**Draft**

**Kyrgyz Republic**

**CASA 1000 Project**

**Environmental Impact Assessment and Environmental Management Plan**

**Detailed Terms of References**

**1. PROJECT BACKGROUND**

The proposed CASA-1000 project will facilitate the first electricity trade of 1,300 megawatts (MW) of existing summertime hydropower surplus between the two regions, involving the Kyrgyz Republic and Tajikistan in Central Asia and Afghanistan and Pakistan in South Asia. Project preparation was guided by the 4-country minister-level Inter-Governmental Council (IGC) with a Secretariat that was put in place in 2011 and through consultations with the 10-member Central Asian Regional Economic Cooperation (CAREC) program. The project is expected to consist of the construction and operation of transmission infrastructure in the four countries, associated technical assistance during implementation, and mechanisms for the sharing of benefits with communities along the transmission corridor and would contribute to alleviating power supply shortages in Pakistan and Afghanistan and would enhance revenues and economic prospects in the Kyrgyz Republic and Tajikistan.

**2. PROJECT DESCRIPTION**

The project would consist of:

 A 500 kV line from Datka to Khujand (477 km) to transfer the surplus power from the Kyrgyz Republic to Tajikistan, with the Tajikistan internal network transferring this power to Sangtuda;

 A 115 km 500 kV line between the Regar and Sangtuda substations;

 A 1,300 MW AC-DC convertor station at Sangtuda;

 A 750 km HVDC line from Sangtuda to Peshawar via the Salang Pass and Kabul;

 A 300 MW DC-AC convertor station at Kabul; and

 A 1,300 MW DC-AC convertor station at Peshawar.

**3. Project Components in Kyrgyz Republic**

The500 kV transmission line from Datka to Khujand has the total length oftheof 477km,outof which452kmpasses in theSouth-Western Kyrgyz Republicand theremaining 25kmliesinTajikistan. The route generally traverses areas of low population densities through the three southern provinces of Jalal-Abad, Osh and Batken – overall it passes by less than two dozen towns/villages. The major long-term impact may be on some cultivated lands, while during the construction phase disruption could be caused to local communities, e.g. in carrying out farming activities, access to roads etc. From a land category and land use perspective the route traverses mountainous terrain with mostly grass and bush vegetation, steep sided barren land, rivers and cultivated land. No important natural habitats and/or physical cultural areas in the vicinity of the proposed route.

**4. IMPLEMENTING AGENCIES**

The implementing agencies are the four NTC[[1]](#footnote-1)s in their respective countries, which will be responsible for (i) establishing the transmission infrastructure for the CASA-1000 project, (ii) operating and maintaining the AC system in their countries; and (iii) coordinating with the DC system operator for smooth operation of the overall CASA-1000 system. These companies are:

 National Transmission and Despatch Company (NTDC), Pakistan.

 OJSHC Barki Tojik (Tajikistan).

 Da Afghanistan Breshna Sherkat (Afghanistan).

 JSC National Electric Grid of Kyrgyzstan or NEGK (the Kyrgyz Republic).

**5. POTENTIAL ENVIRONMENTAL AND SOCIAL IMPACTS**

Construction related impacts are likely to be short term and site specific and can be mitigated by applying internationally recognized best construction practices. Typically such impacts are related to aspects such as: (a) location, establishment and operation of the construction camps; (b) construction of about 3000 towers required to support the OTL in four countries; (c) routing and construction of the many access roadways required throughout the length of the project; (d) soil resource management and the need for erosion control; (e) presence of physical cultural resources in the project area of influence; and (f) a range of security issues (including unexploded ordnance and land mines), particularly associated with the on-going conflict in Afghanistan and associated security issues in parts of Pakistan’ tribal regions.

The project Regional Environmental Assessment (REA)[[2]](#footnote-2) presented an analysis of potential downstream hydrological impacts from the project and concluded that the proposed CASA-1000 project does not envision any change to the current operational regimes of the Nurek and Toktogul dams, which would result in changes in downstream flows.This analysis was based on information available from the feasibility study and other studies in the region, as well as from the public domain. The basic premise for the CASA-1000 project is that the Central Asia countries have existing (in the Kyrgyz Republic) or potential (in Tajikistan) surplus of clean energy in summer from their existing hydropower plants without new generation, which is supported by the analysis of past exports and spillage of water, that could be used to offset shortages in South Asian countries, particularly Afghanistan and Pakistan. The summer surplus is primarily linked to the operation of the Nurek and Toktogul reservoirs, which regulate the releases in the Vaksh River (Tajikistan) and the Naryn River (Kyrgyz Republic) respectively.

