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European Bank for Reconstruction and Development

Shaki Water and Wastewater Feasibility Study Project

Non-Technical Summary of the Environmental and Social (E&S) Assessment and Audit Report

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List of Abbreviations

Abbreviation	Term
ADSEA	Azerbaijan State Water Resources Agency
DFC	Directorate for the Facilities under Construction
EBRD	European Bank for Reconstruction and Development
EIA	Environmental Impact Assessment
ESAA	Environmental and Social Assessment and Audit
E&S	Environmental and Social
EU	European Union
GM	Grievance mechanism
KfW	German Development Bank
OHS	Occupational health and safety
PIU	Project Implementation Unit
PR	Performance Requirement
RWAS	Regional Water Amelioration Services
SEP	Stakeholder Engagement Plan
UNESCO	United Nations Educational, Scientific and Cultural Organization
WWTP	Wastewater Treatment Plant

1. Project Description

The Shaki Water and Wastewater Feasibility Study Project ("Project"), supported by the European Bank for Reconstruction and Development (EBRD), is a major infrastructure investment aimed at improving the water supply, sanitation, and wastewater treatment services in Shaki, a historically significant city in northwestern Azerbaijan, and three surrounding villages—Kish, Okhud, and Gokhmud.

The Project consists of the following components:

- Construction of approximately 102.7 km of drinking water supply network, 148.3 km of wastewater collection network, and 48.7 km of stormwater network in Shaki city. The water network includes the construction of three reservoirs with a total capacity of 5,750 m3 and establishment of a SCADA system for water supply.
- Design and construction of 146.4 km of drinking water supply system and approximately151.2km wastewater collection network for Kish, Okhud and Gokhmud villages, on the western bank of the Kish river. Additionally, six new reservoirs with a total capacity of 12,500 m^3, three pump stations for the water network, three pump stations for the wastewater network and one disinfection unit for the three villages, are also planned.
- Completion of a biological wastewater treatment plant (WWTP) with a projected capacity of 16,000 m^3/day,supporting environmental and public health improvements. Additional to the existing plant design, a solar greenhouse sludge drying facility, temporary storage for dried sludge, as well as a 0.8 MWp PV plant to partially cover the energy needs of the plant will be built at the existing WWTP site.
- Additionally, maintenance machinery and equipment will be bought to facilitate efficient operation and maintenance of the networks built.

This investment aims to resolve long-standing gaps in water and wastewater service delivery, with construction expected to last 30 months. The implementing agency, the Azerbaijan State Water Resources Agency (ADSEA), through its Directorate for the Facilities under Construction (DFC) and Regional Water Amelioration Services (RWAS), will manage the project with an expected workforce of ~1,200 personnel during peak construction, prioritizing local employment.

Overall, the project's goal is to enhance water access, environmental protection, and service reliability while adhering to national and international environmental and social (E&S) standards.

The project area is shown in the figure below:

Figure 1: Project Area Map

2. Background to the Project

2.1 Rationale of the Project

The Shaki Drinking Water, Stormwater, and Wastewater Project represents a strategic investment in urban infrastructure aimed at addressing long-standing deficiencies in water supply, sanitation, and drainage systems in Shaki City. With a population of nearly 68,000 and a rich cultural and economic heritage rooted in silk production, agriculture, and textile manufacturing, Shaki has faced persistent challenges in delivering reliable and safe water services to its residents. Previous efforts, including a major initiative supported by the German Development Bank (KfW), laid the groundwork for improvement but fell short of full implementation, leaving critical gaps in service coverage and infrastructure quality.

From an environmental perspective, aging infrastructure has contributed to leakage, inefficient water use, and pollution of surface and groundwater. Incomplete wastewater treatment means untreated effluents still enter the environment, affecting water quality, biodiversity, and public health. From social point of view, about 78% of the city's residents have access to improved water and sanitation. However, some areas face service gaps. Vulnerable groups, including women, low-income households, and persons with disabilities, have disproportionately limited access to reliable services. The city also experiences urban-rural disparities in service coverage, employment opportunities, and health outcomes.

This new project, supported by the European Bank for Reconstruction and Development (EBRD), builds on recent reforms in Azerbaijan's water sector, which saw the dissolution of legacy water management entities and the establishment of the Azerbaijan State Water Resources Agency (ASWRA, ADSEA).

The rationale for the project is further reinforced by the substantial progress made since 2019 through domestic funding, which has expanded water and sewage networks and improved access for over three-quarters of the city's population.

2.2 Legal aspects and compliance with relevant environmental and social laws

The project is designed to be fully compliant with both national and international environmental and social frameworks. Key Azerbaijani legislation includes the Law on Environmental Protection (1999), Law on Environmental Impact Assessment (2018), Law on acquisition of lands for state needs (2010), Civil Code (1999), Water Code (1998), and Labor Code (1999), among others. These legal instruments ensure that the project considers environmental preservation, sustainable resource use, and community rights.

On the international front, the project adheres to the EBRD's Environmental and Social Policy (2019) and associated Performance Requirements (PRs), as well as relevant EU Directives such as the EIA Directive, Wastewater Treatment Directive, and Water Framework Directive. The project also reflects principles of the Equator Principles IV and aligns with international human rights and labour conventions. The Project will reach compliance with national and EU standards for drinking water quality, urban wastewater treatment and sludge management by implementation of the actions described in ESAP.

The project activities fall within the required regulatory boundaries and trigger environmental and social assessments. The Environmental and Social Assessment (ESA) process further ensures alignment with the EBRD PR, EU EIA Directive, confirming that the mitigation and management frameworks meet best practice standards.

The assessment identified localized sensitivities in terms of biodiversity (e.g., river ecosystems and urban flora), cultural heritage (Shaki's UNESCO-listed sites), and community health risks due to poor drainage and stagnant water. The ESA ensures that these conditions are incorporated into the design, planning, and operational phases of the project. This integrated approach ensures that the project not only meets technical and operational goals but also promotes inclusive development, safeguards cultural heritage, and enhances community well-being.

