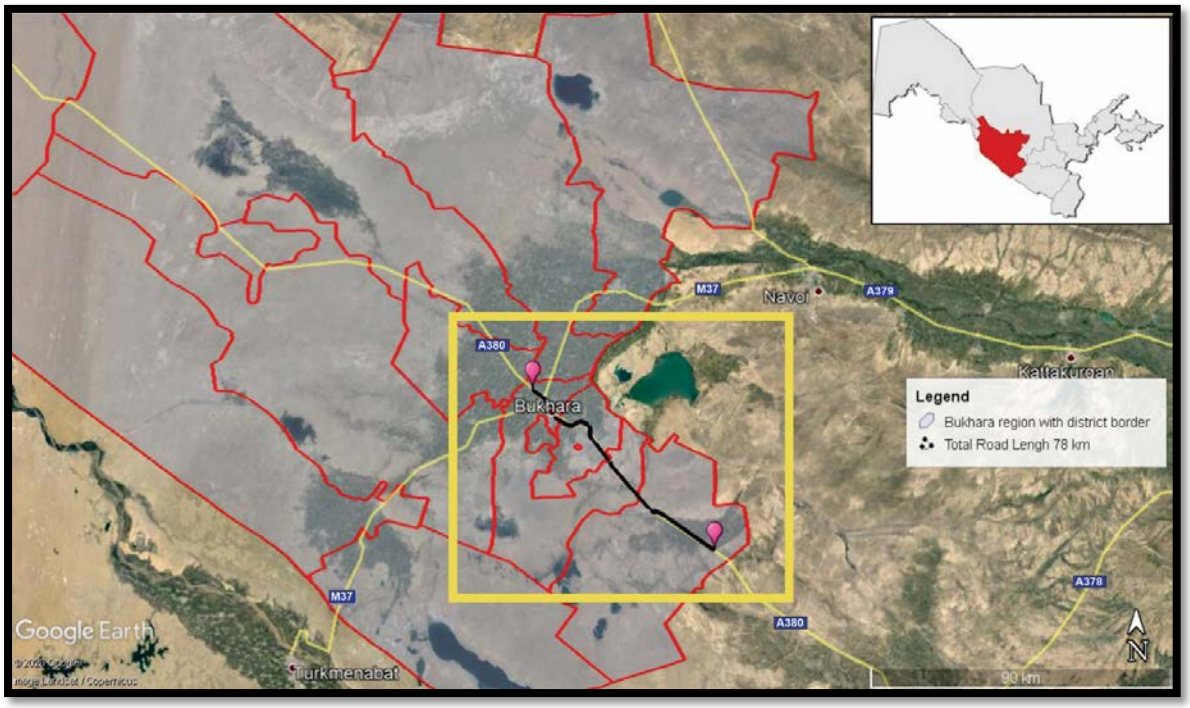


Figure 1.1: Map of Bukhara region Road Network and Project Area (*Source: Google Earth Pro*)

1.3. Project Overview

A phased approach has been adopted for BRNIP as described below.

Phase I (US$ 206.29 Million):

f. Civil works involving rehabilitation and modernization of road A380, for a total length of 78 km, from km 150 to km 228, involving concrete cement pavement and several bridges;

g. Consulting Services for Construction Supervision and Technical Audit/Review of the road A 380;

h. Project preparation for Phase II, involving: i) Conceptual Design and Preparation of Tender documents using innovative contracting methodology OPBRC/DBMOT for 78 km of the southern section of M37 and ii) Detailed Design and Preparation of Tender Documents for about 80 km of the north section of M37 using traditional input type of contracting;

i. Institutional Strengthening and Capacity Building involving: i) Institutional Strengthening (including support to environmental and social (E&S) aspects), ii) Project Implementation Unit (PIU) – establishment and its professional staff engagement for five years, iii) Review and Update of Current Design and Works Standards and Specification;

j. Equipment Purchase related to quality and quantity measurements for innovative contracting methodologies.

Phase II (US$ 630 Million):

a. Rehabilitation and reconstruction of selected links of the road networks in Karakalpakstan and Khorezm regions using traditional input type of contracting, with 414 km long roads in Karakalpakstan and 223 km long roads in Khorezm region;

b. Consulting Services for Construction Supervision and Technical Audit/Review of the road networks in both regions;

c. Rehabilitation and upgrading of the road M 37 for a total length of about 158 km;

d. Consulting Services for Construction Supervision and Technical Audit/Review for road M37.

The proposed Project (Phase I) includes the reconstruction of a 78 km section of the A380 highway, consisting of the following three sections/lots:

- Lot 1 - between 150 and 188 km;
- Lot 2- between 188 and 208 km;
- Lot 3- between 208 and 228 km.

The proposed works include correction of the plan and the longitudinal profile of the route, design of the roadbed, pavement, structures, intersections and junctions and road devices. The project area and various lots are shown in **Figure 1.2**. More details on the proposed project are presented later in the document.

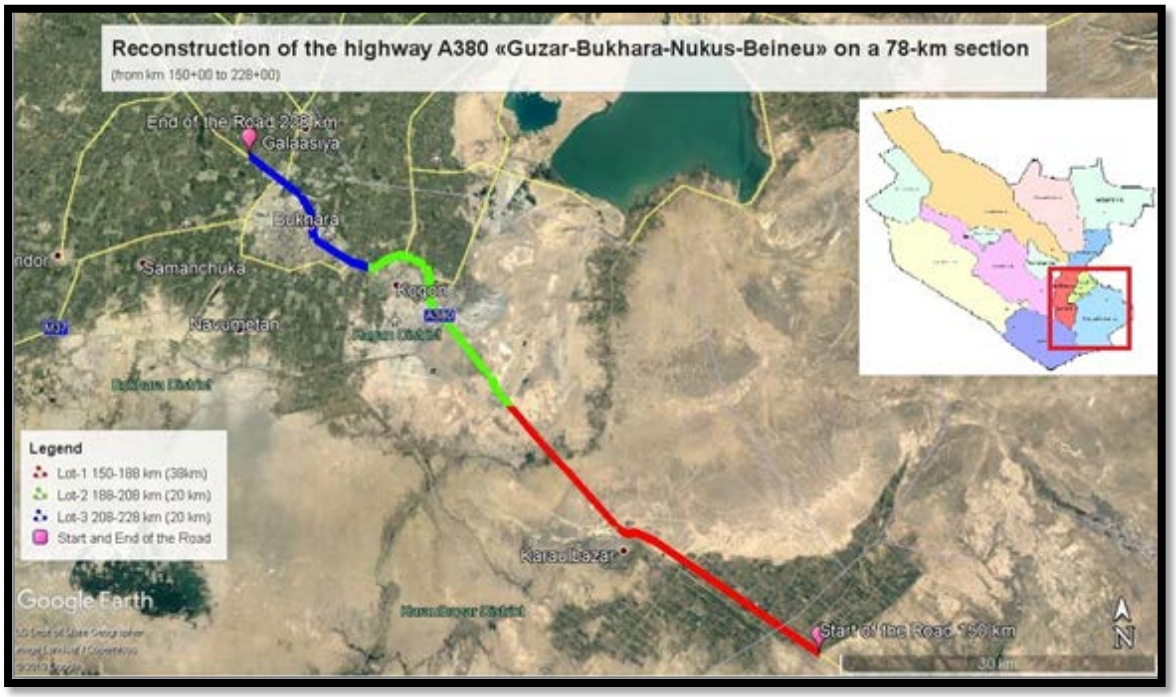


Figure 1.2: Project Components and Study Area

1.4. Regulatory and Policy Framework

According to the national regulatory requirements of the Republic of Uzbekistan specifically Law on Environmental Expertise, 2000 and Regulation on State Environmental Expertise (SEE) approved by Cabinet of Ministry Decree No.949 dated 22 November 2018, it is required to prepare a Draft Statement of the Environmental Impacts (DSEI) and the Environmental Conclusion to be obtained from the Center for State Environmental Expertise (SEE) under the State Committee for Ecology and Environmental Protection (SCEEP) for road project. The Environmental Conclusion from the SEE has been received on 02/10/2019, No: 01-01/10-08-2162 (see **Annex A1**).

In addition, according to the AIIB's ESP and the Environmental and Social Standards (ESS), an Environmental and Social Impact Assessment (ESIA) needs to be carried out for the proposed project. The present assessment has been developed in the response to the above requirements. More details of these regulatory and policy requirements are provided later in the document.

1.5. Objectives and Methodology of the ESIA

1.5.1. Objectives

The present ESIA aims to address the potentially adverse impacts of the project and its activities on the physical and biological environment as well as on socio-economic aspect – in order to make the project environmentally sustainable and socially acceptable. The present study has been carried out in response to the requirements defined by the national regulations as well as AIIB ESP. The key objectives of this ESIA study include:

- Determining the current environmental and social baseline conditions of the area;
- Identifying important environmental and social components which may be impacted by the project;

- Assessing the potential environmental and social impacts, including any residual impact of the proposed project;
- Identifying measures to avoid, minimize or mitigate the adverse impact;
- Preparing an Environmental and Social Management Plan (ESMP) including an Environmental Monitoring Plan;
- Proposing Grievance Redress Mechanism for project-affected people and workers;
- Preparing an Abbreviated Resettlement Plan to address economic displacement and according compensation.

The study covers design, construction and operation and maintenance (O&M) phases of the proposed project.

1.5.2. Area of Influence and study area

Most of the environment and socio-economic impacts of the project are expected to be localized. The direct area of influence (AOI) consists of the area of 200m away from each side of A380 (78-228km) including interchanges and the area of 200m radius around proposed quarriers, borrow areas, batching plant and construction camps. The study area also covers Jeyran Eco-center for ecological impact assessment and villages and households along A380 (78-228km) for socio-economic impact assessment, in addition to the direct AOI.

1.5.3. Methodology

The methodology followed while conducting the present ESIA study of the proposed project is shown in **Figure 1.3**.

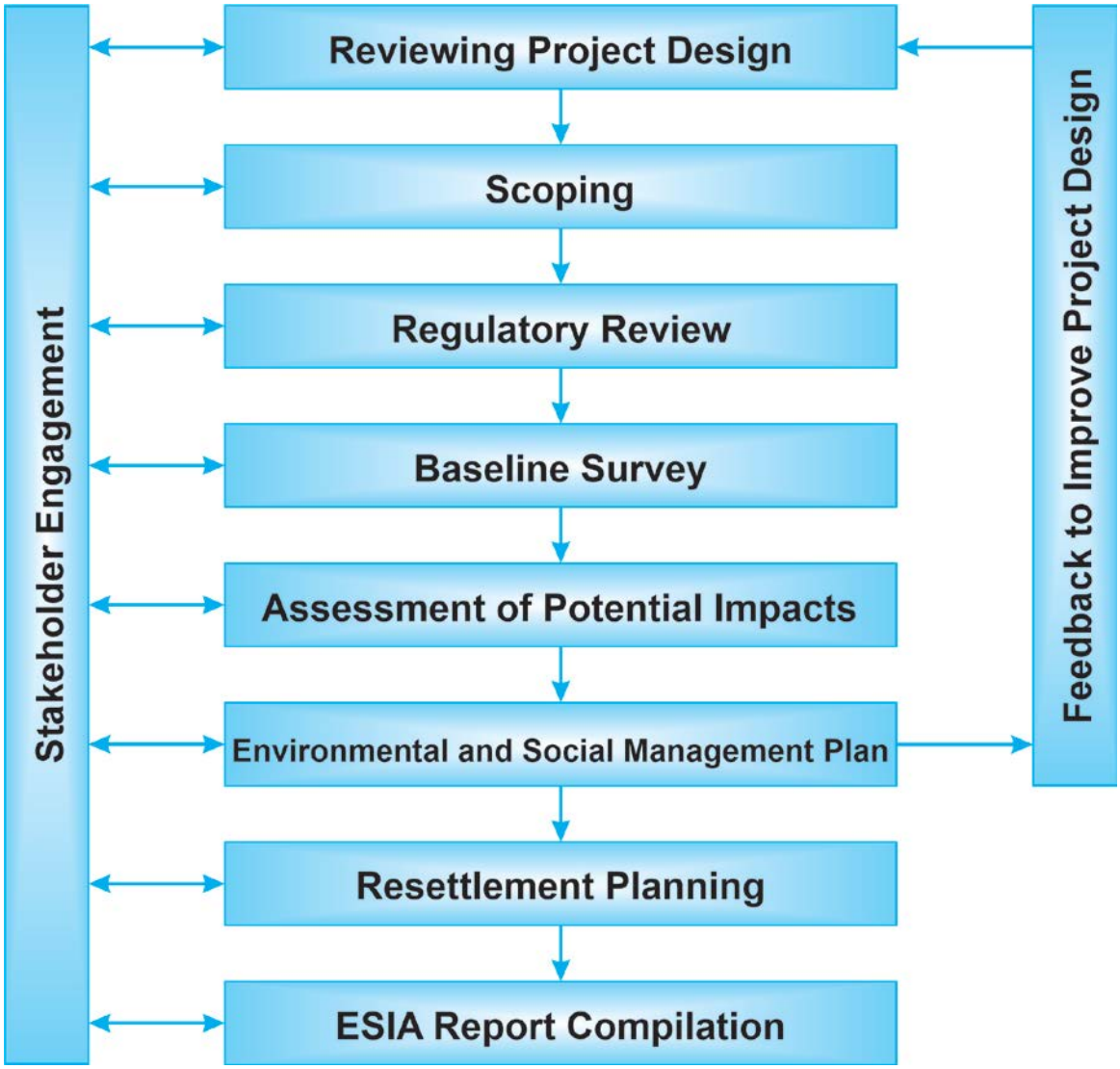


Figure 1.3: Process Followed for ESIA Study

The activities at each stage of the present ESIA study are briefly described below.

Reviewing Project Design

Detailed information about project was collected from Project Feasibility Study of "Uzyolloyiha", Tashkent 2019, by the environmental and social team members for gaining an understanding of the proposed interventions and their possible environmental and social consequences. The design data was collected for preparation of ESIA. The following aspects have been included in the brief description of the project:

- Location of the project and its accessibility;
- Use of natural resources i.e. soil, water and its sources;
- Use of raw materials, fuels and chemicals, their quantities, characteristics, arrangements for transport to site, and storage facilities;
- List of main equipment and machinery, built-in pollution control equipment, description of detailed manufacturing process;
- Information on solid, liquid and gaseous waste generated, and their points of generation;
- Noise level produced by equipment and machinery;

- Layout maps showing key project components.

Scoping

The environmental and social components of the BRNIP activities were identified during scoping process, which was implemented during two stages. At the first stage, environmental and social experts developed the impacts of the BRNIP activities. During second stage, the study team took into consideration ideas and suggestions of the representatives of the primary and secondary stakeholders and local authorities such as khokimiyats, mahkalla committees and Non-Government Organizations. Based on the BRNIP activities the study team carried out the scoping and identified potential impacts. At this stage, the suggestions from the environmental and social experts, engineers as well as local residents were collected and taken into consideration.

Regulatory Review

As part of this task, national regulatory framework relevant to environmental and social assessment as well as involuntary resettlement was reviewed. In addition, the AIIB's ESP and ESS were reviewed and their relevance to the proposed project determined. Finally, a comparison of the two sets of the requirements (ie, national and AIIB requirements) was carried out and gaps between them identified.

Environmental and Social Baseline Survey

The environmental and social baseline conditions of the proposed project area have been determined by collecting relevant data from primary and secondary sources. Under the ESIA study, available data on climate, geology, seismicity, water resources, land resources, soil properties, agriculture, ecology and socio-economic components have been collected from secondary sources. Reconnaissance field visit and instrument monitoring of environmental quality were also carried out from Dec 2019 to Jan 2020 to collect primary data in the key areas of terrestrial ecology, hydrology, industries and socioeconomics of the local community, physical and biological environment.

In particular, socio-economic data have been collected from the project area and relevant makhalla committees, local residents of Bukhara, Kagan, Karaulbazar districts, Bukhara and Kagan cities through Focus Group Discussions (FGDs), workshops, and face-to-face interviews.

Assessment of Potential Impacts

Subsequent to the scoping, review of project details, and review of baseline environmental and social conditions, assessment of impacts on each of the environmental and social parameter was carried out. Once the potential impacts were identified, their significance was assessed. Subsequently, the mitigations and enhancement measures were suggested to avoid, minimize and /or compensate the potential impacts. For this purpose, mitigation strategies adopted during earlier projects of similar nature were reviewed in addition to relying upon experts' judgment. Subsequently, residual impacts – impacts that are likely to take place even after the implementation of mitigation measures – and their significance were assessed.

Environmental and Social Management Plan

The environmental and social management plan (ESMP) was compiled once the impact assessment was completed and mitigation measures identified. During the ESMP compilation, institutional arrangements for environmental and social management of the

project were recommended, mitigation and monitoring plans were formulated, documentation and reporting protocols were defined, training needs were assessed, and cost of ESMP implementation estimated.

Resettlement Planning

As part of this task, a Resettlement Policy Framework was prepared to provide the process to be followed to address the involuntary resettlement impacts caused by the project in accordance with the national requirements as well as AIIB ESP and ESS. In addition, an Abbreviated Resettlement Plan was also prepared to address the resettlement impacts that were identified during the ESIA study.

Stakeholder Engagement

Stakeholder engagement started from environmental and social baseline stage when data and information on baseline conditions is collected from the directly and indirectly project impacted people. Their perceptions were considered in the selection of important environmental and social components through the scoping process.

Some formal consultations were carried out during ESIA study. The ESIA team arranged a formal consultation meeting with project affected people at Bukhara region. Along with this, the study team also communicated with local government authority to inform them and to learned their perception regarding this project. A participatory approach was followed during consultation meetings.

ESIA Report Compilation

Towards to end of present assignment, the ESIA report was prepared compiling the process and outcome of the tasks described above. The ESIA report follows the standard structure that has been described later in the Chapter.

1.5.4. ESIA Study Team

The present ESIA study was carried out by the following key professionals:

- Mr. Tolib Sultanov, Environmental specialist;
- Mr. Jakhongir Gadaev, Environmental specialist;
- Ms. Nodira Azizova, Social Impact and Resettlement Specialist;
- Mr. Jamoliddin Qudratov, Social Safeguard Specialist,
- Mr. Aziz Salomov, the Field Survey Coordinator in Bukhara region.

1.5.5. Structure of ESIA Report

Chapter 2 reviews the prevailing national regulatory requirements and AIIB policies and standards relevant to environmental and social assessment. **Chapter 3** presents a simplified description of the project, its various components and other salient information relevant for environmental and social assessment. Analysis of alternatives considered during project planning and design are explained in **Chapter 4**. Description of the environmental and socio-economic baseline analysis is presented in **Chapter 5**. Potential impacts of the project on environment and people as well as their appropriate mitigation measures have been discussed in **Chapter 6. Chapter 7** describes the Stakeholder consultations and Disclosure were carried out during the ESIA study. **Chapter 8** presents the environmental and social management plan (ESMP). Finally, RPF and ARP are presented in **Chapter 9**.

2. LEGAL, POLICY AND REGULATORY FRAMEWORK

This chapter discusses the laws, regulations and policies of the Government of Uzbekistan, the Khokimiyat of the Bukhara region and AIIB's Environmental and Social Policy that are applicable for this project. Also provided in the Chapter is a comparison between the national and AIIB requirements.

2.1. Relevant National Laws

2.1.1. National Environmental Laws

The Law on Nature Protection was enacted in 1992. It provides the legal and institutional requirements for the conservation of the environment and the rational use of natural resources.

A system of laws and by-laws has been developed and adopted around the Law on Nature Protection. This system is aimed at regulating environmental protection, promoting the rational use of natural resources, and protecting people from unfavorable changes in the environment. Currently, over 40 legislative acts and approximately 70 by-laws are enforced in Uzbekistan in the area of environmental protection and utilization of natural resources, for example laws on ''Protection of Nature', 'Protected Areas', 'State Sanitary Supervision', 'Water and Water Use', 'Subsoil', 'Protection and Utilization of the Fauna', 'Protection of the Atmospheric Air', 'Protection and Utilization of the Flora', 'Forests', 'Safety of Waterworks', 'State Cadasters', 'Wastes', 'Environmental Impact Assessment', and 'Land Code', 'Protection and strengthening of plants and animals valuable and endangered kinds and ordering of their use".

Among the by-laws, the following resolutions of the Cabinet of Ministers of Uzbekistan are particularly relevant: 'The National Environmental Action Program for 1999-2005', "The Cabinet Council regulation of Republic of Uzbekistan "About the statement of the monitoring program of environment in Republic of Uzbekistan for 2016-2020", 'On approval of the Concept of Environmental Protection of the Republic of Uzbekistan to 2030', 'Measures to Observe International Commitments of the Republic of Uzbekistan on the Protection of the Ozone Layer', 'The Red Book of the Republic of Uzbekistan', 'Improvement of the Hydrometeorological Service of the Republic of Uzbekistan', 'Approval of the Statute on the State Environmental Impact Assessment in the Republic of Uzbekistan', "Regulation about Environmental Impact Assessment", 'Measures to Establish and Maintain Hunting Entities in the Forestry Lands', 'Enhancement of Oversight of Rational Utilization, Import, and Export of Biological Resources of the Republic of Uzbekistan', 'Limited Water Use', 'Activities for Enhancement of Effectiveness of Land Use', "The Cabinet Council Regulation of Republic of Uzbekistan "About perfection of payments system for special nature management", 'Approval of the Scale for Calculation of Fines to be Levied for Damage Inflicted on the Flora', 'Approval of Regulatory Acts in accordance with the Law on the Subsoil of the Republic of Uzbekistan', 'Approval of the Statute on State Monitoring of the Environment in the Republic of Uzbekistan', and 'Approval of the Statute on Land Monitoring'.

The Law on Nature Protection establishes the State Committee for Ecology and Environmental Protection, Goskomekologiya, as the agency responsible for implementing

the law. Goskomekologiya (former Goskompriroda) was formed in 1988. Goskomekologiya is headed by a Chairman who is appointed by the Oliy Majlis (i.e. the Parliament). Goskomekologiya has a wide scope of activities including assessing and monitoring the environmental resources of the nation, establishing environmental quality standards and monitoring pollution levels of agricultural and industrial production systems, establishment of protected areas and the protection of ecological resources. The basic divisions are available to attend to such functions in the Ecology and Environmental Protection Committee. Environmental assessment is the responsibility of the Main Directorate of the Center for State Environmental Expertise (i.e., Gosecoexpertisa) a directorate of Regional Centers for State Environmental Expertise.

2.1.2. National EIA Rules and Procedures

The national Environmental Impact Assessment (EIA) procedure is regulated by Law on Environmental Expertise and the Regulation on State Environmental Expertise (SEE) approved by Cabinet of Ministry Decree No.949 dated 22 November 2018. The regulation defines the legal requirements for EIA in Uzbekistan. SEE is a review process conducted by the Center for SEE under SCEEP (Goskomecologiya) at either the national or the regional level, depending on the project category.

Goskomecologiya on state environmental expertise is a uniform system of State Environmental Expertise, methodological guidance of which implemented by Center for State Environmental Expertise. Pursuant to Section 18 of the Regulation on SEE, the developer must conduct the EIA assessment process in a staged approach, providing the Center for State Environmental Expertise/Regional Center for State Environmental Expertise with EIA documents for review at three distinct stages of the Project. Section 14 of the Regulation on SEE outlines the information that should be within the documentation at each of these stages. The three EIA stages and their required deliverables are summarized as follows:

- Stage I: The 'Draft Statement of the Environmental Impacts (DSEI)', to be conducted at the planning stage of the proposed project prior to development funds being allocated.

- Stage II: The 'Statement of the Environmental Impacts (SEI)', to be completed where it was identified by the Center for State Environmental Expertise/Regional Center for State Environmental Expertise at Stage I that additional investigations or analyses were necessary. The Statement must be submitted to the Center for State Environmental Expertise/Regional Center for State Environmental Expertise before approval of the project's feasibility study, and therefore before construction.

- Stage III: The 'Statement on Environmental Consequences (SEC)' represents the final stage in the SEE process and is to be conducted before the project is commissioned. The report details the modifications to the project design that have been made from the Center for State Environmental Expertise/Regional Center for State Environmental Expertise review at the first two stages of the EIA process, the comments received through the public consultation, the environmental norms applicable to the project and environmental monitoring requirements associated with the project and principal conclusions.

SEE approval (Center for State Environmental Expertise/Regional Center for State Environmental Expertise opinion) is a mandatory document for project financing by Uzbek banks and other lenders (Section 24) at Stages I and II and for project commissioning at Stage III of the national EIA procedure.

All economic activities subject to SEE are classified into one of four categories:

- Category I — "high risk of environmental impact" (SEE is conducted by the national SCEEP within 20 days, all EIA materials are required);
- Category II — "medium risk of environmental impact" (SEE is conducted by the national SCEEP within 15 days, all EIA materials are required);
- Category III — "low risk of impact" (SEE is conducted by regional branches of (SCEEP) within 10 days, all EIA materials are required); and
- Category IV – "low impact" (SEE is conducted by regional branches of SCEEP within five days, only a draft EIA is required).

2.1.3. National Social Laws

2.1.3.1. Land Code of Republic of Uzbekistan, 1998

The Land Code of Republic of Uzbekistan was adopted on 30 April 1998 and subsequently amended few times and the amended version as on 01 August 2019 describes the basic principles of land legislation, roles and responsibilities of various arms of the government in land regulation, land ownership, rights of individuals and legal entities with regard to land, powers and procedure to adopted in withdrawal/redemption of land and rights and obligations of land owner, land user and tenant.

Land is a State property, and individuals can have land plots on the right of lifelong inherited possession, permanent use, term (temporary) use and on lease, while legal entities can have land on the right of permanent ownership, permanent use, term (temporary) use and on rent. When transferring ownership, economic management rights or operational management rights to an enterprise, building, structure or other real estate, these objects also pass the right of ownership and permanent use of the land plot occupied by these objects and necessary for their use. When individuals transfer ownership (purchase, donation or inheritance, etc.) of a residential house, a garden house, along with the ownership of these buildings goes the right of lifelong inherited ownership of the entire land plot on which these buildings are located.

The withdrawal of a land plot or its part for state and public needs is carried out with the consent of the landowner or in agreement with the land user and the tenant by decision of the Khokim of the district, city, region or decision of the Cabinet of Ministers of the Republic of Uzbekistan respectively.

Rights of landowner, land user, tenant and owner of a land plot include right for compensation of losses caused to him (including lost profits), in case of withdrawal of a land plot, or compensation of expenses in case of voluntary refusal of a land plot. Further, while defining the process of withdrawal/redemption for state or public needs of land plots provided to individuals, it is specified that it should be done after the Khokim of a district, city, region has allocated an equivalent land plot, constructed at a new place by enterprises, institutions and organizations for which land is allocated, production and other buildings to replace the seized and reimbursement in full of all other damages (including lost profits).

Further, the losses caused to landowners, land users, tenants and owners of land plots is to be reimbursed in full (including lost profits) when the state withdraws/redeems or takes land for temporary occupation. The resolutions passed by cabinet of ministers since May 2016 have made many amends to the Land Code provisions with regard to withdrawal/redemption of land and related compensation for losses to citizens and legal entities.

2.1.3.2. Housing Code of Republic of Uzbekistan, 1998

The Housing code governs the matters relating to citizens, legal entities, government bodies and local government bodies with regard to origins, implementation, change and termination of the property right, right of ownership and use of residential premises; accounting of housing stock; ensuring safety, content and repair of housing stock; control of observance of housing laws of citizens and target use of housing stock.

The housing code apart from dwelling into the ownership of dwelling units, the responsibilities and modalities of transfer and rental, deals with withdrawal of land, wherein, in the event of demolition of residential buildings (apartments) owned by citizens in connection with the withdrawal of land plots for state or public needs, the owners of the property, at their choice and by agreement of the parties, shall be provided with another equivalent well-appointed residential space of an area not less than the social norm of the dwelling area. If in case the market value of building provided exceeds the market value of the demolished house (apartment) or the right to land, the difference is to be paid to the owner.

Further, in case of demolition of residential buildings (apartments) owned by citizens in connection with the withdrawal of land plots for state or public needs, alternate land plot is provided for individual housing construction within the established norm at their choice. In addition, temporary housing is provided on the terms of a tenancy agreement for the period of land development, for a period of up to three years, with reimbursement in full of the market value of demolished houses (apartments), buildings, structures, trees and crops, as well as the difference between the market value of land withdrawn and the land provided, where the market value of land withdrawn is greater than that of the land provided.

For citizens and legal entities whose houses (apartments) are to be demolished, equivalent residential houses and buildings are provided at their choice at the new place, and transferred to them as property. At the same time, payment of the monetary compensation for the market value of the structure taken down, as well as the difference between the market values of the land provided and the land being withdrawn, in case the market value of the land withdrawn is greater than the market value of the land provided, is made in full.

2.1.3.3. Resolution of Cabinet Ministers No. 97 dated 29 May 2006

This resolution deals with regulations that determine the procedure for withdrawal/redemption of a land plot or its part, as well as the procedure for calculating the amount of compensation to citizens and legal entities for demolished residential, industrial and other buildings, structures and trees and crops in connection with the withdrawal/redemption of land plots for state and public needs.

The resolution specifies the purpose for which land can be withdrawn/redeemed and demolition of residential, industrial and other buildings, structures and trees and crops can be done. Land can be withdrawn/redeemed for the needs of defense and state security, protected natural territories, the creation and functioning of free economic zones, fulfilment

of obligations arising from international treaties, the discovery and development of mineral deposits, construction (reconstruction) of roads and railways, airports, airfields, air navigation facilities and aero technical centers, railway transport facilities, bridges, subways, tunnels, energy systems and power transmission lines, communication lines, space facilities, main pipelines, engineering and communication networks.

Payment of compensation in full as per market value to the owner is made mandatory prior to demolition of structures in case of withdrawal/redemption of land plots. Khokimiyats of the respective districts are obliged to notify the owners of residential, industrial and other buildings, structures and plantings of the decision in writing for signature not later than six months before the demolition. The resolution in unambiguous terms states that self-willed residential, industrial and other buildings and structures shall not be reimbursed. In other words, non-titleholders or those without user right, are not reimbursed for the losses.

In case of withdrawal of seized land plots to enterprises, institutions and organizations, payment of reimbursements, provision of residential buildings (apartments) and provision of temporary housing, as well as covering all costs associated with moving to a new location, by decision of the Khokims of the respective districts (cities) are to be borne by these enterprises, institutions and organizations.

The withdrawal/redemption of land is provided with the following types of compensation: (i) providing citizens with the property of another equivalent well-appointed living space of an area not less than the social norm of the living space and paying the cost of trees and crops; (ii) payment to citizens of the market value of the demolished residential building, other buildings, structures and trees and crops, as well as compensation for losses caused to owners in connection with the withdrawal of the land plot; and (iii) providing citizens with a land plot for individual housing construction within the established norm with provision of temporary housing under the terms of a tenancy agreement for the period of land development, for a period of up to two years, with full reimbursement of the market value of demolished houses (apartments), buildings, structures and plantings losses caused to owners in connection with the withdrawal of the land.

The affected person does not have the right to salvage material as all materials from the dismantling of demolished houses (apartments), other buildings and structures (except for unauthorized construction) located in the land that is withdrawn, will remain at the disposal of the enterprise/institution for whom land is acquired and who pays for the cost of building. The owner of the structure has the right to salvage material on payment of the cost determined by the Khokims, allowing for depreciation.

2.1.3.4. Resolution of Cabinet Ministers No. 146 dated 25 May 2011

This resolution was promulgated to further improve the procedure for granting land plots, ensuring the protection of rights of legal entities and individuals to land, improving the architectural appearance of populated areas of the republic, optimal use of their development land in accordance with the Land Code and Town Planning Code of the Republic of Uzbekistan. Further, these regulations establish the procedure for determining the size and compensation of losses of owners, users, tenants and owners of land plots, as well as losses of agricultural and forestry production.

The size of losses of owners, users, tenants and owners of land plots, as well as losses of agricultural and forestry production are determined by the State Research and Design Institute and its territorial divisions, branches of state enterprises of Land Management and

Real Estate Cadaster of the Republic of Karakalpakstan, regions and the city of Tashkent in the respective districts.

Losses of owners, users, tenants and owners of land plots, as well as losses of agricultural and forestry production are reimbursed before the new owner, user and tenant is presented with documents certifying the right to a land plot. Further, owners, users, tenants and owners of land plots that are seized, and who are given land, in disagreement with certain amounts of losses and losses of agricultural and forestry production can go to court.

With regard to compensation for losses arising out of withdrawal, redemption or temporary occupation of land plots or their part, the value of the land, which is privately owned by legal entities and individuals; the cost of residential buildings, structures and structures, including facilities whose construction has not been completed, as well as those located outside the designated area, if their further use is impossible due to land acquisition; the cost of fruit, protective and other perennial plantations; the value of unfinished agricultural production; and lost profit, will be reimbursed.

However, unauthorized occupied land by persons are not entitled for the above listed compensation.

Estimation of the cost of residential houses, buildings and structures, including objects, the construction of which is not completed, as well as those located outside the designated area, if their further use is impossible due to land acquisition, is carried out by the Khokimiyats of the respective districts through a commission constituted with the deputy Khokim of the district as its head, consisting of representatives of financial and other departments of Khokimiyats, the state inspector for control over the use and protection of land, the self-government body of citizens, the landowner (land user, tenant) from whom land is withdrawn, representative of the enterprise, institution or organization which requires the land, and representatives of other competent bodies as required and as decided by the Khokimiyats.

Valuation of fruit bearing, fruit and berry plantations, as well as grafted trees and other perennial plantations is done to include the cost of seedlings and the cost of planting and growing them before the start of fruit bearing or closure of crowns at current prices during the assessment period. Valuation of non-fruit bearing, fruit-berry plantations, as well as grafted trees and other perennial plantations with uncrowned crown, is made according to the actual expenses incurred.

The cost of unfinished agricultural production, which includes the cost of consumed materials (seeds, mineral and organic fertilizers, toxic chemicals, herbicides, etc.) and work actually performed (preparing the soil for sowing, cleaning the irrigation and drainage network, sowing seeds, watering, processing agricultural crops, etc.), is accepted according to primary accounting documents.

The cost of lost profits of legal entities related to the seizure of land plots with the demolition of buildings and structures located on it is determined on the basis of the average annual income for the last three years taken from the financial activity report for the relevant years and the period required for recovery activities in the new location. The period required for the restoration of activities in the new location is the time for obtaining the land plot, the regulatory deadlines for the design and construction of the same facility to be demolished.

The size of lost profits when excluding land from agricultural production is defined as the sum of the average annual net income from the agricultural land excluded from the

agricultural production multiplied by four years for which the design will be carried out, their irrigation and the development of new lands cultivation and other work to improve soil fertility. The amount of net income for one year is determined based on the average annual net income for the last 3 years per 1 hectare of agricultural land and multiplied by the area of agricultural land being withdrawn.

2.1.3.5. Resolution of Cabinet Ministers No. 3857 dated 17 July 2018

This resolution provides for certain measures for improving the efficiency of preparation and implementation of projects with the participation of international financial institutions and foreign government financial organizations.

The resolution provides for compensating for land and structure in accordance with the provisions of the international funding agencies. In Clause 2, it is specified that payment of compensation for the seizure of land, demolition of houses, other buildings, structures or plantings in the framework of projects with the participation of the International Financial Institutions (IFI) / Foreign Government Financial Organizations (FGFO), if provided for by project agreements, is carried out by authorized bodies in accordance with the requirements of the IFI / FGFO.

Further, the resolution deals with procurement procedures, process of entering into project agreements, identification of projects for financing, modalities of financing project preparatory activities, the procedure for conducting loan negotiations and signing of loan agreements, requirements and structure of project implementation units and its obligations and other matters related to procurement and project implementation.

2.1.3.6. Resolution of Cabinet Ministers No. 5495 dated 01 August 2018

This resolution provides for certain measures for further improving the investment climate, measures to stimulate the attraction of direct investments, strengthen investor confidence in the consistency of government policy in this direction and increase the responsibility of government agencies in working with investors.

The resolution stipulates that the affected person will have the right for prior information about withdrawal of land and its cost and other benefits entitled before a decision is made on the withdrawal of such land.

Further, payment for losses is to be made prior to dispossession of the assets and the resolution in clause 2 specifies that demolition of residential, industrial premises, other buildings and structures owned by individuals and legal entities when seizing land plots is allowed after a full refund of the market value of real estate and losses caused to owners in connection.

The resolution also provides for long lease of non-agricultural land for enterprise with foreign investment and simplified criteria for investment to encourage foreign investment.

The resolution “On Approval of the order of the appointment and payment of social allowances and material (financial) assistance to low income families” dated February 15, 2013 #44. This resolution determines the procedure for the appointment and payment of Makhalla allowances for families with children under the age of 14 years, allowances for child care until the age of two years and allowance for low income families. According to this resolution the following types of families are entitled for allowances:

- families who have lost both parents and children involved in family education;

- families where one or both parents are disabled children;
- widow(er), raising two or more children under the age of 14, living separately from other relatives;
- family with disabled children;
- mothers or fathers who are bringing up the children in a single-parent family. In this case the fact of child rearing mother (father) in an incomplete family established by makhalla;
- families in which one or both parents are unemployed who has been registered at centers to promote employment and social protection of the population as job-seekers;
- single retired persons.

2.1.3.7. Civil Code of Republic of Uzbekistan, 1995

The civil code confirms the supremacy of international treaty or agreement over the civil code, as such if an international treaty or agreement establishes rules other than those stipulated by civil legislation, the rules of the international treaty and agreement would prevail.

The code describes the bases for the origin of civil rights and duties arise from the bases provided by legislation and that property rights subject to state registration arise from the time of registration of the respective rights to the property, unless otherwise established by a Law. Similarly, the right of ownership and other rights in things to immovable things, their arising, passage, limitation and termination of these rights are subject to state registration. Fundamentally, the right to a property will stay only if it is registered under the State.

A person whose right has been violated may demand full compensation for the losses caused to him unless a Law or a contract provides for compensation for losses in a lesser amount. Losses means the expenses that the person whose right was violated made or must make to reinstate the right that was violated, the loss of or injury to his property (actual damage), and also income not received that this person would have received under the usual conditions of civil commence if his right had not been violated (forgone benefit). If the person who has violated a right has received income thereby, the person whose right has been violated has the right to demand along with other losses, compensation for forgone benefit in a measure not less than such income.

2.1.3.8. Labor Code and Employment Law

The Labor Code and Employment Law of the Republic of Uzbekistan is the main legislation regulating labor relations of individuals employed with labor contract by enterprises, institutions, organizations of all type of ownership forms, including contracted by individuals. These legislations are considering interests of employees and employers provide efficient function of labor market, just and secure labor conditions, protection of labor rights and employees health, promote to growth of labor productivity, increase of work quality, raising on this matter welfare and social livelihood level of the population.

2.1.3.9. Elimination of the forced labor in Uzbekistan

The GoU and the International Labor Organization (ILO) are actively cooperating on the elimination of the forced labor. Currently, 14 conventions of the ILO have been ratified, including 8 fundamental ones, which are focused on the preventing of forced labor. The

Republic adopted the National Plan of Action for the implementation of ILO conventions, the Country Program on Decent Work is being implemented, the essence and content of which are aimed at developing national labor legislation, the labor market, providing employment, social protection and dialogue with the population according to the ILO methodology. With the direct participation of experts from this organization, the use of child and forced labor in agriculture is monitored.

This project will be implemented based on the national legislation of prohibition of the forced labor in Uzbekistan. In addition to the Labor Code two main documents were approved by Oliy Majlis during two last years. Decree of the Cabinet of Ministers # 349 dated 10 May 2018 "On additional measures on the elimination of forced labor in Uzbekistan" prohibits and provides detail information on types of forced labor, types of governmental organizations and its staff, monitoring mechanism of local governorates (hokimiyats). According to this decree a financial resource of Public Works Fund, which was established under the Ministry of Employment and Labor Relations will be used for any public works in Uzbekistan.

The national legislation was approved by the new law recently approved by Oliy Majlis. On June 21, 2019 the Oliy Majlis of the RoU approved the Law #-545, about Ratification of Protocols to the Convention 29 International Labor Organization 1930 on Forced Labor (Geneva, June 11, 2014). The adoption of this Protocol allows to establish new obligations to prevent forced labor, protect its victims and provide them with access to remedies; create a positive image of Uzbekistan in relations with the International Labor Organization and strengthen constructive cooperation with international human rights organizations.

2.1.3.10. Cultural Heritage, the President Decree # 4068, dated December 19, 2018

The article 49 of the Constitution of the RoU stresses that all citizens of the country are responsible for the preservation of the historical monuments and other cultural values. The Resolution of the President of the Republic of Uzbekistan identifies measures for the improvement of activities for protecting of cultural heritage objects, particularly, in the historical centers such as Bukhara, Samarkand, Khiva and Shahrisabz cities which are included in the UNESCO World Heritage List. This resolution presents responsibilities and tasks of the Ministry of Culture for protection, scientific study, rational use of the cultural heritage objects. It is planned to organize the Main Scientific and Production Administration for the Protection and the use of cultural heritage sites under the Ministry of Culture of the Republic of Uzbekistan, which defines the main tasks of this department as follows:

- implementation of state control on the protection and use of objects of cultural heritage, including objects of archaeological heritage, museum exhibits and collections, as well as cultural values;
- maintaining the state cadaster of objects of cultural heritage, identification, documentation and registration of objects with historical, scientific, artistic or other cultural value, definition of categories and protection zones of objects of immovable cultural heritage, as well as ensuring their rational use;
- implementation of historical and cultural expertise and design estimates documentation, conducting continuous scientific and technical control over the

implementation work to preserve the value and uniqueness of objects of cultural heritage.

- establishing close cooperation with scientists, craftsmen, restorers and experts, supporting the development of unique methods, traditions and schools of repair studies, the implementation of public control.

2.2. AIIB Environmental and Social Framework

The proposed project is being financed by AIIB and therefore its Environmental and Social Framework will be applicable to the project.

2.2.1. Key Elements of Environmental and Social Framework

Environmental and Social Policy

The objective of this overarching policy is to facilitate achievement of these development outcomes, through a system that integrates sound environmental and social management into Projects. The overarching policy comprises Environmental and Social Policy (ESP), and Environmental and Social Standards (ESSs) and Environmental and Social Exclusion List. The ESP sets out mandatory requirements for the Bank and its Clients relating to identification, assessment and management of environmental and social risks and impacts associated with Projects supported by the Bank.

Environmental and Social Standards

The environmental and social standards (ESSs) set out more detailed mandatory environmental and social requirements, as described below.

Environmental and Social Standard 1 (ESS 1). The ESS 1 aims to ensure the environmental and social soundness and sustainability of Projects and to support the integration of environmental and social considerations into the Project decision-making process and implementation. ESS 1 is applicable if the Project is likely to have adverse environmental risks and impacts or social risks and impacts (or both). The scope of the environmental and social assessment and management measures are proportional to the risks and impacts of the Project. ESS 1 provides for both quality environmental and social assessment and management of risks and impacts through effective mitigation and monitoring measures during the course of Project implementation. The ESS 1 defines the detailed requirements of the environmental and social assessment to be carried out for any project to be financed by the Bank.

Environmental and Social Standard 2 (ESS 2). The ESS 2 is applicable if the Project's screening process reveals that the Project would involve Involuntary Resettlement (including Involuntary Resettlement of the recent past or foreseeable future that is directly linked to the Project). Involuntary Resettlement covers physical displacement (relocation, loss of residential land or loss of shelter) and economic displacement (loss of land or access to land and natural resources; loss of assets or access to assets, income sources or means of livelihood) as a result of: (a) involuntary acquisition of land; or (b) involuntary restrictions on land use or on access to legally designated parks and protected areas. It covers such displacement whether such losses and involuntary restrictions are full or partial, permanent or temporary. The ESS 2 defined detailed requirements of resettlement planning of the projects involving involuntary resettlement.

Environmental and Social Standard 3 (ESS 3). The ESS 3 is applicable if Indigenous Peoples are present in, or have a collective attachment to, the proposed area of the Project, and are likely to be affected by the Project. The term Indigenous Peoples is used in a generic sense to refer to a distinct, vulnerable, social and cultural group possessing the following characteristics in varying degrees: (a) self-identification as members of a distinct indigenous cultural group and recognition of this identity by others; (b) collective attachment to geographically distinct habitats or ancestral territories in the Project area and to the natural resources in these habitats and territories; (c) customary cultural, economic, social or political institutions that are separate from those of the dominant society and culture; and (d) a distinct language, often different from the official language of the country or region. In considering these characteristics, national legislation, customary law and any international conventions to which the country is a party may be considered. A group that has lost collective attachment to geographically distinct habitats or ancestral territories in the Project area because of forced severance remains eligible for coverage, as an Indigenous People, under ESS 3. The ESS 3 defines the detailed requirements of People planning, in case such groups are present in the project area and are likely to be affected by the project.

2.2.2. Applicability of ESF for Proposed Project

The BRNIP triggers not only the local environmental and social laws and regulations, but also the ESP and ESS of AIIB. Under BRNIP, ESS 1: Environmental and Social Assessment and Management and ESS 2: Involuntary Resettlement are applicable. The ESIA addresses ESS 1 and the Abbreviated Resettlement Plan (ARP) addresses ESS 2. Standards on Indigenous Peoples (ESS 3) is not be triggered under BRNIP.

The Bank requires its clients (RC in this case) to manage the environmental and social risks and impacts associated with its project in a manner designed to meet the ESP and the applicable ESSs. The present ESIA has been developed in compliance with the ESS 1 and ESS 2. The applicability of ESP and ESSs for the proposed project is presented in **Table 2.1**.

Table 2.1: Applicability of ESP and ESSs for the proposed project

Environmental and Social Standards		Applicability	Triggering Status
ESS 1	Environmental and Social Assessment and Management	ESS 1 is applicable if the Project is likely to have adverse environmental risks and impacts or social risks and impacts (or both)	Yes, since the proposed project is likely to have negative environmental and social impacts. The present ESIA has been conducted in compliance with the ESS 1.
ESS 2	Involuntary Resettlement	ESS 2 is applicable if the project is likely to cause involuntary resettlement impacts.	Yes. The project involves economic displacement due to the siting of the project. Given such impacts, though low intensity in nature, ESS 2 is triggered.
ESS 3	Indigenous Peoples	ESS 2 is applicable if Indigenous People are present in the project area and they	No, since no Indigenous people, as defined in the

Environmental and Social Standards		Applicability	Triggering Status
		are likely to be affected by the project.	ESS 3 are present in the project area.

2.3. International Agreements

The international treaties and agreements in environmental aspect relevant to this project include:

- Convention on Long-Range Trans-boundary Air Pollution (Geneva, 1979)
- Vienna Convention for the Protection of the Ozone Layer (Vienna, 1985)
- Montreal Protocol on Substances that Deplete the Ozone Layer (Montreal, 1987)
- Convention on the Control of Movements of Hazardous Wastes and their Disposal (Basel, 1989)
- Convention on Environmental Impact Assessment in Trans-boundary Context (Espoo, 1991)
- Convention on the Protection and Use of Trans-boundary Water Courses and International Lakes (Helsinki, 1992)
- Convention on the Trans-boundary Effects of Industrial Accidents (Helsinki, 1992)
- United Nations Framework Convention on Climate Change (New York, 1992)
- Convention on Biological Diversity (Rio de Janeiro, 1992)
- United Nations Convention to Combat Desertification in those countries experiencing serious drought and/or desertification, particularly in Africa (June 17, 1994)
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES, Washington, 1997)
- Agreement on the Conservation of African-Eurasian Migratory Waterbirds (1995), signed in the Hague in the framework of the Convention on the Conservation of Migratory Species of Wild Animals (Bonn, 1998)
- Convention on the Wetlands of International Importance Especially as Waterfowl Habitat (Ramsar, 2001)
- Agreement under the United Nations Framework Convention on Climate Change (Paris Agreement, 2016).

2.4. Comparison of national legislation with AIIB Policy on Environmental and Social aspects

A comparison between the GoU national legislation discussed under **Section 2.1** and AIIB ESP and ESS described under **Section 2.2** is given in **Table 2.2**. The project will have to comply with both these requirements; in case of any conflict however, more stringent of the two sets of legislation/policy/standard would be applicable to the project.

Table 1.1: Comparison of national legislation with AIIB Policy on Environmental and Social aspects

ASPECT	AIIB	NATIONAL UZBEK REGULATIONS	HARMONIZED FRAMEWORK
Environmental Policy and Regulations	There are AIIB Environmental and Social Framework, Environmental and Social Policy and Environmental and Social Standards	Environmental assessment and permitting procedure in Uzbekistan are set out in the following laws and regulations: **(i)** The Law on Nature Protection (1992); **(ii)** The Law on Environmental Expertise (2000), and **(iii)** Decree of Cabinet Ministries (DCM) # 949 (2018) on "Regulation on Environmental Expertise" Environmental legislation base consists of the more than 100 laws, by-laws and other regulative documents, such as sanitarian norms and rules, standards and etc.	In most of the cases national requirements and standards for environment quality are matching with AIIB Policy and Standards (For example, Environmental Assessment is compulsory for both requirements). However, there are some parameters when national and AIIB requirements and standards are different (For example, National legislation does not require a preparation of separate EMP or any other environmental documents/plans/checklists for project). In such cases more stringent provisions will apply for the project
Screening and Categorization	AIIB carries out project screening and categorization at the earliest stage of project preparation when sufficient information is available for this purpose. In the case where AIIB and national categorization requirements differ, the more stringent requirement will apply. This refers mostly in the case of deciding about Category C subprojects - the national EA legislation doesn't refer to small scale activities, including construction and rehabilitation of various buildings. In these cases,	In Uzbekistan the EIA system is based on the State Ecological Expertise, which is regulated by Law # 73-II on Ecological Expertise (25.05.2000) and by DCM # 949 On approval of the Regulation of the State Ecological Expertise (22.11.2018). The category of the project is defined in accordance with Appendix 1 to DCM # 949. The Regulation stipulates 4 categories for development: • Category I (High Risk), • Category II (Middle Risk), • Category III (Low Risk), • Category IV (Local Impact). If the activity is not included into the Appendix 1 to the regulation, EIA is not conducted. Location of the potential project is not considered during categorization	AIIB and Uzbekistan project categorization could be harmonized by accepting the following principle: **AIIB** / **Uzbekistan (I-IV)** Category A; / Category I Category A / Category II in same cases Category B / Category II (mostly) Category B / Category III-IV Category C / Not included in the Attachment 1. The proposed project has been assessed as Category B in accordance with AIIB ESF.

ASPECT	AIIB	NATIONAL UZBEK REGULATIONS	HARMONIZED FRAMEWORK
	the client will apply the AIIB criteria. Categorization into Category A, B, C, FI The project categorization depends on location, component presenting the highest environmental or social risk, including direct, indirect, cumulative and induced impacts, as relevant, in the Project area.		
Environmental Impact Assessment Report	In accordance with Environmental and Social Policy, ESIA processes report for category A projects includes the following chapters: (a) description of the Project; (b) policy, legal and administrative framework, including the international and national legal framework applicable to the Project; (c) scoping, including stakeholder identification and consultation plan; (d) analysis of alternatives, including the "without Project" situation; (e) baseline environmental and social data; (f) evaluation of environmental and social risks and impacts; (g) public consultation and information	DCM # 949 (2018) defines content of EIA report for project belonged to categories I-III. The report has to include: (i) baseline data, (ii) project description, (iii) anticipated environmental impacts, (iv) waste management, (v) analysis of emergency situation, and (vi) and anticipated changes due to project implementation. Information on applicable laws and regulation usually is presented in "Introduction" part. For the projects of category IV, the EIA report is more simplified.	The present ESIA has been prepared in fulfilling the national as well as AIIB requirements.

