

Kemin-Balykchy OHTL and Balykchy Substation Environmental & Social Impact Assessment (ESIA): Volume I – Non-Technical Summary

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Abbreviations

AOI	Area of Influence
BFD	Bird Flight Diverters
BMP	Biodiversity Management Plan
CLO	Community liaison Officer
CHMP	Cultural Heritage Management Plan
E&S	Environmental and Social
EBRD	European Bank for Reconstruction and Development
EIA	Environmental Impact Assessment
EMF	Electromagnetic Fields
EPC	Engineering, Procurement, and Construction
EPRP	Emergency Preparedness and Response Plan
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESP	Environmental and Social Policy
GIP	Good Industry Practice
GM	Grievance Mechanism
HR	Human resources
IFC	International Finance Corporation
ILO	International Labour Organisation
ISO	International Organization for Standardization
KBA	Key Biodiversity Area
LARF	Land Acquisition and Livelihood Restoration Framework
LLC	Limited Liability Company
LPA	Local Protected Area
NABU	Nature and Biodiversity Conservation Union
NEGK	National Electric Grid of Kyrgyzstan

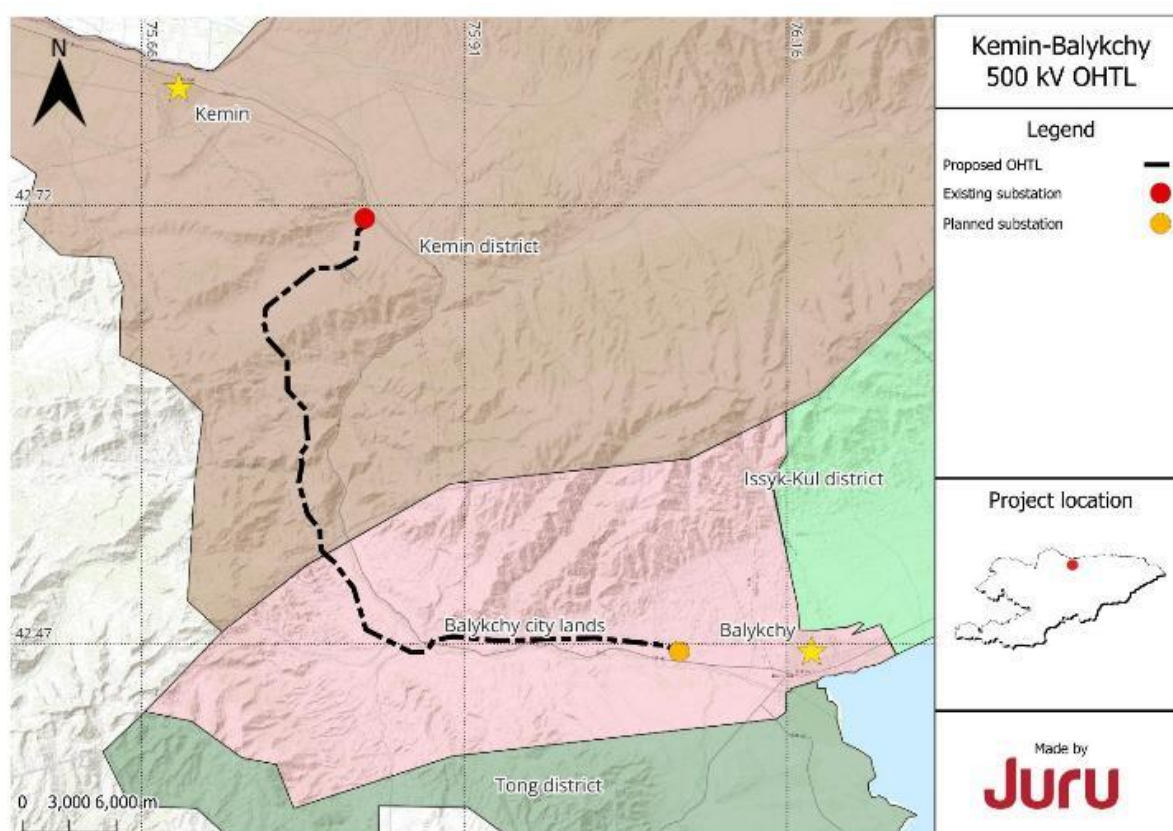
NTS	Non-Technical Summary
O&M	Operation and Maintenance
OHTL	Overhead transmission lines
OHS	Occupational Health and Safety
PBF	Priority Biodiversity Features
PCDR	Public Consultation and Disclosure Report
PIU	Project Implementation Unit
PPE	Personal Protective Equipment
PRs	Performance Requirements
PZP	Protection Zone Plan
ROW	Rights of Way
SEP	Stakeholder Engagement Plan
SS	Substation
TOR	Terms of Reference
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization

1 Introduction

1.1 Background

The European Bank for Reconstruction and Development (“EBRD”) is considering providing a sovereign loan to the Joint-Stock Company National Electric Grid of Kyrgyz Republic (“NEGK”) to finance the construction of an approximate 53 km 500 kV overhead transmission line (OHTL) in Kyrgyz Republic between the existing Kemin substation (SS) in Chui region and a new substation named “Balykchy, SS”, 6.4 km outside Balykchy city in the Issyk-Kul region (“the Project” (Figure 1).

Figure 1: Project overview



EBRD has appointed Juru Ltd. (“Juru”) to perform the Environmental and Social Impact Assessment (ESIA) for the Project following EBRD Environmental and Social Policy 2019 (ESP 2019) and supporting Performance Requirements (PRs). Juru is supported by “Evidence CA”, a local social consulting and research organisation.