2.3 History of the project development and planning

The origin of the Shaki Water and Wastewater Project dates back to 2010, when the Government of Azerbaijan launched the Open Communal Infrastructure Program II with funding from the German

Development Bank (KfW). At that time, the project sought to address longstanding infrastructure deficiencies in Shaki. However, only 44% of the planned investments were realized at the time due to financial, institutional, and implementation constraints.

Since 2019, the Government has continued infrastructure development using domestic funds. This included installation of wells, main water lines, and sewage networks. Although significant progress was made, large portions of the city and surrounding villages remained without access to full services.

In April 2024, Azerbaijan undertook major institutional reforms, creating the Azerbaijan State Water Resources Agency (ADSEA), which now oversees national water infrastructure. With a consolidated mandate and support from the EBRD, ADSEA is now reactivating and expanding the original project. The current design incorporates lessons from past phases, recent demographic and environmental changes, and the evolving regulatory landscape.

3. Process of the Project

The Environmental and Social Assessment and Audit (ESAA) process was conducted in accordance with the EBRD's 2019 Environmental and Social Policy. The ESAA reviewed compliance with national legal requirements, EU directives, and relevant international agreements. Public consultations, site visits, audits, and stakeholder mapping were part of the assessment methodology.

The project has been classified as Category B according to EBRD PR, meaning that impacts are localized, limited, and manageable. Extensive baseline data collection was conducted to assess social and environmental conditions, risks, and sensitivities in the area of influence.

Stakeholder engagement was implemented through community meetings, interviews with vulnerable groups, and coordination with local authorities. Concerns raised by stakeholders—such as temporary construction disruptions, land access, or water quality—were integrated into the project's environmental and social action plan.

The national EIA procedure will be followed, and the ESAA confirms alignment with the EU EIA Directive. All planned mitigation and management strategies will be disclosed and monitored to ensure compliance and responsiveness to stakeholder concerns.

4. Environmental Benefits, Adverse Impacts and Mitigation Measures

4.1 Water Resources, Impacts and Management Measures

Shaki is located within the Kish River basin and is shaped by a network of rivers, streams, and mountain-fed channels that support agriculture, provide drinking water, and influence the city's layout. While these water bodies are vital to the region, they can also contribute to flooding during heavy rainfall, and climate change is beginning to affect water levels and seasonal flow patterns.

The city's water supply comes primarily from the sub-artesian wells on the Kish River basin and the Gurjana River. The Kish River originates in the Greater Caucasus Mountains and the Gurjana from the foothills of the same mountains.

During construction, there is a risk of contaminating both surface and groundwater sources. This could happen through accidental spills or leaks of fuel, oil, or other hazardous substances from construction machinery. Runoff from exposed soil or material stockpiles may carry sediment and pollutants into nearby water bodies, reducing water quality. Although large volumes of chemicals will not be stored on site—making the overall risk relatively low—careful management is still required. Improper waste handling, concrete wash water disposal, or changes to drainage patterns could increase contamination risks. These impacts are expected to be short-term and localised if managed properly.

Once the project is operational, the risk of water pollution will be significantly reduced due to upgraded wastewater treatment and stormwater systems. These facilities are designed to treat water effectively and prevent harmful runoff, helping to protect local rivers and streams.

Sludge generated by the wastewater treatment plant will need careful handling. In the short term, it will be stored in a designated area within the plant site. Over time, more advanced options—such as incineration, or integration with the city's solid waste system—may be considered once sludge volumes are stable. Regular testing and monitoring of treated wastewater and sludge will be essential, ideally under a formal Environmental and Social Monitoring Plan that outlines procedures, schedules, and responsibilities.

Although minor risks remain—such as leaks, equipment failures, or poor sludge handling—these can be effectively managed through routine maintenance and proper operational controls. With these measures in place, treated wastewater is expected to pose minimal environmental risk.

4.2 Habitats, Ecology (Flora and Fauna) and Nature Conservation, Impacts and Management Measures

The project is located in a densely urbanised area and does not intersect any nationally protected zones. However, it partially overlaps with the Shaki Important Bird and Biodiversity Area (IBA) and lies near several ecologically valuable sites, including Shaki Upland, Zakataly-Ilisy, Shahdagh National Park, and the Mingachevir–Turyanchay protected area. Additionally, based on available field data and habitat characteristics, no Critical Habitat (CH) or Priority Biodiversity Features (PBF) is expected to be directly impacted by the Project footprint. Although most construction will take place on existing roads and previously disturbed land, small but important habitats—such as mature trees, riverbanks, and vegetated corridors—still exist within the urban landscape and require careful protection.

During construction, the main ecological risks relate to habitat disturbance and environmental degradation include activities such as tree removal or pruning which may destroy nesting and roosting sites for birds and bats, who are considered priority species under EBRD guidance. Noise, vibration, and artificial lighting could also disturb wildlife, particularly during sensitive periods like breeding or migration. Soil disruption and vegetation clearance may promote the spread of invasive plant species, while works near rivers could damage riparian zones and aquatic habitats, including those connected to the Mingachevir Reservoir.

Given the presence of priority species and the overlap with an internationally recognised IBA, the potential impacts are considered moderate. They are expected to be local and temporary but could become significant without proper mitigation. To manage these risks, the project will implement measures such as ecological

surveys before construction, careful vegetation handling, timing works to avoid sensitive seasons, pollution control, and habitat restoration using native plant species.

In the operational phase, biodiversity impacts are less direct but still important. The key concern is the potential discharge of inadequately treated wastewater, especially during dry periods when river flows are low, which could harm aquatic ecosystems. Maintaining green spaces—such as tree-lined streets and vegetated corridors—will be essential to preserve their ecological function. Without ongoing care, these areas may degrade, and increased urban activity could further fragment habitats and disturb local wildlife.

4.3 Landscape and Visual Impacts, Impacts and Management Measure

Shaki is located at the foothills of the Greater Caucasus Mountains, on the northern edge of the Alazan Ayrichay Valley. The city is built on a steep erosion cone shaped by the Kish River, which flows from north to south through the valley. Historically, Shaki was situated on the river's right bank, but a destructive mudflow in 1772—triggered by a volcano-seismic event—led to its relocation to the current site.