ASPECT	AIIB	NATIONAL UZBEK REGULATIONS	HARMONIZED FRAMEWORK
	disclosure; and (h) development of mitigation, monitoring and management measures and actions in the form of an ESMP or ESIA. For the category B project, the scope of EIA and report should be narrow than for category A projects.		
ESMP	ESMP should be prepared and should specify, along with the proposed mitigation activities, a monitoring plan and reporting requirements, institutional arrangements for ESMP implementation. For sub-projects category B with low impact ESMP checklist has to be filled.	National legislation on EIA requires to identify possible impacts, but it does not require a preparation of separate EMP or any other environmental documents/plans/checklists. There is no requirement on environmental monitoring with specification of monitoring parameters and location.	An ESMP has been prepared and included in the present ESIA.
Public Consultations and Disclosure	The Sub-borrower is responsible for conducting at least one meaningful consultation for all Categories A, B and C projects to discuss the issues to be addressed in the EMP or to discuss the draft EMP itself.	Conducting of public consultation is not mandatory. It may be conducted, if required at the time of the EIA (second stage of EIA). Advertisement on conduction of public consultation have to be announced in the media.	Public consultations have been carried out with the stakeholders, affected people, NGOs as part of the present ESIA, in line with the AIIB requirements. The feedback received from the Public Consultations has been used to finalize the present ESIA.
Requirements on Cultural Heritages	AIIB ESS 1 requires development of Cultural Recourses field-based survey to conserve cultural resources and avoid destroying or damaging them under the Project	Law of RoU "On protection and usage of cultural heritage objects" states that a project's design for rehabilitation of cultural heritage needs to be approved by the Ministry of Culture (former Ministry of Culture and Sport).	Chance Find procedures have been included in the ESIA.

ASPECT	AIIB	NATIONAL UZBEK REGULATIONS	HARMONIZED FRAMEWORK
Involuntary Resettlement (IR)	Environmental and Social Policy and Environmental and Social Standards (ESS 2 – Involuntary Resettlement).	Uzbek legislation regulating involuntary resettlement: Land Code of the Republic of Uzbekistan (1998); Housing Code of the Republic of Uzbekistan (1998); Civil Code of the Republic of Uzbekistan (1995); Decrees and Orders of the President of the Republic of Uzbekistan (Decree of the President of the Republic of Uzbekistan No. 3857 dated 16 July 2018; Decree of the President of the Republic of Uzbekistan No. 5490 dated 27 July 2018; Decree of the President of the Republic of Uzbekistan No. 5495 dated 1 August 2018; Order of the President of the Republic of Uzbekistan No. 5491 dated 3 August 2019); Resolutions of the Cabinet of Ministers (No. 97 dated 29.05.2006; No. 146 dated 25.05.2011; No. 911 dated 16 November 2019; No. 44 dated 15 February 2013).	In most of the cases national requirements and standards for IR are different from AIIB Policy and Standards in terms of providing support and compensation to PAP without any official titles/legal rights. In such cases the Road Committee will follow the principles of AIIB's ESP. An ARP has been prepared for the resettlement impacts of the proposed project.
Categorization	AIIB carry out project screening and categorization at the earliest stage of project preparation when sufficient information is available for this purpose. Type of project categorizations are A, B, C, FI.	According to legislation, there is no categorization in Resettlement documents.	Under the BRNIP will be screened and categorized using the ESIA, RPF.
Compensation entitlements	A. PAPs (Project Affected Persons) with the formal title has to be compensated for lost land/other assets.	PAPs with the formal title (status) is compensated for lost land/other assets. PAPs with legalizable or no legal title (status).	PAPs with the formal title will be compensated for lost land/other assets. No reconciliation needed.

ASPECT	AIIB	NATIONAL UZBEK REGULATIONS	HARMONIZED FRAMEWORK
	B. PAPs with the legalizable title have right to be compensated for lost land and assets after the EAs helps them in legalizing their assets. C. PAPs with no legal title are compensated for lost non-land assets.	Legalizable are not distinguished and considered non-legal as legalization is a burden of the PAPs. Non-legal PAPs have no right to be compensated for land and non-land assets.	For illegal and legalizable PAPs resettlement assistance will be paid to the project affected persons in accordance with the AIIB policies.
Compensation	A. Permanent loss of land. Replacement land as a preferred option or cash compensation at the full market rate. At least for legal/legalizable PAPs.	A. Permanent loss of land. Replacement land for legal PAPs.	A. Same in principle/application for legal PAPs. Reconciliation needed both for principle and application to allow the compensation of all non-land losses of legalizable and non-legal PAPs. This could be achieved through a special Decree for AIIB project or through the inclusion of additional safeguard covenants into the loan agreements which are equivalent of the international treaty or agreement.
	B. Replacement of leased land. Based on replacement of lost income through cash compensation of gross income x the remaining lease years or through a replacement land lease.	B. Replacement of leased land. Based on lease replacement and compensation in cash all losses including lost profit.	B. Same in principle. Application to be further improved. No reconciliation needed. To be reflected through an instruction for AIIB projects.
	C. Loss of structures/ buildings. Cash compensation at replacement cost for lost item free of depreciation, transaction costs, and other deductions.	C. Loss of structures/buildings. Cash compensation at market cost for lost item free of depreciation, transaction costs, and other deductions.	C. No reconciliation of principles and application needed. However, it is required the establishment of a protocol allowing the compensation of structures/ building at replacement cost, when the salvaged

ASPECT	AIIB	NATIONAL UZBEK REGULATIONS	HARMONIZED FRAMEWORK
			materials remain with the developer or landowner provides full reimbursement to the owner. This can be formalized without legal reform but only a Decree for AIIB projects or through the inclusion of additional safeguard covenants into the loan agreements which are equivalent of the international treaty or agreement.
	D. Loss of indirectly affected items. Non affected parts of an asset no longer usable after impact will have to be compensated as well.	D. Loss of indirectly affected assets. Law requires that all losses including lost profits are to be compensated to all legal PAPs.	D. No reconciliation of principles and application needed.
	E. Business losses. Reimbursement of actual losses plus business re-establishment costs. For application based on tax declared income for a period of business stoppage. In absence of tax declaration based on maximum non-taxable salary.	E. Loss of business. Cash compensation at market value for all damages/opportunity costs incurred. The burden of proving opportunity costs rest on the PAP based on recognized documented evidence but no clear methodology.	E. Application reconciliation needed to define a clear methodology and distinguish short- and long-term losses.
	F. Loss of trees: i) Unproductive. Irrespective of legal land occupancy status compensation at market rate. Application based on tree type/ wood volume or other methods ensuring PAP rehabilitation.	F. Loss of unproductive and productive trees. Unproductive as well as productive trees affected by a public project are to be compensated.	F. Same in principle, different in application. Application reconciliation is needed through a decree for AIIB projects for ensuring systematic law implementation and also by providing compensation by cash.

ASPECT	AIIB	NATIONAL UZBEK REGULATIONS	HARMONIZED FRAMEWORK
	ii) Productive. Compensation at replacement cost based for application on various methods: tree reproduction cost, income lost (x tree type x market value of 1-year income x full production years lost). G. Loss of crops. Compensation of crop in cash at market price.	G. Loss of crops. Loss of crops to be compensated. There are two forms of compensation of loss of crops: i) compensation of uncompleted agriculture production and ii) compensation of lost profit by multiplying four (years) average income for the last three years.	G. No reconciliation for policy is needed but the reconciliation of policy application is necessary to ensure that crops are compensated at the moment close as much as possible to the date of calculation lost profit.
Involuntary Resettlement Planning, assessment, and valuation of impacts	Resettlement Plan (RP). RP preparation includes: a) impacts assessment/PAP census; b) definition of entitlements, income/livelihood restoration strategy, compliance & grievance mechanisms, institutional arrangements; c) consultation results; d) monitoring schemes; e) budget and implementation schedule. RP requires the following surveys: i. Measurement survey. Measures all affected items. ii. PAP Census. Identifies all PAPs and establishes legitimate beneficiaries based on legal status.	Resettlement Plan. There are no requirements to prepare integrated and stand-alone RPs. LAR planning entails similar but less extensive/simpler assessment/survey efforts than AIIB Policy, as detailed below: i. Measurement survey. Land and buildings impacts measured. Other impacts identified but not measured; ii. PAPs Identification. Identifies only legal PAPs; iii. Socio-economic survey. No comparable requirements exist; iv. Valuation survey; a) Land: valued at a market rate based on a transactions survey. Valuation includes transaction costs/third party liabilities; b) Buildings and structures. Replacement cost but the salvaged materials remain with the	ARP has been prepared

ASPECT	AIIB	NATIONAL UZBEK REGULATIONS	HARMONIZED FRAMEWORK
	iii. Socio-economic survey. Provides background information on PAP' socio-economic features. iv. Valuation survey a) Land: If land market exists based on a survey of recent transactions; without land market based on land productivity/ income; b) Buildings and structures. The replacement cost of materials, labor and transport and special features of building/structure without discounting depreciation, salvaged materials and transaction costs; c) Trees/crops. Based on the methodology detailed in section Compensation.	developer or landowner provide full reimbursement to the owner; c) Trees/crops. If compensated is provided based on the methodology detailed in section "Compensation" section F. and G. or based on an agreed lump sum.	
Procedural mechanisms	A. Information disclosure. Resettlement-related documents to be timely disclosed in the PAP language. B. Public consultation. Meaningful public consultations are to be held with the PAPs. PAPs should be informed about their entitlements and options, as well as resettlement alternatives.	A. Information disclosure. No disclosure requirement exists. B. Public consultation. Matters of local importance to be publicly discussed with local authorities. But no requirement to consult directly the PAPs.	A. Different in principle and application. Information will be provided during implementation of the BRNIP. B. Same in principle but different in application. public consultations will be conducted during implementation of the BRNIP.

ASPECT	AIIB	NATIONAL UZBEK REGULATIONS	HARMONIZED FRAMEWORK
	C. Grievance procedure. A Grievance Redress Mechanism (GRM) is to be established for each project. Information on GRM to be communicated to the PAPs. D. Asset acquisition conditions. Property can be acquired only after full compensation is paid to the PAPs.	C. Grievance Procedures. Each state agency/ministry must follow to detail instructions (approved by the government) on registering and reviewing the concerns and claims from citizens. New opportunities for claims are provided by virtual Government websites platforms. D. Asset acquisition conditions. Property can be acquired only after full compensation is paid to PAPs.	C. No reconciliation is needed. However, the existing grievance mechanism may be further strengthened with further supplementary measures D. Same in principle, but unsystematic in the application. Application to be improved in order to ensure the implementation of the ESS 2 requirements.
Assistance to vulnerable and severely affected PAP	The special assistance is provided to the PAPs who recognized as vulnerable. In addition, at their pre-project level of livelihoods should be restored/ improved.	There are no special laws or regulations for livelihood restoration due to land acquisition and involuntary resettlement impact. However, there are a number of legislative documents related to social support and livelihood improvement measures considered by the government of Uzbekistan to consider social allowances and needy families through two Cabinet of Ministers resolutions No 44, dated December, 2013) and to consider disabled people through the Law on social protection of disabled people (No 422-dated, March, 2018). Thus, support of vulnerable segments of the population is provided on the regular base by the Government on central and local levels and does not require additional payments in connection with the project implementation.	AIIB ESS 2 will be followed during the BRNIP implementation.

3.PROJECT DESCRIPTION

This Chapter presents a simplified description of the proposed project, its components, and various activities to be carried out during its various phases. An overview of the temporary facilities which will be needed during construction phase is provided in this Chapter. Additionally, human resource requirements, types and estimated quantities of the key construction materials are also taken in to consideration.

3.1. Components of the Project

The Bukhara Road Network Improvement Project (BRNIP) Phase 1 will finance rehabilitation and modernization of critical section of International Road A380 (km 150 – km 228) and will include the following components:

- **Component 1 – Rehabilitation, modernization, and widening of about 78 km of International Road A380.**
    - **Sub-component 1a:** 78-km section from 150+000 km to 228+000 km;
    - **Sub-component 1b:** Land Acquisition and preparation of technical documentation and financing the training related to environmental and social (E&S) aspects.
- **Component 2** – Construction Supervision of implementation of Component 1
- **Component 3** – Preparation of contracts documentation and associated tender documents for approximately an additional 160 km of International Road M37. This component will consist of:
    - **Sub-component 3a:** Conceptual Design and Preparation of Tender documents using Output and Performance-based Road Contracts with Design-Build-Operate-Maintain-Transfer methodology (OPBRC/DBMOT), for about 80 km road segment.
    - **Sub-component 3b:** Detailed Design and Preparation of Tender Documents applying input type contracting for about 80 km road segment.
- **Component 4** – Institutional Strengthening and Capacity Building.
- **Component 5** – Equipment Purchase for quality control involving modern technologies and methods of construction.

The project will help to ensure an effective, safe and sustainable road network in Uzbekistan that meets the requirements of internal and regional connections and contributes to sustainable economic development and the growth of domestic and foreign trade.

3.2. Road Standards and Profiles

3.2.1. Technical and economic parameters

The project section starts at 150 km of road A380 on the border of Kashkadarya and Bukhara regions and ends at 228 km near the bypass road of Bukhara city. The project section of the highway with a total length of around 78 km passes through the territories of Karaulbazar, Kagan and Bukhara districts of the Bukhara region.

There are 40 turns along the highway, with the minimum radius of 180 m and the maximum radius of 3000 m. In order to maximize the use of the existing subgrade, the axis of the road will not be changed.

Geometric design standards have been selected based on traffic flow, road category and relief to ensure safe and unimpeded traffic flow. The road design is based on ShNK 2.05.02-07 "Automobile Roads"[3]. The key parameters of the project road are presented in **Table 3.1**.

Table 3.1: Key parameters of the road project

No.	Name of parameters	Units	Indicators
1.	Administrative value	-	International
2.	Road Category	-	I
3.	Estimated speed	km/h	120
4.	The load on the single most loaded axle of the car	kN/t	130/13
5.	Number of lanes in settlements outside settlements	 quantity quantity	 3 2
6.	Lane width	m	3.75
7.	Roadway Width in settlements outside settlements	 m m	 11.25 x 2 7.5 x 2
8.	Curb Width	m	3.0
9.	The width of the edge strip at the curb	m	0.75
10.	Subway Width in settlements outside settlements	 m m	 56.7 25.1
11.	Cross slope of the carriageway	‰	15; 20
12.	Cross slope of roadsides	‰	40
13.	Climatic zone	-	I
14.	Intersections and junctions	-	at one and at different levels
15.	Type of pavement	-	capital
16.	Type of coating	-	cement concrete
17.	In settlements green area width local width sidewalk width bike track width	 m m m m	 3-5 6 2.25 1.5
18.	The steepness of the slopes of the embankment on: sandy areas irrigated areas		 1:2 1:1,5
19.	Drainage system: in settlements in irrigated areas		 trays ditches

3 Building Regulation of the Automobile Roads (http://ekspertiza.uz/info/reguls/ShNQ_2_05_02.pdf)

3.2.2. Route plan

The axis of the upgraded road has been selected considering the maximum use of the existing axis and subgrade of the road, minimum damage to agriculture land, minimum impact on buildings, and the reorganization of utilities.

3.2.3. Longitudinal profile

During designing the longitudinal profile, the following factors were considered:

- the minimum permissible elevation of pavement over the designed pipes;
- the carriageway of the designed bridges;
- the maximum possible use of existing pavement.

The road profile has been designed in accordance with requirements of ShNK 2.05.02-07, to ensure the stability and strength of the upper part of the subgrade and pavement, and the elevation of the surface of the coating above the calculated level of groundwater or long-standing surface water, as well as above the surface of the earth in areas with unsupported surface runoff or above the level of short-term standing surface water.

3.2.4. Road Cross Sections

In all the sections of the project road, the cross section is arranged in two carriageways with two traffic lanes each (2+2 lanes). Traffic lanes in this proposal are 3.75m wide, to guarantee enhanced and homogeneous safety level across the road.

When the road passes through the settlements, a local driveway (service road) is provided on both sides of the road for the continuous movement of transport. The carriageway would be sloping along the edge. Sidewalks and bicycle paths are arranged 2 m wide outside the local passage. See **Figures 3.1** and **3.2** for the road cross sections in urban and rural areas, respectively.

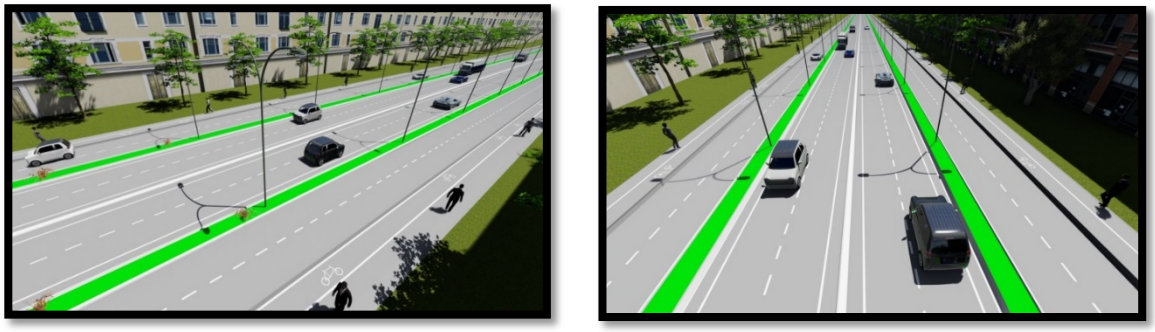


Figure 3.1: View of Green Zones of the Road in Settlement area

Figure 3.2: View of the Road in Rural area

The project provides for bicycle lanes and pedestrian walkways in sections of the highway near populated areas; see **Figure 3.3**.

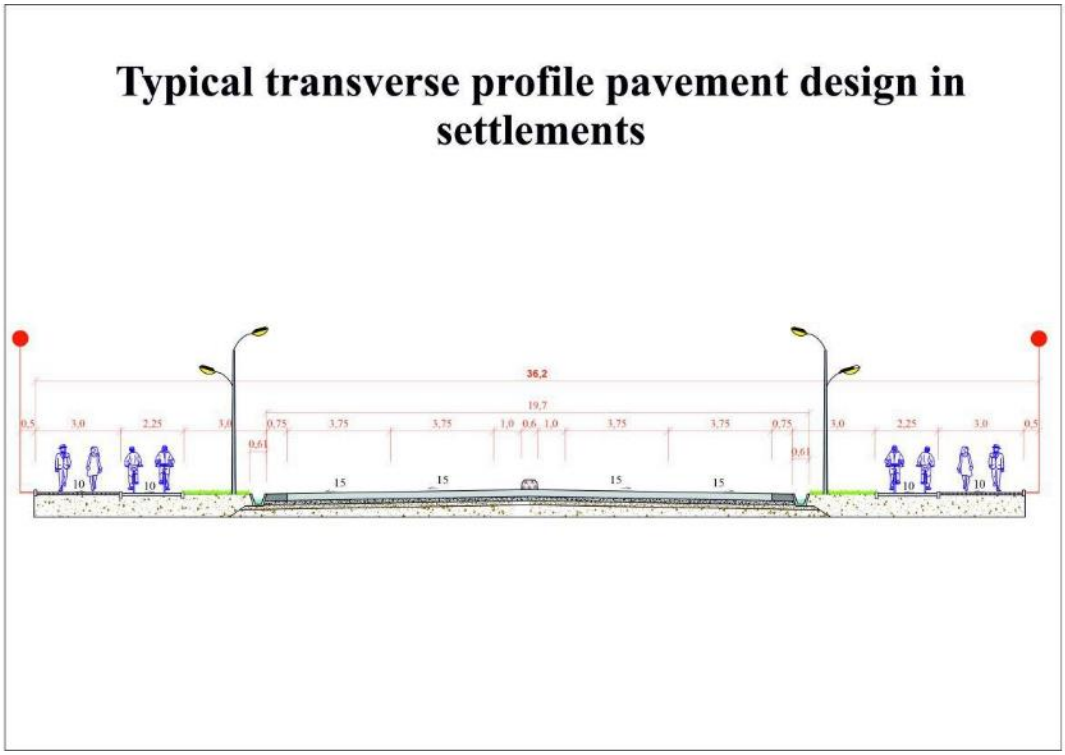


Figure 3.3: Transverse profile pavement design in settlement

3.2.5. Road Pavement

The reconstruction of the road pavement considers the importance and function of the road, traffic volume, reliability and efficiency, availability of local building materials, climatic and soil-hydrological conditions, as well as operating and maintenance conditions of the road.

Cement concrete pavement has been proposed for the carriageway of the main road. The existing asphalt concrete pavement will be used as a base. The pavement of interchanges will be asphalt-concrete.

The cement-concrete pavements for main road are designed for prospective traffic intensity considering their average service life before overhaul of 20 years (MKN 41-2008 Industrial Standards for Overhaul Service Life of Rigid Road Closets).

For the main road, the following road pavement design was adopted by the project:

- monolithic cement concrete pavement;
- geotextile laying with the density;
- top layer of the base made of gravel and sand mixture treated with cement;
- the bottom layer of the base made of gravel and sand mixture.

Construction layers of road pavement are shown in **Figure 3.4**.

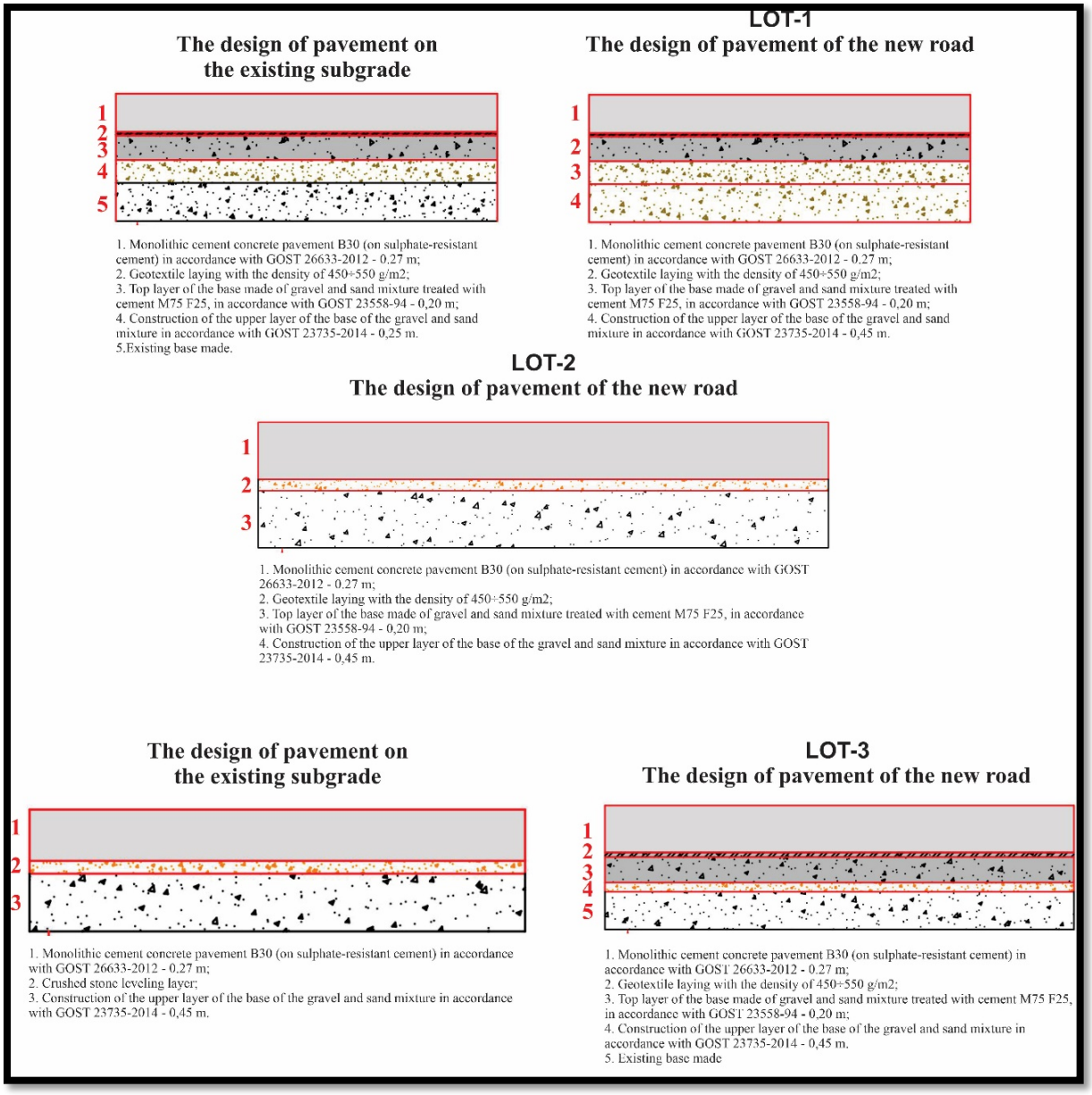


Figure 3.4: Construction layers of road pavement

3.3. Structures

3.3.1. Culverts

A total of 30 pipe culverts will be constructed as part of the proposed project. these culverts are listed in **Table 3.2**.

Table 3.2: List of culverts

No	Location of the pipe, km	Pipe diameter, m	No	Location of the pipe, km	Pipe diameter, m
1	152+70	1,0	16	208+90	1,0
2	154+20	1,0	17	211+20	1,2
3	156+50	1,0	18	211+60	2,0
4	157+00	N/A	19	212+30	1,2
5	158+40	1,2	20	213+40	1,0
6	160+80	1,2	21	214+20	1,0
7	162+90	1,2	22	215+00	N/A
8	164+70	1,2	23	219+80	N/A
9	167+10	1,2	24	221+00	N/A
10	168+90	N/A	25	225+30	1,2
11	172+10	1,2	26	165+80	N/A
12	174+00	N/A	27	212+90	N/A
13	199+20	N/A	28	205+20	N/A
14	205+90	1,0	29	214+00	N/A
15	206+75	1,0	30	224+00	N/A

3.3.2. Bridges

There are 14 existing bridges in the project road, six of these bridges will be replaced (i.e., the existing bridges will be dismantled and new bridges will be constructed). The existing bridges at 184+00 km, 215+900 and 227+100 km are in good condition and will not require to be replaced or re-constructed. The bridges at 217+500 km, 224+400 km and 228+350 km are to be dismantled and removed since there are no watercourses crossing the road anymore at these locations. The bridge at 224+900 km will be replaced with a reinforced concrete pipe. See **Table 3.3** for a list of these bridges.

Table 3.3: List of bridges

No.	Name and location of structures	Notes
1	Bridge over the Amu-Bukhara Canal at 184+00 km	Bridge is in good condition; will not be replaced.

No.	Name and location of structures	Notes
2	Bridge over the Kuyumazar Canal at 200+300 km	Bridge to be replaced
3	Bridge over the collector at 200+700 km	Bridge to be replaced
4	Bridge over the collector at 202+600 km	Bridge to be replaced
5	Overpass through the railway station Kagan at 208 km	Bridge to be replaced
6	Bridge over the collector at 212+300 km	Bridge to be replaced
7	Bridge over the Irrigation canal at 215+900 km	Bridge is in good condition; will not be replaced.
8	Bridge over the collector at 217+500 km	Watercourse missing construction dismantle
9	Bridge over the Irrigation canal at 220+800 km	Bridge to be replaced
10	Bridge over the Irrigation canal at 221+070 km	Bridge to be replaced
11	Bridge over an inactive collector at 224+400 km	Bridge to be removed
12	Bridge over the collector at 224+900 km	Bridge to be replaced
13	Bridge over the collector at 227+100 km	Bridge is in good condition; will not be replaced.
14	Bridge over the Juyzar canal at 228+350 km	Repair and restoration of the lower block

3.3.3. Interchanges

It is planned to construct five new interchanges on the A380 road as part of the proposed project. The main purpose of these interchanges is to avoid level crossings that can disrupt the traffic flow and also pose traffic safety issues. These interchanges are listed in **Table 3.4**, their locations shown in **Figure 3.5**, whereas their layouts are shown in **Figures 3.6** to **3.10**. Typical drawings of interchange are given in **Annex A2**.

Table 3.4: List of Interchanges

No	Interchange Location
1	152 km
2	159 km
3	170 km
4	181 km
5	194 km

Figure 3.5: Locations of new interchanges

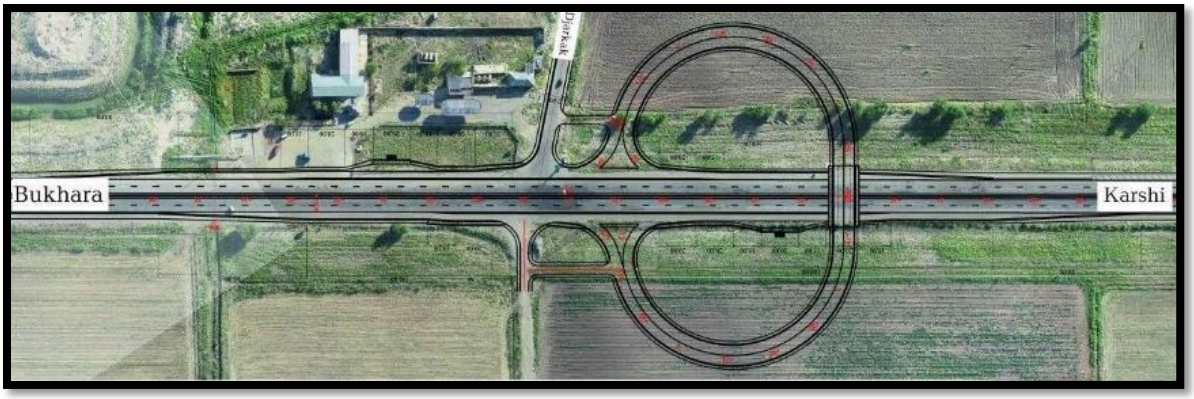


Figure 3.6: New interchange at 152 km

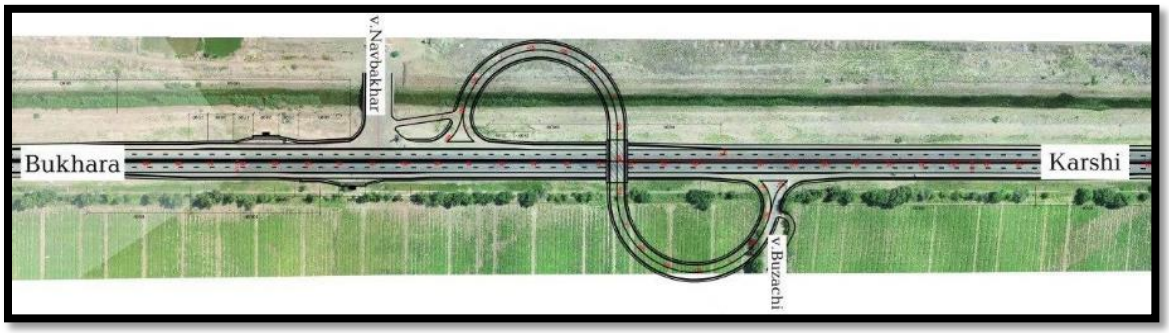


Figure 3.7: New interchange at 159 km

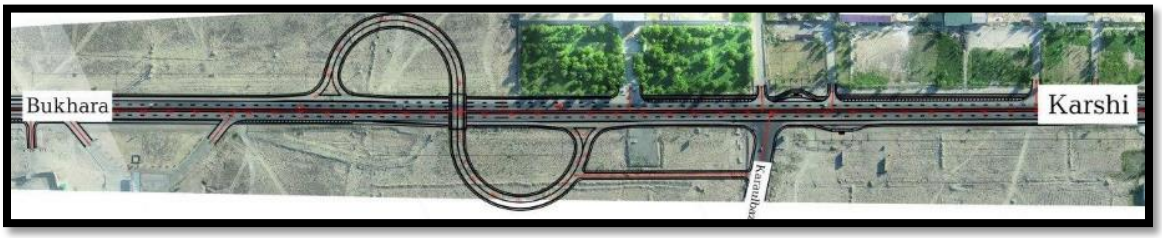


Figure 3.8: New projected interchange on 170 km

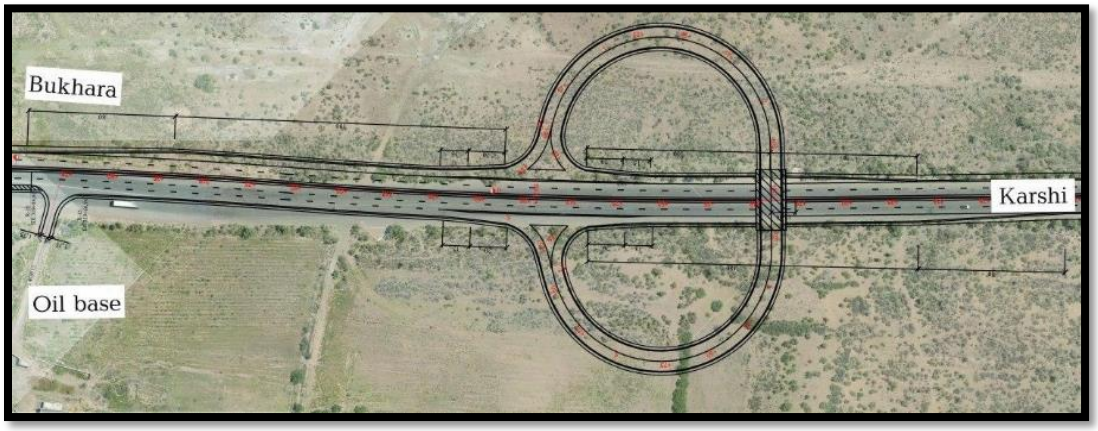


Figure 3.9: New interchange at 181 km

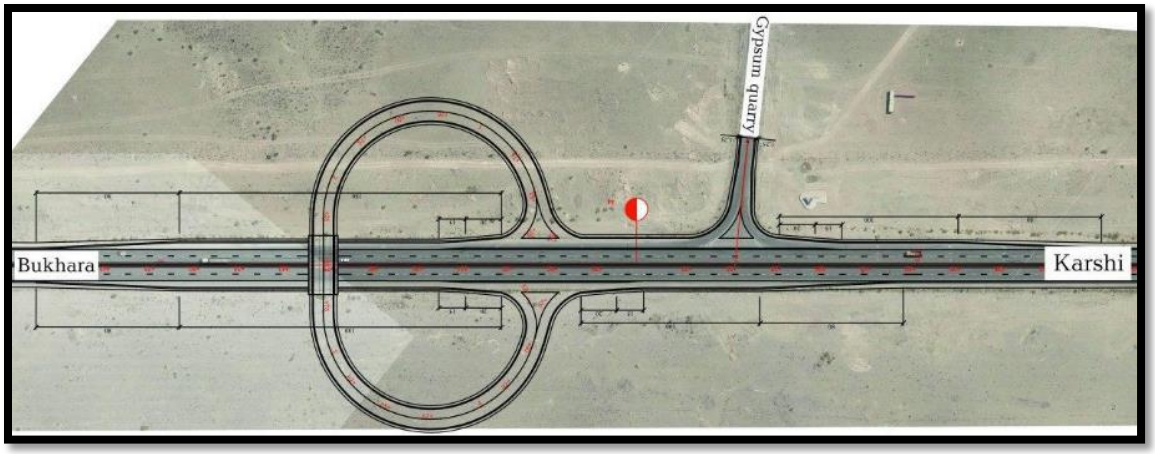


Figure 3.10: New interchange at 194 km

3.4. Road devices

Road devices are designed in accordance with the requirements of SNK 2.05.02-07 "Automobile Roads". Road signs, fencing and marking of the road are provided for traffic regulation.

Installation of road signs is provided in accordance with GOST standard 10807-78 for "Road Signs" and GOST standard 23457-86 for "Technical Means of Traffic Management". In combination with road signs, the marking of the road will be in accordance with GOST 23457-86.

On the axis of the dividing strip of the road, there will be two-sided single-level road group fences with a shock absorber console, see **Figure 3.11** for its typical design.

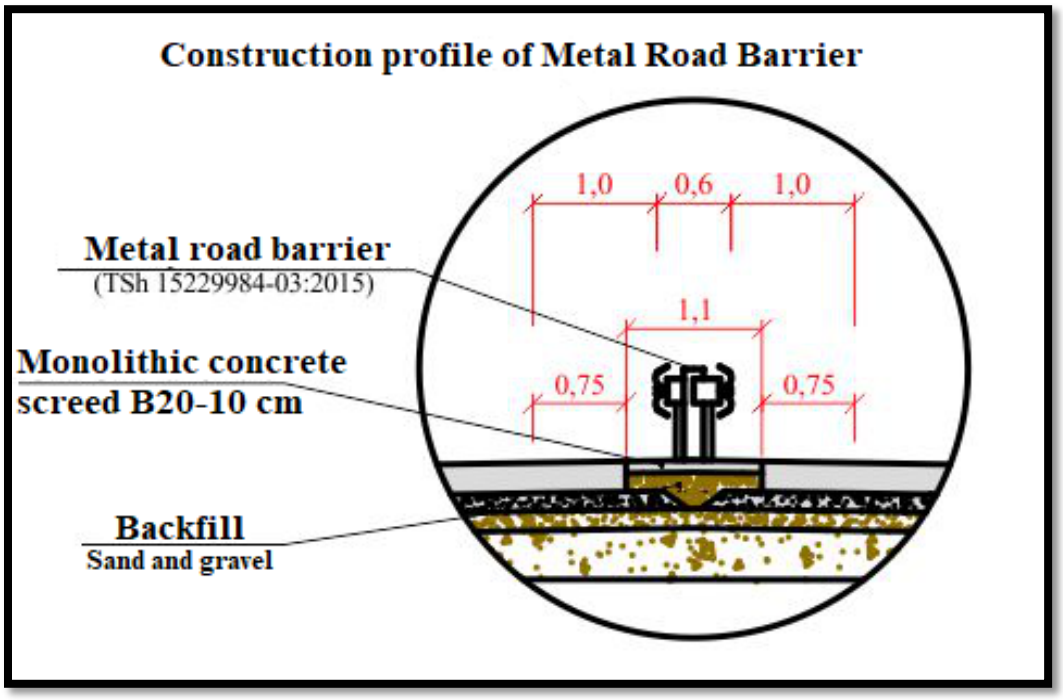


Figure 3.11: Construction profile of Metal Road Barrier

3.5. Road construction materials

The material required for road construction will include borrow material (mostly earth and clay), cement, stones, and sand.

The fill material, mostly soil, to be obtained from borrow areas near the construction sites. These borrow areas have not been identified yet however efforts will be made to select areas outside cultivation fields.

Stones and sand will be obtained from licensed quarries; Ziadin, Tsvetuschy, Zhingyldy quarries located near the project area can be used for this purpose.

Cement will be procured locally from companies such as Transyulqurilish and Bukhara ABC (approximately 6-16 km east of the Project area); other sources of cement may also be found closer to the site.

Approximately 2530 m3 of technical water and around 9.5 m3 of potable water will be needed during the construction phase on a daily basis. Most technical water will be sourced from the canals adjacent to the construction sites. Potable water will be sourced from existing water supply pipelines, or will be provided to camps in bottles. The final locations of the extraction points (for both technical and potable water) will require the approval of the PIU Engineer and the RC prior to the start of extraction to ensure that over extraction of water resources does not happen. Potable water will also need to be tested regularly throughout the construction period to ensure it meets the drinking water standards of GoU.

3.6. Construction Activities

During the construction phase the following activities will be undertaken:

- **Land Acquisition** - Under AIIB ESP, the Employer must prepare the Abbreviated Resettlement Plan (the ARP). Then, the PIU will implement the plan and acquire the land before the commencement of the construction works at any part of the site.
- **Site Clearing Works** - The Works include the following site clearing works within or adjacent to the Road Project, in accordance with the drawings or instructions of the Engineer:
    - Clearing and grubbing.
    - Removal and disposal of traffic signs, sign posts and their foundations.
    - Demolition, removal and disposal of existing bridges including foundations, riverbank and waterway protection works.
    - Demolition, removal and disposal of existing culverts, inlet and outlet structures, headwalls, concrete drains, channel lining, and erosion protection works.
    - Removal of and any other natural or artificial objects within the BRNIP.
    - Removal and disposal of all vegetation and debris within the designated limits.
- **Relocation of Existing Services** - The Works include the relocation of all services affecting the construction of the A 380 Road. The services include the following:
    - water mains
    - overhead electric supply lines
    - gas pipelines

- underground telephone cables

- **Construction Activities**– The main construction phase aspects are described in detail below.

3.6.1. Bridges and Interchanges

The construction of the new bridges and interchanges includes but is not limited to the following parts of the structures and associated works:

- Foundations.
- Substructure including bridge bearings.
- Superstructure, including construction of expansion and deformation joints and footpaths.
- Deck pavement including hydro isolation, drainage, hand railing, and conduits for services.
- Approach slabs.
- Slope treatments in front and around the abutments.
- Construction and maintenance of traffic detours.
- Scour and erosion protection of the waterway areas and river bank protection upstream and downstream of the bridge crossing, and removal of old foundations and substructure from the waterways.
- All necessary and incidental items required for a complete bridge.
- All new and widened bridges will be designed for the life expectancy of 100 years.
- Oil and grease interceptor tanks.

3.6.2. Culverts

Project works include the construction of culverts, including inlet and outlet structures and associated works in accordance with the Specification. The scope of the cross drainage works includes:

- Complete replacement of existing culverts which are old, structurally deficient or undersized;
- Extension of existing culverts which are of adequate design and in good condition;
- Construction of new culverts at locations where no cross-drainage structure existed before;
- Cleaning of existing culverts which are partially or completely silted;
- Miscellaneous repair of the existing culvert joints, headwalls, wing walls, and scour and erosion protection works;
- Construction of new scour protection and channel lining works.

3.6.3. Other Drainage Structures

Surface runoff from the carriageway and all other pavements, and any cut and embankment slopes must be discharged through longitudinal drains designed for adequate cross section, bed slopes, invert levels and the outfalls. The Works include construction of the drainage system components in urban and rural areas according to the types, dimensions, classes and material requirements for this work.

3.6.4. Earthworks

The Works include the following types of earthworks necessary for the construction of the Project Road and all associated works:

- Removal of topsoil.

- Construction of subgrade.
- Excavation and removal of the existing pavement materials and the existing road embankment.
- Removal and replacement of unsuitable materials.
- Structural excavation.
- Excavation for the construction of side drainage and cross-drainage works.
- Excavation for the removal and relocation of the existing utilities.
- All backfilling necessary for the construction of bridges, retaining walls or other earth retaining structures, cross drainage structures and associated works, side drains and erosion protection work.
- Preparation of beddings and filters for all structural, cross drainage, side drains or pavement works.
- Excavation, filling or backfilling necessary for the execution of any other incidental works.

3.6.5. Removal of Asphalt

The Contractor shall remove the existing bituminous pavement layers and stockpile this material at locations that will be specified by the PIU and instructed by the Engineer. The asphalt will be re-used, where practical, for access roads and temporary roads, after which it will be re-used for shoulder material.

3.6.6. Batching and Asphalt Plants

The materials for pavement will be produced in batching plant and asphalt plant. The contractor shall utilize existing batching plants/facilities as much as possible. If there are no available facilities in the project area that meet the need of this project, the contractor will select proper location and build new batching and asphalt plants.

3.7. Construction Equipment

A large number of construction equipment will be needed to undertake the construction works of the proposed project. **Table 3.5** provides indicative lists of this equipment.

Table 3.5: List of Construction Equipment

Item No.	Description	Item No.	Description
1.	Backhoe excavator (80 – 90 bhp)	21.	35 tonne pneumatic tired roller
2.	Backhoe excavator (110 - 130 bhp)	22.	Tandem roller (2.7 - 5.4 t/m roll)
3.	Backhoe excavator (170 - 230 bhp)	23.	Tandem roller (over 5.4 t/m roll)
4.	Backhoe excavator (300 - 340 bhp)	24.	Asphalt paver =125 BHP
5.	Dump truck (10 - 15 m^3 struck capacity)	25.	Concrete slipform paver, min. width 9 m
6.	Dump truck (16 - 20 m^3 struck capacity)	26.	Chip spreader (4 m wide)

Item No.	Description	Item No.	Description
7.	Dump truck (21 - 30 m³ struck capacity)	27.	Bitumen tanker with spray bar
8.	Motor grader (110 - 125 bhp)	28.	Bitumen / emulsion hand held spray lance
9.	Motor grader (140 - 160 bhp)	29.	Compressor = 14 m³ / minute (including hoses and tools)
10.	Motor grader (180 - 210 bhp)	30.	20 tonne truck
11.	Track-type crawler tractor (120 - 150bhp)	31.	30 tonne truck
12.	Track-type crawler tractor (160 - 190bhp)	32.	40 tonne truck
13.	Track-type crawler tractor (200 - 225bhp)	33.	Wheeled shovel = 2 m³
14.	Track-type crawler tractor (250 - 300bhp)	34.	Concrete mixer (indicate size)
15.	Track-type crawler tractor (350 - 400bhp)	35.	Pumping / dewatering (describe)
16.	4 – 5 tonne vibrating roller (2.5-3.5 t/m roll)	36.	Cutting Equipment (describe)
17.	5 – 9 tonne vibrating roller (3.5-5 t/m roll)	37.	Drilling / blasting equipment (describe)
18.	>9 tonne vibrating roller (> 6 t/m roll)	38.	Rock crushing equipment (describe)
19.	15 tonne pneumatic tired roller	39.	Cold milling equipment (1.5 m / deep cut)
20.	25 tonne pneumatic tired roller	40.	Recycler WR-2500

3.8. Construction Staff

Table 3.6 provides an indicative list of the key staff required during the construction phase.

Table 3.6: Key staff in the construction phase

No.	Description
1	Foreman
2	Skilled workers (carpenter, electrician, mechanic etc.)
3	Semi-skilled workers (manual equipment, mixers etc.)

No.	Description
4	Un-skilled workers
5	Operator – excavator
6	Driver – dump truck
7	Operator – grader
8	Operator – dozer
9	Operator – asphalt paver
10	Operator - slipform concrete paver
11	Operator - roller
12	Driver

3.9. Camps and Storage Areas

3.9.1. Construction Camps

Camp sites will be selected keeping in view the availability of an adequate area for establishing camps, including parking areas for machinery, stores and workshops, access to communication and local markets, and an appropriate distance from sensitive areas in the vicinity. The final locations of the camps will be selected by the Contractor after the approval from the RC and the PIU Engineer.

The area requirement for construction camps will depend upon the workforce deployed and the type and quantity of machinery mobilized. For example, the camps may include rock crushing plant and concrete batching facilities. In view of the area required, it will not be possible to locate campsites within the BRNIP area and the contractors will have to acquire land on lease from private landowners. The construction camp will also have facilities for site offices, workshop and storage yard, and other related facilities including fuel storage.

The Contractor will provide the following basic facilities in the construction camps:

- Safe and reliable water supply.
- Hygienic sanitary facilities and sewerage system.
- Treatment facilities for sewerage of toilet and domestic wastes
- Sickbay and first aid facilities.

3.9.2. Storage Areas

Temporary storage areas will be required for certain activities, such as the storage of sand and gravels and construction equipment. These storage areas may range in size from anything between 50 m^2 to more than a hectare. The precise locations of these temporary facilities are not known at

this stage. The final locations of the storage areas will be selected by the Contractor after the approval from the RC and the PIU Engineer.

3.10. Road Safety

The following elements will be provided for traffic control and security on road:

- Road signs and indicators;
- Fences;
- Signal posts;
- Traffic markings;
- Lighting;
- Traffic lights;
- U-turns;
- Space for short time stops for vehicles;
- Sidewalks;
- Bus stops.

The main road safety benefits the project will deliver are the following:

- Reduced risk of vehicles leaving their lane to avoid potholes and surface deformations;
- Improved sight distances;
- Better separation between pedestrians and vehicles; and
- Better night driving conditions due to wider carriageway and improved pavement centerline markings.

Some of these advantages could be partially offset by the higher speeds that may lead to accidents.

3.11. Estimated Project Cost

The total cost of the project is estimated to be about 208 million USD including about 157 million USD from AIIB, and the remaining about 51 million USD as contribution from the Government of the Republic of Uzbekistan.

3.12. Associated Facility

There is a railway overpass above the railway line at km 208 of the A380 road. Currently, construction works at this overpass are in progress under another project with other funding source. Hence, this part of the road is excluded from the proposed project scope. The railway overpass at km 208 is considered associated facility in accordance with AIIB ESP. According to the due diligence of this associated facility, the construction is implemented by State Unitary Enterprise (SUE) “Trest Kuprikqurilish” under the joint-stock company “O’zbekiston Temir Yo’llari” and is expected to be completed by 2022. Given the works are near completion, it has been concluded that the E&S risk of the associated facility and its risk to the proposed project is low.

4. ANALYSIS OF PROJECT ALTERNATIVES AND ASSOCIATED FACILITIES

4.1. Analysis of alternative options

The project has been considered and investigated for several alternatives to reduce the environment and social impacts. The alternatives assessed were not limited to environment and social aspects, but assessment also included the technical and financial impacts of different options. This section presents an assessment of "no project" scenario, types of pavement and design of interchanges. The conclusions have been incorporated into the project design and implementation arrangements.

4.2. ”No-project” Scenario

The proposed project is part of the state program on reconstruction of the national highway A380. This road connects four regions of the republic and is the main route between north-west and south-east of Uzbekistan, an important international corridor between Afghanistan, Tajikistan, Turkmenistan, Kazakhstan and the Russian Federation. It is part of international corridors CAREC 2 and 6, Asian Highway 63, Europe-Caucasus-Asia (TRACECA), and European Highways E40 and E60.

A380 road was built at the beginning of 1960s. Currently, most sections of the A380 have been rebuilt, including with funds from international financial institutions such as the Asian Development Bank (ADB) on sections 355-440 km (85 km), and similar works are planned on sections 964-1204 km (240 km).

The project section of the road has a length of 78 km. It has been in operation for a long time, without proper repair. The partial sections of A380 road were reconstructed during 2010-2017 period, as listed in **Table 4.1**. As a result, the asphalt-concrete pavement roadway has significant defects, longitudinal, transverse, grid cracks, rutting, subsidence, waves, breaks; paints, exfoliation, potholes, shifts. This leads to hampered traffic flow, slow speeds, and traffic safety issues. See **Figure 4.1** for some photographs showing the current road condition.

Table 4.1: The reconstructed parts of A380 road section 150-228 km

No	Section of the A380 road	Year of reconstruction	Implementing organization	Notes
1	176-178 km	2010	“Bukhara department of road design”	Completed
2	Reconstruction of the bridge on 208 km section	2010	“Yul loyiha byurosi” LLC	Completed
3	198-208 km	2012	“Yul loyiha byurosi” LLC	Completed

No	Section of the A380 road	Year of reconstruction	Implementing organization	Notes
4	188-198 km	2013	“Yul loyiha byurosi” LLC	Completed
5	Reconstruction of the bridge on 184 km section	2017	“Yul loyiha byurosi” LLC	Completed
6	Reconstruction of the bridge on 208 km section	2017	“Yul loyiha byurosi” LLC	Reconstruction is in the progress

159 km 170 km 181 km

182 km 194 km 207 km

Figure 4.1: Current condition on different sections of the A380 road

Under the "no project" scenario, the condition of the A380 (150-228 km section) would be getting worse given the current traffic, especially the freight vehicles. The damage to the pavement would gradually destroy of the road subgrade as well. The traffic accidents might increase due to the unfunctional road, which would eventually lead to decrease of use of A380 road and the traffic. Thus, the government's strategic goals would not be fulfilled in terms of reconstruction of the entire A380 road and creation of a national highway network that fully meets international demands, through development of modern infrastructure of highways and connection with world roads.

In addition, the resource intensity of transportation and transportation costs will grow. The growth of transportation costs, in turn, will have an impact on the increase of transportation tariffs. This will also have a negative impact on international traffic volumes.

Without more transportation on the highway, the goals of improving quality of life of local people and business activities in the region could not be realized either. The scenario without the project will constrain the socio-economic development of the Bukhara region, as it is also an important destination of international tourists.

To conclude, without this project, various goals of national and regional governments would not be achieved. Economic development and people's life would significantly benefit only if this project could be implemented. Therefore the 'no-project' is not a viable option.

