

# Sarimay-Muruntau OHTL

## Environmental & Social Impact Assessment (ESIA): Volume I – Non-Technical Summary

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## Abbreviations

AOI	Area of influence
CC	Civil Code
CHS	Community Health and Safety
CSEE	Center for State Ecological Expertise
EBRD	European Bank for Reconstruction and Development
EHS	Environment, Health and Safety
EIA	Environmental Impact Assessment
EMF	Electric and Magnetic fields
EPC	Engineering, procurement and construction
E&S	Environmental and Social
ESAP	Environmental and Social Action Plan
ESIA	Environmental and Social Impact Assessment
ESMP	Environment and Social Management Plan
ESMS	Environmental and Social Management System
ESP	Environmental and Social Policy
GBV	Gender-Based Violence
GIP	Good International Practice
GM	Grievance Mechanism
ILO	International Labor Organisation
LARF	Land Acquisition and Livelihood Restoration Framework
LC	Land Code
LILO	Line-in Line-out
MEEPCC	Ministry of Ecology, Environment protection and Climate Change of the Republic of Uzbekistan
NEGU	National Electric Grid of Uzbekistan
NTS	Non-Technical Summary
O&M	Operations and Maintenance
OHS	Occupational Health and Safety
OHTL	Overhead transmission line
PIT	Project Implementation Team
PR	Performance Requirement
ROW	Right of Way
SanPiN	Sanitary Regulations and Norms of Uzbekistan
SEFG	Southern even-fingered Gecko
SEP	Stakeholder Engagement Plan
S-M	Sarimay-Muruntau
SS	Substation

## Preface

The European Bank for Reconstruction and Development (the “EBRD” or the “Bank”) is considering providing a sovereign loan to the Republic of Uzbekistan to Joint-Stock Company National Electric Grid of Uzbekistan (JSC NEGU) to finance the construction of a 500 kV overhead transmission line (OHTL) (the “Project”) in Uzbekistan between the existing Sarimay substation (SS) in Khorezm region and the Muruntau SS in Navoi region (see Figure 1).

EBRD has appointed Juru Ltd. (“Juru” or the “ESIA Consultant”) to perform an Environmental and Social Impact Assessment (ESIA) for the Project following the EBRD Environmental and Social Policy 2019 (ESP 2019) and supporting Performance Requirements (PRs).

This document provides a Non-Technical Summary (NTS) of the ESIA findings. This NTS aims to present clearly and simply the draft findings and conclusions of the environmental and social (E&S) impact assessment process, including the outcomes of the public consultation process.

EBRD has categorized this Project as Category A. Category A projects require a comprehensive ESIA and associated documents. The ESIA is organized as follows:

- Volume I: Non-Technical Summary (NTS) (this document)
- Volume II: ESIA Main Report
- Volume III: ESIA Technical Appendices
- Volume IV: Framework Environmental and Social Management Plan (ESMP)
- Volume V: Stakeholder Engagement Plan (SEP)
- Volume VI: Land Acquisition and Livelihood Restoration Framework (LARF)

The ESIA process, as reflected in this NTS, includes the outcomes of public meetings arranged with responsible organizations, land users, and people from the nearest communities to the Project to communicate the findings of the draft ESIA. The draft final ESIA and SEP provide a complete summary of this consultation. The ESIA package, including this NTS, will now be publicly disclosed on the Lender website for 120 days for further opportunity to comment and feedback on the outcomes of the E&S assessment process.

Following the Resolution "On the State Ecological Expertise", approved by the Resolution of Cabinet of Ministers No. 541 "On further improvement of the environmental impact assessment mechanism" (2020), a national Environmental Impact Assessment (EIA) Study has been submitted for approval by the state unitary enterprise "The Center for State Ecological Expertise" of the MEEPCC. At this time the approval is pending.

A copy of this NTS in Uzbek can be viewed at the locations listed below:

- Khokimiyat Offices in Tuprokkala, Turtkul, Peshku, Uchkuduk and Tamdi districts;
- Uzunkuduk, Nukus and Sarimay community offices.

Questions or comments can also be addressed via the channels outlined below.

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# 1 Introduction

## 1.1 Overview of the Project

The Sarimay-Muruntau 500 kV overhead transmission line Project (S-M OHTL or “the Project”) proposed by JSC NEGU is located in the southwestern part of the Kyzylkum Desert (Figure 1). It starts from the existing Sarimay substation (SS) in the Khorezm region (Figure 2), which is close to both the Nukus village (approximately 300 meters) and the Sarimay village (approximately 4.3 kilometres) and extends to a planned Muruntau substation (under construction) located in the Navoi region. A 60 m health protection zone (HPZ)<sup>1</sup> must be maintained (30 m on either side of the OHTL centre line) to comply with setback requirements under national legislation.



Figure 1: General landscape of the OHTL route

JSC NEGU will develop the Project with support from private investment. An Engineering, Procurement and Construction (EPC) contractor will perform the design, construction and commissioning work on behalf of JSC NEGU following an open tender process.

The main components of an OHTL are the towers, foundations, and conductors.

- Towers are typically suspension, angle or terminal towers that can either be self-supporting or guyed towers with a tower height of approximately 30 to 40 m.
- Foundations are required to fix the towers in place; the foundations may be up to two meters deep, depending on geotechnical requirements.
- Conductors are the lines that string between each tower that transmit the electricity. The distance between each tower is the span; typical spans are between 300 m and 400 m.



Figure 2: Sarimay Substation

Activities required to support the OHTL construction works will include:

- End-user works at the Sarimay SS (within a newly expanded area to be constructed under a separate Project).

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<sup>1</sup> Can also be described as the right of way (ROW) or servitude



- End-user works at the Muruntau SS — expected to be within the planned SS site boundary (currently under construction);
- Establish 60 m ROW under the OHTL (including the provision of any related livelihood compensation);
- Upgrade the existing track or new access track suitable to provide access to the OHTL ROW from the existing road that runs parallel to the OHTL.

The mobilization and construction phase will take 12-18 months, followed by 3 months of testing. Works at substations will be shorter and timed to finish before OHTL commissioning. Construction will take place between Spring 2024 and Spring 2026. The project cycle has 4 stages: pre-construction, construction, operation, and decommissioning. Construction progresses sequentially along the line by teams of 10-20 workers. Main activities are site clearance, vehicle access, civil works, steel delivery, tower construction, conductor stringing, and commissioning. Workers' accommodation will be a temporary work camp near Sarimay or Muruntau SS or in the nearby settlements of Sarimay and Nukus. At this time the construction water source is unknown, but abstraction from community points adjacent to the route or groundwater abstraction are not envisaged at this time. Materials and equipment will be delivered to the nearest railway station and then to the site using trucks. The construction workforce will not exceed 200 people during peak and could be considerably less. Limited opportunities for local employment may be available during construction. During operation and maintenance JSC NEGU will operate the OHTL. Maintenance works will be intermittent and within the right of way. The expected lifetime of the infrastructure is 30-40 years. Options will be considered at the end of its lifetime to replace or remove all infrastructure.