This document is the 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 categorised this Project as Category A. Category A projects require a comprehensive ESIA and associated documents. The ESIA package is organised 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: Land Acquisition and Livelihood Restoration Framework (LARF)
- Volume VI: Stakeholder Engagement Plan (SEP) with Public Consultation and Disclosure Report (PCDR)

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

According to the Law of the Kyrgyz Republic "On Environmental Protection" dated June 16, 1999, No. 53, for projects of this type, it is required to conduct an environmental impact assessment (EIA) when designing economic activity facilities. High-voltage transmission lines are classified as economic activities requiring a full environmental impact assessment (EIA), following Annex 1 of the Resolution of the Government of the Kyrgyz Republic No. 60 dated February 13, 2015, "On the Approval of the Regulation on the Procedure for Environmental Impact Assessment in the Kyrgyz Republic. Additional categorization is determined based on the results of the project's emissions and discharges calculations by Appendix 2 of the Law of the Kyrgyz Republic No. 151 dated May 8, 2009, "General Technical Regulation on Ensuring Environmental Safety in the Kyrgyz Republic". These calculations will be carried out as part of the National EIA.

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

- Akimyat Offices in Kemin district
- City hall of Balykchy city;
- Cholok, Kok-Moynok-1 and Kok-Moynok-2 community offices.

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

Juru (via Evidence CA)	NEGK
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1.2 Overview of the Project

The primary components of the K-B OHTL and substation Project are:

- 52.9 km of 500kV OHTL between the settlements of Cholok (Chui region, 13 km from Kemin city) and a new substation (Balykchy SS) near Kok-Moynok-1 settlement (Issyk-Kul region, 6 km away from Balykchy city).

Related activities in support of the OHTL works will include:

- End-user works at the Kemin SS - the connection is expected to be within an existing reserve bay within the current substation footprint (Figure 3)
- New 14.3 ha standalone substation - Balykchy SS (Figure 2)
- 78 m servitude under the OHTL (including the area for tower footprint, and the health protection setback of 30 m on either side of the outermost conductor).
- Upgrades to existing access routes (gravel) or new access routes (gravel) suitable to provide access to the OHTL ROW and the new substation.

From the Kemin SS, the OHTL heads west into the mountains, routing to the south of the planned solar PV Project (by LLC “Eco Energy”). The route broadly follows an unpaved gravel road and existing 500kV OHTL (“Datka-Kemin”) southwest crossing the existing 220 kV lines “Kemin-Issyk-Kuls kaya-1” and “Kemin-Issyk-Kuls kaya-2”, as it passes through the mountains to the village of Kok-Moynok-2. At this point, the OHTL ROW crosses the Bailamtal River and follows a similar alignment to the “Bishkek-Torugart” highway for 16 km to the new Balykchy SS.

NEGK will hire an Engineering, Procurement and Construction (EPC) contractor to perform the design, construction and commissioning work on behalf of NEGK 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 between 24.3 - 38.0 m.



Figure 2: Location of the planned Balykchy SS



Figure 3: Kemin substation

- 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.
- A ~78 metre right of way must be maintained (30m on either side of the OHLT outermost conductor) to comply with setback requirements under national legislation.

The mobilisation 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 OHLT commissioning. Construction will take place between Spring 2026 to 2027. The project cycle has 4 stages: pre-construction, construction, operation, and decommissioning. Construction progresses sequentially 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 in the existing accommodation in nearby towns. At this time, the construction water source is unknown, but abstraction from community points adjacent to the route or groundwater abstraction is not envisaged at this time. Materials and equipment will be delivered to the ROW 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, NEGK will operate the OHLT. 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

Activity	Date
Project Categorisation	September 2024 (completed)
Scoping	January 2025 (completed)
Consultation on draft ESIA	June 2025 (completed)
Finalization of the Submission of the draft ESIA	July 2025 (completed)
EBRD 120-day disclosure period	Mid-July to Mid-October 2025
Finalise ESIA (including public consultation comments)	October 2025
Financial close	Q4 2025 (immediately after signing)
Pre-mobilisation (finalisation of route corridor, tower micro-siting, planning and design)	Q1 2026
Construction Start	Q1 2026
Construction End	Q1 2027
Expected Lifetime	Approximately 50 years or more

