د افغانستان برېښنا شرکت

Islamic Republic of Afghanistan

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA)

FOR

PROPOSED KAROKH 31KM, 110KV TRANSMISSION LINE

(A Component of Herat Electrification Project)

Implementing Agency: Da Afghanistan Breshna Sherkat (DABS)

Kabul

January 2019

Acronyms and Abbreviations

ADB	Asian Development Bank
AIP	Access to Information Policy
ALA	Afghanistan Land Authority
ARAP	Abbreviated Resettlement Action Plan
ARTF	Afghanistan Reconstruction Trust Fund
AWEC	Afghanistan Wildlife Executive Committee
CBD	Convention on Biological Diversity
CDC	Community Development Council
CESMP	Construction Environmental and Social Management Plan
CHMP	Cultural Heritage Management Plan
CoC	Code of Conduct Certificate of Compliance
CPF	Country Partnership Framework
DABS	Da Afghanistan Breshna Sherkat
EA	Environmental Assessment/Environmental Audit
EIA	Environmental Impact Assessment
EMA	Environmental Management Act
EMF	Electro-Magnetic Field
ESIA	Environmental and Social Impact Assessment
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
ESS	Environmental and Social Safeguard
FGD	Focus Group Discussion
GWh	Gigawatt Hour
HVAC	High Voltage Alternating Current
HIV	Human Immunodeficiency Virus
IDA	International Development Association
KTL	Karokh Transmission Line

KV	kilo Volts
KM	Kilometer
MEA	Multilateral Environmental Agreement
MoPW	Ministry of Public Work
MTP	Medium Term Plans
MAIL	Ministry of Agriculture, Irrigation and Livestock
NEPA	National Environmental Protection Agency
O&M	Operation and maintenance
PDO	Project Development Objective
TAPI	Turkmenistan-Afghanistan-Pakistan-India (Pipeline)
OP	Operational Policy
OPGW	Optical Ground Wire
PAP	Project Affected Person
PPE	Personal Protective Equipment
RAP	Resettlement Action Plan
RoW	Right of Way
SHE	Safety, Health and Environment
SDGs	Sustainable Development Goals
STD	Sexually Transmitted Disease
TL	Transmission Line
UNCCD	United Nations Convention to Combat Desertification
UNEP	United Nations Environmental Program
USD	United State Dollar
WB	World Bank

Executive Summary

The Government of Afghanistan (GoA), through Da Afghan Breshna Sherkat (DABS) plans to implement the Herat Electrification Project (HEP) in Herat province. The project is financed by the World Bank (WB) and includes, among other sub-projects, installation of a 31 kilometers (km) long transmission line from Robate Sorkh village to the proposed location of Karokh sub-station in Karokh district. To address the potentially negative environmental and/or social impacts of the Karokh transmission line (KTL) sub-project, and to comply with the national regulatory as well as the WB policy requirements, an environmental and social assessment (ESIA) has been carried out. The present document provides the process and outcome of this ESIA.

Project Location

The Herat Electrification Project component -1 lot two is construction of 31 KM transmission line from existing 110 kV transmission line between the Noor-ul-Jahad substation near Herat city and Salma Dam to Karokh district of Herat province, Afghanistan.

The subproject is comprising the building of a 110 kV transmission line, and a 110/20 kV substation and medium and low voltage distribution networks in Karokh district of Herat Province.

The KTL gets T- connection from Salma Noor-ul Jahad existing TL in the area of Robat e Sorkh village of the same district and the KTL passes mostly from desert, non-cultivated land which encompasses governmental, private and communal land. There are nine villages located in the area of influence of the KTL with varying degree of distance from the KTL, generally the KTL is reasonably away from the residential houses.

Sub-Project Overview

The proposed KTL subproject comprises installation, operation, and maintenance of a 110-kV transmission line with a total length of about 31 km. The KTL will have 140 steel towers with concrete foundations, steel conductor, insulators, and other accessories. The key installation activities will include excavation for tower foundations, construction of concrete pads (four pads for each tower), backfilling, tower assembly and erection, stringing of conductors and earth wire, installation of insulators and other accessories, and finally, testing and commissioning. The operation and maintenance (O&M) activities will include periodic patrolling and repairing transmission line faults such as broken conductor, damaged/faulty insulators, and damaged or fallen towers.

Regulatory and Policy Overview

The Afghan national legislation and regulations require the project proponents to conduct environmental and social assessment of the proposed project and obtain approval from the National Environmental Protection Agency (NEPA), before initiating the project. Similarly, the WB safeguard policies require the project proponents seeking the Bank's financing to carry out environmental and social assessment of the proposed project and obtain the Bank's clearance. The present assessment has been carried out in response to these requirements.

Environmental and Social Management Framework

DABS prepared an environmental and social management framework (ESMF) of the HEP in 2017 since location and exact nature of its sub-projects was not known at that stage. The ESMF provides DABS with a procedure for determining the appropriate level of environmental and social assessment required for the sub-projects. Further, it guides the power utility in preparing the necessary environmental and social mitigation tools/measures for the sub-projects during operations phases.

The ESMF calls for preparing environmental and social management plans (ESMPs) for smaller sub-projects and ESIA for larger sub-projects such as transmission lines. Pursuant to these requirements, the present ESIA for KTL has been carried out. The HEP ESMF also comprised a Resettlement Policy Framework to guide land acquisition and resettlement in case any subproject would necessitate land acquisition.

ESIA Objectives

The present ESIA aims to address the potentially adverse impacts of the KTL and its associated facilities on the physical and biological environment as well as on people – in order to make the project environmentally sustainable and socially acceptable. The present study has been carried out in response to the requirements defined by the national regulations as well as WB safeguard policies.

Baseline Conditions

The KTL sub-project will be implemented in Karokh district of Herat province. The project area is mostly rural and is not densely populated. The KTL route passes through various types of land like barren, hilly, rain fed, irrigable and irrigated. There is no forest or any sensitive/important habitat along or near the route. A limited number of towers would be located in agricultural land thus minimizing impacts on crops, there is no damage to the existing private and public structures like residential houses, orchards, schools, clinic, irrigation structures, graveyards and etc.

The water sources in the KTL sub-project area include small streams, dug wells, bore holes, and karez[1]. No major river or any other significant water body exist in the area, except a proposed Pashdan dam which is planned to be constructed close to the KTL route. Hari-rod that flows south of the Herat town is the major river in the Herat province.

The sub-project area is mostly barren and devoid of any significant natural vegetation and important habitat. Only nine fruit trees will need to be felled for KTL construction. No significant wildlife exists in the area primarily because of the modified nature of habitat and human presence. No important bird's area are located within or near the sub-project area. No protected areas are located along or near the KTL route.

Most of the people in the area are dependent on cultivation and livestock for their livelihood though a limited number of people work as laborers. Wheat followed by barley are the key crops in the area.

The occupations of the respondents were found to be 75% farming and livestock rearing, while 20% of those interviewed said that they were both livestock keepers and laborers. Only 5% of the respondent were depended on employment.

Ten schools exist in the sub-project area but outside the direct footprint of the KTL. No other sensitive receptors are located in the area. Similarly, no physical cultural resources (PCR) except one graveyard exist along the KTL route.

Potential Environmental Impacts

The potential impacts of the project's construction phase on physical and biological environment could include soil erosion in hilly areas; dust emissions caused by operation of machinery and running vehicles on earthen tracks within the right of way (RoW) of KTL and along the access routes; gaseous emissions from construction vehicles, machinery, and generators; release of waste effluents and solid wastes from construction areas and camps causing soil and water contamination; loss of natural vegetation and trees in the RoW; and finally, occupational health and safety (OHS) hazards for the construction staff and other project site personnel. The potential impacts of the transmission line during the operation and maintenance stage are limited to electrocution and collision of birds.

Potential Social Impacts

The most significant social impacts of the project pertain to the land acquisition and resettlement impacts and these include diminution of land/property valuation, damage to crops, and trees that exist in the RoW. A summary of these impacts is tabulated below.

[1] Karez: Manmade underground water channels to bring water from wells/springs to the settlements and cultivation fields.

ES.1: land Acquisition & Resettlement Impacts

	Resettlement Impacts	Quantity In ha	Nature of Impact
A.	**Land under KTL Towers**		
1	Cultivated irrigated land for tower erection (ha)	0.085	Expropriation of land in which towers to be erected. Decreased value and utility of affected land. No construction possible. Limited cultivation possible.
2	Cultivable rain-fed land (ha)	0.24	
3	Barren land (ha)	0.37	
	Sub Total (ha)	***0.695***	
B	**Land under Conductors (but not under towers)**		
1	Cultivated irrigated land (ha)	0.27	Decreased value and utility of affected land. No high-rise construction possible. Cultivation possible, growing of tall trees not possible.
2	Cultivable rain-fed land (ha)	4.95	
	Sub Total (ha)	***5.22***	
C.	**Affected area under crops**		
1	Total area of agriculture land to be impacted by tower installation and conductor stringing. (ha)	8.08	Crop damage
2	Area under access tracks (ha)	7.65	Crop damage
	Sub Total (ha)	***15.73***	
D	**Affected trees**		
1	Privately owned Fruit Trees	9 sapling	Loss of trees and their produce
E	**Project Affected Households**		
1	Households losing land	21 HH	Permanently lose land under tower erection
2	Households losing crops	23 HHs	Here, 21 HHs are repeated in 23 HHs it means that 21 out of 23 HHs are the same HHs Who will loss both land for tower erection and crops.
3	Households losing trees	1HH	
	Sub Total (HHs)	**45**	

Other potential impacts of the project's construction phase on the local communities include temporary blockage of local routes, project-related traffic on local roads, labor influx risks , gender-based violence (GBV) risks, noise generation causing nuisance and disturbance to local population, safety hazards caused by construction activities and project related vehicular traffic, social conflict and /or cultural issues caused by the presence of a large number of

construction workers some of them may be from other parts of the country, additional pressure on local resources such as water and fuel, damage to sites of cultural and or religious significance such as graveyards and shrines, and disturbance to women activities. The potential impacts of the project's operation and maintenance activities on the local communities could include risk of electrocution and occasional crop damage.

Mitigation

To address the potentially negative environmental impacts of the project, appropriate mitigation measures have been included in this ESIA. These include implementing soil erosion control measures at the tower locations where needed; water sprinkling to suppress dust emissions particularly near the settlements, using properly tuned vehicles and machinery to minimize exhaust emissions; ensuring that no untreated waste effluents are released into the environment and using appropriate treatment mechanism for this purpose; preparing and implementing waste management and pollution control plans; minimizing disturbance to natural habitats; enforcing 'no hunting, no trapping, no catching' policy for the wildlife; and preparing and implementing an OHS plan.

To address the resettlement impacts described earlier, a separate Abbreviated Resettlement Plan (ARAP) has been prepared and will be submitted separately, in view of the limited impact and comparatively small number of project affected households. For the remaining potential impacts of the project on the people and communities, appropriate mitigation measures have been included in the present ESIA and will be among the contractual obligations of the contractor. These mitigation measures include maintaining liaison with the local community during the construction phase to ensure that local routes are not blocked in the first place, however if it is unavoidable, then alternate routes are identified in consultation with the affected community. For mitigating the impacts of noise generation, the contractor will use machinery and vehicles equipped with standard noise reduction arrangements (such as silencer and canopy), will avoid nighttime work to the extent possible, and will maintain liaison with the communities. For increased traffic on local roads, the contractor will prepare and implement a traffic management plan. The contractor will also prepare and implement a safety management plan to ensure that safety hazards for the communities are minimized. To address the social conflict, an employee's code of conduct and labor influx mitigation plan have been prepared and included in the site specific ESMP that all site personnel will be required to follow that. The contractor will be required to obtain supplies such as water, fuel and other commodities in a manner that the local communities are not negatively affected; liaison with the local community will also be maintained for this purpose in addition to establishing a grievance redress mechanism. The contractor will also be required to avoid any damage to places such as graveyards and shrines. Finally, to protect privacy of women, the code of conduct described above will be enforced at the site.

Environmental and Social Management Plan

An Environmental and Social Management Plan (ESMP) has been prepared as standalone document in line with the present ESIA in order to define the implementation mechanism for the above-described mitigation measures and the ESMP will be included in both bidding document and contract documents. The ESMP includes description of institutional arrangements, a mitigation plan, a monitoring plan, a training and capacity building plan, documentation protocols, and a grievance redress mechanism (GRM).

DABS will be overall responsible for implementation of ESIA and other safeguard instruments prescribed by NEPA and WB. Within DABS, the Project Implementation Unit (PIU) has already been established for HEP implementation. The PIU will be responsible for procurement contractors for construction and a consulting firm for construction supervision. The PIU includes an Environment Specialist and a Social Specialist, who will assist the PIU on issues related to environmental and social management and oversee Construction Supervision Consultant (CSC) and contractors and will compile quarterly monitoring reports on Construction ESMP (CESMP) compliance, to be sent to the PIU Head and also shared with the World Bank, throughout the construction period. They will also provide trainings to the DABS field personnel responsible for monitoring of environmental and social safeguard compliance during both construction and O&M phases of the project.

The PIU has environmental and social safeguard specialists and will maintain coordination and liaison with CSC for effective ESMP implementation. Similarly, the CSC will also have environmental and social specialists, as well as a certified OHS specialist, who will supervise and monitor the contractors for effective CESMP, H&S Plan and ARAP implementation. The contractors in turn will also have environmental and OHS officers who will ensure CESMP and H&S Plan implementation during construction activities and will be tasked to develop necessary detailed HSE plans (CESMP and H&S Plan) as per this ESMP, and oversee their implementation.

ESMP includes a mitigation and compliance monitoring plan, which describes the potentially negative impacts of each subproject activity, lists mitigation and control measures to address the negative impacts, and assigns responsibilities for implementation and monitoring of these measures.

A two-tier monitoring program has been proposed comprising compliance monitoring and effects monitoring. The main purpose of this monitoring program is to ensure that the various tasks detailed in the ESMP particularly the mitigation measures are implemented in an effective manner, and also to evaluate program impacts on the key environment and social parameters.

Grievance Redress Mechanism

A three-tier Grievance Redress Mechanism has already been established for the overall HEP project. The primary objective of this GRM is to ensure that the views and concerns of those affected by project activities are heard and acted upon in a timely, effective and transparent manner. It will also facilitate people who might have objections or concerns regarding the project activities to raise their objections and through conflict resolution so that these can be addressed adequately. The Grievance Redress Mechanism will be transparent, accessible to all, inclusive, participative and unbiased. PAPs will be made fully aware of their rights and the procedures for submitting a grievance. All grievances are recorded and maintained in DABS PIU as well as in Herat Breshna by safeguard team in a database sheet along with outcome of grievance redress – and closely monitored and analyzed in terms of category of grievances of speed of resolution.

Cost of ESIA Implementation

Total cost of ESMP implementation is USD 66,000. This includes cost of trainings, environmental monitoring and contingencies. The ARAP budget is USD ***** which includes compensation for land acquisition, reduction on land value, restrictions on land use, crop damage, and tree cutting.