Also, the project is not expected to cause significant impact to critical and natural forests as it will not include any plantation activity, commercial harvesting or harvesting conducted by small-scale landholders or local communities. Furthermore, during the construction phase (and potentially during the operations stage), there will be some removal of vegetation for right-of-way maintenance and for access roads and other associated facilities, impacts of which will be studied by the proposed country-specific ESIAs.

**6. PROJECT ENVIRONMENTAL CATEGORY**

Based on proposed investments and baseline analysis, the project was rated Category A because it involves green-field construction of about 1,200 Km of high voltage Overhead Transmission Lines (OTL), crossing four countries with potential adverse environmental and social impacts that in some cases might be significant due to the fact that proposed civil works will be implemented in/or in the vicinity of environmentally sensitive areas.

**7. SCOPE AND MAIN OBJECTIVES OF THE ASSIGEMENT**

The original project-wide Environmental and Social Assessment (ESIA) based on the prefeasibility study, summarizing potential impacts from construction of transmission lines (TL) within a 2 kilometer wide corridor has been prepared, disclosed and consulted in all participating countries. The detailed design, including final routing/alignment of TL within this corridor, the exact location of DC-AC converter stations and tower footings, etc. will be defined later by the engineering, procurement and construction (EPC) contractors, following detailed route surveys and considering the site-specific environmental and social aspects. The environment and social assessment work conducted during the Feasibility Study screened and selected a corridor within which the TL will be constructed. The subsequent ESIA supplemented this work by the inclusion of country-specific assessment work that sought to identify if there were any site-specific ‘show stoppers’ due to sensitivities. This subsequent work also developed a range of measures to mitigate potentially adverse effects and manage project implementation, as part of an ESMP that was developed. A special (independent) Avian Risk Assessment and Management study focusing on avifauna revealed that there were some inherent risks to birds, generally considered to be at a local level, but which required further evaluation through field study. This work also discovered that there were several sites in proximity to the TL routing that were of strategic importance to seasonal migration of birds due to the habitat type. Consequently, further detailed field work needs to be undertaken as part of the individual, country-specific ESIAs that are scheduled to be undertaken by the national ESIA Consultants. These activities will be based on the results of the project Regional Environmental Assessment (REA) which summarizes potential primary impacts from construction of transmission lines within a broader corridor of two km width, and follows a framework approach with detailed guidance for preparing country specific ESIAs and several specific Management Plans (MPs) by independent EA consultants that would meet the requirements of respective national laws and applicable Safeguards Policies of the World Bank. *Thus the main objective of the assignment is to conduct an ESIA, obtain approval from the State Agency for Environmental Protection/State Ecological Expertise and prepare an EMP for the proposed activities within the territory of the Kyrgyz Republic.*

**8. GUIDANCE FOR THE ESIA study**

Following on from the REA, it is essential that individual ESIA would be in full compliance with national policies and legislation and World Bank (and other participating IFIs) Safeguard Policies and standards. In accordance with WB practices, it is customary for the Client to be responsible for conducting the ESIA for projects that are being financed. It is therefore likely independent ESIA Consultants should be engaged to undertake the ESIA. This section of the TORs provides guidance to those Consultants, so that the work will be carried out in compliance to the required standards, and also that the scope of work considers the amount and extent of E&S investigations that have preceded it.

While conducting the ESIA the Consultant might use the Integrated Biodiversity Evaluation Instrument (IBEI) which was developed by IUCN, UNEP World Environmental Monitoring Center, International Protection Company and International Bird Protection Association to check whether any significant biodiversity areas are located within the vicinity to or on the proposed TL site. This is a useful resource for selection in developing the map of high- value biodiversity areas (many of which correspond with Critical Natural Habitats) within the Project area. Based on the IBEI results it will be necessary to focus the site visits and investigations, as well as consultations with relevant national authorities, NGOs, individual experts and local communities.

Overall the general information and content of REA form part of the TOR for ESIA as they will build on REA and preceding studies; hence, general information is not repeated in the TOR, which is focused on key tasks to be implemented. The ESIA contractors will be provided with REA prior to works and be required to review and build on ESIA reports prepared during previous studies, which the REA refers to.

Additional useful for the ESIA information is presented in Annex 1 and Annex 2 to the REA, which also includes management plans and other information that could be used as part of the contract document in order to ensure efficient environmental management in ESIA and during construction activities.

**9. APPROACH AND CONTENT**

The ESIA approach includes compliance to both national legislation[[3]](#footnote-3) and the World Bank Safeguard Policy[[4]](#footnote-4).