The city's terrain slopes predominantly from north to south, with some east-west gradients. Its historic center features narrow, steep streets that reflect its traditional urban layout. Shaki's status as a UNESCO World Heritage Site highlights the importance of preserving its cultural heritage and unique visual character.

During construction, visual impacts are a key concern, particularly in culturally and scenically sensitive areas such as Shaki City and Kish Village. In Shaki, excavation and trenching could disrupt historic views and alter the city's distinctive appearance. Kish Village faces similar risks near the Church of Kish, where construction may affect the visual landscape and increase erosion on steep terrain. Rural areas like Okhud and Gokhmud may experience temporary visual changes due to trenching in agricultural and pasture lands. Construction equipment, dust, and temporary works may further affect the aesthetic quality of these areas, especially in locations popular with tourists.

Shaki and Kish are the most vulnerable due to their cultural and visual importance. However, impacts can be effectively reduced through mitigation measures such as erosion control, visual screening, and heritage-sensitive design. With careful planning and community engagement, the overall visual impact during construction is considered moderate and manageable.

In the operational phase, visual impacts will be significantly lower. In Shaki, infrastructure will be designed and placed to preserve the city's historic skyline. Kish may experience low impacts, depending on how well the design integrates with the surrounding landscape.

4.4 Air Quality, Impacts and Management Measures

Air quality in Shaki generally meets national hygiene and ecological standards, according to the Ministry of Ecology and Natural Resources of Azerbaijan. The city benefits from continuous monitoring through an automatic air quality station, which tracks pollutants such as fine and coarse particulate matter (PM2.5 and PM10), nitrogen dioxide, sulfur dioxide, carbon monoxide, and ozone. Weather conditions like temperature, humidity, and wind speed are also monitored, as they influence how pollutants disperse. Overall, Shaki's air quality is considered good, with occasional short-term declines during dusty weather. Noise levels are also monitored to safeguard public health.

During the construction phase, temporary impacts on air quality and noise are expected. Dust will be generated during excavation, earthworks, demolition, and the transport of loose materials, especially in dry or windy conditions. This may lead to short-term increases in fine dust particles near construction sites, potentially affecting nearby residents and sensitive locations such as schools, healthcare facilities, and heritage areas. Noise will result from heavy machinery and construction vehicles, with peak levels during the most active periods. However, construction will be limited to daytime hours to reduce disturbance.

The wastewater treatment plant is located approximately 850 metres from the nearest homes, well beyond the 400-metre Special Protection Zone, which helps minimise dust and noise impacts in residential areas.

Overall, the construction phase presents a moderate risk, which will be managed through appropriate mitigation measures implemented by the Contractor and ADSEA.

In the operational phase, impacts on air quality, dust, and noise will be minimal. Routine operation of the upgraded water, wastewater, and stormwater systems will not produce significant emissions or noise.

Occasional maintenance may cause minor disturbances, but these will be well controlled. Importantly, the project is expected to improve overall air quality by reducing odours and health risks associated with untreated sewage and stagnant water.

In summary, while construction may cause temporary inconvenience, effective mitigation will reduce its impact. The operational phase is expected to bring long-term environmental benefits, contributing to a cleaner, healthier, and more pleasant living environment for Shaki's residents.

4.5 Climate Conditions and Meteorology

Shaki city's location in a rainy and mountainous zone makes it vulnerable to flooding, particularly during intense rainfall. Floods in the Gurjana River have become more frequent in recent years, often taking the form of mudflows that damage roads, fill basements, and threaten historical buildings. These risks are worsened by deforestation—between 2004 and 2019, Shaki lost approximately 47 hectares of forest, mainly due to urban expansion near the historic center. Forests play a key role in flood prevention by absorbing rainfall and slowing surface runoff; when trees are removed, flood risks increase.

Shaki is also experiencing the effects of climate change. Rising temperatures are leading to hotter summers and milder winters, while rainfall patterns are becoming more unpredictable.

Greenhouse gas emissions—primarily from fossil fuel use, livestock farming, and deforestation—are a major driver of climate change in Azerbaijan. When forests are cut down, stored carbon is released into the atmosphere, contributing to global warming.

Rural communities and farmers in Shaki are particularly vulnerable to these changes. Their livelihoods depend on stable weather, and they often lack the resources to cope with floods, droughts, or other climate-related challenges. Women and children may be disproportionately affected due to limited access to support and resources.

The project will help make Shaki more resilient to flooding and climate change by upgrading water management and drainage systems, reducing damage to roads, homes, and UNESCO-listed historical sites. Reforestation and vegetation restoration will slow surface runoff, lower flood risks, and store carbon, reversing recent forest loss.

Improved infrastructure and natural flood buffers will protect farmland and livelihoods, particularly benefiting vulnerable rural communities, women, and children. By combining environmental restoration with climate adaptation, the project will safeguard Shaki's cultural heritage, enhance community well-being, and support long-term sustainability.

4.6 Noise and Vibration

Azerbaijan operates a national environmental monitoring system that includes 26 observation posts in major cities, including Shaki. These stations continuously measure environmental pollutants, including noise levels, and transmit data every 30 minutes to both the Ministry of Ecology and Natural Resources and the Ministry of Emergency Situations Crisis Management Centre. This system helps ensure that any significant changes in environmental conditions are quickly identified and addressed.

During construction, noise is expected from heavy machinery, trucks, and other site activities. This may temporarily affect nearby homes, schools, healthcare centers, and heritage sites, especially during the busiest periods of work. However, construction will only take place during daytime hours, and the disturbances will be short-term and limited to areas close to the worksites.

The wastewater treatment plant (WWTP) is located about 850 meters from the nearest homes, which is well beyond the 400-meter Special Protection Zone. This means that residents near the WWTP are unlikely to be significantly affected by noise or dust from construction activities.

Overall, the sensitivity of nearby communities to noise and dust is considered moderate—they may notice some disruption but are generally able to cope with it. The actual impact is expected to be low, as the disturbances will be temporary and well managed. With proper safeguards in place, the overall risk is considered moderate and manageable.