2 Project Need and Alternatives

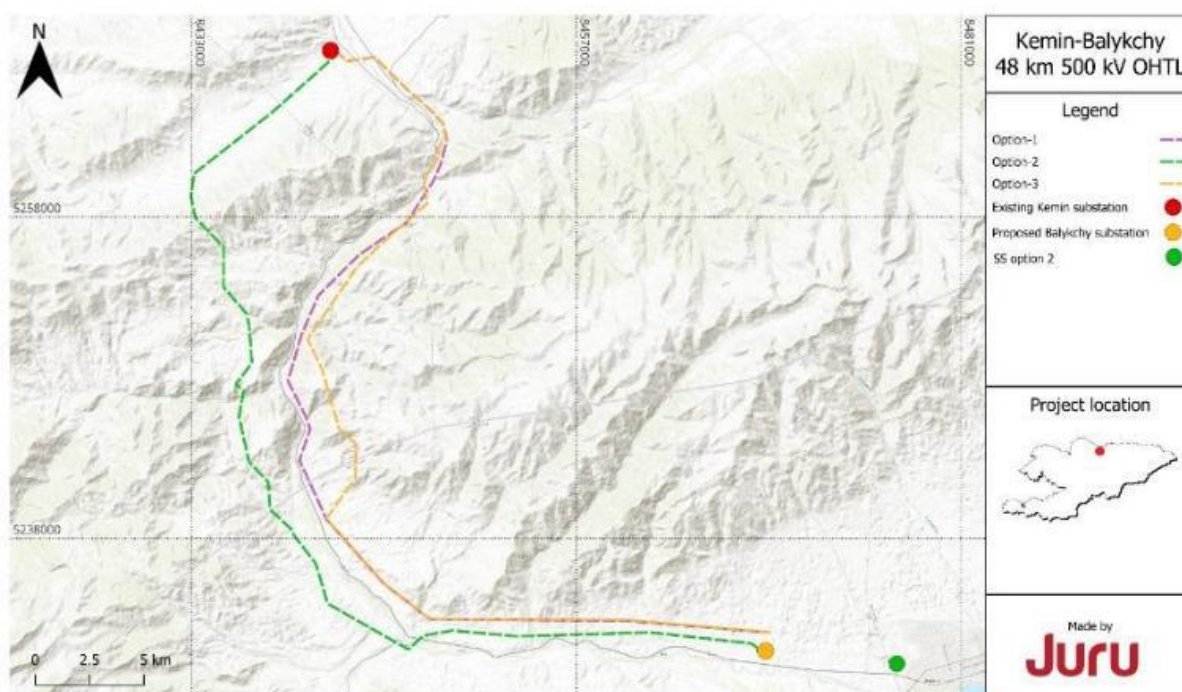
2.1 Project need

The Project's primary purpose is to support the evacuation of electricity generated by renewable energy power plants under development to the national power grid. Implementing the Project will also significantly improve the transmission networks' reliability, efficiency, stability, quality and security of the electricity supply.

2.2 Alternative options

Alternative concepts and route options have been considered, including the "do nothing" option. Three route options and two substation locations (for the new Balykchy substation) were considered (see Figure 4). Minor route variations have been applied to maximise the setback from the line to avoid receptors, avoid residential and other structures, and avoid commercial areas, e.g. farmsteads, crops, commercial forestry plantations, as much as possible to achieve a route that balances technical requirements and E&S considerations. Final decisions on the design of the final tower locations and Project components (towers, insulators) will be made by the EPC Contractor selected to deliver the Project. Specific design mitigations are highlighted in the Project ESMP and will be included in the Construction contractor's scope of work.

Figure 4: Project alternatives



3 How did we assess the Project Impact?

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

The Project ESIA has been developed to comply with Kyrgyz national laws and regulations for environment, health and safety, labour and land following the steps in Figure 5.

The baseline studies included the following:

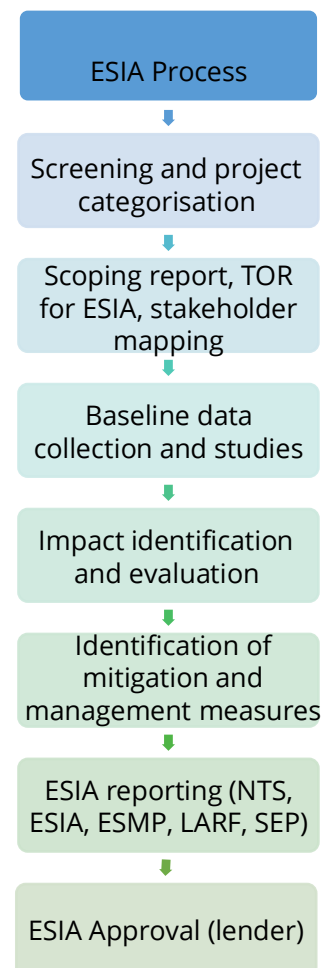
- 1) Biodiversity: botany, reptiles (autumn and spring); mammals (autumn, winter, spring); birds (all seasons); fish, bats (spring)
- 2) Environmental: air quality and noise levels, soil and water quality
- 3) Social: socio-economic survey, focus group discussions, key informant interviews, traffic survey

The ESIA has evaluated potential impacts within the direct¹ and indirect² 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);

Figure 5: Steps of ESIA preparation



¹ 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).

² 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).

- duration (continuous/temporary);
- time period (immediate / delayed);
- reversibility (reversible/irreversible);
- likelihood to occur (none, small, average, high).

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

Mitigation and management measures have been identified following the mitigation hierarchy of avoid, reduce/minimise, 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. NEGK 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 conducting meaningful consultation with local communities and other interested groups (collectively known as stakeholders). A systematic



Figure 6: Community consultations

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).

Consultation and engagement to date:

Stakeholder engagement started in November 2024 with a scoping site visit, followed by an ESIA site visit, including distribution of Project leaflets, key informant interviews with women, health specialists, businesspersons, biodiversity and cultural heritage stakeholders. Focus groups were held with women, youth, the elderly and community representatives within project AOI. The outcomes of the scoping and ESIA consultation performed in April 2025 have directly influenced the mitigation approach set out in the ESIA, particularly regarding safety concerns under the overhead line, traffic risks through Kok Moynok-2 village, tourism impacts, potential issues with access to water during construction, vegetation relocation practises, and requirements for working close to burial sites (kurgans). The consultation has verified assumptions relating to biodiversity baseline findings regarding the absence of risks to birds linked to the Issy Kyl Lake. Following the completion of the draft ESIA, a series of public meetings was held in June 2025 in the Balykchy City Hall and the Kemin District Administration to disclose the findings of the ESIA.