Table 1: Project schedule

<b>Activity</b>	<b>Date</b>
Project Categorization	August 2023 (completed)
Scoping and route definition	October 2023 (completed)
Consultation on draft ESIA	December 2023 (completed)
Finalization of the Submission of draft ESIA	February 2024
EBRD 120-day disclosure period	March to May2024
Finalise ESIA (including public consultation comments and ongoing studies)	June-August 2024
Financial close	Autumn 2024 (Q3)
Pre-mobilization (finalization of route corridor, tower micro-siting, planning and design)	Winter 2024
Construction Start	Spring 2025

Construction End	Spring 2026
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## 2 Project Need and Alternatives

### 2.1 Project need

The Government of Uzbekistan aims to increase its power supply and has adopted the 2030 Energy Strategy, which defines several objectives and directions for electricity supply between 2020-2030, including the rapid development of renewable energy projects.

2030 Energy Sector Strategy sets a key objective to *"develop and expand renewable energy use and its integration into the unified power system"* (BDS18-237(F))

Green Economy Transition promotes *"cleaner production and distribution of energy through greater energy and resource efficiency"* (BDS15-196(F))

The development of the Project is supported by the Resolution of the President of the Republic of Uzbekistan dated 28.12.2022 № PP-459 "Measures for implementation of the Investment Program of the Republic of Uzbekistan for 2023-2025", the future Project is mentioned in the item 27 of the appendix 9.

The Project will strengthen the power supply stability between the Southwestern and North-Western regions of the country and support the wider integration of renewable energy projects to the national grid.

### 2.2 Alternative options

Alternative concepts and route options have been considered, including the "do nothing" option. It was determined that there was no viable alternative strategic option available for the wider grid strengthening in the North-West. The S-M OHTL plays a key role in connecting the North-Western region to the rest of the 500 kV network. The S-M OHTL route corridor itself is defined by the start and endpoints of the OHTL and the existing road that runs between Sarimay and Muruntau. Minor route variations have been applied to avoid one farmstead located in the ROW and mining areas.

Final decisions on the design of the Project components (towers, insulators) and tower siting as described in the draft ESIA may be subject to change by the EPC Contractor selected to deliver the Project. This ESIA has identified specific design mitigations for inclusion in the EPC specification (e.g. electrocution friendly pylon design and bird diverters). These are noted in the ESMP and will be integrated into the EPC contract for implementation during the Project's next phase.

### 3 Assessment Approach

#### 3.1 Assessment framework

The Project has been assessed against the national regulatory framework and the requirements of EBRD Environmental and Social Policy (ESP) 2019, the supporting Performance Requirements (PRs), World Bank Group Environment, Health and Safety Guidelines (General), Sector guidelines (Transmission lines), international environmental conventions, core labour conventions of the International Labour Organisation (ILO) and United Nations (UN) and Good International Practice (GIP).

#### 3.2 Assessment methodology

Under national law, the Project is categorized as Category II, requiring an environmental impact assessment (EIA). A separate EIA has been prepared by NEGU and submitted for approval in March 2024.

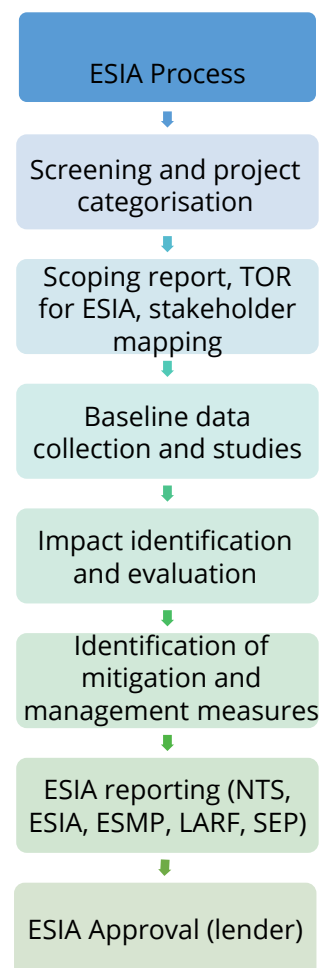
The Project ESIA has been developed to comply with Uzbek national laws and regulations and international Lender standards for environment, health and safety, labour and land following the steps in Box 1.

The ESIA has evaluated potential E&S impacts within the direct<sup>2</sup> and indirect<sup>3</sup> area of influence (AOI). The evaluation of impacts has considered the **magnitude** of the predicted impacts and the **sensitivity** of the receptors (physical, human or biological) as defined by the baseline studies and data collection.

The magnitude of the impact considers:

- type and nature of impact (positive / negative);
- scope (e.g., local, regional, global);
- duration (continuous / temporary);
- time period (immediate / delayed);
- reversibility (reversible / irreversible);
- likelihood to occur (none, small, average, high).

Box 1: Steps of ESIA preparation



<sup>2</sup> Direct area of influence: considers the physical footprint of the project such as the site layout, work staging area and area affected during construction and operation works (e.g., traffic patterns).

<sup>3</sup> Indirect area of influence: includes area which may experience project related changes in combination with activities not under the direct control of the project (e.g., inward migration, induced development, visitor influx, access to employment).

The sensitivity of the receptors considers such things as the ability of the receptors to absorb the change or recover from change once the impact is removed.

Mitigation and management measures have been identified following the mitigation hierarchy of avoid, reduce/minimize, mitigate and compensate/offset to reduce impact significance to acceptable levels (residual significance). Mitigation and management measures identified in the ESIA have been included in a framework ESMP (Volume IV), which outlines mitigation measures across the different phases of the development cycle. All contractors will be required to demonstrate that they have the procedures in place to implement the requirements of the framework ESMP. JSC NEGU and the Lenders, or their representatives, will undertake regular audits of works against the requirements of the framework ESMP commensurate with the nature of the risk.

### **3.3 Stakeholder engagement**

An essential part of the ESIA process has been consultation with local communities and other interested groups (collectively known as stakeholders). A systematic approach to stakeholder engagement has been employed to build a constructive relationship with stakeholders, particularly the directly affected communities. This is set out in the project communication plan, referred to as a Stakeholder Engagement Plan (SEP) (Volume V). Stakeholder engagement started in October 2023 with a scoping site visit and included a series of public meetings in January 2023 on the draft findings of the ESIA. Stakeholder engagement will continue throughout the Project construction period and as necessary during operation.

The Project has held one-on-one meetings with various stakeholders and public meetings where the ESIA findings were disclosed on 15-19 January 2024. Meetings held include:

- Face-to-face meetings with the Ministry of Mining to avoid certain mining areas;
- Face-to-face meetings with owners of the farms along the ROW and State Committee on Sericulture and Wool Industry Development Community leaders (Nukus village, Sarimay village, Uzunkuduk village);
- Letters to government bodies (national, provincial, municipal and district departments/khokimiyats);
- Meetings with:
  - government bodies (national, provincial, municipal and local departments/khokimiyats – Khorezm, Tuprokkala, Turtkul, Bukhara, Peshku, Navoi, Uchkuduk, Kannimekh, Tamdy;
  - regionally based industries (mining, railway), community leaders;
  - project-affected communities (PAC) (Nukus, Sarimay, Uzunkuduk villages);
  - land users (herders).
- Focus groups with vulnerable groups (women, youth and children, elderly or disabled and illiterate or semi-literate persons).