4.3. Alternatives of pavement

Asphalt and concrete surfaces were considered for rehabilitation of A380 (150-228km section). At present, the roads in Uzbekistan are being constructed and reconstructed with asphalt-concrete pavement, which serves 10-15 years and requires repair after the first 4-5 years of use. Although the cost of cement concrete coating is 15-20 percent higher, its operational life is 2-3 times longer and maintenance costs are three times less. At the same time, Uzbekistan has witnessed significant growth in cement production in recent years. The Government has also decided to gradually convert newly constructed and reconstructed roads of state importance to cement concrete coating. See **Table 4.2** for the comparison of asphalt and cement pavements.

Table 4.2: Comparison of Alternatives of Pavement

	Alternative 1- Concrete pavement	**Alternative 2- Asphalt-concrete pavement**
Engineering features	Cement concrete B30 / Btb 4.0 – 27 cm Skinny concrete - 20cm Gravel and sand top coat - 25 cm Gravel and sand bottom layer - 25 cm	Fine-grained asphalt concrete grade 1 – 6 cm Coarse grade asphalt 1- 9 cm Skinny concrete - 20cm Gravel and sand - 40 cm
Construction cost	398 496 thousand Uzbek SOUM	368 508 thousand Uzbek SOUM
O&M frequency and cost	5-10 years, low cost of maintenance and operation	3-4 years. high cost of maintenance and operation
Life span	30 years	10-15 years
Environmental impacts	• reduces fuel consumption, thus emits less air pollution; • not responsive to heat; • does not emit toxic gases when heated; • reduces the risk of cars slipping on a wet track • not prone to rutting	• responsive to heat; • emit toxic gases when heated • prone to rutting
Resource	• Cement (Local) • Gravel (Local) • Sand (Local)	• Bitumen (Imported from foreign countries) • Gravel (Local) • Sand (Local)

	Alternative 1- Concrete pavement	Alternative 2- Asphalt-concrete pavement
Land occupation	Batching plants require less land and can be located in small area.	Needs land for asphalt plant
Climate resilience	Concrete pavements are less susceptible to water damage, but at risk from expansion beyond the capacity of joints in high temperatures.	There are extremes of both high and low temperatures, asphalt can be more susceptible to both fatigue cracking due to cold temperature embrittlement, and deformation due to high temperature softening. This effect of extremes can significantly reduce the durability and therefore the longevity of asphalt on a road.

In the light of above comparison, Alternative 1- concrete pavement is the recommended option for the main road, being more feasible alternative with less impacts on environment, resources and land use. Alternative 2- asphalt-concrete pavement has been selected for interchanges considering the easier way for construction.

4.4. Alternatives of interchanges

A total of six alternatives were proposed for types of interchanges to be built as part of the proposed project. See **Table 4.3** for the salient features of the interchange design alternatives.

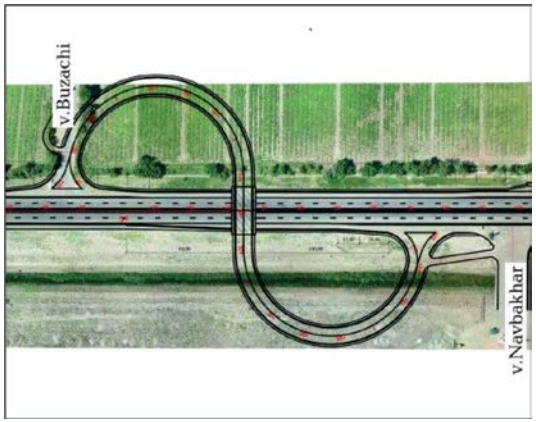
As can be seen from **Table 4.3**, Alternative-1 is the least cost option, however because of the associated low road safety, this alternative has been rejected. Alternatives 3 and 5 have higher costs and also require larger areas of land, resulting into higher levels of environmental and social impacts – hence these options have also been rejected.

Considering Alternative 2 and 6, Alternative 2 requires less land (about 19200 m2) as compared to Alternative 6 (about 22456 m^2). In addition, the pavement area of Alternative 2 is less by about 6757 m^2 than for Alternative 6. As a result, demolishing of structures (business and household) is not needed for Alternative 2, whereas it is a possibility under Alternative 6. Alternative 6 for one of the interchanges would need demolishing of the building covering an area of about 169 m^2. Similar comparison can be found between Alternative 4 and 6. Due to above reasons, Alternative 6 is not suitable because of covering a larger area, and causing resettlement impacts (i.e., demolishing of a building).

Therefore, Alternatives 2 has been chosen for the proposed project at 152km, 181km and 194km and Alternative 4 has been chosen at 159km and 170km, due to lower costs, high road safety conditions, requiring smaller areas of land and having lesser environmental, social, and involuntary resettlement impacts.

Table 4.3: Comparison of Alternatives of Interchanges

Value	Alternative 1- At-grade U turn	Alternative 2- Round loop interchange	Alternative 3- Bowtie Interchange
Design drawing			
Engineer features	Expanded axis with two land islands	Two elevated semi loops connected to the bridge	Two elevated loops connected to the bridge
Cost Uzbek SOUM	1.5-2.0 billion UZS	4.6-4.8 billion UZS	10-12 billion UZS
Road safety	Low	High	High
Speed limit	60-70 km/h	120 km/h	120 km/h
Land acquisition	3.0 ha	1.9 ha Possible involuntary land acquisition of farm lands	11-12 ha Possible demolishing of the business and household structures
Impacts on environment	Low disturbance of surrounded flora and fauna during construction phase	Medium impact on flora and fauna specifically within area of low biodiversity value during construction phase	High impact on flora and fauna. Disturbance of animal species. High noise level (especially during construction period)

Value	Alternative 4 - S shape semi loops interchanges	Alternative 5 - Elevated four-leaf clover interchange	Alternative 6 - Bowtie 2 Interchange
Design drawing			
Engineer features	Two elevated S shape semi-loops connected to the bridge	A cloverleaf interchange is a two-level interchange in which left turns (reverse directions in left-driving regions) are handled by ramp roads.	Elevated bridge with roundabout.
Cost Uzbek SOUM	4,6-4,8 billion UZS	20 billion UZS	6.5-7.0 billion UZS
Road safety	High	Medium	High
Speed limit	120 km/h	120 km/h	120 km/h
Land acquisition	1.9 ha Possible involuntary land acquisition of farm lands	15-20 ha Possible demolish of the business and household structures	2.25 ha Possible demolishing of the business and household structures
Environmental impact	Medium impact on flora and fauna specifically within low value land.	High impact on flora and fauna. Disturbance of animal species. High noise level	Medium impact on flora and fauna specifically within low destroyed land.

5.ENVIRONMENTAL AND SOCIOECONOMIC BASELINE ANALYSIS

This chapter of the ESIA presents the baseline environmental and socioeconomic conditions of the project area. This baseline has been prepared with the help of literature review, instrument monitoring, field data collection, and research.

5.1. Physical Environment

5.1.1. Climate

Climate conditions in Bukhara region is influenced by three main factors: general circulation of atmosphere, solar radiation inflow determined by geographical location, and terrain. The territory of Bukhara is characterized by features of sharply continental climate with large seasonal and daily fluctuations of air temperature.

One of the features of the climate is a long summer. In summer over the territory of Bukhara region is often located in a thermal depression, which is a low-mobility area of low pressure with typical clear, dry and hot weather. The area is a hotbed of intense air mass transformation during the warm season. Autumn (September-December) is warm, in the second half cloudy, with rains. Winter (December-February) is mild, unstable, with prevailing cloudy weather. Spring (February-April) is characterized by unstable weather, with cloudy cool days followed by sunny and warm days.

In general, the territory of the Bukhara region belongs to the arid zone. The precipitation is brought mainly by wet air masses. The distribution of atmospheric precipitation in the region is uneven and closely connected with the altitude of the area above sea level. Usually, a considerable amount of precipitation falls in autumn-winter and spring periods.

5.1.2. Precipitation

In winter, precipitation is most often in the form of drizzling rain, sometimes there are snowfalls, but no stable snow cover is formed. Snow remains for no more than 15 days. In spring, precipitation is mainly in the form of brief showers. In summer, the weather is hot, dry and there is practically no precipitation. Autumn is warm, overcast and rainy in the second half. Almost 60% of precipitation falls in January - April. The annual amount of solar radiation is 150-160 kcal.

The average annual rainfall in the Bukhara region is low - 133 mm, in the city of Bukhara 142 mm. The duration of fogs, usually in winter, is 64 hours per year. Average annual evaporation reaches values of 250 mm, higher than annual amount of precipitation.

5.1.3. Temperature

In the Bukhara region, according to national standard (KMK 2.01.01-94), the absolute minimum temperature of -18 ^{o}C is registered in January. Absolute maximum is recorded in July and is equal to +44 ^{o}C. The average annual air temperature in the areas of the project area was 15.8 ^{o}C, with an absolute maximum in July + 46.0 ^{o}C, the minimum in January - 17.0 ^{o}C. In winter, daytime air temperatures are usually positive (3-7 ^{o}C), while at night they are negative (-9 to -14 ^{o}C). See **Figure 5.1** for average, minimum and maximum temperatures in Bukhara region.

Figure 5.1: Temperature in Bukhara Region (*Source: https://invest.gov.uz/ru/regional-map/buharskaya-oblast/)*

5.1.4. Wind Speed

In Bukhara region the average wind speed is 3.3 m/sec. In summer time sand and dust storms are possible. The most typical for this area are winds with speeds of 2-3 m/s (38%) and 4-5 m/s (33%). Winds with speeds of 4-5 m/sec and more are especially dangerous as they carry harmful substances over long distances. The predominant wind direction is from north (39%); see **Table 5.1** for details.

Table 5.1: Wind Data of Project Area

Average annual wind direction repeatability	%
North	39
Northeast	7
East	8
Southeast	4
South	6
Southwest	3
West	7
Northwest	26
Average annual wind speed, m/s	3.3

5.1.5. Humidity and Pressure

Air humidity in Bukhara region depends on the season, precipitation, ambient temperature, air pressure and other factors.

The average monthly humidity in the Bukhara region in January is 77% and the atmospheric pressure is 747 mm Hg. In March, 62%, atmospheric pressure 744 mmHg. In June 28%, air pressure 740 mmHg, in September 3%, air pressure 736 mmHg, in December 71%, air pressure 748 mmHg. Average annual atmospheric pressure in Bukhara region is 742 mmHg, and air humidity is 51%. See **Figure 5.2** for details.

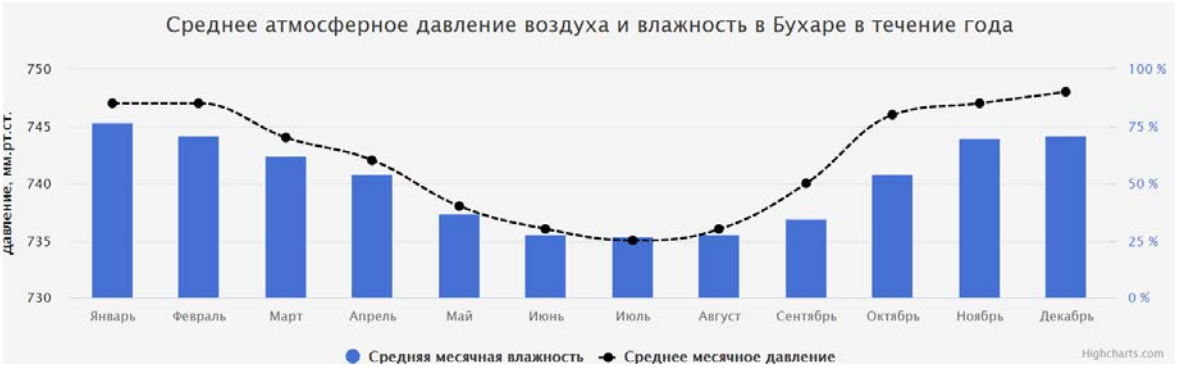


Figure 5.2: Humidity and Atmospheric Pressure in Bukhara Region (*Source: https://global-weather.ru/archive/buxara_buxarskaya_oblast)*

5.1.6. Relief and Topography

In geomorphological terms, the studied section of the road is partially located in the northwestern part, which belongs to the Bukhara-Qarshi system of structures of the Turan plate connecting to the so-called Bukhara oasis. The relief is flat, in some places dissected by reclamation canals. Floodplain and floodplain terraces are clearly distinguished by the nature of the structure, lithology and mechanical properties of alluvial-proluvial deposits. A change in the microrelief is associated with human activities.

The following relief types can be divided into the Bukhara region:

1) individual low mountains, plateaus (Kulzhuktau, Mount Tuzkon, Jarkok, Saritosh);
2) plateaus and hills with a flat surface (Karakul, Dengizkul, Uchbosh, Korakir);
3) accumulative plains that have arisen under the influence of wind and are covered by river and lake sediments;
4) separately expressed closed depressions (Korahatun, Oektigma, Dengizkul);
5) in oases with a flat surface there are hills 5-15 m high.

5.1.7. Geology and Soils

The Project site is located on the southeastern outskirts of the city of Kagan, Bukhara region. Geomorphologically, the site belongs to the third left-bank terrace of the Zarafshan River. In lithological terms, the studied area is composed of a thickness of alluvial proluvial deposits of the Quaternary age. These deposits from 0.5 m are represented by interbedded loesslike loams and sandy loams, sands, limestones, marls.

A bulk layer with a thickness of 0.5-3.0 m was uncovered from the surface in the area. Soils in the studied areas are saline. The value of the dense residue varies from 4530 to 6086 mg/kg. The content of CI ions varies from 160 to 380 mg/kg, SO_4 ions from 1553 to 2655

mg/kg. Soils are very aggressive to concrete on Portland cement according to GOST 10178-85. Soils highly aggressive to concrete on sulfate-resistant cement according to GOST 22266-85 and medium aggressive to reinforcement of reinforced concrete structures.

Groundwater is opened by openings at a depth of 2.8 m from the surface of the earth. According to the chemical composition, groundwater is salty with a dense residue of 968-5360 mg/l; the content of HCO_3 - 213-610 mg/l, Cl ions - 204-1154 mg/l; SO_4 ions - 860-2238 mg/l. groundwater aggressive to concrete on Portland cement according to GOST10178-85.

Groundwater regime depends on vegetation and flushing irrigation of fields and precipitation. The minimum level position falls on August - September, the maximum on the January-March months. The amplitude of the oscillation is 1.5 meters.

The Project area is located on the southwestern outskirts of Kyzyl-Kum, where typical desert sandy soils are common. The soil cover does not exceed 20 cm. The humus content in the described soils ranges from 0.5 to 0.8%, nitrogen from 0.04 to 0.06%. Only in takyr soils is there in some cases an increase in the amount of humus to 1%; according to the amount of humus, the nitrogen content changes (up to 0.07%). The ratio of C:N ranges from 6.9 to 7.9.

By the total number of microbes per 1 gm, desert soils are inferior to meadow soils and sierozems. The poor quality of these soils is apparently due to the fact that these soils contain very insignificant amount of humus.

The soil cover in the area is represented by a complex of desert gray-brown soils developed on sandy desert soils. The following soil differences are distinguished on the elevation of Karaulbazar: gray-brown desert soils that make up the main cover of Karaulbazar; takyrs and washed soils dish-shaped flat depression; salt marshes occupying the most lowered depressions; sandy - gypsum soil with fragments of sandstone and limestone.

5.1.8. Hydrology and Water Resources

Four water-pressure complexes namely Jurassic, Neocomian, Aptian, Alb-Cenomanian, and Nadturon exist in the area separated by Upper Jurassic-Neocomian, Lower Middle Albian, Lower Turonian, and Eocene-Oligocene formations.

According to the hydrogeological map, the shallowest aquifer is the Quaternary complex, characterized by gray sandstones, conglomerates on carbonate cement.

Groundwater is found generally at a depth of 10 m in low places and up to 20 m in high zones. They are either fresh or slightly saline, usually suitable for drinking, although the content of the solid residue reaches up to 2.8-3 g/l.

The source of water supply is precipitation and percolation to underground aquifers. The flow of groundwater is slowed down, as it is weakened due to the small slopes of the geomorphological formulations and the poor water throughput of the rocks of the complex and has the form of a radially diverging stream.

Based on the foregoing, it can be concluded that the aquifer complex, the waters of which are used for drinking, irrigation and watering of livestock, are not common in the Quaternary sediments.

Water resources of Bukhara region consist of a number of surface and ground waters, as well as return water from anthropogenic use (sewage and drainage water). Water resources are mainly generated in transboundary river basins. The project area is located in the Amudarya River Basin, which is one of the important surface water sources. The Amudarya River is the largest river in Central Asia in terms of catchment area, 2,600 km long, with a catchment area of 230,000 km^2 and an average annual water flow of 78 km^3. It accounts for half of the annual flow of Central Asia. The two main tributaries of the Amudarya - Panj and Vakhsh - originate in the Gissaro Alay, Pamir and Hindu Kush mountain ranges. In Uzbekistan, the Amu Darya tributaries provide 6 km^3 of water, which is about 7.5% of the total flow. In Uzbekistan, the Amu Darya flows in the south of Surkhandarya province, bordering Afghanistan. The river then enters Turkmenistan, separating the Karakum and Sundukli sands. Further on, the Amu Darya riverbed approaches the border of Uzbekistan in the area of the Kimirekkum sands, and in the south-west of Bukhara and Khorezm regions runs along the border of two countries.

The third longest river in Central Asia is the Zarafshan River, which also flows through Uzbekistan (781 km long, 12,300 km^2 of catchment area, with an average long-term water flow of 190 m^3/sec). The Zarafshan originates from numerous tributaries of the Turkestan and Zarafshan ridges and flowing from east to west between these two ranges, it is basically replenished by its left tributaries: Fandarya, Magian and Kshtut. Below Penjikent, the mountains are gradually parting, and the river is already flowing in the plain part of Samarkand and then Navoi region, bounded by the spurs of Zerafshan and Turkestan ridges - Zirabulak and Ziatda mountains, Chumkartau, Nuratau, Karatepa and Aktau ridges. Further the river turns to the south-west, towards the Bukhara oasis, where it actively disassembles irrigation canals, getting lost in the south of the region, not reaching the Kimirekkum sands.

Surface waters of Bukhara region also include lakes - Tudakul, Dengeskul, Zamonbobo, Shorkul and Aydar as well as the Kuyumazar reservoirs. The main purpose of the Kuyumazar reservoir is irrigation. Canals in the area include Amu-Bukhara, Amu-Karakul, Dzhuyzar, Chor-Bakr, Shokhrud and others.

Amu-Bukhara irrigation canal starts on the right bank of Amudarya river, passes through Kyzylkum desert zone to Bukhara oasis. The length of the canal is 400 km, maximum capacity is 270 m^3/sec. This canal supplies irrigation water to 285 thousand ha irrigated lands of the Bukhara and Navoi regions. The canal crosses road A380 at km 184.

Kuyumazar canal was built in 1965. The length of the canal is 16 km. Maximum capacity is 100 m^3/sec. Kuyumazar irrigation canal is a part of Kagan district irrigation system. The canal crosses road A380 at km 200.3.

Chor-Bakr canal was built in 1974. The length of the canal is 8.1 km. Maximum capacity is 4.5 m^3/sec. Chor-Bakr irrigation canal is a part of Bukhara city. The canal crosses road A380 at km 221.07.

Shokhrud canal was built in 1971. The length of the canal is 1.9 km. Maximum capacity is 3.0 m^3/sec. Shokhrud irrigation canal is a part of Bukhara city. The canal crosses road A380 at km 220.8.

Surface water in project area

As introduced in **Chapter 3**, there are 14 bridges falling in the alignment of the project. Eleven of them cross surface water bodies. See the details of the surface water bodies in the project area in **Table 5.2**.

Sample data from irrigation canals

Three locations were selected from the above-mentioned surface water bodies for sampling and measurement. The Bukhara Regional Department for Ecology and Environmental Protection conducted the water analysis of the Kuyumazar, Chor-Bakr, and Shokhrud canals. Based on the findings of the results it was found that parameters of the pH, Ammonium ions, chemical oxygen demand (COD) of the all water sources were identified within the SanR&N RUz No. 0172-04 Sanitarian Rules and Norms Hygiene Requirements to the protection of surface waters in the territory Republic of Uzbekistan (see **Table 5.3**). The national standard is provided in **Annex A3**. Chlorides, Sulfates and total dissolved solids (TDS) of the Kuyumazar irrigation canal exceed the national norms. Due to the fact that canal flows through saline lands, the high concentrations of Chlorides, Sulfates and TDS in Kuyumazar canal were observed.

Table 5.2: Bridges and canals

№	Bridge location	km	Surface water body	Purpose of surface water	Notes (condition)
1.	Amubukhara Canal	184+200	Canal	Irrigation	Good
2.	Kuyumazar Canal	200+300	Canal	Irrigation	Need to be replaced
3.	Drainage collector	200+700	Canal	Drainage	Need to be replaced
4.	Drainage collector	202+600	Canal	Drainage	Need to be replaced
5.	Bridge over the railway	208	-	-	Need to be replaced (not included in the project)
6.	Drainage collector	212+300	Canal	Drainage	Satisfactory
7.	Irrigation canal	215+900	Canal	Irrigation	Good
8.	Drainage collector	217+500	Canal	No watercourse	Need to be dismantled
9.	Irrigation canal	220+800	Canal	Irrigation	Need to be replaced
10.	Irrigation canal	221+070	Canal	Irrigation	Need to be replaced
11.	Drainage collector	224+400	Canal	No watercourse	Need to be dismantled
12.	Drainage collector	224+900	Canal	Drainage	Need to be replaced
13.	Drainage collector	227+100	Canal	Drainage	Good
14.	Canal Juizar	228+350	Canal	Irrigation	Need to be repaired

Table 5.3: Results of Water Quality Analysis

No	Name	Purpose	Results		Standards
1.	**Kuyumazar (200 + 300) km**	**Irrigation**	pH	6.8	6.5-8.5
			TDS mg/l	3,500	1,000-1,500
			Ammonium ions mg/l	1,0	3
			Chlorides mg/l	469.3	250-350
			Sulfates mg/l	1,690.5	400-500
			COD mg/l	5.2	30
			Turbidity	Transparent	Light turbid
			Color	Colorless	Colorless
			Petroleum products	Not detected	Not detected
			E. Coli	No toxic effect	No toxic effect
2.	**Chor-Bakr (221 + 070) km**	**Irrigation**	pH	6.5	6.5-8.5
			TDS mg/l	950	1,000-1,500
			Ammonium ions mg/l	0.05	3
			Chlorides mg/l	243.3	250-350
			Sulfates mg/l	384.2	400-500
			COD mg/l	4.0	30
			Turbidity	Turbid	Light turbid
			Color	Colorless	Colorless
			Petroleum products	Not detected	Not detected
			E. Coli	No toxic effect	No toxic effect
3.	**Shokhrud (220 + 800) km**	**Irrigation**	pH	6.5	6.5-8.5
			TDS mg/l	1,000	1,000-1,500
			Ammonium ions mg/l	0,052	3
			Chlorides mg/l	208.5	250-350
			Sulfates mg/l	408.3	400-500
			COD mg/l	4.2	30
			Turbidity	Turbid	Light turbid
			Color	Light brown	Colorless
			Petroleum products	Not detected	Not detected
			E. Coli	No toxic effect	No toxic effect

5.1.9. Seismicity

The project area is located in a seismic hazard zone. Severe earthquakes of more than 5 magnitude occur approximately once or twice within 2-3 years. Seismicity of the region is 7-8 points. See **Figure 5.3** for a seismic map of the area.

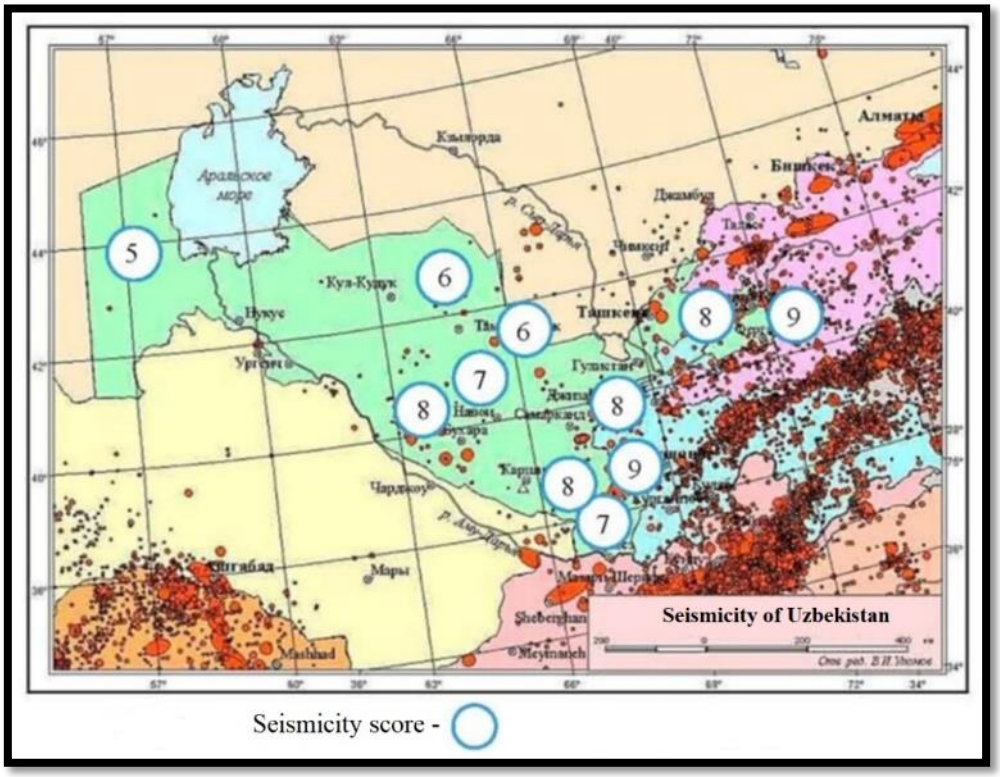


Figure 5.3: Seismicity of the Area

5.1.10. Land Use and Land Cover of the Area

The 78-km section of the road A380 passes through mostly uninhabited area with only a few settlements and buildings situated along the corridor. **Table 5.4** provides a list the key features along the road; these features are shown in **Figure 5.4**.

Table 5.4: Key Features along the Project Road

No	Northeast Side	Chainage (KM)	Southwest Side
Karaulbazar district (Section 150-181 km)			
1	Irrigated lands with canals and drainage collectors (highlighted in green color in **Figure 5.4**). Rural Assembly of Citizens "Navbahor" (2700 m from the road) is located on 159 km section On 152 km section, around 3 km from the A380 road,	150-165	Irrigated lands with canals and drainage collectors On 158 km section, around 1 km from the A380 road, there is a Rural Assembly of Citizens "Toshquduq" On 161 km section, around 3 km from the A380 road there is a Rural Assembly of Citizens "Buzachi" (430 m from the road)

No	Northeast Side	Chainage (KM)	Southwest Side
	there is a Rural Assembly of Citizens "Jarkok" (2500 m from the road)		
2	Desert zone (highlighted in yellow color in **Figure 5.4**) Industrial Enterprises are located along 169-170 m and 171-173 km sections	165-181	Desert zone Karaulbazar city center is located 500 m from A380 at section 171-175 km.
Kagan district (Section 181-212)			
3	Bridge (Amu-Bukhara Irrigation Canal passing through the A380 road)	181	Bridge (Amu-Bukhara Irrigation Canal passing through the main road A380)
4	Sections 181-190 km: open territory of the Jeyran Eco-center (100 m from the road) Gypsum quarry of the "Knauf Gips Bukhara" LLC is located on the Sections 190-193 km (1200 m from the road) "Knauf Gips Bukhara" LLC and other Industrial Enterprises are situated on the section 196-198 km (100 m from the road)	181-198	fenced territory of the Jeyran Eco-center (100 m from the road)
5	Bridge (Kuyumazar canal passing through the main road A380)	198	Bridge (Kuyumazar canal passing through the main road A380)
6	Industrial Enterprises are situated on the section 198-202 km (100 m from the road) Bridge, Drainage collector passing through the main road A380 on the section 201 km Irrigated lands and settlement area (Kurgoncha 750 m and Gashgash 500 m makhallas) of Kagan district are located on the sections 202-206 km	198-206	Military zone is located on the sections 198-202 km Bridge, Drainage collector passing through the main road A380 on the section 201 km Settlement area of Kagan city is located on the sections 202-206 km (20-40 m from the road)
7	Railway overpass	207	Railway overpass

No	Northeast Side	Chainage (KM)	Southwest Side
8	Irrigated lands and settlement area (Niyozkhoji, Ubachuli, Yangirobot and Kalluk, Amirza, makhallas) of Kagan district are located on the sections 207-212 km (40 m from the road) Road circle on the section 209 km Bridge, Drainage collector passing through the main road A380 on the section 210 km	207-212	Settlement area of Kagan city is located on the sections 207-212 km (20-40 m from the road) Road circle on the section 209 km Bridge, Drainage collector passing through the main road A380 on the section 210 km
Bukhara district (Section 212-228)			
9	Settlement area (Konchilar, Deychaabad, Vodnik, Djuvazkagaz, Shaykhancha makhallas) of Bukhara district are located on the sections 212-228 km (40-60 m from the road) Bridge over the collector at 212+300 km Bridge over the Irrigation canal at 215+900 km Bridge over the collector at 217+500 km Educational and healthcare establishments of Bukhara district on the Section 218-219 (40-100 m from the road) Section 219-222 km is covered by Farmlands (10 m from the road) Dekhkan Market “Karvon Bozor” on the Section 222-223 km (40 m from the road) Bridge over the Irrigation canal at 220+800 km Bridge over the Irrigation canal at 221+070 km	212-228	Makhallas of Bukhara city are located on the sections 212-228 km (40-60 m from the road) Bridge over the collector at 212+300 km Bridge over the Irrigation canal at 215+900 km Bridge over the collector at 217+500 km Educational and healthcare establishments of Bukhara city on the Section 218-228 (40-100 m from the road) Bridge over the Irrigation canal at 220+800 km Bridge over the Irrigation canal at 221+070 km Bridge over an inactive collector at 224+400 km Bridge over the collector at 224+900 km Bridge over the collector at 227+100 km Bridge over the Juyzar canal at 228+350 km

No	Northeast Side	Chainage (KM)	Southwest Side
	Bridge over an inactive collector at 224+400 km Bridge over the collector at 224+900 km Bridge over the collector at 227+100 km Bridge over the Juyzar canal at 228+350 km		

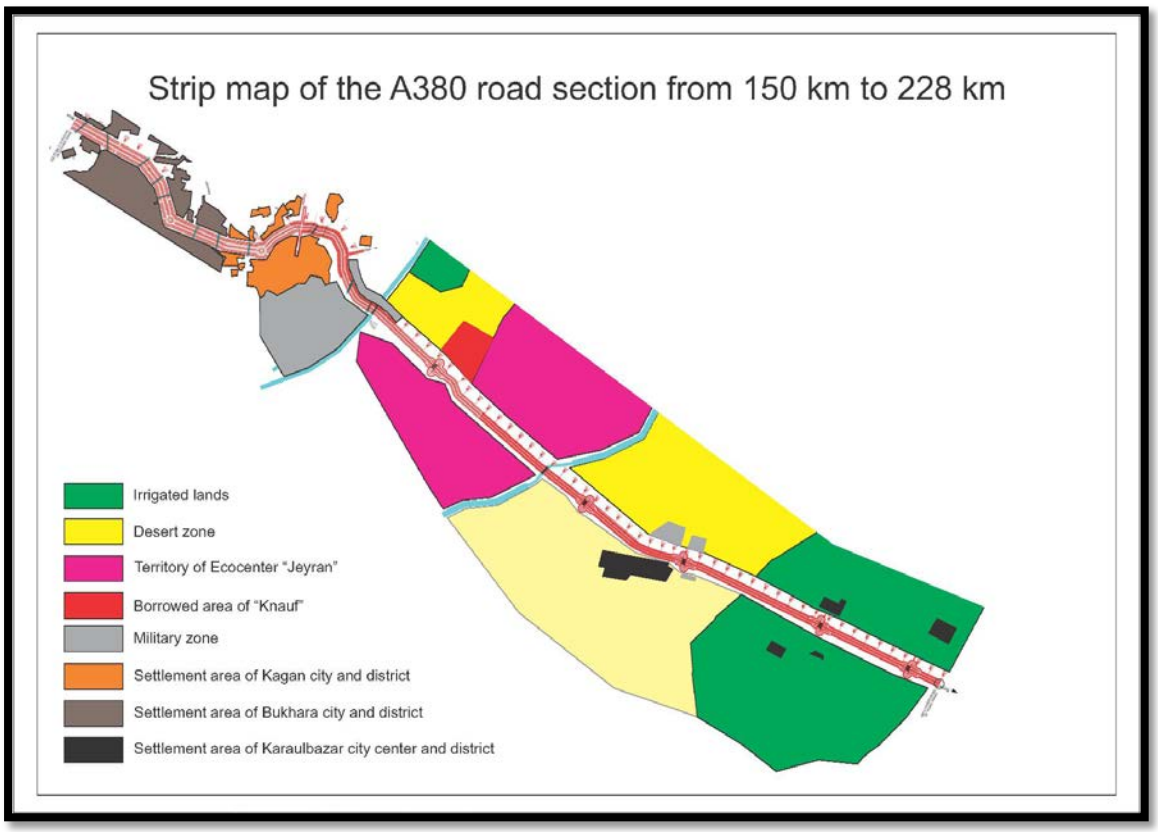


Figure 5.4: Strip Map of the Project Area

5.1.11. Desertification

The development of desertification is due to the peculiarities of the natural conditions of the territory and the nature of the use of natural resources. The vast territory of the flat part of Uzbekistan is represented by sandy deserts, which are potentially prone to desertification due to the weak stability of ecosystems. The variety of natural conditions and causes of desertification in Uzbekistan determines the variety of types of desertification. This is the de-humification of arable land both in the steppe zone and in the zone of irrigated agriculture; water and wind erosion; pasture degradation; salinization of irrigated lands, degradation of vegetation and reduction of forests; drying out of lakes and deltas of desert rivers, pollution of soils with chemical compounds and oil pollution of ecosystems.

5.1.12. Climate change in Bukhara region

According to the composite indicator, Bukhara region belongs to the medium vulnerable group of regions in Uzbekistan.

The water resources management system of the region annually faces problems in managing water allocation between users caused by climatic conditions each year. Dry years are the most difficult to manage due to lack or low precipitation and high temperatures in the autumn-winter period. Water inflow into reservoirs in such years is minimal, with small rivers practically drying out in summer. Water availability falls to 60-65%.

Heavy precipitation in spring is often accompanied by dry winter, which practically puts water resources management in a difficult situation. On the one hand, reservoirs are not sufficiently filled, as they are formed due to melt water, and on the other hand, mudflow during the spring period brings destructive water consumption, which is practically not retained by reservoirs due to high consumption on small rivers and in the upper reaches of the rivers forming reservoirs. In most cases, such debris flows have to be discharged to avoid the destruction of river beds and canals.

As the climate in Bukhara region warms, the number of days with abnormally high air temperatures will increase, which may lead to lower crop yields.

Drought
Due to possible reduction of vegetative flow and increase in water consumption in the sectors of the economy as a result of climate change and intensive population growth, the risks of extreme dryness and drought are significantly increasing, especially in the lower reaches of the Amudarya basin rivers.

Heat waves
An increase in the number of days with "heat waves" will be observed in the Bukhara region. An indicator of the risk of dangerous "heat waves" is the number of days with high air temperature. The results of the assessment of changes in the repeatability of high air temperatures show that by 2050 it is possible to increase the repeatability of air temperatures above 39 ^{o}C by 1.5-2 times relative to the base period.

Due to the expected increase in the overall variability of precipitation and its daily maximum, an increase in the repeatability of heavy precipitation, rainfall and hail can also be expected.

Mudflow and floods
Mudflow is widespread in mountainous and foothill areas of Uzbekistan and can be a cause of flooding. The country's mudflow zones are m: Fergana Valley (Andijan, Namangan and Fergana provinces); Zeravshan Valley and the Sansar River Valley (Jizzak, Navoi and Samarkand provinces); the Chirchik and Ahangaran river basins (Tashkent province); the Kashkadarya River basin (Kashkadarya province); and the Surkhandarya and Sherabad River basins (Surkhandarya province). The territory of Bukhara Province is not part of the selective zone of Uzbekistan.

At the same time in Bukhara region there are dams of reservoirs, though they are not high, but we cannot exclude the possibility of a breakthrough. Therefore, all hydraulic structures, regardless of their parameters and functional purpose, are subject to the Law of the

Republic of Uzbekistan "On safety of hydraulic structures". (1999) are subject to periodic inspection, both in terms of their safety and in terms of their ability to perform their functions (technical reliability). The main tasks of ensuring the safety of hydraulic structures must be carried out by their operating organizations.

Impact of climate change on public health in the region

Climate change affects human health through a complex system of factors. The direct consequences are loss of life and injuries as a result of mudflows, floods, "heat waves", the frequency of which increases. Indirect effects are manifested in the increased incidence of infectious, vector-borne diseases and lack of clean drinking water.

Impact of climate change on biodiversity

Climate change is intensifying land degradation and desertification, and thus affecting biodiversity. These processes are particularly active in a number of districts of the region, in the Kyzylkum desert and in the foothill areas. Such trends in the future will intensify the transformation and fragmentation of desert, foothill and lowland ecosystems.

Climatic factors affect the functioning of aquatic and terrestrial ecosystems through changes in surface runoff, which, depending on the water content of the years, undergoes significant fluctuations. When flood regimes change and water flows in rivers decrease, riparian vegetation areas decrease and floodplain river ecosystems further degrade.

5.1.13. Air quality

The major sources of emissions of air pollutants in the project area include the vehicular traffic Bukhara Oil Refinery and the KNAUF gypsum plasterboard production plant located a few hundred meters from the road. The refinery is located a few hundred meters away from the road, as well as exhaust fumes from vehicles and dust from vehicles. Emissions from economic activities for the population living along the road. Exhaust emissions from motor vehicles are relatively low at this stage.

The feasibility study included observations of atmospheric air pollution in Uzbekistan are conducted on the following indicators: dust, sulphur dioxide, nitrogen dioxide, nitrogen oxide, carbon monoxide, phenol, hydrogen fluoride, ammonia, formaldehyde, heavy metals.

According to the Bukhara region hydrometeorological service, the air quality along the reconstructed road generally corresponds to the maximum permissible concentrations of pollutants in the air. It is noted that the concentration of pollutants at night is relatively lower than during the day, which is probably due to less vehicle traffic and lower fuel consumption.

Air Quality Field Data

As part of ESIA, the air quality samples were taken at four selected points along the A380 highway for five components (NO_2, NO, SO_2, CO and PM), as well as meteorological parameters of the project area. Samples were transferred to the laboratory for analysis with meteorological parameters (see **Figure 5.5** for sampling locations). Measurements were made three times at time intervals (morning, afternoon and evening) (see **Annex A4**). By comparing national standards of Uzbekistan and WHO Ambient Air Quality Standards, the national standards are more stringent, so they are applicable for this project. The

monitoring results have been compared to SanR&N RUz No. 0293-11 Sanitarian Rules and Norms List of Maximum Permissible Concentrations (MPC) of pollutants in the atmospheric air of populated areas on the territory of the Republic of Uzbekistan, which is presented in **Annex A3**.

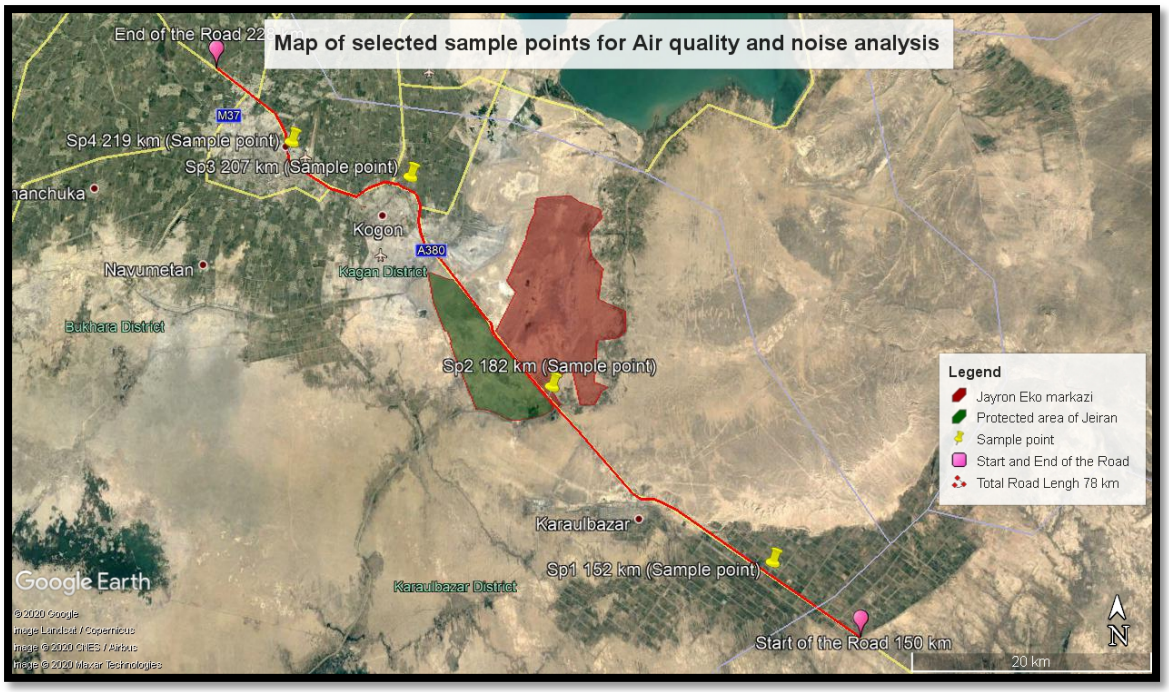


Figure 5.5: Selected points for Air Quality and Noise Monitoring
(Source: Google Earth Pro)

Based on the analysis results, an excess of the maximum permissible concentration for carbon monoxide in the city of Kagan was 1.25 times of the limit in the standard, for dust in the city of Bukhara 1.1 times of the limit in the standard, in the city of Kagan 3.4 times of the limit in the standard, in the "Jeyran" Nursery 2.0 times of the limit in the standard due to weather conditions during the sampling period. The exceedances are highlighted in **Table 5.5**.

Table 5.5: Results of air quality field data on A380 road (150-228 km)

No	Name	Location	Reading		Standards
1	Sp1 152 km (near to “Jarqoq” settlement)	39°26'55.38"N 64°55'30.62"E	NO_2 mg/m^3	0.02	0.085
				0,03	0.085
				0.02	0.085
			NO mg/m^3	0.02	0.6
				0.01	0.6
				0.01	0.6
			SO_2 mg/m^3	0.007	0.5
				0.014	0.5
				0.008	0.5
			CO mg/m^3	2.0	5.0
				2.0	5.0
				3.0	5.0

No	Name	Location	Reading		Standards
			PM mg/m^3	0.0	
2	Sp2 182 km (near to "Jeyran" Nursery	39°34'48.12"N 64°42'41.24"E	NO_2 mg/m^3	0.03	0.085
				0.02	0.085
				0.03	0.085
			NO mg/m^3	0.01	0.6
				0.01	0.6
				0.03	0.6
			SO_2 mg/m^3	0.000	0.5
				0.000	0.5
				0.000	0.5
			CO mg/m^3	1.0	5.0
				1.0	5.0
				1.0	5.0
			PM mg/m^3	0.7	0.35
3	Sp3 207 km (Kagan city)	39°44'12.45"N 64°34'25.01"E	NO_2 mg/m^3	0.02	0.085
				0.01	0.085
				0,03	0.085
			NO mg/m^3	0.00	0.6
				0.01	0.6
				0.02	0.6
			SO_2 mg/m^3	0.010	0.5
				0.000	0.5
				0.011	0.5
			CO mg/m^3	7.0	5.0
				4.0	5.0
				3.0	5.0
			PM mg/m^3	1.2	0.35
4	Sp4 219 km (Bukhara city)	39°45'45.62"N 64°27'28.28"E	NO_2 mg/m^3	0.05	0.085
				0.03	0.085
				0.02	0.085
			NO mg/m^3	0.04	0.6
				0.02	0.6
				0.01	0.6
			SO_2 mg/m^3	0,000	0.5
				0.003	0.5
				0.004	0.5
			CO mg/m^3	4	5.0
				3	5.0
				1	5.0
			PM mg/m^3	0.4	0.35

5.1.14. Noise

Transport noise as a factor of negative impact is of great importance. Staying in a noise environment negatively affects their health. An increased noise level leads to a disorder of the nervous system, diseases of the cardiovascular system, and some other diseases.

The noise level requirements are reflected in the Laws of the Republic of Uzbekistan "On the sanitary and epidemiological well-being of the population" (2015), "On the protection of public health" (1996), "On the protection of atmospheric air" (1996) and others. In the sanitary rules and norms of SanPiN RoU N 0325-16. permissible noise levels at workplaces are determined. The Uzbek standards are compared with the standards recommended in World Bank Group Environmental, Health and Safety Guidelines. The applicable noise level standards are presented below.

Noise level, being one of the factors of negative impact on people and wildlife, depends on several factors. The most significant of them are the traffic intensity, the composition of the traffic flow and its speed.

Analysis of the noise characteristics of roads in the construction area was carried out according to the measured actual intensity of the traffic flow and its composition on the stretches of roads A380. At the time of the survey, the composition of the traffic flow included: 30% of cars, 64% of trucks and 6% of buses (see **Table 5.6**). The estimated speed of 60 km/h was used for the analysis. The analysis indicate that the projected noise levels would be 80 dBA.

Table 5.6: Estimated traffic flow on speed 60 km/h

Total intensity, vehicles/day	Type of vehicle		
	Passenger, auto / day	Freight, car/day	Buses, bus/day
4600-7000	3 0 %	64 %	6 %

According to the standards, the permissible noise level in residential areas created by vehicles should not exceed 65 dBA for the daytime and 55 dBA for the night. The calculated equivalent noise levels on the road section will exceed the allowable noise level by 15 dBA.

Results of analysis of noise

As a part of ESIA, Bukhara regional Department of Sanitarian-Epidemiologic Station conducted noise measurements at four selected sample points in the project area (see **Figure 5.5**). The maximum and average noise level at the road section Sp1 at 152 km was identified as 56-58 dB and 41-43 dB respectively. The same indicators of the survey findings sections Sp2 at 182 km were 50-51 dB and 38-40 dB respectively (**Annex A4)**. Due to higher density population and number of educational and healthcare establishments the noise level (Sp3 and Sp4) were higher in comparison with two previous sections and composed 52-64 dB and 40-48 dB respectively. By comparing national standards of Uzbekistan and World Bank Group (WBG) Environment, Health and Safety (EHS) Guidelines, the national standards are more stringent, so they are applicable for this project.

The maximum and average noise level was shown below according to SanR&N RUz No. 0267-09 Sanitarian Rules and Norms On admissible noise level into the living area, both inside and outside the buildings. The national standard is presented in **Annex A3**. See **Table 5.7** for the monitoring results.

Table 5.7: Results of noise measurement analysis (dB)

Sample points	Maximal level of the noise at the settlement	Equivalent (average) level of the noise at this site	Estimated maximum level of the noise	Estimated equivalent (average) level of the noise
Sp1 Road section 152 km	70	55		
Buzachi settlement site (right)			58	41
Jarqoq settlement site (on the left site)			56	43
Sp2 Road section 182.km				
Eco-center Jeyran Open (on the right site)			51	38
Eco-center Jeyran Enclosed (on the left site)			50	40
Sp3 Road section 207 km				
The Gashkash settlement (on the right site)			61	42
The Kagan city area (on the left site)			62	43
Sp4 Road section 219 km				
The Bukhara district populated area (on the right site)			52	40
The Bukhara city with healthcare and education establishments (on the left site)			64	48

5.2. Biological Environment

5.2.1. Protected Natural Areas

Protected Natural Areas in Bukhara region are presented in **Table 5.8**.

Table 5.8: List of Protected Natural Areas

No	Name of Protected Area	Quantity	Thousand hectares
1	Reserves	7	188.3
2	Complex landscape reserve	1	628.3
3	Biosphere reserves	2	111.7
4	National nature parks	3	558.2
5	Complex landscape reserve	1	628.3
6	National park “Durmen”	1	32.4
7	Natural monuments	10	3.8
8	Wildlife sanctuaries	12	572.4
9	Bukhara Specialized Nursery "Jeyran"	1	16.5
10	Forest and forest hunting farms		11,121.00

(Source: https://www.cbd.int/countries/?country=uz).

The system of protected areas in Bukhara region includes the Kyzylkum State Reserve located in two administrative districts and two regions of the Republic of Uzbekistan: Romitan district of Bukhara region – 1,467 hectares and in Khazorasp district of Khorezm region – 8,844 hectares; see **Figure 5.6** for the protected natural areas. In total, over 200 species of plants grow in the reserve. Large populations of Bukhara deer, foxes and gazelles are found here. In coastal zones reed cats, Khiva pheasants, herons, ducks and skids are common. The Bukhara deer were on the verge of extinction back in the seventies. Thanks to the long-term efforts of the Reserve's staff, its population has since increased 10 times and now it is more than 100 animals. The territory of the reserve is located at a considerable distance from the A380 road in a section of 150-228 km.

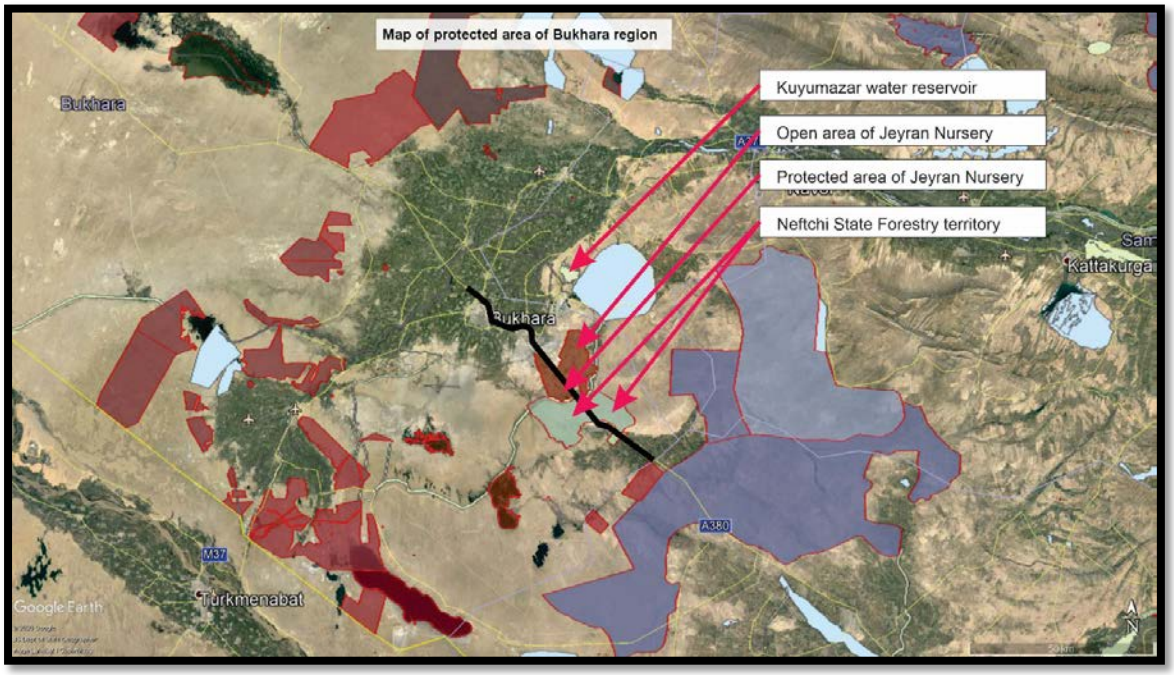


Figure 5.6: Protected Natural Areas of Bukhara region
(Source: Google Earth Pro)

5.2.2. Jeyran Eco-Center

Established in 1977, Jeyran Eco-center is located in the southwest of the Kyzylkum desert, around 42 km from Bukhara and 12 km from the Karaulbazar city. A section of this Eco-center is located along the A380 road; see **Figure 5.7**. This is a republican scientific-production center and a nursery for the breeding of rare species of animals.