Figure 7: Community

Meetings were held with stakeholders, including representatives of local authorities and key agencies such as the departments of ecology, land cadastre, public health, culture, electricity networks, and others. In the villages of Kok-Moynok-1, Kok-Moynok-2, and Cholok, the ESIA findings were also disclosed to community members, including women and other vulnerable groups, including persons with disabilities.

Throughout the ESIA process, Project leaflets with the project contact details for complaints and questions and a summary of the ESIA findings (in PowerPoint format) have been shared amongst stakeholders. The Project documentation will be disclosed for 120 days on the Lender and NEGK websites, and hard copies of this document will be located in the Project Affected Communities.

Ongoing engagement - Stakeholder engagement will continue throughout the Project construction period and as necessary during operations. A complete list of the stakeholder engagement undertaken to date on the Project can be found in the Public Consultation and Disclosure Report (PCDR) and is summarised in the ESIA (Volume II).

3.4 How to raise concerns, issues or questions “grievances”

Any concerns, issues, or questions (“grievances”) that 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 Figure 8 and explained below. Grievances can be raised through the following methods:

- Directly to the Project staff during meetings or Project site visits.
- Via telephone calls (see contact details on page 1).
- In written form (text messages, via e-mail, mobile applications, letters, written requests).
- Using the grievance form
- In grievance boxes located at Akimat offices in Kemin district and Balykchy city, at the entrance to the Project work sites, and Kemin SS (during the construction phase).

The grievance mechanism will keep **strict data confidentiality, including all applicants' personal information**. All grievances can be



Figure 8; Steps in the Community Grievance Mechanism (GM)

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.

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

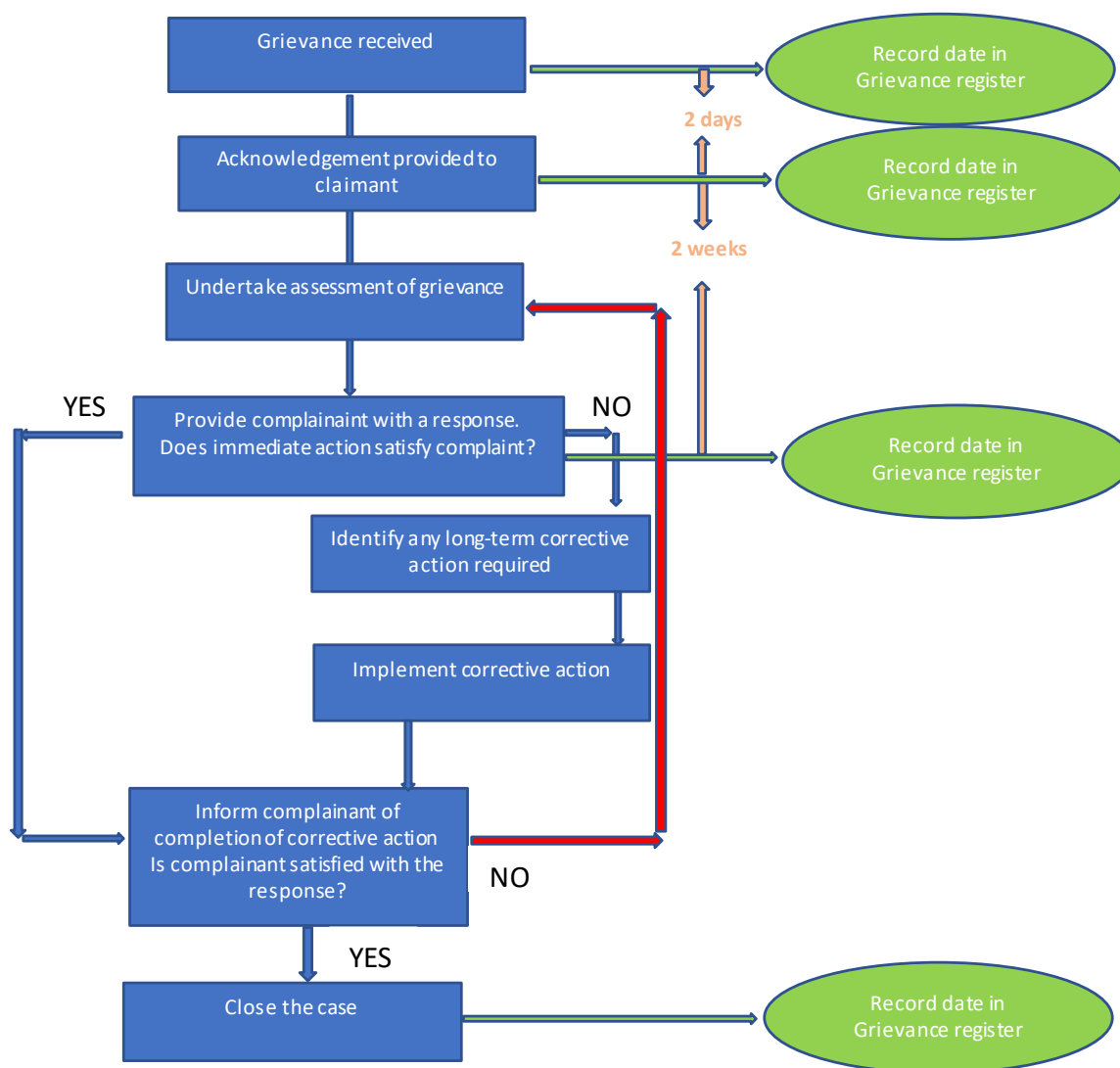
Step 4: The resolution of grievances will be formally communicated to the complainant in written form. If a complainant cannot receive a written response, the complainant will be contacted via phone and informed of the results of their grievance. The table below provides the timeframes for responses 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.