4.7 Soil

Shaki region is known for its rich and varied soil types, shaped by the area's changing elevation, topography, and climate. This diversity supports a wide range of agricultural activities—from grain and vegetable farming in the valleys to fruit orchards and vineyards on the slopes, and summer grazing in the highland pastures. Fertile soils, combined with good irrigation and sustainable land management, are key to maintaining the region's productivity and ecological balance.

During construction, activities like excavation, grading, and quarrying will disturb the topsoil and remove vegetation, increasing the risk of erosion from wind and rain. Sediment runoff could affect water quality, harm aquatic life, and clog drainage systems. If stockpiles are poorly managed or soils are compacted, erosion and runoff may worsen. Unrestored quarry sites could also lose long-term productivity and create dust and visual impacts.

These risks are considered moderate but manageable. They can be reduced through practical measures such as installing silt fences and sediment traps, using temporary vegetation cover, phasing land clearing, and avoiding major earthworks during rainy periods. Restoring disturbed areas after construction is essential to prevent long-term damage.

In the operational phase, soil impacts are expected to be minimal, provided that construction areas are properly rehabilitated. Permanent infrastructure will not affect soil under normal conditions, though small-scale erosion could occur if stormwater is not well managed or vegetation is not fully restored. Occasional maintenance work may cause minor disturbance, but with good drainage systems, vegetation cover, and regular inspections, the overall risk to soil during operation is considered low.

4.8 Waste Management

Construction works can create a lot of waste—like leftover materials, packaging, and even dirty water. If this waste isn't handled properly, it could pollute the soil and water and even affect people's health. But with good planning and regular clean-up, these problems can be avoided.

Before construction begins, the building team will work with the local government to choose safe places to take the waste. Any extra soil or broken materials will be taken away and disposed of properly. If any areas are found to be contaminated by old, damaged pipes or wastewater, they'll be cleaned up carefully to avoid spreading pollution.

To keep things under control, the team will follow three key steps:

- **Reduce Waste**: By planning well and using smart building methods, they'll try to create as little waste as possible.
- **Reuse and Recycle**: Materials like metal, wood, and soil will be sorted and reused or recycled whenever possible.
- **Safe Disposal**: Anything that can't be reused will be taken to approved waste sites.

Even though the area around the project includes homes and water sources, the local waste system is strong enough to handle the extra waste—so long as the team sticks to the plan. Overall, the risk is moderate but manageable.

Once the building work is done, much less waste will be produced. Most of it will come from routine maintenance, like fixing pipes or cleaning equipment. The biggest type of waste will be sludge (a thick, muddy material) from the wastewater treatment plant.

4.9 Consistency with Policy, Law and Other Plans

The Project will comply with Azerbaijan's national legislation, the EBRD's Environmental and Social Policy (ESP) and Performance Requirements (PRs) in line with environmental, social and economic objectives. It will also be designed and implemented in line with local government and municipal plans.

4.10 Environmental Management Plans, Mitigation Measures and Compensatory Measures

A detailed Environmental Management Plan (EMP) will be prepared to manage the environmental impacts of the Project. This plan will include measures to be implemented to prevent environmental degradation during construction and operations. Mitigation measures will include measures to minimize potential impacts identified in areas such as water resources, air quality, soil health and biodiversity.

5. Social Benefits, Adverse Impacts and Mitigation Measures

5.1 Local Economy

The Project will deliver modest economic benefits, particularly during construction, through local procurement, temporary employment, and improvements to infrastructure. In the longer term, more reliable water and wastewater services are expected to contribute to better public health, smoother business operations, and an overall improved quality of life for the people of Shaki city and surrounding three villages.

During the construction phase, the project will generate some positive economic effects. The purchase of goods and services such as construction materials, transport, accommodation, and catering will provide income opportunities for local suppliers. Temporary employment for unskilled and semi-skilled workers will also bring additional earnings to local households, potentially increasing spending in the community and supporting small businesses. Minor upgrades to roads, utilities, or access routes required for construction may create further indirect benefits for residents and businesses.

However, there may also be temporary and localised drawbacks. Without proactive involvement of local businesses in procurement, there is a risk that contracts could be awarded mainly to outside companies, limiting the local share of benefits. Construction activities might also disrupt nearby businesses and informal vendors, particularly those dependent on street access and customer visibility, such as sellers of the well-known Shaki paxlava. These disruptions could include noise, dust, traffic congestion, and restricted access.

Overall, the local economy is considered resilient enough to withstand these short-term impacts, and the scale of any negative effects is expected to be minor. The positive effects of job creation and increased demand for services are likely to balance out the temporary inconveniences. From an environmental perspective, impacts during construction will be similar to those seen in typical urban works, such as emissions from vehicles, noise from machinery, and short-lived disturbances. As construction will take place within urban and semi-urban areas, no significant loss of biodiversity is anticipated.

In the operational phase, the project's economic impacts will be more limited but will still offer important long-term benefits. A reliable supply of clean water and effective wastewater services will reduce service interruptions, improve hygiene, and create a more attractive climate for doing business. Stronger utility infrastructure can help encourage investment and stimulate sectors such as agriculture, food processing, hospitality, and small-scale manufacturing. The continued provision of these services may also provide modest revenue for local authorities through user fees or service charges, which can be reinvested in local development.

In summary, the Project is expected to bring short-term economic opportunities alongside minor disruptions during construction phase, while the operational phase will deliver steady, indirect benefits to both the economy and public well-being. With strong engagement of local businesses and effective monitoring, the project can make a positive contribution to Shaki's economy while avoiding significant or lasting harm.

5.2 Employment

The project is expected to employ around 1,200 people at its construction peak, with most roles filled by local workers. This presents a strong opportunity for job creation and skill development, particularly for semi-skilled and unskilled labourers. If managed inclusively and in line with international labour standards, the project could support poverty reduction, workforce development, and social inclusion.

During construction, the benefits are clear—local hiring can boost household incomes and provide valuable experience through on-the-job training and mentoring. However, risks such as occupational health and safety issues and limited skill transfer must be addressed. Ensuring safe working conditions and promoting inclusive employment practices, especially for women and youth, will be key to maximizing long-term benefits.