According to existing legislation, the Eco-center is a protected area of national importance with a strict regime for the protection of natural objects and complexes. It is intended for breeding rare species of animals, and preserving and studying typical ecological systems.

The territory of the Jeyran Eco-center covers 16,522 hectares. It consists of two sections:

The first plot, with an area of 5,145 ha, is intended for animal breeding and research. This site belongs to the strict security zone. The territory is protected by a fence which is more than 2 m high.

The second section of 11,377 hectares (planned to be increased to 26,008 hectares) is intended to transfer an excessive number of animals from the first section to the second and their adaptation to restore and maintain the structure of desert biosensors as well as the

establishment of a protection regime and the cessation of the illegal use of biological resources and the development of ecotourism.

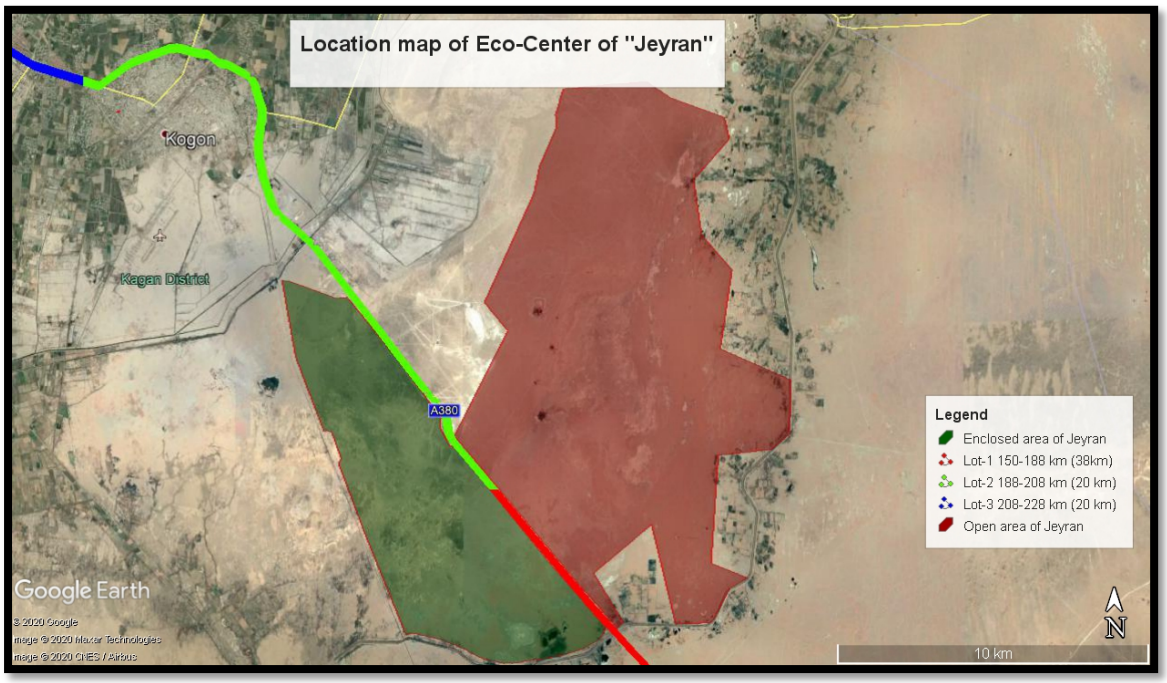


Figure 5.7: Location map of the Jeyran Eco-center

Flora

The area supports Saxaul groves, Tugai thickets, unique plants of salt marshes and Takyrs. In the Eco center, more than 250 species of plants from 28 families were recorded. The following are the main plant species found in the area:

- Tugai vegetation with thickets of reed, tamaris, sucker;
- Black Saxaul;
- Halophilic vegetation of puffy Takyr-like and wet salt marshes with associations of pineal-like Sarsazan, European salt marsh;
- The vegetation of compacted gypsum sandy loam and loamy plains with associations of leafworms, camel thorns and small-leaved ellen;
- Vegetation of sandy loam gravel soils of ridges with associations of a kidney-bearing hodgepodge, tree-hodgepodge, spread, astragalus of the hardest;
- Vegetation of sand and gravel soils in cones of removal of sai (small river) with associations of the Caspian feather grass;
- Psammophilic vegetation in the valleys of sai with associations of Smyrnovia Turkestan, Aristida cirrus;
- Vegetation of compacted sandy plains with associations of the Lemapne Ammotamus;
- Vegetation of finely tuberous sands with associations of fine-fruited kandyma, bristly kandyme, spread bindweed, single-leaf and shaggy astragalos.

Fauna

The following species are found in the Eco-center (also see **Figure 5.8**):

- Jeyran (*Gazella subgutturosa*). This is a vulnerable species. It is included in the Red Book of the International Union for Conservation of Nature (IUCN).
- Kulan (*Equus hemionus kulan*). In Uzbekistan, this species disappeared in nature, but was bred in the Eco-center. It is included in the Red Data Book of the IUCN as endangered species.
- Przewalski's horse (*Eguus fernsprzewalskii*). This species is listed in the Red Book of MCOP, endangered species (CR).
- Bukhara mountain sheep (*Ovis orientalis bocharensis*). In Uzbekistan, this species is on the verge of extinction. The IUCN Red List is listed as Vulnerable (VU).

In addition, the Eco-center has rich biodiversity, which indicates its importance not only in breeding rare species, but also in maintaining desert biosensors nationwide.

Insects. The world of insects is rich and diverse, according to the region, 2,500 species are described, at least 700 are found in the nursery, of which 6 species are listed in the Red Book of Uzbekistan.

Fish. More than 18 fish species are found in lakes of the Eco-center of which five species are listed in the Red Book of Uzbekistan.

Amphibians and reptiles. In the Eco-center there are two species of amphibians: a lake frog can be found on the lakes, and a green toad lives in the residential area. There are also 20 species of reptiles - this is 33% of the total diversity of Uzbekistan, among them three rare species are listed in the Red Book of Uzbekistan and the International Red Book.

Birds. More than 257 species of birds can be observed in the Eco-center, including 63 nesting birds. And this is more than 58% of the entire avifauna of Uzbekistan. Among them are 35 rare and listed in the Red Book of Uzbekistan and the IUCN Red Book

Mammals. Thirty-six species of mammals were recorded in the Eco-center, which is 33% of the total species diversity of mammals in Uzbekistan. Of these, eight species are listed in the Red Book of Uzbekistan and the IUCN Red Book.

In the 1st territory there is the main livestock of bred ungulates: gazelles, kulan, Przhevalsky's horse, Bukhara mountain sheep, and goat (hangul). According to the latest count conducted in October 2019, the total number of experimental ones is as follows: 953 gazelles, 155 kulans, 25 Przhevalsky horses, Bukhara mountain sheep (urial) 49 and screw-goat (hangul) - two. In the non-fenced territory of the reserve there are 30 gazelles, nine lancers, eight Przhevalsky horses.

In accordance with the government plans for the period 2019-2028, it is envisaged to increase the number of gazelles to 1,000 individuals.

From time to time, as the number of animals increases, exceeding the capabilities of the first plot in the feed base, water supply, the necessary territory, sanitary requirements, animals are moved by decision of the Goskomekologiya to other reserves and to the second plot. The last movement of 200 individuals of Jeyrans was in 2016. Other species found in both territories include long-needle hedgehog, Karaganka fox, large steppe cat, red-tailed gerbil, and small jerboas.


Przewalski's horse


Goitered Gazelle


Houbara bustard


Bukhara deer

Figure 5.8: Animals of the Jeyran Eco-center

5.2.3. Neftchi State Forestry Area

The Neftchi State Forestry Area with an area of 8,500 ha was established according to Resolution of the President of the RUz No. 2966 dated May 11, 2017 On organizing the activities of State Committee on Forestry of the Republic of Uzbekistan. The purpose of this resolution is to ensure efficient implementation of state policy, improvement of public administration system in the sphere of forestry, rational use of forest resources and with the purposes of elimination of existing challenges and further development of forestry.

The Neftchi State Forestry Area is a typical desert forest. It is represented by sparse plantations of white and black Saxaul, Circassian, combed and large hodgepodge. Like other desert forests, Neftchi State Forest plays an important role of soil-protective and sand-strengthening, prevent the onset of sand deposits on cultural oases, and has an impact on improving the climate resilience of adjacent territories. Such forests fasten sand substrates with a grid of horizontal roots and do not allow them to move in the direction of the prevailing winds. In addition, they serve as a forage base for sheep grazing.

5.2.4. Vegetation and fauna living along the route

On the territory along the road various types of desert and semi-desert vegetation grow. These include saxaul groves, tugai thickets, plants of salt marshes and takyrs, thickets of reeds, and tamaris. The vegetation of the loamy sand gravel soils of the ridges with associations of the kidney-bearing hodgepodge, treelike hodgepodge, spread bindweed, astragalus shaggy and others are found in the area. The vegetation of finely tuberous sands with associations of fine-fruited kandyma, bristly kandyme, spread bindweed, single-leaf and shaggy astragals also exist in the area. Wormwood and wormwood-shrubbery vegetation occurs along the road.

Jerboas, various species of ground squirrels, wolf, fox-corsac, hedgehog, tortoise and other wild species exist in this area. Different types of snakes and lizards including boa constrictor, snake, sand efa and shchitomordnik, and monitor lizard are found here. The birds of the area include lark, jay, stork, heron, bustard -krasotka, steppe eagle, owls, laughing dove, European bee-eater, tufted minutes bird, eagle, hawk and others.

Along the road there are animals listed in the Red Book of IUCN and the Republic of Uzbekistan. The largest number of animals listed in the Red Book live in the open area of Jeyran Eco-center (see **Table 5.9**).

Table 5.9: Key Species in Jeyran Eco-center

No	Common name	Scientific name	Uz protection category	IUCN Status (2019-2)
1.	Jeyran	Gazella subgutturosa	Vu	Vu
2.	Kulan	(Equus hemionus kulan).	EN	EN
3.	Przewalski 's horse	Eguus fernsprzewalskii	CR	CR
4.	Central Asian tortoise	Agrionemys horsfieldii	Vu	Vu
5.	Meadow viper	Ursini's viper	Bdd	VDD
6.	Long tailed eagle Pallas's fish eagle	Eagle haliaeetus leucoryphus	Vu	Vu
7.	Great spotted eagle	Greater spotted eagle	NT	NT

No	Common name	Scientific name	Uz protection category	IUCN Status (2019-2)
8.	Saker Falcon	Saker Falcon	NT	Vu
9.	Peregrine Falcon	Peregrine falcon	VU: R	-
10.	Bustard Beauty (Jack) Houbara Bustard	Houbara (McQueen's) Bustard	VU: D	Vu
11.	Brown pigeon Yellow-eyed Pigeon	Pale-baked pigeon Columba eversmanni	VU: D	-
12.	Long-needle (bald) hedgehog Brandt's Hedgehog	Brandt's Hedgehog Paraechinus hypomelas	NT	Lr / lc

Source: Red Book of the Republic of Uzbekistan, 2009 ed. "Chinor ENK"

5.3. Socioeconomic Baseline

This section presents the findings of the socio-economic survey in the Bukhara region based on the data obtained during the qualitative survey in three districts of the project area including Bukhara, Kagan and Karaulbazar as well as Bukhara and Kagan cities. In total, 12 focus group discussions (FGDs) were carried out in the three districts and two cities - two in each district and each city (one for women and one mixed FGDs). Two additional FGDs were conducted with representatives of the key project stakeholders and business enterprises located along the A380 road. The focus of the FGDs was to explore the transport services challenges. The list of participants is attached in **Annex B1**.

The goal of the socio-economic survey is to evaluate the economic, social and gender factors affecting the project, and to develop proposals for the mitigation/elimination of any negative impacts and risks on specific social groups. As the project involves not only reconstruction of the existing road but also the new construction (interchanges), special emphasis has been placed on reviewing the current situation relating to safety issues, access to the road, level of transport services, including their reliability and accessibility for all users.

5.3.1. Research methodology

Data Collection

The following data was collected to obtain a broad range of information about the characteristics of the three districts of the Bukhara region namely Karaulbazar, Kagan, and Bukhara as well as Bukhara and Kagan cities:

i. **specific socio-economic features** of the project area; the presence of local communities within the project area, and their access to road and transport services;

ii. **gender specific features** and issues relating to the access to road and transport services, such as indicators of women's mobility; gender differences in constraints faced in accessing transport facilities; and gender differences in preferences for/concerns on pedestrian crossing facilities;

iii. possible **socio-economic benefits** of the project, primarily for vulnerable groups of the population;

iv. **road safety:** available baseline on Road Safety is presented.

Procedures for Data Collection and Analysis

In total, 170 members of the project area participated in the FGDs, where the share of women and men was 57% and 43% respectively (see **Table 5.10**).

Besides FGDs, during field survey in December - January 2020, 8 face-to-face interviews with key "Uzyolloyiha" experts, Bukhara region State Roads Safety Services, Land Committee and other secondary and primary stakeholders were carried out.

Table 5.10: The number of FGDs participants by districts

No	Districts	Participants	Women	Men
1.	Bukhara	31	13	18
2.	Kagan	41	25	16
3.	Karaulbazar	42	26	16
4.	Bukhara city	29	18	11
5.	Kagan city	27	15	12
	Total	**170**	97	73

Source: Social survey of the BRNIP, 2020

Relevant secondary information was collected from the State Statistic Committee Makhalla Foundation of the Bukhara region in 2019 - 2020.

The research instruments (guidelines for FGDs) for the survey are attached in the **Annex B2** of the main report.

In addition, socio-economic, road safety, productive and social infrastructure information were collected from mahallas along the road A-380 (150-228 km). Information were provided by the chairpersons of urban and rural mahallas, local authorities, departments of statistics, departments of local employment agencies.

Secondary Information

During the preparatory phase, a brief review of relevant official statistics will be carried out on the basis of the selected indicators, specifically:

(i) administrative data
(ii) demographic statistics
(iii) geographical and climate information
(iv) data on labor and employment
(v) data on social infrastructure facilities (educational establishments and medical institutions)
(vi) information about access to municipal infrastructure (electricity, natural gas and water supply)

The data of the State Committee of the Republic of Uzbekistan on Statistics (Bukhara Region State Statistics Committee) are used as a basic source of secondary information. In addition, information was supported by the Department of Economy and Statistics of local Khokimiyats and at times at local self-governance bodies.

5.3.2. Bukhara district

Bukhara district was established in 1926. Administrative center of Bukhara district – Galaosiyo is located in 9 km distance from the center of Bukhara region – Bukhara city. The district area is 1,32 thousand square kilometers – 6,5% of the region area, with 165,200 people, or 7,9% of the region population. The density of the district is around 677 people per square kilometer – one of the highest ones in Bukhara region. See **Table 5.11** for the key information about the district.

Around 85,5% of the district population resides in rural areas compared to 15,5% of urban population. Ethnic composition of the population includes Uzbeks – 94,2%; Tadjiks are 2%, and 4% constitutes other nationalities. There are 14 Rural Assemblies of Citizens, 36 Makhalla Assemblies of Citizens in Bukhara district. Aside Galaosiyo city, there are six town in the district. Two makhallas of the Bukhara district are located along the A380 road.

Bukhara city is one of the ancient cities in the world. The history of Bukhara stretches back millennia. It is now the capital of Bukhara Region of Uzbekistan. Located on the Silk Road, the city has long been a center of trade, scholarship, culture, and religion.

In 2019, almost 278 500 people reside in 65 makhallas assemblies. Residents of different ethnic groups such as Uzbeks – 83%, Russians- 6%, Tadjiks – 4%, and others- 7%, live in the 66,816 households. The residents of the 10 makhallas of the Bukhara city are residing along the A380 road.

Table 5.11: Administrative Information of Project area, 2019

Name	Area, Thousand km^2	Distance to center of region (km)	Number of rural assemblies of citizens (RAC's)[4]	Number of Mahalla assemblies of citizens	Number of Cities, Towns Urban-type and rural type settlements
Bukhara district	1.32	9	14	36	162
Kagan district	0.50	15	9	23	136
Karaulbazar district	2.20	63	7	7	n/a
Bukhara city	0.07	-		65	
Kagan city	0.027			21	
Bukhara region	40.32	100	120	543	64

Source: Bukhara region Statistics Department, 2019

Kagan district

Kagan district was established in 1926. As of 2019, the number of the Rural Citizens Assemblies is nine with 23 makhallas. Kagan district borders with Bukhara city, Bukhara district, and Navoiy region. The distance from Kagan district to Bukhara city is 12 km. The

[4] Rural population – a form of self-government where citizens residing in rural administrative and territorial areas are under the jurisdiction of a village headman or chief of the district.

economy of this district is focused on production of the construction materials, dairy products, as well as fishery and poultry development. An industrial enterprise "Qurilish konstrukciyalar ta'minoti", 20 joint stock companies, 269 small industrial enterprises, and 462 farmers are operated in the Kagan district.

Kagan city was established in 1929 and its territory is around 1,535 ha (0,027 thousand square kilometers). The state statistic committee reports that around 61 000 people are living in the 21 makhallas and 13,970 households (see **Table 5.12**).

Karaulbazar district

Karaulbazar district was established in 1993. The administrative center is the city of Karaulbazar. This district borders with Kashkadarya and Navoiy regions as well as with Alat, Kagan and Bukhara districts of the Bukhara region. Karaulbazar is one of the important industrial centers of the Bukhara region. The gas and oil production factories are the main sources of the employment and incomes of the local residents. In addition, around 30 organizations specialized on transport, construction, and industrial production are located in this district. There is a district bus stop location and a railway station in the Karaulbazar city. In total, in 2019 around 18,301 people resided in the district. The share of the urban population is more than rural constitutes 57% and 43% respectively. This district is famous for its architectural monuments, ancient mosques and historical places (63).[5] See **Table 5.11** for the key information about the district.

According to the preliminary assessment of published statistical data, the population of Bukhara, Kagan and Karaulbazar districts is 165,200, 77,500 and 18,200, respectively, as of 2019. The share of rural residents is more in Bukhara (77%) and Kagan (93%) districts in comparison with Karaulbazar district (43%). Bukhara city and Bukhara district constitute more populated areas of the project area (see **Table 5.12**).

Table 5.12: Populations in Project area

Name	Population 000's			Number of Households 000's	Population as % of Province Population	Population Growth, per 1,000 Population
		Urban	Rural			
Bukhara District	165.2	37.8	127.4	28,743	8.6	18.6
Kagan district	77.5	5.4	72.1	16,174	4	22.7
Karaulbazar district	18.2	10.4	7.8	4,396	1	22.1
Bukhara city	278,500	278,500	-	66,816	14.6	18.4
Kagan city	60,700	60,700	-	13,970	3.2	18.6
Bukhara region	1915.9	707.3	1208.6	385,075	100	20.8

Source: Bukhara region Statistics Department, 2019

[5] The list of historical heritage approved by Cabinet of Ministries in 2018.

Project Beneficiaries

The number of the directly affected residents of the project is 600,100 people. Indirectly the whole population of the Bukhara region, around two million people, and the whole country will benefit from the project activities (see **Table 5.13**).

Table 5.13: Number of people of the project area

No	Districts	Population
1.	Bukhara	165,200
2.	Kagan	77,500
3.	Karaulbazar	18,200
4.	Bukhara city	278,500
5.	Kagan city	60,700
Total:		**600,100**

Source: State Committee of Statistics, 2019.

5.3.3. Income and expenditures of the households in the project area

According to the data of the Makhalla foundation of the Bukhara region the highest number of low-income families is found in the Bukhara city and Bukhara district and constitute 2,064 and 563 low-income families. The lowest number of low-income families is presented in the Karaulbazar district who resides in the 7 makhallas (see **Table 5.14**).

Table 5.14: Number of the low-income families in the project area

No	Name of the district	Number of Makhalla committees	Number of low-income families
1.	Bukhara	36	563
2.	Kagan	21	298
3.	Karaulbazar	7	32
4.	Bukhara city	65	2064
5.	Kagan city	21	233
Total		**150.0**	**3,190**

Source: Bukhara region Makhalla Foundation. 2020

The State Statistic reports that the nominal average salary in the Bukhara region constituted 2,388,600 UZS. The statistical data presented that highest salary rate is observed in the Kagan city and Karaulbazar district which composed 2,859,400 UZS and 2,786,200 UZS respectively (see **Figure 5.9**).

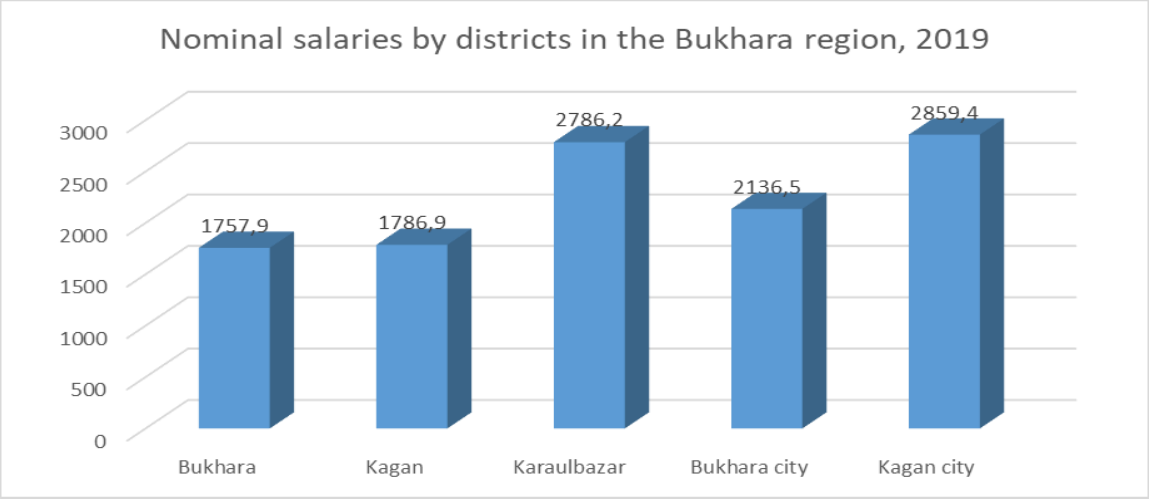


Figure 5.9: Nominal salaries by districts in the Bukhara region, 2019 (Source: State Committee of Statistics, 2019)

The workers of the banks and insurance companies received the maximum amount of the salary, whereas the salary of teachers and doctors constituted the minimal wage (on average, 1,200,000 UZS). Workers in the transport sector received 2,366,300 UZS which is almost equal to the average salary rate of the Bukhara region 2,388,600 UZS (see **Figure 5.10**).

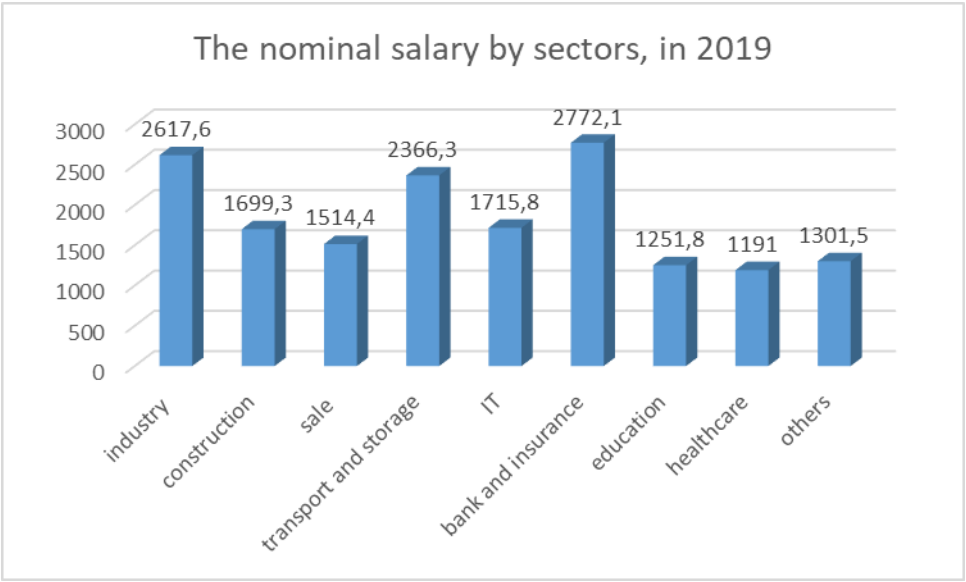


Figure 5.10: The nominal salary by sectors, in 2019 (Source: State Committee of Statistics, 2019)

5.3.4. Education and Healthcare

Social infrastructure of the Bukhara district includes 54 schools including two residential schools, 37 pre-school establishments and kindergartens, six professional colleges, and 16 healthcare establishments. The education and healthcare systems of the Kagan district include 22 secondary schools, 12 kindergartens, five libraries and three hospitals. According to the Karaulbazar district statistic data, the education sector includes eight

secondary schools, nine kindergartens and four libraries. There is a hospital and a policlinic in the district (see **Table 5.15**).

Table 5.15: Number of Healthcare and Education Facilities

No	Districts	Number of Kindergartens	Number of schools	Number of colleges	Number of Institutes	Number of libraries	Number of hospitals
1.	Bukhara	37	54	6	0	11	16
2.	Kagan	12	22		0	12	3
3.	Karaulbazar	9	8	1	0	4	2
4.	Bukhara city	95	53		4	37	35
5.	Kagan city	21	11		0	5	5

Source: State Committee of Statistics, 2019.

5.3.5. Transport

The volume of the freight turnover in the Bukhara region increased in 2019 by 8.8% in comparison with 2018. Private entrepreneurs of the Bukhara region recorded an increase in freight turn over by road transport of 794.1 million tons/km in 2019 which is for 3.7% more than the figures of 2018. The freight turnover observed in the Bukhara city and adjoining Romitan districts in 2019 was 9,912.7 tons and 5,935.3 tons respectively. These districts are covered by the project area and use the important A380 road. However, the freight turnover of the Kagan city is comparatively lower (3,036 tons) (see **Figure 5.11)**.

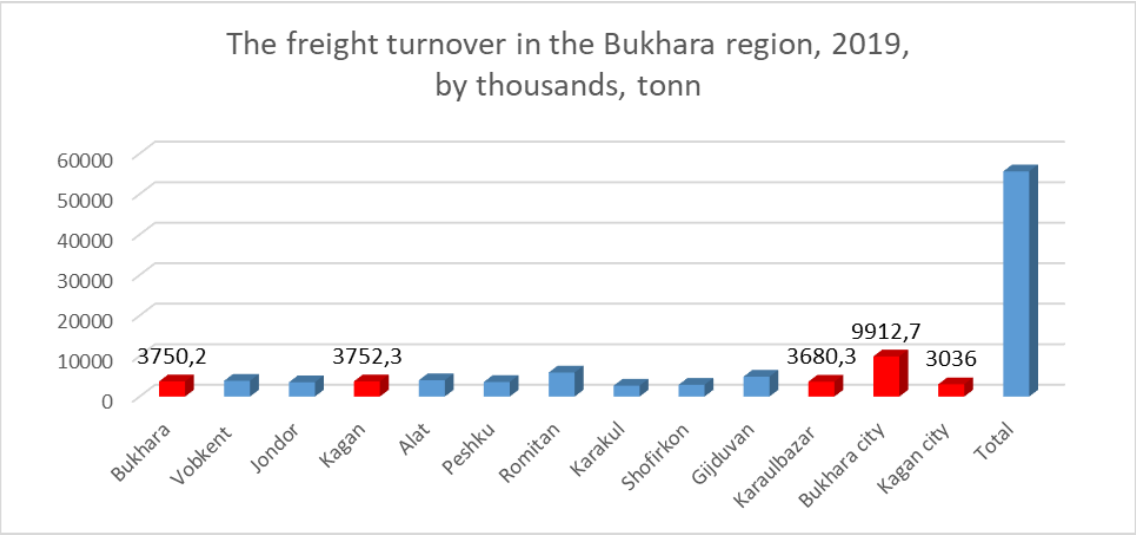


Figure 5.11: The freight turnover in the Bukhara region, 2019 (Source: State Committee of Statistics, 2019)

The taxi and public transport services constitutes significant share of the local economy. In Jan – Sept, 2019 there were 236 thousand passengers in Bukhara Region. The number of

passenger turnover in the Bukhara city was 61,250.7. During the same period there were 9,000 passengers in Kagan City (**Table 5.16**)

Table 5.16: Number of the passenger's turnover in the Bukhara region, 2019

Passengers transporting services (in thousand)	236
Bukhara City (in thousand)	661
Bukhara District (in thousand)	26
Kagan City (in thousand)	9
Kagan District (in thousand)	16
Karaulbazar (in thousand)	14

Source: State Committee of Statistics, 2019.

5.3.6. Road Safety

According to the statistical data of the Bukhara region Road Safety department, number of car collisions was increased by three times in 2019 in comparison with 2017 and 2018. The share of the accidents where pedestrians were hit by car composed the significant numbers in comparison with other types of the accidents (see **Figure 5.12**). The data provided by official representatives is included in **Annex C1**.

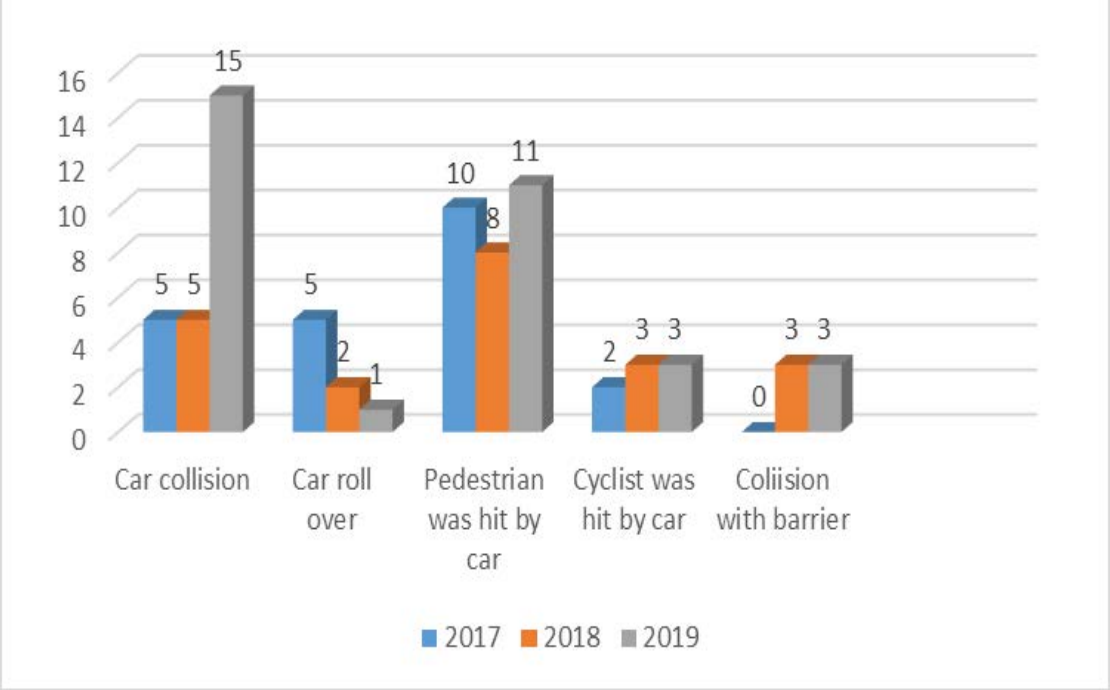


Figure 5.12: Number of accidents at the A 380 section 150-228 km, during 2017-2019

The analysis of the number of accidents during last three years from 2017 to 2019 revealed that majority of them (8) happened at the 219 km cross section (**Figure 5.13**). This is the most populated area where many healthcare and educational establishments of the Bukhara

city are located. Based on the findings of the statistical data from Bukhara region Road Traffic Department, the area between 204 – 221 km maybe considered unsafe for local residents, women, children, cyclists, and drivers. The average number of the accidents is 4-5 at these section of the international road A 380 (see **Figure 5.14**).

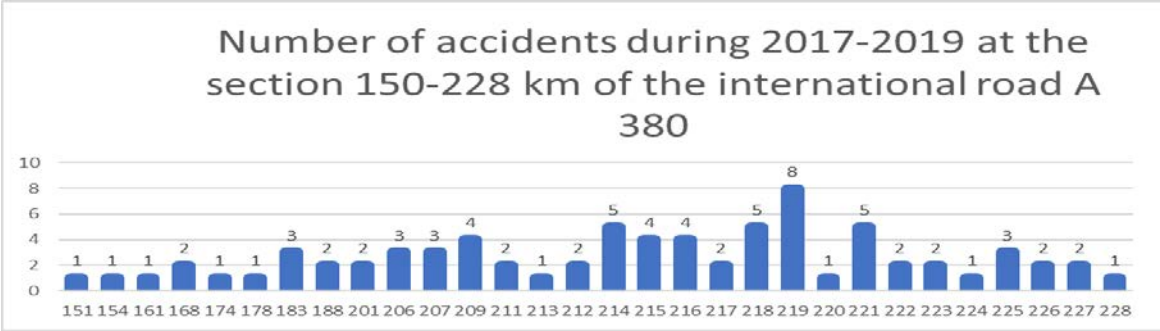


Figure 5.13: Number of accidents during 2017-2019 at A380 road section 150-228 km *(Source: Bukhara region Road Safety Department, 2020)*

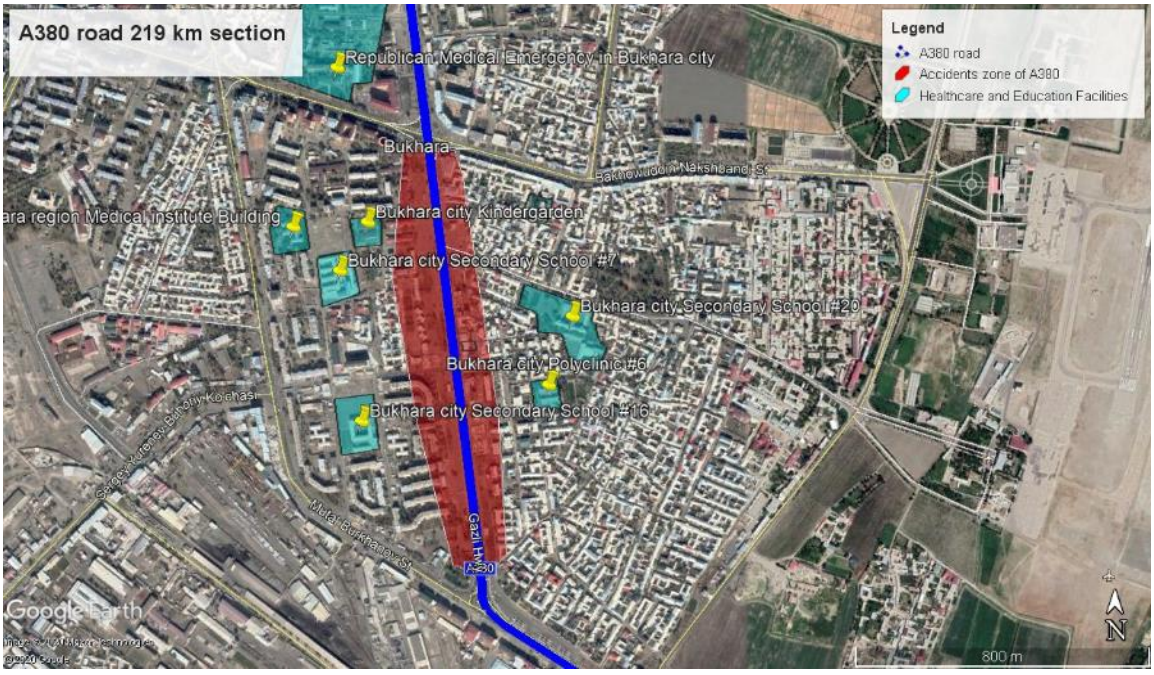


Figure 5.14: Accidents zone of A380 section 219 km

The analysis of the number of accidents by location in the project area shows that most of them occur on section of the road of the Bukhara city and Kagan district. In 2019, there were 15 accidents in the Bukhara city in comparison to 9 in 2018. Many accidents take place when pedestrians and cyclists are hit. Incidences of collisions of cars has also been recorded in the Kagan district. (See **Figure 5.15**)

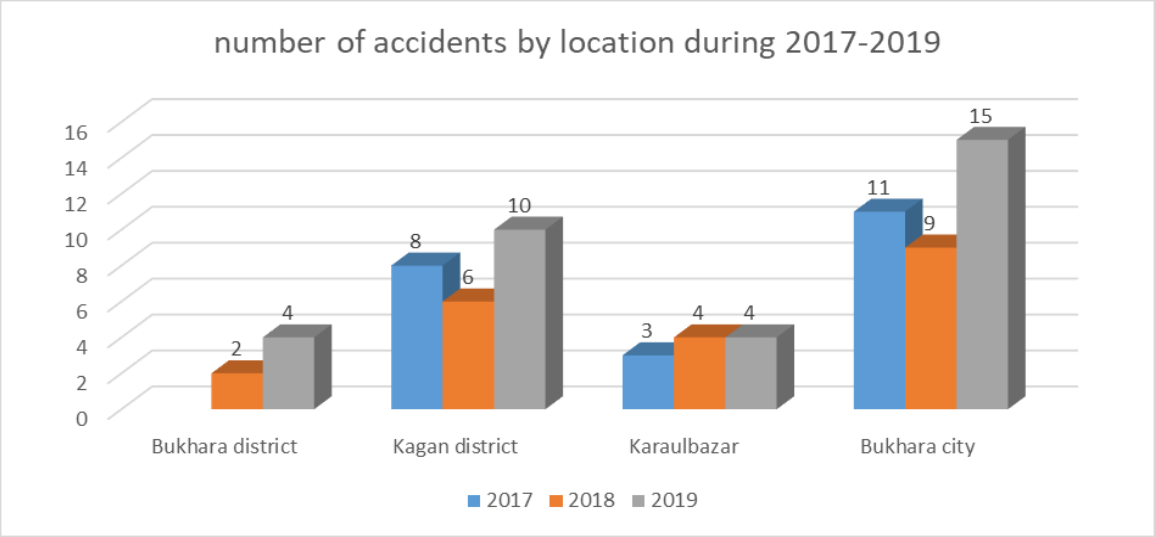


Figure 5.15: Number of accidents by location during 2017-2019
(*Source: Bukhara region Road Safety Department, 2020)*

The Road Safety Department data indicates that both death and injury due to road accidents have increased in 2019 from 2018. (See **Figure 5.16**)

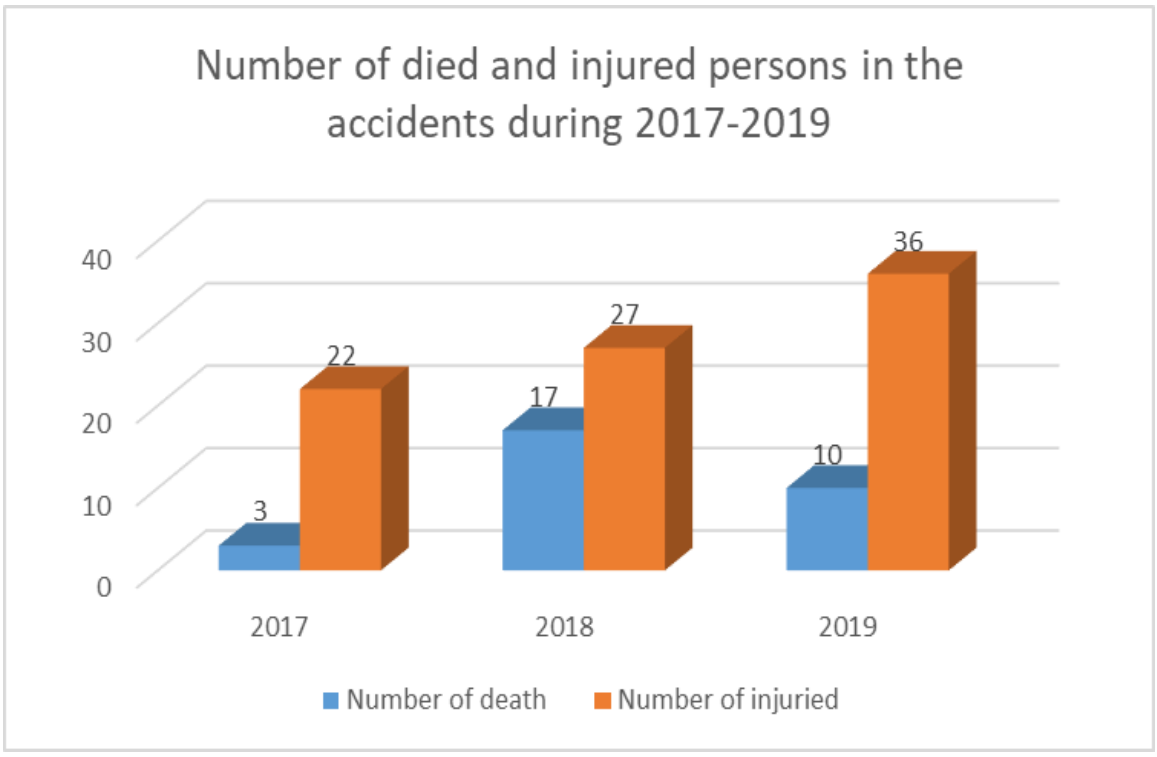


Figure 5.16: Number of died and injured persons in the accidents during 2017-2019
(*Source: Bukhara region Road Safety Department, 2020)*

5.3.7. Cultural Heritage

A total 829 objects of cultural heritage sites are located in Bukhara region. More than half (448) of the historical monuments are located in the Bukhara city and Kagan district (63) (see **Table 5.17**)

Table 5.17: Number of historical monuments in the project area, 2020

№	Names of districts and cities	Quantity	Monuments			
			Archaeology	Architectures	Monumental Art	Attractions
1	Kagan	63	32	31		
2	Karaulbazar	2		2		
5	Bukhara					
7	Bukhara city	448	2	321	118	7
8	Kagan city	40	2	38		
9	Bukhara region	829				

As part of the preliminary environmental and social assessment studies of the project, a baseline assessment, including consultations, was conducted to identify any archaeological, architectural or cultural heritage sites in the project area. This assessment presented that there are no historical or cultural monuments in the project area along the road A380 on the section 150-228 km. At the same time, the possibility of archaeological finds cannot be ruled out. Archeological finds are most often found at the stage of construction works. In the case of archaeological finds, special notices will be issued and, if necessary, excavations will be stopped and their protection respected. The procedure for handling archaeological finds includes the identification, notification of discovery, documentation and handling of archaeological finds in accordance with national legislation and, if necessary, international practice and local customs.

5.3.8. Findings of the FGDs

This section described the results of the socio-economic survey in the Bukhara region. It presents the results of the FGDs related to transport services systems and examines to what extent local residents have access to transport and social infrastructure facilities at the A380 150-228 km section road as well as its current safety problems.

Demographic features of the households

During the survey, in January 2020, the residents of the makhallas located along the A380 participated in the FGDs. According to the data of the Makhalla Foundation, the makhallas listed in **Table 5.18** are located along the A 380 road.

Table 5.18: Makhalla Located along A380 (150-228 km Section)

No	Bukhara city and Bukhara district	Kagan district	Karaulbazar district
1.	Konchilar	Uzbekiston	Jarkok
2.	Deychaabad	Hoja Bargi	Toshquduq
3.	Vodnik	Mahtum quli	Navbahor

No	**Bukhara city and Bukhara district**	**Kagan district**	**Karaulbazar district**
4.	Djuvazkagaz	Mustaqillik	Buzachi
5.	Shaykhancha	Uba Chuli	
6.	Abduholik Gijduvoniy	Mirzo Ulugbek	
7.	Sherbudin	Babur	
8.	Shark Yulduzi	Istiqlol	
9.	Kuksaroy	Beklar	
10.	Guli Chorbog	Tutkunda	
11.	Ibn Sino	Taraquyot	
12.	Guliston	Kurgoncha	
13.	Otbozor	Gashgash	
14.	Sheyhon		
15.	Dehcha		

Based on findings of the FGDs, the average size of the family in the project area districts is around 4-6 persons in rural areas and 4-5 in the cities. A majority of participants of FGDs (40%) have completed secondary education and 60% graduated from the higher institutes. According to the results of the recent survey, number of children under 19 years old make up about 30%, the same general structure of the population in demographic indicators is confirmed by the general republican statistical indicators.

Road Transport Features in the project area

During FGDs participants shared the current problems of the access to local healthcare and educational establishments, local markets, livelihood economic, tourism, pilgrimage, and traveling opportunities by using the A380 international road.

Almost 80% of the participants of the FGDs from Karaulbazar and Kagan districts stated that they travel out of their districts either for going to the hospitals, institutes/colleges, central dehkan markets at the Bukhara city. Whereas habitants of the Bukhara and Kagan cities are using A380 mostly for reaching their workplaces in Kagan and Karaulbazar districts. The results of the discussions with local residents in the project area were subsequently shared with the project proponents. The summary of these discussions is given in **Table 5.19** below.

Table 5.19: Summary of FGDs

	Public Perceptions	**Responses by Road Committee**
1	Travel expenditures is a high proportion of the family income	Improved road condition will improve ease of commutation; The frequency of public transport will increase. More buses and taxis

	Public Perceptions	Responses by Road Committee
		will ply on the road. But the Road Committee has no control on cost of travel
2	High cost of the taxi transport services at night and holidays from Bukhara city to Kagan and Karaulbazar districts, particularly for low-income households and students from Karaulbazar and Kagan districts	The improved condition of the road will lead to decongestion of traffic. Thus, ease of travel will improve but the Road Committee will not have any impact on reduction of travel cost
3	Lack of safety at the A380 road: High number of accidents among women and children at the road alignments, near the schools and institutes	Signages for schools or busy pedestrian crossings will be put in place. Additional zebra crossing, speed breakers, cameras (for speed control) and lights will be introduced
4	Lack of separate bicycle lines in the Kagan and Bukhara districts	Separate bicycle lines and sidewalks for pedestrians has been designed
5	Traffic jams at the peak hours at the populated area in the Bukhara and Kagan districts	Improved road condition will lead to decongestion and reduce traffic jams
6	Lack of correct road alignments and pedestrian cross-road at the Kagan district and Bukhara city alignments	Proper alignment with sidewalks is planned under the new road design.
7	Lack of sanitation facilities for passengers and drivers: absence of separate toilets at the bus stops, separate rooms for women and children	As per Government of Uzbekistan decree (# 793 dated 21September 2019), all fuel stations are prohibited to function from 1 March 2020, if they don't have toilets. However, given the problem of maintenance, it would not be feasible to construct toilets on the roads.
8	Unsatisfied public service at the A 380. For example, issues of the Damas (explanation of the car) services: lack of safety and small capacity of this car for the transportation from Kagan to Karaulbazar, Karshi, Bukhara city. Damas cars are served just until Kagan center and then buses are used for going to the Bukhara city	The improved road conditions will ensure higher degree of public transport facilities, such as buses and taxis. This will improve easier transportation to educational and health centers. Access to markets for commercial purposes and buying perishable stocks at home will also be easier. The connectivity across the entire region will also be improved
9	The longtime of travelling because of traffic jams, poor road conditions	Improved road conditions will lead to decongestion of traffic and travel time will be reduced

5.3.9. Gender assessment

Demographics: The State Statistic Committee reports that in 2019 the share of women and men in Uzbekistan constituted 49,8% and 50,2% respectively. The same trend is observed in the Bukhara region Statistics. Drawn on the findings of the survey, the percentage of women who retired is slightly higher than that of men, which is 58,1% and 41,9%, respectively.[6] During FGDs female participants stressed that it is easier for men to migrate than for men. That is why in some households are headed by women; and women are taking care for children, doing housework, and also working.

There are, however, gender disparities in decision making across districts where women cannot voice their decisions regarding expenditures on transportation, for instance, the women cannot send their children to Bukhara city which would entail higher transportation cost. Women in Bukhara and Kagan cities stated that they can contribute to the family budget and promote their contribution in the decision-making process at the household.

*Occupational details***.** The survey revealed that majority of female and male respondents are employed in the public sector and constitutes around 48% and 39% respectively. The share of men who have their own business/or self -employed (10%/13%) is two times more than females (5%/7%). The number of unemployed women is significantly higher than men and composed 23% and 6% respectively. This is explained by the reason that women mostly occupy professions of teachers and nurses. Traditionally after the college education girls get married around 21-23 years old. The FGDs findings indicate that women are mostly employed in the small business such as sewing, cooking, agriculture sector, greenhouses, and farms as seasonal workers and very rare as owners of the farms.

Because the number of vacancies in the healthcare and education sector are limited, where women are generally employed, specifically in rural areas, the number of unemployment among women is significantly higher than men. The share of men (23%) in transport, construction, communication services are relatively higher than women (10%). See **Table 5.20** for details.

Table 5.20: Number of employed women and men

Sectors	Women		Men	
	Total	%	Total	%
Agriculture	20	5,1	31	7,8
Non-Agricultural Sector (transport, construction, industry, communications, trade, services, etc.)	40	10,3	92	23,3
Public Sector (health care, education, management, law enforcement agencies, etc.)	186	47,7	153	38,7

[6] Bukhara Region Water Supply and Sewerage Project (BRWWSP), AIIB, 2020

Sectors	Women		Men	
	Total	%	Total	%
Have their own business / business / private enterprise	18	4,6	39	9,9
Self-employed	29	7,4	52	13,2
Unemployed	91	23,3	22	5,6
Others	6	1,5	6	

Source: Socio-economic Survey in Bukhara Province, 2019.

The findings of the FGDs demonstrated that unemployed women often applied to Women Committees and khokimiyat for the help to find the appropriate job for them. Part of them expressed their willingness to open their business in the agriculture and catering services. They would like to have an additional training for business and financial management. However, they are challenged with affordable, safe and reliable access to transport services. The encounter with the lack of appropriate public transport and sanitation facilities at the A380 intern international road. Furthermore, women expressed their willingness to open new shops and cafés at the bus stations along the A380 road. They also recommended to get involved in private sector for maintaining and operating services of the sanitation facilities at the bus stations (see **Figure 5.17**).

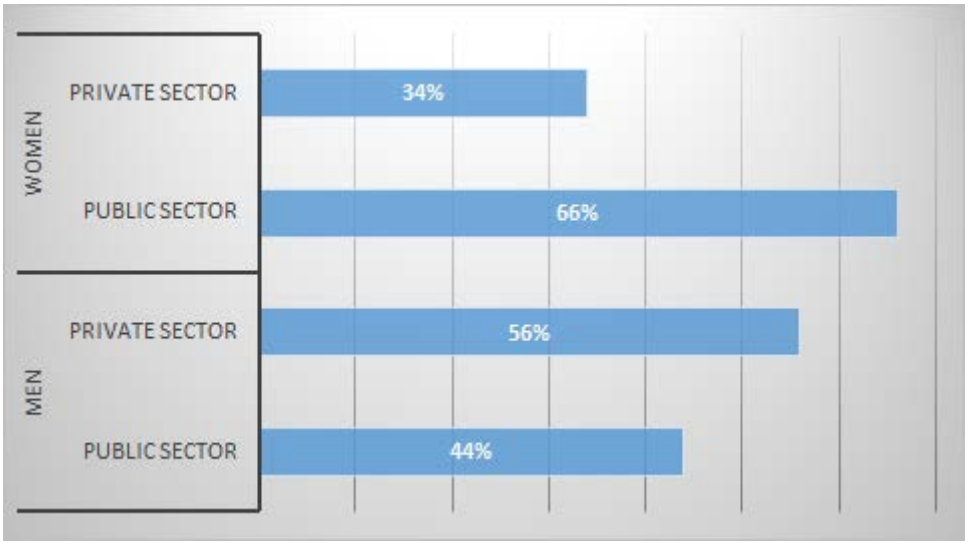


Figure 5.17: Distribution of men and women employed in the informal and formal sectors

Women of the FGDs shared that they use A380 road for going to the hospitals, markets, work, and visiting their relatives who is living in the different districts in the Bukhara region. During FGDs women were asked to indicate their most common mode of travel to these places. Based on the FGDs findings around 20% female participants don't have personal vehicles and hence they use public toilets.