Table 2: Grievance Processing Timeline

Stage	Timeline
Receipt and registration of grievance	Day 0
Providing acknowledgement of grievance receipt to the complainant	Maximum of three working days after submission of the grievance
Assessment/investigation of the received grievance	Maximum of 14 working days after submission of the grievance
Providing the complainant with a response	Maximum three working days after the assessment has been completed.
Reassessment of the grievance in case the complainant is not satisfied with the previously provided response	Maximum 14 working days 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.

Figure 9: Grievance Mechanism



4 Summary of Environmental and Social Impacts and Mitigation

4.1 Project receptors

Within a 2 km buffer of the OHTL route, human, ecological and other receptors have been identified. Project Affected Communities along the OHTL ROW are Kok-Moynok-1 (~500m from ROW), Kok-Moynok-2 (~1.5km from ROW) and Cholok village (Kemin district) (~220m from ROW). There is an existing unpaved road that runs alongside the northern section of the proposed route (Figure 10).



Figure 10: Gravel road that runs parallel to the OHTL)

Other receptors identified include several clusters of houses and businesses: a residential cluster, which includes scattered individual houses; a farming cluster; and a commercial cluster. In addition to the clusters, individual roadside shops, a fishpond currently under construction south of the village of Kok-Moynok-2, and the Nature and Biodiversity Conservation Union (NABU) animal rehabilitation centre have been identified. The proposed route requires the following crossings with natural features or existing infrastructure:

- Railway crossing.
- Crossing of the Chu River or its tributaries at 6 locations
- Multiple crossings of existing 220 kV overhead line (Issyk Kul-1, Issuk Kul-2 and Zapadnaya OHTL).
- Road crossings (EM11, EM23 and minor local roads).

4.2 Potential positive impacts of the Project

The ESIA identified the following potential positive impacts:

- Small amount of temporary job creation (including prioritisation of jobs for local people and women within 15km) coordinated via a **Local recruitment and procurement plan**
- Small amount of local procurement and business opportunities (food delivery, driving, accommodation, sale of locally available materials (cement, hardware);
- A more stable and diversified electricity network to support the transition to clean energy generation.

Enhancement action - To maximise local procurement and job creation, the Contractor will prepare a Local Hiring and Procurement Policy that focuses on maximising hiring of local

community members within 15km of the ROW for supporting roles (e.g. drivers), unskilled and semi-skilled jobs.

4.3 Biodiversity impacts

Habitat mapping along the OHTL route indicates that the OHTL passes through a wide variety of natural habitat types (grasslands, shrubland, riverine habitats, canyon/rocky areas and scree slopes) and man-made habitat types e.g. urban areas, agricultural land and rangeland/meadows). Within the Project area, most of the habitat/vegetation is in a relatively natural condition, with a low-moderate degree of impact from low-density livestock grazing activities that occur on a seasonal basis throughout most of the area, as well as limited zones of heavy impact from small human settlements, areas with heavy livestock grazing pressure, and hay meadows and other agricultural habitats.

The Project does not overlap, nor does it have the potential to generate significant adverse impacts on any national or international protected areas. The nearest protected area is Issyk-Kul State Reserve with Lake Issyk-Kul (at 2.5 km from the project RoW).

Six plant species with protected status are classified as high conservation value (also known as Priority Biodiversity Features) for the Project. It is not certain whether or not any of them will be impacted by Project construction, as the areas in which soil disturbance is to occur have not yet been finalized.

The details for this action are defined in the Project Biodiversity Management Plan (BMP), also publicly disclosed

Figure 11: One of the priority conservation species - *Tulipa ostrowskiana*



Mitigation action – The BMP specifies that pre-construction surveys for these plants will be carried out during the blooming period in all areas in which soil disturbance is to occur. The primary objectives of this pre-construction survey are to a) avoid impacting these plants to the extent possible, and b) implement rescue/relocation for any individuals located in areas where soil disturbance cannot be fully avoided. If rescue/rehabilitation of plants is necessary during Project construction, then operations phase monitoring will be conducted to document success of the relocation efforts. If any such relocations are determined not to have been successful, based on operations phase monitoring results, then additional restoration, or other mitigation of impacts to these plants will be necessary in order to achieve NNL. The specific nature of any such additional mitigation will be determined in consultation with qualified experts in consideration of the specific nature of the residual impact, agreed between NEGK and EBRD, and implemented by qualified restoration consultants, should it be necessary.

One reptile or amphibian identified as having a high conservation value (or PBF) for the Project is considered possible in the ROW, this being the Asian Frog *Rana asiatica*. It was not detected in the Project area during the baseline surveys, but it is considered possible that it could occur there, particularly in proximity to small water bodies and patches of woodland located along the river corridors of the Chui River and major tributaries (Konorchok, Kok-Moynok Rivers) through which the OHTL passes.

Mitigation action – All workers will be trained to identify the Asian frog so that if observed during the construction process, the Contractor ecologist can take necessary actions to remove it from the direct impact area.

Two species of mammal (Marbled Polecat, Snow Leopard) have been classified as high conservation value (or PBF) for the Project, and again, neither one was documented in the area during the baseline survey, indicating that these species are rare in the Project area, if they occur at all.

Mitigation Action - All workers will be briefed on the potential presence of these species and informed of prohibited actions, e.g. poaching and other actions to be taken to minimise interaction and impact.

Five species of fish have been identified as high conservation value (or PBF) for the Project, on the basis that they i) have sensitive status, and ii) may occur in the rivers that are crossed by the Project's OHTL in three places, including for spawning.