As described in the REA, the member countries, including Kyrgyz Republic have their own approach to EMP/ESIA improved and enhanced over the years, and national legislations regarding EIA/ESIA; normally, they have standards and guidelines that contemplate the EIA process as well as the legally established evaluation process and documents prepared by the Government or the Agency’s authorities. However, since these standards and possibly, which is more important, the EIA practice continue to develop in the region, it is critical that the EIA work meets highest relevant standard and be responsive to the World Bank’s and other participating International Financial Institutions’ Safeguard Policy.

**10. THE STRUCTURE AND THE CONTENT OF THE ESIA**

Below is presented an expanded Table of Contents (ToC), which is presented to indicate the coverage of individual ESIA. Each ESIA shall be aimed to discuss typical issues in order to ensure that all EA-related issues are adequately covered by ESIA because such country-specific ESIA may vary in terms of content and structure to the extent when issues and processes should be followed in required detail. The ESIA Consultants should aim to build on the previous ESIA work, presented in the REA, by providing the site-specific detail from fieldwork; facts, figures and detailed assessment work; and moving on to the EMP management aspects, with details of organisational aspects, such that the approach and range of management measures described in the EMP are delivered successfully.

***a. Acronyms and Abbreviations***

All acronyms and abbreviations used in the ESIA must be clearly and succinctly defined and described herein.

***b. Executive Summary***

A general summary of the ESIA shall be provided and shall be written using a vocabulary that can be easily understood by the public.

***c. Project Description and Context***

Objectives of the proposed Project, overall project description (components, funding sources), country specific project descriptions (i.e., proposed investments in the respective countries, including a clear description of associated and off-site facilities such as access roads, borrow pits, workers camps, number of towers, Convertor Stations etc.), a summary of work carried out till date and the process/methodology followed in preparing the ESIA.

***d. Legal and Regulatory Framework***

This section of the ESIA shall define the legal framework under which the ESIA is being completed, including applicable environmental standards, norms and requirements set forth at the international, national, regional and/or local levels and that of the World Bank.

***e. Project and Alternatives Description***

To include a full description and location of the proposed project and reasonable alternatives including ancillary facilities and operations such as the camp/housing for construction, borrow and disposal areas, sanitary services, waste disposal and transportation infrastructure etc. All project alternatives that are reasonable and feasible shall be summarized and evaluated. Full reference shall be made to the ESIA and REA in each individual ESIA. These aspects must draw on the REA and the specialist avifauna study that was undertaken, which identifies the generic risks to birds from power projects and a number of important areas and habitats likely to support high numbers of birds, representing greater risk to bird populations and/or species.

 Operation phase: Details of equipment, machinery and labour to be used during operations.

 Closure and decommissioning plan: Brief outline for decommissioning and closure of the infrastructure and referencing that the project operator shall contact the proper regulatory agency(s) to obtain the environmental guidelines to carry out the closure or decommissioning.

***f. Environmental Baseline***

Based on information available from the literature, government, specialist studies, preceding studies and site fieldwork and surveys as required, the ESIA shall provide information on the environmental and social setting for the different types of physical, biological and social‐economic‐cultural environments. All sources of data must be cited in the ESIA and this section shall include the following:

 Soil Resources and Land Use: baseline soil resources, as applicable to potential effects. Land use for agriculture and other major uses; Erosion and sedimentation potential; Quantity and quality available for re-vegetating and restoring the disturbed area after temporary use.

 Water Resources: Surface water resources: permanent and intermittent streams, rivers, wetlands, lakes and reservoirs within the area of influence; Groundwater and exploited aquifers if potentially affected.

 Air and Climate: Baseline information for air resources shall be collected for a representative period and include rainfall and wind direction.

 Noise and Vibration: Present a description of the noise and vibration levels for receptors near where noise generating activities of the project may occur.

 Aesthetic and Visual Resources: Photos presenting baseline panoramic views of the facility site from potential receptors, where TL and tower routing may create a visual impact.

 Biological Environment: Provide information on the location and condition of ecosystems along the proposed routes of the transmission line including: Vegetative mapping of terrestrial and wetland habitats; Aquatic and Terrestrial fauna: Fish and Aquatic Resources potentially affected. Pay particular attention to the protected areas and habitats already identified as important for birds (e.g. IBAs - Important Bird Areas) and Ramsar) in the REA. А more detailed study of avian problems will be required for Osh and Batken oblasts, where intensive nesting and flyways are observed.