The project's impact is expected to be highly positive, especially if inclusive hiring and training are prioritized. Overall, the construction phase offers a strong positive contribution to employment and skill development.

In the operation phase, no major changes in employment or skill development are expected, making its impact neutral.

5.3 Working Conditions, Labour Management and Occupational Health and Safety

During the construction phase of the project, a temporary worker accommodation site may be established to house non-local employees. While most workers are expected to be hired locally, any accommodation must be carefully located away from residential and heritage areas to avoid disturbing the community. If not properly planned, such camps could affect local health, safety, and social dynamics. However, with appropriate measures—such as limiting occupancy, ensuring secure and hygienic living conditions, and providing access to essential services—the risks are considered low to medium and manageable.

Occupational health and safety (OHS) is a key concern throughout the project, especially during construction activities like excavation, pipe-laying, and infrastructure installation. These tasks carry risks such as physical injuries, exposure to dust and noise, electrical hazards, and stress from demanding work conditions. Azerbaijani law requires employers to maintain safe workplaces, provide protective equipment at no cost, and ensure workers are trained in safety procedures. Employers must also investigate and report any accidents or illnesses and inform workers of their rights and responsibilities.

The project will be supported by dedicated OHS specialists from ADSEA, DFC, RWAS and Shaki Azerbaijan Amelioration and Water Farm OJSC , who will oversee safety training and compliance. Risks to both workers and nearby residents are considered moderate due to the nature of the work and the urban setting. Effective safety management—including proper equipment use, regular training, and strict enforcement of safety protocols—will be essential to protect health and minimize accidents.

No worker accommodation is expected during the operational phase, and occupational risks will be significantly lower, with standard procedures in place to manage routine maintenance and operations safely.

5.4 Land Use and Land Acquisition and Resettlement

5.4.1 Land Use

Shaki city and nearby villages show a mix of traditional, historical, and agricultural land uses.

In **Shaki city**, residential areas range from dense historic neighbourhoods with traditional houses and gardens to newer developments in the south. The city has active commercial zones, including local markets and shops in the historic center, and is well connected by main roads (R9 and R57). The project area includes part of the UNESCO-listed Yukhari Bash Historical and Architectural Reserve and many local monuments.

Kish village, about 5 km north of the city, is known for the ancient Church of Kish and other heritage sites. Land is mainly used for residential plots, terraced gardens, walnut and persimmon orchards, and small vineyards. Development here must protect the village's scenic, cultural, and environmental features.

Okhud village is an agricultural community with grain fields, vegetable plots, orchards, and pasturelands. Farming is traditional and relies on seasonal labour, with concerns about water overuse and soil depletion.

Gokhmud village has dispersed homes, forest edges, pastureland, and rainfed agriculture. Livelihoods depend on livestock, beekeeping, and haymaking. The area's natural landscape is valuable but sensitive to overuse, requiring careful management and preservation of traditional practices.

It is understood that some households within the Project's Area of Influence (AoI) may lack formal documentation, such as planning approvals or proof of land tenure. While the exact number is currently unknown, this could affect their ability to connect to the water supply network, as current procedures typically require such documents.

To address this, a socio-economic survey will be conducted to identify any undocumented households. This will help assess the risk of exclusion and guide appropriate mitigation measures, including engagement with authorities and affected communities, to support fair access to services in line with EBRD Performance Requirements and international good practice.

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5.4.2 Land Acquisition

Although the project design has prioritized avoiding and minimizing land-related impacts through careful alignment of infrastructure along public roads and government-owned land, some degree of permeant and temporary land acquisition and access restrictions remains necessary to enable successful implementation of the project. Therefore, EBRD Performance Requirement 5 (PR5) is considered applicable to the Project.

Permanent land acquisition is primarily associated with the construction of four out of six planned water reservoirs in the villages of Kish, Okhud, and Gokhmuk, while the construction of water and wastewater networks, particularly in densely populated urban areas like Shaki and surrounding villages, particularly narrow, irregular, and winding streets, is expected to result in temporary land access impacts.

In some cases, servitudes may be required, especially in areas where infrastructure (water and sewage lines) must pass through or alongside private property. However, they should be minimized through careful engineering solutions and should be accompanied with community engagement and compensation where applicable. Furthermore, many existing structures in these neighbourhoods are aged and potentially vulnerable to ground disturbance. The primary risk arises from excavation activities, which could affect the structural integrity of nearby buildings. These risks will be systematically assessed and mitigated during implementation.

The Resettlement Policy Framework (RPF) provides an identification of potential land-related impacts based on the preliminary assessment performed. This RPF will inform planning and mitigation strategies. However, further assessment should be undertaken including a land impact assessment as part of the feasibility and preliminary design stages to flag high-risk zones.

Overall, the project presents a moderate risk during construction. While impacts are not large-scale, the land acquisition, potential for structural damage and disruption in a vulnerable urban setting warrants careful planning and mitigation.

Potential land impacts are concentrated in construction stages and operation of the project is not expected to have any land acquisition and resettlement impacts.

5.5 Impacts on Existing Infrastructure

The project will affect public infrastructure in both helpful and challenging ways during construction and operation. While building is underway, there may be extra pressure on housing, especially if non-local workers move into the area. This could lead to higher rents and strain shared services like water and electricity. Although no one will need to move permanently, some homes may need small repairs or upgrades. Over time, improved infrastructure could raise property values, but careful city planning will be needed to manage any lasting effects from the temporary workforce.

Roads and transport systems may be disrupted by construction vehicles and heavy machinery, which could damage streets and make walking less safe. On the positive side, temporary road improvements might make it easier to get around. Once the project is finished, better water and wastewater systems should help reduce flooding and improve travel, though maintenance vehicles could still cause minor issues if not properly managed.

Electricity services might temporarily be affected during construction, but new connections could improve access in some areas. In the long run, reliable electricity will be important for running water and wastewater systems. However, if improvements aren’t shared fairly, some communities could be left behind.

Water and sewer systems will be upgraded, which will improve hygiene and help prevent disease—especially for vulnerable groups like children, women, and low-income families. Still, there are risks from maintenance traffic and handling of chemicals used in water treatment, which must be managed carefully.