Mitigation Action - The Project will undertake micro-siting of pylons and access roads to avoid any areas within 25 m of the Chui, Konorchok, or Kok-Moynok Rivers, or 25 m of riparian forest groves along the rivers.

Sensitive species of raptors and vultures that nest within the area include Golden Eagle *Aquila chrysaetos* and Himalayan Griffon *Gyps himalayensis*. The baseline studies indicated that no collision-prone bird species occur in high abundance within the Project area, including during migration seasons. Individual species defined as priority conservation species for the Project that may be susceptible to OHTL collision impacts include White-headed Duck, Demoiselle and Common Cranes, Sociable Lapwing, Arctic Loon, and Great White and Dalmatian Pelicans.

Mitigation action - The Project has determined that to minimise risks to nesting birds, however, pre-construction raptor/vulture nesting surveys within 1 km of OHTL within potential raptor/vulture nesting zone of OHTL as defined in the BMP will be performed.

To minimise operational impacts, bird flight diverters will be installed along four sections of the line where it is determined the risk may be most prevalent. In addition, post-construction bird fatality monitoring will be performed for one year following construction.

In general, careful consideration will be made during construction works to avoid siting temporary laydown areas and generators near raptor nest sites and within forestry service land and to limit the extent of new access roads that must be built along the ROW using existing roads wherever possible.

Using the area for construction will change the environment and expose the ecosystems to change, but in this case, the degradation of the ecosystems will be minimal.

4.4 Cultural heritage impacts

No items of tangible cultural heritage as listed in the UNESCO World Heritage List are located within or near the Project site. Archaeological studies were carried out in 2025, and these studies have found large numbers of kurgans (burial mounds) near the Balykchy SS and along the OHTL RoW. The Project design has avoided placing project components within archaeological protected zones and has maintained a minimum 50m buffer from the archaeological sites and a where possible, a further buffer between 50 and 150m. Nevertheless, there are several locations where the OHTL RoW intersects with the protection zones of archaeological sites. However, this is expected to only have minor impacts on the archaeological sites as excavation work during the construction phase will take place only at the tower foundation locations and for the substation. The substation is located entirely outside the 50m buffer zones of the nearby kurgans, and therefore, no direct impact on kurgans from the construction of the substation is anticipated.

Based on the current routing, all except one angle tower have been identified as outside any identified 50m buffer zone, and the mapping shows that micro-siting of the remaining towers between each angle tower can be done to also avoid encroaching on the 50m buffer zones.

Mitigation Action - To ensure that works commence in line with national requirements and EBRD PR8, NEGK will develop a Protection Zone Plan (also called a cultural heritage management plan (CHMP)). If a 50m buffer cannot be maintained, NEGK will conduct a "Salvage Investigation" to determine whether construction works can proceed without excavation of the archaeological site. If preservation of the site is not possible, an Excavation and/or Relocation Plan for Archaeological Sites will be developed and implemented under the supervision of an archaeologist and in consultation with local users and custodians of the sites.

In addition, all features within 50m of planned work (tower, substation or access road) will be protected by erecting a cordon to reflect the 50m buffer zone, including clear signage, to protect the buffer zone and ensure no project vehicles encroach into the 50m protection zone.

An archaeologist will be present during all excavation works (as defined in the Protection Zone Plan (PZP)), and the PZP will include a Chance Finds Procedure and watching brief as part of the EPC E&S management system for all below-ground works. Following this approach will lead to a Project that is aligned with national requirements and respects the sites and is expected to reduce all direct impacts to acceptable levels.

4.5 Landscape and Visual Impacts

The ESIA has identified that most landscape impacts will arise during the construction period and return to almost pre-project levels following construction. The overhead line is visible from viewpoints along the whole length of the line, and the introduction of a new line into this landscape is considered to be high impact, considering it is a permanent change that is a noticeable deterioration in the landscape character and given that the new line in combination with the existing lines have the potential for the landscape to be dominated by wires, otherwise

known as a 'wirescape'. The ESIA has identified that the Kok Moynok canyon may be particularly susceptible to visual impacts due to its popularity as a destination for walkers and tourists. Permanent visual changes are deemed of moderate significance and unavoidable.

Mitigation Action - Given the scale of the Project and limited scope for specific mitigation measures related to landscape and visual impacts, the ESIA has identified local level measures that may minimise effects for certain receptors, e.g. localised planting around certain visual receptors (Kok Moynok canyon), around lower-level infrastructure, e.g. Balykchy SS.

4.6 Labour and Worker Health and Safety

Although labour regulation broadly aligns with international labour laws, there is potential for the working conditions and welfare of workers to be below required standards.

Mitigation Action - To manage this, the Project will develop a workers' code of conduct, a security personnel's code of conduct, and a labour management plan to manage the fundamental rights of workers, including promoting diversity, fair pay, rest periods, non-discrimination, working time regulations and overtime restrictions. The Project will ensure, amongst other things, that all employees of the EPC contractor and its subcontractors have an employment contract that is explained to the worker before signing and that the employee is given a copy of this contract. Labour audits will ensure wage slips with information on wages, overtime hours and pay, deductions, are clear and understandable and confirm their accuracy.

Requirements for maintaining worker health and safety during work will be defined in an occupational health and safety (OHS) plan and implemented through a permit-to-work system.

Mitigation action - The OHS plan will include requirements to undertake activity-specific risk assessments and assign the correct safety measures, such as safety supervisors, training and personal protective equipment (PPE). The effectiveness of the OHS plan will be monitored through regular inspections, audits and monitoring, including health monitoring. All workers will have access to a workers' complaints process, an essential process by which workers can access remedies for poor worker practices.