 Socio‐Economic Conditions: Identify and map nearby human settlements in the Project area, paying special attention to communities or people potentially affected by the Project. For such PAC/PAPs it will be necessary to collect cultural and socio-economic data as may be necessary to assess potential impacts on their income, livelihood status etc. Any resettlement, whether that be through land acquisition or actual physical resettlement will require detailed analysis, as per guidelines from WB Involuntary Resettlement policy and the standards and guidelines that are generated from the LARF/RPF work in each Project country for the Project. In the latter case, data would include: population (size, gender and age distribution); cultural characteristics (religion, ethnic composition, languages spoken, etc.); economic activities; literacy rates; community organizations; public health and safety; diseases in the Project area and level of emergency services and access to clinics, doctors and hospitals; existing practice for assessment of occupational health; existing electromagnetic fields; skills and services.

 Infrastructure: For each settlement potentially affected, describe the infrastructure such as roads and traffic patterns on existing roads. Public health infrastructure as appropriate if it is to be used or adversely affected: drinking water supplies and treatment; wastewater treatment and management; solid and hazardous waste management and treatment; communications infrastructure: locations of transmission lines (if applicable); Locations of microwave towers and/or antennae (if applicable).

 Cultural, archaeological, ceremonial and historic resources: identify all cultural, archaeological, ceremonial and historic resources within the area of influence; information on indigenous people or other traditional cultures, if any. Commence with conducting consultations with the governmental ministry or agency responsible for archaeology and any specialist interest groups or societies. ESIA Consultants should either employ or contract in the requisite specialists to undertake this work.

***g. Assessment of Impacts***

The ESIA shall provide information on potential impacts (direct, indirect and cumulative) and their magnitude and frequency on physical, biological, social‐economic‐cultural resources resulting from construction, operation and a look ahead towards closure issues of the proposed project and associated on-site and off-site facilities (e.g., access roads, borrow pits, workers camps if any, transportation and storage of construction equipment and materials) if relevant.

The ESIA shall identify which impacts are significant and the criteria used to make this judgment. Assessment should look at both, the impacts that will be intrinsic to OTL during construction, and during subsequent operation. Critical data input from Project description and environmental baseline analysis shall be used as the baseline upon which potential impacts are forecast. The ESIA shall also identify sources of data used and the uncertainties associated with the outputs of each method used.

 *Air and Climate:* potential impacts to air resources shall be described including impacts on ambient air quality and any sensitive receptors

 *Noise and Vibration:* potential impacts from noise shall be described in the project area, particularly for nearby communities; potential vibration for any blasting or movement of heavy equipment; overall assessment of significance of direct, indirect and cumulative impacts for all phases of the proposed project based upon analysis of magnitude, frequency, scope and duration.

 *Aesthetic and visual resources:* potential impacts to aesthetic resources shall be described including impacts on visual resources and landscapes; overall assessment of significance of direct, indirect and cumulative impacts for all phases of the proposed project based upon analysis of magnitude, frequency, scope and duration.

 *Biological Impacts:* potential impacts to biological resources: vegetation/flora and associated ecosystems; deforestation or wetlands destruction; other vegetative type conversions; direct vegetative removal for roads, rights of way and substation locations; spread of noxious or invasive species; overall assessment of significance of direct, indirect and cumulative impacts for all phases of the proposed project based upon analysis of magnitude, frequency, scope and duration in context.

 *Aquatic and terrestrial wildlife/fauna and associated ecosystems:* describe and quantify potential impacts; loss of habitat; disturbance of aquatic resources during construction, operations, or maintenance activities; wildlife resources, paying particular attention to the Avifauna Risk Assessment that is presented in the REA and the issues of protected areas; design features to inherently reduce or avoid the potential for electrocution such as the distances between electrified components and insulators; the routing through high bird-use areas/habitats and the use of deterrents and line markers; and the prevention of nesting and perching features wherever possible; loss of habitat, migratory routes/corridors, and breeding areas due to changes in vegetative cover/wetlands loss; disturbance of habitat, migratory routes/corridors and breeding areas due to project construction, operation, and maintenance, recreational use, and human settlement associated with the project (e.g., noise, vibration, illumination, vehicular movement); loss or contamination of drinking water for wildlife species; overall assessment of significance of direct, indirect and cumulative impacts for all phases of the proposed project based upon analysis of magnitude, frequency, scope and duration in context

 *Endangered or Threatened Species:* Describe and quantify impacts to endangered or threatened species or habitats; Biodiversity; Individual species (with special emphasis on endemic, rare, threatened and endangered species); Overall assessment of significance of direct, indirect and cumulative impacts for all phases of the proposed project based upon analysis of magnitude, frequency, scope and duration in context. See more discussions on Avifauna Aspects below under section 8.6 on Key Environmental Impacts and Mitigation.