Consultations

The NEPA and World Bank policies call for effective stakeholder participation during the ESIA process. Stakeholder engagement is a key part of this ESIA study process. One of the key aims of the stakeholder engagement exercise is to ensure that all relevant stakeholders are provided with the opportunity to express their concerns and opinions, which are incorporated as early as possible in the project development: at planning, implementation and operation phase and in the effect minimize the potential unexpected opposition of the proposed project and potential adverse effects tothe environment. It is also very beneficial in incorporating the views of the public into the design process for the adoption of the best workable models and systems. The stakeholder engagement exercise also provides DABS with the necessary information to assist it in making an informed decision about the Project.

Interviews with the key stakeholders were carried out on 12th to 20th May 2018 through questionnaires. Comprehensive public participation meetings were held on 19th May 2018 with various administrative leaders, community leaders and the residents who are likely to be affected by the project along the TL corridor, as well as consultation were carried out on draft ESIA on 16 September, 2018 and community concerns are addressed in the project design example: some households who have private land along the TL route in which seven towers are to be erected, they suggested two options either shift TL route from its current location about 500 meter to northwest direction of the same land owned by them or decrease the number

of towers. This concern of community was discussed with the technical team and they agreed to decrease the numbers of towers from 7 to 5.

The following is a summary of the views of the stakeholders interviewed:

- The project is good for the development of the Karokh district since it will boost power supply and improve on industrial development, and should therefore be undertaken.
- The project will improve businesses in the area and also create job opportunities to the local youth during construction phase.
- The project will enhance security due to lighting in the neighborhood at night.
- There would be increased pollution from transport vehicles during construction.
- There would be electromagnetic radiations and risk of electrocution that may affect those residing near the wayleave.
- There would be possibility of insecurity in the areas due to the influx of other people during construction phase.
- Some community members were wary of the presence of the high-voltage wires in their immediate environment.
- Hiring of unskilled labor from effected villages.
- Electrification at first phase to those villages which are affecting by the TL project.
- Requesting for starting physical work as soon as possible.
- Special attention to those families who are poor.
- Residents of the Karokh district have very limited resources of irrigation water therefore, they suggested DABS to not double charge them for utilizing/spending extra electricity (example; when it exceeds from 200 or 300 kw something like this) so that they will be able to provide irrigation water for their lands by digging of wells.
- Residents of Payeen Bolook (10 CDCs) requested that they have prepared electrical equipment from NSP program and they have erected poles, boxes etc. at residential area of (10 CDCs) therefore they requested from project and Herat Breshna to pay attention to them and cover their villages at the first phase of electrification because they have already done some job in this regard.
- Residents of Pashtan village expressed that they are excluded from more development projects therefore requesting from the project to include this village in the project first priority.
- More participants of the meetings requested for starting of project work physically and complained from delay in project implementation.
- The meeting participants requested to do the project activities in consultation to the community representatives.
- The contractor should do their activities in coordination to the local representatives

- The Proponent should ensure proper environmental management practices are put in place.
- Noise pollution should be controlled.
- Some communities have recommended that their villages should be included for electrification at the first phase of electrification distribution.

Conclusions

The intensity of impacts will be relatively higher at the tower construction sites within the RoW. These impacts are related to land degradation, noise, waste handling, and air quality and vegetation clearance. These potential impacts are easy to mitigate through proper construction planning. However, impacts on vegetation could be locally substantial during construction phase.

Furthermore, the ESIA shows that there are none of the significant potential impacts identified that cannot be adequately managed and mitigated. The construction of KTL will be environmentally sound in their design, sitting, maintenance and operation. Conventional engineering designs with proven records of reliable performance will be adopted for the construction of this TL. The minor environmental impacts anticipated during the construction works can be mitigated by applying measures set out in the ESMP and ESIA's Specific Environmental and Social Conditions. The HEP ESMF has been prepared which will guide the preparation of Site-Specific ESMP for KTL corridor. There is an overall appreciation by majority of the population living in the area of influence. The most significant social impacts of the project pertain to the land acquisition and resettlement impacts and these includes diminution of land/property valuation, damage to crops, and few trees that exist in the right of way. All this will require an abbreviated RAP process to provide for all issues related to land acquisition, payment of compensation and established mechanisms. The Resettlement Policy Framework (RPF) already prepared for HEP will guide the development of such an Abbreviated RAP which will be developed after completion of the ESIA. The ARAP will be implemented before the physical work will start.

The project requires construction material to be sourced from outside the project area. The project design process and the contractor will have to identify specific sources and the Environmental and Social Safeguard unit of the DABS/WB/PIU will be required to conduct a comprehensive assessment for approval of the sites chosen by the contractor. The contractor will have to ensure appropriate safety standards, applicable gender principles and labor laws.

During construction, potential impacts on local communities and enterprises are largely positive, as the construction activities provide direct job opportunities and indirectly create income from trading through supply contracts, food vendors, accommodation, entertainment etc. However these positive impacts are limited to the duration of the construction activities and would not have a significant sustainable positive impact on the local economy.

Recommendations

- Clearance of Vegetation: Unnecessary clearing of vegetation should be avoided in order to reduce soil erosion.
- Mitigation Measures: Mitigation measures outlined in this report should be adhered to and the site specific Environmental and Social Management Plan (ESMP) should be prepared in order to address the negative environmental and social impacts. The implementation of this ESMP will be key in achieving the appropriate environmental management standards as detailed for this project.
- Monitoring: The impacts of the proposed project should be monitored closely by DABS safeguard team in collaboration with NEPA.
- Licence: All the negative impacts identified can be mitigated, and will restore the ecosystem to near or original state. We thereby recommend that the proponent should be licensed by NEPA to continue with the construction of the proposed project
- The contractor should work closely with local people, community leaders, Karokh district Government and other stakeholders to ensure smooth implementation of the project.
- The contractor will have to ensure appropriate safety standards, applicable gender principles and labor laws.
- The contractor should construct his/ her construction camps in proper places away from residential compound with close coordination and consultation with GRC and local community as well as district authorities, and not disturb landscape and green cover during establishing the mentioned camps.

Disclosure

The ESIA along with translation of its executive summary will be disclosed at the DABS in country website on 01 February, 2019 and will be made available at concerned offices of Herat particularly Karokh district and also to the affected communities, the final ESIA will be sent to World Bank for international disclosure.

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1. Introduction

The Government of Afghanistan (GoA) through its electricity utility, Da Afghanistan Breshna Sherkat (DABS), plans to implement the Herat Electrification Project (HEP) in Herat province. The project is financed by the World Bank (WB) and includes, among other sub-projects, installation of a 31 kilometers (km) long, 110-kilo volt (kV) transmission line from Robate Sorkh village to the proposed location of Karokh sub-station in Karokh district of Herat province. To address the potentially negative environmental and/or social impacts of the Karokh transmission line (KTL) sub-project, and to comply with the national regulatory as well as the WB policy requirements, an environmental and social assessment (ESIA) has been carried out. The present document provides the process and outcome of this ESIA.

1.1. Project Location

The Herat Electrification Project component -1 lot two is construction of 31 KM transmission line from existing 110 kV transmission line between the Noor-ul-Jahad substation near Herat city and Salma Dam to Karokh district of Herat province, Afghanistan.

The subproject is comprising the building of a 110 kV transmission line, and a 110/20 kV substation and medium and low voltage distribution networks in Karokh district of Herat Province.

The KTL gets T- connection from Salma Noor-ul-Jahad existing TL in the area of Robat e Sorkh village of the same district and the KTL passes mostly from desert, non-cultivated land which encompasses governmental, private and communal land. There are nine villages located in the area of influence of the KTL with varying degree of distance from the KTL, generally the KTL is reasonably away from the residential houses.

1.2. Sub-Project Overview

The proposed KTL subproject comprises installation, operation, and maintenance of a 110-kV transmission line with a total length of about 31 km. The KTL will have 140 lattice steel towers with concrete foundations, steel conductor, insulators, and other accessories. The key installation activities will include excavation for tower foundations, construction of concrete pads (four pads for each tower), backfilling, tower assembly and erection, stringing of conductors and earth wire, installation of insulators and other accessories, and finally, testing and commissioning. The operation and maintenance (O&M) activities will include periodic patrolling and repairing transmission line faults such as broken conductor, damaged/faulty insulators, and damaged or

fallen towers.

The KTL is a sub-project of the Herat Electrification Project that envisages to provide electricity to households, institutions, and businesses in the selected areas of Herat Province, with focus on the districts of Chesht, Hobai, Karokh and Pashtun-Zarghoon. The Project is expected to contribute to Da Afghanistan Breshna Sherkat's overall objectives of alleviating poverty and ensuring inclusivity of access to electricity for all segments of the population the project will benefit the local population in these areas by providing grid electricity.

1.3. Regulatory and Policy Overview

The Afghan national legislation and regulations require the project proponents to conduct environmental and social assessment of the proposed project and obtain approval from the National Environmental Protection Agency (NEPA), before initiating the project. Similarly, the WB safeguard policies require the project proponents seeking the Bank's financing to carry out environmental and social assessment of the proposed project and obtain the Bank's clearance. The present assessment has been carried out in response to these requirements.

1.4. Environmental and Social Management Framework

DABS prepared an environmental and social management framework (ESMF) of the HEP in 2017 since location and exact nature of its sub-projects was not known at that stage. The ESMF provides DABS with a procedure for determining the appropriate level of environmental and social assessment required for the sub-projects. Further, it guides the power utility in preparing the necessary environmental and social mitigation tools/measures for the sub-projects during operations phases. The objectives of ESMF are as follows:

- Establish the legal framework, procedures, and methods for environmental and social planning, review, approval and implementation investments to be financed;
- Identify roles and responsibilities, including reporting procedures and monitoring and evaluation;
- Identify capacity/or training needs for different stakeholders to ensure better implementation of the provisions in the ESMF and also in the sub-project ESMPs and;
- Identify funding requirements and resources to ensure effective implementation of the framework.

The ESMF calls for preparing environmental and social management plans (ESMPs) for smaller sub-projects and ESIA for larger sub-projects such as transmission lines. Pursuant to these requirements, the present ESIA for KTL has been carried out. The HEP ESMF also comprised a Resettlement Policy Framework to be followed in case any sub-projects would require land acquisition.

1.5. Environmental and Social Impact Assessment Study

1.5.1. Study Objectives

The present ESIA aims to address the potentially adverse impacts of the KTL and its associated facilities on the physical and biological environment as well as on people – in order to make the project environmentally sustainable and socially acceptable. The present study has been carried out in response to the requirements defined by the national regulations as well as WB safeguard policies.

1.5.2. Study Area

For the purpose of the environmental and social assessment and baseline data collection, a two-kilometer-wide corridor along the proposed KTL route has been considered as the study area or the project area. Most of the field data collection was carried out within this corridor though where relevant data was also collected from a wider area along the transmission line route. The reason for selecting this wide corridor is to cover those areas that have a potential to be affected by the project activities. The study area covers the following:

- The entire length of 30m wide right of way (RoW) of the KTL. The RoW covers the direct and permanent foot print of the project comprising the towers locations and the area falling directly beneath the TL conductors;
- A two-kilometer wide corridor along the KTL where various sub-project activities such as construction may be undertaken and where direct and indirect impacts of the sub-projects may take place.
- Access tracks from the nearby existing roads/tracks to the RoW;
- Potential sites for construction camps and other temporary facilities.

The direct impacts of the proposed project and its activities are likely to be limited to the study area as defined above and therefore it can be termed as the **area of influence (AoI)** of the project. Indirect impacts of the project may however extend to a much wider area.

1.5.3. Study Methodology

The key steps of the ESIA study methodology are described below.

Scoping and Screening. During this first step of the study, the spatial and sectorial dimensions of the study were determined. This included defining and demarcating the study area and determining the environmental and socioeconomic aspects to be studied. In addition to reviewing the project details, a reconnaissance field visit was also carried out as part of this step.

Review of Secondary Data. Available secondary data on various aspects of physical, biological, and socioeconomic environment were identified and reviewed. These included published and unpublished reports and books of private and government organizations, gazetteers, research articles, popular articles, and newspapers. The physical environmental aspects included geology, topography, water resources, and meteorology. The biological aspects included presence and condition of various species and their habitat in the study area and information about species of concern. The socioeconomic aspects included administrative setup, demography, literacy and education, agricultural data, land holdings, land use, gender, and poverty.

Baseline Data Collection: Based upon the review of secondary resources discussed above, need of the primary data collection was determined and detailed checklists and methodologies developed for each aspect of physical, biological, and socioeconomic environment. For socioeconomic condition of the TL corridor of impact, a questionnaire was dispensed to a random sample of 189 person (male 165 female 35) along the TL corridor drawn from the 2,111 households which forms almost 10% of residing households in the corridor of impact, each of these interviewees were representing a household and the sample was drawn along the whole length of the TL. Subsequently, field teams were deployed to collect primary data on physical environment such as land form and land use, air and water quality; biological aspects such as vegetation cover, habitat condition, and identification of key biological receptors (species, habitats) likely to be affected by the project; and socioeconomic aspects such as land holdings, agricultural practices, earning levels, household size, and others. Secondary information related to the baseline environmental conditions in the project area was also collected from the district level government agencies.

Stakeholder Consultations: Consultations were carried out with local communities, through village level meetings as well as draft ESIA consultation to share the project information, to obtain feedback from the communities about the project and its perceived impacts, and to collect anecdotal information on environmental, ecological, and socioeconomic baseline in the study area. Separate consultations were carried out with women by Herat Breshna female employee (Bibi Hajira member of billing management and revenue collection) to obtain their views and concerns regarding the project. Consultations were also conducted with district level government departments and nongovernment organizations to obtain their views on the project.

Impact Assessment. This was the most important step of the entire study and involved using standard methodology to identify and characterize each potential impact of the project on various aspects of physical, biological, and socioeconomic environment. Based on its nature and likelihood of occurrence, significance of each potential impact was assessed as severe, moderate,

mild, or negligible. Subsequently, appropriate avoidance, mitigation, or compensatory measures were identified, in this order of preference, to address each potential impact. Finally, significance of residual impacts, i.e., significance of impact after the implementation of mitigation measures, was determined. An environmental and social management plan (ESMP) has also been prepared to define institutional, monitoring, and capacity building arrangements to effectively implement the mitigation measures identified during the ESIA study.

A 100% census of PAP households which showing the exact impact of project and calculated their losses has been done and will be placed in ARAP, which is prepared and will shared separately be separately prepared.

1.5.4. Study Team Composition

A team of national and international experts conducted the present ESIA. The key members and their assigned roles for this study are presented below.