It is possible that workers may be housed in sub-standard accommodation in the local area, which can negatively affect their well-being and safety.

Mitigation action - Accommodation will be selected that aligns with national standards, Lender guidelines (specifically the EBRD/IFC Guidance on Worker Accommodation) and GIP. Accommodation will be selected to cause the least impact on local communities, and to avoid impacting tourists and tourism.

4.7 Social impacts

The nearest communities to the Project are Kok-Moinok 1 and 2 and Cholok, which are located along the EM11 highway, not along the RoW itself. However, local herders use the Project RoW, so there is the possibility that site clearance works and road construction may impact herders or their animals in and around the Project construction sites. **Mitigation action** - The Project will undertake a comprehensive stakeholder engagement campaign through the SEP, to inform community members of the possible risks and impacts of the construction of the Project.

Temporary labour influx of people (either for work, or with the hope to obtain work) can cause strains on local infrastructure, such as health clinics, hospitals, markets and schools. It can also put community members at risk of conflict with workers or at greater risk of contracting communicable diseases. **Mitigation action** - Training will be provided to workers and community members (as relevant) on communicable diseases and the risks related to at-risk behaviours.

There will be some groups within the local communities that will be more vulnerable to risks than others, or they may have difficulties in receiving Project benefits. These include women, the disabled, the elderly, the illiterate and youth. Some levels of gender-based violence (GBV) have been identified in the local communities (predominantly psychological and emotional violence, rather than physical violence). The introduction of workers in the vicinity of local communities has the possibility of increasing GBV between workers and community members. **Mitigation action** - The EPC will be required to prepare a plan/strategy to guard workers and community members against sexual exploitation and GBV. All workers will also be required to sign a Project code of conduct that sets out clearly project expectations for general conduct and outlines zero tolerance for GBVH infractions and dismissal steps.

Community members could be negatively impacted during the operations phase if they attempt to access the Project infrastructure. This is unlikely as community members have seen OHTLs before and are aware of their risks. **Mitigation action** - A Community Liaison Officer (CLO) will be hired by the Project to liaise with local communities and maintain open communication with local community members; a community complaints process is available for community members to raise concerns. Project contact details are provided in the introduction above.

4.8 Traffic and transportation impacts

Traffic and transportation risks are limited to the construction phase. The ESIA has specifically identified traffic safety risks along the EM11 and risks to local community members in the community of Kok Moynok 2 and the subdivision of DEU-10.

Mitigation action - Commitments have been made to prohibit vehicles from passing through DEU-10 and Kok Moynok-2. The EPC Contractor is required to develop a Traffic and Transportation Management Plan, requiring all drivers to adhere to a driver's code of conduct. Following the

implementation of the commitments set out in the ESIA, residual impacts are determined to be minor or neutral.

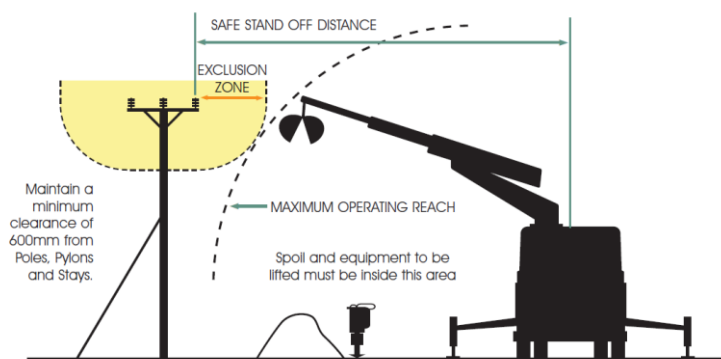
4.9 Electromagnetic fields and safety setbacks

There is **no possibility of EMF** impacts associated with the project's construction phase, since the electrical equipment will not be energised at this stage. During operation, the maximum magnetic field produced by an overhead line occurs directly beneath the conductors at mid-span. The setback distance for 500 kV OHTL is 30 m to each side of the outermost conductor, equating to a ROW of approximately 78m. International scientific research has shown that levels of EMF fall to acceptable levels well within 30 m of the overhead line.

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

500 kV	Magnetic Field (microteslas) uT	Electric Field (volts per metre)
Maximum field (under line) (ICNIRP Exposure Guidelines value)	100	11,000
Typical field (under line)	5-10	3000-5000
Typical field (25 m to side)	1-2	200-500

All receptors are outside the ROW; they are also far enough away not to experience EMF levels above the international standards and will not experience an impact. EMF levels connected with the substation exhibit similar falls in EMF levels within 25m of the substation boundary. **Farmers**



may continue to graze their animals and plant crops under the line as it is accepted that they are not directly under the overhead line for significant periods. However, it is necessary to adhere to careful working practices when working under the line, and there are safety exclusion

zones that are applied directly under the line to minimise the risk of electrocution.

Mitigation action - NEGK will run a campaign to inform residents and farmers who use the ROW of the safe way to work under the line and to highlight the absence of health risks when working or passing close to the lines. NEGK will also run safety campaigns to ensure local children do not undertake activities that will risk their safety.

4.10 Environmental impacts

The Project has been routed to maintain at least 120m between settlements and work activities and will therefore have a negligible impact on air quality (dust), noise, groundwater levels, water availability, soil quality and water quality and waste in the local region.