Healthcare and social services may be stretched during construction due to a short-term increase in population. Clinics and schools could become crowded, and those with fewer resources may be most affected. Over time, better sanitation and urban services could ease this pressure, but only if planning is inclusive and benefits are shared fairly.

Overall, the project presents a moderate risk during construction and a low risk during operation. With good planning and fair policies, the benefits can be maximized while keeping disruptions to a minimum.

5.6 Traffic and Accessibility Management

During the construction phase, frequent movement of materials, equipment, and personnel as well as temporary road closures for pipe laying in smaller streets may temporarily disrupt local transportation systems. This includes increased traffic volumes, potential congestion, and reduced pedestrian safety—particularly in residential areas with narrow streets. The use of heavy vehicles may also contribute to road deterioration, including potholes, erosion, and surface wear.

On the positive side, temporary road upgrades implemented to support construction activities may improve local accessibility and reduce travel times for residents. These improvements, although short-term, could offer lasting benefits if properly maintained.

In the operational phase, the upgraded water and wastewater infrastructure is expected to significantly reduce flooding and street deterioration. This will enhance urban mobility, improve access to essential services, and contribute to safer, more reliable transportation networks.

However, without effective traffic management, ongoing vehicle movements related to system maintenance and operations could continue to disrupt traffic flow and pose safety risks. Proactive planning—including designated routes, scheduling of maintenance activities during off-peak hours, and clear communication with local communities—will be essential to mitigate these impacts.

ADSEA will ensure the contractor develops and implements a Traffic Management Plan in line with EBRD Environmental and Social Policy and Performance Requirements. The plan must be prepared at least 30 days before construction begins and will include staff training on its implementation. Key elements of the plan include:

- A phased construction schedule, work start and end dates and an overview of current conditions near construction sites.
- Identification of impacted areas and proposed mitigation measures.
- Traffic diversion strategies, such as material transport routes, entry/exit points, parking areas and intersections.
- Temporary pedestrian and vehicle pathways, signage and traffic control measures (e.g., barriers and warning systems).
- Routes for oversized vehicles, construction access, loading/unloading zones and supply vehicle roads.
- Anticipated interactions between pedestrians and vehicles, with related safety measures.
- Responsibilities of personnel for traffic management and emergency response procedures.
- Community information via brochures, posters and direct communication at local centers.
- Minimization of peak-hour disruptions and training for project drivers on road safety and traffic rules.
- Adherence to vehicle weight limits and transportation of hazardous materials by licensed carriers.
- Coordination with local authorities on heavy vehicle routes and advance public communication.
- Securing construction sites to prevent unauthorized access and repairing any road damage caused by the Project.
- Restoration of impacted roads post-construction and installation of clear traffic and warning signs.

Work will be restricted to daytime hours, with special considerations for vulnerable groups during route planning.

5.7 Contractor Management

Contractor management will ensure safety, comply with environmental standards and ensure compliance with Turkish laws and international EBRD Performance Requirements. Contractors will be held accountable for meeting these standards, particularly in terms of labour rights and occupational health and safety.

5.8 Community Health and Safety

The project is expected to influence community health, safety, and security in both positive and negative ways, particularly in densely populated urban areas. During the construction phase, increased movement of heavy machinery raises the risk of traffic accidents, especially on narrow roads. Dust, noise, and emissions may worsen air quality and affect vulnerable groups like children and the elderly. The arrival of non-local workers could increase the spread of communicable diseases and potentially lead to social tensions if not managed through proper engagement and grievance mechanisms.

Given the broad exposure and vulnerability of the local population, the overall risk during construction is considered high and requires strong mitigation measures, including traffic management, public health monitoring, and community engagement.

In the operational phase, the project is expected to bring long-term health benefits through improved sanitation and water infrastructure. These improvements will help reduce waterborne diseases and enhance hygiene, especially benefiting women, children, and low-income households. However, risks remain from maintenance vehicle traffic and the handling of hazardous materials used in water treatment. These risks are more localized and affect specific groups, making the sensitivity medium and the impact low. Overall, the operational phase presents a minor risk, manageable through standard safety procedures and regular monitoring.

5.9 Vulnerable and Disadvantaged Groups

Measures will be implemented to protect vulnerable groups during construction. For children and the elderly, construction zones will be clearly marked and safe, accessible pathways will be provided. Low-income groups will have minimal disruption to transportation routes and any structural damage to nearby housing will be monitored and compensated. For individuals with disabilities, accessible routes and regular updates will be provided, with temporary transportation services to minimize disruption and ensure access to essential services.

5.10 Cultural Heritage, Impacts and Management Measures

Shaki, located on the historic Silk Road, has been a hub for trade and cultural exchange for centuries. This history is reflected in its diverse architecture, shaped by Safavid, Qajar, and Russian influences. The city's most famous heritage sites are in the Yukhari Bash State Historical and Architectural Reserve, created in 1967. This area includes the Historic Centre of Shaki and the Khan's Palace, both inscribed as UNESCO World Heritage Sites in 2019. About 20% of Shaki's population (around 13,500 people) live in the reserve, making it a densely populated historic urban area.

Within the reserve, there are 9 monuments of national importance, 1 archaeological site, 1 monumental park, and over 200 locally significant historic buildings such as traditional houses, workshops, and factories. The historic center sits in a mountainous setting, with traditional Shaki houses—known for high roofs, wide balconies, and gardens—blending harmoniously with the natural landscape.

Part of the project will take place in culturally sensitive areas of Shaki City, including zones within or near the Shaki Historical-Architectural Reserve, which contains a UNESCO World Heritage Site and numerous protected monuments. Several segments of the planned infrastructure works are located within both the UNESCO World Heritage Site boundary and its designated buffer zone. This overlap confirms that portions of the Project will be implemented in areas of high cultural sensitivity, requiring strict adherence to heritage protection protocols and coordination with relevant authorities to avoid adverse impacts on the site's Outstanding Universal Value (OUV).To safeguard these heritage assets, the project team has consulted with the Reserve's administration and will ensure all activities comply with national heritage protection standards.