The key issues raised covered:

- avifauna assessment and mitigation;
- maintenance of adequate buffer zones with other nearby infrastructure (water pipelines, gas pipeline);
- concerns relating to OHTL routing near or across leased farmland/grazing lands;
- requests for information on the construction duration, budget, potential impacts on grazing livestock, and
- employment opportunities.

A complete list of the stakeholder engagement undertaken to date on the Project can be found in the SEP (Volume V) and is summarised in the ESIA (Volume II).

### 3.4 Grievance mechanism

Any concerns, issues, or questions (“grievances”) any stakeholders may have can be raised to the Project via the “grievance mechanism” (GM). The GM sets out the project commitments to acknowledge, investigate and respond to all concerns. The steps in the GM are provided in Box 2. Grievances can be raised through the following methods:

- Directly to Project staff during meetings or Project site visits.
- Via telephone calls.
- In written form (text messages, via e-mail, mobile applications, letters, written requests).

The grievance mechanism will keep **strict data confidentiality, including all applicants' personal information**. All grievances **can be submitted anonymously**. In cases where the complainant is unsatisfied with the proposed solution/response to the grievance, they have the right to take other legal action to resolve the grievance.

The following is a description of the steps in the implementation of the GM:

Step 1: Upon receiving a grievance by any means of communication, the Grievance Manager will enter the grievance into the grievance log to ensure that all raised concerns/inquiries are investigated and addressed.

Step 2: After receipt and registration of a grievance, a complainant will receive written notification that includes a proposed timeline for investigation depending on the request and the preliminary time of receipt of a response. A grievance form and log will keep a tracked record of each grievance received.

Step 3: Allocated members of the ESIA consultant team will be responsible for receiving and monitoring grievances during the ESIA phase of the Project. The grievance form is prepared based

Box 2: Steps in the Community Grievance Mechanism (GM)



on the location, language preferences, and communication opportunities of identified stakeholders. Responses will be provided in a language suitable for the complainant, i.e., Uzbek or Russian.

Step 4: The resolution of grievances will be formally communicated to the complainant in written form. If a complainant cannot receive a written response, the complainant will be contacted via phone and informed of the results of their grievance. The table below provides the timeframes for response to grievances. If the complainant is unhappy with the response, an appeal may be submitted. Furthermore, submitting a grievance through the grievance mechanism will not preclude a complainant in any way from also seeking recourse through the national legal system, and the complainant can take this course of action should they not be satisfied with the response they receive to their grievance if they wish.

The approaches taken to resolve grievances will depend on the nature, frequency of occurrence and the number of grievances.

Table 2: Grievance Processing Timeline

Stage	Timeline
Receipt and registration of grievance	Day 0
Providing acknowledgement of grievance receipt to the complainant	Maximum three days after submission of grievance
Assessment/investigation of the received grievance	Maximum two weeks after submission of grievance
Providing the complainant with a response	Maximum three days after assessment has been completed.
Reassessment of grievance in case the complainant is not satisfied with the previously provided response	Maximum two weeks after notification of dissatisfaction by the complainant

Where complex grievances or other factors are extending the investigation time, the complainant will be informed of this delay, advised of an updated expected timeline for a response, and provided regular updates.

## 4 Summary of Environmental and Social Assessment

### 4.1 Project receptors

The OHLT ROW area spans arid desert and steppe landscapes. Proximity to the Kyzylkum Desert contributes to high aridity (see Figure 3).

The OHTL routes through four regions and five districts (Figure 7):

- Khoesm region (Tuprokkala district);
- Republic of Karakalpakstan (Turtkul district);
- Bukhara region (Peshku district); and
- Navoi region (Uchkuduk and Tamdi districts).

Uzunkuduk village (Figure 4) is the closest to the overhead line, with the nearest house of the village being 210 meters away from the OHTL route. The villages of Sarimay and Nukus are also located near the Sarimay Substation. There is an existing unpaved road that runs alongside the proposed route (Figure 5).

Three water pipelines (two operational and one under construction) run parallel to the OHTL, along with several water pumping stations with periodic water access points along the entire water pipeline route to provide access to water for livestock farmers in the wider area (Figure 6).