Participants of the female FGD of the Karaulbazar district indicated that women mostly occupy traditional professions such as teachers and doctors and they faced many employment challenges given limited opportunities. Almost majority of women stressed that the share of the transport expenditures is around 30-40% of the family budget.

Particularly, the household with school children and students spent around 200,000 - 300,000 UZS per month for their daily roads.

The transport service is not comfortable and safe for the female passengers from Karaulbazar districts. In order to get better professional medical treatment women mostly use Damas cars (seven seats), Gazel microbus with 10-12 seats, and public buses. As the survey examined, the distance between the Karaulbazar district and Bukhara city is almost 60 km and passengers spent around 1.30 hour to one-way road. Female students (many of them married) also have to visit the Universities for educational purposes. Currently, long distance and infrequent public transport are key challenges. These problems will be adequately addressed with the rehabilitation of A380.

The lack of sanitation facilities was stated is one of the important issues for women and children. although there are signs of the separate toilets along the road, most of them are located 100 m or more from the main road. Specifically, during rain and snow it is hard to reach these facilities with small kids and elders. That is why women recommended to construct separate sanitation facilities for men and women. However, due to challenges of maintenance, such facilities cannot be built by the Road Committee.

The survey examined that A380 is a part of the Great Silk road and give access to the sacred and historical places in the Bukhara region. People have spiritual and historical roots in this region. For instance, visiting of the “7 Saints” one time per year has become a tradition for many Bukhara inhabitants. The FGD indicated that the lack of access to modern and comfortable sanitation facilities declined the number of young, elders, and people with disabilities pilgrims and tourists. This condition will be significantly addressed by the rehabilitation of the road.

The list of female participants and photos of participants of the FGDs is attached in **Annex B1**.

6. IMPACT ASSESSMENT AND MANAGEMENT MEASURES

This Chapter discusses potential impacts of the proposed project on environment and people; also discussed are the mitigation measures to address these potential impacts.

6.1. Impact Assessment Methodology

In this ESIA, each potential impact is described in terms of its various relevant characteristics (e.g. type, scale, duration, frequency, extent).

The potential impacts are qualitatively assessed based on the above characteristics to determine whether it is potentially significant or not.

The significance of potential impacts was assessed using the risk assessment methodology that considers impact magnitude and sensitivity of receptors, described below.

Impact Magnitude

The potential implications of the project have been categorized as major, moderate, minor or nominal based on consideration of the parameters such as i) duration of the effect; ii) spatial extent of the impact; iii) reversibility; iv) likelihood; and v) legal standards and established professional criteria. The magnitude of each potential impact of the Project has been identified according to the categories outlined in **Table 6.1**.

Table 6.1: Parameters for Determining Magnitude

Parameter	Major	Medium	Minor	Nominal
Duration of potential impact	Long term (beyond the project life)	Medium Term Lifespan of the project (within the project life span)	Limited to construction period	Temporary with no detectable potential impact
Spatial extent of the potential impact	Widespread far beyond project boundaries	Beyond immediate project components, site boundaries or local area	Within project boundary	Specific location within project component or site boundaries with no detectable potential impact
Reversibility of potential impacts	Potential impact is effectively permanent, requiring considerable intervention to return to baseline	Baseline requires a year or so with some interventions to return to baseline	Baseline returns naturally or with limited intervention within a few months	Baseline remains constant
Legal standards and established professional criteria	Breaches national standards and or international guidelines/obligations	Complies with limits given in national standards but breaches international lender	Meets minimum national standard limits or international guidelines	Not applicable

Parameter	Major	Medium	Minor	Nominal
		guidelines in one or more parameters		
Likelihood of potential impacts occurring	Occurs under typical operating or construction conditions (Certain)	Happens under worst case (negative impact) or best case (positive impact) operating conditions (Likely)	Occurs under abnormal, exceptional or emergency conditions (occasional)	Unlikely to happen

Sensitivity of Receptor

The sensitivity of a receptor has been determined based on a review of the population (including proximity/numbers/vulnerability) and the presence of features on the site or the surrounding area. For each potential impact of the project, sensitivity of the related receptor was determined using the criteria outlined in **Table 6.2**.

Table 6.2: Criteria for Determining Sensitivity

Sensitivity Determination	Definition
Very Severe	Vulnerable receptor with little or no capacity to absorb proposed changes or minimal opportunities for mitigation.
Severe	Vulnerable receptor with little or no capacity to absorb proposed changes or limited opportunities for mitigation.
Mild	Vulnerable receptor with some capacity to absorb proposed changes or moderate opportunities for mitigation
Low	Vulnerable receptor with good capacity to absorb proposed changes or/and good opportunities for mitigation

Assigning Significance

Following the assessment of impact magnitude and determining the quality and sensitivity of the receiving environment or potential receptor, the significance of each potential impact was established using the impact significance matrix shown in **Table 6.3.**

Table 6.3: Significance of Impact Criteria

	Sensitivity of Receptors			
Magnitude of Impact	**Very Severe**	**Severe**	**Mild**	**Low**
Major	Critical	High	Moderate	Minimal
Medium	High	High	Moderate	Minimal
Minor	Moderate	Moderate	Low	Minimal
Nominal	Minimal	Minimal	Minimal	Minimal

6.2. Summary of Potential Impacts

A summary of these impacts and their significance along with the mitigation measures is presented in **Table 6.4**, followed by discussions on these impacts.

Table 6.4: Summary of Potential Impacts and their Significance

Potential Impacts	Duration of Impact	Spatial Extent	Reversible or not	Likelihood	Magnitude	Sensitivity	Significance Prior to Mitigation	Mitigation Measures	Significance after Mitigation
Improved transport system	Long term	Local	Yes	Certain	Major	-	High positive	No mitigation is needed.	N/A
Impacts due to project siting									
Land acquisition and resettlement (related to five interchanges)	Long term	Local	No	Certain	Major	Mild	Moderate	Compensation to be paid to the affected people/entities.	Minimal
Loss of farms income and livelihood sources of affected households including vulnerable households	Long term	Local	No	Likely	Major	Mild	Moderate	Compensation to be paid to the affected people/entities.	Minimal
Impact on ecosystem	Long term	Local	No	Certain	Medium	Low	Minimal	No additional measures required	Minimal
Impacts related to Construction Phase									
Employment opportunities for local communities	Short term	Within project boundary	Yes	Certain	Medium	-	High positive	Preference to the local communities in the construction works; Employment Policy to be announced by contractors. Code of conduct for workers.	-
Risk of soil contamination and soil erosion	Medium term	Local	Yes	Certain	Medium	Severe	High	Pollution prevention plan will be prepared and implemented. Excavated top soil in the cultivated areas will be stored	Minimal

Potential Impacts	Duration of Impact	Spatial Extent	Reversible or not	Likelihood	Magnitude	Sensitivity	Significance Prior to Mitigation	Mitigation Measures	Significance after Mitigation
								separately, to be used as the top most layer during backfilling. Backfilled soil will be compacted to avoid soil erosion. Measures will be taken to avoid/minimize erosion of excavated soil. Top layer of soil will be stored separately and will be restored as the topmost layer after restoration	
Risk of water contamination	Short term	Wide-spread	Yes	Certain	Medium	Severe	High	Pollution prevention plan will be prepared and implemented. No untreated effluents will be released to ground or water bodies. Hazardous substances will be handled and stored according to the standards.	Minimal
Blockage of or damage to canals and drainage collectors	Short term	Local	No	Certain	Medium	Severe	High	Damage to canals and collectors will be avoided; Construction planning will be carried out to avoid any blockage of canals and collectors;	Minimal

Potential Impacts	Duration of Impact	Spatial Extent	Reversible or not	Likelihood	Magnitude	Sensitivity	Significance Prior to Mitigation	Mitigation Measures	Significance after Mitigation
								If damaged, the canals and collectors will be repaired and restored. No spoils or debris will be released / thrown in to canals and collectors	
Dust and air pollution from construction activities	Short term	Local	Yes	Certain	Medium	Severe	High	Pollution prevention plan will be prepared and implemented. Water sprinkling will be carried out.	Minimal
Impacts on borrow areas and sourcing of construction materials	Short term	Wide-spread	No	Certain	Medium	Severe	High	Borrow areas will be selected outside cultivated area; Areas will be restored after borrowing the soil; Depth of borrow areas will be kept up to 1 meter. Sand and stones will be obtained from licensed quarries.	Moderate
Generation of spoils, debris, asphalt scrapings	Short term	Local	Yes	Certain	Medium	Mild	Moderate	Excavated spoil will be re-used to the extent possible; Left-over spoil and debris will be disposed in designated areas	Minimal
Generation of solid waste and hazardous waste	Short term	Local	Yes	Certain	Medium	Severe	High	Waste management plan will be prepared and implemented. Reduce, recycle and reuse (3R) practices will be encouraged	Minimal

Potential Impacts	Duration of Impact	Spatial Extent	Reversible or not	Likelihood	Magnitude	Sensitivity	Significance Prior to Mitigation	Mitigation Measures	Significance after Mitigation
Noise and vibration from construction activities	Short term	Local	Yes	Certain	Medium	Severe	High	Noise reduction measures such as noise barriers will be implemented particularly near sensitive receptors; Working times near sensitive receptors will be adjusted to minimize impact.	Minimal to Moderate
Site clearance and restoration	Short term	Local	Yes	Certain	Medium	Mild	Moderate	Cleaning of the construction sites will be carried out	Minimal
Impact on flora and fauna due to clearing of land	Short term	Local	Yes	Certain	Medium	Mild	Moderate	Camps will not be established within 500 m of Jeyran Eco-center or near any other sensitive habitat; Area will be restored after removal of camp	Minimal
Impact on Jeyran Eco-center from construction activities (disturbance to wild species in the Eco-center, accidents)	Short term	Local	Yes	Likely	Medium	Mild	High	Liaison with the Eco-center authorities to be maintained during the construction phase; Workers will be educated about the wild species in the Eco-center	Minimal to Moderate
Greenhouse gas emissions from site clearing, construction activities	Short term	Local	Yes	Certain	Medium	Mild	Moderate	Emissions will be minimized through using efficient and well-maintained machinery	Minimal to Moderate

Potential Impacts	Duration of Impact	Spatial Extent	Reversible or not	Likelihood	Magnitude	Sensitivity	Significance Prior to Mitigation	Mitigation Measures	Significance after Mitigation
Crop damage	Short term	Local	Yes	Certain	Medium	Severe	High	Crop damage will be minimized through astute construction and site management and scheduling of construction works; Compensation will be paid to the growers/landowners	Minimal to Moderate
Blockage of access roads and damages to local infrastructure, traffic congestion	Short term	Local	Yes	Certain	Medium	Severe	High	Traffic management plan will be implemented Alternate routes will be identified; Damaged infrastructure will be restored b	Minimal
Community health and safety from construction traffic and activities	Short term	Local	Yes	Certain	Major	Severe	High	Community health and safety management plan will be prepared and implemented; Hazardous substances will be handled and stored according to the standards; Community liaison will be maintained.	Moderate
Occupational health and safety	Short term	Local	Yes	Certain	Major	Severe	High	Occupational health and safety plan will be implemented	Moderate
Additional load on local resources	Short term	Local	Yes	Certain	Medium	Mild	Moderate	Local resources such as water and fuel will be obtained after obtaining necessary approval and community consultation	Minimal

Potential Impacts	Duration of Impact	Spatial Extent	Reversible or not	Likelihood	Magnitude	Sensitivity	Significance Prior to Mitigation	Mitigation Measures	Significance after Mitigation
Impacts on cultural resources	Short term	Local	Yes	Likely	Medium	Severe	High	Chance find procedures will be implemented	Minimal
Social conflict and privacy of women, influx of workers, gender issues	Short term	Local	Yes	Likely	Medium	Mild	Moderate	Community liaison will be maintained; Construction camps will be established at least 500 m from communities, with the approval of PMU and local authorities; Guidelines for Influx of Workers and Gender-based violence (GBV) will be implemented; Code of conduct for workers will be enforced.	Minimal to Moderate
Impacts from O&M Activities									
Waste management on Road	Long term	Local	Yes	Certain	Major	Severe	High	Waste management plan will be implemented Road signage will be installed to educate road users	Minimal
Air pollution	Long term	Local	Yes	Certain	Major	Mild	Moderate to High	Tree plantation will be carried out along the road	Moderate
Noise and vibration	Long term	Local	Yes	Certain	Major	Severe	High	Noise reduction measures such as noise barriers will be considered at the sensitive receptors	Moderate

Potential Impacts	Duration of Impact	Spatial Extent	Reversible or not	Likelihood	Magnitude	Sensitivity	Significance Prior to Mitigation	Mitigation Measures	Significance after Mitigation
Occupational health and safety during maintenance	Long term	Local	Yes	Likely	Major	Severe	High	OHS management plan will be implemented	Medium
Community health and safety	Long term	Local	Yes	Likely	Major	Severe	High	Community health and safety management plan will be implemented; Road signage will be installed; Community liaison will be maintained. Emergency services (ambulance, rescue vehicles) will be arranged.	Moderate
Impact on Jeyran Eco-center (road hits, disturbance to wild species in the Eco-center)	Long term	Local	Yes	Likely	Medium	Severe	High	Road signage will be installed; Liaison with the Eco-center authorities to be maintained.	Minimal to Moderate
GHG Emissions	Long term	Global	No	Certain	Medium	Mild	Moderate	N/A	Moderate

6.3. Impacts due to Project Siting

The environmental impacts associated with the pre-construction phase are discussed below.

6.3.1. Improvement of transport system

Road network is a key element of the economy of the Bukhara region. The effective functioning of the transport system will lead to sustainable development of the economic growth, integrity and national security, as well as improvement of living standards and livelihoods of local population. The primary economic benefits of the investment program are cost savings from vehicle operation, reduction in travel time, and lower transaction costs related to transportation. Other benefits are: i) the establishment of international transport corridors; ii) improvements in road transport efficiency; iii) increase in freight and passenger transport due to improvements in the quality of roads; iv) increase axle load capacity; v) less road accidents due to improvements in road safety; (vi) improve sanitation facilities for local residents and tourists along the 150-228 km A380 road; and (vii) open new livelihood generating opportunities for young people and women of the project area.

6.3.2. Involuntary Resettlement

The involuntary resettlement impacts of the project are primarily associated with land acquisition, which is required for the five new interchanges and road constructions at 5 locations (see **Section 3.3.3**). The locations and layout of the interchanges are shown **Figures 3.5** to **3.10**. A total of 7.41 hectare (ha) of land will be needed for these interchanges. The detail summary Involuntary Land Acquisition is presented later in the document. This land acquisition will also cause loss of farm income. A summary of these impacts is provided later in the document. Significance of this impact has been assessed as Moderate, as shown in **Table 6.4**.

Mitigation Measures

An Abbreviated Resettlement Plan (ARP) has been prepared to address the involuntary resettlement impacts described above. Compensation and assistance will be paid to the affected people in accordance with criteria defined in ARP, presented later in the document.

Residual Impacts

After implementing the ARP, the involuntary resettlement impacts of the project will be mostly mitigated. Therefore, the significance of the residual impacts is likely to be Minimal, as shown in **Table 6.4**.

6.3.3. Impact on Ecosystem

The existing A380 runs through areas with desert, agricultural and urban ecosystems. The Jeyran Eco-center is the only protected area and of high ecological functions in the project area. The Jeyran Eco-center was established in 1977 while A380 was constructed in 1960. As described earlier, open territory of the Jeyran Eco-center lies on the right side of section 181-190 km of A380 road while fenced territory of the Jeyran Eco-center is located at the left side of section 181-198 km.

The proposed project includes construction of five interchanges on road A380 (see **Section 3.3.3**). The interchange to be constructed at 181 km (see **Figures 6.1** and **6.2**)

would be located 460m to the southeast of the Jeyran Eco-center (both open territory and fenced parts). The interchange to be constructed at 194 km would be located northeast of fenced Jeyran Eco-center. The radius of that interchange will be wider than the existing road. The shortest distance between that interchange and the fence of Jeyran Eco-center would be 20 m. Thus, the project will not have direct impact on the projected area.

Because of the existing vehicular traffic on road A380 and the noise caused by this traffic, most wild species in Jeyran Eco-center are likely to stay well away from the road corridor. The risks and impacts of the project on the Jeyran Eco-center (at 181-198 km of A380) particularly its wild species are likely to be mostly similar to the existing impacts and the increased volume and higher vehicular speeds are not likely to substantially change the nature or intensity of the impacts. There might also be some disturbance during construction, which are discussed in sections below.

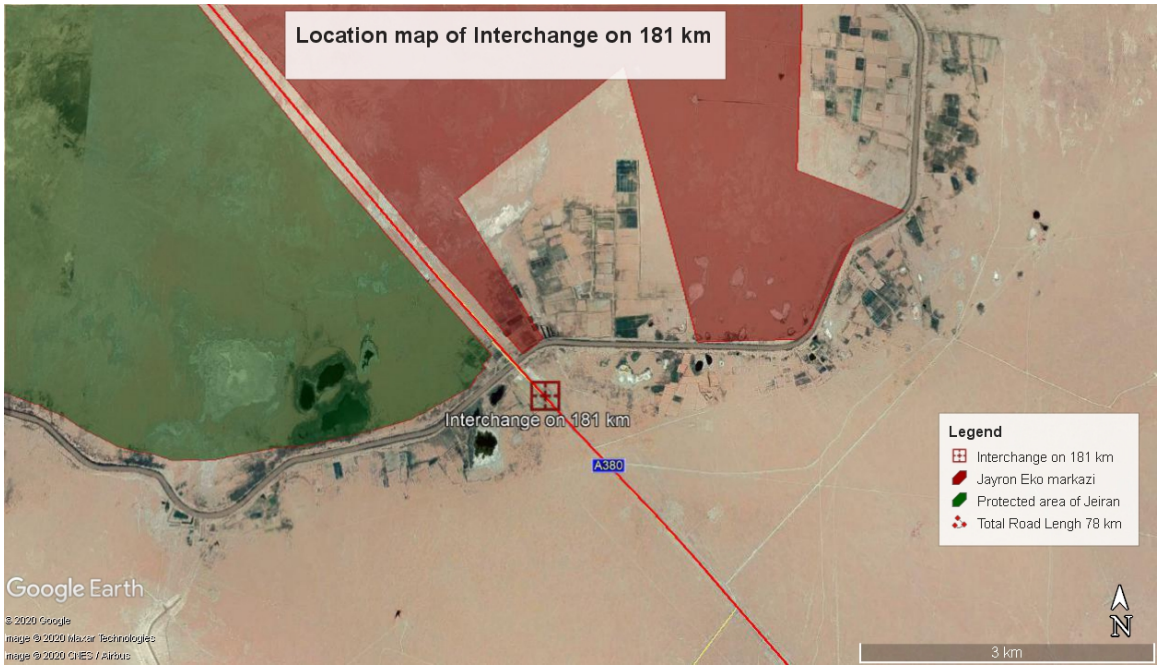


Figure 6.1: Location of Interchange at km 181

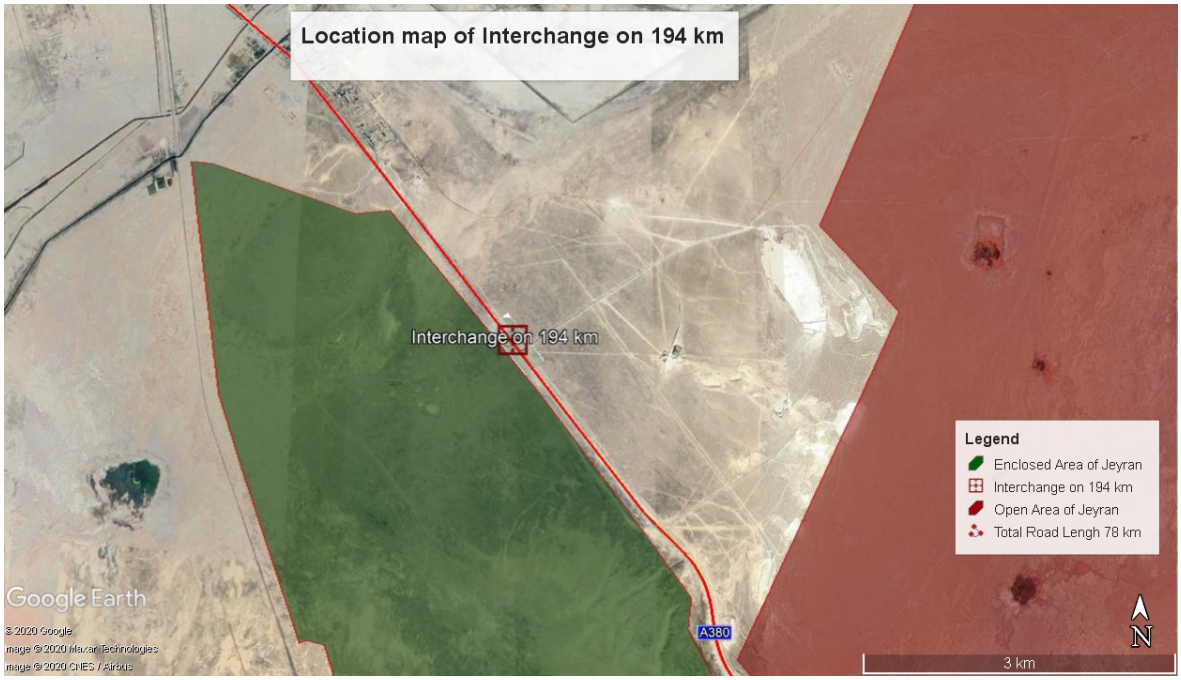


Figure 6.2. Location of Interchange at km 194

In view of the above discussion, the significance of the project's impacts on ecosystem has been assessed as Mild, as shown in **Table 6.4**.

Mitigation

During the design, the siting of the interchanges has avoided land acquisition inside the protected area- Jeyran Eco-center. Nonetheless the following additional mitigation measures are proposed here to further improve the situation:

- Coordinate with the Eco-center authorities for any additional mitigation measures such as installing fence along the currently un-fenced portion of the Eco-center.
- Installation of road signage, warning the drivers about the presence of wild animals.
- Strengthen the existing fence, in order to avoid animal crossing and any possible road hits.
- Maintain record of any road hits/kills involving wild species.
- Consider the viability of underpass for wild species connecting the two sections of the Eco-center, in consultation with the relevant authorities.
- Capacity building of the O&M staff to include protection of Eco-center wildlife resources.
- Maintain liaison with the Eco-center authorities on an on-going basis to ensure regular monitoring of the wildlife protection and to identify the need of any additional measures.

Residual Impacts

After implementing the above listed mitigation measures, whatever small impacts the proposed project might have on the natural vegetation and wildlife of the area, will be

further reduced. The residual impacts have therefore been assessed as Mild, as shown in **Table 6.4**.

6.4. Impacts during Construction Phase

6.4.1. Employment Opportunities

Construction contractor(s) will have a sizeable work force. A large proportion of this workforce will be skilled and semi-skilled laborers including drivers, machinery operators, steel fixers, technicians, electricians, fitters, welders, watchmen, camp staff, warehouse staff, and manual laborers. The local communities during the stakeholder consultations have shown great desire to be included in the project's workforce. In line with the aspirations of local communities, the contractors will be contractually bound to maximize employing the locals as appropriate. In addition to maintaining good relations with the local communities, maximizing local employment may also be cost effective since engaging workforce from other parts of the Country could be costlier.

Mitigation

This is a beneficial impact of the project and hence does not need any mitigation as such. The contractors will be required to formulate an employment policy to ensure equitable availability of employment opportunities to all communities within the project area particularly the project affected persons (PAPs). It will also be ensured that no child labor and force labor are engaged by the project or its contractors/suppliers. The Environmental and Social Specialist of the PIU will conduct regular field visits to ensure that child labor or forced labor do not exist. Moreover, the bi-annual E&S Monitoring will focus on the incidence of child labor or forced labor in the construction sites.

6.4.2. Soil Contamination and Erosion

During construction phase, there is a risk of accidental spills and leakages that may occur from fuel and oil tanks, vehicles and machinery and storage of chemicals used in construction areas, yards, batching plants, worker camps, and residential areas and from storage sites. These spills can pollute soils and contaminate surface water and groundwater in the area. Waste effluents from temporary facilities such as camps and offices can also contaminate soil and surface run off.

Disturbance of soils during construction including (and particularly) from movement of vehicles may lead to destruction of the integrity of upper soil layers. Damaged soil is more readily eroded and washed into water courses during rainfall events and can also form dust during dry periods.

Excavation for reconstruction of A380 road can cause soil erosion. High rainfall events can also potentially cause accelerated erosion particularly in excavated areas.

Excavation and construction activities in the cultivation fields can potentially cause the loss of upper layer of soil, causing reduction in soil fertility and hence reduced crop productivity.

The significance of impact on soil has been assessed as High, as given in **Table 6.4**.

Mitigation

The following mitigation measures will be implemented:

- Contractor will prepare and implement a Pollution Prevention Plan prior to the start of the work.
- Contractor will be required to take appropriate measures to avoid and contain any spillage and pollution of the soil;
- Contractor will confine the contaminants immediately after such accidental spillage;
- Contractor will collect contaminated soils, treat and dispose them in environment friendly manner;
- All areas intended for storage of hazardous materials to be quarantined and provided with adequate facilities to combat emergency situations complying all the applicable statutory stipulation;
- Top soil to be stripped and stockpiled where practical, particularly in cultivation fields.
- Vehicles and equipment will not be repaired in the field. If unavoidable, impervious sheathing will be used to avoid soil and water contamination.
- Temporary stockpile of soil to be protected from wind and water erosion.
- For sewage waste, appropriate treatment arrangement such as septic tanks and soakage pits will be installed on site. Water will percolate into the ground so there will be no discharge. Alternatively, sewage from construction camps and other facilities will be collected and transported to nearby sewage treatments plants.

Residual Impacts

After implementation of the above mitigation measures, the impacts of the project on the soil contamination and soil erosion will be adequately mitigated. Hence the significance of residual impacts is expected to be Minimal, as shown in **Table 6.4**.

6.4.3. Water Contamination

During construction especially the culvert construction activities, there is a high risk of contamination of these water bodies from the following activities:

- Run-off from excavation, crushed and ground rock material from drilling
- Run off from earthmoving and spoil handling, open excavations, concrete batching for old road pavement;
- Sanitary effluents from construction workers camp;
- Oil and chemical spills; washing of vehicles and other machinery;
- Piling of bridges;
- All other activities causing soil contamination discussed earlier can also cause water contamination.

The significance of impact on water environment has been assessed as High, as given in **Table 6.4**.

Mitigation

The following mitigation measures will be implemented to address the water contamination caused by the project:

- Contractor will prepare and implement a Pollution Prevention Plan prior to the start of the work. Proper baseline data will be collected;
- Contractor will prepare Bridge Construction Management Plan to address environmental impacts of bridge construction;
- Contractor will be required to comply with the national legislation for waste water discharges in to the water bodies;
- Contractor will be required to take appropriate measures to avoid and contain any spillage and pollution of the water;
- All areas intended for storage of hazardous materials to be quarantined and provided with adequate facilities to combat emergency situations complying all the applicable statutory stipulation;
- For the treatment of effluent to be discharged, sedimentation ponds will be provided to allow sediment to settle for periodic removal for disposal in designated site spoil areas. Water being discharged from these ponds will be regulated to ensure they are within turbidity limits.
- Workers camps will be located minimum 500 m away from water bodies.
- Sewage from the toilets will go into lined septic tanks. Sewage disposal trucks will be used to periodically remove the sludge/sewage from the site and camps.
- Oil and water separators and settling ponds will be installed where appropriate to minimize the risk of contaminated construction water entering the canal, collector or groundwater and degrading water quality.
- Construction works near canals and collectors will be carried out ensuring that no debris or excavated soil are released in water.

Residual Impacts

After implementation of the above mitigation measures, the impacts of the project on the water resources will be adequately mitigated. Hence the significance of residual impacts will be Minimal, as shown in **Table 6.4**.

6.4.4. Blockage of or Damage to Canals and Drainage Channels

The road construction activities particularly near these irrigation canals and drainage channels and also the bridge construction activities can potentially cause damage to the side slopes of the canals and drainage channels and even block them. The piling of construction may require diverting of water or temporary cofferdam in the canals and drainage channels. The damage to or blockage of irrigation canals can cause reduction of water availability for irrigation purposes thus causing loss of agriculture produce. Similarly, any damage or blockage of drainage channels can cause local flooding, adversely affecting the road as well as the nearby cultivation fields.

The above impact has been assessed as High, as shown in **Table 6.4**.

Mitigation Measures

The following mitigation measures will be implemented to address the damage or blockage of canals and channels caused by the project:

- Contractor will prepare Bridge Construction Management Plan including plan of water diverting to address environmental impacts of bridge construction.
- No debris, soil, waste material or access construction material will be released in the canals or channels.
- Construction material will not be stockpiled near water bodies.
- Vehicle movement near the water bodies will be avoided.
- Liaison with irrigation authority and keep the stakeholders informed in case of any damage to or blockage of irrigation canals.
- Any damage to the canals or drainage channels will be restored immediately.

Residual Impacts

After implementation of the above mitigation measures, the impacts of the project on the canals and drainage channels will be adequately mitigated. Hence the significance of residual impacts will be Minimal, as shown in **Table 6.4**.

6.4.5. Dust and Air Pollution

Air quality will be affected and dust will be generated during construction activities. Major sources of air pollution are drilling activities, excavations, emissions from construction related traffic and equipment, batching plant and asphalt plant. The construction activities will also generate airborne dust and particulate matter. Dust raised from the above activities will have impacts on crops, animals and public health. These impacts will be most severe for the sensitive receptors in the area; see **Table 6.5** for a list of such areas along the project road.

Table 6.5: Sensitive Receptors in the Project Area

No	Name of Receptor	Type of Receptor	GPS Location	Affected by	Distance from Edge of Road (meters)
1.	Eco center “Jeyran”	Environmental Zone	39°34'27.41"N 64°42'58.75"E	Noise, Dust, and Vibration, Animals Safety	70 – 140
2.	Water Distribution Unit “Kagan”	Water Supply Facility Complex	39°44'22.29"N 64°33'47.85"E	Dust and Vibration	20
3.	Kagan city Kindergarten	Preschool Object	39°44'17.83"N 64°33'21.97"E	Noise, Dust and Safety	300
4.	Kagan city high school	Secondary education	39°44'17.60"N 64°33'11.79"E	Noise, Dust and Safety	340

No	Name of Receptor	Type of Receptor	GPS Location	Affected by	Distance from Edge of Road (meters)
5.	Kagan city high school	Secondary education	39°44'8.25"N 64°32'17.06"E	Noise, Dust and Safety	200
6.	Kagan city College	Preschool Object	39°44'0.71"N 64°31'56.35"E	Noise, Dust and Safety	70
7.	Kagan district Private Kindergarten	Preschool Object	39°43'55.14"N 64°30'46.09"	Noise, Dust and Safety	130
8.	Kagan District Private Clinic	Medical Institution	39°44'5.04"N 64°30'43.87"E	Noise, Dust and Vibration	100
9.	Kagan District high school	Secondary education	39°45'4.96"N 64°28'59.53"E	Noise, Dust and Safety	550
10.	Bukhara city High school #16	Secondary education	39°45'39.78"N 64°27'17.23"E	Noise, Dust and Safety	230
11.	Bukhara City Polyclinic #6	Medical Institution	39°45'42.73"N 64°27'38.65"E	Noise and Dust	180
12.	Bukhara city High school #12	Secondary education	39°45'48.87"N 64°27'41.78"E	Noise, Dust and Safety	190
13.	Bukhara city High school #7	Secondary education	39°45'53.20"N 64°27'14.57"E	Noise, Dust and Safety	230
14.	Faculty of Dentistry Medical Institute of Bukhara city	Medical institution	39°45'57.06"N 64°27'9.36"E	Noise, Dust and Safety	360
15.	Bukhara city Kindergarten	Preschool Object	39°45'56.59"N 64°27'18.08"E	Noise, Dust and Safety	150
16.	Bukhara city Kindergarten	Preschool Object	39°45'59.02"N 64°27'37.68"E	Noise, Dust and Safety	220
17.	Bukhara branch of the Republican Center for Emergency Medicine	Medical Institution	39°46'14.60"N 64°27'14.94"E	Noise and Dust	65
18.	Bukhara branch of the Tashkent Institute of Irrigation and Melioration	Academic Institution	39°46'25.76"N 64°27'26.53"E	Noise, Dust and Safety	20
19.	Water Treatment Plant and Water Distribution Unit “Shokhrud”	Water Supply Facility	39°46'34.99"N 64°27'6.46"E	Dust and Vibration	30
20.	Bukhara region Medical University (under the Construction)	Medical Institution	39°48'20.61"N 64°25'52.21"E	Noise and Dust	260
21.	Karvon bazar (Market)	Service Facilities	39°48'20.35"N 64°25'35.12"E	Noise and Dust	40
22.	Bukhara regional Derma-venereological Clinic	Medical Institution	39°48'31.26"N 64°25'39.90"E	Noise and Dust	400

No	Name of Receptor	Type of Receptor	GPS Location	Affected by	Distance from Edge of Road (meters)
23.	Republican Specialized Scientific and Practical Medical Center of Oncology and Radiology Bukhara Branch	Medical Institution	39°48'33.50"N 64°25'28.62"E	Noise and Dust	320
24.	Bukhara district Private Kindergarten	Preschool Object	39°48'38.24"N 64°24'49.47"E	Noise, Dust and Safety	50
25.	Bukhara district Kindergarten	Preschool Object	39°48'38.36"N 64°24'24.05"E	Noise, Dust and Safety	420
26.	Bukhara Regional Psychoneurological Dispensary	Medical Institution	39°49'14.08"N 64°24'30.31"E	Noise and Dust	400
27.	Health-Improving Center "Zhuizar" (Sanatorium)	Medical Institution	39°49'23.26"N 64°23'2.01"E	Noise and Dust	400

The significance of the impact has been assessed as High particularly for the sensitive receptors, as shown in **Table 6.4**.

Mitigation

To mitigate deterioration of air quality and generation of dust, the following measures will be taken:

- The equipment and vehicles used during the construction process will comply with the national legislation;
- Concrete batching and asphalt plants will be located downwind of and minimum 500m away from residential areas as well as sensitive receptors (**Table 6.5**) and will have appropriate dust/emission suppression mechanisms such as wet scrubbers;
- Contractor will implement dust prevention measures such as watering of roads near the residential areas;
- Loose material such as sand will be covered with tarpaulin when being transported on trucks and store piled at the site;
- Regular air monitoring will be carried out near the sensitive receptors (**Table 6.5**) to ensure ambient air quality remains within the limits defined by national standards;
- Measures will be taken to protect the workers from excessive dust (i.e., usage of personal protective equipment);
- Project vehicles will avoid passing through the communities as far as possible. If unavoidable, speed will be reduced to 15 km/h to avoid excessive dust emissions.

- A GRM (discussed later in the document) will be put in place to receive complaints from public on various aspects of environmental issues, including air pollution. These grievances will be addressed by the contractor by adopting necessary pollution control measures. Continued consultations with the affected communities will be carried out during construction phase.

Residual impacts

With the help of the above mitigation measures, the potential impacts associated with air quality deterioration are likely to be adequately addressed and hence the significance of residual impact is likely to be Minimal, as shown in **Table 6.4**.

6.4.6. Impact of borrow areas

The road construction activities may need significant quantities of soil, which need to be obtained from borrow areas. These borrow areas may cause a number of adverse impacts, including loss of fertile soil, damage to cultivation fields, soil erosion, devaluation of land value, and safety hazards. Such impacts are considered High in significance, as shown in **Table 6.4**. Maps showing the proposed locations of the borrow areas, for each of the three lots is given in the **Annex C2**.

Mitigation

- Borrow areas will not be selected inside cultivation fields;
- Borrow areas will be kept up to 1 m deep;
- Borrow areas will be restored to minimize safety hazards, blockage of routes, or devaluation of land.
- Crushed stone, gravel, and sand should be imported from specially designated quarries (having licenses for the extraction of building materials);
- In quarries, regulatory requirements for environmental protection must be followed;
- When carrying out construction work, transportation of construction materials should be carried out strictly along the designated routes, in order to minimize the possibility impacts on receptors;

Residual impacts

After implementation of the above mitigation measures, the residual impacts on borrowing areas will be greatly mitigated. Hence the significance of residual impacts will be Moderate, as shown in **Table 6.4**.

6.4.7. Generation of Spoils

Excavations activities particularly for foundation of interchange structures and bridges will generate excess spoils. Disposal of this spoil in cultivation fields will affect the crops and irrigation. Similarly, spoil disposal in built-up area will cause hinderance and traffic congestion. The spoils will also act as a source of dust. The significance of the impact has been assessed as Moderate, as shown in **Table 6.4**.

Mitigation

The first step towards addressing the impacts of spoil is to minimize the generation of spoils by recycling the excavated soil to the maximum extent possible by using it as filling

material in the road section. The excess spoils should be stored in the lands provided by local communities or in the areas approved by the project management/local authorities. Further guidance is provided in the ESMP.

Residual Impacts

With the help of the above mitigation measures, the potential impacts associated with spoil generation are likely to be adequately addressed and hence the residual impact is likely to be Low in significance, as shown in **Table 6.4**.

6.4.8. Solid Waste Management

The construction works generate large quantities of excess materials from construction sites (concrete, discarded material, vegetation), demolition wastes (dismantled asphalt and other facilities), and wastes from field camps and construction yards, including garbage, recyclable waste, food waste, and other debris. A large part of this waste is biodegradable or recyclable. In addition, small quantities of hazardous waste will also be generated mainly from the vehicle maintenance activities (liquid fuels; lubricants, hydraulic oils; chemicals, such as anti-freeze; contaminated soil; spillage control materials used to absorb oil and chemical spillages; machine/engine filter cartridges; oily rags, spent filters, contaminated soil, and others). If this waste is not responsibly disposed, it can cause adverse environmental, human health and aesthetic impacts. Significance of this impacts has been assessed as High, as shown in **Table 6.4**.

Mitigation

The following mitigation measures will be implemented:

- Contractor will prepare and implement pollution prevention plan and waste management plan;
- The dismantled asphalt will be recycled and reused for approach road or other constructions.
- The contractor will identify suitable sites for temporary storage of wastes from construction sites and demolished wastes in consultation with communities and government authorities. The wastes shall be transported for disposal in a timely manner;
- The contractor will identify suitable sites for disposal of hazardous and non-hazardous waste. The selection will be carried out in consultation with the local government authorities.

Residual Impacts

With the help of the above mitigation measures, the potential impacts associated with waste generation are likely to be adequately addressed and hence the residual impact is likely to be Minimal in significance, as shown in **Table 6.4**.

6.4.9. Noise and vibration

Various construction activities will cause noise and vibration. Noise from vehicles and construction equipment will also affect receptors near the construction sites and along the transportation routes. In particular, the sensitive receptors listed in **Table 6.5** will be

severely affected by this noise. The vibration may affect the stability of nearby structures. Significance of this impacts has been assessed as High, as shown in **Table 6.4**.

Mitigation

If the noise level exceeds the established standards, it is necessary to apply mitigation measures, including noise barriers, using vehicles and equipment in good conditions, forbidding horns in populated areas, and optimizing the construction schedule (e.g. piling works not at night) to minimize the impacts on nearby communities. Meanwhile, monitoring shall be carried out to inform the mitigation measures, especially monitoring of noise near sensitive receptors and vibration near the cultural heritage or historic buildings. In addition, the GRM will be established as described earlier to capture noise and vibration-related complaints and grievances.

Residual Impacts

After implementing the mitigation measures, the residual impacts have been assessed as Moderate, as shown in **Table 6.4**.

6.4.10. Impact on Flora and Fauna

Construction activities particularly camp establishment and construction of interchanges can potentially cause loss of natural vegetation and disturbance to wildlife of the area. However, most of the construction activities will be carried out on the existing road hence minimizing the need of any large-scale vegetation clearing and tree felling. According to a study conducted jointly by the Bukhara regional Department of Ecology and Environmental Protection and the State Unitary Enterprise “Uzyulloyiha”, the construction of this project will require felling of 2,934 saxauls trees around 181km (in the Neftchi State Forestry Area, near but outside the Eco-center), 217 km and 219 km at A380. The saxuals trees have a diameter from 4.1 to 32 cm, which is a common local species. In addition to saxauls, some shrubs will also be damaged due to the construction activities.

Similarly, the wildlife of the area (except for Jeyran Eco-center) mostly consists of species that have adapted to the human presence and vehicular traffic. Therefore, the project activities are not likely to have any significant impacts on the natural vegetation and wildlife of the area and hence significance of these impacts has been assessed as Moderate as shown in **Table 6.4**.

Mitigation

- Clearing and removing of natural vegetation will be minimized.
- Tree and shrub cutting will be minimized.
- Compensation for tree cutting is calculated in ARP provided later in the document. Compensatory tree plantation will be carried out (e.g., along the periphery of road). The tree species and plantation location will be decided in consultation with the concerned department including authorities of the Eco-center. The same species that has been removed will be planted at the ratio of 1:10 (i.e., 10 saplings planted for each tree felled).
- Road signs will be installed along the A380 road passing through the Jeyran Eco-center (181-198km), warning the drivers about the presence of wildlife in the area.

- Camps will not be established within 500 m of Jeyran Eco-center or near any other sensitive habitat. Camp area will be restored after the construction phase.
- Hunting, trapping, or harassing of wildlife will not be permitted.

Residual impacts

With the help of the above measures, the potential impacts of the project on the biological resources of the area will be adequately mitigated and therefore the significance of the residual impacts has been assessed as Minimal, as shown in **Table 6.4**.

6.4.11. Impact on Jeyran Eco-center

The construction activities are likely to have some adverse impacts on the Eco-center particularly on its wild species, although most of these species are likely to remain away from the construction sites because of the presence of construction workers and generation of noise. In addition, the wild species are already likely to be adapted to certain level of noise and disturbance in view of the presence of A380 and its vehicular traffic. The significance of these impacts has been assessed as High, as shown in **Table 6.4**.

Mitigation

- Liaison with the Eco-center authorities will be maintained during the construction phase.
- The construction sites near the Eco-center will be fenced if needed to avoid any injury to the wild species.
- Detailed management of construction of the interchange at 194 km is required, as it is only 20 m from the fence of the Eco-center.
- All construction activities or operation of equipment/machinery inside the Eco-center or Neftchi Forestry Area will be avoided.
- Workers will be educated about the wild species in the Eco-center. Poaching or harassing of wildlife will be forbidden. No waste disposal particularly food waste or hazardous waste will be carried out inside the Eco-center.
- Camps or any other project facility will not be established inside or within 500 m of the Eco-center.

Residual impacts

With the help of the above measures, the potential impacts of the project on the Jeyran Eco-center will be greatly mitigated and therefore the significance of the residual impacts has been assessed as Minimal to Moderate, as shown in **Table 6.4**.

6.4.12. Crop Damage

The loss of cultivation field/produce as a result of the land acquisition has already been discussed earlier. In addition, the construction activities along the cultivation fields have a potential to damage crops caused by vehicle movement, material stockpiling, or releasing wastes inside cultivation fields. This will cause economic loss and livelihood impacts on the farmers. The significance of this impact has been assessed as High, as shown in **Table 6.4**.

Mitigation'

The above described impacts can be readily avoided through proper construction planning and awareness raising of the construction workers. In case of any inadvertent damage to the crops, adequate and immediate compensation will be paid to the farmers/growers. GRM will also capture any related complaints raise by the affected people.

Residual impacts

With the help of the above measures, the potential impacts of the project related to crop damages will be adequately mitigated and therefore the significance of the residual impacts has been assessed as Minimal, as shown in **Table 6.4**.

6.4.13. Damage to and relocation of public utilities

Construction activities particularly in the urban areas can potentially damage the public utilities such as electricity wires, water pipelines, and drainage structures. Such damages will have severe impacts on the local communities. Therefore, the significance of this impact has been assessed as High, as shown in **Table 6.4**.

Mitigation

Before the start of construction activities, all public utilities requiring relocation will be identified. Subsequently, the concerned departments/authorities will be contacted for the relocation of these utilities. It will be ensured that there is a minimum disruption of services such as electricity and water. Any infrastructure damaged by the construction activities will be repaired. GRM will also capture any related complaints.

Residual impacts

With the help of the above measures, the potential impacts of the project related to relocation of utilities will be adequately mitigated and therefore the significance of the residual impacts has been assessed as Minimal, as shown in **Table 6.4**.

6.4.14. Blocked Roads, Damages to Local Infrastructure, and traffic congestion

The construction activities will require using/establishing roads to access the main road A380 from the existing road network. Though exact locations and hence ownership of the land under these access roads is not known at this stage.

The construction activities including establishing and using access roads may also damage the local infrastructure such as existing roads/tracks, tube-wells, water courses, and drainage channels.

The construction activities will cause traffic disruption along the road A380. In addition, the construction activities can potentially block local roads and routes and also cause traffic congestion. This can adversely affect the local communities particularly in urban areas (Bukhara and Kagan cities) and also in areas (Karaulbazar district) where accessibility is already an issue. Any such disturbance to the local community can also result in disruption of the construction works.

Significance of the above impacts has been assessed as High, as shown in **Table 6.4**.

Mitigation

The mitigation measures to address impacts associated with the blockage of local routes are listed below.

- The contractor will prepare and implement a traffic management plan, in consultation and coordination with the local community;
- The community will be informed about the nature of construction activities and possibility of any blocked route; alternate routes will be identified with the help of local/affected community. Duration of such blockage will be minimized to the extent possible;
- Construction works on the road A380 will be planned and implemented in a manner to minimize traffic disruption. All road safety measures including road signage, warning lights, lane dividers, and safety railings will be installed.
- Liaison and coordination will be maintained with relevant authorities such as khokimiyats, makhallas, Bukhara region Road Safety Department.
- Liaison with the community will be maintained.
- The GRM described earlier will also address community grievances related to any blockage.

Residual Impacts

After implementing the above-listed mitigation measures, the impacts of the project associated with blockage roads will be adequately mitigated. Hence the significance of residual impacts will be Negligible, as shown in **Table 6.4**.

6.4.15. Community Health and Safety

The construction activities will cause significant health and safety risks to the local community particular children. These risks and impacts include, among others, dust, noise, and vibration from construction vehicle transit, and communicable diseases associated with the influx of temporary construction labor, and operation of heavy construction machinery as well as movement of construction vehicles. Significance of these impacts has been assessed as High as shown in **Table 6.4**.

Mitigation

The mitigation measures to address the project impacts on communities' health and safety are listed below.

- Construction camps will be located at least 500 m away from the communities. Entry of the site personnel in the local communities will be minimized to the extent possible/appropriate;
- The contractor will prepare and implement an Occupational Health and Safety (OHS) Plan that will also cover communities' health and safety aspects;
- The contractor will prepare and implement a Traffic Management Plan that will also address traffic safety for communities;
- Road signage will be fixed at appropriate locations to reduce safety hazard associated with project-related vehicular traffic.
- The community will be informed about the nature of construction activities and the associated health and safety risks; awareness raising of the communities will be

carried out for this purpose with the help of training sessions, posters, signage, and other similar means;
- Awareness raising of communities will be carried out, in a culturally-sensitive manner, about the communicable diseases including sexually transmitted infections;
- Regular safety monitoring will be carried out at the sensitive receptors (**Table 6.5**);
- The construction sites will be fenced as appropriate to minimize entry of the local communities particularly children in the work areas;
- Construction camps and other site facilities will be fenced;
- Liaison with the community will be maintained;
- GRM will be established to address community grievances related to health and safety aspects.

Residual Impacts

Even after implementing the above-listed mitigation measures, the health and safety impacts on local communities cannot be fully mitigated. Hence the significance of residual impacts will be Moderate, as shown in **Table 6.4**. Strict monitoring will be required to ensure that mitigation measures are effectively and strictly enforced.

6.4.16. Occupational Health and Safety

Construction activities such as site preparation, excavation, asphalting/concreting, operation of construction machinery and equipment, vehicular traffic, and the use of temporary workers' accommodation pose potential risks to the health, safety, security and therefore wellbeing of construction workers. Health and safety issues associated with the use of temporary accommodation sites include those relating to sanitation, disease, fire, cultural alienation, sleeping space, quality and quantity of food, personal safety and security, temperature control and recreation, amongst others.

Some of the Occupational Health and Safety (OHS) risks which are likely to arise during the construction phase of the Project, and are typical to many construction sites, include: exposure to physical hazards from working on heights, use of heavy equipment including cranes; trip and fall hazards; exposure to dust, noise and vibrations; falling objects; exposure to hazardous materials; and exposure to electrical hazards from the use of tools and machinery.

Workers on the Project, particularly sub-contracted construction workers, are vulnerable to risks to their wellbeing, health and safety on a daily basis.

Significance of the above impacts has been assessed as High, as shown in **Table 6.4**.

Mitigation

The mitigation measures to address the project impacts on workers' health and safety are listed below:

- The contractor will prepare and implement an Occupational Health and Safety (OHS) Plan
- Job hazard analysis will be carried out for each type of construction activities
- Contractors will have dedicated and qualified staff for ensuring compliance with the OHS Plan

- Regular trainings will be provided to the workers on OHS aspects.
- Awareness raising material will be used including posters, signage, booklets, and others
- All site personnel will be screened for communicable diseases including sexually transmitted infections.
- Use of appropriate personal protective equipment (PPE) will be mandatory. No worker (or even visitor) will be allowed on the site without the required PPE (such as hard hat, safety shoes).
- Firefighting equipment will be made available as required at construction sites, camp sites, and particularly near the fuel storage.
- The project drivers will be trained in defensive driving. They will maintain low speed while driving through / near the communities.
- Complete record of accidents and near-misses will be maintained.
- First aid facilities will be made available at the work sites and in the camps. The contractors will engage qualified first aider(s).
- Location and telephone numbers of the nearest hospital will be displayed at appropriate places at work sites and in construction camps. If necessary, the contractor will have an ambulance available at the site.

Residual Impacts

Even after implementing the above-listed mitigation measures, the health and safety impacts on site personnel cannot be fully mitigated. Hence the significance of residual impacts will be Moderate, as shown in **Table 6.4**. Strict monitoring will be required to ensure that mitigation measures are effectively and strictly enforced.

6.4.17. Additional Load on Local Resources

The construction work and camp operation will require supplies such as water, fuel, and camp supplies. Obtaining these supplies from the local sources can exert additional pressure on these sources which may already be over-exploited and therefore adversely affect the local communities. Any such impact on the local community can increase their hardship and even result in disruption of the construction works. Significance of this impact has been assessed as Moderate, as shown in **Table 6.4**.

Mitigation

The mitigation measures to address impacts associated with the availability of local resources and supplies are listed below:

- The contractor will prepare and implement a plan to obtain key supplies such as water and fuel, in consultation and coordination with the local community;
- The plan will ensure that there is no significant impact on the local community and local resources;
- Liaison with the community will be maintained;
- The GRM described earlier will also address community grievances related to usage of local resources.

Residual Impacts

After implementing the above-listed mitigation measures, the impacts of the project associated with usage of local resources will be adequately mitigated. Hence the significance of residual impacts will be Minimal, as shown in **Table 6.4**.

6.4.18. Impacts on cultural resources

No cultural/historical site has been identified along the project road or at the proposed sites of the interchanges. However, the Chance Find procedures will be implemented if any sites or artefacts are found during the construction phase.