	Team member	Position	Role
1	Wahdatullah Wardak	National Environmental. Specialist	Collection of field data, assessment of KTL project environmental impacts, prepare ESIA, ESMP and other necessary documents for ESIA.
2	Mohammad Tawoos Wafa	National Social specialist	Collection of field data, holding consultation meeting with relevant stakeholders, determining social impacts of the KTL project and prepare ESIA and ESMP.
3	Tayeb Azizi	Social safeguard officer	Holding meeting with GRC and other Project relevant stakeholders, determining social impacts of the project, collection of the essential data for ESIA preparation.
4	Sadiqullah Kakar	Environmental Safeguard officer	Field observation/Screening for environmental impacts determining, Data collection for preparation of ESIA, ESMP and other necessary documents.
5	Bibi Hajera	Member of Billing Management and	Holding meeting with women, filling of socioeconomic questionnaires with

	Team member	Position	Role
		revenue collection of Herat Breshna	female beneficiaries and collection of the essential data for ESIA preparation.
6	Mohammad Omar Khalid	International environmental and social development specialist	Reviewing the draft ESIA including ESMP.

1.6. Document Structure

Chapter 2 presents a simplified description of the project, its various components and other salient information relevant for environmental and social assessment. Analysis of alternatives considered during project planning and design are explained in **Chapter 3**. **Chapter 4** reviews the prevailing national and provincial regulatory requirements and World Bank policies and guidelines relevant to environmental and social assessment. Description of the environmental, biological, and socioeconomic baseline conditions is presented in **Chapter 5**. Potential impacts of the project on environment and people as well as their appropriate mitigation measures have been discussed in **Chapter 6**. Finally, **Chapter 7** describes the consultations that were carried out with the stakeholders during the ESIA study.

2. PROJECT DESCRIPTION

This Chapter presents a simplified description of the proposed Herat Electrification Project and Karokh transmission line sub-project. More details are available in Project Appraisal Document (PAD).

2.1. Project Background

Grid supply dominates for urban households in Afghanistan with 89 percent reporting grid access, but it represents the primary supply source for only 11 percent of electrified rural households. Rural areas are dominated by mini grids and stand-alone systems, based primarily on solar and small hydropower plants. Over 5,000 micro hydro plants have been constructed under the National Solidarity Program (NSP) to provide supply to small groups of households in rural communities. Grid access across Afghanistan is also quite heterogeneous across the country's 34 provinces, with some areas having no connections to the grid while others are well served – especially in urban areas. Herat, which has direct links to both Iran and Turkmenistan, enjoys a high level of connections in the capital city. However, areas outside the capital have little or no grid connection, despite the fact that the province as a whole has a reliable and ample source of electricity supply.

Households dominate the customer base, representing almost 93 percent of grid connections, while commercial customers represent just under 7 percent and government agencies less than 1 percent. Total supply from the grid in 2015-16 was 4,773 GWh, of which 3,767 or 80 percent was imports. Uzbekistan was the main source of external supply (1,284 GWh), followed closely by Turkmenistan (1,184 GWh). Iran supplied 827 GWh and Tajikistan supplied 471 GWh. Domestic generation totaled 1,007 GWh, and was almost exclusively (96 percent) hydro.

2.2. HEP Overview

The key aspects of the Herat Electrification Project are described below.

2.2.1. Project Objectives and Beneficiaries

The Project Development Objective (PDO) of HEP is to provide access to electricity to households, institutions, and businesses in selected areas of Herat Province, Afghanistan.

The primary project beneficiaries are the residents, businesses and community institutions located in the Karokh district of Herat Provence. Within the communities, the Project should be of benefit to all genders and ages. Families will have better lighting to enable them to work, read and study after sunset. All members are also likely to have access to better health care as local health centers have better lighting and refrigeration for medicines. Teachers and students will also potentially

have access to better learning resources thanks to the use of computers. Easier charging of mobile phones will enhance access to social networks and online media, while easier access to television and radios will provide both learning opportunities and the capacity to stay informed about events outside the local community. Electric pumps can facilitate access to both drinking water and irrigation water. Finally, reliable access to electricity supply will support the entrepreneurial activities of both men and women, be they crafts, retail/commercial, or small to medium scale manufacturing.

The proposed Project is expected to contribute to Da Afghanistan Breshna Sherkat's (DABS) overall objectives of alleviating poverty and ensuring inclusivity of access to electricity for all segments of the population. The Project is closely aligned with the Government's "New National Priority Program", especially the Citizen Charter's mission of providing electricity services and the National Infrastructure Plan. The Project is also consistent with the first and third pillars – 'Building Strong and Accountable Institutions' which aims to build the capacity and self-reliance of government institutions and improving service delivery, and 'Social Inclusion' which is aimed at reducing differences among the population in terms of access to services and vulnerability to shocks.

As the Herat Electrification Project is financed by the World Bank, it is also closely aligned with the 2016 Country Partnership Framework (CPF) for Afghanistan covering the period from 2017 to 2020, especially with the second of three pillars of the Framework, 'Supporting Inclusive Growth'.

2.2.2. HEP Components

The Herat Electrification Project will have three components, briefly described below.

Component 1 – Electrification of Four Districts in Herat Province: This component will support investments for building a new 110 kV transmission line (the sub-project for which the present ESIA has been carried out), and four 110/20 kV substations and medium and low voltage distribution networks in four districts of Herat Province (Chesht, Hobai, Karokh and Pashtun-Zarghoon).

Component 2 – Grid Densification, Extension, and Off-grid pilots in Herat Province: This component will extend grid electricity supply to other parts of Herat Province and test solar off-grid pilots. Specific sub-projects will be identified during project implementation and evaluated based on cost effectiveness (total cost of the sub-project vs. incremental demand served).

Component 3 – Technical Assistance: This component will finance technical assistance to insure timely and quality completion of the Project, to enhance DABS capacity in procurement, engineering studies and project management, to enhance financial planning for the utility, and to prepare a foundation for further extension and integration of the grid in Herat Province.

2.3. Karokh Transmission Line Sub-Project

The proposed KTL subproject is a key component of the HEP and provides connectivity between the existing transmission line network in the area and the proposed sub-station to be established in Karokh district. The KTL sub-project comprises installation, operation, and maintenance of a 110-kV transmission line with a total length of about 31 km. The KTL will have 140 lattice steel towers with concrete foundations, steel conductor, insulators, optical ground wire, earthing system, and other accessories. The average distance between two adjacent towers is likely to be about 200-250 meters. Generally, two broad types of towers will be used: angle towers and suspension towers.

The key installation activities will include excavation for tower foundations, construction of concrete pads (four pads for each tower), backfilling, tower assembly and erection, stringing of conductors and earth wire, installation of insulators and other accessories, and finally, testing and commissioning. The temporary facilities needed during the construction phase will include construction camp, contractor's office and workshop, material yard, machinery yard, and access routes.

The operation and maintenance (O&M) activities will include periodic patrolling, preventive maintenance, and repairing transmission line faults such as broken conductors, damaged/faulty insulators, and damaged or fallen towers.

2.3.1. Proposed KTL Route

The KTL will start at the proposed sub-station in Karokh district of Herat province and terminate at an existence Salma - Herat transmission line in Robate Sorkh village, which is about 31 km from the sub-station site. The route generally avoids built-up and residential area and passes through barren land and some cultivation fields.

Table 2.1 provides salient features of the proposed route while route itself is shown in **Figure 2.1**.

Table 2.1: Key Features of KTL Route

	Village Name	No of Households	Population	Number of Towers per village	Land type
1	Rubat e Surkh	110	550	26	Barren
2	Qala e Pashdan	512	2560	36	Barren/Hilly
3	Qala e Qasab	125	618	16	Hilly /Rain fed /Agriculture land
4	Majghandak	524	2620	9	Hilly /Rain fed /Agriculture land
5	Qala e Zaman Khan	32	224	6	Hilly /Rain fed /Agriculture land
6	Qala e Dasht	76	380	7	Agriculture land
7	Qala e Safeed	135	679	13	Rain fed
8	Benafshak	300	1501	6	Rain fed
9	Saghari ha/ Merza Rajab	297	1078	21	Agriculture land
Total	9	2,111	10,210	140	

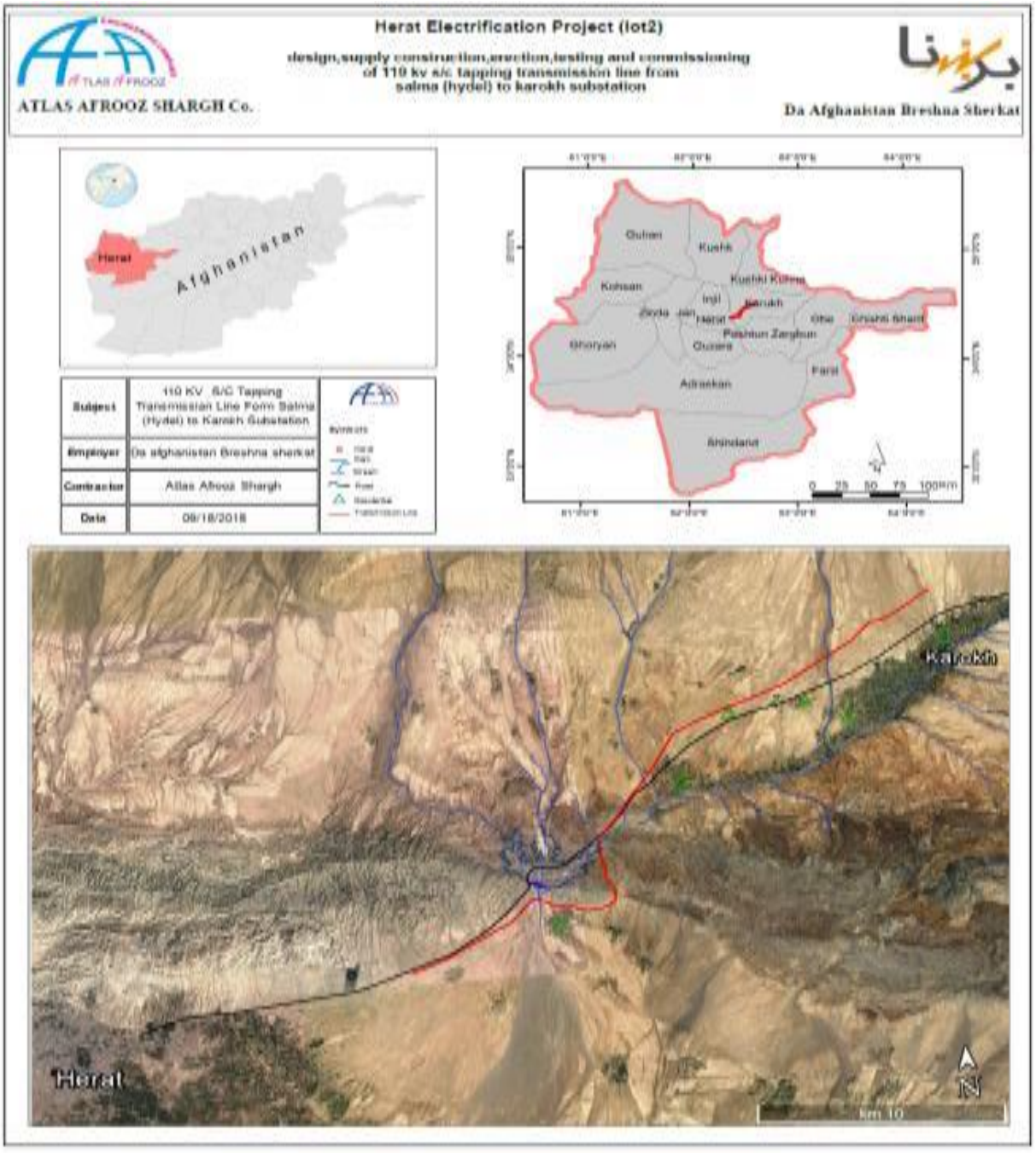


Figure 2.1: KTL Route

2.3.2. Area of Influence (AoI)

The Project Area of Influence is divided into two: direct (AoI) and indirect (AoI). The direct project area of influence is confined up-to ROW about 30 m. and (ii) indirect project influence area which covers 2 km both side of the TL route.
Environmental and Social Impact Assessment - KTL Project

(i) TL route features like religious structures, public structures, houses, schools, clinics, graves, water bodies etc. on which impacts of TL are generally confined up-to ROW, whereas, direct impact zone especially for farm land is limited up to TL conductors.

(ii) The indirect project influence area has been defined as the area falling within 1 km on either side of the TL project. This was defined based on the socio economic impact of the project in the local context, which would include the near communities that will directly experience the TL project. The Socio-Economic Baseline Study covered a sample of 9 villages within the AoI from which a random sample of 189 households were drawn. It covered basic socio-economic household data.
The quarry location and construction camp are proposed outside of the ROW within the project influence area. There are no pipelines, canals, tunnels, watershed within the project area of influence.

2.3.3. Sub-project Implementation

The construction approach and procurement strategy to be employed for the proposed KTL project will be driven by the short timeframe within which to develop and commission the works. The procurement strategy is yet to be finalized however it is likely that DABS will adopt an Engineer Procure Construct (EPC) type of contract for these works where the EPC contractor will design the works, procure the equipment and undertake the construction works all in one package. The letting of this contract would follow standard World Bank procedures including pre-qualification and competitive bidding. Both skilled and semi-skilled construction workers will be required throughout the project.

2.3.4. Contractor Modality

Based on the line route condition, the material specifications for tower, conductor, insulator types and fitting will be finalized in the bid document. The detailed design, i.e., line route map, final tower location, detail tower drawing and construction methodology will be prepared by the construction contractor. However, DABS and Consultant will review and approve the entire technical document prepared by the construction contractor.

2.3.5. Pre-construction/Project Design

DABS are currently applying for various permits and licenses necessary for the construction of the proposed transmission line. The procurement of the various goods and services and contracting of the construction firm and other consultants will begin after the completion of the ESIA process and obtaining the WB approval. The key pre-construction activities are tabulated below.

Table 2.2: Pre-construction Phase Activities

	Activities	Sub activities
1	Design	Mine clearance
		Route finalization
		Coordination with local governmental organization
		Soil investigation
		Detail survey
2	Procurement	Finalize engineering
		Finalize drawings of equipment
		Finalize vendor list
		Finalize procurement contract
		Shipment equipment to site
		Type test of steel towers

2.3.6. Construction Works

The proposed KTL project construction work will follow DABS guidelines and specifications. The proposed KTL crosses infrastructures and other existing facilities along with water bodies, therefore additional design activities will also be required and would be carried out during final design and construction phases as described earlier. However, the key stages in the construction process of overhead high voltage transmission line are summarized in **Table 2.2**.