Figure 3: Desert landscape in the Project area



Figure 4: Uzunkuduk village



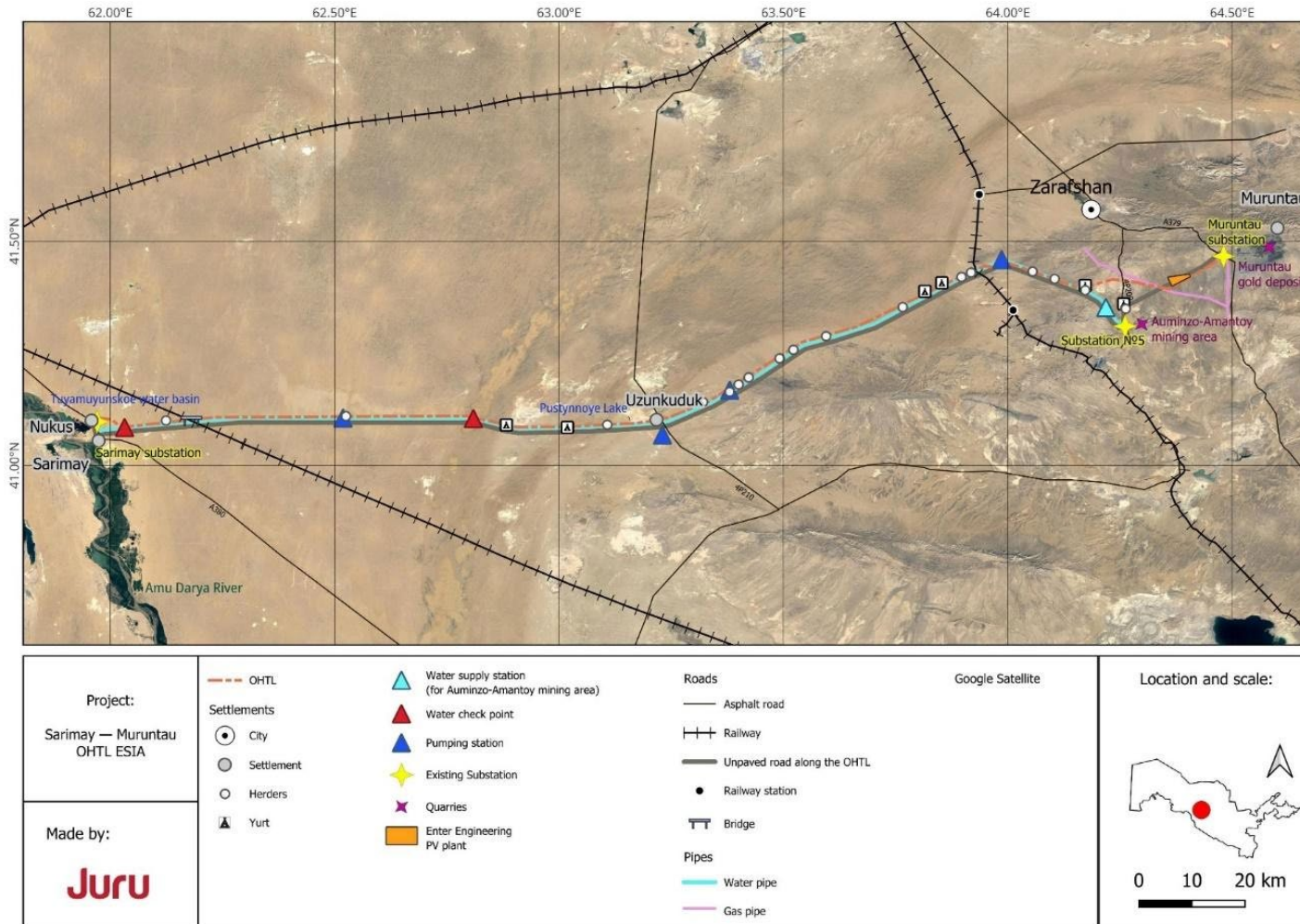
Figure 6: Water ponds along the route



Figure 5: Existing gravel road running parallel to the OHTL



Figure 7: Project location and receptors along the OHTL



Based on the outputs of the scoping phase work, the ESIA has focused on the assessment of impacts on the habitat of southern even figured gecko (SEFG), impact on habitats and sensitive species in the ROW, operational avifauna impacts (in particular concerning bustards, raptors and waterbirds), physical impacts, e.g., noise, air quality, surface water run-off, and social impacts e.g., livelihoods of herders and farmers in the ROW, worker influx, supply chain, community health and safety (noise, traffic and dust, electromagnetic frequency), employment and labour rights and worker welfare.

## **4.2 Potential positive impacts of the Project**

A small amount of job creation, local procurement and increased local spending during the construction phase of the Project is expected to positively impact the economies of local communities (communities within 15 km of the Project). Unskilled or semi-skilled temporary employment will be generated related to ground clearance works, cement batching, construction of the foundations, catering, driving and security work. A local recruitment plan will be prepared to encourage the employment of workers from local communities and to communicate relevant employment and procurement opportunities before the start of work. The operational phase is not expected to create employment opportunities.

## **4.3 Potential adverse impacts of the Project**

### **4.3.1 Land acquisition, involuntary resettlement and economic displacement**

The state owns all land in Uzbekistan and administers it through government agencies, such as the Committee for Development Sericulture and Wool Industry (SWID); the government agencies give the rights to use the land through limited liability companies (LLCs). The owners of the land rights along the Project ROW are:

- The SWID and LLCs:
  - “Khorezm sheep-breeding cluster” LLC (in Tuprokkala district),
  - Jonkeldi LLC (in Peshku district), Darxan-2019 LLC (in Tamdi district),
  - JSC Navoi Mining and Metallurgical Company and JSC “Navoiyazot” lands in Tamdi district
  - “Uchquduq chorva klasteri” LLC (in Uchkuduk district),
  - SWID lands in Turtkul district and two farms, “DILMUROD-CHORVA” and “OQ-DARBAND-CHORVA”;
- Three farms called “Uchquduq Zamin Gulshani”, “Dilmurod Sharif”, and “Chorvador Rajab Narzulla” in Uchkuduk district, and
- Two farms called “DILMUROD-CHORVA” and “OQ-DARBAND-CHORVA” in Turtkul district.

Permanent land take will be for the OHTL tower footprints only. The Project will not result in any physical displacement impacts (i.e. relocation of households) to create the ROW for the OHTL or the access tracks. Grazing and other activities may continue under the line once it is operational. Work at the substations will be entirely within the existing substation footprints. During operation,

the Project footprint will be reduced to the tower foundation area only and the access tracks to the ROW. No livelihood issues are anticipated during the operations phase.

For the newly designed 500 kV OHTL, there is a setback of 30m from the outermost conductor on either side of the OHTL, in which no buildings or structures can be located; this forms the ROW or servitude. The Project must obtain servitude rights over the land for the OHTL ROW and any permanent and temporary access roads (unsurfaced). As SWID owns the land, JSC NEGU will enter into a servitude agreement with SWID.

Consultation was performed with the cadastral agencies, SWID and engagement with land rights holders and herders was undertaken along the proposed OHTL route. This consultation resulted in refining the OHTL route to reduce land acquisition impacts. One residential structure was identified to be within the protection set back (60 m) of the OHTL and so the OHTL route was diverted around the property to avoid the need for physical displacement (Figure 8 ). The original OHTL route also passed through a number of mining concessions as identified through consultation with the Ministry of Mining. Following MOM guidance, rerouting around two of these concessions has been undertaken (Figure 8 and Figure 9).



Figure 8: S-M OHTL (in blue) rerouting (in yellow) near the farmstead

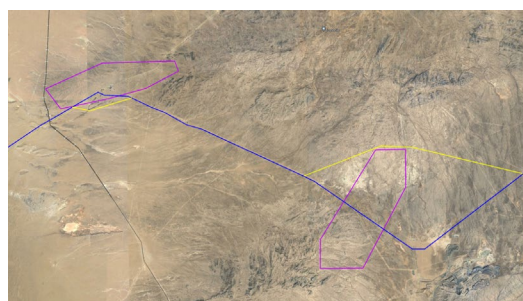


Figure 9: S-M OHTL (in blue) rerouting (in yellow) to avoid the non-ferrous metals areas (in purple)

Calculation and compensation of losses to those with land rights will be undertaken following Uzbek regulations. Landowners, land users, and lessees are eligible for compensation (including the lost profit) should the construction or operation of the Project restrict their access to the land. The Land Law in Uzbekistan also protects the owner/user from servitude impacts and does not restrict land use due to servitude, except concerning the construction of structures.

The Land Acquisition and Livelihood Restoration Framework (LARF) has assessed potential livelihood losses not covered by Uzbek regulation, and livelihood restoration measures, such as training courses, will be developed in consultation with the Project affected people (people with

land rights and land users, such as herders) to address the loss of land or income resulting from the construction works and the operational OHTL. The measures will be included in a Livelihood Restoration Plan (LRP) which will be prepared later but based on the measures outlined in the LARF.

### **4.3.2 Labour influx and community health and safety**

The Uzbek standard for establishing a health protection zone (HPZ), also known as a safety setback, for an OHTL is SanPiN No.0350-17 "For the Protection of Atmospheric Air in Populated Areas of the Republic of Uzbekistan" (2017). For this Project, a 30 m HPZ on either side of the outermost wires applies in a direction perpendicular to the OHTL. While work can continue within the HPZ after construction, specific restrictions regarding using plant and machinery near the wires and the tops of the pylons (known as the exclusion zone) will apply. This impact will be relevant to land rights holders, land users and possibly herders. The Project will undertake information awareness campaigns with land rights holders, land users and herders concerning working under OHTL.

General health and safety risks to local communities during the construction phase may include the following:

- introduction of workers' increasing the possibility of gender-based violence (GBV) between workers and community members;
- an influx of people causing strains on local infrastructure (such as healthcare facilities and markets);
- risk of passing communicable diseases between workers and the community.
- impacts becoming more pronounced or more likely due to more than one OHTL being constructed in the same location.

Security guards will likely be assigned to protect Project equipment during construction. Security guards are often the first point of contact between community members and the Project; therefore, they are the most at risk to cause conflict or harassment or to receive conflict or harassment from community members.