 *Protected Areas and important Natural Habitats:* impacts on the integrity of any protected areas and other important natural habitats and their ability to support the representative interest for which they were notified and a review of sensitive natural habitats must be completed along the transmission line route.

 *Social‐Economic‐Cultural Impacts:* The ESIA shall assess potential positive and negative impacts to socio-economic‐cultural resources including: socio‐economic conditions; increased individual incomes; direct employment at the project; indirect employment generated by project activities; other economic activities stimulated in the community as a result of the project; employment opportunities for local residents; displacement or disruption of people’s livelihoods (e.g., fishing, hunting, grazing, farming, forestry and tourism); public finance requirements – will more infrastructure need to be built and maintained to meet the demands of increased population; impacts on public health; creation of new electromagnetic fields near residences, including their strength and extent; potential for induced or conducted currents along the transmission right‐of‐way from electric and magnetic fields; impacts on worker health and safety; occupational diseases due to exposure to dust and other project related activities such as handling of explosives, solvents, petroleum products, etc.; Identification of physical risks and safety aspects; potential for fires; overall assessment of significance of direct, indirect and cumulative impacts; for all phases of the proposed project based upon analysis of magnitude, frequency, scope and duration in context.

 *Infrastructure:* Transportation infrastructure: potential impacts of transportation and traffic patterns on existing roads and related aspects as may be relevant such as run-off into rivers, noise issues etc. other potential issues such as interference with community infrastructure should also be covered here.

 *Cultural, archaeological, ceremonial and historic and resources:* damage during construction; visual or audible elements that diminish integrity; loss of medicinal plants or traditional use areas

 *Land Use:* any changes.

***h. Mitigation and Monitoring***

This section of the ESIA must include measures designed to mitigate potential adverse impacts to physical, biological and social‐economic‐cultural resources from construction, operation and closure of the proposed project. These shall include measures to avoid and prevent, and if needed, to reduce or minimize adverse impacts. The project proponent must include measures considered to be “best practices” in the design of all alternatives, compliant to World Bank Safeguards policies and EHS Guidelines. Here and/or in the Environmental Management Plan section, proposed mitigation shall be described in auditable terms and at a level of detail sufficient to demonstrate its effectiveness in addressing the concern or performance criterion, including its anticipated level of effectiveness and/or measurable performance, and design specifications.

The monitoring plan must include monitoring throughout the life of the project for each potential mitigation to confirm the effectiveness of the measure and support contingency plans to provide assurance that the project, at the site preparation, construction, operation, expansion, and closure stages will meet applicable environmental requirements/standards by law, and fall within the limits of impacts deemed acceptable upon approval of the ESIA. Some important items to address in the mitigation plan and associated monitoring plans include, but are not limited to the following:

 Workers to show respect to the local populations and their culture and social rules; measures proposed to protect public from failure of proposed facilities; design and operational measures to avoid or reduce risk; measures to exclude public from hazardous areas; development of an occupational health, industrial safety and accidents; prevention program with appropriate accident prevention program, reporting and periodic review including provision of routine training and testing, and proper safety equipment such as hearing protection, hard hats, steel‐toed shoes, safety railings, fall arrestors etc.

***i. Environmental Management Plan***

The ESIA shall include an Environmental Management Plan (EMP) to prevent, mitigate and monitor each potential impact identified in the ESIA. Plans will describe actions to be taken in sufficient detail to provide a basis for subsequent auditing of compliance with commitments made in the ESIA process including who is responsible, how and when it will be implemented, what will be done and what results will be achieved, why it is being done, and how to know whether it is effective in addressing the underlying concerns. Environmental management plan should cover mitigation and monitoring measures for design, construction and operation stages.

During the the design stage all environmental and social requirements of the Kyrgyz Republic and participating IFIs should be fully integrated into the design documents. . This work should be implemented in strong cooperation with the EPC contractor. During the construction stage the EMP has to prescribe all mitigation and monitoring activities to be followed by the contractors and by the NEGK, while implementing the proposed activities, making sure they are in compliance with the environmental requirements, prescribed in the document.

Lastly, for the third stage, the ESIA Final report should provide recommendations for “NEGK”, which should be followed during the TL operation and maintenance.

The Environmental Management Plan shall have the following elements:

 Overview of Environmental Management Plan organization and policy; project management and how environmental management and organization relates to overall project responsibility. Describe the personnel and performance accountability system for design, operation and maintenance for implementation of mitigation and monitoring measures; including commitment to continuous improvement, control and environmental monitoring and good relationship with neighbouring populations and countries, as well as the commitment to internal controls such as compliance and environmental monitoring and routine audits. Include all monitoring, inspections and management, as per the REA EMP approach to management and inspections throughout the various project partners, from Client to EPC Contractor.