6.4.19. Social Conflict and Influx of Workers

The influx of a large number of workers from other parts of the Country can potentially cause conflict between the project personnel and the local community. This could be because of differences in culture, religion, social norms, acceptable social behavior, and even dress code. In addition, the construction activities can potentially affect the women economic activities. Any such impact can be detrimental to the project since it can potentially cause tension between the project and local communities and even disruption of construction works.

The mitigation measures to address impacts associated with the social conflict are listed below.

- The World Bank Guidance Note[7] will be used to address potential impacts caused by temporary project induced labor influx;
- The World Bank Guidance Note on gender-based violence (GBV) will be used to address potential impacts caused by temporary project induced labor influx;
- The contractor will prepare and implement a Code of Conduct for all site personnel, in consultation and coordination with the local community;
- All site personnel will be provided orientation and training on Code of Conduct. Awareness raising materials such as posters and signage will be used as appropriate;
- All site personnel will be provided awareness and training to prevent communicable diseases, sexually transmitted infections, Human immunodeficiency virus (HIV) infections / Acquired Immune Deficiency Syndrome (AIDS);
- Privacy of women will be respected; routes and places used by them will be avoided as far as possible;
- As described earlier, construction camps will be located at least 500 m away from the communities. Entry of the site personnel in the local communities will be minimized to the extent possible/appropriate.
- No child labor or forced labor will be engaged by the project or its contractors.
- Liaison with the community will be maintained.
- The GRM described earlier will also address community grievances related to social conflict.

[7] The Note is available at: http://pubdocs.worldbank.org/en/497851495202591233/Managing-Risk-of-Adverse-impact-from-project-labor-influx.pdf.

6.4.20. Site Clearance and Restoration

After the completion of the construction activities, the left-over construction material, debris, spoils, scraps and other wastes from workshops, and camp sites can potentially create hindrance and encumbrance for the local communities in addition to blocking natural drainage and or irrigation channels. Significance of these impacts has been determined as Moderate, as shown in **Table 6.4**.

Mitigation

The contractors will be required to remove all left-over construction material, debris, spoils, and other wastes from the construction sites in a timely manner. The camps sites will be completely cleaned and restored in original condition to the extent possible. No waste disposal will be carried out in the streams and canals. Photographic record will be maintained for pre-construction and post-construction condition of the sites.

Residual impacts

With the help of the above mitigation measures, the potential impacts associated with site clearance are likely to be adequately addressed and hence the residual impact is likely to be Minimal in significance, as shown in **Table 6.4**.

6.5. Impacts during Operation and Maintenance Phase

6.5.1. Waste Management

The operation and maintenance (O&M) activities at the A380 road will generate wastes such as oily run-off from the road surface, spilled oil and other lubricants, broken vehicle parts such as pieces of tires, asphalt/concrete scrapping, road kills, and other similar wastes. Some of these are hazardous wastes. Significance of these impacts has been assessed as High, as shown in **Table 6.4**.

Mitigation

A Waste Management Plan will be prepared a as part of the standard operating procedures. The non-hazardous waste will be disposed through the city or district services whereas hazardous wastes will be disposed by agreement with local organizations for the disposal of solid and hazardous wastes.

Residual Impacts

With the help of the above measures, the negative impacts associated with waste generation from A380 road operation and maintenance will be adequately addressed and hence the significance of residual impact would be Nominal, as shown in **Table 6.4**.

6.5.2. Air Pollution

After the reconstruction of A380 road, vehicular traffic is expected to increase (see **Table 6.6**), as a result of which vehicular emissions and ensuing atmospheric pollution are likely to increase along the road. This will have significant impacts on the sensitive receptors listed in **Table 6.5**. Significance of these impacts has been assessed as Moderate to High, as shown in **Table 6.4**.

Table 6.6: Estimation of the increase in traffic flows for the period 2020-2045

Periods	Motorcycles and bicycles, %	Cars, %	Tractors and agricultural machinery, %
2020-2025	1,7	9,4	8,5
2025-2030	1,5	8,5	6,2
2030-2035	1,4	7,8	5,9
2035-2040	1,2	6,5	5,5
2040-2045	1,2	4,7	3,9

Mitigation

Tree plantation will be carried out along the road particularly near the settlements and sensitive receptors **(Table 6.5)**. The project proponents will also coordinate with the relevant government department to introduce stricter regulations for vehicular emissions (such as Euro 4).

Residual Impact

Despite the measures proposed above, the impacts of the A380 on air quality cannot be fully mitigated, hence residual impact will remain Moderate, as shown in **Table 6.4**.

6.5.3. Noise and vibration generation

During the operation phase, noise and vibration will be generated mainly from heavy trucks traffic on the A380 road. The noise will have considerable impacts on communities living along the road, particularly for the sensitive receptors (**Table 6.5**). The vibration is likely to affect the nearby buildings and structures. Significance of this impact has been assessed as High, as shown in **Table 6.4**.

Mitigation

The tree plantation along the road proposed earlier can marginally address the noise generated from the vehicular traffic. Road signage for Silence Zone will be installed near the sensitive receptors. In addition, noise barriers need to be considered near the sensitive receptors.

Residual Impacts

The measures proposed above will not be able to fully mitigate the impacts associated with noise and vibration caused by the vehicular traffic on road A380. Therefore, the significance of the residual impact has been assessed as Moderate.

6.5.4. Occupational Health and Safety during Operation and Maintenance

The maintenance activities on the road A380 will pose OHS risks for the maintenance staff. These risks may include exposure to physical hazards from working on heights, use of

heavy equipment including cranes; trip and fall hazards; exposure to dust, noise and vibrations; falling objects; exposure to hazardous materials; exposure to electrical hazards from the use of tools and machinery; and risks associated with working close to vehicular traffic. Significance of these impacts has been assessed as High, as shown in **Table 6.4**.

Mitigation

- As part of the O&M procedures, an OHS plan will need to be prepared and implemented. The Plan will define procedures and protocols for each type of activities to be carried out as part of the O&M activities.
- Job hazard analysis will be carried out for each type of O&M activity
- Dedicated and qualified staff will be employed for ensuring compliance with the OHS Plan
- Regular trainings will be provided to the O&M workers on OHS aspects.
- Awareness raising material will be used including posters, signage, booklets, and others
- All site personnel will be screened for communicable diseases including sexually transmitted infections.
- Use of appropriate personal protective equipment (PPE) will be mandatory. No worker will be allowed on the site without the required PPE (such as hard hat, safety shoes).
- Firefighting equipment will be made available as required at appropriate places.
- Complete record of accidents and near-misses will be maintained.
- First aid facilities will be made available at the offices.
- Location and telephone numbers of the nearest hospital will be displayed at appropriate places.

Residual Impacts

Even after implementing the above-listed mitigation measures, the health and safety impacts on site personnel cannot be fully mitigated. Hence the significance of residual impacts will be Moderate, as shown in **Table 6.4**. Strict monitoring will be required to ensure that mitigation measures are effectively and strictly enforced.

6.5.5. Community Health and Safety during Operation and Maintenance

With the increase in the traffic volume and vehicular speeds, risk of traffic accidents will also increase. The project road passes through some settlements also (see **Table 5.3**) and also some sensitive receptors (see **Table 6.5**). At such locations, the increased traffic volume poses additional and severe risks to pedestrian and other road users. Significance of these impacts has been assessed as High, as shown in **Table 6.4**.

Mitigation measures

The project road needs to meet highway safety standards including traffic signage, warning signs, traffic lights, reflectors, and pedestrian crossings (overhead or underground where possible/appropriate). Emergency services (ambulance, rescue vehicles) will also need to be arranged. In addition, liaison with the community will need to be maintained in addition to raise their awareness regarding safety risks associated with vehicular traffic.

With the help of the above measures, the significance of residual impacts has been assessed as Moderate, as shown in **Table 6.4**.

6.5.6. GHG Emissions

Methodology

Emission of carbon dioxide (CO_2) due to fuel combustion in vehicle engines is calculated on the basis of fuel consumption. The methodology is explained as below, followed by the formula:

1) The consumption of each type of fuel is estimated by type of vehicles (cars, trucks, buses, special vehicles).
2) The total CO_2 emissions are estimated based on the amount of fuel consumption, the emission factor for each type of fuel and type of vehicles.

$$E = M \times K_1 \times TNZ \times K_2 \times 44/12$$

Where:

E - the daily emission of CO_2 (tons/day);

M - actual fuel consumption (tons/day);

K_1 - the coefficient for oxidation of carbon in the fuel (the proportion of burnt carbon), see **Table 6.9**;

TNZ - calorific value of the fuel (J/tons), **Table 6.9**;

K_2 – carbon emission factor (tons C/J), **Table 6.9**;

44/12 - coefficient for conversion of carbon emissions (from C to CO_2: carbon – 12 g/mol, O_2 = 2x16 = 32 g/mol, CO_2 = 44 g/mol).

GHG emissions in baseline year- 2019

(1) Analysis of traffic flows in baseline year

The average annual average daily traffic density on the project road for 2019 is 16,992 cars/day. **Table 6.7** shows the average daily traffic by type of vehicle on a road section.

Table 6.7: Traffic on A380 (150-228km) in 2019 (Unit: vehicle/day)

Place of counting	Trucks				Cars	Micro buses and buses	Motorcycles and bicycles	Tractors and agricultural machinery	Total
	up to 3.5 t	from 3.5 t to 12 t	12 t	Auto trains					
160 km	312	455	380	438	6405	2580	207	300	11077
180 km	200	352	750	80	11427	86	64	108	13067
210 km	277	832	416	416	21414	1165	868	1446	26834
Average	263	546	515	311	13082	1277	380	618	16992

Source: Feasibility Study

(2) Fuel consumption and coefficients

Based on the above traffic on the project, the total fuel consumption is estimated. The calculation of fuel consumption is based on a, conventional assumption that cars and motorcycles use gasoline while trucks and buses use diesel. The average fuel consumption per 100 km per vehicle operating in good weather conditions and average load has been used for calculation as recommended in the Fuel consumption rates for cars and road building machines[8] (see in **Table 6.8**). The factors of calorific value of fuel and carbon emissions, which are recommended in the Methodology on Greenhouse Gas Emissions Calculations (CO_2 equivalent)[9], is shown in **Table 6.9**.

The total mileage per day is calculated on the basis of the number of cars and the distance of the reconstructed road, which is 78 km.

Taking cars as an example, the total mileage is:

Cars: 13082x78 km = 1020396 km/day.

The total fuel consumption per day is:

Cars: 1,020,396 km x10kg/100km x1000 kg = 102 t.

Table 6.8: Calculation of fuel consumption in 2019

Vehicle category	The number of vehicles (vehicles/ day)		Total mileage (km/day)	Fuel consumption per vehicle, (kg/100 km)		Total fuel consumption, (ton/day)	
	Gasoline	Diesel fuel		Gasoline	Diesel fuel	Gasoline	Diesel fuel
	1	2	3	4	5	6	7
Cars	13082		1020396	10		102	
Freight (with lifting capacity up to 3.5 t)		263	20514		25		5
Freight With a loading capacity over 3.5 t		546			30		13
C Uzes gruzopod-emnostyu 12 m. And higher		515			35		14
Road trains		311			35		8
Buses		1277			20		19
Motorcycles	380			5		1.5	
Other (tractors, bulldozers, excavators, etc.)		618			30		14

[8] https://nrm.uz/contentf?doc=46019_normy_rashoda_topliva_avtomobilnym_podvijnym_sostavom_i_stroitelno-dorojnymi_mashinami
[9] https://sro150.ru/metodiki/371-metodika-rascheta-vybrosov-parnikovykh-gazov

Table 6.9: Coefficients for Calorific Value and Carbon Emissions

Types of fuel	Net calorific value lower, TNZ TJ / thousand tons	Carbon Emission Factor, K 2, tS / TJ	The fraction of oxidized carbon, K 1
Gasoline	44.21	19.13	0,995
Diesel fuel	43.02	19.98	0,995

Source: https://sro150.ru/metodiki/371-metodika-rascheta-vybrosov-parnikovykh-gazov

(3) CO_2 emissions in 2019

Based on the above assumptions and factors, the CO_2 emissions is calculated as follows. The results are summarized in **Table 6.10**.

Cars:

E = 102 tons x 0.995 x 44.21 x 19.13 x 44/12 = 315 tons per day. CO_2 equivalent

Freight (with lifting capacity up to 3.5 t):

E = 5 tons x 0.995x43.02 x19.98x 44/12 = 16 tons per day. CO_2 equivalent

Freight (with a loading capacity over 3.5 t):

E = 13 tons x 0.995 x 43.02 x 19,98 x 44/12 = 41 tons per day. CO_2 equivalent

Freight 12t.

E = 14 tons x 0.995 x 43.02 x 19.98 x 44/12 = 44 tons per day. CO_2 equivalent

Auto trains

E = 8 tons x 0.995 x 43.02 x 19.98 x 44/12 = 25 tons per day. CO_2 equivalent

Buses:

E =19 tons x 0.995 x 43.02 x 19.98 x 44/12 = 59 tons per day. CO_2 equivalent

Motorcycles:

E = 1.5 tons x 0.995 x 44.21 x 19.13 x 44/12 = 5 tons per day. CO_2 equivalent

Other (tractors, bulldozers, excavators, etc.):

E = 14 tons x 0.995 x 43.02 x 19.98 x 44/12 = 44 tons per day. CO_2 equivalent

Table 6.10: Total Carbon Dioxide Emissions in 2019

Vehicle category	CO_2 emissions (CO_2 equivalent tons/day).
Cars	315
Freight (with lifting capacity up to 3.5 t)	16
Freight With a loading capacity over 3.5 t	41
C Uzes gruzopod-emnostyu 12 m. And higher	44
Road trains	25
Buses	59
Motorcycles	5
Other (tractors, bulldozers, excavators, etc.)	44
Total	549

(4) Predicted GHG emissions in 2025

The CO_2 emission is predicted with the increase of traffic on A380 (150-228km). To simplify the prediction, the same assumptions have been applied, in terms of type of vehicles and fuel consumptions. According to the feasibility study, the total traffic in 2025 is estimated as 19,009 vehicles per day. It will increase by 11.87% compared to that of 2019. In 2019, the total CO_2 emission was estimated 549 tons per day CO_2 equivalent. It is predicted the total CO_2 emission to be 614 tons per day CO_2 equivalent in 2025.

However, after the completion of the project, the road conditions will be significantly improved; the speed of the vehicles will be increased because of new pavement and comfortable interchanges and road safety conditions.

7. STAKEHOLDER CONSULTATIONS AND DISCLOSURE

This Chapter presents the objectives and findings of the initial public and stakeholder consultations which were conducted during the development of the present ESIA. The Chapter also defines the requirements of consultations to be carried out during the project implementation, in addition to describing the disclosure requirements.

7.1. Objectives of Consultations

Stakeholder consultations (or public consultation) during the environmental and social assessment process of development projects is increasingly considered an important notion and requirements which increases the authenticity and acceptability of assessment itself but more importantly can possibly enhance the quality of decisions making as well. Stakeholder consultation/participation during various stages of developmental projects helps to improve decision making and ultimately leads towards sustainable development.

Stakeholder consultation is a two-way process. For stakeholders, the consultation process is an opportunity to obtain project information, to understand its potential impacts, to raise issues and concerns, and ask questions. For the project proponents, the consultation process offers an opportunity to understand the stakeholders and their concerns about the project, their needs and aspirations, and also their suggestions that can potentially help shape the project and its design. Listening to stakeholders' concerns and feedback can be a valuable source of information that can improve project design and outcomes and help the project proponent to identify and control external risks. It can also form the basis for future collaboration and partnerships.

Specific objectives of the consultation process that has been initiated while preparing the present ESIA are listed below.

- sharing of information with stakeholders on the proposed project and key findings of the ESIA;
- obtaining their feedback about the project, perceived impacts and preferred mitigation measures, and to collect information on environmental, ecological, and socio-economic baseline in the project area;
- understanding the stakeholders' concerns regarding various aspects of the project, including the existing situation, construction works and the potential impacts of the construction-related activities
- developing and maintaining communication links between the project proponents and stakeholders,
- ensuring that views and concerns of the stakeholders are incorporated into the project design and implementation as much as possible with the objectives of reducing or offsetting negative impacts and enhancing benefits of the proposed project.
- managing expectations and misconceptions related to the project;
- obtaining local and indigenous knowledge about the people living in the project area;
- interaction with the project affected population and other stakeholders for the collection of primary as well as secondary data relating to the project activities.
- engaging stakeholders for maximization of the project benefits.

7.2. Stakeholder Identification

Stakeholders are considered to be individuals or organizations which have an interest in the proposed project or knowledge that would provide insight into issues or affect decision making related to the proposed project. On the basis of interest and role criteria there are two types of stakeholders for the proposed project as described below.

7.2.1. Primary Stakeholders

The primary stakeholders (also called direct stakeholders) are the grass-root stakeholders, such as project affected persons and general public including women residing in the project area. These are the people who are directly exposed to the project's impacts though in some cases they may not be receiving any direct benefit from the project.

The communities living along the road A380 particularly along the 78-km stretch to be upgraded under the proposed project are the key primary stakeholders for BRNIP-I. Other primary stakeholders of the project include citizens of Bukhara region particularly people living in Bukhara, Kagan, Karaulbazar districts and Bukhara and Kagan cities.

7.2.2. Secondary / Institutional Stakeholders

The secondary stakeholders (also called institutional stakeholders) are the people, department, institutions, and/or organizations that may not be directly affected by the project however they may influence the project and its design. They include project proponent, other concerned departments that may have a role during various phases of the project, regulatory agencies, other relevant departments, non-governmental organizations (NGOs), the broader interested communities including academia and journalists, and general public.

The institutional stakeholders of the proposed project include:

- Ministry of Transport, including the Road Committee
- Republican Road Fund, which is part of the organizational structure of the Roads Committee under the Ministry of Transport of the Republic of Uzbekistan, performing the role of executive body on implementation of investment projects with participation of international financial institutions, as well as foreign governmental financial organizations in the field of road facilities;
- Sectoral Scientific and Technical Council of the Roads Committee under the Ministry of Transport of the Republic of Uzbekistan, which examines the feasibility of the project and its technical and technological parameters;
- The Ministry of Investment and Foreign Trade and the Ministry of Finance of the Republic of Uzbekistan, in terms of carrying out the feasibility study of the project and preparing opinions within their competence.
- Management and staff of Jeyran Eco-center.
- Contractors/Performers of works on reconstruction of the project road and implementation of technical support of the project will be determined by competitive bidding in accordance with the established procedure.
- Bukhara region khokimiyats and their district departments
- Bukhara region Women's Committee, Oila Markaz, and other women's NGOs

- Bukhara regional Department of Culture and Ecology and Environmental Protection,
- Department of Land Resources and State Cadaster of Bukhara region.

7.2.3. Outcome of Consultation Process during Project Preparation

During December 2019- January 2020, the ESIA team conducted two rounds of the workshops and public consultations in the Bukhara region. The expressed views and comments of all stakeholders including vulnerable groups such as women, members of the low-income families, and students were recorded and included in the report for addressing them in the project design and implementation; see **Table 7.1** for a summary of the view and concerns shared by the stakeholders.

Table 7.1*:* Summary of the Public Consultations

Location and Date of Consultation	Stakeholder consulted	Stakeholder's concerns/suggestions	Responses to Stakeholders
Karaulbazar district, secondary school #8, January 24, 2020	2 FGDs In total 42 participants with 26 women	Poor A380 road conditions Lack of sanitation conditions, no separate toilets at the bus stops, separate rooms for women and children. High cost of the taxi transport services, particularly for the low-income passengers and students. Unsafe Damas (local public transport) services: lack of safety and small capacity of this car for the transportation from Karaulbazar to Bukhara city Longtime of travelling (road takes 1-1.30 hour for going by public transport from district to Bukhara city) to healthcare, education establishments and dehkan market (Karvon bazar) of the Bukhara city, specifically for women with children and elders. The high unemployment among young people. Recommendations: -to construct separate sanitation facilities (toilets) for men and women - to construct bus stops with shops and shelters	- At present time the technical team is focused on design of the new road facilities in order to increase safety of the passengers such pedestrian crossings, new alignments, installing of lights, bridges and additional safety road signs. The new road alignments and interchanges will increase traffic volume The national standards are required the provision of sanitation facilities along the international roads. This A380 road will follow to national and international standards related to future construction of the facilities. During the implementation of this project the separate cycling lines will be designed, specifically in the populated areas. After the project implementation the travel time from Karaulbazar to Bukhara city will be reduced. The bus stops will be constructed. The local population will have opportunity to

Location and Date of Consultation	Stakeholder consulted	Stakeholder's concerns/suggestions	Responses to Stakeholders
		- to improve public transport service by using big and comfortable buses	participate in the project implementation during construction period and improve their wellbeing's.
Secondary school # 1 of Kagan district, January 24, 2020	In total 45 participants with 21 women	High number of accidents Lack of separate bicycle lines Traffic jams at the peak hours Lack of the sanitation facilities for passengers and drivers High cost of the taxi transport services for the low-income passengers and students, specifically at night time and holidays (average cost of the transport to Bukhara city and Karaulbazar both sides is around 15,000- 20,000 UZS). The longtime of travelling because of traffic at the peak hours High share of the road expenditures including petrol The high unemployment High noise and vibration level at the houses along the road Recommendations: -to design additional safe pedestrians, lights, cameras -to improve road junctions - to add a separate line for cycling -to construct separate sanitation facilities (toilets) for men and women - to construct bus stops with shops and shelters - to improve road conditions, pavement	At present time the technical team is focused on design of the new road facilities in order to increase safety of the passengers such pedestrian crossings, new alignments, installing of lights and additional safety road signs. The new road alignments and interchange will increase traffic volume The A 380 will use cement concrete pavement which will improve road conditions and decrease number of accidents According to national regulations, new comfortable bus stops will be constructed by small entrepreneurs and also open new opportunities for women empowerment During the implementation of this project the separate cycling lines will be designed, specifically in the populated areas. The construction of the road alignments, improving the access to the shops will be included in the new project design. The engineers pay special attention to the safety issues in the populated areas of the A380 road. The construction of the additional pedestrian roads is included in the project design.
Bukhara district, Pedagogical college	In total 31 participants with 13 women	High number of accidents Lack of safe and comfortable road alignments, pedestrian cross-roads Lack of separate bicycle lines	- At present time the technical team is focused on design of the new road facilities in order to increase safety of the passengers such

Location and Date of Consultation	Stakeholder consulted	Stakeholder's concerns/suggestions	Responses to Stakeholders
January 25, 2020		Traffic jams at the peak hours The longtime for transportation because intensive traffic High share of the road expenditures The high unemployment Lack of sanitation facilities for drivers and passengers at the transport alignments Recommendations: -to design additional safe pedestrians, lights, cameras -to improve road junctions - to add a separate line for cycling - to construct bus stops with shops and shelters - to improve road conditions, pavement	pedestrian crossings, new alignments, installing of lights and additional safety road signs. The national standards are required the provision of sanitation facilities along the international roads. This A380 road will follow to national and international standards related to future construction of the facilities. According to national regulations, new comfortable bus stops will be constructed by small entrepreneurs and also open new opportunities for women empowerment
Bukhara region Department of Uzavtoyol 25 January 2020	Number of participants - 7	- High level of traffic accidents Lack of safety at the 211-218 km. There are 12 pedestrians' crossings at the 211-218 km section but they do not ensure the safety of passengers and pedestrians. This area is full of education establishments at 221 km there is the Irrigation Institute, the School for the Blind people - High traffic on a densely populated section of the road (202 km) - Poor road quality and conditions - lack of dividing barriers among lines - Lack of cameras and radars at the road - Lack of lights along the road -Lack of separate lines for bicycles - Lack of safety at the railway crossings with road. - Intensive traffic and lack of correct road alignments at the	The installation of the modern lights is included in the design of the project. The new road alignments and interchanges will increase traffic volume At present time the technical team is focused on design of the new road facilities in order to increase safety of the passengers such pedestrian crossings, new alignments, installing of lights and additional safety road signs. The A 380 will use cement concrete pavement which will improve road conditions and decrease number of accidents The construction of the road alignments, improving the access to the shops will be included in the new project design.

Location and Date of Consultation	Stakeholder consulted	Stakeholder's concerns/suggestions	Responses to Stakeholders
		Kagan district and Bukhara city alignments - The Cement-concrete pavement can be a reason of the accidents Recommendations: - Due to high number of accidents at the A380 road it was recommended to follow the international standards of road conditions and safety policy. - It is impossible to set a traffic light at the intersection of international roads A380 and A380a - it is necessary to put a bridge or an interchange of roads. - At the Kalinin junction of 214 km it is also necessary to make the right road junction - this is the main problem, when the main vans pass on this road, they are creating a lot of traffic jams. - Cargo vans from Turkmenistan and other trucks must not enter the city, they must follow the circle road without entering the city. - All major road traffic and traffic problems occur between the two main circles of Kagan district and Bukhara city.	The engineers pay special attention to the safety issues in the populated areas of the A380 road. The construction of the additional pedestrian roads is included in the project design.
Bukhara city khokimiyat, January 26, 2020	In total 29 participants with 18 women	High number of accidents Lack of safe and comfortable road alignments, pedestrian cross-roads Lack of separate bicycle lines Traffic jams at the peak hours High share of the road expenditures The high unemployment Recommendations: -to design additional safe pedestrians, lights, cameras -to improve road junctions - to add a separate line for cycling	At present time the technical team is focused on design of the new road facilities in order to increase safety of the passengers such pedestrian crossings, new alignments, installing of lights and additional safety road signs. During the implementation of this project the separate cycling lines will be designed, specifically in the populated areas.

Location and Date of Consultation	Stakeholder consulted	Stakeholder's concerns/suggestions	Responses to Stakeholders
		-to construct separate sanitation facilities for men and women - to construct bus stops with shops and shelters - to improve road conditions, pavement	The new road alignments and interchanges will increase traffic volume.
Kagan city khokimiyat January 26, 2020	In total 27 participants with 15 women	High number of accidents Lack of safe and comfortable road alignments, pedestrian cross-roads Lack of separate bicycle lines Traffic jams at the peak hours High share of the road expenditures The high unemployment Recommendations: -to design additional safe pedestrians, lights, cameras -to improve road junctions - to add a separate line for cycling -to construct separate sanitation facilities for men and women - to construct bus stops with shops and shelters - to improve road conditions, pavement	At present time the technical team is focused on design of the new road facilities in order to increase safety of the passengers such pedestrian crossings, new alignments, installing of lights and additional safety road signs. The new road alignments and interchanges will increase traffic volume. According to national regulations, new comfortable bus stops will be constructed by small entrepreneurs and also open new opportunities for women empowerment. During the implementation of this project the separate cycling lines will be designed, specifically in the populated areas.
Jeyran Eco-center, Karaulbazar district 26-27 January 2020	Total number of participants - 10	Lack of animal safety signs High level of noise Lack of fence along the road No parking space for buses No U-turn Recommendations: To install signs for animals' safety To design comfortable U-turn to the buses with tourists	The animal safety issues and tourism development are taken into account and new interchange on the 181 km will be constructed. However, it was noted that the noise levels in Jeyran were under permissible limits. For animals crossing the road, it was decided that appropriate signages will be installed for lowering the speed of the vehicles
LLC "KNAUF	Number of participants - 6	No U-turn near the KNAUF Lack of lights Recommendations:	The installation of the modern lights is included in the design of the project.

Location and Date of Consultation	Stakeholder consulted	Stakeholder's concerns/suggestions	Responses to Stakeholders
GIPS BUXORO"		To design the comfortable U-turn or interchange at the KNAUF location To improve the road pavement and interchanges in both directions To install lights and cameras	The new road alignments and interchanges along the road A380 will increase the traffic volume.

The first reconnaissance mission was conducted in December 2019. The first workshop was conducted at the Bukhara region Department of Uzyolloyiha in December 2019. During first field survey, environment and social consultants conducted 5 in-depth interviews with representatives of the Jeyran Eco-center, Bukhara region Women Committee, and Bukhara region khokimiyat.

In order to assess the potential involuntary resettlement impacts, a site visit was undertaken during the 17-18 December 2019, along with the Chief Engineer of the territorial division of the State Committee of Bukhara region on automobile roads, Shavkat Kauymov. During the site visit, the entire length of the 78 km of the existing road and proposed territories for junctions were screened.

During 26-27 January, 2020 the IKS team conducted the workshop at the Jeyran Eco-center, which is located in Karaulbazar district at the section 180-190 km of the road A380. Director and staff of the Eco-center shared the historical information and current situation about the Biodiversity and Migration of the animals in the project area. The specialist of the Bukhara region Road Committee Department presented the draft design of the project. Participants of the workshop answered about the details of the project design related to safety and junction of the road near the Eco-center. The staff asked to put additional signs for safety of animals. During migration seasons animals can cross the roads, that is why the staff recommend to take into special consideration on protection migrated animals such as Jeyran, Kulan, Bustard ant others.

7.3. Consultation and Participation during Project Implementation

The stakeholder consultation in the project aera and citizen engagement is an ongoing process and will continue throughout the project implementation. The ongoing consultation process could be scheduled on a regular basis with the stakeholders including but not limited to the concerned government departments, local administration, and the community representatives from the proposed project area with specific focus on women empowerment.

A framework has been developed for the consultations to be carried out during the project implementation; see **Table 7.2**.

Table 7.2: Consultation and Participation Framework during Project Implementation

Description	Target Stakeholders	Timing	Responsibility
Public awareness campaigns/ scoping sessions to share ESIA, SSESMPs and RPs with the PAPs, communities and other stakeholders. Location: 3 districts in Bukhara region including Bukhara and Kagan cities	Communities within project area, general public; and line departments/ agencies.	Commencing with the preparation of first SSESMP; to be continued there after	PIU /Design Consultants/ Supervision Consultants
Consultations with the communities during ESIA, SSESMP and RP implementation Location: 3 districts in Bukhara region including Bukhara and Kagan cities	Communities at/around subproject area	Before commencement of project activities.	PIU / Supervision Consultants
Establishment of GRM and GRCs Location: 3 districts in Bukhara region including Bukhara and Kagan cities	Communities at/around project area	Before commencement of project activities.	PIU
Grievance redress Location: 3 districts in Bukhara region including Bukhara and Kagan cities	PIU staff; consultants; relevant line departments; and communities (as needed).	Project implementation Stage	PIU/ Supervision Consultants
Informal consultations and discussions. Location: 3 districts in Bukhara region including Bukhara and Kagan cities	Communities at/around project area	Project implementation Stage	PIU / Supervision Consultants; contractor
Consultations with the communities during internal monitoring Location: 3 districts in Bukhara region including Bukhara and Kagan cities	Communities at/around project area	Construction Stage	PIU / Supervision Consultants
Monthly meetings at project sites Location: District departments Road Committee	PIU staff; consultants; and communities (as needed).	Construction Stage	PIU / Supervision Consultants

Description	Target Stakeholders	Timing	Responsibility
Consultation workshops to review ESIA/ESMP/SSESMP and RP implementation, any outstanding issues and grievances, views and concerns of communities; and actions needed to address them. Location: District departments Road Committee.	Rural and Urban Communities at the project area; relevant line department; relevant NGOs	Six-monthly during implementation phase	PIU / Supervision Consultants
Consultations with the Communities relating to the leftover tasks Location: District departments Road Committee	Communities at/around project area	After completion of projects	PIU / Supervision Consultants
Consultations with the communities during the site visits by the AIIB Review Missions. Location: rural and urban communities and District departments Road Committee.	PIU; Communities at/around subproject area	Construction/ Operation Stage	PIU / Supervision Consultants

7.4. Disclosure

This draft ESIA document is disclosed at the website of Ministry of Transport. The final ESIA will also be disclosed in a similar way. The Executive Summary of the ESIA will be translated into Russian and Uzbek languages and placed on the same website, in addition to being available locally at the project site (PIU office, contractor's office).

8. ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

This chapter provides the environmental and social management plan (ESMP) of the Project. It describes institutional arrangements for the environmental and social management of the project, provides mitigation and monitoring plans, presents monitoring and reporting requirements, recommends environmental and social trainings to be conducted by various project entities and proposes the grievance redress mechanisms (GRM).

8.1. Objectives of ESMP

The basic objective of the ESMP is to manage adverse impacts of proposed project on the environment and people in the project area. The specific objectives of the ESMP are to:

- Facilitate the implementation of the mitigation measures discussed earlier in **Chapter 6** of the ESIA.
- Maximize potential project benefits and control negative impacts;
- Describe the institutional setup for the implementation of the ESMP and outline responsibilities for PIU, contractors, supervision consultants, and other entities for the environmental and social management of the project;
- Define a monitoring and reporting mechanism and identify monitoring parameters in order to:
    - Ensure the complete implementation of all mitigation measures,
    - Ensure the effectiveness of the mitigation measures;
- Assess environmental training requirements for different stakeholders at various levels.
- Establishes the grievance redress mechanisms (GRM) for project-affected people and workers.

8.2. Institutional Arrangements

The overall responsibility of environmental and social performance of the project and effective ESMP implementation will rest with RC. RC will establish the Project Implementation Unit (PIU) to lead the Project implementation. The PIU will be headed by the Project Director (PD). An Environmental and Social (E&S) Specialist will be hired in PIU under PD's supervision. The E&S Specialist will be responsible for overall environmental and social management for the project and supervising the environmental and social performance of the project and oversee the Construction Supervision Consultant (CSC) and contractors.

The organogram of PIU is shown in **Figure 8.1**.

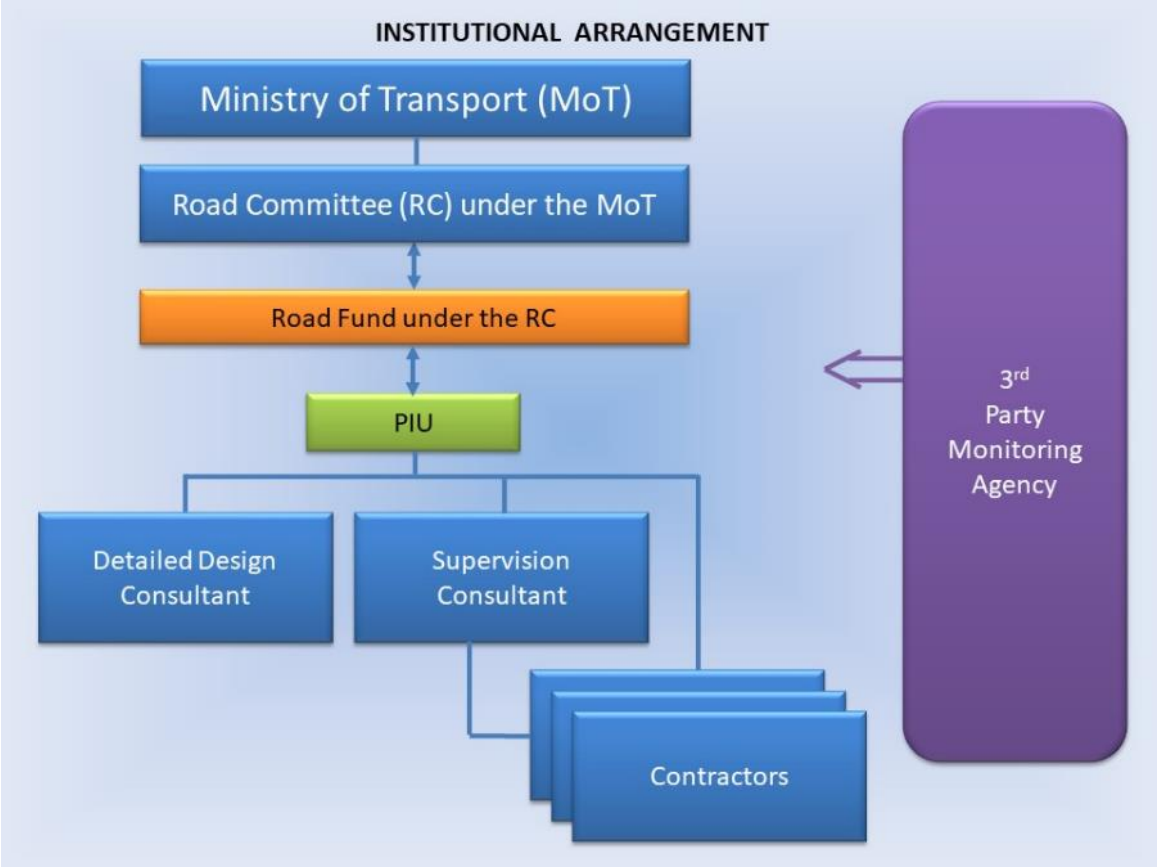


Figure 8.1: Organogram for Environmental and Social Management of Project

8.2.1. RC and Project Implementation Unit (PIU)

A PIU, under RC will be established at the national level to implement the project. As stated earlier, an E&S specialist will be engaged in PIU. The main duties of the E&S Specialist would be to ensure that the project activities are implemented in compliance with the AIIB's ESP, National EIA regulations and procedures, as well as in compliance with the present ESIA/ESMP. The specialist's major responsibilities will include:

(a) managing all environmental and social issues associated with the project;
(b) overseeing the CSC's work in E&S aspects;
(c) coordinating with CSC to ensure that the contractors develop Site-specific ESMP (SSESMP) and comply with all environment, social, health and safety (ESHS) and labor requirements;
(d) establishing the GRMs for affected people and workers respectively as defined in this ESMP and ensure they are functional through the project lifetime;
(e) appointing certificated third-party monitoring organization to conduct external environmental and social monitoring as required in the ESMP and to prepare the monitoring reports;
(f) documentation of E&S related issues, ensuring to incorporate ESHS into Quarterly Project Progress Reports, and submitting semi-annual Environmental and Social Monitoring Reports, and Project Completion Environmental and Social Monitoring Report to AIIB as required in this ESMP;
(g) identifying E&S training needs and organizing training for all parties involved in ESMP implementation.

8.2.2. Construction Supervision Consultant (CSC)

The CSC will be responsible for supervising the work of all the stages during construction. It shall include an E&S team with qualified and adequate professionals. The CSC will take major responsibilities in E&S management during the construction phase, including:

(a) Supervising and guiding the contractors to prepare SSESMPs in accordance with this ESMP;
(b) Carrying out E&S supervision to ensure successful implementation and monitoring of SSESMPs;
(c) Supporting PIU to get all national permits regarding ESHS prior to the construction;
(d) Ensuring compliance with national regulations in terms of environmental protection, occupational health and safety and labor issues;
(e) Implementing the monitoring plan defined in the ESMP and conducting regular monitoring of the compliance related to ESHS and labor issues;
(f) Monitoring and assessing environmental and social performance and efficiency of mitigation measures, as well as identify non-compliance issues or adverse trends in results, and put in place corrective measures;
(g) Liaison with the communities and Makhalla heads in the project area, other stakeholders on environmental and social issues related to the project; and keeping the local communities informed of the environmental and social compliance of the project and properly address their concerns, if any;
(h) Leading the GRM at the field-level as suggested in the GRM section of this ESMP;
(i) Providing ESHS inputs to the Quarterly Project Progress Reports; documenting the E&S supervision and regularly reporting to the PIU regarding ESMP implementation including GRM.

8.2.3. Contractors

The contractors should ensure full compliance with environmental and social requirements related to construction activities, as laid down in the ESMP. The contractor should form a team consisting of environmental, safety and health and labor professionals. The contractors shall ensure adequate budget to meet all of the ESHS and labor requirements in the bidding documents. They will be required to prepare SSESMP based on the ESMP and to implement the SSESMP under the supervision of the CSC. The contractors will also develop Code of Conduct for workers. The Contractors will ensure that all the workers are properly briefed in ESHS matters in terms of the ‘Do’s and Don’ts’ while they work on the project. The Contractors will strictly follow national regulations on labor issue. In particular, forced labor and child labor are strictly forbidden in this project.

8.3. Inclusion of Relevant Components of ESMP in Contract Documents

The ESMP of the project will be included in the construction bid documents and also reflected in the construction contracts. The technical specifications of the bid documents will clearly state that contractor will need to comply with the mitigation measures provided in ESMP and Environmental Codes of Practice (ECPs); AIIB ESP and ESSs, and national regulatory requirements.

8.3.1. Bill of Quantities in Bid Documents

A lumpsum item for ESMP implementation will be included in the bill of quantities (BOQs) of construction bid documents. This item refers to:

- Preparation and implementation of SSESMP in compliance with ESMP, AIIB ESP and Environmental and Social Standards, and national standards on air, noise, water quality, and others;
- Provision of an Environmental Officer and an Occupational Health and Safety Officer (for the duration of construction phase);
- Providing and maintenance of Noise Meters and Dust Measurement Meters for spot measurement;
- Dust monitoring and noise monitoring as planned in the ESMP at locations specified by the CSC.

After award of the contract and before mobilization, the Contractor will need to prepare an SSESMP with site specific mitigation measures for approval by PIU.

PIU will ensure that contractors and their subcontractors carry out their responsibility of implementing the mitigation measures, monitoring plan as well as other environmental and safety measures provided in the ESMP.

8.4. Payment Milestones

Payments to contractors would be linked to environmental and social performance, measured by completion of the prescribed environmental and social mitigation measures. Contractors would be required to join forces with the PIU, CSC and local population for the mitigation of adverse impacts of the project. For any non-compliance causing damages or material harm to the natural environment, public or private property or resources, the contractor will be required to either remediate / rectify any such damages in a timeframe specified by and agreed with the engineer, or pay PIU for the cost (as assessed by PIU) of contracting a third party to carry out the remediation work.

8.5. Environmental Code of Practices for Construction

The environmental codes of practice (ECPs) are generic and non-site-specific guidelines for the construction phase. The ECPs consist of environmental and social management guidelines and practices to be followed by the contractors for sustainable management of all environmental issues. The contractors will be required to follow them and also use them to prepare SSESMP. The ECPs are presented in **Annex D1**.

ECP 1: Waste Management

ECP 2: Fuels and Hazardous Substances Management

ECP 3: Erosion and Sediment Control

ECP 4: Topsoil Management

ECP 5: Borrow Areas Management

ECP 6: Air Quality Management

ECP 7: Noise and Vibration Management

ECP 8: Protection of Flora and Fauna

ECP 9: Water Quality Management

ECP 10: Road Safety and Traffic Management

ECP 11: Construction Camp Management

ECP 12: Cultural Heritage and Chance Find Procedure

ECP 13: Occupational Health and Safety.

8.6. Site-specific Environmental and Social Management Plans for Construction Stage

As stated earlier, construction contractors will be required to prepare and implement SSESMP. The contractors will need to obtain CSC's approval of the SSESMP. The key elements of SSESMP will include the following:

- **Pollution Prevention Plan** will be prepared and implemented by the contractor on the basis of the mitigation measures given in this ESIA and ECPs.
- **Waste Disposal and Effluent Management Plan** will be prepared and implemented by the Contractor on the basis of the ESMP and ECP.
- **Drinking Water Supply and Sanitation Plan:** Separate water supply and sanitation provisions will be needed for the temporary facilities including offices, construction camps and workshops in order not to cause shortages and/or contamination of existing drinking water sources.
- **Occupational Health and Safety (OHS) Plan** will be prepared and implemented by the contractor on the basis of the present ESMP, ECPs, and other relevant standards.
- **Traffic Management Plan (TMP)** will be prepared by the contractor after discussion with PIU and authorities responsible for roads and traffic. The Plan will be submitted to the CSC for their review and approval before contractor mobilization. The Plan will identify the routes to be used by the contractors, procedures for the safety of the local community particularly pedestrians, and monitoring mechanism to avoid traffic congestion.
- **Construction Camp Management Plan** will be prepared by the contractor. The Plan will include the camp layout, details of various facilities including supplies, storage, and disposal.
- **Fuel and Hazardous Substances Management Plan** will be prepared by the contractor in accordance with the present ESMP, standard operating procedures and other relevant guidelines, and where applicable, material safety data sheets (MSDS). The Plan will include the procedures for handling the oils and chemical spills.
- **Emergency Preparedness and Response Plan** will be prepared by the contractor after assessing potential risks and hazards that could be encountered during construction.

- **Communication Plan** to deal with the interaction of the community, complaints management, workers recruitment, notice of works and workers conduct with locals.

8.7. Performance Indicators

For evaluating the performance of the environmental and social management and monitoring, performance indicators are identified to for efficient and timely implementation of measures/actions proposed in ESMP. The indicators are defined both for construction phase and operation phase. CSC will be responsible for compiling the information on these indicators and report to PIU.

To measure the overall environmental and social performance of the project, a tentative list of performance indicators is given below.

- Number of inspections carried out by CSC per month.
- Number of non-compliances observed by CSC or PIU.
- Availability of environmental, social and OHS specialists in CSC.
- Availability of EHS specialists with contractors.
- Timely reporting of documents (as defined in ESMP and monitoring plan).
- Number of training programs conducted for stakeholders/other capacity building initiatives.
- Timely disbursement of compensation/ timely resettlement of project affectees.
- Timely implementation of resettlement schedule.
- Number of grievances received.
- Number of grievances resolved.
- Number of construction-related incidents, accidents, injuries, and fatalities.

8.8. Mitigation Plan

An overarching Mitigation Plan has been developed for the pre-construction, construction and O&M phases of the Project; please see **Table 8.1**. The Plan has been organized with respect to the various activities to be carried out during the project phases. The Plan describes mitigation measures, implementing and monitoring responsibilities and also identifies performance standards.

Table 8.1: Environmental and Social Mitigation Plan

Ref	Project Activity	Environmental /Social Impact		Mitigation Measures	Responsibility		Target / Indicator / Performance Requirement
					Implementation	Monitoring	
Pre-Construction Phase							
1.	Siting of the project	1.1	Land acquisition	The Abbreviated Resettlement Plan will be implemented	RC	CSC	Compensation payment received by the affected entities; Number of grievances received
		1.2	Loss of farm income	The Abbreviated Resettlement Plan will be implemented	RC	CSC	– Compensation payment received by the affected entities; – Number of grievances received
Construction Phase							
2	Contractor mobilization and demobilization	2.1	Traffic management	– The approved TMP will be followed. – It will be ensured that disruption of traffic on road A380 is minimized – Traffic management, such as speed limits and signal lights, are to be strengthened – Coordination will be maintained with the local traffic authorities to engage traffic police at the busy junctions – Implement the mitigation measures proposed in ECP 10	Contractor	CSC	– Number of any non-compliance reports – Number of complaints / grievances. – Number of traffic accidents/incidents involving project vehicles and lorries bringing materials and supply to project
		2.2	Soil Erosion and Contamination	– Vehicular traffic on unpaved roads will be avoided as far as possible. – Operation of vehicles and machinery close to the water bodies will be minimized. – Vehicles and equipment will not be repaired in the field. If unavoidable,	Contractor	CSC	– Number of any non-compliance reports – Number of complaints / grievances.

Ref	Project Activity	Environmental /Social Impact		Mitigation Measures	Responsibility		Target / Indicator / Performance Requirement
					Implementation	Monitoring	
				impervious sheathing will be used to avoid soil and water contamination. – Waste management plan will be implemented ECP 1, ECP 3, and ECP 4 will be implemented.			
		2.3	Air pollution	– -Pollution prevention plan will be implemented. – Construction vehicles will be kept in good working condition and properly tuned, in order to minimize the exhaust emissions, and in compliance with the standards (national standards and WBG EHS Guidelines). – Dust emissions will be minimized by appropriate methods, such as spraying water on soil, where required and appropriate. – Project vehicles will avoid passing through the communities as far as possible. If unavoidable, speed will be reduced to 15 km/h to avoid excessive dust emissions. – Air quality will be properly monitored, especially near the population centers and sensitive receptors. Appropriate actions will be undertaken in case ambient air quality at the population centers deteriorates beyond limits. – ECP 6 for air quality management will be implemented.	Contractor	CSC	– Number of non-compliance reports. – Number of community complaints. – Ambient air quality found beyond the standards (national standards and WBG EHS Guidelines).
		2.4	Noise and vibration	– -Pollution prevention plan will be implemented.	Contractor	CSC	- Number of non-compliance reports;

Ref	Project Activity	Environmental /Social Impact		Mitigation Measures	Responsibility		Target / Indicator / Performance Requirement
					Implementation	Monitoring	
				– Noise barriers will be installed where needed particularly near sensitive receptors such as schools – Vehicles will have exhaust mufflers (silencers) to minimize noise generation. – Nighttime traffic will be avoided near the communities. Local population will be taken in confidence if such work is unavoidable. – Vehicular traffic through the communities will be avoided as far as possible. Vehicle speeds will be kept low, and horns will not be used while passing through or near the communities. – Compliance with national standards and WBG EHS Guidelines will be ensured. – Noise monitoring will be carried out particularly near settlements and sensitive receptors – ECP-7 will be enforced. – Continued consultations with the affected communities will be carried out.			- Noise measurement data - Number of community complaints.
		2.5	Public Safety	– Occupational health and safety procedures and OHS Plan will be enforced. – Implement fuels and hazardous substances management plan – The Traffic Management Plan will be implemented that will aim at ensuring access to residential areas, and	Contractor	CSC	– Number of any non-compliance reports; – Number of any related public complaints – Number of accidents, incidents and near-misses.

Ref	Project Activity	Environmental /Social Impact		Mitigation Measures	Responsibility		Target / Indicator / Performance Requirement
					Implementation	Monitoring	
				preventing of unsafe situations, especially near schools, housing areas, construction areas, camps and offices. – Special attention should be focused on safety training for workers to prevent and restrict accidents and on the knowledge how to deal with emergencies. – Road signage will be fixed at appropriate locations to reduce safety hazard associated with project-related vehicular traffic. – Liaison with traffic police will be maintained – Project drivers will be trained on defensive driving. – Vehicle speeds near / within the communities will be kept low, to avoid safety hazards. – Regular safety monitoring will be carried out at the sensitive receptors – ECP-10 and ECP-13 will be implemented. – Continued consultations with the affected communities will be carried out.			
		2.6	Damage to Infrastructure	All damaged infrastructure will be restored to original or better condition.	Contractor	CSC	– Number of any non-compliance reports; – Number of any public complaints.
		2.7	Damage to cultural heritage	No vehicle movement will be carried out near any cultural heritage site	Contractor	CSC	– Number of any non-compliance reports;

Ref	Project Activity	Environmental /Social Impact		Mitigation Measures	Responsibility		Target / Indicator / Performance Requirement
					Implementation	Monitoring	
							– Number of any public complaints.
		2.8	Crop damage	– No vehicle movement will be allowed inside any cultivated area – Any damage caused by the camp establishment will be compensated	Contractor	CSC	– Number of non-compliance reports – Number of related complaints
		2.9	Damage to natural vegetation, threat to wildlife	– No vehicle movement will be carried out inside Jeyran Eco-center or Neftchi Forestry Area.	Contractor	CSC	– Number of any non-compliance reports – Number of trees felled – Number of sighting of key wild species – Number of related complaints.
3	Construction camp establishment	3.1	Soil erosion; soil and water contamination	– Camp management plan will be implemented – location of camp will be selected after obtaining CSC's approval and in consultation with local community – Photographs will be taken to record the site conditions prior to the establishment of the camp. – Land clearing, leveling and grading will be minimized, and carried out in a manner to minimize soil erosion. – Camp will have rainwater drainage arrangements – Camps will have protection arrangements against soil erosion – Vehicular traffic on unpaved roads will be avoided as far as possible. Operation of vehicles close to the	Contractor	CSC	– Compliance to the Camp Management Plan, Waste Management Plan – Number of any non-compliance reports – Results of soil and water quality analysis – Number of related complaints

Ref	Project Activity	Environmental /Social Impact		Mitigation Measures	Responsibility		Target / Indicator / Performance Requirement
					Implementation	Monitoring	
				water channel and water bodies will be minimized. – Contractors will prepare and implement a Waste Management Plan. – For the domestic sewage, appropriate treatment and disposal system (e.g., septic tank and soaking pits) will be constructed having adequate capacity – Waste oils will be collected in drums and sold to the recycling contractors. – The inert recyclable waste from the site (such as cardboard, drums, and broken/used parts) will be sold to recycling contractors. The hazardous waste will be kept separate and handled according to the nature of the waste. – Domestic sold waste from the camp site will be disposed off in a manner that does not cause soil contamination. – The contractor will identify suitable sites for disposal of hazardous and non- hazardous waste. The selection will be done in consultation with the PMU and the local municipal authorities. No waste disposal will be carried out in water bodies or inside Jeyran Eco-center or Neftchi Forestry Area. – The camp site area will be completely restored after completion of construction works. All temporary structures will be demolished,			

Ref	Project Activity	Environmental /Social Impact		Mitigation Measures	Responsibility		Target / Indicator / Performance Requirement
					Implementation	Monitoring	
				– ECP-1, ECP-2, ECP-3, ECP 4, and ECP-11 will be implemented.			
		3.2	Air pollution	– -Pollution prevention plan will be implemented. – Generators and vehicles will be kept in good working condition and properly tuned, in order to minimize the exhaust emissions. – dust emissions will be minimized by appropriate methods, such as spraying water on soil, where required and appropriate. – Air quality will be properly monitored, especially near the population centers – compliance with national standards and WBG EHS Guidelines will be ensured. – ECP-6 will be implemented.	Contractor	CSC	– Number of any non-compliance reports – Air quality monitoring data – Number of related grievances
		3.3	Vegetation loss; threat to wildlife	– Camp will not be established inside or adjacent to Jeyran Eco-center or Neftchi Forestry Area – Clearing natural vegetation will be avoided as far as possible. – The camp will be established in a natural clearing, to the extent possible. – Any loss or damage to crops or cultivation land will be compensated in accordance with ARP – Complete record will be maintained for any tree cutting. – The camp staff will not indulge in any animal shooting, trapping, catching, or killing activities.	Contractor	CSC	– Number of any non-compliance reports – Number of trees felled – Number of sighting of key wild species – Number of related complaints.