The Contractor and NEGU will implement awareness-raising activities to inform local community members of key Project risks. They will require workers and security personnel to sign a workers' "code of conduct". The Project will develop a security plan that outlines the security requirements for construction and operations and, where necessary, include fencing, safety signage (in local languages) and other relevant features to deter community members from entering the work area or climbing the OHTL towers. Workers will be housed in accommodations away from the local communities. There will be a Project grievance mechanism that can inform the Project of any Project impacts or concerns that local community members may have as a result of the construction or operation of the Project.

#### *4.3.2.1 Electromagnetic fields*

Most electric power operates at 50 or 60 cycles per second or hertz (Hz), termed 'extremely low frequency (ELF). Short-term effects include established biological effects from acute exposure at

high levels (well above 100  $\mu$ T) explained by recognized biophysical mechanisms. EMF impacts are not possible during the Project's construction phase since the electrical equipment will not be energized at this stage. International scientific research has shown that levels of EMF fall away to acceptable levels well within 30 m of the OHT, as presented in Table 3. There are no permanent properties with the HPZ of 60 m; therefore, all properties are well outside the exposure impact area.

Table 3: Magnetic and electric field from 500 kV OHTL at various distances from the centre line

<b>500 kV</b>	<b>Magnetic Field (microteslas) <math>\mu</math>T</b>	<b>Electric Field (volts per metre)</b>
Maximum field (under line) (ICNIRP Exposure Guidelines values)	100	11,000
Typical field (under line)	5-10	3000-5000
Typical field (25 m to side)	1-2	200-500

Herders and farmworkers may continue to graze their animals and plant crops under the line; however, are considered not to be directly beneath the OHTL for significant periods<sup>4</sup>. Overall, the possibility of receiving high-level short-term exposure to EMF in exceedance of ICNIRP 1998 exposure guidelines is negligible. Furthermore, the possible effects of EMFs on various animals have been studied several times, and no detectable effects of EMFs have been found. There is general agreement that EMFs have not been shown to have any detectable effects on crops, pasture grasses or native flora. A WHO Task Group concluded that scientific evidence supporting an association between ELF magnetic field exposure and these health effects is weak in all cases. In some instances (i.e., cardiovascular disease or breast cancer), the evidence suggests that these fields do not cause them<sup>5</sup>. Awareness-raising activities with local farmers and herders are planned to raise awareness on the actual risk from EMF from OHTL to ensure farmers continue to plant crops and graze in the area and also how to return to work safely under the overhead lines taking account of exclusion zones (as explained above).

### 4.3.3 Biodiversity

#### 4.3.3.1 Impact Overview

The biodiversity baseline characterization and impact assessments were informed by a comprehensive review of technical literature and available desktop-level resources, combined with a set of biodiversity baseline field studies designed to align with GIP and performed by qualified national biological experts. This set of field studies included Vantage Point (VP) surveys for birds (600 total hours of survey, divided evenly over 15 locations covering the entire line, and

<sup>4</sup> Significant period of time is typically taken to mean a permanent residences of permanent grazing fields/paddocks.

<sup>5</sup> NRPB, 2004. Review of the Scientific Evidence for Limiting Exposure to Electromagnetic Fields (0-300 GHz). Documents of the NRPB: Volume 15, No. 3, 2004.

divided evenly between spring and autumn migration seasons); Houbara Bustard surveys (following survey protocol designed by national experts, conducted at 15 points covering all potential breeding habitat on the OHL during peak hours during the peak courtship season [mid-April]), waterbird surveys of Lake Pustynnoye (conducted on four days per migratory season), reptile surveys (2 days in October), botany/habitat survey (1 day in October), and mammal surveys (4 days of transect surveys in October, plus one month of continuous photo trapping at 12 locations in autumn).

This information, along with an IBAT report, was used to perform a Critical Habitat (CH) Assessment, following the guidance and specific criteria of both EBRD PR6 and IFC PS6 (thus including identification of Priority Biodiversity Features [PBF], per EBRD PR6, in addition to CH features). This assessment concluded that the Project does not trigger CH for any receptors and identified 24 PBFS, including three plant species, two reptile species, 14 bird species, three mammal species, and two multi-taxon groups of birds.

The Project does not overlap any internationally recognized Key Biodiversity Areas (KBA) or Legally Protected Areas (LPA). It has minimal potential to affect biodiversity values, with a distance of at least 10 km from the nearest KBA and at least 3 km from the nearest LPA.

The OHTL passes primarily through arid habitats of the Kyzylkum Desert, with desert communities of more stable soils and piedmonts in the eastern half and communities associated with sandy desert in the western half. Such communities generally have very sparse vegetation and low diversity, though they contain a set of highly specialized organisms of desert communities, with the piedmont and fixed sand areas containing higher biodiversity than the sandy desert areas.

There are two areas where the OHTL comes in proximity to waterbodies that contain concentrations of waterfowl and other water birds, especially during migratory seasons, and these zones are where collision risks are concentrated for 3 of the bird PBFs that are known to be susceptible to collisions with OHTL (Common Pochard, Sociable Lapwing, other migratory waterbird species). Lake Pustynnoye is located as close as 600m to the OHTL, roughly 5 km west of the small settlement of Uzunkuduk, roughly in the middle of the OHTL. This small lake is neither recognized as an Important Bird Area (IBA, a type of KBA), nor is it an LPA. Nonetheless, it contains relatively small, seasonal concentrations of water birds, which may be exposed to the risk of colliding with the OHTL. This risk will be mitigated by installing Bird Flight Diverters (BFD), following GIP designs and spacing, on a 7 km stretch of the OHTL, including all areas within 3 km of this lake. At the western terminus of the OHTL, where it connects to the Sarimay substation, the OHTL is located within 2 km of the wetland/waterbody complexes associated with the Amu Darya riparian corridor, which also host seasonal concentrations of waterfowl and other waterbirds, and which serves as a significant migration corridor for such birds, which may also be exposed to risk of collision with the OHTL in this portion of the line. Such risk will be mitigated by installing BFD on the westernmost 5 km of the line. Residual collision impacts have been classified as moderate for one PBF waterbird species, minor for one PBF waterbird species, and multi-species PBF waterbird group.

Most of the eastern half of the OHTL (stable soil desert and piedmont habitat) was identified as a potential breeding habitat of the McQueen's Bustard (or Asian Houbara, *Chlamydotis macqueeni*, IUCN VU, nationally VU). This species is considered a highly sensitive biodiversity receptor for the Project, as collisions with OHTL are considered to be a primary anthropogenic threat to this species' conservation, and it is hypothesized that it may also be sensitive to displacement impacts from the installation of tall, anthropogenic structures within its otherwise treeless habitat. Specialized surveys for this species conducted in all potential breeding habitats during the peak breeding season yielded only one observation of this species, consisting of two males performing courtship displays roughly 4 km north of the line. On this basis, it was concluded that the Project area supports a very low-density breeding population of this species. Impacts to this species will be mitigated by the restriction of construction activities in this area only outside of its primary breeding season (April-May), and the residual impact of both displacement and collision is classified as "minor" for this species.