 Contingency Plans shall be prepared and described to address a) failure to meet specific performance criteria established by law or necessary for the project to meet its commitments in the ESIA (as per EMP Penalty system etc.) and b) respond to natural and other risks previously identified and mitigated in the ESIA in the event reasonable and feasible mitigation measures to address the risks are inadequate.

***j. Public Consultations and Disclosure***

The ESIA and EMP report should also describe the public consultations process followed, including a summary of key issues/concerns raised and how they were addressed. It is necessary to ensure consultations with Project Affected People, civil society, Avian experts (especially while developing mitigation measures in hot spots identified during the ESIA process) at least twice: (a) shortly after environmental screening and before the terms of reference for the EA are finalized; and (b) once a draft EA report is prepared. In addition, develop guidance for NTCs to consult with such groups throughout project implementation as necessary to address EA-related issues that affect them.

**Annexes**

These shall be numbered and duly referenced in the text, to include Public Consultation: public consultation plan, target audience, approaches and methods, feedback incorporation etc.; see Consultation Guidance Plan; technical supporting documents, maps etc.; references: List of all references, (books, articles, technical reports and other information sources) cited in the ESIA.

**11. GUIDANCE FOR ALIGNMENT CHANGES**

To date in the Project development, starting with the Feasibility Study, a 2 km wide Corridor of Interest (CoI) has been established, with the idea being that the final TL will be constructed within this linear area. It is assumed that this CoI was arrived at by progressive analysis of in effect joining together the infrastructure required to form the Project and essentially the power source and power destination. The selection of such a corridor takes into account aspects such as the shortest feasible route (to minimise cost) and a range of constructability issues including topography; physical constraints; access; geology and soil type; protected or other sensitive or no-go areas; existing infrastructure and communities and the like. The overall alignment followed as much linear infrastructure as feasible, to reduce impacts on undeveloped areas of land.

This CoI was then assessed in the ESIA and associated ESIAs and was generally found to be an acceptable alignment and of sufficient width to allow ‘minor’ route modifications to avoid sensitive or valuable features, including the precise location of associated infrastructure, such as towers and sub-stations. However, it has come to light during this REA that some Clients may want to make modifications to this alignment to avoid issues like security installations and cultural issues such as enclaves of ethnic populations and areas where national boundaries have historic issues with their positioning. In particular, the section of Datka-Khudjant 500kV line route within the Kyrgyz Republic was selected during the feasibility study in 2010. It is expected that certain changes will be introduced to the route in between Datka substation and Kyzyl Kia town, which will bring deviation from the original alignment as significant as 5 km. This problem will be addressed jointly with Contractor Engineer at the preparatory stage. This work will also be contributed by ESIA consultant, which will help to identify solutions simultaneously to environmental and socio-economic issues related to the OTL corridor.

In theory, it would be very advantageous to have all the sensitive features and ‘hot-spots’ identified and mapped out across a wide area, such that potential route changes could be evaluated. In practice, however, this is seldom achievable as the effort and cost of doing this would be high and also the route change could still lie outside this wider zone if a large deviation were to be enacted. This section therefore presents guidance on the approach to assessing route changes.

If an exact alignment is proposed by a Client at commencement of the country-specific ESIAs, then this new corridor should be assessed as part of the ESIA, in a fairly standard manner and no particular issues are envisaged. If, however, a Client seeks to avoid a particular site or feature there may be a need to develop a new CoI around the avoidance area. The approach for assessing this should involve approaches including:

 The ability to screen potential CoIs for statutorily protected sites such as National Parks, Ramsar sites, protected habitats or valuable sites and habitats that support protected species at either international or national level, vulnerable species etc. Therefore, a data collection and mapping exercise is required, which could involve acquisition of new satellite or aerial imagery, consultation with relevant stakeholders such as Environmental Protection Ministries/Agencies and ground-truthing/field survey.

 Collection of data on socio-economic and cultural issues and values, community infrastructure etc., so as to minimise potential adverse issues.

 Collection and analysis of data on geology, topography and soil and water resources.

In summary, an analysis requires to be performed that ‘funnels’ down the E&S issues, commencing with a broad or high level screening, sequentially down to a final established CoI, that can be the subject of an individual ESIA. As cited in this REA there is considered to be a certain amount of inherent flexibility around TL routing, as there is little definitive guidance in this technical area. In other words, there are precedents of avoiding community residential and other sensitive sites, but there is little in the way of absolute protocol that determines the distance of power line infrastructure to community infrastructure, housing etc. and these aspects require to be resolved on a case-by-case basis, taking into account local issues, landscapes and other ‘design drivers’. Within the international literature and research into power lines, sub stations and related power infrastructure that is capable of emitting magnetic fields, there is little in the way of absolute guidance or standards that determine the proximity of housing or other land uses to power infrastructure. An indicative reference of a 1km distance is considered useful in appraising route modifications, so ESIA Consultants could use this figure as a guide when screening and assessing alignment changes.