Table 2.3: Typical Activities for Overhead Transmission Line Construction

Stage	Activity	Description
1	Site Preparation	This may include: • Vegetation clearance where the line passes over or close to trees which could infringe safe clearances

Stage	Activity	Description
		• Verification of local utilities and underground services prior to works and establishing of safeguards and obtaining of necessary agreements • Geotechnical and geographical surveys in advance of works where necessary • Any intrusive works undertaken in accordance with archaeological chance find procedures.
2	Site Enabling Works	This may include: • Determining access requirements (routes and detailed arrangements agreed in advance with land owners) • For tower locations where no vehicle access is required, access will be via the RoW / surrounding land with no new access construction. • For tower locations where it is determined vehicle access is required, access will be via: existing access roads • In certain circumstances where ground conditions prevent normal access, it may be necessary to construct a temporary access track.
3	Civil Works	Tower foundations are constructed first, either four or one foundations per tower depending on the final tower design. The foundations are mechanically excavated and filled with concrete. Piled foundations may be required in some areas where ground conditions are unstable. The dimensions of the excavation will differ depending on the type of tower to be installed. Concrete would typically be delivered by ready mixed concrete truck from batching plants strategically located along the route. Foundation strengthening works typically require increasing the bulk of concrete in the foundation, depending on the additional tower loads that are expected. This normally involves excavation around the existing foundation and application of additional concrete.
4	Steel Erection	Steelwork sections for the towers will be delivered through access road. The assembly of each tower at ground level would proceed as far as possible until the utilization of a crane becomes necessary to enable the higher sections of the tower to be completed. It is normal practice to use cranes to erect steelwork, subject to good access being available.
5	Conductor Stringing	Stringing is undertaken using a winch to pull the conductor along the towers and a 'tensioner' at the other end to keep the conductor above the ground. Typically, the sections depend on the requirement of angle towers decided during the

Stage	Activity	Description
		construction phase. These winch locations are not fixed and can be selected to minimize impact at sensitive locations.
6	Testing of Equipment	Overhead line components including conductors, insulators, towers, joints and fittings are designed and tested to prove compliance with structural, mechanical and electrical requirements.
7	Reinstatement of Tower Construction Area	At completion, the area would be cleared and tidied up. Fences and hedges would be repaired and access routes and disturbed land would be reinstated in agreement with the land users and title owners. Any site security fences would be retained throughout the dismantling and construction process.

2.3.7. Construction Schedule

A tentative construction schedule is given below.

Table 2.4: Tentative Construction Schedule

	Task description	Duration
1	Mobilization	4 weeks
2	General Activates	8 weeks
3	Foundation construction work	26 weeks
4	Erection of complete towers	26 weeks
5	Installation of line materials for conductor and OPGW	40 weeks

2.3.8. Resource Requirement

The manpower requirement during the construction phase is presented below.

Table 2.5: Manpower Requirement

	Description	Approximate Quantity
1	Civil works (masons)	15
2	Tower erection (fitters, welders)	20
3	Stringing ACSR (fitters)	17
4	Stringing OPGW (fitters)	5
5	Test and Commissioning (technicians, engineers)	3
	Total	60

The requirement of construction machinery is provided in the following table.

Table 2.6: Construction Machinery

	Description	Quantity
1	Loader	1
2	Troves	2-4
3	Lift 10 ton	1
4	4WD vehicles	4
5	Concrete mixer	2-4
6	Puller 10 tone	1

The requirement of construction material is provided in the following table.

Table 2.7: Construction Material

	Description	Unit	Quantity
1	Concrete	cubic meters	1500
2	ACSR wire	km	2-4
3	OPGW wire	km	1
4	Hardware	Set	As required
5	Isolator	Set	As required
6	Pilot wire	km	15
7	Rebar	Ton	20
8	Grounding wire system	Set	150
9	Steel towers	Ton	650

2.3.9. Operation and Maintenance

Once constructed, the transmission line will require routine maintenance which may entail occasional bush clearing and repair of damaged towers and conductors. After a period of many years, the entire system would need a detailed survey and overhaul. There may be a requirement for occasional visits to ensure proper functioning of the system. Access rights may need to be retained to allow for maintenance works in the future.

The safe delivery of power requires eliminating the potential for electric shock or fire hazards. Electric shock hazard occurs when any object such as a tree comes in contact with live parts of the transmission line and may subsequently conduct a current that energizes that object and the surrounding ground. This would create a hazardous situation for people, livestock, and wildlife in the area. Similarly, trees coming in contact with a power line may create a flow of current to the ground causing the tree or surrounding vegetation to ignite. To preventive all such accidents, DABS will prepare and implement an Operational Manual for the KTL (and associated facilities such as sub-stations). The Manual will define standard operating procedures for the O&M activities, precautions to avoid accidents, and recommended procedures to be followed in case accidents do occur.

2.3.10. Decommissioning

The transmission line is likely to remain in place for many years and therefore any decommissioning works would be a long time in the future. The transmission line would be dismantled and removed and materials recycled/re-used as far as possible. Any areas disturbed would be restored to pre-project conditions and/or to conditions acceptable to NEPA. Environmental impacts associated with the decommissioning process would be minimized through the implementation of an environmental and social management plan (ESMP) to be prepared before the de-commissioning activities are started.

3. Analysis of Project Alternatives

This Chapter discusses various project alternatives including their respective environmental and social implications considered during the planning stage.

3.1. No-Project Option

A described in **Section 2.2**, the key objective of HEP is to provide electricity in the target areas in Herat province whereas the objectives of KTL are to provide electricity in the Karokh district. The overarching goal of the electrification is poverty alleviation and improving the living conditions of the population in the area. If the KTL sub-project is not implemented, then the overall objective of the HEP will not be materialized and poverty alleviation and improving the living conditions in the area will not be achieved. Lack of electricity also potentially causes environmental degradation in terms of deforestation and public health issues related to poor indoor air quality (caused by smoke from fuel wood) and poor sanitation. For improved educational and healthcare services also, availability of reliable electricity supply is essential.

On the basis of the above, not providing electricity in Karokh district is not an acceptable option and hence 'no-project' option is rejected.

3.2. Transmission Line Routes

Various options were considered during the planning stage of the KTL. These are discussed in the following sub-sections.

A site visit was carried out to assess various routing alternatives. The main purpose of this site visit was to review, survey and re-evaluate the initial route proposed by the preliminary design and the alternative routes.

In order to coordinate with other departments and government entities, such as Energy and Water, Public Affairs, Urban Development, Municipality, Agriculture and livestock, Afghanistan Independent Land Authority (Arazi), NEPA and CDC Elder, their representatives were officially invited to take part in this survey and share their ideas.

During this survey all above mentioned representatives were present and they shared their collective views, interest and concerns, ideas and feedback regarding the TL routes which were very useful for selection the most feasible route for Transmission Line.

The site visit included two major sections:

1. Re-survey the contracted route of transmission line.

2. Survey of three alternatives routes.

3.2.1. Original Route

Initial surveyed route was approximately 25 km long which takes connection from existing Salma-Noor-ul-Jahad transmission line and extends up to Karokh Substation (see **Figure 3.1**).

Figure 3.1: Original KTL Route (Red Line with Yellow Pegs)

This route has its own advantages and disadvantages as follows:

Advantages:

- Distance of this route is shortest.

Disadvantages:

- Crossing of transmission line from Pashdan Dam Catchment area.
- Crossing of transmission line from residential area and agriculture land.
- Crossing of transmission line from the flood route (at the downstream of Pashdan dam).
- Possibility of adverse potential social and environmental impacts.

- Disagreement of local residents in crossing the mentioned TL from their properties (residential compounds, agricultural land, rain fed land and dry land) due to none electrification the villages at first stage of the project.
- Lack of tension tower to take new connection.
- Damage to cultural and religious sensitive monuments like graveyard is highly expected in this route.

3.2.2. Alternatives Routes

The contractor suggested three options for the mentioned transmission line route and DABS team along with representatives from different governmental entities, re-surveyed all the options suggested by contractor. The first suggested route has below advantages and disadvantages:

First Option, 33 Km Long (Right Side of Dam)

In this option the transmission line passes from the upstream of the catchment area of Pashdan Dam (see **Figure 3.2**). The total length is 33 KM, after surveying and analyzing, the survey team found results as follows:

Advantages:

- Bypassing of Pashdan catchment area and avoiding the reservoir of Pashdan dam and crossing the transmission line from upper area of the Dam.
- Minimizing negative social impacts.
- Minimizing potential negative environmental impacts.
- By passing the transmission line from residential area.
- Low possibility of damage to cultural and religious sensitive monuments like graveyard.

Disadvantages:

- Increase the length of transmission line about eight km
- Increase the price of the project.
- Crossing of TL from harsh areas
- The possibility of damage to a part of the cemetery on the route in order to build the tower base.

Figure 3.2: Alternate KTL Route (First Option)

Second Option, 29.8 Km Long (Left side of the dam)

In this option the contractor suggested the same route as initial route in the contract; just the transmission line changed its direction in the lower part of the dam to the left side (see **Figure 3.3**). The total length of this route is about 29.8 km, after surveying and assessment of site, survey team found some advantages and disadvantages as below:

Advantages:

- To some extent avoiding the Pashdan dam catchment area and crossing of the transmission line from downstream of the Dam.

Disadvantages:

- Crossing of transmission line from a margin of Pashdan Dam.
- Crossing of transmission line from residential area and agriculture land.
- Crossing of transmission line in the flood plain (at the downstream of Pashdan dam).
- Possibility of adverse social and environmental issues.
- Possibility of disagreement of local residents to cross the TL from the mentioned route due to not electrifying their respective villages at first stage of the project.
- Lack of tension tower to take new connection.

Figure 3.3: Alternate KTL Route (Second Option)

Third Option, 31.3 Km Long

In this option the suggested route of the KTL is following the main road of Herat- Badghis (Qala-e-Naw) up to Pashdan Dam and then it continues approximately 500m away from the mentioned road (see **Figure 3.4**). The total length of this route is 31.3 KM, after surveying and assessment of route, survey team found some advantage and disadvantage as below:

Advantages:

- By passing the Pashdan Dam (just one tower will be erected in the river bed (downstream of the dam) which do not make serious problem because upon construction of the Dam, there will be no more water in the river bed just two canals in the right and left of the Dam will be there for irrigation water.
- Easy maintenance of transmission line as it is along the main road.
- No significant environmental issues and have less impact on human mental health.
- No significant social problem (from tower which take connection up to Pashdan dam the land is smooth, there is no residential houses)
- Existence of tension tower for the new connection transmission line to Karokh substation so no need to install new tension tower for connection purpose.
- Easy implementation of project because the location of suggested TL rout is near to Highway and it has good security and easy access.

- Avoiding the erection of transmission tower on the flood plain.

Disadvantages:

- Increase length of transmission line about 6.3 Kilo Meters.
- Erection of a tower in the river bed in downstream of Pashdan Dam.

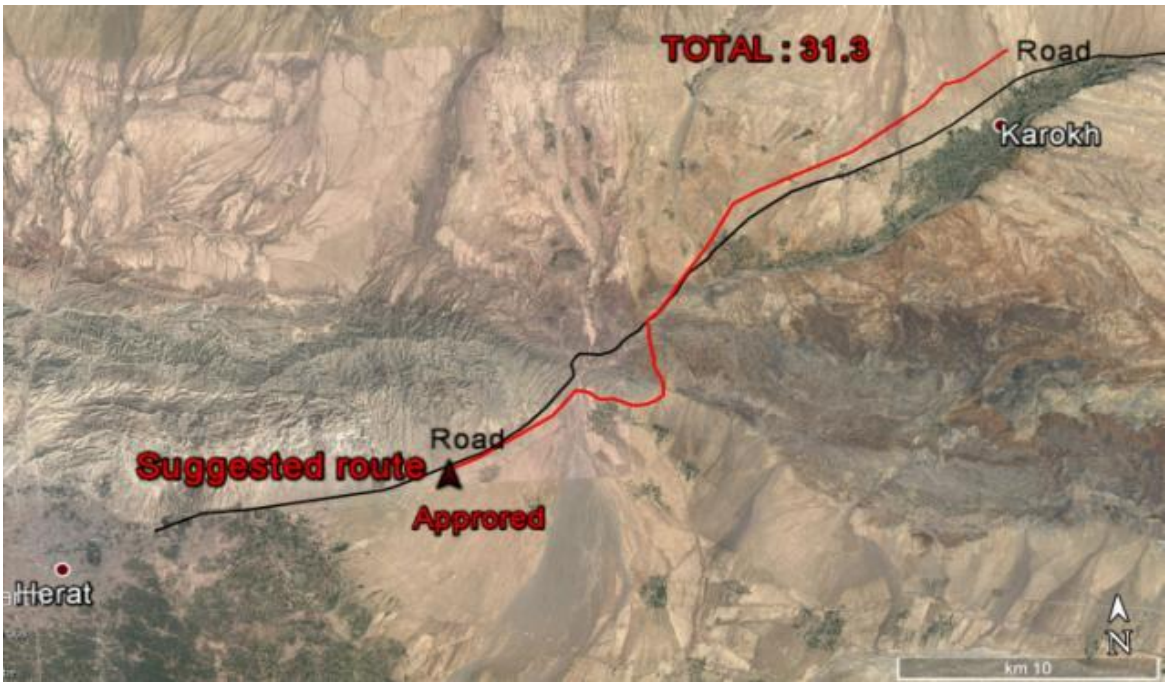


Figure 3.4: Alternate KTL Route (Third Option) (Selected Route)

3.2.3. Conclusion and Remarks:

The DABS survey team and representatives of government directorates and departments surveyed /screened and evaluated all of the mentioned options and shared their ideas together about the positive and negative points of the transmission line routes. They recommended the third option, which seems better than the others options and have less social and environmental impacts compared to other two suggested options and original KTL route.

Table 3.1: Summary of Analysis

		Advantages	Disadvantages
1	Initial route	• Distance of this route is short.	• Crossing of transmission line from Pashdan Dam Catchment area.

		Advantages	Disadvantages
			• Crossing of transmission line from residential area and agriculture land. • Crossing of transmission line from the flood route (at the downstream of Pashdan dam). • Possibility of adverse potential social and environmental impacts. • Disagreement of local residents in crossing the mentioned TL from their properties (residential compounds, agricultural land, rain fed land and dry land) due to none electrification the villages at first stage of the project. • Lack of tension tower to take new connection. • Damage to cultural and religious sensitive monuments like graveyard is highly expected in this route. .
2	First Option	• By passing of Pashdan catchment area and avoiding the reservoir of Pashdan dam. • Minimizing negative social impacts. • Minimizing potential negative environmental impacts. • By passing the transmission line from residential area. • Low possibility of damage to cultural and religious sensitive monuments like graveyard.	• Increase the length of transmission line about 8 KM • Increase the price of the project. • Crossing of TL from harsh areas • The possibility of damage to a part of the cemetery on the route in order to build the tower base.

		Advantages	Disadvantages
3	Second Option	• To some extent avoiding the Pashdan dam catchment area and crossing of the transmission line from downstream of the Dam.	• Crossing of transmission line from a margin of Pashdan Dam. • Crossing of transmission line from residential area and agriculture land. • Crossing of transmission line in the flood plain (at the downstream of Pashdan dam). • Possibility of adverse social and environmental issues. • Possibility of disagreement of local residents to cross the TL from the mentioned route due to not electrifying their respective villages at first stage of the project. • Lack of tension tower to take new connection.
4	Third Option	• By passing the Pashdan Dam (just one tower will be erected in the river bed (downstream of the dam) which do not make serious problem because upon construction of the Dam, there will be no more water in the river bed just two canals in the right and left of the Dam will be there for irrigation water. • Easy maintenance of transmission line as it is along the main road. • No significant environmental issues and have less impact on human mental health. • No significant social problem (from tower which take connection up to	• Increase length of transmission line about 6.3 Kilo Meters. • Erection of a tower in the river bed in downstream of Pashdan Dam.