While not generally susceptible to collision impacts, a broad set of vultures, eagles, and other raptors occurs in the Project area, and the behavioral tendency of these species to perch on powerlines and powerline support structures, combined with their relatively large size, exposes such species to the risk of electrocution on powerlines if these birds make simultaneous contact either with two different electrified parts or with one electrified part and one grounded part. Eleven individual species, plus one multi-species bird group in this category, have been classified as PBF for the Project, and baseline surveys indicated that a broad set of such species occurs within the Project area, all at relatively low density and broadly distributed across the entire OHTL, which generally runs perpendicular to the migratory paths of most species in this category. The low density and lack of spatial patterning in the observations of such species on intensive VP surveys conducted during spring and fall migrations indicates that the OHTL does not contain or cross any concentrated migratory corridors or "bottleneck" points for any such species. This impact will be mitigated by the selection of "raptor safe" designs for the poles/pylons throughout the entire OHTL, and residual electrocution impact has been classified as moderate for 9 PBF bird species, minor for two PBF bird species and neutral for the multi-species bird category. Bird fatalities caused by either collision or electrocution and covering all potentially affected bird species will be monitored during operations following a protocol aligned with GIP and accompanied by an adaptive management framework to ensure that any fatalities to PBFs above "no net loss" thresholds are compensated with additional mitigation.

Aside from the aerial impacts on birds described above, the Project may also impact a set of ground-based biodiversity receptors, including three plant species, two reptile species, and three mammal species classified as PBF. Such impacts may include habitat loss/displacement, disturbance, and/or direct mortality and are generally limited to the Project's construction and decommissioning phases and within the Project's soil/vegetation disturbance footprint, which includes the locations permanent infrastructure (support tower bases), as well as areas that will be temporarily disturbed during construction and decommissioning (e.g. lay-down areas). Residual Impacts on such species range from neutral to minor and will be mitigated with the following set of measures:

- Pre-construction sensitive plant survey (*Acanthophyllum cyrtostegium*, *Tulipa lehmanniana*, *Lepidum subcordatum*, other UZRDB category 1 or 2 species ) including construction phase seed collection and replanting program;
- Pre-construction monitoring and relocation procedure implemented for Southern Even-Fingered Gecko (SEFG), including a requirement to survey the population immediately before construction and relocating to the nearest habitats;
- Pre-construction terrestrial animal survey and rescue/relocation immediately before construction;
- Off-site vegetation restoration/rehabilitation to compensate for all permanent habitat loss generated by the Project, noting that some species defined as PBF and therefore subject to the “no net loss” mitigation standard per EBRD PR6, occur throughout the entire Project area, such as Central Asian Tortoise (see also ESMP);
- Temporary fencing installed around takyr in the direct impact area to exclude people, heavy machinery, equipment laydown, or any vehicles from entering/disturbing takyr, which are SEFG habitat;
- Creation of temporary closed zones for the period of construction where transport, livestock and people should not get into, that can be used for the release of any SEFG if found during the excavation works;
- A biodiversity monitor is to be on-site during excavation to assure compliance with construction phase mitigation measures and conduct daily searches of work fronts and animal rescue from open trenches, as needed.

#### **4.3.4 Construction impacts**

##### *4.3.4.1 Dust, noise, traffic and transportation*

The overhead line route passes through mostly uninhabited desert landscapes with few, if any, sources of anthropogenic emissions. Baseline noise and air quality measures confirmed that the noise and air quality are mainly influenced by natural noise sources, meaning good air quality and low noise baseline. Air quality and noise monitoring at key points along the line confirmed this. There is a general absence of receptors in the ROW, but where receptors (specifically the water pumping stations, water pumps, and herder camps) are identified, a 150m buffer between works and receptors has been maintained to help minimize these impacts. Sustainable land clearance practices and rehabilitation and restoration actions will also ensure disturbed areas of land are restored/rehabilitated as soon as possible to minimize dust generation. Furthermore, the sequential nature of the construction of overhead lines means that impacts along the route will be short-term, intermittent, and confined to the right of way, with most work being performed at the tower locations and during daylight hours. The impact from noise and dust is considered to be low.

There will also be increased levels of traffic, creating both dust and noise and adding to the traffic volume on the single-lane gravel road adjacent to the OHLT. Increased traffic has the potential to affect workers and community members. The impacts of construction traffic are likely to be temporary, lasting only for the duration of the construction phase. Given the low traffic volumes on this road, impacts are expected to be negligible. The condition of the road is expected to be improved as a result of the work. A key pinch point is the Uzchuduk community, and it is



proposed to designate traffic routes that allow construction traffic to enter the right of way with minimal routing past the village, i.e. entering the worksite from Sarimay or Murantau and working east and west, respectively to avoid traffic passing through this area. In addition, GIP for the timing of deliveries, speed limits, signage, laydown locations, and rest locations will be defined. Any damage to existing infrastructure will be made good by the Project, and a community safety campaign to improve the people's knowledge of the traffic hazards on their roads will be rolled out.

#### *4.3.4.2 Soils erosion*

Soils along the OHTL route are predominantly fixed and semi-fixed sands with a high sensitivity to erosion when disturbed. The vegetation cover of the fixed and semi-fixed sands is a major factor in retaining their structure. If disturbed or compacted, it can lead to a loss in this vegetation cover and a phenomenon known as "shifting sands". Due to soil conditions (low organic matter and nitrogen content), natural re-vegetation cannot be expected, and therefore, the potential magnitude of the impact is deemed moderate. Soil sampling revealed that some soils in the eastern portion of the line exhibit elevated levels of heavy metals, potentially attributed to the proximity to mining locations. There is also a potential risk of causing contamination to soils and experiencing a deterioration of worker health, particularly during foundation excavation due to the naturally elevated levels of heavy metals in the soils. The construction specification will require a tension stringing technique to avoid impact on the habitat between the towers and stringing points. A site clearance plan will set out measures to minimize soil removal, confine vehicle movements to reduce compaction impacts and, for any area impacted by compaction a requirement to rehabilitate the compacted area to support the return of the impacted area to the original state as quickly as possible following completion of the works. This may require aeration of the topsoil, enrichment of the topsoil or reintroduction of selected species and shrubs. GIP (including risk assessments) will minimize releases of pollutants to the ground. All workers must wear the appropriate personal protective equipment (PPE) for groundwork.

#### *4.3.4.3 Water Use and Quality*

Careful siting of tower workfronts at least 150 m from surface water features near the ROW will be followed to reduce the potential risk to water quality. Relatively low volumes of water will be required for the construction works, and no water will be required for operation. The primary water use is during cement manufacture, which is expected at offsite facilities under the relevant licence. No groundwater or other water sources will be used for construction works. Drinking water will be tankered to each work front daily. Measures to prevent contamination of groundwater and nearby surface water features include appropriate storage for chemicals, fuels and oils; refuelling offsite; minimizing increased run-off from work areas; no cement washout at work front sites; and no direct discharge of contaminated water or potentially contaminated water to the ground without prior treatment. Construction water use will be monitored throughout the construction phase following GIP.