Ref	Project Activity	Environmental /Social Impact		Mitigation Measures	Responsibility		Target / Indicator / Performance Requirement
					Implementation	Monitoring	
				– Include information on wildlife protection in all tool-box orientation briefings for camp staff – ECP-8 will be implemented.			
		3.4	Noise	– -Pollution prevention plan will be implemented. – Noise barriers will be installed where needed particularly near sensitive receptors – Generators and vehicles will have exhaust mufflers (silencers) to minimize noise generation. – Liaison with the communities will be maintained. – Noise monitoring will be carried out. – compliance with national standards and WBG EHS will be ensured. ECP-7 will be implemented.	Contractor	CSC	– Number of any non-compliance reports – Noise monitoring data – Number of grievances regarding noise
		3.5	Health and Safety	– OHS plan will be prepared and implemented – Implement fuels and hazardous substances management plan – Protective fencing to be installed around the Camp to avoid any accidents. – Contain all fuel tanks in a fully bunded area with a storage capacity of at least 110 percent of the potential storage volume. – Spill control arrangements to be made for hazardous substances (e.g., fuels)	Contractor	CSC	– Number of any non-compliance reports – Number of trainings conducted – Number of accidents, incidents, and near misses.

Ref	Project Activity	Environmental /Social Impact		Mitigation Measures	Responsibility		Target / Indicator / Performance Requirement
					Implementation	Monitoring	
				– Firefighting equipment will be made available at the camps. – The camp staff will be provided OHS training. – All safety precautions will be taken to transport, handle and store hazardous substances, such as fuel. – Construction camps will have first aid kits – Camp crew will be provided with awareness for transmissible diseases and gender issues (eg, HIV, hepatitis B and C; GBV). – ECP-13 will be implemented.			
		3.6	Social and Gender Issues	– Local norms and customs will be respected – Camp crew will avoid entering the settlements – No child labor or forced labor will be employed in the camps. – Liaison with the community will be maintained. – The World Bank Guidance Note[10] will be used to address potential impacts caused by temporary project induced labor influx; – The World Bank Guidance Note on gender-based violence (GBV) will be used to address potential impacts caused by temporary project induced labor influx;	Contractor	CSC	– Number of non-compliance reports; – Number of related complaints

[10] The Note is available at: http://pubdocs.worldbank.org/en/497851495202591233/Managing-Risk-of-Adverse-impact-from-project-labor-influx.pdf.

Ref	Project Activity	Environmental /Social Impact		Mitigation Measures	Responsibility		Target / Indicator / Performance Requirement
					Implementation	Monitoring	
				– The contractor will prepare and implement a Code of Conduct for all site personnel, in consultation and coordination with the local community; – All site personnel will be provided orientation and training on Code of Conduct. Awareness raising materials such as posters and signage will be used as appropriate; – Privacy of women will be respected; routes and places used by them will be avoided as far as possible; – Construction camps will be located at least 500 m away from the communities. Entry of the site personnel in the local communities will be minimized to the extent possible/appropriate. – The GRM described earlier will also address community grievances related to social conflict.			
		3.7	Damage to sites of cultural heritage	– In case any artifacts or sites of archeological, cultural, historical, or religious significance are discovered at the camp site, the concerned department and local Khokimiyats will be informed. – ECP 12 will be implemented.	Contractor	CSC	– Number of non-compliance reports – Number of reports of any discovery of cultural heritage sites/artifacts
		3.8	Increased Load on Local Services and Supplies	– - The contractor will prepare and implement a plan to obtain key supplies such as water and fuel, in consultation and coordination with the local community;	Contractor	CSC	Number of related public grievances

Ref	Project Activity	Environmental /Social Impact		Mitigation Measures	Responsibility		Target / Indicator / Performance Requirement
					Implementation	Monitoring	
				– The plan will ensure that there is no significant impact on the local community and local resources; – Liaison with the community will be maintained; – The GRM described earlier will also address community grievances related to usage of local resources.			
		3.9	Damage to crops	– Camp will not be established inside any cultivated area – Any damage caused by the camp establishment will be compensated	Contractor	CSC	– Number of non-compliance reports – Number of related complaints
4.	Construction equipment and material transportation	4.1	Traffic management	Same as Item 2.1.	Contractor	CSC	Same as Item 2.1
		4.2	Soil Erosion and Contamination	Same as Item 2.2	Contractor	CSC	Same as Item 2.2
		4.3	Air pollution	Same as Item 2.3	Contractor	CSC	Same as Item 2.3
		4.4	Noise	Same as Item 2.4	Contractor	CSC	Same as Item 2.4
		4.5	Public Safety	Same as Item 2.5	Contractor	CSC	Same as Item 2.5
		4.6	Damage to Infrastructure	Same as Item 2.6	Contractors	CSC	Same as Item 2.6
		4.7	Damage to cultural heritage	Same as Item 2.7	Contractor	CSC	Same as Item 2.7
		4.8	Blocked routes	– The contractor will prepare and implement the TMP, in consultation and coordination with the local community;	Contractors	CSC	Number of any non-compliance reports Number of related grievances

Ref	Project Activity	Environmental /Social Impact		Mitigation Measures	Responsibility		Target / Indicator / Performance Requirement
					Implementation	Monitoring	
				– The community will be informed about the nature of construction activities and possibility of any blocked route; alternate routes will be identified with the help of local/affected community. Duration of such blockage will be minimized to the extent possible; – Construction works on the road A380 will be planned and implemented in a manner to minimize traffic disruption. All road safety measures including road signage, warning lights, lane dividers, and safety railings will be installed. – Liaison and coordination will be maintained with relevant authorities such as khokimiyats, makhallas, Bukhara region Road Safety Department. – Liaison with the community will be maintained. – The GRM described earlier will also address community grievances related to any blockage.			
		4.9	Crop damage	– Same as Item 2.8	Contractor	CSC	Same as Item 2.8
		4.10	Damage to natural vegetation, threat to wildlife	– Same as Item 2.9	Contractor	CSC	Same as Item 2.9
5	Excavation	5.1	Soil erosion; water and soil contamination,	– Contractor will prepare and implement a Pollution Prevention Plan prior to the start of the work.	Contractor	CSC	– Number of any non-compliance reports – Number of complaints / grievances.

Ref	Project Activity	Environmental /Social Impact		Mitigation Measures	Responsibility		Target / Indicator / Performance Requirement
					Implementation	Monitoring	
				– Contractor will be required to take appropriate measures to avoid and contain any spillage and pollution of the soil; – Contractor will confine the contaminants immediately after such accidental spillage; – Contractor will collect contaminated soils, treat and dispose them in environment friendly manner; – Top soil to be stripped and stockpiled where practical, particularly in cultivation fields. – Vehicles and equipment will not be repaired in the field. If unavoidable, impervious sheathing will be used to avoid soil and water contamination. – Temporary stockpile of soil to be protected from wind and water erosion. – ECP 3 and 4 will be implemented			
		5.2	Air pollution	– Pollution prevention plan will be implemented. – The equipment and vehicles used during the construction process will comply with the national legislation as well as WBG EHS Guidelines on exhaust emissions; – Contractor will implement dust prevention measures such as watering of roads near the residential areas; – Regular air monitoring will be carried out near the sensitive receptors (Table 6.5) to ensure	Contractor	CSC	– Number of any non-compliance reports – Number of complaints / grievances. – Air quality monitoring data

Ref	Project Activity	Environmental /Social Impact		Mitigation Measures	Responsibility		Target / Indicator / Performance Requirement
					Implementation	Monitoring	
				ambient air quality remains within the limits defined by national standards and WBG EHS Guidelines; – Measures will be taken to protect the workers from excessive dust (i.e., usage of personal protective equipment); – A GRM (discussed later in the document) will be put in place to receive complaints from public on various aspects of environmental issues, including air pollution. These grievances will be addressed by the contractor by adopting necessary pollution control measures. Continued consultations with the affected communities will be carried out during construction phase. – ECP 6 for air quality management will be implemented.			
		5.3	Noise	– -Pollution prevention plan will be implemented. – Noise barriers will be installed where needed particularly near sensitive receptors such as schools – Equipment will have exhaust mufflers (silencers) to minimize noise generation. – Nighttime works will be avoided near the communities. Local population will be taken in confidence if such work is unavoidable.	Contractor	CSC	– Number of any non-compliance reports – Number of complaints / grievances. – Noise monitoring data

Ref	Project Activity	Environmental /Social Impact		Mitigation Measures	Responsibility		Target / Indicator / Performance Requirement
					Implementation	Monitoring	
				– Compliance with national standards and WBG EHS Guidelines will be ensured. – Noise monitoring will be carried out particularly near settlements and sensitive receptors – ECP-7 will be enforced. – Continued consultations with the affected communities will be carried out.			
		5.4	Damage to water bodies	– No debris, soil, waste material or access construction material will be released in the canals or channels. – Construction material will not be stockpiled near water bodies. – Vehicle/equipment movement near the water bodies will be avoided. – Liaison with irrigation authority and keep the stakeholders informed in case of any damage to or blockage of irrigation canals. – Any damage to the canals or drainage channels will be restored immediately. – ECP 9 will be implemented	Contractor	CSC	– Number of any non-compliance reports – Number of complaints / grievances.
		5.5	Public safety	– The contractor will prepare and implement an Occupational Health and Safety (OHS) Plan – Job hazard analysis will be carried out for each type of construction activities – Contractors will have dedicated and qualified staff for ensuring compliance with the OHS Plan	Contractor	CSC	– Number of any non-compliance reports – Number of complaints / grievances. – Number of accidents

Ref	Project Activity	Environmental /Social Impact		Mitigation Measures	Responsibility		Target / Indicator / Performance Requirement
					Implementation	Monitoring	
				– Construction area will be cordoned off to avoid unauthorized entry into the construction area – Regular trainings will be provided to the workers on OHS aspects. – Awareness raising of communities will be carried out on safety aspects – Liaison will be maintained with the local communities. – Awareness raising material will be used including posters, signage, booklets, and others – All site personnel will be screened for communicable diseases including sexually transmitted infections. – Use of appropriate personal protective equipment (PPE) will be mandatory. No worker (or even visitor) will be allowed on the site without the required PPE (such as hard hat, safety shoes). – Firefighting equipment will be made available as required at construction sites, particularly near the fuel storage. – The project drivers will be trained in defensive driving. They will maintain low speed while driving through / near the communities. – Complete record of accidents and near-misses will be maintained. – First aid facilities will be made available at the work sites and in the camps. The contractors will engage qualified first aider(s).			

Ref	Project Activity	Environmental /Social Impact		Mitigation Measures	Responsibility		Target / Indicator / Performance Requirement
					Implementation	Monitoring	
				– Location and telephone numbers of the nearest hospital will be displayed at appropriate places at work sites and in construction camps. If necessary, the contractor will have an ambulance available at the site. – ECP 13 will be implemented			
		5.6	Loss of vegetation / trees	– Tree and shrub cutting will be minimized. – Compensation for tree cutting is calculated in ARP provided later in the document. Compensatory tree plantation will be carried out (e.g., along the periphery of road). – The tree species and plantation location will be decided in consultation with the concerned department including authorities of the Eco-center. – All construction activities or equipment/machinery should avoid entering the Neftchi Forestry Area – The same species that has been removed will be planted at the ratio of 1:10 (i.e., 10 saplings planted for each tree felled). – ECP 8 will be implemented	Contractor	CSC	– Number of any non-compliance reports – Number of complaints / grievances. – Number of trees felled – Number of trees planted – Number of related complaints
		5.7	Threat to wildlife	– Warning signs will be installed along the A380 road passing through the Jeyran Eco-center (181-198km), warning the drivers about the presence of wildlife in the area. – Hunting, trapping, or harassing of wildlife will not be permitted.	Contractor	CSC	– Number of any non-compliance reports – Number of sighting of key wild species – Number of related complaints

Ref	Project Activity	Environmental /Social Impact		Mitigation Measures	Responsibility		Target / Indicator / Performance Requirement
					Implementation	Monitoring	
				– Liaison with the Eco-center authorities will be maintained during the construction phase. – The construction sites near the Eco-center will be fenced if needed to avoid any injury to the wild species. – All construction activities or equipment/machinery should avoid entering the Eco-center. – Workers will be educated about the wild species in the Eco-center. Poaching is forbidden or harassing of wildlife. – No waste disposal particularly food waste or hazardous waste will be disposed inside the Eco-center. – ECP 8 will be implemented			
		5.8	Damage to infrastructure and public utilities	– Same as Item 2.6. – Before the start of construction activities, all public utilities requiring relocation will be identified. – Subsequently, the concerned departments/authorities will be contacted for the relocation of these utilities. – It will be ensured that there is a minimum disruption of services such as electricity and water. – Any infrastructure damaged by the construction activities will be repaired. – GRM will also capture any related complaints.	Contractor	CSC	Same as Item 2.6.

Ref	Project Activity	Environmental /Social Impact		Mitigation Measures	Responsibility		Target / Indicator / Performance Requirement
					Implementation	Monitoring	
		5.9	Social conflict due to the Influx of Workers and In-migrants	– Local norms and customs will be respected – No child labor or forced labor will be employed in the camps. – Liaison with the community will be maintained. – The World Bank Guidance Note[11] will be used to address potential impacts caused by temporary project induced labor influx; – The World Bank Guidance Note on gender-based violence (GBV) will be used; – The contractor will prepare and implement a Code of Conduct for all site personnel, in consultation and coordination with the local community; – All site personnel will be provided orientation and training on Code of Conduct. Awareness raising materials such as posters and signage will be used as appropriate; – Privacy of women will be respected; routes and places used by them will be avoided as far as possible; – Entry of the site personnel in the local communities will be minimized to the extent possible/appropriate. – The GRM described earlier will also address community grievances related to social conflict.	Contractor	CSC	Same as Item 3.6.

[11] The Note is available at: http://pubdocs.worldbank.org/en/497851495202591233/Managing-Risk-of-Adverse-impact-from-project-labor-influx.pdf.

Ref	Project Activity	Environmental /Social Impact		Mitigation Measures	Responsibility		Target / Indicator / Performance Requirement
					Implementation	Monitoring	
		5.10	Damage to cultural resources	Same as Item 3.7	Contractor	CSC	Same as Item 3.7
		5.11	Blockage of roads and local routes	– The contractor will prepare and implement TMP, in consultation and coordination with the local community; – The community will be informed about the nature of construction activities and possibility of any blocked route; alternate routes will be identified with the help of local/affected community. – Duration of such blockage will be minimized to the extent possible; – Construction works on the road A380 will be planned and implemented in a manner to minimize traffic disruption. All road safety measures including road signage, warning lights, lane dividers, and safety railings will be installed. – Liaison and coordination will be maintained with relevant authorities such as khokimiyats, makhallas, Bukhara region Road Safety Department. – Liaison with the community will be maintained. – The GRM described earlier will also address community grievances related to any blockage. – ECP 10 will be implemented.	Contractor	CSC	Number of any non-compliance reports Number of related grievances
		5.12	Spoil generation	– Minimize the generation of spoils by recycling the excavated soil to the	Contractor	CSC	Number of any non-compliance reports

Ref	Project Activity	Environmental /Social Impact		Mitigation Measures	Responsibility		Target / Indicator / Performance Requirement
					Implementation	Monitoring	
				maximum extent possible by using it as filling material in the road section. – Excess spoils should be stored in the lands provided by local communities or in the areas approved by the project management/local authorities.			Number of related grievances
		5.13	Damage to crops	– Crop damage will be minimized to the extent possible – If unavoidable, compensation will be paid to the grower/farmer.	Contractor	CSC	Number of any non-compliance reports Number of related grievances
6	Road construction (base, sub-base, asphalting)	6.1	Water and soil contamination,	– Contractor will prepare and implement a Pollution Prevention Plan prior to the start of the work. – Contractor will be required to take appropriate measures to avoid and contain any spillage and pollution of the soil; – Contractor will confine the contaminants immediately after such accidental spillage; – Contractor will collect contaminated soils, treat and dispose them in environment friendly manner; – Vehicles and equipment will not be repaired in the field. If unavoidable, impervious sheathing will be used to avoid soil and water contamination. – ECP 3 and ECP 9 will be implemented	Contractor	CSC	– Number of any non-compliance reports – Number of complaints / grievances.
		6.2	Air pollution	– Same as Item 5.2.	Contractor	CSC	Same as Item 5.2
		6.3	Noise	Same as Item 5.3.	Contractor	CSC	– Same as Item 5.3
		6.4	Damage to water bodies	Same as Item 5.4.	Contractor	CSC	– Same as Item 5.4

Ref	Project Activity	Environmental /Social Impact		Mitigation Measures	Responsibility		Target / Indicator / Performance Requirement
					Implementation	Monitoring	
		6.5	Public safety	– Same as Item 5.5. – Special care needs to be employed while laying the concrete for the pavement; required PPE such as safety shoes must be used by all site personnel.	Contractor	CSC	– Same as Item 5.5
		6.6	Loss of vegetation / trees	Same as Item 5.6.	Contractor	CSC	– Same as Item 5.6.
		6.7	Threat to wildlife	Same as Item 5.7.	Contractor	CSC	– Same as Item 5.7.
		6.8	Damage to infrastructure and public utilities	Same as Item 5.8.	Contractor	CSC	Same as Item 2.6.
		6.9	Social conflict due to the Influx of Workers and In-migrants	Same as Item 5.9.	Contractor	CSC	Same as Item 3.6.
		6.10	Damage to cultural resources	Same as Item 3.7	Contractor	CSC	Same as Item 3.7
		6.11	Blockage of roads and local routes	Same as Item 5.11	Contractor	CSC	Same as Item 5.11
		6.12	Spoil generation	Same as Item 5.12	Contractor	CSC	Same as Item 5.12
		6.13	Damage to crops	Same as Item 5.13	Contractor	CSC	Same as Item 5.13
7	Bridge /culvert construction	7.1	Water and soil contamination,	– Same as Item 6.1.	Contractor	CSC	Same as Item 6.1
		7.2	Air pollution	Same as Item 5.2.	Contractor	CSC	– Same as Item 5.2

Ref	Project Activity	Environmental /Social Impact		Mitigation Measures	Responsibility		Target / Indicator / Performance Requirement
					Implementation	Monitoring	
		7.3	Noise	Same as Item 5.3.	Contractor	CSC	– Same as Item 5.3
		7.4	Damage to water bodies	– Contractor will prepare Bridge Construction Management Plan including plan of water diverting to address environmental impacts of bridge construction. – No debris, soil, waste material or access construction material will be released in the canals or channels. – Construction material will not be stockpiled near water bodies. – Vehicle movement near the water bodies will be avoided. – Liaison with irrigation authority and keep the stakeholders informed in case of any damage to or blockage of irrigation canals. – Any damage to the canals or drainage channels will be restored immediately. – ECP 9 will be implemented.	Contractor	CSC	– Number of any non-compliance reports – Number of complaints / grievances.
		7.5	Public safety	– Same as Item 5.5. – Special care needs to be employed while laying the concrete for the bridges; required PPE such as safety shoes must be used by all site personnel.	Contractor	CSC	– Same as Item 5.5
		7.6	Loss of vegetation / trees	Same as Item 5.6.	Contractor	CSC	– Same as Item 5.6.
		7.7	Threat to wildlife	Same as Item 5.7.	Contractor	CSC	Same as Item 5.7.

Ref	Project Activity	Environmental /Social Impact		Mitigation Measures	Responsibility		Target / Indicator / Performance Requirement
					Implementation	Monitoring	
		7.8	Damage to infrastructure and public utilities	Same as Item 5.8.	Contractor	CSC	Same as Item 5.8.
		7.9	Social conflict due to the Influx of Workers and In-migrants	Same as Item 5.9.	Contractor	CSC	Same as Item 3.6.
		7.10	Damage to cultural resources	Same as Item 3.7	Contractor	CSC	Same as Item 3.7
		7.11	Blockage of roads and local routes	Same as Item 5.11	Contractor	CSC	Same as Item 5.11
		7.12	Spoil generation	Same as Item 5.12	Contractor	CSC	Same as Item 5.12
		7.13	Damage to crops	Same as Item 5.13	Contractor	CSC	Same as Item 5.13
8	Interchange construction	8.1	Water and soil contamination,	Same as Item 6.1.	Contractor	CSC	Same as Item 6.1
		8.2	Air pollution	Same as Item 5.2.	Contractor	CSC	Same as Item 5.2
		8.3	Noise	Same as Item 5.3.	Contractor	CSC	Same as Item 5.3
		8.4	Damage to water bodies	Same as Item 5.4.	Contractor	CSC	Same as Item 5.4
		8.5	Public safety	– Same as Item 5.5. – Special care needs to be employed while laying the concrete and asphalt for the interchanges; required PPE such as safety shoes must be used by all site personnel.	Contractor	CSC	Same as Item 5.5

Ref	Project Activity	Environmental /Social Impact		Mitigation Measures	Responsibility		Target / Indicator / Performance Requirement
					Implementation	Monitoring	
		8.6	Loss of vegetation / trees	– Same as Item 5.6. – Special care will be employed for interchanges near the Eco-center.	Contractor	CSC	Same as Item 5.6.
		8.7	Threat to wildlife	– Same as Item 5.7. – Special care will be employed for interchanges near the Eco-center.	Contractor	CSC	Same as Item 5.7.
		8.8	Damage to infrastructure and public utilities	Same as Item 5.8.	Contractor	CSC	Same as Item 2.6.
		8.9	Social conflict due to the Influx of Workers and In-migrants	Same as Item 5.9.	Contractor	CSC	Same as Item 3.6.
		8.10	Damage to cultural resources	Same as Item 3.7	Contractor	CSC	Same as Item 3.7
		8.11	Blockage of roads and local routes	Same as Item 5.11	Contractor	CSC	Same as Item 5.11
		8.12	Spoil generation	Same as Item 5.12	Contractor	CSC	Same as Item 5.12
		8.13	Damage to crops	Same as Item 5.13	Contractor	CSC	Same as Item 5.13
9	Borrow areas	9.1	Borrow area management	– Borrow areas will not be selected inside cultivation fields, near any water body, or inside Jeyran Eco-center or Neftchi Forestry Area; – Borrow areas will be kept up to 1 m deep;	Contractor	CSC	Number of any non-compliance reports Number of related grievances

Ref	Project Activity	Environmental /Social Impact		Mitigation Measures	Responsibility		Target / Indicator / Performance Requirement
					Implementation	Monitoring	
				– Borrow areas will be restored to minimize safety hazards, blockage of routes, or devaluation of land. – Crushed stone, gravel, and sand should be imported from specially designated quarries (having licenses for the extraction of building materials); – In quarries, regulatory requirements for environmental protection must be followed; – When carrying out construction work, transportation of construction materials should be carried out strictly along the designated routes, in order to minimize the possibility impacts on receptors			
10	Asphalt plan	10.1	Water and soil contamination,	– Asphalt plan will be located at least 500 m away from any water body – Contractor will prepare and implement a Pollution Prevention Plan prior to the start of the work. – Contractor will be required to take appropriate measures to avoid and contain any spillage and pollution of the soil; – Contractor will confine the contaminants immediately after such accidental spillage; – Contractor will collect contaminated soils, treat and dispose them in environment friendly manner; – Asphalt drums will be stored on a concrete platform with embankment around it to arrest any accidental leakage.	Contractor	CSC	– Number of any non-compliance reports – Number of complaints / grievances.

Ref	Project Activity	Environmental /Social Impact		Mitigation Measures	Responsibility		Target / Indicator / Performance Requirement
					Implementation	Monitoring	
				– Asphalt tanks will be placed in a secondary containment area, to retain the molten asphalt in case of any leakage – ECP 3 and ECP 9 will be implemented			
		10.2	Air pollution	– Asphalt plant will be established downwind of and at least 500 m away from any settlement or sensitive receptors, downwind from such areas. – Pollution prevention plan will be implemented. – The equipment used for Asphalt Plan will comply with the national legislation as well as WBG EHS Guidelines on exhaust emissions; – Measures will be taken to protect the workers from excessive dust and asphalt fumes (i.e., usage of personal protective equipment); – A GRM (discussed later in the document) will be put in place to receive complaints from public on various aspects of environmental issues, including air pollution. These grievances will be addressed by the contractor by adopting necessary pollution control measures. Continued consultations with the affected communities will be carried out during construction phase. – ECP 6 for air quality management will be implemented.	Contractor	CSC	– Number of any non-compliance reports – Number of complaints / grievances. – Air quality monitoring data

Ref	Project Activity	Environmental /Social Impact		Mitigation Measures	Responsibility		Target / Indicator / Performance Requirement
					Implementation	Monitoring	
		10.3	Noise	– -Pollution prevention plan will be implemented. – Asphalt plant equipment will have exhaust mufflers (silencers) as appropriate to minimize noise generation. – Compliance with national standards and WBG EHS Guidelines will be ensured. – ECP-7 will be enforced. – Continued consultations with the affected communities will be carried out.	Contractor	CSC	– Number of any non-compliance reports – Number of complaints / grievances. Noise monitoring data
		10.4	Damage to water bodies	Asphalt plant will be established at least 500 m away from any water body,	Contractor	CSC	– Number of any non-compliance reports – Number of complaints / grievances.
		10.5	Public safety	– Same as Item 5.5. – Special care needs to be employed while handling asphalt; required PPE such as safety shoes, gloves and goggles must be used by all site personnel.	Contractor	CSC	– Same as Item 5.5.
		10.6	Loss of vegetation / trees	– Asphalt plant will not be established inside the Eco-center or Neftchi Forestry area – Tree and shrub cutting will be minimized. – Compensation for tree cutting is calculated in ARP provided later in the document. Compensatory tree plantation will be carried out (e.g., along the periphery of road).	Contractor	CSC	Same as Item 5.6.

Ref	Project Activity	Environmental /Social Impact		Mitigation Measures	Responsibility		Target / Indicator / Performance Requirement
					Implementation	Monitoring	
				– The tree species and plantation location will be decided in consultation with the concerned department including authorities of the Eco-center. – ECP 8 will be implemented			
		10.7	Threat to wildlife	– Asphalt plant will not be established inside the Eco-center – ECP 8 will be implemented.	Contractor	CSC	Same as Item 5.7.
		10.8	Damage to infrastructure and public utilities	Same as Item 5.8.	Contractor	CSC	Same as Item 2.6.
		10.9	Social conflict due to the Influx of Workers and In-migrants	Same as Item 5.9.	Contractor	CSC	Same as Item 3.6.
		10.10	Damage to cultural resources	Same as Item 3.7	Contractor	CSC	Same as Item 3.7
		10.11	Damage to crops	– Asphalt plant will not be established in any cultivated area – Any crop damages will be compensated.	Contractor	CSC	Number of any non-compliance reports Number of related grievances
11	Batching plant	11.1	Water and soil contamination,	– Batching plan will be located at least 500 m away from any water body – Contractor will prepare and implement a Pollution Prevention Plan prior to the start of the work. – Contractor will be required to take appropriate measures to avoid and	Contractor	CSC	– Number of any non-compliance reports – Number of complaints / grievances.

Ref	Project Activity	Environmental /Social Impact		Mitigation Measures	Responsibility		Target / Indicator / Performance Requirement
					Implementation	Monitoring	
				contain any spillage and pollution of the soil; – Contractor will confine the contaminants immediately after such accidental spillage; – Contractor will collect contaminated soils, treat and dispose them in environment friendly manner; – ECP 3 and ECP 9 will be implemented			
		11.2	Air pollution	– Batching plant will be established downwind of and at least 500 m away from any settlement or sensitive receptors, downwind from such areas. – Pollution prevention plan will be implemented. – The equipment used for Batching Plan will comply with the national legislation as well as WBG EHS Guidelines on exhaust emissions; – Measures will be taken to protect the workers from excessive dust (i.e., usage of personal protective equipment); – A GRM (discussed later in the document) will be put in place to receive complaints from public on various aspects of environmental issues, including air pollution. These grievances will be addressed by the contractor by adopting necessary pollution control measures. Continued consultations with the affected communities will	Contractor	CSC	– Number of any non-compliance reports – Number of complaints / grievances. – Air quality monitoring data

Ref	Project Activity	Environmental /Social Impact		Mitigation Measures	Responsibility		Target / Indicator / Performance Requirement
					Implementation	Monitoring	
				be carried out during construction phase. – ECP 6 for air quality management will be implemented.			
		11.3	Noise	– -Pollution prevention plan will be implemented. – Batching plant equipment will have exhaust mufflers (silencers) as appropriate to minimize noise generation. – Compliance with national standards and WBG EHS Guidelines will be ensured. – ECP-7 will be enforced. – Continued consultations with the affected communities will be carried out.	Contractor	CSC	– Number of any non-compliance reports – Number of complaints / grievances. – Noise monitoring data
		11.4	Damage to water bodies	Batching plant will be established at least 500 m away from any water body,	Contractor	CSC	– Number of any non-compliance reports – Number of complaints / grievances.
		11.5	Public safety	– Same as Item 5.5.	Contractor	CSC	– Same as Item 5.5.
		11.6	Loss of vegetation / trees	– Batching plant will not be established inside the Eco-center or Neftchi Forestry area – Tree and shrub cutting will be minimized. – Compensation for tree cutting is calculated in ARP provided later in the document. Compensatory tree	Contractor	CSC	Same as Item 5.6.

Ref	Project Activity	Environmental /Social Impact		Mitigation Measures	Responsibility		Target / Indicator / Performance Requirement
					Implementation	Monitoring	
				plantation will be carried out (e.g., along the periphery of road). – The tree species and plantation location will be decided in consultation with the concerned department including authorities of the Eco-center. ECP 8 will be implemented			
		11.7	Threat to wildlife	– Batching plant will not be established inside the Eco-center ECP 8 will be implemented.	Contractor	CSC	Same as Item 5.7.
		11.8	Damage to infrastructure and public utilities	Same as Item 5.8.	Contractor	CSC	Same as Item 2.6.
		11.9	Social conflict due to the Influx of Workers and In-migrants	Same as Item 5.9.	Contractor	CSC	Same as Item 3.6.
		11.10	Damage to cultural resources	Same as Item 3.7	Contractor	CSC	Same as Item 3.7
		11.11	Damage to crops	– Batching plant will not be established in any cultivated area – Any crop damages will be compensated.	Contractor	CSC	Number of any non-compliance reports Number of related grievances
12	Spoil management	12.1	Spoil management	– Minimize the generation of spoils by recycling the excavated soil to the maximum extent possible by using it as filling material in the road section. – The excess spoils should be stored in the lands provided by local	Contractor	CSC	Number of any non-compliance reports Number of related grievances

Ref	Project Activity	Environmental /Social Impact		Mitigation Measures	Responsibility		Target / Indicator / Performance Requirement
					Implementation	Monitoring	
				communities or in the areas approved by the project management/local authorities. – No spoil to be stored or disposed inside the Eco-center or Neftchi Forestry Area – No spoil to be stored or disposed near water bodies – No spoil to be stored or disposed in a manner that it can block natural drainage – No spoil to be stored or disposed in a manner that it blocks local roads or routes – ECP 1 to be implemented.			
13	Waste management	13.1	Waste management	– Contractors will implement the Waste Management Plan. – Appropriate hazardous, industrial and domestic waste disposal facilities must be established – For the domestic sewage, appropriate treatment and disposal system (e.g., septic tanks and soaking pits) will be constructed having adequate capacity – Waste oils will be collected in drums and sold to the recycling contractors. – The inert recyclable waste from the site (such as cardboard, drums, and broken/used parts) will be sold to recycling contractors. – The hazardous waste will be kept separate and handled according to the nature of the waste.	Contractor	CSC	Number of any non-compliance reports Number of related grievances

Ref	Project Activity	Environmental /Social Impact		Mitigation Measures	Responsibility		Target / Indicator / Performance Requirement
					Implementation	Monitoring	
				– Domestic solid waste will be disposed off in a manner that does not cause soil contamination. – Awareness raising for minimizing use of non-biodegradable substances – Regular maintenance of waste management facilities will be undertaken – No waste dumping/release will be carried out in the Eco-center or Neftchi Forestry area – No waste dumping/release will be carried out in or near any water body – No waste dumping/release will be carried out in or near any settlements – Implement ECP 1.			
14	Clearing and Restoration	14.1	Clearing and Restoration	– The contractors will be required to remove all left-over construction material, debris, spoils, and other wastes from the construction sites in a timely manner. – The camps sites, asphalt plant site, batching plant site and any other temporary facility established by contractor will be completely cleaned and restored in original condition to the extent possible. – No waste disposal will be carried out in the streams and canals. – Photographic record will be maintained for pre-construction and post-construction condition of the sites.	Contractor	CSC	– Number of any non-compliance reports – Number of related grievances – Photographic record.

Ref	Project Activity	Environmental /Social Impact		Mitigation Measures	Responsibility		Target / Indicator / Performance Requirement
					Implementation	Monitoring	
O&M Phase							
15	Pavement maintenance	15.1	Water and soil contamination,	Same as Item 6.1	Maintenance Contractor	RC	Same as Item 6.1
		15.2	Air pollution	Same as Item 5.2.	Maintenance Contractor	RC	Same as Item 5.2
		15.3	Noise	Same as Item 5.3.	Maintenance Contractor	RC	Same as Item 5.3.
		15.4	Damage to water bodies	Same as Item 5.4.	Maintenance Contractor	RC	Same as Item 5.4.
		15.5	Public safety	– Same as Item 5.5. – Special care needs to be employed while laying the concrete or asphalt for the pavement; required PPE such as safety shoes must be used by all site personnel.	Maintenance Contractor	RC	Same as Item 5.5.
		15.6	Loss of vegetation / trees	Same as Item 5.6.	Maintenance Contractor	RC	Same as Item 5.6.
		15.7	Threat to wildlife	Same as Item 5.7.	Maintenance Contractor	RC	Same as Item 5.7.
		15.8	Damage to infrastructure and public utilities	Same as Item 5.8.	Maintenance Contractor	RC	Same as Item 2.6.
		15.9	Social conflict due to the Influx of Workers and In-migrants	Same as Item 5.9.	Maintenance Contractor	RC	Same as Item 3.6.

Ref	Project Activity	Environmental /Social Impact		Mitigation Measures	Responsibility		Target / Indicator / Performance Requirement
					Implementation	Monitoring	
		15.10	Damage to cultural resources	Same as Item 3.7	Maintenance Contractor	RC	Same as Item 3.7
		15.11	Blockage of roads and local routes	Same as Item 5.11	Maintenance Contractor	RC	Same as Item 5.11.
		15.12	Spoil generation	Same as Item 5.12	Maintenance Contractor	RC	Same as Item 5.12.
		15.13	Damage to crops	Same as Item 5.13	Maintenance Contractor	RC	Same as Item 5.13.
16	Road Operation	16.1	Waste management	– A Waste Management Plan will be prepared a as part of the standard operating procedures. – The non-hazardous waste will be disposed through the city or district services – hazardous wastes will be disposed by agreement with local organizations for the disposal of solid and hazardous wastes. – ECP 1 will be implemented.	O&M Staff	RC	Number of any non-compliance reports Number of related grievances
		16.2	Air pollution	– Tree plantation will be carried out along the road particularly near the settlements and sensitive receptors (Table 6.5). – The project proponents will also coordinate with the relevant government department to introduce stricter regulations for vehicular emissions (such as Euro 4). – Regular monitoring of air quality will be carried out along the road	O&M Staff	RC	Number of any non-compliance reports Number of related grievances

Ref	Project Activity	Environmental /Social Impact		Mitigation Measures	Responsibility		Target / Indicator / Performance Requirement
					Implementation	Monitoring	
				particularly near settlements and sensitive receptors.			
		16.3	Noise and vibration	– The tree plantation along the road proposed earlier can marginally address the noise generated from the vehicular traffic. – Road signage for Silence Zone will be installed near the sensitive receptors. – In addition, noise barriers need to be considered near the sensitive receptors.	O&M Staff	RC	Number of any non-compliance reports Number of related grievances
		16.4	Public safety	– As part of the O&M procedures, an OHS plan will need to be prepared and implemented. The Plan will define procedures and protocols for each type of activities to be carried out as part of the O&M activities. – Job hazard analysis will be carried out for each type of O&M activity – Dedicated and qualified staff will be employed for ensuring compliance with the OHS Plan – Regular trainings will be provided to the O&M workers on OHS aspects. – Awareness raising material will be used including posters, signage, booklets, and others – All O&M personnel will be screened for communicable diseases including sexually transmitted infections. – Use of appropriate personal protective equipment (PPE) will be mandatory. No worker will be allowed on the site	O&M Staff	RC	Number of any non-compliance reports Number of related grievances Number of accidents

Ref	Project Activity	Environmental /Social Impact		Mitigation Measures	Responsibility		Target / Indicator / Performance Requirement
					Implementation	Monitoring	
				without the required PPE (such as hard hat, safety shoes). – Firefighting equipment will be made available as required at appropriate places. – Complete record of accidents and near-misses will be maintained. – First aid facilities will be made available at the offices. – Location and telephone numbers of the nearest hospital will be displayed at appropriate places. – Implement highway safety standards including traffic signage, warning signs, traffic lights, reflectors, and pedestrian crossings (overhead or underground where possible/appropriate). – Emergency services (ambulance, rescue vehicles) will also need to be arranged. – Liaison with the community will need to be maintained in addition to raising their awareness regarding safety risks associated with vehicular traffic.			

8.9. Environmental and Social Monitoring

Environmental and social monitoring during project implementation should provide information about its actual environmental impacts, social consequences, the effectiveness of mitigation measures and compliance with the ESMP. Such information enables the PIU and the Supervision Consultant to evaluate the success of mitigation measures and compliance of the contractors' activities as part of project supervision and allows corrective action(s) to be implemented in a timely manner, when needed.

For the proposed project, two types of monitoring have been proposed: compliance monitoring and environmental quality monitoring, described below.

Compliance monitoring will focus on compliance of various labor and ESHS requirements, implementation of mitigation measures identified in **Table 8.1** and SSESMP and corrective measures (if any). Separate monitoring will be carried out for the implementation of ARP. Standard checklists will be used to monitor and on compliance issues. The contractors will carry out compliance inspection on a daily basis; the CSC will do random supervision of compliance during regular inspections.

For the environmental quality, the monitoring plan is presented in **Table 8.2**. The results will be compared against the applicable standards as listed in Chapter 5. If as a result of this monitoring, exceedance of standard is observed, corrective actions will be proposed by the CSC and implemented by the contractors in a timely manner.

In addition to the above, a third-party monitoring agency will be engaged every half a year to carry out monitoring and develop semi-annual Environmental and Social Monitoring Reports. The Environmental and Social Monitoring Report will focus on the implementation of the ESMP and ARP. It will (i) verify the compliance to regulations, contract agreements, the ESMP and ARP, (ii) summarize the monitoring results of environmental quality, capacity building and accidents, (iii) review the implementation of GRM; and (iv) recommend corrective actions or amendments of the ESMP, SSESMP and ARP.

Similarly, during the operation phase, RC will engage a third-party monitoring agency to monitor the ESHS performance of the project road. As a result of this monitoring, semi-annual Environmental and Social Monitoring Reports will be prepared.

Separately, AIIB experts will also carry out bi-annual site-specific visits to review compliance. In the case of non-compliance, the PIU would investigate the nature and reason(s) for non-compliance, and a decision would have to be made on what is needed to bring the project into compliance.

Table 8.2: Environment Quality Monitoring Plan

Issue	Monitoring	Locations	Schedule	Responsibilities	Reporting	Estimated Budget in USD
Construction Phase						
Air Quality	Establish routine ambient air quality monitoring throughout the construction period. The following parameters shall be monitored: Particulate Matter (PM10 & PM2.5), Sulfur Dioxide (SO_2), Nitrogen oxides (NO_x), and Carbon Monoxide (CO). Other parameters maybe warranted as determined by the CSC	Six construction locations near the settlements and sensitive receptors, to be determined by the CSC	Monitoring to be undertaken monthly during construction period (36 months) and as required in the event of complaints.	The CSC shall hire certified laboratory to perform the monitoring activities.	The certified laboratory shall provide the results to the CSC within seven days of the monitoring activity.	-
	Ensure routine inspection of dust.	Construction sites.	Daily during construction period (36 months)	Contractors conduct measurement with dust meter on a weekly basis.	The contractors shall document the results of inspection and report to CSC in monthly report.	-
Noise	Ensure that routine noise monitoring is undertaken throughout the construction period. Parameters to be monitored include: Laeq 1h (dBA); Laeq 24 h (dBA)	Six locations (including the ones monitored in this ESIA) at the facade of settlements buildings and sensitive receptors	Monitoring to be undertaken monthly both daytime and night-time measurements during construction period (36 months)	The CSC shall hire certified laboratory to perform the monitoring activities.	The certified laboratory shall provide the results to the CSC within seven days of the monitoring activity.	-

Issue	Monitoring	Locations	Schedule	Responsibilities	Reporting	Estimated Budget in USD
	Ensure routine monitoring of noise. Parameters to be monitored include: Laeq 1h (dBA)	Construction sites.	Weekly at construction hours during construction period (36 months)	Contractors conduct weekly measurement with noise meter.	The contractors shall document the results of measurement and report to CSC in monthly report.	-
Surface Water Quality	Establish routine water quality monitoring throughout the construction period. The following parameters shall be monitored: pH; Suspended Solids; BOD5; COD; Coliforms; Nitrate (NO3); Phosphate (PO4); Oil and Grease. Other parameters maybe warranted by CSC as and when required.	50 meters upstream from the bridge (to be reconstructed or repaired) sites crossing canals (4 locations) during construction; 50 meters downstream of the four bridge sites.	Monitoring to be undertaken monthly during bridge construction works	The CSC shall hire certified laboratory to perform the monitoring activities.	The certified laboratory shall provide the results to the CSC within seven days of the monitoring activity.	-
	Ensure routine inspection of water pollution.	Construction sites.	Daily during construction period (36 months)	Contractors conduct visual inspection on a daily basis.	The contractors shall document the results of inspection and report to CSC in monthly report.	-
Total						-
Operational Phase						
Air Quality	Parameters to be monitored include PM_{10}, $PM_{2.5}$, NOx, SO_2 and CO.	At locations same as during the construction phase.	Twice per year	PIU shall hire certified laboratory to perform the monitoring activities (during	The certified laboratory shall provide the results to the PIU within seven days of the monitoring activity.	-

Issue	Monitoring	Locations	Schedule	Responsibilities	Reporting	Estimated Budget in USD
				defects liability period- 24 months).		
Noise	Noise monitoring - Laeq 1h (dBA); Laeq 24h (dBA) both daytime and nighttime periods.	At all sensitive receptors within Project corridor; behind finished noise barriers at sensitive receptors (if any barriers installed during the implementation of the project)	Twice per year	PIU shall hire certified laboratory to perform the monitoring activities (during defects liability period- 24 months).	The certified laboratory shall provide the results to the PIU within seven days of the monitoring activity.	-
Total						**-**

8.10. Documentation and Reporting

The PIU with assistance from CSC and contractors will produce the following environmental and social documentation and report:

Monthly Report on Environment, Health, and Safety: the contractor will prepare a monthly report covering environmental monitoring, OHS compliance, OHS incidents and accidents, trainings conducted, and any other salient activities carried out during the reporting period. The report will be submitted to CSC.

Environmental, Social, Health and Safety in Quarterly Project Progress Reports: the CSC will prepare quarterly Project Progress Report. The Environmental, Social and OSH Specialists of CSC will provide inputs to the Project Progress Reports covering various ESHS issues that include monitoring and results, compliance, incidents and accidents, ESHS training, grievances. The reports will be submitted to PIU and then submitted to AIIB by PIU.

Semi-annual Environmental and Social Monitoring Report: The PIU will engage a third-party Monitoring Agency to prepare Environmental and Social Monitoring Reports. The environmental and social monitoring reports will include environmental and social mitigation measures undertaken, environmental and social monitoring activities undertaken, progress of resettlement, payment of compensation and assistance, details of monitoring data collected, analysis of monitoring results particularly the non-compliances, recommended mitigation and corrective measures, training conducted, regulatory violations observed, status of GRM and its implementation, and grievance received and resolved. The environmental and social monitoring reports will be submitted semi-annually during the construction period and annually for three years after completion of construction. The reports will be submitted by PIU to AIIB.

Project Completion Environmental and Social Monitoring Report: One year after completion of construction, the PIU will submit a Project Completion Environmental and Social Monitoring Report, which will summarize the overall environmental and social management of the project.

8.11. Capacity Building

Capacity building is the key for effective implementation of the ESMP. Capacity building for environmental and social management will need to be carried out at all tiers of the project, including RC, PIU, CSC, and contractors. At the construction site, CSC will take the lead in implementing the capacity building plan, though the contractors will also be responsible to conduct training for their own staff and workers. The capacity building will cover general environmental and social awareness, sensitive receptors in the area, key environmental and social impacts of the project, ESMP requirements, OHS aspects and labor requirements. **Table 8.3** provides a summary of the environmental and social training programs to be conducted at the construction and operation phases. PIU may revise the plan during the project implementation as required.

During the O&M phase of the project, the training will continue to be conducted by PIU staff for all relevant O&M personnel.

Table 8.3: Environmental and Social Training Programs

No	Training topics	Time and tentative duration of the training	Trainees	Organizer	Tentative cost (USD)
1	AIIB ESP, national EIA regulations and comparison with AIIB ESP, showcases of project level E&S documents, ESHS in bidding documents	During first year of Project implementation Duration – 1 day	PIU's PD, engineers, procurement specialist, E&S Specialist	PIU	-
2	AIIB ESP, ESHS in ESMPs, development of SSESMP, environmental and social management and supervision at construction sites, monitoring and reporting and GRMs	Before contracting the contractors Duration– 3 days	EHS specialists of CSC	PIU	-
3	Development and implementation of SSESMP, ESHS inspection at sites, monitoring and reporting, and GRMs	Before the civil works Duration- 3 days	EHS staff of contractors	CSC	-
4	Health & Safety, Handling and disposal of hazardous materials	Before starting respective works 1 day	EHS staff of contractors	CSC	-
5	Code of conduct; gender issues; GBV and other social issues	During the construction	Contractors' workers	CSC	-
6	Awareness increase program	Continuously during the project implementation	Public, Main stakeholders	PIU & RC	-
7	All aspects of Environmental, Health and Safety	Continuously during construction	Contractors' workers	Contractors	To be included in the budget of construction works
	Total				**-**

8.12. Grievance Redress Mechanism (GRM)

The existing mechanisms of addressing project related complaints in Uzbekistan has been reviewed. In addition to this, two separate Grievance Redress Mechanisms will be established for

the proposed project, one for the affected people and the other for workers, to supplement the existing system in accordance with AIIB's ESP and applicable ESSs. The GRMs are designed to address concerns and complaints promptly, using an understandable and transparent process that is gender-sensitive, culturally appropriate and readily accessible to all affected people in the Bukhara region as well as workers to be involved in this project.

8.12.1. Republic of Uzbekistan's Complaint Handling System

The Law of the Republic of Uzbekistan on the Appeals of Individuals and Legal Entities was introduced on 29 October 2014 and this law replaced the earlier law on Appeal of Citizens that was introduced on 13 December 2012. This law guarantees the right to appeal and prescribes the requirements of an appeal, its form and structure. Further, the timeline for addressing the appeal, the procedure for personal hearing, need for maintaining record of appeals and procedure for second appeal are prescribed.

According to the law, affected persons can submit their grievances through the Virtual reception of the President of the Republic of Uzbekistan, which is an online portal[12]. From February 2018, the online version is updated and presented on this online portal. All citizens of the country can use different options for their appeals.

1) By calling the phone number 0-800-210-00-00 or the short number 10-00;
2) By using the online portal and filling out a special request form on the website http://pm.gov.uz;
3) By visiting the People's Reception Office. The address of the 14 People's Reception offices in each district of the Bukhara region are provided on its site.

This mechanism assures the constitutional rights of citizens to appeal to the President of the Republic of Uzbekistan. Through this system, any persons from Bukhara, Kagan, Karaulbazar districts and Bukhara and Kagan cities can send their applications, suggestions and complaints to the portal of the President of the Republic of Uzbekistan. After receiving the complaint from the Bukhara region, the responsible person from online portal will provide complainant with contact details of the responsible person from the Republican Road Fond under the Ministry of Transport of the RoU. The Republican Road Fond will directly request the PIU to resolve the grievance, with an option of sending the grievance through an email. In the new version of the Virtual Reception, the complainant can indicate the **mahalla** in which they live when submitting the appeal. This will speed up the solution of the problem, help determine which sector is responsible for the problem resolving.

The online portal has provisions for checking the status of the grievance and further appeal if the appellant has been harassed for raising the grievance. If someone who sends a complaint is persecuted, she/he can quickly report it by pressing a special "button" on the same site. Such messages will be considered promptly and with high priority of involving law enforcement agencies.

[12] https://pm.gov.uz/ru#/map_app_root

8.12.2. Project-level Grievance Redressal Mechanism for Affected People

For the project-affected people, a two-tier GRM will be established for this project; see **Figure 8.2**. The first tier GRM will be at the field level, managed by a local Grievance Redress Committee (GRC). The second tier GRM will be at the PIU level, managed by the PIU. The field level of the GRC will comprise CSC (with E&S staff in charge), representative of the Contractors, district Roads Management Department, and head of the Makhalla Foundation. Aggrieved persons can contact either of them and they will be responsible for receiving, hearing and resolving the grievances. The second level GRC will be chaired by PIU PD, and include a representative of the district khokimiyat and a representative from Bukhara region Roads Management Department (Uzavtoyol). Members of the GRCs will be finalized before the mobilization of contractors. The grievances that can be addressed through this GRM shall include but not limited to:

- Noise pollution due to vehicular traffic, machinery etc.;
- Air pollution due to construction activities;
- Contamination of waterbodies due to disposal of any type of waste such as solid waste from labor camps, construction and demolition waste, oil spills etc.;
- Use of productive land for material transportation or storage or labor camps without necessary permissions from concerned authority;
- Damage to any cultural or physical resources outside the project area;
- Misbehavior of labor with the local community;
- Improper construction site management, improper storage or disposal of waste / debris material, inadequate safety practices, damage to cultural or public properties and issues between the labor force and the local community; and
- Grievances related to land acquisition, compensation and resettlement will include issues such as computation of compensation, land measurement, eligibility, non-inclusion in the list of PAPs, valuation of structures, trees, loss of income or livelihood, etc.