		Advantages	Disadvantages
		Pashdan dam the land is smooth, there is no residential houses) • Existence of tension tower for the new connection transmission line to Karokh substation so no need to install new tension tower for connection purpose. • Easy implementation of project because the location of suggested TL rout is near to Highway and it has good security and easy access. • Avoiding the erection of transmission tower on the flood plain.	

4. Review of Legislative and Policy Framework

This Chapter provides an overview of national laws and regulations relevant to environmental and social aspects of the KTL sub-project. Also discussed in this Chapter are the WB environmental and social safeguard policies relevant to the proposed sub-project.

4.1. Legislative Framework

Recognizing the importance of natural resources and the environment in general, the Afghanistan Government has put in place a wide range of legislations, policies and institutional framework to address the major causes of environmental degradation and negative impacts on ecosystem emanating from industrial and economic development programs. These laws and policies are geared towards mitigating any social and environmental negative impacts that may result from a proposed project. As such this section presents various legislations, policies and international agreements to which the proposed transmission line project must comply with at all phases of implementation.

The relevant laws and regulations relevant to the social and environmental issues of the KTL are the Environment Law of Afghanistan (2007), National Regulations for Environmental and Social Impact Assessment (2017), the Constitution of Afghanistan (2004), Afghan Land Policy (2017), the Labor Law (2007), the Law on Land Acquisition (2017), the Land Management Law (2017) and the Law on the Preservation of Afghanistan's Historical and Cultural Heritage (2004). Key provisions of these laws/regulations are described below.

4.1.1. The Environmental Law of Afghanistan (2007)

The law was developed based on international standards considering the environmental conditions in Afghanistan and is considered quite comprehensive. It stipulates that the active involvement of local communities in decision-making processes is required for the sustainable use, rehabilitation, and conservation of biological diversity, forests, land, and other natural resources as well as for prevention and control of pollution, conservation, and rehabilitation of the environment quality. It also states that the affected persons must be given the opportunity to participate in each phase of the project. The law requires the proponent of any development project, plan, policy, or activity to apply for an environmental permit (called the Certificate of Compliance - CoC) before implementation of the project by submitting an initial environmental impact assessment (EIA) to the NEPA to determine the associated potential adverse effects and possible impacts. The law also establishes a Board of Experts that reviews, assesses, and considers the applications and documents before the NEPA could issue or not issue the permit. The EIA Board is appointed by the General Director of the NEPA and is composed of not more than eight members. The EIA Board of Expert's decision can be appealed.

4.1.2. National Regulations for Environmental and Social Impact Assessment (2017)

These update the EIA Regulations (2008) and grant the NEPA formal oversight responsibility for the social impact assessment (SIA) in addition to the EIA. These are now merged into a single ESIA process. The updated regulations set out the administrative procedures for conducting ESIAs. The regulations provide examples of projects expected to create adverse impacts (Category 1) and those that may create significant negative impacts (Category 2) before describing specific processes and procedures, as well as the required documents for each category. After receipt of the application form and other relevant documents, the NEPA will, according to the requirements, a) issue a CoC, with or without conditions, (b) advice the applicant in writing to review the technical reports and address the concern of the NEPA, or (c) refuse the CoC with written reasons. See **Figure 4.1** for the ESIA process. Once permission is granted, the proponent must implement the project within three years, failing which the permit expires. Implementation constraints include (a) effective application of ESIA procedures by private and public proponents; (b) monitoring of the implementation of the ESMP; (c) the expertise and means for quality analysis necessary to determine compliance reports; (d) the ownership of the EIA process by line ministries; and (e) limited knowledge, experience, and capacity of staff; and (f) the coordination, monitoring, and harmonization of various requirements by international agencies involved in technical and financial supports.
As per the NEPA regulation the HEP project is classified Category 2 and hence the present ESIA has been carried out for one of its sub-projects, ie, KTL.

Specific guidelines have now been produced as part of the Environmental Management Act to deal with Environmental Impact Assessment. In theory there are several key stages in the assessment procedure as follows:

1- Any project, plan or policy of significant size or scope (no screening list defined as yet) shall submit to NEPA a brief containing enough information to enable NEPA to determine the potential adverse effects and positive impacts of the project, plan or policy.

2- After reviewing the brief and acting on behalf of the EIA Board of Experts NEPA will either:

a) Recommend the project proceeds without further environmental assessment; or

b) Submit an environmental assessment / comprehensive mitigation plan

3- The outline of the EA is roughly similar to that contained herewith, however, alternatives should also be considered, e.g. alternative design, technologies, routes etc.

4- Once the EA has been approved by the Executive Secretary General (acting on the advice of the EA Board of Experts) a permit is granted allowing continuation of the proposed project, plan or policy. If the permit is refused for whatever reason an appeal can be submitted within 60 days of the refusal.

The regulations also state that Public Participation should also be part of the EA process. Public participation in this sense includes distributing copies of the EA to affected persons and undertaking public hearings.

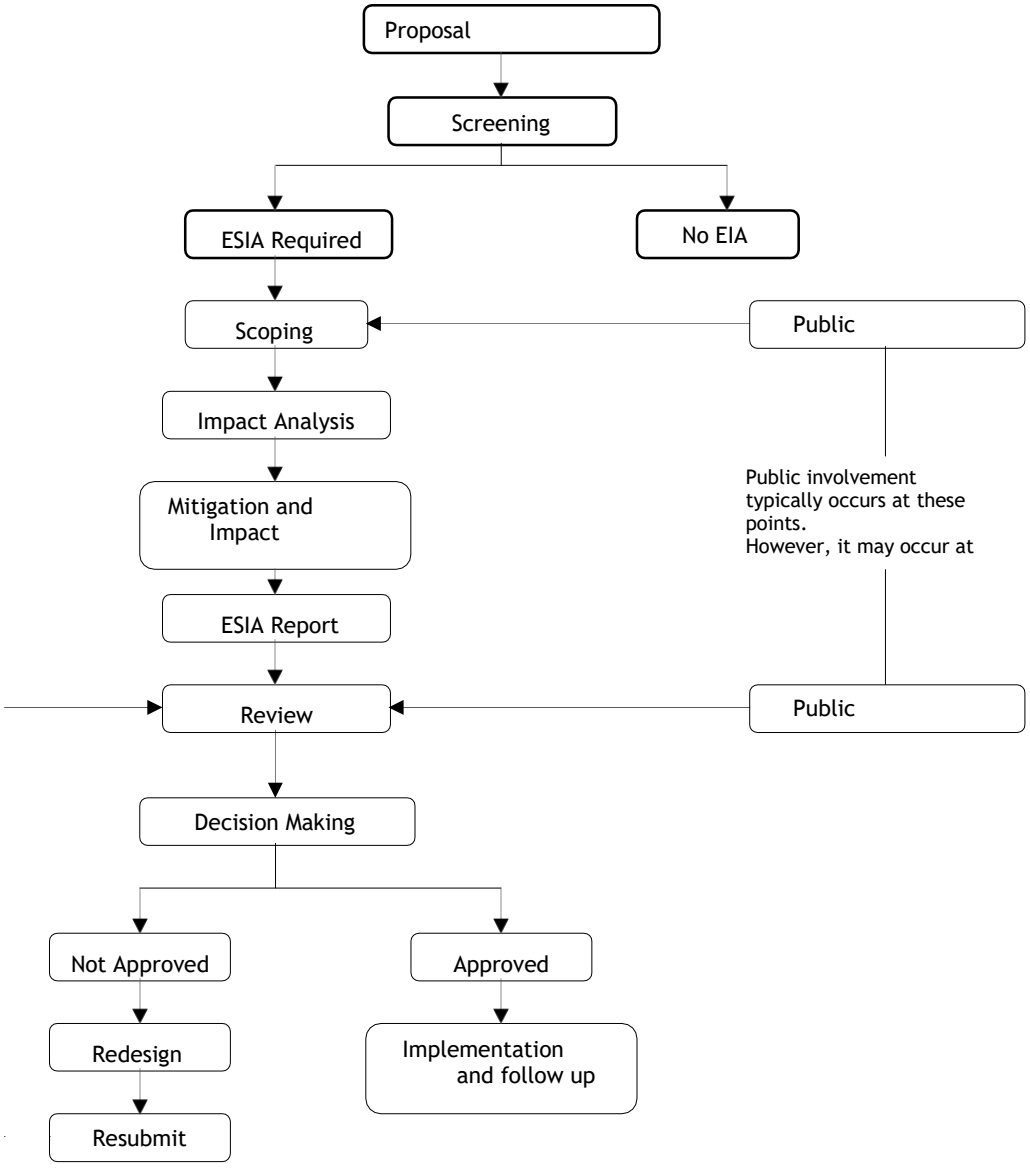


Figure 4.1: Environmental Impact Assessment Procedure at NEPA

4.1.3. The Constitution of Afghanistan (2004)

The constitution of Afghanistan contains some articles that relate specifically to compensation and resettlement issues. These include Article 40 'No one's property shall be confiscated without the order of the law and decision of an authoritative court. Acquisition of private property shall be legally permitted only for the sake of public interests and in exchange for prior and just compensation.

4.1.4. The Law on Preservation of Afghanistan's Historical and Cultural Heritage (2004).

According to this law, operations that cause destruction or harm to historical and cultural sites or artefacts are prohibited (Article 11, Article 16). The law provides guidelines for how to deal with chance finds. This is considered consistent with the World Bank's OP 4.11 on Physical Cultural Resources. ESIAs need to include screening for existence of physical cultural resources in the potential area of impact.

4.1.5. Labor Law (2007)

The Afghanistan labor law contains a number of articles relevant to infrastructure development. Article 30 states that an organization 'can increase or decrease the hours of work during the week provided that the total working hours during a week do not exceed 40 hours'. Articles 107–119 in Chapter 10 of the Law set out a range of specific requirements to ensure health and occupational safety conditions in a workplace. For example, Article 112 requires that when working in 'conditions harmful to health', special clothing/footwear and so on should be put at the disposal of employees free of charge. Article 114 requires that First Aid Medical kits should be available and the treatment of an employee's illness should be at the employer's expense.

4.1.6. The Afghan Land Policy

The Policy was approved by the Cabinet in 2018. Important relevant provisions of the current policy include the following:

Land Tenure/Land Acquisition: (i) Land policy provides that compensation for the expropriation of ownership or of rights over land as enshrined in the Constitution be strictly enforced by law. Property rights may only be expropriated under defined legal procedures and for defined legal purposes. (ii) It also provides that no law may permit arbitrary deprivation of property rights. If the government decides to implement a development project in the interest of the public, the value that the land had before the announcement of the expropriation will form the basis for the amount of monetary compensation to the owners of the property.

Protection of Property Rights: (i) It is a national policy that the national and provincial governments take measures to protect citizens including residents of informal settlements from

arbitrary and forcible eviction. Eviction and relocation of unplanned settlement residents shall be undertaken with community involvement only for necessary spatial rearrangement that should take effect in accordance with the public's interest. (ii) Compensation for expropriation of rights over land must be provided equitably in accordance with the law.

The Law on Land Acquisition (2017) replaces the Law on Land Expropriation (2009) in providing the legal basis for land acquisition and compensation.

Article 4 confirms municipalities in urban areas and Afghan Land Authority (Arazi) in rural areas as the enforcement authorities of the law. Article 5 sets out the range of public interest projects, including a range of infrastructure projects, for which an individual's property and assets may be expropriated. Article 6 reconfirms the types of properties (cultural and historic) and land (required for environmental protection) where expropriation is either prohibited or limited. Articles 9–12 set out the various responsibilities of the expropriating authority, affected person, and evaluation committee. Articles 13–18 describe the different types of expropriation. The arrangements for transfer of government property to enable a project are described in Articles 19–21. Articles 22–37 are devoted to a set of issues around the valuation of expropriated properties including the establishment of a Panel of Developing Bill of Valuation of Expropriated Properties in every province (Article 22), appraisal of compensation for different assets (Articles 25–33). Articles 36 and 37 deal respectively with expropriation of property of an absent person and timing of compensation payments. Articles 38–41 set out the resettlement procedures and responsibilities of the Resettlement Committee. Various miscellaneous provisions related to land acquisition including assessment of property related conflicts and enforcement are set out in Articles 42–53.

The new Land Management Law (2017) replaces the Law on Managing Land Affairs (2008) and aims to create a legislated unified, reliable land management system. This law also aims to provide a standard system for land titling, land segregation, and registration; prevent illegal land acquisition and distribution; provide access to land to people; and provide conditions for appropriation of lands. Under the new law, the judiciary will no longer have a dominant role in land registration, issuance of land documents, and land titling, thus removing any potential conflict of interest with its key role in dispute resolution.

4.2. Key International Environmental Conventions and Agreements

Afghanistan is a signatory of many international environmental agreements, treaties, and conventions. The NEPA and Ministry of Agriculture, Irrigation, and Livestock (MAIL) play

important roles as the focal points for these agreements. Currently, Afghanistan has ratified the following treaties:

- Convention on Biological Diversity
- Desertification convention UNCCD
- United Nations framework convention on climate change
- Convention on international trade and endangered species of fauna and flora
- Vienna convention for the protection of the ozone layer

In addition, Afghanistan has signed but not ratified the Basel Convention regarding trans boundary movement and disposal of hazardous waste and is in the process of acceding to the Convention on Migratory Species and the Ramsar Convention on Wetlands.

4.3. World Bank Safeguard Policies and Guidelines

The WB environmental and social safeguard policies and guidelines and their relevance to the proposed KTL sub-project is discussed in the following sub-sections.

4.3.1. World Bank Environmental, Health and Safety Guidelines

World Bank Group's Environmental, Health, and Safety (EHS) Guidelines are applicable to the proposed KTL sub-project. In particular, contractors will be required to implement the General EHS Guidelines (April 2007)[2], the EHS Guidelines for Electric Power Transmission and Distribution (April 2007)[3], and the EHS Guidelines for Construction Materials Extraction (April 2007).

4.3.2. WB Guidance Note on Managing the Risks of Adverse Impacts on Communities from Temporary Project Induced Labor Influx

This Note provides guidance on identifying, assessing and managing the risks of adverse social and environmental impacts that are associated with the temporary influx of labor resulting from Bank-supported projects. The Note contains guiding principles and recommendations to be considered as part of the design and implementation of projects with civil works that require labor from outside the project's area of influence. This Note is particularly applicable to the subproject involving grid connected solar power plant and should be used during the detailed environmental and social assessment of the relevant subprojects. [4]

[2] World Bank Group EHS Guidelines are available at: http://www.ifc.org/wps/wcm/connect/554e8d80488658e4b76af76a6515bb18/Final%2B-%2BGeneral%2BEHS%2BGuidelines.pdf?MOD=AJPERES

[3] These are under revision and the ESA team will monitor draft documents to anticipate any future requirements that may be applicable.