**12. KEY ENVIRONMENTAL IMPACTS AND THEIR MITIGATION**

The four initial ESIAs completed for each of the countries include a detailed analysis of anticipated project impacts, where possible. It must be recognized at this stage that the routing and amount of engineering and Project design detail available to date is only at a feasibility stage and as explained elsewhere the whole range of construction-related aspects such as roads, laydown yards and camps have yet to be determined, and will only be determined during the detailed design stage.

From a consideration of the work undertaken to date, it is considered that there are no ‘show stoppers’ i.e. potentially significant adverse impacts that have been identified that cannot be avoided or mitigated. The ‘hot spots’ established to date include the sites and habitats that are important to birds and these were studied in the IEL ESIA and specialist avifauna report, which concluded that further fieldwork was required to evaluate potential effects in more detail and develop mitigation and management plans. This work will be undertaken as part of the four country-specific ESIAs to be undertaken on behalf of the Client organisations. Other potential issues relate to proximity to settlements and routing through agricultural lands. Until the detailed ESIAs are performed it is not possible to quantify these potential effects and categorically state their level of impact. However, given that there is inherently a 2km wide corridor within which the TL will be constructed, that width is considered generally large enough to be able to avoid sensitive features such as houses, socially sensitive buildings and the like.

Issues of agricultural land appears at this stage to be manageable, as the key constraints associated with power lines relate to a maximum clearance height and therefore, within reason, many agricultural practices can continue within the CoI and the Right of Way (RoW) will not be sterilised in terms of land use or vegetation clearance. Worldwide typical standards and guidelines routinely cite vegetation that is not capable of growing beyond a height of 4-5m is allowable under power lines and therefore agricultural crops and livestock practices should remain unaffected.

**13. AVIAFAUNA ASPECTS**The Avifauna Study was prepared by avifauna specialists, who are knowledgeable about bird species and their habitats and breeding and migration aspects within ornithology. They are also knowledgeable about the potential electrocution aspects of power projects and recommended techniques and designs that inherently reduce or eliminate electrocution risk. Reference to this study and the range of literature available in the scientific community, needs to be made such that this issue is fully taken into consideration in the design and environmental assessment of the Project. The other main aspect of bird strike should also be addressed in a similar manner; there are a range of approaches, techniques and specific equipment (e.g. markers, diverters and colours) that are available to inherently reduce the chance of bird strike.

Consequently, the ESIA Consultants need to ensure that the requisite ornithological expertise is available or contractually engaged into their ESIA team. Full reference and adherence to the findings and recommendations made in the Avifauna Study shall be made accordingly. Site visits shall be made to each of the identified bird habitat sites and a specific assessment conducted of all the relevant issues such as:

 The precise alignment of the TL, in relation to flight directions, numbers and bird species

 The exact location of towers and other infrastructure, in terms of habitat features and likely number of birds, their interest in the site such as migratory feeding stop over, breeding locations and other habitat-related aspects

 Habitat and species evaluation of the construction aspects, such as access, ground disturbance, soil management, and any other relevant issues

 Timing in relation to the site interest such as breeding or migration, with the construction work timing aimed at minimising potential adverse effects, all of which needs to be fed into the construction programme as early as possible, to potential timing constraints to be accommodated into the construction programming

**14. ENVIRONMENTAL AND SOCIAL MITIGATION SUB-PLANS**

The REA concluded that environmental and social impacts of the Project are expected to be minimal at this level of analysis and are expected to be effectively mitigated through implementation of measures contained in its EMP. After reviewing and incorporating the findings from the avifauna study and on-going social assessment work, this basic conclusion is supported. For each potential impact, the relevant plan that is required is indicated and detailed information on plan content is provided in Annex 1.

Impacts and related mitigation measures include following:

 Environmental aspect: organization’s actions, products or services that can interact with environment and can be direct or indirect;

 Impact: influence by environmental aspect on environmental or social receptors;

 Mitigation objective/standard: Project objective as a result of mitigation;

 Mitigation: proposed activity for reduction or diminishing Project impact; and

 Relevant plan: liaison between proposed mitigation plan and measures that should be included in the biding specifications.

The EMP should be developed as an essential document in the hierarchy of supervision sub-plans. It should set out the structure of covering environmental and social management principles, which will be applied to the Project contractual aspects.