The GRM aims to provide a time-bound and transparent mechanism to voice and resolve social and environmental concerns linked to the project. The GRM is not intended to bypass the government's inbuilt redressal process, nor the provisions of the statute, but rather it is intended to address PAP's concerns and complaints in environmental and social aspects promptly, making it readily accessible to all PAP and is scaled to the risks and impacts of the project.

The GRCs will continue to function, for the benefit of the affected persons, during the entire life of the project including the defects liability period.

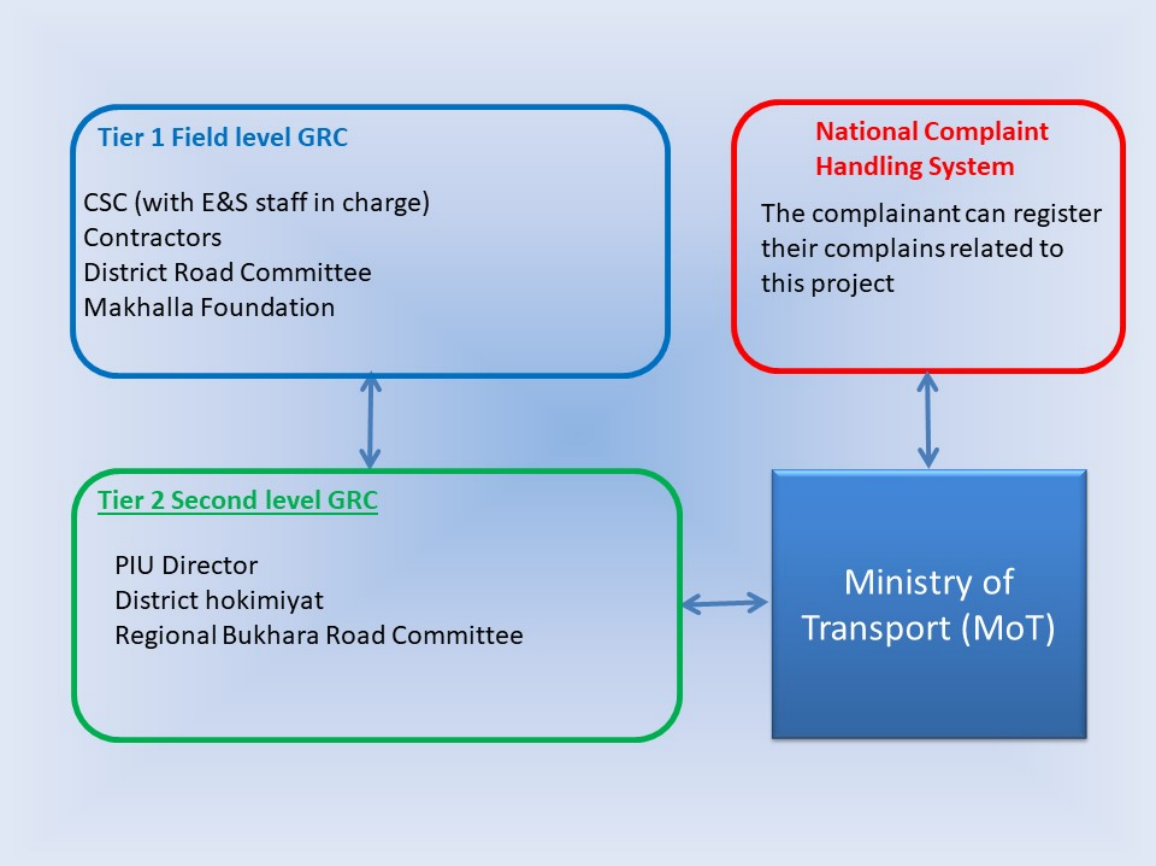


Figure 8.2: GRM for Affected-people for BRNIP

8.12.2.1. Functions of GRM

The grievances will be received via the following ways:

- Letter to GRCs;
- Telephonic grievances on the phone number linked to GRC members. The grievances received telephonically will be noted in the telephonic grievances register.
- Grievances communicated to any of the GRC members or the field staff of CSC/Contractor/PIU verbally by the stakeholders. The GRC members or the field staff should insist the stakeholders to give the written complaint, which will be given to the GRC.

Tier-1 GRM: The complainant can leave the written complaint to any member of the GRC. The process of grievance redress includes the following steps:

a) Grievance received by any member of the GRC will be transferred to the E&S staff of the Construction Supervision Consultant for documentation.
b) The E&S staff will coordinate with the contractors and GRC members to work out a solution.
c) The E&S staff together with head of Mahalla Foundation (if necessary) will communicate with the complainants and agree on the solution.

d) The final solution will be sent to the aggrieved person in writing in 15 days.

The PIU will maintain a registration of all grievances received with details of date of receipt of the grievance, date of hearing, if any, along with nature of complaint/concern, actions taken, and date of communication sent to the complainant. Communication, in writing will be sent to the aggrieved person with the date, time and venue of the hearing and make it known that s/he is entitled for a personal hearing. If the complainant is not satisfied with the decision at the first tier, she/he can choose to escalate the grievance to Tier 2 or register in the UZ complaint handling system.

Tier-2 GRM: The decision of the Tier-1 GRC will be final unless the complainant prefers to use the Tier-2 GRM. People who believe they have been significantly affected by the project could also submit grievances directly to Tier-2 GRC without registered in Tier-1 GRM.

1) Grievance received by any member of the GRC will be transferred to the PIU PD for documentation.
2) The PIU PD will coordinate with the GRC members and concerned stakeholders to work out a solution.
3) The PIU PD will lead the communication with the complainant and agree on the solution.
4) The final solution will be sent to the aggrieved person in writing in 15 days.
5) If the complainant is not satisfied with the decision of the PIU, s/he can choose to register the complaint in the UZ complaint handling system. S/he also have the right to approach the court.

Documentation of Grievances and reporting. The complaint/grievance will be redressed in 15 days at each tire time and written communication will be sent to the complainant at each tier. A complaint log will be maintained both at Construction Supervision Consultant and PIU, with details of complaint lodged, date of personal hearing, actions taken and date of communication sent to the complainant. The CSC is responsible for reporting the complaint log to PIU on a monthly basis. The PIU PD is responsible for gathering the grievance statistics at two tiers and in the UZ complaint handling system, compiling the data in the Quarterly Project Progress Reports and semi-annual Environmental and Social Monitoring Reports, and reporting to AIIB.

8.12.2.2. Distribution of GRM information

Flyers, community billboards and local mass media will be used to distribute the GRM information including the members of the GRCs and their contact information. The same information will be presented at the construction sites as well as community centers. The information of Tier-2 GRC will be announced at websites of Ministry of Transport.

8.12.3. Project-level Grievance Redressal Mechanism for Workers

According to the lessons learned in various project contexts, there is a need to establish a separate GRM to deal exclusively with those complaints that involve workers employed by the contractors for construction activities. Such grievances may involve wage rates and unpaid overtime work, irregular and partial payments, lack/inadequacy of living accommodations, lack of clean drinking water and sanitation facilities, and lack of medical care.

GRC will be established to deal with labor grievances, including members who are directly and indirectly associated with the construction work. The GRC will include the Engineer from the PIU who is in charge at the worksite as the convener, resident engineer of the CSC, a worker's representative, and the contractor's representative. The convener will designate an official to receive the complaints and ensure the complainant does not lose his job and is not intimidated into withdrawing the complaint before the formal hearing.

To ensure impartiality and transparency, hearings on complaints will be held in a non-threatening environment and will remain open to all other workers on the site. The GRC will record the (i) details of the complaints; (ii) reasons that led to acceptance or rejection of the individual cases, as well as the number of accepted and rejected cases; and (iii) decisions agreed with the complainants. The PIU will keep records of all resolved and unresolved complaints and summarize in the Quarterly Project Progress Reports and Semi-annual Environmental and Social Monitoring Report to be submitted to AIIB. The records shall be made available for review as and when asked for by AIIB and other interested entities/persons.

8.12.4. AIIB's PPM

In addition to the GRM, the Project-affected People's Mechanism (PPM) has been established by the AIIB to provide an opportunity for an independent and impartial review of submissions from Project-affected people (PAP) who believe they have been or are likely to be adversely affected by AIIB's failure to implement its ESF in situations when their concerns cannot be addressed satisfactorily through Project-level GRM or AIIB Management's processes. It has been advised that a two-tier GRM will be constituted for the Project in line with the prescriptions of the PPM Policy of the Bank, building on the existing complaint mechanisms.

8.13. ESMP Implementation Budget

The budget for implementation of this ESMP has been estimated to be USD **** (see **Table 8.4**). This includes the cost for mitigation measures, monitoring, capacity building as well as PIU operation relating to E&S aspects.

Table 8.4: ESMP Implementation Budget

	Item	Responsible entity	Budget (USD)
1	PIU operation on E&S	PIU	Included in the PIU operational budget
2	Mitigation plan	Contractors	Included in the contractor's scope
3	Environmental quality monitoring	CSC	-
		Contractors	0
4	Third-party monitoring	PIU	-
5	Capacity building	PIU	-
		CSC	-
Total			-

9. RESETTLEMENT POLICY FRAMEWORK AND ABBREVIATED RESETTLEMENT PLAN

This Chapter presents the Resettlement Planning Framework (RPF) and the Abbreviated Resettlement Plan (ARP) prepared in order to address the involuntary resettlement impacts caused by the proposed project.

9.1. Introduction

As land will be required for the project, an implementation action plan to secure the rights of land has been prepared. Involuntary land acquisition requires focused and planned attention as it could result in economic and/or physical displacement and consequently several adverse impacts. While designing the project, need for securing land in the location of the interchanges has been identified and accordingly an Abbreviated Resettlement Plan (ARP) has been developed. Before preparing the ARP, a detailed discussion on the Resettlement Planning Framework (RPF) has been documented, to ensure that while progressing in the project, if any further land acquisition is envisaged, the provisions of the RPF will be followed.

The process of land acquisition for the interchanges has been initiated. Towards mitigating the adverse impacts, the Social Impact Assessments (SIA), followed by the environmental and social screening, has been undertaken in respect of the project to determine the magnitude of displacement and prospective losses, identify vulnerable groups, ascertain the costs of resettlement, and prepare an Abbreviated Resettlement Plan (ARP) for implementation.

The key objective of the Resettlement Policy Framework is to provide a framework to appropriately identify, address and mitigate adverse socioeconomic impacts that may occur due to the implementation of the project that involve the involuntary acquisition of land and the subsequent resettlement of affected people.

In accordance to AIIB's ESP projects are screened to determine whether it involves Involuntary Resettlement (which covers both physical and economic displacement, as defined in ESS 2). Where it is not feasible to avoid Involuntary Resettlement, the Road Committee under Ministry of Transport of the Republic of Uzbekistan (RC) is required to ensure that resettlement activities are conceived and executed as sustainable development programs, providing sufficient resources to enable the persons displaced by the Project to share in Project benefits.

If the Project involves Involuntary Resettlement, the AIIB requires the Road Committee under Ministry of Transport of the Republic of Uzbekistan (RC) to prepare a resettlement plan or ARP[13] (as applicable) that is proportional to the extent and degree of the impacts. The degree of impacts is determined by: (a) the scope of physical and economic displacement; and (b) the vulnerability of the affected people. The resettlement plan or RPF complements the broader coverage of social risks and impacts in the environmental and social assessment and provides specialized guidance to address the specific issues associated with Involuntary Resettlement, including land acquisition, changes in land use rights, displacement and need for livelihood restoration.

[13] An Abbreviated Resettlement Plan (ARP) is prepared in case the impacts are low

The AIIB does not endorse illegal settlement; however, it recognizes that significant populations already inhabit both urban and rural land without title or recognized land rights in its countries of operation. Given this situation, the AIIB requires the Road Committee under Ministry of Transport of the Republic of Uzbekistan (RC) to ensure that displaced persons without title to land or any recognizable legal rights to land, are eligible for, and receive, resettlement assistance and compensation for loss of non-land assets, in accordance with cut-off dates established in the resettlement plan, and that they are included in the resettlement consultation process. This is also applicable to employment issues and in cases when project affected people lose their jobs due to the involuntary resettlement the Road Committee under Ministry of Transport of the Republic of Uzbekistan (RC) to ensure the provision of one-time allowance and assistance in employment issues to all PAPs even if their employment is recognized as unofficial.

This RPF is prepared based on the results of (1) Technical report; (2) Review of policies of Uzbekistan and AIIB on resettlement (3) site survey and social impact screening of project areas to assess possible impacts of land acquisition and resettlement; (4) consultations and meetings with the Road Committee under Ministry of Transport of the Republic of Uzbekistan (RC), Bukhara regional department of RC, khokimiat of Karaulbazar district and local stakeholders.

According to the results of field visit on January 24-26, requirement of land on 5 sites (1 in Bukhara district and 4 in Karaulbazar district) will be acquired for Project needs. In 2 cases (1 in Bukhara district and 1 in Karaulbazar district) land is owned by local khokimiats. In the remaining 3 sites (all in Karaulbazar district) involuntary land acquisition will be conducted. Based on the information provided by representatives of RC the total area of land on 3 sites to be acquired from current land owners is equal to 5.6 ha, and Bukhara regional khokimiat initiated the coordination process of the land acquisition with the Cabinet of Ministers and received resolution to start the land acquisition process (relevant document copy is attached in the **Annex E**).

While preparing the ARP, data has been updated to suit the project objectives and policies. This Resettlement Policy Framework will be updated when changes or amendments to the applicable laws and policies are made and based on implementation experience and lessons learned.

9.2. Legal and Policy Framework

9.2.1. Applicable national laws and policies

The Constitution of the Republic of Uzbekistan (December 8, 1992) provides that: Everyone shall have the right to own property (Article 36). The economy of Uzbekistan, evolving towards market relations, is based on various forms of ownership. The state shall guarantee freedom of economic activity, entrepreneurship and labor with due regard for the priority of consumers' rights, equality and legal protection of all forms of ownership (Article 53); An owner, at his discretion, shall possess, use and dispose of his property. The use of any property must not be harmful to the ecological environment nor shall it infringe on the rights and legally protected interests of citizens, juridical entities and the state (Article 54); The land, its minerals, waters, fauna and flora, other natural resources shall constitute the national wealth and shall be rationally used and protected by the state (Article 55).

Land Code (LC). The LC defines the terms of rights of termination on land plot, seizure and land acquisition of land plot for state and public needs, and terms of seizure of land plot in violation of land legislation. The LC also regulates the allocation, transfer, and sale of land plots, defines

ownership and rights on the land. It describes the responsibilities of different state authorities in land management; rights and obligations of the land possessor, user, tenant, and owner; land category types, resolution of land disputes and land protection.

The LC (Article 86, Clause 1) specifies the cases where losses of land users must be compensated in full including lost profits: seizure, redemption or temporary occupation of land; the restriction of their rights in connection with the establishment of water protection zones, coastal strips, sanitary protection zones of water bodies, zones of formation of surface and underground water, zones of resort areas, public areas of biosphere reserves, protected zones around national parks, game reserves, national nature monuments, sites of cultural heritage, discharges, roads, pipelines, communication and power lines.

Civil Code of the Republic of Uzbekistan describes the bases for the origin of civil rights and duties arise from the bases provided by legislation and that property rights subject to state registration arise from the time of registration of the respective rights to the property, unless otherwise established by a Law. Similarly, the right of ownership and other rights in things to immovable things, their arising, passage, limitation and termination of these rights are subject to state registration. Fundamentally, the right to a property will stay only if it is registered under the State. This Code also confirms the supremacy of international treaty or agreement over the civil code, as such if an international treaty or agreement establishes rules other than those stipulated by civil legislation, the rules of the international treaty and agreement would prevail.

Labor Code and Employment Law are main legislations regulating labor relations of individuals employed with labor contract by enterprises, institutions, organizations of all type ownership forms, including contracted by individuals. These legislations are considering interests of employees and employers provide efficient function of labor market, just and secure labor conditions, protection of labor rights and employees health, promote to growth of labor productivity, increase of work quality, raising on this matter welfare and social livelihood level of the population.

Decree of the President of the Republic of Uzbekistan No. 3857 dated 16 July 2018 "On measures to improve the effectiveness of preparing and implementing projects with the participation of international financial institutions and foreign government financial organizations" stipulates that payment of compensation in the seizure of land, demolition of homes, other buildings, structures or spaces within the framework of the implementation of projects with the participation of international financial institutions and foreign government financial institutions, if this is stipulated in the agreement on the projects carried out by the authorized bodies in accordance with the requirements of international financial institutions and foreign government financial organizations.

Decree of the President of the Republic of Uzbekistan No. 5490 dated 27 July 2018 "On measures to further improve the system of protection of rights and legitimate interests of business entities" introduces a new mechanism for compensation of losses to individuals and legal entities in connection with withdrawal of their land plots for state and public needs within which f centralized fund for compensation of losses to individuals and legal entities in connection with withdrawal of their land plots for state and public needs under the Cabinet of Ministers of the Republic of Uzbekistan was formed. The compensation to be financed from the Fund's resources, while providing for mandatory participation of the revenue part of local budgets in forming the

Fund's resources. Moreover, the seizure of lands for state and public needs subject for mandatory coordination with the Fund.

According to **Decree of the President of the Republic of Uzbekistan No. 5495 dated 1 August 2018** "On measures for cardinal improvement of investment climate in the Republic of Uzbekistan" making decisions on the seizure of land for state and public needs is allowed only after an open discussion with interested parties whose land is planned to be withdrawn, as well as assessing the benefits and costs. The demolition of residential, industrial premises, other buildings and structures belonging to individuals and legal entities, upon the seizure of land is permitted after full compensation of the market value of real estate and losses incurred by the owners in connection with such seizure. And losses incurred by individuals and legal entities as a result of the unlawful administrative act of a state body (official) are subject to compensation by the state, primarily at the expense of extrabudgetary funds of the relevant authorities, followed by recovery from the guilty person in a recourse manner.

The withdrawal of land for state and public needs is allowed solely for the following purposes: provision of land for the needs of defense and state security, protected natural territories, creation and functioning of free economic zones; fulfillment of obligations arising from international treaties; discovery and development of mineral deposits; construction (reconstruction) of roads and railways, airports, airfields, aeronautical facilities and aeronautical centers, railway facilities, bridges, subways, tunnels, energy systems and power lines, communication lines, space activities, trunk pipelines, engineering and communications networks; the implementation of the master plans of settlements in the construction of facilities at the expense of the State budget of the Republic of Uzbekistan, as well as in other cases directly provided for by laws and decisions of the President of the Republic of Uzbekistan.

According to the **Order of the President of the Republic of Uzbekistan No. 5491 dated 3 August 2019** "On additional measures on absolute guarantee of ownership of citizens and business entities", the seizure of land and the demolition of real estate owned by citizens and businesses for state and public needs, as well as for other purposes, is carried out in the procedure consisting of the following stages: i) at the first stage - information materials on the territory planned for demolition is submitted to the Cabinet of Ministers of the Republic of Uzbekistan by the chairman of the Council of Ministers of the Republic of Karakalpakstan, khokims of the regions and the city of Tashkent; ii) at the second stage - conclusion is prepared in the Cabinet of Ministers of the Republic of Uzbekistan, on urban planning requirements - by the First Deputy Prime Minister, for financial calculations – by the Deputy Prime Minister; iii) at the third stage - the prepared conclusion is submitted to the Prime Minister of the Republic of Uzbekistan for consideration and decision making.

The resolutions passed by cabinet of ministers since May 2016 have made many amends to the Land Code provisions with regard to withdrawal/redemption of land and related compensation for losses to citizens and legal entities. Thus, according to **Resolution of Cabinet Ministers No. 911 dated 16 November 2019** "On additional measures for enhancing procedure of providing compensation on withdrawal and allocation of land plots and safeguard the property rights of individuals and legal entities", withdrawal of the land plot or part thereof for state and public needs, as well as within the framework of state programs aimed at the development of territories, including changing or improving the architectural appearance of a certain territory, investment and other projects of socio-economic importance, is carried out with consent of the owner or by

agreement with the user and tenant of the land by decision of Zhukargu Kenes of the Republic of Karakalpakstan, Kengashs of people's deputies, and the President of the Republic of Uzbekistan and the Cabinet of Ministers.

Decisions of the Council of Ministers of the Republic of Karakalpakstan, khokimiyats of regions and the city of Tashkent or districts (cities) on the demolition of real estate located on a seized land, are taken only if there is a positive opinion of the justice authorities. And the agreement on the provision of compensation in connection with the seizure of land concluded between the initiator of the seizure of the land and the owner of the property located on the seized land is subject to notarization. Decision on the demolition of real estate is taken only after providing the full compensation to the owner of the real estate specified in the agreement, and in cases of disputes, in court decisions.

The securing of land by means of canceling or amending previously adopted decisions of the Council of Ministers of the Republic of Karakalpakstan, khokimiyats of regions on the allocation of a land plot, including canceling or amending these decisions due to non-compliance with administrative procedures by the Council of Ministers of the Republic of Karakalpakstan, khokimiyats of regions or other state bodies is prohibited.

Along with this, in the structure of the Council of Ministers of the Republic of Karakalpakstan, the khokimiyats of the regions and the city of Tashkent, a Sector for the coordination of work on the seizure of land and the provision of compensation was created. At the same time, if necessary, by decision of the Council of Ministers of the Republic of Karakalpakstan, khokimiyats of regions and the city of Tashkent, the post of chief specialist in land acquisition and compensation issues may be established in the structure of khokimiyats of districts (cities).

Resolution of Cabinet Ministers No. 44 dated 15 February 2013 “On Approval of the order of the appointment and payment of social allowances and material (financial) assistance to low-income families” regulates the mechanism to the determination of vulnerable groups and their entitlements.

Resolution of Cabinet Ministers No. 146 dated 25 May 2011 “On measures to improve the procedure for granting land plots for urban development activities and other non-agricultural purposes” regulates resettlement compensations for affected agricultural lands and trees. Also regulates the provision of land to land compensation principles.

Resolution of Cabinet of Ministers № 146 (25 May 2011). This Resolution is aimed to improve the procedure of granting land plots, protect the rights of legal entities and individuals on land, improve the architecture of settlements and the efficient use of their land for construction in accordance with the Land Code and the Town Planning Code.

9.2.2. AIIB Policy Requirements

The AIIB Policy requirements have already been discussed in **Section 2.2** of this document.

9.3. Key principles of resettlement

The primary goal of the RPF is to ensure that those negatively affected by Project activities, through temporary or permanent losses and impacts, are not worse off the following

implementation, that they are compensated in a participatory and timely basis, and that any mitigating activity is carried out in a systematic and beneficial manner.

The following principles will apply to all activities under the Project:

a) Resettlement impacts will be minimized. If any resettlement impact, as defined under ESS 2, is identified during screening of BRNIP sites then proposed sites shall explore feasible alternative project designs and/or configurations.

b) PAPs are defined as persons whose land is acquired and those who will be subjected to physical or economic displacements.

c) Meaningful consultation with PAPs and communities. d) All adverse Project impacts will be identified prior to implementation and losses properly recorded. The following information should be recorded to facilitate the planning, implementation, and monitoring of impacts:

d) Develop an inventory of impacted landholdings and immovable/non-retrievable improvements (buildings and structures) to determine fair and reasonable levels of compensation or mitigation;

   A census detailing PAP composition and demography, and other relevant socio-economic characteristics.

e) PAPs are entitled to full compensation and rehabilitation measures on an equitable basis. Compensation must be sufficient to, at a minimum, to maintain pre-project living standards. As a principle, the Project should seek to leave PAPs with improved conditions through the inclusion of PAPs in project benefits. All PAPs will be equally eligible to the entitlement, irrespective of social or economic standing, tenure status, or any other discriminating factor.

f) Vulnerable groups will receive special attention. Particular attention will be paid to adverse impacts on groups/social categories such as the elderly, the physically disabled, women-headed households, child/orphan-headed households, and households below the poverty line who, because of their social position, may be vulnerable to changes brought about by project activities or excluded from project benefits. Members of these groups are often not able to make their voices heard, and this will be considered in the consultation and planning process, and in the establishment of grievance procedures.

g) Resettlement planning, budgeting, and implementation will be an integral part of the Project. Any resettlement-associated cost is an upfront investment. All restorative activities and compensation identified as part of the RPF process must be completed prior to Project implementation.

A Grievance Redress Mechanism will be established to address concerns that the PAPs may have. Grievance, monitoring, and evaluation procedures will verify the effectiveness of resettlement measures. PIU and consultants are responsible for monitoring adequate implementation of this RPF as well as any associated RPs. This requires that an effective and accessible grievance procedure is in place. All project activities must be in accordance with the AIIB policy of the ESS 2.

9.4. Gaps between Uzbek legislation and AIIB policy on resettlement

Analysis of previous resettlement issues that were highlighted in Uzbek mass media and the decrees, provisions and other legislation documents adopted for the last 2 years shows that the resettlement procedure underwent serious reforms aimed at providing compensation prior to resettlement actions are taken. The AIIB ESS 2 policy covers the broader aspects of social risks and impacts in the environmental and social assessment and provides specialized guidance to address the specific issues associated with Involuntary Resettlement, including land acquisition, changes in land use rights, displacement and need for livelihood restoration. However, there are some discrepancies between AIIB Policy and Uzbek legislation on compensation for involuntary resettlement.: 1) For instance conducting socioeconomic and other surveys among PAPs is not practiced under Uzbek laws. Currently Uzbek legislation only provide compensation for land that is legally owned by PAPs and no compensation to encroachers for the same. The AIIB requires the GoU to ensure that displaced persons without title to land or any recognizable legal rights to land, are eligible for, and receive, resettlement assistance and compensation for loss of non-land assets, in accordance with cut-off dates established in the resettlement plan, and that they are included in the resettlement consultation process.

Thus, when developing and submitting draft Decree on Project implementation to Cabinet of Ministers, RC must ensure that the Decree contains norms confirming that the resettlement costs within the Project will be paid based on assessment documents prepared by PIU in accordance with the methodology of AIIB. And the same statement will be fixed in the Agreement between the AIIB and GoU. Based on this the AIIB Policy ESS 2 will prevail in cases of discrepancies between AIIB and Uzbek legislation, not just simply in relation to compensation issues but to all issues.

Based on the comparison between the Uzbek legislation and the AIIB Policy ESS 2 a harmonization measures were developed and discussed in **Chapter 2**.

9.5. Entitlement and eligibility

All involuntary land acquisitions will be compensated at replacement cost as per the ESS 2 and the PAPs will be assisted to re-establish their living standards (affected shelter and incomes) to a level to or better than their living condition prior to the project. According to Presidential Decree No 5495 (dated from August 1, 2018), a replacement cost, including compensation on market value and losses shall be paid to PAPs. So, the valuation of affected structures can be measured by independent valuation companies without deducting any depreciation. Land-based compensation is provided by khokimiyat of Bukhara region on the basis of land acquisition acts at respective districts (cities).

In accordance with the principles of the RPF of BRNIP, all displaced households and persons will be entitled to a combination of compensation packages and resettlement assistance depending on the nature of ownership rights on lost assets and scope of the impacts including socio-economic vulnerability of the displaced persons and measures to support livelihood and employment restoration if livelihood and employment impacts are envisaged. The displaced persons will be entitled to the following five types of compensation and assistance packages:

- Compensation for the loss of land, crops/ trees at their replacement cost;

- Compensation for structures (residential/ commercial) and other real estate at their replacement cost;
- Assistance in lieu of the loss of business/ wage income and income/employment restoration assistance;
- Assistance for shifting and provision of the relocation site (if required), and
- Rebuilding and/ or restoration of community resources/facilities.

Displaced persons (DPs) meeting the cut-off date requirements will be entitled to a combination of compensation measures and resettlement assistance, depending on the nature of ownership rights of lost assets and scope of the impact, including the social and economic vulnerability of the displaced persons. Unforeseen impacts will be mitigated in accordance with the principles of this RPF.

An Entitlement Matrix has been developed in Table below that summarizes the types of losses and the corresponding nature and scope of entitlements and follows National Laws and ESS 2 of AIIB. The entitlement matrix presents the entitlements corresponding to the tenure of the DPs in the following order.

- Loss of Land (agricultural, residential, commercial or otherwise)
- Loss of residential structure (inhabited structures)
- Loss of Commercial structures
- Impact to Tenants (Residential/ Commercial / Agricultural)
- Impact to trees, standing crops, other properties, perennial and non-perennial crops
- Loss of Land/ house/shop
- Impact to Squatters
- Impact to Encroachers
- Loss of employment in non-agricultural activities or daily agricultural wages or other wage workers
- The impact on Vulnerable Households
- Unforeseen impacts.

Table 9.1. Entitlement matrix

S. No	Impact Category	Entitlements		Implementation Guidelines
Section I. TITLE HOLDERS - Loss of Private Property				
1	Loss of Land (agricultural, residential, commercial or otherwise including resident & non-resident landlords)	a	Land for land compensation with a plot of equal value.	Compensation "land for land" is provided to all the PAPs in case of loss of their land by selection of the similar (equivalent) land plots of the equal value/productivity, of comparable location and additional agricultural means. Transaction costs including, valuation fee, stamp duty, and registration charges will be borne by the Road Committee.
		1.1 Agricultural land		

S. No	Impact Category	Entitlements		Implementation Guidelines
		a	Land for land compensation with a plot of equal value. OR Compensation to recover a new land to the pre-project condition.	Compensation based on market value for loss harvest equal the average annual income for past 3 years multiplied by 4 times (years). Unaffected portions of an affected arable plot will also be compensated if the same becomes unviable after impact.
		b	One-time subsistence allowance of equivalent to three months minimum wage income[14] for severely affected households	Households who are losing more than 10% of productive lands.
2	Loss of residential structure (inhabited structures)	2.1. Inhabited structures		
		a	In addition to Compensation for land listed above under S.No.1 advance notice to vacate the structures. Cash compensation at full replacement costs OR Provision of the alternative house of equal in adjacent territories. In case the alternative house's market value lower than an affected house, then additional cash compensation for the difference will be provided.	Payment of compensations is carried out by independent Valuation Service on the basis values in local markets in adjacent territories for the actual moment of compensation payment, considering inflation and market fluctuation in prices in the real estate sphere. Transaction costs including, valuation fee, stamp duty, and registration charges will be borne by the Road Committee. For partly affected structures, the PAPs will have the option of claiming compensation for the entire structure, if the remaining portion is unviable. Based on the preliminary study during the field visit on January 24-26, 2020 all 4 sites in Karaulbazar district where involuntary land acquisition will be conducted are free from any residential structures.
		b	Right to salvage affected materials	There will be no deductions for depreciation or for retention of salvaged materials in the calculation of compensation.
		c	One-time subsistence allowance of equivalent to three months minimum	Households who need to relocate are aided as part of livelihood restoration.

14 Since February 1, 2020 the minimum wage in Uzbekistan equals to 679,330 UZS, so one-time allowance is 2,037,990 UZS. This number is subject to corrections based on minimum wage rate at the time of census.

S. No	Impact Category	Entitlements		Implementation Guidelines
			wage income[15] for project affected households who are required to relocate due to the project	
		d	One-time allowance of moving costs for those who have to relocate.	One-time allowance will be calculated during the census survey based on the actual market value in respective project areas.
		e	Rental allowance up to 24 months for affected households who gets cash compensation for affected residential structure OR Rental allowance for 1 month who gets an alternative house.	Monthly allowance will be calculated during the census of PAPs consisting of average market rental value in respective project areas. Information from Real Property Agencies or websites can be taken as reference. One-month allowance will be given to households who will be provided a ready alternative house to live.
		2.2. Losses of adjoining substructures to the residential houses such as fences, shed /tents etc.		
		a	Compensation at full replacement cost for affected structure/fixed assets free of depreciation and transaction cost	PAPs must have the right to salvage materials. Based on the preliminary study during the field visit on January 24-26, 2020 all 4 sites in Karaulbazar district where involuntary land acquisition will be conducted are free from any adjoining substructures.
3	Loss of Commercial structures	a	In addition to Compensation for Land and Assistance listed above under S.No.1 Cash compensation at full replacement costs OR Provision of the alternative commercial structure of equal in adjacent territories. In case the alternative structure's market value lower than affected structure, then additional cash	Payment of compensations is carried out by independent Valuation Service on the basis values in local markets in adjacent territories for the actual moment of compensation payment, considering inflation and market fluctuation in prices in the real estate sphere. Transaction costs including, valuation fee, stamp duty, and registration charges will be borne by the project For partly affected structures, the PAPs will have the option of claiming compensation for the entire structure, if the remaining portion is unviable.

15 Since February 1, 2020 the minimum wage in Uzbekistan equals to 679,330 UZS, so one-time allowance is 2,037,990 UZS. This number is subject to corrections based on minimum wage rate at the time of census.

S. No	Impact Category	Entitlements		Implementation Guidelines
			compensation for the difference will be provided	Based on the preliminary study during the field visit on January 24-26, 2020 all 4 sites in Karaulbazar district where involuntary land acquisition will be conducted are free from any commercial structures.
		b	Right to salvage affected materials	There will be no deductions for depreciation or for retention of salvaged materials in the calculation of compensation.
		c	One time grant equal to one year of wages for loss of trade/self-employment for the business owner	Provision of compensation will be based on tax declaration or official minimum salary.
		d	One-time subsistence allowance of equivalent to three months minimum wage income for owners of commercial structures who are required to relocate due to the project	Owners of Commercial structures who need to relocate are accepted as severely affected entities losing more than 10% of their production capacities.
		e	One-time allowance of moving costs for those who have to relocate	One-time allowance will be calculated during the census survey based on the actual market value in respective project areas.
		f	Rental allowance up to 3 months for lost income during the interruption.	Monthly allowance will be calculated during the census of PAPs consisting of average market rental value in respective project areas. Information from Real Property Agencies or websites can be taken as reference. Provision of rehabilitation assistance if required (assistance with job placement, skills training).
4	Impact to Tenants (Residential/ Commercial / Agricultural)	4.1 Residential		
		a	1-month notice to vacate the rental premises	Based on the preliminary study during the field visit on January 24-26, 2020 all 4 sites in Karaulbazar district where involuntary land acquisition will be conducted are free from any residential structures.
		b	Rental allowance for 1 month	Monthly allowance will be calculated during the census of PAPs consisting of average market rental value in respective project areas. Information from Real

S. No	Impact Category	Entitlements		Implementation Guidelines
				Property Agencies or websites can be taken as a reference
		c	One-time allowance of moving costs for those who have to relocate	One-time allowance will be calculated during the census survey based on the actual market value in respective project areas.
		4.2 Commercial		
		a	1-month notice to vacate the rental premises	Based on the preliminary study during the field visit on January 24-26, 2020 all 4 sites in Karaulbazar district where involuntary land acquisition will be conducted are free from any commercial structures.
		b	Rental allowance for 1 month	Monthly allowance will be calculated during the census of PAPs consisting of average market rental value in respective project areas. Information from Real Property Agencies or websites can be taken as a reference
		c	One-time allowance of moving costs for those who have to relocate	One-time allowance will be calculated during the census survey based on the actual market value in respective project areas.
		d	Commercial tenants will receive a one-time allowance for loss of trade/self-employment provided under 3(c) above in lieu to the owner	Provision of compensation will be based on tax declaration or official minimum salary
		4.3 Agricultural tenants		
		a	In case of agricultural tenants advance notice to harvest crops OR Compensation for the lost crop at the market value of the 1-year yield	Based on 1 year of production costs (inputs) plus an allowance equivalent to 1-year average net income based on the average income over the past 3 years determined by the Agricultural Department (AD) at respective districts of the project area
5	Impact to trees, standing crops, other properties, perennial and non-perennial crops	a	Three months (90 days) advance notification for the harvesting of standing crops OR A lump sum equal to the market value of the yield of the standing crop lost	Based on 1 year of production costs (inputs) plus an allowance equivalent to 1-year average net income based on the average income over the past 3 years determined by the AD

S. No	Impact Category	Entitlements		Implementation Guidelines
		b	Compensation for timber trees provided based on replacement cost.	Based on the market value of dry wood volume determined by the AD. Felled trees will be kept by affected households
		c	Compensation for fruit trees will be provided based on replacement cost.	Based on market value for loss harvest equal the average annual income for past 3 years multiplied by 4 times (years) plus input costs for trees to reflect the duration from planting to reach the productive stage
Section II. Additional assistance for Women headed households (Title and non-title holders)				
6	Loss of Land / house / shop		One-time subsistence allowance of equivalent to three months minimum wage for women-headed households who are required to relocate due to the project	Based on the preliminary study during the field visit on January 24-26, 2020 all 4 sites in Karaulbazar district where involuntary land acquisition will be conducted are owned by legal entities (State forestry unitary enterprise, farm and 2 LLCs). According to the survey results there are no Women headed households.
Section III. NON-TITLE HOLDERS - Impact to squatters / Encroachers				
7	Impact to Squatters	7.1 Loss of house		
		a	Cash compensation at market value for the structures OR Provision of comparable alternative structures	Based on the preliminary study during the field visit on January 24-26, 2020 all 4 sites in Karaulbazar district where involuntary land acquisition will be conducted are free from any residential structures.
		b	Right to salvage the affected materials	
		c	One-time subsistence allowance of equivalent to three months minimum wage income for project affected households who are required to relocate due to the project	
		d	One-time allowance of moving costs for those who have to relocate	
		e	Assistance in the legalization of title	Transaction costs including, valuation fee, stamp duty, and registration charges will be borne by the Road Committee.
		7.2 Loss of shop, repair shop		
		a	Cash compensation at full replacement costs for the structures OR	Based on the preliminary study during the field visit on January 24-26, 2020 all 4 sites in Karaulbazar district where involuntary land acquisition will be

S. No	Impact Category	Entitlements		Implementation Guidelines
			Provision of comparable alternative structures	conducted are free from any commercial structures.
		b	Right to salvage the affected materials	
		c	One-time subsistence allowance of equivalent to three months minimum wage income for project affected households who are required to relocate due to the project	
		d	One-time allowance of moving costs for those who have to relocate	
		e	Assistance in the legalization of title	
		7.3 Loss of standing crops		
			Three months (90 days) advance notification for the harvesting of standing crops OR A lump sum equal to the market value of the yield of the standing crop lost	
8	Impact to Encroachers	8.1 Loss of Standing crops		
		a	2-month notice to harvest standing crops or market value of compensation for standing crops, if notice is not given.	Market value for the loss of standing crops will be decided by the PIU in consultation with the Agriculture Department at respective districts.
		8.2 Structure		
		a	1-month notice to demolish the encroached structure	
		b	Compensation at market value for structures without depreciation for the affected portion of the structure	
Section IV. Loss of Livelihood Opportunities				
9	Loss of employment in non-agricultural activities or daily agricultural wages or other wage workers		One-time subsistence allowance of equivalent to three months minimum wage income.	Only agricultural laborers who are in fulltime / permanent employment of the landowner, or those affected full-time employees of the business, will be eligible for this assistance. Part -time employees will be compensated at the prorated rate.
Section V. Impact on Vulnerable Households				

S. No	Impact Category	Entitlements		Implementation Guidelines
10	Vulnerable Households (Women headed household, Low-Income household, a household headed by elderly with no support and household headed physically challenged people)	a	Inclusion in existing safety net programs to ensure the continuation, or increase, of previous income.	One adult member of the displaced household, whose livelihood is affected, will be entitled to skill development. The census team will identify the number of eligible vulnerable displaced persons based on the 100% census of the displaced persons and will conduct training need assessment in consultations with the displaced persons so as to develop appropriate training programs suitable to the skill and the region. Suitable trainers or local resources will be identified by BRNIP PIU in consultation with local training institutes. It is recommended to involve local NGOs in this process
		b	One-time subsistence allowance equivalent to three months minimum wage income	
		c	Priority for employment in project-related jobs, training opportunities, self-employment, and wage employment assistance.	
Section VI. Unforeseen Impacts				
Any unanticipated impacts identified during Project implementation will be compensated in full at replacement cost and the entitlement matrix shall be revised if required in case major unanticipated impacts occur during detailed and final design.				

9.6. Process of Land acquisition and payment of Compensation

The Project Affected Persons (PAP) may be classified in one of the three groups listed:

- Those who have formal legal rights to the land they occupy;
- Those who do not have formal legal rights to land, but have a claim to land that is recognized or recognizable under the national laws including those measures put in place by the draft land policy; or
- Those who have no recognizable legal right or claim to the land they occupy.

Steps in Land Acquisition (progress till date)

The following steps have been followed:

Step 1: Land is identified for acquisition by the project.

Step 2: The proposal of land acquisition has been developed by khokimiats at district and regional levels.

Step 3: The proposal of Bukhara regional khokimiat on starting land acquisition was approved by Cabinet of Ministers: resolution dated from February 18, 2020 states the joint conclusion to be submitted by relevant government bodies (Cadaster committee, RC, Ministry on construction and Bukhara regional khokimiat).

Step 4: District khokimiats informed land owners about land acquisition for Project needs. According to information provided by Head of Cadaster division of Karaulbazar district Mr. Jasur Xolov, consent of all land owners has been received.

Step 5: The study of land to determine the compensation amount based on impact assessment (standing crops, the value of land acquired etc.) has been initiated by Uzdavyerloyiha design institute together with regional departments of State cadaster committee and Ministry on construction.

Steps in land acquisition (pending actions)

Step 6: Based on the results of the study the compensation amount will be determined. The compensation will include following:

- Land for land compensation. This type of compensation is not foreseen. According to the preliminary results of the meetings with landowners during the field visit on March 10-11 2020 to Karaulbazar district, the landowners do not have demand to receive additional land to compensate the land acquisition because the impact of land acquisition to the activities of land owners is too low.
- Compensation for employees of land owners. In all cases no impact on employment is expected because the land acquired comprises from 1.5 to 3.3% of total land owned by the current landowners.
- Compensation for the cost of land acquired will be calculated by district cadaster division based on soil bonitet score[16], and the higher the score the more compensation is provided. This amount will be shown in the offer to land owners issued by khokimiat.
- Compensation for standing crops will be calculated by the valuation company. This amount will be shown in the offer to land owners issued by khokimiat.
- Compensation for agricultural works in progress is provided based on primary accounting documents of land owner.
- Compensation for the foregone (lost) profit is determined as the sum of the average annual net income for the last three years received from the acquired land plot multiplied by four years

Step 7: The consultation with land owners is conducted by khokimiat. The consultation consists of information disclosure on Project benefits to Bukhara region and its districts, the land acquisition procedure, compensation amount, procedure of compensation payment, obligations of khokimiat and rights of land owners during the land acquisition process.

Step 8: Based on the consultation process landowners and khokimiat sign agreement on land acquisition and compensation provision. If land owners will not give their consent the khokimiat will appeal to court (In general, this is a very rare case. Moreover, within this Project such risk is minimal, because the impact of land acquisition is too low).

[16] Soil bonitet (appraisal) is a comparative characteristic of the quality of land in points based on soil surveys. It is used for economic valuation of land, land cadaster, land reclamation, etc. Soil bonitet accurately predict crop yields, it is also taken into account when determining the value of the land tax values, rents and so on. Soil bonitet score is determined every 5 years by the Institute under the State cadaster committee and based on its corresponding land map is developed.

Step 9: The khokimiat initiates the process of funding the compensation from Centralized Fund by submitting request to regional department of Ministry of finance (working body of Centralized Fund).

Step 10: The compensation is provided to landowners and khokimiat takes decision on land acquisition.

Step 11: Information on closing the process of land acquisition for Project needs is disclosed by khokimiat.

After completion of the entire process of land acquisition the Environmental and Social Specialist of the PIU will document the process and present it to AIIB and the RC for feedback and information.

9.7. Cut-off date

Cut-off dates are essential in the process of drawing up lists to ensure that ineligible persons do not take the opportunity to claim eligibility. The establishment of a cut-off date is required to prevent opportunistic invasions/rush migration into the chosen land, thereby posing a major risk to the project. The cut-off date will be the last date of the census.

This process must be in full compliance with the conflict resolution mechanisms in this RPF and this date must be communicated effectively to the potential PAPs and surrounding local communities. The local community and traditional leaders will play a crucial role in identifying users of land.

9.8. Social Impact Assessment

Per the AIIB safeguards policies social impact assessment is an instrument to identify and assess the potential environmental and social impacts of a proposed Project, evaluate alternatives, and design appropriate mitigation, management, and monitoring measures. Projects need SIA to address important issues not covered by any applicable regional or sectoral assessment.

The objectives of these meetings were: to inform the stakeholders about the objectives and project developments and the expected of environmental and social impacts; to collect information and data from the public and/or the communities that will be affected by the project; and to ensure participation of the public and local communities in a process and support for the project. The minutes of the consultation meetings can be found in the **Annex B1**.

After completing the technical design public consultation meetings with all stakeholders will be carried out in the field for the dissemination of information regarding the rehabilitation process and entitlement framework for making the RP preparation and implementation process transparent. Several documents of RPF, RP and the resettlement and rehabilitation R&R policy in Uzbek and Russian languages must be introduced to public. The documents available in the public domain will include Entitlement Matrix and RP (summary in local language) and the list of eligible PAPs for various R&R benefits. All documents will be kept in PIU of RC. As per Access to Information Policy of the AIIB, all safeguard documents will also be available at the AIIB Portal. The RC/PIU will be responsible for disclosure and information dissemination on community level including a community display, meetings, and consultations.

Additional disclosure consultations will be conducted, including the disclosure of information on BRNIP sub-project components.

9.9. Abbreviated Resettlement Plan (ARP)

9.9.1. Summary of Impact and Compensation:

The different types of impact on land and livelihood and the corresponding provisions of compensations are given below:

- **For withdrawing land**, usually equivalent land is given as compensation. Alternatively, cash compensation is also provided. The cost of the land is determined by soil bonitet (appraisal) and accordingly the compensation amount is calculated
- **For standing crops**, the compensation amount is calculated by valuation of fruit bearing crops, as well as protective and other perennial crops is carried out at the cost of seedlings and the cost of planting and growing them before fruiting or closing of crowns at current prices during the valuation period. Valuation of non-bearing fruit and berry plantations, as well as protective and other perennial plantations with open crown, is carried out at the actual costs incurred.
- **For agricultural works in progress**, the cost of agricultural work in progress, which includes the cost of the consumed materials (seeds, mineral and organic fertilizers, pesticides, herbicides, etc.) and the work actually performed (preparing the soil for sowing, cleaning the irrigation and drainage network, sowing seeds, irrigation, processing of crops etc.), is accepted according to primary accounting documents of land owner.
- **For the foregone (lost) profit**, the amount of lost profit is determined as the sum of the average annual net income for the last three years received from the land plot excluded from agricultural production multiplied by four years (during these 4 years the design, irrigation and development of new land cultivation and other work will be carried out to increase soil fertility). The amount of net income for one year is determined based on the average annual net income for the last three years per ha of agricultural land and multiplied by the withdrawn area of agricultural land. In cases where PAPs are provided with equivalent land plots compensation for lost profit is not provided.
- **Employment issues** are addressed by providing people losing jobs opportunities to undergo trainings or employment in other places.

9.9.2. Summary of profile of Affected Persons and the Impacts

The involuntary land acquisition is identified on three sites in Karaulbazar district. The total area of land to be acquired from current land owners is equal to 5.6 ha.

Site#1 is located at 152 km of A380 road. The land to be acquired of 1.9 ha is owned by “ABC Qorovulbozor” LLC. The land owner has 82 ha of land for planting pomegranates and saffron. The land was allocated to the owner in November 2019 and the owner has not planted any crop on the land to be acquired for Project needs. Therefore, the land acquisition has no impact on the activities of land owner.

Site #2 is located at 159 km of A380 road. The right side of the site of 0.9 ha is owned by Alisher Marjona farming unit. The farm owns 68 ha of land used mainly for cultivating cotton and grain. The land acquisition will have no impact on employment and profit source, as the acquired land plot is not used for planting cotton, the main source of farm's revenue. The left side of the site of 1 ha is owned by Agro Food LLC and used for planting grapes. The vinery was established recently and has not bring any fruit. Agro Food LLC has 30 ha of land and the impact of land acquisition will not affect employment of permanent workers of the LLC. In general, the impact of land acquisition at site#2 is very low.

Site #3 is located at 178.5 km of A380 road. The land to be acquired of 1.9 ha is owned by Neftchi State Forestry (See **Figure 5.6**). The forestry owns land of 19,000 ha. The acquisition of 1.9 ha land will have no impact on employment and very limited impact on revenue. The land plot is used for planting saxaul bush trees and has no premises/building on it.

All landowners have been notified by district Cadastral division and consent of land owners was received by local khokimiat. During the field visit to Karaulbazar district on March 10-11 2020, representatives of land owners informed about full support of Project activities on improvement of road infrastructure in Bukhara region.

It may be noted that the owners (users) of the land are forfeiting between 1.3% to 3.3% of their total land. Thus, the impact due to land acquisition on their monthly income is minimal. Also, there is no impact on the people working in these lands. Consultations with the affected people indicated that they were happy to contribute to the development of the road and happy with the compensation they will receive.

Apart from the above land acquisition, due to the expansion of roadbed at 181.73-182.7 km of A380 road 2,934 units of saxaul bush trees will be felled. As a remedial measure, funds will be provided by the Contractor to the State Committee for Ecology and Environmental Protection, for plantation at the ratio of 1:10 for every tree felled. The valuation of the trees felled will be conducted by the State Committee for Ecology and Environmental Protection.

Table 9.2. Summary of land acquisition impact and compensation provided to PAPs.

PAPs	Total land owned by PAPs	Land acquired for project needs	Share of acquired land in total land owned by PAPs	Employed people	Compensation for					Remarks
					Land	Standing crops	Agricultural works in progress	Foregone (lost) profit	Employment issues	
"ABC Qorovulbozor" LLC	82 ha	1.9 ha (at 152 km of A380 road)	2.3%	n/a established in 2019	cost of the land is determined by soil bonitet (appraisal)	No standing crops, land allocated in November 2019	cost of agricultural work in progress is calculated according to primary accounting documents	the amount of lost profit is determined as the sum of the average annual net income for the last three years received from the land plot excluded from agricultural production multiplied by four years	N/A established in 2019	The social and economic impact is low, the owners has no demand for land to land compensation due to low impact to its activities
"Alisher Marjona" farming unit	68 ha	0.9 ha (at 159 km of A380 road)	1.3%	30 permanent 25 seasonal	cost of the land is determined by soil bonitet (appraisal)	Cost of apricot trees will be calculated by valuation company	cost of agricultural work in progress is calculated according to primary accounting documents	the amount of lost profit is determined as the sum of the average annual net income for the last three years received from the land plot excluded from agricultural production multiplied by four years	No impact on employment	The social and economic impact is low, the owners has no demand for land to land compensation due to low impact to its activities

PAPs	Total land owned by PAPs	Land acquired for project needs	Share of acquired land in total land owned by PAPs	Employed people	Compensation for					Remarks
					Land	Standing crops	Agricultural works in progress	Foregone (lost) profit	Employment issues	
"Agro Food" LLC	30 ha	1.0 ha (at 159 km of A380 road)	3.3%	6 permanent 50 seasonal	cost of the land is determined by soil bonitet (appraisal)	Cost of vinery will be calculated by valuation company	cost of agricultural work in progress is calculated according to primary accounting documents	the amount of lost profit is determined as the sum of the average annual net income for the last three years received from the land plot excluded from agricultural production multiplied by four years	No impact on employment	The social and economic impact is low, the owners has no demand for land to land compensation due to low impact to its activities
"Neftchi" state forestry	19000 ha	1.9 ha (at 178,5 km of A380 road)	0.01%	53 permanent 10 seasonal	cost of the land is determined by soil bonitet (appraisal)	Cost of saxaul bush trees will be calculated by valuation company	cost of agricultural work in progress is calculated according to primary accounting documents	the amount of lost profit is determined as the sum of the average annual net income for the last three years received from the land plot excluded from agricultural production for four years	No impact on employment	The social and economic impact is low, the owners has no demand for land to land compensation due to low impact to its activities