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

4.3.3. World Bank Safeguard Policies and Requirements

The project proponents seeking financing from the World Bank are required to comply with the applicable environmental and social safeguard policies. A summary of the key objectives of the relevant safeguards policies considered for the Project is provided in the table below.

Table 4.1: Applicability of WB Safeguard Policies

WB Operational Policies		Triggered		Justification/Action Taken or to be Taken
		Yes	No	
Environmental Assessment	OP/BP/GP 4.01	✓		The project has a potential to cause localized and mostly reversible impacts hence this OP is triggered and project is assessed as category B. The Environment Assessment safeguard is triggered due to environmental and social impacts also foreseeable risks related to labour health and safety from the civil works planned under the project operations. As an umbrella policy the EA spells out the conducting the ESIA and subsequent site specific ESMPs for subprojects. The present ESIA has been prepared in response to this OP.
Natural Habitats	OP/BP 4.04		✓	This policy is not triggered since no sensitive habitat exists at or near the KTL route.
Pest Management	OP 4.09		✓	The Project does not require the use of pesticide (or other agro-chemicals). This includes maintaining of the RoW beneath the power evacuation lines. DABS does not use pesticides to maintain RoW.
Indigenous Peoples	OP 4.10		✓	There are no distinct, vulnerable, social and cultural groups in the project/study area which could qualify as indigenous.
Physical Cultural Resources	OP 4.11	✓		No known PCRs are known to exist in the study area nor identified during the field investigations and consultations. In the possible event that a sub project may encounter archaeological/historic and other 'chance finds' during implementation therefore this policy is also triggered. The Chance Find procedures are included in the ESMP.
Involuntary Resettlement	OP/BP 4.12	✓		The KTL sub-project will result in resettlement impacts including land acquisition and damage to assets such as crops and structures; hence this OP is triggered and

WB Operational Policies		Triggered		Justification/Action Taken or to be Taken
		Yes	No	
				an ARAP has been prepared (provided under separate cover).
Forests	OP/BP 4.36		✓	There will be no disruption to forests as a result of the Project.
Safety of Dams	OP/BP 4.37		✓	The Project does not include any dam construction or maintenance.
Projects on International Waterways	OP/BP/GP 7.50		✓	No project activities will be carried out inside or associated with any international waterways nor will the project impact any of such waterways.
Projects in Disputed Areas	OP/BP/GP 7.60		✓	The Project is not located in or near any disputed area.
Access to Information		✓		Consultations with various stakeholders including affected communities were carried out during ESIA study. The ESIA (and other safeguard documents) will be disclosed at DABS website. The executive summary of this ESIA will be translated into Dari and Pashto, will be disclosed at DABS website and will be made available to the local communities.

5. Environmental and Social Baseline Conditions

This chapter presents the prevailing conditions of the physical, biological and social environment in the sub-project area.

5.1. Physical Environment

5.1.1. Landform and Land use

The sub-project will be implemented in Karokh district of Herat province. The project area is mostly rural and is not densely populated. The KTL route passes through various types of land like barren, hilly, rain fed, irrigable and irrigated. There is no forest or any sensitive/important habitat along or near the route. **Figure 5.1** shows the salient features of the area. Some site photographs are presented in **Figure 5.2** (more photographs are provided in annexes – Volume II of this ESIA). The key land form and land use features of the KTL routes are presented in **Table 5.1**, and ***Ta*ble 5.2** beneath of Table 5.1 shows the relative proportion of government land, communal land and private land which will be actually expropriated for the towers erecting, and land which will be affected by cable stringing between two towers. (Temporally)

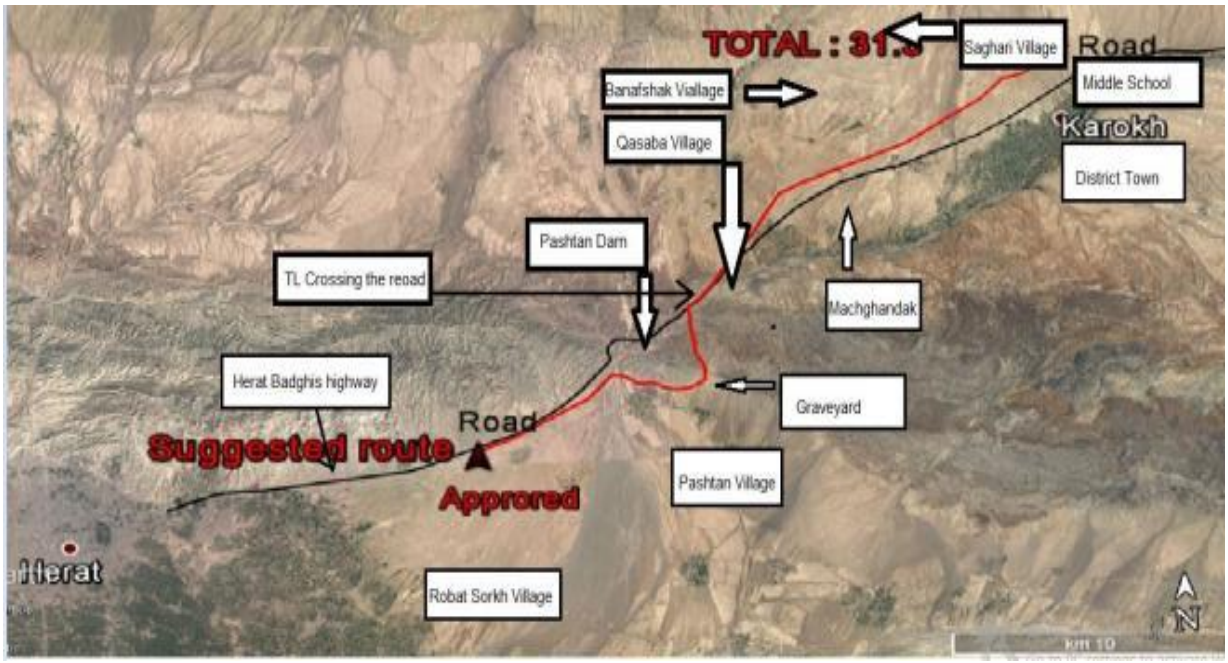


Figure 5.1: Salient Features of Sub-Project Area

Figure 5.2: Photographs of Project Area

Table 5.1: Key Features along KTL Route

	Village Name	Tower No	Land Type	Land Ownership	GPS Coordinates		Elevation
					Longitude	Latitude	
1	Rubate Surkh	1	Barren	Communal land	441509.6310	3803631.6420	1037.4620
2	Rubat e Surkh	2	Barren	Communal land	441727.2990	3803713.9480	1040.1650
3	Rubat e Surkh	3	Barren	Communal land	442031.0150	3803828.7920	1043.2640
4	Rubat e Surkh	4	Barren	Communal land	442260.8480	3803915.6990	1044.7630
5	Rubat e	5	Barren	Communal	442463.692	3803992.4	1054.5540

	Village Name	Tower No	Land Type	Land Ownership	GPS Coordinates		Elevation
					Longitude	Latitude	
	Surkh			land	0	000	
6	Rubat e Surkh	6	Barren	Communal land	442718.4240	3804088.7210	1057.7980
7	Rubat e Surkh	7	Barren	Communal land	442882.1960	3804150.6490	1065.8600
8	Rubat e Surkh	8	Barren	Communal land	443091.0880	3804263.0460	1066.5270
9	Rubat e Surkh	9	Barren	Communal land	443335.0850	3804394.3320	1076.2010
10	Rubat e Surkh	10	Barren	Communal land	443476.2810	3804470.3050	1075.6940
11	Rubat e Surkh	11	Barren	Communal land	443707.9230	3804594.9430	1078.1510
12	Rubat e Surkh	12	Barren	Communal land	443954.1940	3804727.4530	1081.5960
13	Rubat e Surkh	13	Barren	Communal land	444220.1360	3804870.5470	1084.1710
14	Rubat e Surkh	14	Barren	Communal land	444496.3760	3805019.1820	1087.8060
15	Rubat e Surkh	15	Barren	Communal land	444723.9460	3805141.6300	1092.0000
16	Rubat e Surkh	16	Barren	Communal land	444943.7810	3805259.9150	1092.4940
17	Rubat e Surkh	17	Barren	Communal land	445150.8090	3805371.3100	1091.0490
18	Rubat e Surkh	18	Barren	Communal land	445393.3160	3805501.7950	1093.3900
19	Rubat e Surkh	19	Barren	Communal land	445562.1090	3805592.6160	1094.0800
20	Rubat e Surkh	20	Barren	Communal land	445746.6290	3805691.9000	1096.5680
21	Rubat e Surkh	21	Barren	Communal land	445889.2160	3805836.4330	1097.2700
22	Rubat e Surkh	22	Barren	Communal land	446054.8110	3806004.2890	1097.3600
23	Rubat e Surkh	23	Barren	Communal land	446245.5840	3806197.6670	1102.6780
24	Rubat e Surkh	24	Barren	Communal land	446320.2590	3806279.6660	1104.0400
25	Rubat e Surkh	25	Barren	Communal land	446498.8630	3806475.7880	1100.0500
26	Rubat e Surkh	26	Barren	Communal land	446681.1810	3806675.9880	1098.9180
27	Qala e Pashdan	27	Hilly	Government	447066.1910	3806621.8970	1120.3580
28	Qala e Pashdan	28	Hilly	Government	447214.6820	3806548.4210	1133.6500
29	Qala e Pashdan	29	Hilly	Government	447429.1450	3806385.2240	1117.1100
30	Qala e Pashdan	30	Hilly	Government	447569.5310	3806278.3960	1119.9790

	Village Name	Tower No	Land Type	Land Ownership	GPS Coordinates		Elevation
					Longitude	Latitude	
31	Qala e Pashdan	31	Hilly	Government	447701.2460	3806265.4870	1119.7170
32	Qala e Pashdan	32	Hilly	Government	447873.1630	3806248.6380	1115.8050
33	Qala e Pashdan	33	Hilly	Government	447981.3450	3806263.4470	1119.3080
34	Qala e Pashdan	34	Hilly	Government	448094.3250	3806281.5580	1117.8750
35	Qala e Pashdan	35	Hilly	Government	448232.3180	3806218.9140	1116.6200
36	Qala e Pashdan	36	Grave yard	Communal	448449.3940	3806128.0000	1110.3600
37	Qala e Pashdan	37	Grave yard	Communal	448640.5880	3806043.8880	1105.7400
38	Qala e Pashdan	38	Grave yard	Communal	448852.3520	3805955.2310	1102.0150
39	Qala e Pashdan	39	Grave yard	Communal	449045.6130	3805961.9350	1101.0760
40	Qala e Pashdan	40	Hilly	Government	449193.6580	3805970.7730	1105.4000
41	Qala e Pashdan	41	Hilly	Government	449328.1860	3805978.8030	1097.6330
42	Qala e Pashdan	42	Hilly	Government	449510.9740	3806034.3100	1102.8530
43	Qala e Pashdan	43	Hilly	Government	449664.3500	3806080.8860	1108.9610
44	Qala e Pashdan	44	Hilly	Government	449840.8660	3806188.1120	1113.7230
45	Qala e Pashdan	45	Hilly	Government	450031.4890	3806303.9070	1122.0850
46	Qala e Pashdan	46	Hilly	Government	450049.0160	3806504.1920	1135.3650
47	Qala e Pashdan	47	Hilly	Government	450057.0510	3806648.5280	1139.7090
48	Qala e Pashdan	48	Hilly	Government	450047.7490	3806799.6110	1149.0250
49	Qala e Pashdan	49	Hilly	Government	450025.4700	3806947.2140	1160.5350
50	Qala e Pashdan	50	Hilly	Government	449956.1640	3807100.7260	1165.2950
51	Qala e Pashdan	51	Hilly	Government	449877.2980	3807202.2810	1169.1310
52	Qala e Pashdan	52	Hilly	Government	449824.0570	3807351.3830	1178.1980
53	Qala e Pashdan	53	Hilly	Government	449734.2080	3807511.9930	1187.7130
54	Qala e Pashdan	54	Hilly	Government	449737.9960	3807754.1570	1189.9040
55	Qala e Pashdan	55	Hilly	Government	449758.8530	3807923.4860	1190.5380
56	Qala e	56	Hilly	Government	449684.635	3808067.2	1168.6470

	Village Name	Tower No	Land Type	Land Ownership	GPS Coordinates		Elevation
					Longitude	Latitude	
	Pashdan				0	680	
57	Qala e Pashdan	57	Hilly	Government	449682.9130	3808241.8190	1162.0640
58	Qala e Pashdan	58	Hilly	Government	449646.7150	3808345.8080	1158.4820
59	Qala e Pashdan	59	Hilly	Government	449629.8580	3808525.5420	1152.7510
60	Qala e Pashdan	60	Hilly	Government	449605.4850	3808725.7200	1151.0890
61	Qala e Pashdan	61	Hilly	Government	449607.8170	3808867.9810	1148.5280
62	Qala e Pashdan	62	Hilly	Government	449626.5110	3808994.2950	1151.0830
63	Qala e Qasab	63	Hilly and Rain fed	Communal	449582.1570	3809322.3280	1148.1720
64	Qala e Qasab	64	Hilly and Rain fed	Communal	449623.2780	3809449.8520	1152.0880
65	Qala e Qasab	65	Hilly and Rain fed	Communal	449824.5910	3809588.8670	1161.9410
66	Qala e Qasab	66	Hilly and Rain fed	Communal	449991.8350	3809704.3560	1165.6410
67	Qala e Qasab	67	Hilly and Rain fed	Communal	450209.2770	3809969.3280	1179.4650
68	Qala e Qasab	68	Hilly and Rain fed	Communal	450306.0730	3810080.4780	1184.1600
69	Qala e Qasab	69	Hilly and Rain fed	Communal	450477.8020	3810287.8160	1194.7500
70	Qala e Qasab	70	Hilly and Rain fed	Communal	450575.5230	3810418.7020	1195.1000
71	Qala e Qasab	71	Hilly and Rain fed	Communal	450661.4900	3810545.7640	1189.9240
72	Qala e Qasab	72	Cultivated	Communal	450743.8380	3810667.4770	1191.0000
73	Qala e Qasab	73	Cultivated	Communal	450906.8510	3810908.4170	1192.6600
74	Qala e Qasab	74	Cultivated	Communal	451079.5220	3811124.9930	1194.6540
75	Qala e Qasab	75	Cultivated	Abdul Salaam	451262.7430	3811354.8010	1201.4940
76	Qala e Qasab	76	Cultivated	Abdul Salaam	451448.6270	3811587.9480	1204.7350
77	Qala e Qasab	77	Hilly	Arbab Ramazan	451601.8270	3811780.1020	1204.6210
78	Qala e Qasab	78	Cultivated	Arbab Ramazan	451775.0970	3811997.4300	1195.7980
79	Majghandak	79	Hilly	Government	451900.8170	3812155.1160	1204.0650
80	Majghandak	80	Hilly	Government	451963.9130	3812234.2550	1203.9700
81	Majghandak	81	Hilly	Government	452150.3570	3812492.4390	1202.9870