UNESCO guidelines emphasize the need for Heritage Impact Assessments (HIAs) prior to any development within or near World Heritage properties. These assessments must evaluate direct, indirect, and cumulative impacts on the site's OUV and propose alternatives or mitigation measures where necessary.

The Reserve spans 283 hectares, with 120 hectares designated as UNESCO-protected, and includes 83 officially registered historical monuments. Some planned water and wastewater infrastructure works will occur within or adjacent to these areas, making it essential to coordinate all design and construction activities with the State Tourism Agency and the Reserve Management Center.

While the project is designed to avoid direct damage to monuments, potential risks of construction include physical damage to historical structures due to excavation, vibration, or accidental contact, visual and

landscape impacts which could alter the aesthetic integrity of the heritage setting, restricted access to cultural sites affecting tourism and local community use, and disturbance to undocumented archaeological layers beneath the surface

= Another culturally important monument in the project area is Kish Albanian Church, nationally protected cultural monument situated in Kish village. Construction activities near the Kish Albanian Church may pose several risks, including ground vibration and potential structural disturbance resulting from excavation and trenching works. These activities could also affect the visual and aesthetic integrity of the surrounding heritage landscape, which is an important aspect of the monument's cultural value. Additionally, access to the church may be temporarily restricted during construction phases, potentially impacting both local visitors and tourists.

These impacts are considered moderate in magnitude. Overall, the risk to cultural heritage is moderate but manageable through careful planning, close collaboration with heritage authorities, and strict mitigation measures.

5.11 Social Management Plans, Mitigation Measures and Compensatory Measures

Management plans, mitigation measures and compensatory measures to be implemented in the Project, to minimize the impacts of the Project on the society. Relevant management plans will be prepared to address and manage social impacts throughout the Project lifecycle. These plans include stakeholder engagement, grievance mechanisms and managing social risks that may arise during construction and operation. ADSEA/PIU's Social Expert will be responsible for overseeing the implementation of the related management plans, ensuring the effective handling of social issues identified in the ESA report and managing the grievance mechanism (GM). The existing 955 Hotline, along with the ADSEA's website and other communication channels, will serve as the primary tool for receiving grievances and ensuring timely responses. ADSEA/PIU will track and address complaints, with an organized process for verification, investigation and feedback.

Mitigation Measures. A selection of specific mitigation measures to reduce negative social impacts are described in the ESA report. These measures will focus on minimizing disruptions to local communities, preventing adverse effects on vulnerable groups and enhancing the positive social outcomes of the Project. Some of the key mitigation actions include:

- Implementing occupational health and safety measures for workers and nearby communities.
- Ensuring proper stakeholder engagement through ongoing consultation and participation in decision-making processes.
- Heritage Impact Assessment.
- Preparation of a Resettlement Action Plan (RAP) in accordance with the RPF and national law as well as a Project level GRM to handle complaints related to land access, compensation, and construction disturbance.

Managing potential impacts on local infrastructure, such as roads and water services, by ensuring proper coordination with the relevant authorities.

Compensatory Measures. If adverse social impacts cannot be fully mitigated, compensatory measures will be employed. These measures may include:

- Compensation for any involuntary land acquisition or displacement, ensuring fair compensation and resettlement assistance for affected individuals and communities.
- Offering alternative livelihood support and restoration programs for individuals whose livelihood may be affected by the Project activities.
- Continuous monitoring of affected communities during both the construction and operational phases to ensure compensation is sufficient and effective.

These plans and measures aim to ensure that the social impacts of the Project are well-managed, any negative impacts are minimized and communities that are affected by the Project are properly supported. Regular

monitoring and reporting will be conducted to assess the effectiveness of these measures, ensuring compliance with the ESAA report and relevant regulations.

5.12 Monitoring of Impacts

The Project will implement a structured monitoring programme to track environmental and social impacts across all phases—pre-construction, construction, and operation. These activities are designed to ensure compliance with national legislation, EBRD Performance Requirements, and international best practices. A summary of the planned monitoring activities is provided below:

Air Quality: Dust and particulate matter (PM10) levels will be monitored during both construction and operation phases. Maintenance records and exhaust emission decals for all machinery and equipment will be reviewed regularly. Community complaints related to air quality will be logged and investigated.

Soils and Land Use: Incidents involving spills or leakages will be recorded, along with corrective actions taken in line with applicable standards. Complaints regarding land use and potential soil contamination will be monitored and addressed.

Environmental Noise: Noise levels (in decibels) will be measured in response to complaints, with particular attention to working hours and proximity to sensitive receptors. All noise-related grievances will be documented and evaluated.

Waste Management: Throughout the Project lifecycle, implementation of the waste management plan will be monitored, including records of waste generation, handling, and temporary storage. Compliance with disposal protocols will be verified to ensure environmentally sound practices.

Landscape and Visual Impacts: During construction, grievances related to changes in landscape character or visual disturbance will be recorded and addressed through appropriate mitigation measures.

Land Acquisition and Resettlement: During construction, implementation of the RAP will be monitored and grievances related to land access, compensation and construction disturbance will be recorded and addressed through timely resolution procedures.

Cultural Heritage: During construction, monitor implementation of Cultural Heritage Management Plan, monitor vibration levels, and register any reported “chance finds” in line with the Chance Finds Procedure.

Community Health, Safety, and Security: Regular site inspections will be conducted to assess traffic management and general safety conditions. Records of stakeholder engagement activities and community grievances will be maintained to ensure responsive and inclusive project implementation.

Labour Force and Working Conditions Monitoring will include tracking incidents related to labour conditions, documenting training requirements and hours delivered, and maintaining records of worker grievances. Agreements with contractors and subcontractors will be reviewed to ensure compliance with labour standards.

Occupational Health and Safety (OHS): Accident reports, employment records, and training logs will be maintained during construction and operational phases. Emergency preparedness procedures will be implemented and reviewed periodically. Personnel grievances and the validity of environmental and OHS permits will also be verified.

Performance Review and Adaptive Management: Periodic reviews of the Environmental and Social Assessment (ESA) report and associated management plans will be conducted to assess performance and identify areas for improvement. Monitoring data will be used to refine mitigation strategies and respond to unforeseen impacts in a timely and effective manner.