It should also contain guiding principles and procedures for communication, reporting, training, monitoring and plan review to which all Project personnel, contractors and subcontractors are required to comply with throughout the preconstruction and construction phases of the Project. Operation phase sub-plans will be subsequently developed by the project executing agency (NTCs), once the Project has been constructed.

In addition, the EMP should be considered as a general framework document forming assignment for all prescribed in the REA project environmental and social sub-plans that need to be completed including the following:

 Workforce and Site Installation Management Plan

 Site Preparation and Restoration Management Plan

 Construction Impact Management Plan

 Waste Management Plan

 Pollution Prevention Plan

 Aesthetics and Ecological Management Plan

 Safety Management Plan

 Physical Cultural Property – Chance Finds Management Plan

 Community Relations and Health Management Plan

**15. CONSULTANT COORDINATION AND REPORTING**

The OJSC NEGK will coordinate SEIA consultant work and facilitate its interaction with EPC contractor and state environmental agencies via Project Implementation Unit (PIU)

The NEGK PIU will be also responsible for controling over the work of SEIA consultant. Within the PIU there will be hired an Environmental Specialist which will be in charge of supervising of ESIA Consultant’s activities ensuring their high quality. She/he will be also in charge of reviewing and approving of all ESIA Consultant’s reports, providing comments and suggestions, when needed. al.

The ESIA Consultant will report to the PIU on a monthly basis. Each report is a subject to approval by the PIU Executive Director. NEGKNEGK

**16. DELIVERABLES**

The ESIA Consultant deliverables include the following:

 Inception report with the methodology of the study and timetable and full draft of the operational TORs;

 Results of the public consultation on the draft TORs for the ESIA;

 Draft ESIA report for NEKG revision and for further public consultations;

 Results of the public consultation on the draft ESIA report;

 Final version of the ESIA report.

The final Report should be presented in both Russian and English. It should cover all sections specified above in the point 10.

**17. SCHEDULE OF PAYMENT**

Structure of payments to the Consultant on SEIA will be determined during signing the contract based on following conditions:

- An advance payment that shall not exceed 20%;

- Subsequent payments will be made upon submission and approval of the deliverables specified above.

**18. QUALIFICATIONS REQUIREMENTS FOR ESIA CONSULTANT**

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| The ESIA Consultant must be a legal person with the following qualifications:  Activities required by the present Terms of Reference are listed in the charter or the statutes of the applicant organization / institution –;  The applicant organization / institution - has required licenses, certificates, certificates of admission to types of work, specified in the given Terms of Reference;  The applicant organization / institution - and its potential subcontractors have qualified professionals able to perform the present Terms of Reference;  experience in developing of SEIA for projects in the energy sector;  experience in cooperation with public authorities, scientific organizations, experts and practitioners at all levels (national, regional, etc.) on matters relating the present Terms of Reference;  experience in engineering and environmental studies for the construction and other economic activity in order to prevent, reduce or eliminate adverse effects and related social, economic and other consequences and maintain optimal conditions of living for population, including:  • Experience in carrying out studies to determine the migration routes of birds, and their nesting;  • Experience in the review and analysis of environmental and social aspects of the project alternative TL routes. |
| Overall the consultant should have the necessary skills to prepare a description of the existing environment conditions, environmental impact assessment of the project during the construction and operations, to provide recommendations on management, mitigation and monitoring of the selected parameters. Furthermore, the consultant and its potential subcontractors should have material-technical base, which allows to perform the Terms of Reference, as well as adequate training and resources for sampling, analysis and monitoring of air quality standards, noise, soil and water, noise, vibration to meet state standards, construction norms and regulations, sanitary regulations and norms. Also the consultant should have sufficient expertise to ensure quality control of field data and coordination with agencies, as well as an overview of the legal framework of the project to analyze the administrative and legal framework for environmental protection in the Kyrgyz Republic, including international treaties and conventions ratified by the Kyrgyz Republic.  Experience in ESIA studies for international projects in the power sector/electricity transmission lines and in particular in Central Asia would be an asset during the tendering process. |

1. The term NTC is used to identify the responsible organisation in each CASA-1000 country that distributes and manages the electricity infrastructure [↑](#footnote-ref-1)
2. The REA document will be attached to the TORs [↑](#footnote-ref-2)
3. Define only laws/decrees and their special requirements that are relevant/feasible for this Project [↑](#footnote-ref-3)
4. Use ISDS final stage concept as a basis for identification of requirements of the World Bank Group’s policy applied. It should be updated upon release of the subsequent ISDS stage by the World bank. [↑](#footnote-ref-4)