	Village Name	Tower No	Land Type	Land Ownership	GPS Coordinates		Elevation
					Longitude	Latitude	
82	Majghandak	82	Hilly	Government	452247.2980	3812626.6800	1204.5800
83	Majghandak	83	Cultivated	Communal	452377.8130	3812841.4820	1208.0300
84	Majghandak	84	Hilly	Government	452492.5980	3813030.3970	1213.4450
85	Majghandak	85	Cultivated	Haji Aminullah	452636.6300	3813254.3250	1215.0950
86	Majghandak	86	Cultivated	Haji Aminullah & Abdul Salim & Haji Karim	452745.3450	3813423.3470	1217.8000
87	Majghandak	87	Hilly	Haji Aminullah	452884.7500	3813640.0820	1222.6440
88	Qala e Zaman Khan	88	Hilly	Arbab Zaman	452971.3000	3813774.6430	1222.4290
89	Qala e Zaman Khan	89	Hilly	Arban Zaman	453110.4710	3813991.0140	1232.4240
90	Qala e Zaman Khan	90	Rain fed	Arbab Zaman	453338.3290	3814104.6350	1238.2530
91	Qala e Zaman Khan	91	Cultivated	Engineer Bashir	453535.4950	3814202.9510	1240.8020
92	Qala e Zaman Khan	92	Cultivated	Engineer Bashir	453708.5860	3814289.2620	1243.6400
93	Qala e Zaman Khan	93	Cultivated	Engineer Bashir	453869.6880	3814369.5960	1244.8960
94	Qala e Dasht	94	Cultivated	Mohammad Umer	454017.1210	3814443.0710	1250.3010
95	Qala e Dasht	95	Cultivated	Sultan Ahmad	454240.4030	3814531.0680	1252.2120
96	Qala e Dasht	96	Cultivated	Zia U Din	454467.1740	3814620.4410	1257.1350
97	Qala e Dasht	97	Cultivated	Nadir	454690.0280	3814708.2690	1261.1200
98	Qala e Dasht	98	Cultivated	Ghulam Sakhi	454922.8080	3814800.0100	1266.4500
99	Qala e Dasht	99	Cultivated	Nadir/M. Azam	455150.5500	3814889.7640	1271.8200
100	Qala e Dasht	100	Cultivated	Mohammed Hussain	455357.6090	3814971.3680	1277.0000
101	Qala e Safeed	101	Rain fed	Government	455535.1110	3815041.3230	1282.4500
102	Qala e Safeed	102	Rain fed	Government	455813.9300	3815146.7800	1293.5300
103	Qala e Safeed	103	Rain fed	Government	456028.7470	3815228.0290	1301.2960
104	Qala e Safeed	104	Rain fed	Government	456274.8690	3815321.1180	1312.8660
105	Qala e Safeed	105	Rain fed	Government	456516.3240	3815412.4430	1310.9920

	Village Name	Tower No	Land Type	Land Ownership	GPS Coordinates		Elevation
					Longitude	Latitude	
106	Qala e Safeed	106	Rain fed	Government	456748.1540	3815500.1270	1313.2800
107	Qala e Safeed	107	Rain fed	Government	457011.1640	3815599.6040	1320.4520
108	Qala e Safeed	108	Rain fed	Government	457276.4180	3815699.9300	1331.1600
109	Qala e Safeed	109	Rain fed	Government	457539.8680	3815799.5740	1342.8760
110	Qala e Safeed	110	Rain fed	Government	457782.8120	3815891.4610	1343.4990
111	Qala e Safeed	111	Rain fed	Government	457928.2590	3815982.7110	1347.0420
112	Qala e Safeed	112	Rain fed	Government	458143.6980	3816117.8720	1350.8880
113	Qala e Safeed	113	Rain fed	Government	458391.7830	3816273.5140	1348.1320
114	Benafshak	114	Rain fed	Communal	458614.7990	3816413.4280	1354.3320
115	Benafshak	115	Rain fed	Communal	458858.2290	3816566.1490	1358.9000
116	Benafshak	116	Rain fed	Communal	459053.7780	3816688.8310	1363.9680
117	Benafshak	117	Rain fed	Communal	459308.5390	3816848.6620	1365.4910
118	Benafshak	118	Rain fed	Communal	459461.5400	3816944.6510	1367.4300
119	Benafshak	119	Rain fed	Communal	459631.3390	3817037.5020	1360.9950
120	Merza Rajab	120	Rain fed	Haji Aref	459840.6300	3817165.1090	1365.1850
121	Merza Rajab	121	Rain fed	Haji Aref	459962.1340	3817239.1920	1373.9100
122	Merza Rajab	122	Rain fed	Haji Aref	460192.1920	3817379.4610	1377.5500
123	Merza Rajab	123	Rain fed	Haji Asef	460448.7890	3817535.9110	1383.6620
124	Merza Rajab	124	Rain fed	Haji Asef	460677.0260	3817675.0700	1382.7900
125	Merza Rajab	125	Rain fed	Marouf	460862.7200	3817859.6590	1389.1290
126	Merza Rajab	126	Rain fed	Marouf	461061.7470	3818057.5020	1394.0890
127	Merza Rajab	127	Rain fed	Haji Nisar Karokhi	461191.8670	3818186.8490	1398.8210
128	Merza Rajab	128	Rain fed	Haji Nisar Karokhi	461358.1970	3818352.1890	1397.3050
129	Merza Rajab	129	Rain fed	Haji Karimullah	461468.8800	3818478.4770	1401.8760
130	Merza Rajab	130	Rain fed	Haji Karimullah	461741.1620	3818525.4770	1399.4900
131	Merza Rajab	131	Rain fed	Haji	462003.448	3818588.7	1402.0000

	Village Name	Tower No	Land Type	Land Ownership	GPS Coordinates		Elevation
					Longitude	Latitude	
				Karimullah	0	790	
132	Merza Rajab	132	Cultivated	Mohammad Musa	462202.8970	3818636.9150	1400.4400
133	Sagharee Ha	133	Cultivated	Government	462413.3690	3818768.9070	1402.4400
134	Sagharee Ha	134	Cultivated	Government	462639.3650	3818904.9440	1404.4040
135	Sagharee Ha	135	Cultivated	Government	462880.4140	3819058.9270	1406.0700
136	Sagharee Ha	136	Cultivated	Government	463127.5670	3819216.8110	1408.1250
137	Sagharee Ha	137	Rain fed	Communal land	463365.1560	3819381.5340	1415.4150
138	Sagharee Ha	138	Rain fed	Communal land	463581.8520	3819531.7730	1413.9450
139	Sagharee Ha	139	Rain fed	Mohammad Mubin	463809.2080	3819689.4020	1416.4050

Table 5.2, Proportion of different land type to be affected along the TL

A.	**Land along KTL Route**	**Quantity**
	Cultivated land (hectares) ***Different land type affecting by towers erection.***	
1	Private irrigated land (17 towers)	0.085 ha
2	Private rain fed land (17 towers)	0.085ha
3	Communal irrigated land (4 towers)	0.02 ha
4	Communal rain fed land (15 towers)	0.075 ha
5	Communal barren land (30 towers)	0.15 ha
	Governmental irrigated land (4 towers)	0.02 ha
6	Governmental rain fed land (13 towers)	0.065 ha
	Governmental barren (39 towers)	0.195 ha
	Sub Total	**0.695 ha**
B	***Different land type to be affected by cable*** ***Stringing between two towers.(temporally)***	
1	Private irrigated land.	2.3625 ha
2	Private rain fed land.	1.4625 ha
3	Communal irrigated land	0.3375 ha
4	Communal rain fed land.	2.025 ha
5	Governmental rain fed land	1.4625
	Sub Total	**7.65 ha**

5.1.2. Climate

Herat has a cold semi-arid climate. Precipitation is very low, and mostly falls in winter. Although Herat is approximately 240m, (790 ft.) lower than Kandahar, the summer climate is more temperate, and the climate throughout the year is far from disagreeable. From May to September, the wind blows from the northwest with great force. The winter is tolerably mild; snow melts as it falls, and even on the mountains does not lie long. Three years out of four it does not freeze hard enough for the people to store ice. The eastern reaches to the Hari Rud River, including the rapids, which are mostly frozen during the winter. **Table 5.2** presents the climate data of Herat province.

Table 5.3: Climate Data for Herat province

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Record high °C (°F)	24.4 (75.9)	27.6 (81.7)	31.0 (87.8)	37.8 (100)	39.7 (103.5)	44.6 (112.3)	50.0 (122)	42.7 (108.9)	39.3 (102.7)	37.0 (98.6)	30.0 (86)	26.5 (79.7)	50 (122)
Average high °C (°F)	9.1 (48.4)	11.9 (53.4)	17.9 (64.2)	24.0 (75.2)	29.6 (85.3)	35.0 (95)	36.7 (98.1)	35.1 (95.2)	31.4 (88.5)	25.0 (77)	17.8 (64)	12.0 (53.6)	23.79 (74.83)
Daily mean °C (°F)	2.9 (37.2)	5.5 (41.9)	10.2 (50.4)	16.3 (61.3)	22.1 (71.8)	27.2 (81)	29.8 (85.6)	28.0 (82.4)	22.9 (73.2)	16.1 (61)	8.8 (47.8)	4.7 (40.5)	16.21 (61.18)
Average low °C (°F)	−2.9 (26.8)	−0.6 (30.9)	3.8 (38.8)	9.1 (48.4)	13.3 (55.9)	18.2 (64.8)	21.2 (70.2)	19.2 (66.6)	13.2 (55.8)	7.4 (45.3)	1.0 (33.8)	−1.4 (29.5)	8.46 (47.23)
Record low °C (°F)	−26.7 (−16.1)	−20.5 (−4.9)	−13.3 (8.1)	−2.3 (27.9)	0.8 (33.4)	9.7 (49.5)	14.7 (58.5)	8.4 (47.1)	1.3 (34.3)	−5.6 (21.9)	−12.8 (9)	−22.7 (−8.9)	−26.7 (−16.1)
Average precipitation mm (inches)	51.6 (2.031)	44.8 (1.764)	55.1 (2.169)	29.2 (1.15)	9.8 (0.386)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	1.7 (0.067)	10.9 (0.429)	35.8 (1.409)	238.9 (9.405)
Average rainy days	6	8	8	7	2	0	0	0	0	1	3	5	40
Average	2	2	1	0	0	0	0	0	0	0	0	1	6

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
snowy days													
Average relative humidity (%)	72	69	62	56	45	34	30	30	34	42	55	67	49.7
Mean monthly sunshine hours	149.3	153.5	202.5	235.7	329.6	362.6	378.6	344.8	323.2	274.0	235.0	143.1	3,131.9

Source: NOAA (1959-1983)

5.1.3. Air Quality

Though no air quality monitoring was carried out during the current ESIA, no major source of air pollution exists at or near the KTL route other than the vehicular traffic on the local roads. Hence the ambient air quality in the area is expected to be well within the acceptable limits. The contractor will however be required to carry out air quality monitoring before commencing the construction activities.

5.1.4. Noise

Much like sources of air pollution, there are no major sources of noise in the area except the vehicular traffic on the local roads. Hence the ambient noise levels are likely to be well within the acceptable limits. The contractor will however be required to carry out noise measurements before commencing the construction activities.

5.1.5. Water Resources

The water sources in the sub-project area include small streams, dug wells, bore holes, and karez[5]. No major river or any other significant water body exist in the area, except a proposed Pashdan dam which is planned to be constructed close to the KTL route. The Pashdan Multipurpose Dam Project consists of a rockfill dam and an intake structure, a powerhouse, a weir, head regulators, right and left main canals. Hari-rod that flows south of the Herat town is the major river in the Herat province. Some key information on this river and its basin is presented below.

[5] Karez: Manmade underground water channels to bring water from wells/springs to the settlements and cultivation fields.

Herat province and hence the sub-project area is located in the Hari-rod - Murghab river basin, which contributes to a tiny 4 percent of the total annual flow in Afghanistan. The main rivers are the Hari-rod, which takes its source from the western slope of the Koh-i-Baba Mountains in the central highlands and the Murghab, which comes from the Tir Band-i-Mountains in Turkistan. However, only part of the water from both rivers remains within the national boundaries of the country. Indeed, the Hari Rod and Murghab dry up in the irrigation canals of the Mary and Tejen oases of the Garagum desert in Turkmenistan. A water channel, the Garagum channel, linking the oases to the Amu Darya River, was constructed across more than a thousand kilometers of desert in Turkmenistan to add water in the Mery and Tejen oases (from the Am u Darya River). The Hari-rod - Murghab Basin includes four main watersheds: Bala Murghab watershed; Kushk wa Kashan Rod watershed; Upper Hari Rod watershed; and Lower Hari Rod watershed.

The only major source of water contamination in the area is the sewage from the settlements in the area. No water analysis was carried out as part of the present ESIA however the contractor will be required to carry out water analysis in the area before mobilization in the field.

5.2. Biological Environment

5.2.1. Flora

Afghanistan's vegetation is typical of the semi-deserts and steppes. Ephemeris vegetation grows in the sandy semi-deserts and halophiles vegetation is found in the salt semi-deserts. The most common trees on the more humid soils are oaks, ashes, willows, poplars and fruit trees in orchards. Himalayan forest, including evergreen oak woods grow in the borderland between Afghanistan and Pakistan. Unfortunately, areas supporting natural flora habitat are diminishing. The Asian Development Bank (ADB) reports that one of the most critical environmental problems of Afghanistan is massive deforestation and overgrazing. It is estimated that forest cover declined from 3.4 to 2.6 percent of total land area between 1970 and 1990. Since then, continued timber harvesting and the use of forest resources for fuel have reduced forest cover to less than two percent of the total area.

During screening the following types of vegetation have been reported: cumin, mushroom, Zarashk (Berberis intagerrima), Kasni (Cechoriam pumilium), Aspand, Bomadaran (Achirllea eriophora), Raziana (foeniculum olgar), and Panirak (Malva neglecta).

The secondary literature review and field investigations as part of the present ESIA indicate that the sub-project area is devoid of any significant natural vegetation and important habitat. Some photographs of the vegetation of the area are presented below.

Figure 5.3: Vegetation in Sub-project Area

5.2.2. Fauna

Afghanistan's National Environmental Protection Agency (NEPA) has officially released Afghanistan's first list of protected species. The species on this list are now protected against illegal hunting or harvest. NEPA, with help from the Wildlife Conservation Society, Kabul University and the Ministry of Agriculture, Irrigation and Livestock (MAIL), created the Afghanistan Wildlife Executive Committee (AWEC) to facilitate the listing process. 138 species are currently on the list, which includes 74 mammals, 54 birds, seven plants, one amphibian, one reptile and an insect. The list includes well known species such as the snow leopard (Panthera uncia), the wolf and the brown bear, as well as lesser-known species such as the Paghman salamander (Paradactylodon mustersi), goitered gazelle (Gazella subgutturosa), Saker falcon (Falco cherrug), markhor (Capra falconeri), and the Himalayan elm tree (Ulmus wallichiana).