#### *4.3.4.4 Pollution prevention and resource management*

Generally, waste generation by the Project will be low and typically non-hazardous and low-level hazardous wastes (e.g., oils, paints, solvents). Inadequate handling, transfer and disposal of

hazardous waste may lead to uncontrolled releases to land, air, and groundwater, leading to the degradation and pollution of the receiving environment. The availability of non-hazardous or construction waste disposal facilities in the local area is good. There is less capacity to dispose of hazardous wastes locally, which must be factored into contracting clauses with subcontractors. A site waste management plan will be required for each phase of the Project to set out the plans for handling and storing waste at the Workfront and centrally coordinate transportation and disposal to an appropriate landfill in line with national laws, standards, and GIP. There will be limited, if any, opportunities for recycling wastes or re-using wastes. Weekly and monthly waste generation volumes for construction wastes (segregated by waste stream defined by waste disposal option) will be reported.

#### **4.3.5 Cultural heritage**

Consultation was performed with the national UNESCO World Heritage database, local land users (particularly herders) and the Uzbek Cultural Heritage Agency (CHA). No protected or identified tangible or non-tangible cultural heritage has been identified in the ROW or broader area (up to 5km from the Project). Along some parts of the OHTL, the route intersects with several ancient riverbeds and tributaries, depressions and small mountain massifs. These areas may also contain monuments from the Stone Age to the Late Middle Ages. Pre-construction archaeological investigations by the Institute of Archaeology are required in these areas.

#### **4.3.6 Climate-related risks and resilience**

Considering the expected lifetime of the Project, the predominant climate risks are physical climate-related risks to infrastructure, and to worker health. Climate risk screening in the short, medium, and long term has projected increasing trends for frequent storms (dust storms), extreme rain events and potential for prolonged periods of extreme heat during the summer months as the key effects of climate change to be managed. Increased wind speed can damage conductors, increase heat convection, and impact worker health (dust storms). Increased temperatures can lead to technical issues and impact worker health, leading to a higher prevalence of heat-related medical conditions or more significant restrictions on periods of physical work. There is also potential for extreme rain events to create wet soil conditions that, if not accounted for, can lead to groundwork and tower foundation issues. Climate-resilient design choices and appropriate emergency response planning are key to managing these impacts. Design recommendations will consider climate projections up to 2085 and whether there is a need to reinforce the structures/foundations for higher design standards (stronger winds, higher temperatures). Emergency preparedness plans will include evacuation/sheltering against dust storms, thresholds for stopping work when the temperature exceeds safe limits for physical exertion (~35 °C), extended rest periods, and adequate drinking water. Contractors will be required to establish an early warning system for wind and extreme heat events through continuous weather monitoring and provide awareness training to workers on their rights regarding working in these conditions.

## 5 How will the Project ensure effective management and monitoring of impacts?

As part of the ESIA, a framework Environmental and Social Management Plan (ESMP) has been prepared (Volume IV of the ESIA). The ESMP sets out Project-specific mitigation measures arising from the impact assessment process and GIP. JSC NEGU or the EPC Contractor will implement the requirements of the ESIA. A separate Construction ESMP and operation ESMP will also be prepared.

JSC NEGU will establish a Project Implementation Unit (PIU) to oversee the development and construction works. Once the Project is operational, responsibility for operations and maintenance works (O&M) and any operational E&S requirements will be transferred directly to NEGU operations team.

NEGU and the EPC Contractor will be required to establish an environmental and social management system (ESMS) to oversee and implement the Project's development and construction activities relative to their role on the Project. Both the NEGU and Contractor ESMS will include policies, assessment documentation, Project-specific management plans, and key sub-plans on waste management, labour management, accommodation, employment procurement, and biodiversity. The ESMS framework must be aligned with ISO 14001 Environmental Management requirements. Underpinning the project plans will be a Project Policy setting out the core values and principles of the Project.

Occupational Health and Safety (OHS) risks will be managed following a health and safety management system (HSMS) to be established by the EPC Contractor and aligned with ISO 45001 health and safety management standard. Key areas of focus will include managing working at height, electrical safety, accidents and emergencies. In addition, an emergency preparedness and response plan (EPRP), particularly addressing access to medical facilities, will be prepared.

Temporary construction worker accommodation camps could expose workers to the risks of illness and below-standard welfare arrangements. A specific project Accommodation Management Plan (AMP) will be prepared to stipulate that workers will be housed away from local communities and that there will be first aid facilities at all work fronts. The requirements of the AMP will follow EBRD and IFC Guidance on worker accommodation "Workers' accommodation: processes and standards".

Potential social risks and impacts will be mitigated by preparing management policies and procedures, such as the human resources (HR) policy, the worker code of conduct and specific code of conduct for security guards, the Security Plan and the OHS Plan. Employment of local workers will be maximized through the preparation of a local procurement plan; however, the number of unskilled and semi-skilled jobs will be small and temporary.

As well as meeting Uzbek requirements, the Project commits to meeting international standards in managing workers, such as the requirements of EBRD and the International Labor Organization

(ILO), which regulate working hours, payment, and leave, among other things. They also prohibit the use of child and forced labour. The Main Contractor must also be internationally certified to ISO45001 (or equivalent) in OHS aspects. Workers will be provided with relevant training, for their work, and also provided adequate welfare facilities and working conditions. Workers will be able to raise grievances about issues that arise during their employment, including the ability to raise them anonymously and without retribution. The Project design will incorporate safety requirements, and an HPZ has been identified. Where necessary, fences, signs and other safety features will be provided.

JSC NEGU will manage land acquisition impacts, and an LRP will be prepared; this LRP will include livelihood restoration activities for project-affected people. A Community Liaison Officer (CLO) will run a comprehensive stakeholder engagement campaign to inform community members about the Project. A community grievance mechanism will also be set up for community members to raise grievances. During operation and maintenance all responsibility will transfer to JSC NEGU for management of the OHTL following their corporate operational systems.

## 6 Conclusion

The overall outcome of the ESIA is that the Project is an effective and viable energy infrastructure project that is central to the transition of the country to renewable power and grid strengthening needs. The Project is considered suitable for development and able to comply with the national regulatory framework and the requirements of EBRD ESP 2019 subject to implementing the mitigation measures identified in the ESIA. The measures identified in the ESIA enable the Project to avoid, or where avoidance is not possible, minimize, mitigate or compensate for adverse environmental or social impacts and issues to workers, affected communities, and the environment, including priority biodiversity features and critical habitats. Key commitments outlined in the ESIA and ESMP are incorporated into the Lender Environmental and Social Action Plan (ESAP) that will be appended as a contractual obligation to the financing agreement with EBRD.

Social impacts can impact local community members (from the villages of Uzunkuduk, Sarimay and Nukus), land rights holders, land users (herders) and Project workers. However, the majority of Project impacts identified have been assessed as minor due to the temporary nature of the Project construction and the distance from the Project to local communities. Changes have been made to the Project route to reduce impacts on land users, and mitigation measures have been identified that, once implemented, will reduce the risk of social impacts to minor or negligible levels. The Project will benefit Uzbekistan with more reliable electricity, and there will be a small number of employment and procurement benefits for workers and enterprises employed by the Project, including possible knock-on benefits to local economies.