Mitigation action - To ensure this, GIP techniques for management and mitigation of impacts have been defined in the ESIA and ESMP to ensure receptors (e.g. the NABU wildlife rehabilitation centre), gravel road users, livestock users and commercial and residential receptors near the ROW are protected. Examples include ensuring all equipment is sited more than 200m from any receptor where possible, using defined access routes, returning impacted areas to pre-construction vegetation, adopting dust and noise control measures, enforcing speed limits in the work areas and along access roads, avoiding night time working, ensuring the use of licenced waste contractors, siting temporary worksites away from rivers and surface water features and adopting best practices for management of pollution from using machines and equipment, refuelling, storage and handling of hazardous materials and management of wastes.

The Project may generate negative environmental impacts from the use of hazardous materials or poor waste management.

Mitigation action – Worker and environmental risks from the use of hazardous materials will be mitigated or managed to acceptable levels as set out in the Project ESMP, including safe and secure storage of materials, clean-up equipment and appropriate worker protection equipment. Monitoring will be performed, e.g. daily visual inspection to ensure that best practice mitigation measures are working

4.11 Land acquisition, involuntary resettlement and economic displacement

The owner of the land rights of the Project AOI includes the government, private landowners and the Forestry Department. Local municipalities (until recently previously pasture committees) manage the temporary allocation of land for grazing. The Project will obtain servitude rights from these landowners for the land required for the OHTL. The footprint of the OHTL towers will cause a permanent impact for the lifetime of the Project (however, it will be a small impact). Site clearance for the OHTL ROW, access roads and temporary laydown areas/camps has the potential to impact access to grazing land and trees and crops that fall within the RoW.

The Project will impact a small percentage of the land that is being used by herders and communities, and the majority of impacts will be temporary. Disturbance at each tower footprint is short-term (approximately two to three weeks during tower foundation works and steel erection, and one to two weeks during conductor stringing).

The LARF has found that there will be no physical displacement of houses or businesses required for the Project. Instead, the Project affected people (PAPs) will be herders and land users impacted

by temporary loss of access to grazing land, and those that will lose trees and crops as a result of the clearance of vegetation under the RoW. Based on Pastureland Management Department (PMD) records and field discussions, 92 herder households (both officially registered and unofficial) are reported to use pasturelands crossed by the OHTL route. This number may change slightly as more detailed surveys are completed.

Mitigation action - Juru has prepared a Land Acquisition and Resettlement Framework (LARF) for the Project, which has identified the potential impacts of the Project and the compensation and actions required to mitigate these impacts. This will be followed up by the preparation of a Livelihood Restoration Plan, which will be the responsibility of NEGK, including the completion of census surveys and valuations, once the final layout of the Project is determined.

5 How will the Project implement the mitigation measures outlined above?

A framework Environmental and Social Management Plan (ESMP) has been prepared (Volume IV of the ESIA). The ESMP sets out Project-specific commitments arising from the impact assessment process and Good International Practice (GIP) requirements. A supporting Biodiversity Management Plan (BMP), Construction-ESMP and Operation-ESMP will also be prepared by Juru on behalf of NEGK, setting out further specific details on the requirements to be followed by the Contractor. EBRD will also include in the financial agreement an Environmental and Social Action Plan (ESAP) that also places certain obligations on NEGK to implement the findings of the ESIA.

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

The EPC Contractor will be required to establish an environmental and social management system (ESMS) to oversee the Project's development and construction activities. The 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.

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

Temporary worker accommodation in the community could expose workers to the risks of illness and below-standard welfare arrangements, and a specific project accommodation management plan will be prepared to stipulate that workers will be housed in accommodation that complies with EBRD/IFC Guidance on Worker Accommodation.

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 maximised 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 Kyrgyz requirements, the Project commits to meeting international standards in managing workers, such as the requirements of EBRD and the International Labour Organisation (ILO), which regulate working hours, payment, and leave, among other things. They

also prohibit the use of child and forced labour. The EPC Contractor must also be internationally certified to ISO45001 (or equivalent) in OHS aspects. Workers will be provided with relevant training for their work, as well as for their welfare 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 a safety setback has been identified. Where necessary, fences, signs and other safety features will be provided. NEGK 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 NEGK 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, minimise, 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 Cholok, Kok-Moynok-1, Kok-Moynok-2), land rights holders, land users (herders), tourists and Project workers. However, the majority of the Project impacts identified have been assessed as minor due to the temporary nature of the Project construction and the Project routing, which avoids as much as possible communities, residences and the E11 highway. Changes have been made to the Project route to reduce impacts on land users and businesses, archaeological sites and tourists, and mitigation measures have been identified that, once implemented, will reduce the risk of social impacts to minor or negligible levels. Care will need to be taken when works are within the 150m buffer of archaeological sites. However, the approach identified, including planning, training and monitoring the archaeological sites, respects the sites and is expected to reduce all direct impacts to acceptable levels. The Project will benefit Kyrgyz Republic 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, 32 Priority Biodiversity Features, no potential for impacting protected areas, 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 bird flight detectors 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.
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 <i>inter alia</i> , 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 unrecognised in baseline studies that are discovered during exploration and excavation 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 habitats 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).
Electromagnetic fields	Electric fields (ELF) are produced by voltage and increase in 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 is 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.
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, minimisation, and compensation/offset, and monitors these mitigation measures.

Term	Definition
Environmental and social management system (ESMS)	Part of the Project's overall management system that includes the organisational 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 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 an 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 the 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.
Indirect area of influence	Includes areas 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.
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, servitude or rights of way.
Livelihood	Full range of means that individuals, families, and communities utilise 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 is categorised as beneficial or adverse. Secondly, the beneficial or adverse impacts are categorised as major, moderate, minor or negligible based on consideration of several parameters.
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

Term	Definition
	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.
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.