This continuous monitoring approach will ensure that environmental and social risks are proactively managed, and that mitigation measures remain effective and responsive throughout the Project’s lifecycle.

6. Stakeholder Engagement

Within the scope of the ESAA studies carried out for the Project, the Stakeholder Engagement Plan (SEP), which is a public document, was prepared. The SEP was developed as a public document to present stakeholder engagement, consultation and disclosure plans, including the requirements of national environmental legislation and relevant international environmental and social standards, as well as the EBRD PR10 Environmental and Social Sustainability targets.

Community Liaison Officer (CLO) will be assigned by the Contractor to manage the implementation of SEP and handle grievance mechanism.

In the context of the Project, it's crucial to identify stakeholders early on to inform them about the Project and ensure their active involvement.

Specifically, the following individuals and groups should be informed:

- Individuals likely to be directly or indirectly affected by the Project
- Entities with an interest in the Project
- Entities with potential to influence Project outcomes or company operations Additionally, it's essential to identify vulnerable or disadvantaged groups likely to be impacted by the Project during stakeholder identification. Potential stakeholders who may be affected by or influence the Project include:
- National and local public institutions and organizations
- Non-Governmental Organizations
- Local residents
- Local businesses
- The Project personnel, including contractors

7. Grievance Mechanism

7.1 External Grievances Mechanism

Azerbaijan State Water Resources Agency (ADSEA) operates an external grievance mechanism to handle complaints and requests related to water supply and wastewater services in Shaki. This system is managed both at ADSEA headquarters and by the Shaki regional department, allowing residents to raise issues through several accessible channels.

The main platform is the ADSEA 955 hotline, which connects callers to a central call centre in Baku. This service operates 24 hours a day, seven days a week for both landline and mobile phone users. The Shaki regional department also responds to calls from 9:00 to 21:00 daily. When a complaint is made, it is logged in ADSEA's internal system, and a work order is created. Relevant regional staff can view the issue and take action. Once resolved, the outcome is recorded in the system.

Residents can also submit grievances via the following channels:

- The Grievance Focal Person, Mr. Cavid Mehdiyev:
- Email – cavid.mehdiyev@toom.gov.az
- Telephone – +994124314767(1094)
- Address – 69 A Moscow Ave, 5th floor, Baku, Azerbaijan, AZ1012
- social media platforms such as Facebook, Instagram and LinkedIn:
    - Facebook - **Azərbaycan Dövlət Su Ehtiyatları Agentliyi.**
    - Instagram – @adesa.gov.az
    - **LinkedIn - https://www.linkedin.com/company/adsea-gov-az/_**;
  - Online application on ADSEA website - https://adsea.gov.az/elaqe/onlayn-muraciet
  - Online chat box on ADSEA website - https://adsea.gov.az
  - ADSEA e-mail at info@adsea.az
  - Grievances received at the ADSEA office in Shaki by General Department as well as through phone calls at +99424 24443730[1] .
  - Through **e-su.az** portal which is a single platform to increase the accessibility and ease of services provided to subscribers and citizens in general, increasing their efficiency through digitising applications.
- Contractor Community Liaison Officer (CLO) – Once selected and mobilized, the contractor will include the contact details of its Community Liaison Officer in the RFP and share it with project stakeholders.

This multi-channel approach ensures that the public has several convenient ways to raise concerns and follow up on service issues, improving responsiveness and accountability. All grievances are logged, tracked, and resolved within a defined timeframe, with outcomes communicated to complainants. Confidentiality can be maintained if preferred.

7.2 Worker Grievance Mechanism

According to ADSEA, there is not a special grievance/appeals mechanism at Shaki Water Reclamation Systems Operation Department. Rather, staff grievances are to be solved by the HR department locally and

[11] The telephone number is reflected on the debt notification receipt given to subscribers.

at the ADSEA headquarters. ADSEA including Regional Water Melioration Service PLE and Shaki Water Reclamation Systems department staff can submit grievances to the Director, the HR department and the trade union representative at Shaki Water Reclamation Systems department as well as to the ADSEA headquarters.

The PIU should establish and implement a specific employee grievance mechanism within Shaki Water Reclamation Systems Operation Department. This should include registration of grievances but still allow for grievances to be treated confidentially, when preferred by employees. A clear description of the employee grievance mechanism should be prepared, including the role of the trade union committee, and dissemination of this information to all employees. Additionally, it should ensure that contractors and consultants hired for the Project follow the Azerbaijani legislation and EBRD PR 2 requirements inclusive of access to a grievance mechanism.

8. Associated Facilities

In line with EBRD Performance Requirement 1, the Environmental and Social Assessment has identified several associated facilities that, while not financed by EBRD, are essential for the successful implementation and operation of the Shaki Water and Wastewater Project. These include quarries and borrow pits, access roads, water abstraction and discharge points, power supply infrastructure, and temporary worker accommodation, all of which are either constructed, expanded, or operated in direct support of the project.

The environmental and social risks and impacts of these facilities have been assessed to ensure alignment with the objectives of the EBRD Performance Requirements (PRs) and Good International Practice (GIP). Key risks include dust and noise emissions, biodiversity disturbance, land use restrictions, and community health and safety concerns. Where applicable, mitigation measures, such as erosion control, traffic management, stakeholder engagement, and grievance mechanisms, have been incorporated into the project's Environmental and Social Action Plan (ESAP) and Environmental and Social Management System (ESMS).

Although these facilities may be operated by third parties, ADSEA will exert influence to ensure that their management practices are consistent with EBRD standards. Monitoring and reporting obligations extend to associated facilities, and stakeholder engagement activities include consultation with communities potentially affected by their operation. This integrated approach ensures that the project's broader footprint is managed responsibly and sustainably.

Furthermore, institutional arrangements will be reinforced through the establishment of a Project Implementation Unit (PIU), supported by a Community Liaison Officer and a Communication Coordinator, to oversee compliance, capacity building, and reporting. These measures collectively ensure that associated facilities are not only functionally integrated into the project but also meet the environmental and social expectations set forth by EBRD and international best practice.