Biodiversity impacts are generally low, with no Critical Habitat triggers, 24 Priority Biodiversity Features, no potential for impacting any KBA or LPA, and no areas of concentrated migration or high density of sensitive species. The Project will mitigate biodiversity impacts following the mitigation hierarchy and aligned with GIP, with a set of measures that include selection of "raptor

safe” designs for the entire line, installation of BFD on all portions of the line with elevated waterbird collision risk, and pre-construction surveys, rescue, and relocation of sensitive plants and reptiles, in addition to a conventional set of construction-phase biodiversity impact mitigation measures.

## Glossary

Term	Definition
Area of Influence (AOI)	The area over which the impacts of the Project are likely to be felt as well as any reasonably foreseen unplanned developments induced by the Project or cumulative impacts.
Associated facilities	Facilities that are not funded as part of the Project and that would not have been constructed or expanded if the Project did not exist and without which the Project would not be viable.
Baseline surveys	Gathering of data to describe the existing physical, biological, socioeconomic, health, labour, cultural heritage, or any other variable considered relevant before project development.
Biodiversity	Variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are a part; this includes diversity within species, between species, and of ecosystems.
Chance finds	Archaeological or cultural sites and artefacts, including such items as ceramics, tools, buildings, burials, etc., previously unrecognized in baseline studies that are discovered during exploration activities.
Consultation	Consultation is a two-way process of dialogue between the project company and its stakeholders. Stakeholder consultation is about initiating and sustaining constructive external relationships over time.
Critical habitat	Either modified or natural habitats supporting high biodiversity value, such as habitat required for the survival of critically endangered or endangered species.
Cultural heritage	Defined as resources with which people identify as a reflection and expression of their constantly evolving values, beliefs, knowledge and traditions.
Cumulative impacts	The combination of multiple impacts arising from existing projects or activities, and/or anticipated future projects or activities.
Direct area of influence	Considers the physical footprint of the projects such as the right of way, construction sites, work staging area and area affected during operational works (e.g., traffic patterns).
Effluent	Wastewater-treated or untreated that flows out of a treatment plant, sewer, or industrial outfall
Electromagnetic fields	Electric fields (ELF) are produced by voltage and increase strength as the voltage increases. Electric field strength is measured in volts per meter (V/m). Magnetic fields are produced by the current, which measures the flow of electricity, which increases in strength as the current increases. Electromagnetic fields are measured in units of tesla (T).
Emission	Pollution discharged into the atmosphere from smokestacks, other vents, and surface areas of commercial or industrial facilities; from residential chimneys; and from motor vehicle, locomotive, or aircraft exhausts.
Environmental and Social Impact Assessment (ESIA)	A forward-looking instrument that can proactively advise decision-makers on what might happen if a proposed activity is implemented. Impacts are changes that have environmental, political, economic, or social significance to society. Impacts may be positive or negative and may affect the environment, communities, human health and well-being, desired sustainability objectives, or a combination of these.

Term	Definition
Environmental and Social Management Plan (ESMP)	Summarises the company’s commitments to address and mitigate risks and impacts identified as part of the ESIA, through avoidance, minimization, and compensation/offset, and monitor these mitigation measures.
Environmental and social management system (ESMS)	Part of the Project’s overall management system that includes the organizational structure, responsibilities, practices and resources necessary for implementing the project-specific management program developed through the environmental and social assessment of the Project.
Good International Industry Practice (GIIP) or Good International Practice (GIP)	Exercise of professional skill, diligence, prudence, and foresight that would reasonably be expected from skilled and experienced professionals engaged in the same type of undertaking under the same or similar circumstances globally or regionally. The outcome of such exercise should be that the Project employs the most appropriate technologies in the project-specific circumstances.
Grievance mechanism	Procedure provided by a project to receive and facilitate resolution of affected communities’ concerns and grievances about the Project’s environmental and social performance.
Habitat	Terrestrial, freshwater, or marine geographical unit or airway that supports assemblages of living organisms and their interactions with the non-living environment.
Hazardous waste	By-products of society that can pose a substantial or potential hazard to human health or the environment when improperly managed. Substances classified as hazardous wastes possess at least one of four characteristics —ignitability, corrosivity, reactivity, or toxicity — or appear on special lists.
Indigenous peoples	Distinct social and cultural group possessing the following characteristics in varying degrees: (a) Self-identification as members of a distinct indigenous social and cultural group and recognition of this identity by others; (b) Collective attachment to geographically distinct habitats, ancestral territories, or areas of seasonal use or occupation, as well as to the natural resources in these areas; (c) Customary cultural, economic, social, or political institutions that are distinct or separate from those of the mainstream society or culture; and (d) A distinct language or dialect, often different from the official language or languages of the country or region in which they reside.
Indirect area of influence	Includes area which may experience Project related changes in combination with activities not under the direct control of the Project.
Information disclosure	Disclosure means making information accessible to interested and affected parties (stakeholders). Communicating information in a manner that is understandable to stakeholders is an important first and ongoing step in the process of stakeholder engagement. Information should be disclosed in advance of all other engagement activities, from consultation and informed participation to negotiation and resolution of grievances. This will make engagement more constructive.
Intangible cultural heritage	According to the 2003 UNESCO convention for the safeguarding of intangible cultural heritage, manifestations of intangible cultural heritage include: Oral traditions and expressions, including language; Performing arts; Social practices, rituals and festive events; Knowledge and practices concerning nature and the universe.
Land acquisition	All methods of obtaining land for project purposes, which may include outright purchase, expropriation of property and acquisition of access rights, such as easements or rights of way.

Term	Definition
Livelihood	Full range of means that individuals, families, and communities utilize to make a living, such as wage-based income, agriculture, fishing, foraging, other natural resource-based livelihoods, petty trade, and bartering.
Magnitude	The assessment of magnitude is undertaken in two steps. Firstly, the magnitude of potential impacts associated with the Project are categorized as beneficial or adverse. Secondly, the beneficial or adverse impacts are categorized as major, moderate, minor or negligible based on consideration of several parameters.
Modified habitat	Land and water areas where there has been apparent alteration of the natural habitat, often with the introduction of alien species of plants and animals, such as agricultural areas.
Natural habitat	Land and water areas where the biological communities are formed largely by native plant and animal species, and where human activity has not essentially modified the area's primary ecological functions.
Occupational health and safety	The range of endeavours aimed at protecting workers from injury or illness associated with exposure to hazards in the workplace or while working.
Project affected people	Individuals, workers, groups or local communities which are or could be affected by the Project, directly or indirectly, including through cumulative impacts.
Sensitivity	The sensitivity of a receptor is determined based on the review of the population (including proximity / numbers / vulnerability), presence of biological features of the site and the surrounding area, soil, agricultural suitability, geology and geomorphology, proximity of aquifers and watercourses, existing air quality, presence of any archaeological features, etc.
Significance	Significance of impact considers the interaction between the magnitude and sensitivity criteria.
Solid waste	Material with low liquid content, sometimes hazardous. Include municipal garbage, industrial and commercial waste, sewage sludge, wastes resulting from agricultural and animal husbandry operations and other connected activities, demolition wastes and mining residues.
Stakeholders	Stakeholders are persons or groups who are directly or indirectly affected by a project, as well as those who may have interests in a project or the ability to influence its outcome, either positively or negatively.