The proposed project area has no value as a habitat for any important faunal species including threatened and endangered species because of the lack of vegetative cover or other suitable habitat although some common wild animals like wolf, Jackal, fox, ferret have been reported in the area.

5.2.3. Avifauna

A total of 25 species of avifauna were recorded from the study area. The species include terrestrial and aquatic birds. Some key terrestrial and aquatic birds recorded are described below.

House Sparrow, House Crow, Mina, Long tailed Shrike, Little Green Bee-eater, parrot, duck, partridge, eagle, nightingale, stork, hawk falcon, Alum, Vulture, Jackdaw, bimaculate lark, Goose, pelican.

5.2.4. Important Bird Area

There is no important bird area at the immediate sub-project area, though Heart province has the two important bird areas, which are sufficiently away from the sub-project area. These areas are described below.

Hari-Rod Valley, with an area of 35,000 ha. It is a 112-km stretch of valley running from Obeh west of Herat city in north-west Afghanistan. The valley widens considerably towards Herat and even as far east as Obeh it is about 15 km wide, and comprises barren, desert hills and plains with sparse vegetation and cultivation. Along watercourses stands of Tamarix prevail and there are Populusgroves and some apricot orchards. Other interesting breeding species include Accipiter badius (Herat), Picus squamatus flavirostris (Herat and Obeh), Alauda gulgula, Motacilla citreola and Saxicola caprata. Phasianus colchicus principalis formerly occurred in the valley, mainly to the west of Herat, but is probably extinct in Afghanistan through hunting and habitat destruction. The following are also likely to breed, given their presence 100 km further down the valley by the river and on the plains around Kohsan: Ixobrychus minutus, Buteo rufinus, Porzana porzana, Cursorius cursor, Sterna albifrons, Melanocorypha bimaculata, Calandrella acutirostris, Acrocephalus stentoreus, Hippolais rama and Rhodopechys githaginea.

North-western steppe, with an area of 80,000 ha. Barren, hot, desert-steppe plains lying west of the town of Qala-i-Nau in north-west Afghanistan, rising to rounded barren foothills of the Paropamissus (Safed Koh) range to the south, and bordered by Turkmenistan to the north and Iran to the west. The area is between 500 and 1,000 m above sea-level, and fingers of hills project into the plains from the south. Artemisia steppe predominates on the plains, with Pistacia woodland in the hills; patches of Juniperus occur on hills nearer the Paropamissus. Land is mainly used for grazing; Pistacia woodland provides seasonal income to local people.

5.2.5. Protected Areas

No sensitive ecological habitat or environmental and social hot spots are located within the sub-project area. Six protected areas have been identified in the country; none of these are located within or near the proposed sub-project area; in fact, all of them are located outside the Herat province. Salient information of these areas is tabulated below.

Table 5.4: Protected Area of Afghanistan

Name	Province	Area	Year	Elevation	Designation

		(ha)		(m)	
Ab-i-estada	Ghazni	27,000	1977	1,950-2,100	Waterfowl sanctuary
Dashte Nawar	Ghazni	7,500	1977	3,200-3,210	Waterfowl sanctuary
Pamir-i-Buzurg(Wakhan)	Badakhshan	67,938	2014	3,250-6,103	Wildlife reserve
Kole Hashmat Khan	Kabul	191	1973	1,792-1,794	Wildlife reserve
Ajar-valley	Bamyan	40,000	1978	2,000-3,800	Wildlife reserve
Bande-amir	Bamyan	41,000	2009	2,900-2,832	Waterfowl sanctuary

5.3. Environmental Degradation

Both natural and human induced environmental degradation is currently taking place in the project area.

5.3.1. Natural Degradation

The project area has undergone tremendous natural degradation in form of erosion. Erosion processes including gully, rill and stream bank erosion are common in the project area. In addition, erosion processes by strong winds in the project area are extensive.

- Rill erosion – Rill erosion is common all over the project area. The process of rill erosion becomes more serious where natural vegetation has been damaged. In such cases, small rills resulting from splash and rill wash erosion may join and form the beginning of somewhat deeper rill.
- Stream bank erosion – Fluvial processes are limited to riverbeds especially in the project area. A decrease in vegetation cover increases runoff and the amount of eroded materials especially during heavy rains. This has a net effect of enhancing stream bank erosion. During heavy floods the riverbeds often change their courses.
- Wind erosion – Due to the strong winds prevailing in the area, the project area is an indicator of overgrazing and desertification.

5.3.2. Human induced degradation

Although the above-described erosion processes are basically natural, the inhabitants of the project area have enhanced degradation in this area. In particular, over-grazing by livestock has been causing degradation of the environment of the project area.

5.4. Socioeconomic Conditions

5.4.1. Administrative Setup

Administratively, the county is divided into 34 administrative provinces, 416 districts and 46,000 villages. See **Figure 5.4** for provinces of Afghanistan. The proposed KTL sub-project is located in Herat province.

5.4.1. Population and Demography of Herat Province

Herat is one of the 34 provinces of Afghanistan, located in the western part of the country (see **Figure 5.4**). Together with Badghis, Farah, and Ghor provinces, it makes up the north-western region of Afghanistan. Its primary city and administrative capital is Herat City. The province of Herat is divided into 19 districts and contains over 1,000 villages. It has a population of about 1.97 million, making it the second most populated province in Afghanistan behind Kabul Province. The population is multi-ethnic but largely Persian-speaking.

Herat province shares border with Iran in the west and Turkmenistan in the north, making it an important trading province. The Trans-Afghanistan (Tajikistan, Afghanistan, Pakistan and India – TAPI) natural gas pipeline is expected to pass through Herat from Turkmenistan to Pakistan and India in the south. The province has two airports, one is the Herat International Airport in the Herat City and the other is at the Shindand Air Base, which is one of the largest military bases in Afghanistan. The Salma Dam which is fed by the Hari River is also located in this province.

Karokh (or Karukh) District is situated in the north-eastern part of Herat Province and is about 35 km from the Herat City (see **Figure 5.5** for a map of the district). It borders Kushk District to the northwest, Kushki Kuhna District to the north and Badghis Province to the northeast. To the east is Obe District. To the south is Pashtun Zarghun District while Injil District is situated to the west. The population of the district is 67,549 (34243 males and 33306 females) in 186 villages (year 2017 central statistic organization). The district center is the town of Karokh. The main sources of income in the district are farming and livestock rearing. The total agricultural area is about 42354 hectares (22905 hectare irrigable and 19449 hectares are rain fed). The main agriculture produce in Karokh are wheat, corn, barely, eggplant, tomato, potatoes, tobacco, peas and fruits.

Figure 5.4: Provinces in Afghanistan

Only the road from province center to the district center has been asphalted and inside the district all the roads are in bad condition. About 40 percent of the roads are open to traffic in all seasons of the year (ie, all-weather roads).

Men are traditionally responsible for agricultural activities and taking care of animals, while women are tasked with taking care of their children and performing day-to-day chores in the homes. The principal ethnic groups of people that are found in the district (and project area) are Tajik.

The socioeconomic survey was done during the month of May 2018 and it covered mainly the people who live along the TL corridor of impact and also the targeted individuals who would be affected directly by the project and settled in nine villages along the TL route. The sampling was done randomly targeting the household representatives.

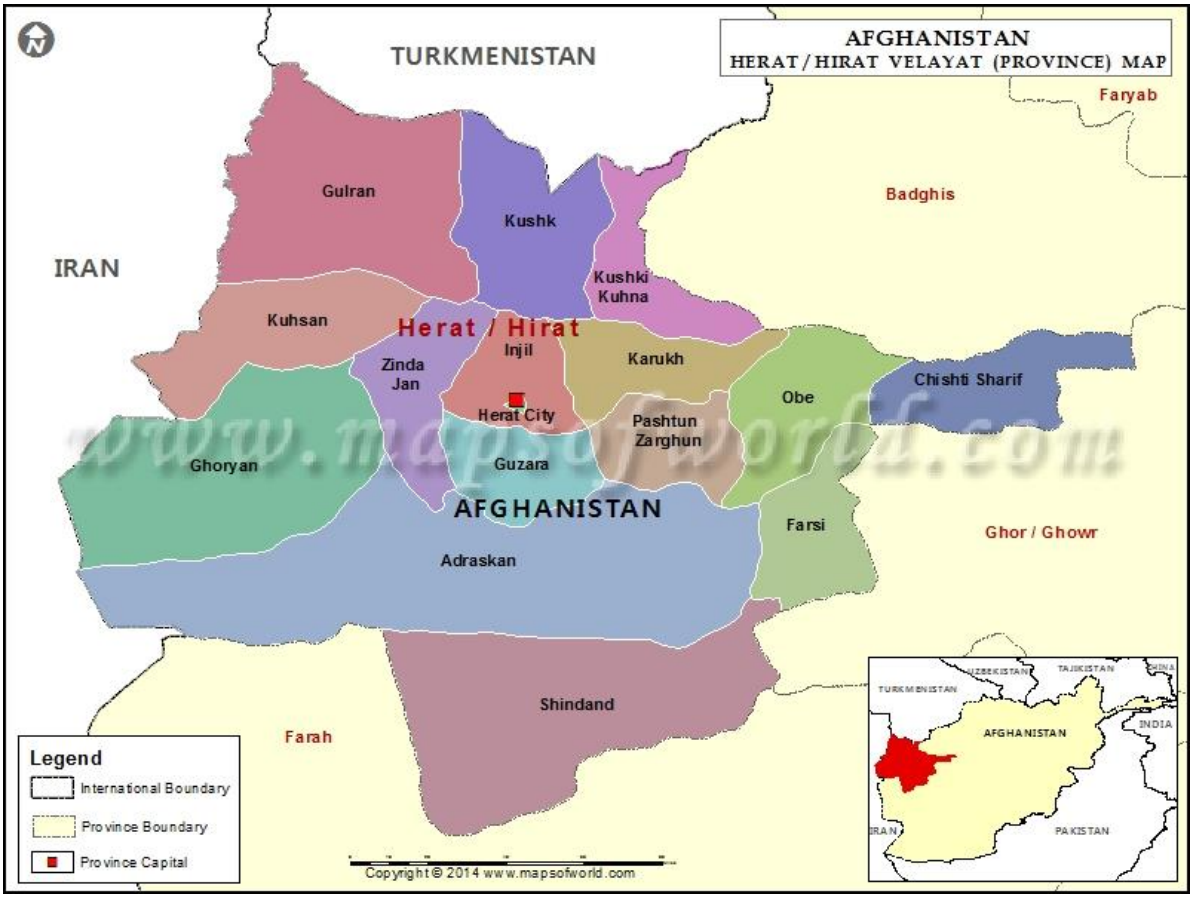


Figure 5.5: Herat Province and its Districts

5.4.2. Local Power Structure and Decision Making

Local power structure at village and community level is mainly composed of Maliks (Arbab), religious scholars, elders of tribes, while a strong district government also exists headed by district governor who represents the provincial governor. The district government comprise fully equipped offices and all relevant departments like judicial, agriculture, public health, and others.

Important community development initiatives and projects first come to the existing local power structure in close coordination with district governmental officials. The communities are free in decision making for their public interest and goodwill.

5.4.3. Local Dispute Resolution

Much like rest of the Country, a local mechanism is being used in Karokh district to resolve disputes in the local communities. This mechanism includes gatherings of elders generally formed temporarily to solve a specific case. Each community also typically has more permanent councils of elders, called *shuras*, which can range from local mosque *shuras* to district- and provincial-level *shuras*. In addition, a range of respected individuals, including religious and tribal leaders, may act as mediators in a given dispute. Mediators may also include

government officials, such as the district governor or district police chief, if they happen to have local legitimacy. Finally, government bodies like the Ministry of Justice, Huqooq Department (civil affairs department), can also serve as mediators or as referring agents to one of the above sources of dispute-resolution authority.

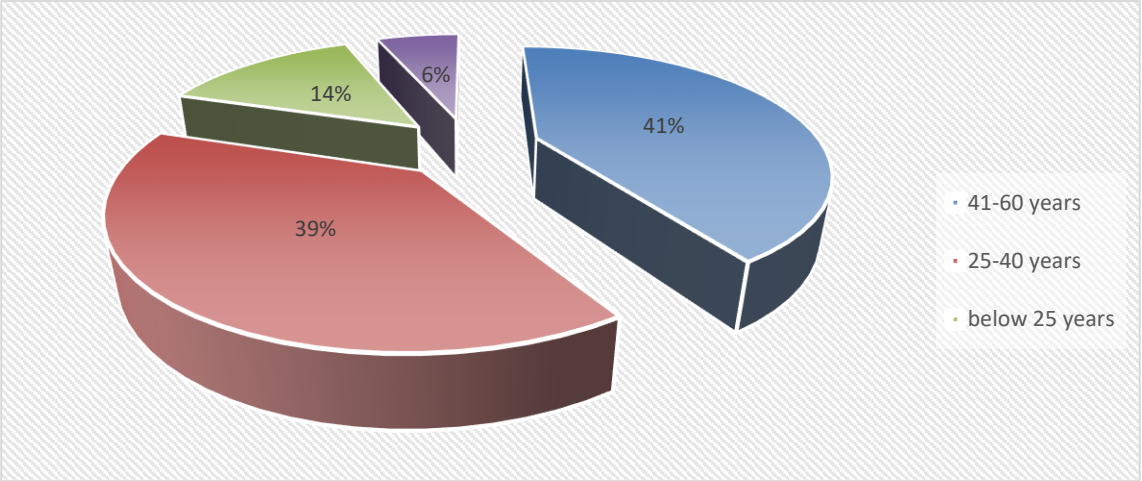
5.4.4. Gender Issues

Much like most rural areas of Afghanistan, male and female roles are strongly differentiated in the sub-project area. The public sphere is the domain of men, and the domestic one is the realm of women. Women take care of young children, cook for the household, and clean the house. They may have a small garden and a few chickens. They weave and sew and, in some areas, make rugs and felt. Among nomads, women make tents and have more freedom of movement. In a peasant family, men look after the sheep and goats, and plow, harvest, thresh, and winnow the crops. Among both rural and urban people, a man must not stay at home during the day. Women and children undertake important roles in agricultural production alongside men in crop production, horticulture and the rearing of livestock. Women live within family compounds, often for most of their lives. Within the compound walls women manage livestock (chickens, dairy cows), small orchards (vegetables, nuts, fruits), bee-hives and gardens. Women transform agricultural and livestock output into enterprise opportunities – weaving wool from sheep into carpets; making jams, drying fruit, tending bees and selling the honey. Men often market the women's produce and tend the field crops and livestock outside the compound. Involvement of women is necessary to find out what are their needs for the agricultural sector.

5.4.5. Age Profile

As indicated in the figure below, the total socioeconomic questionnaires were filled from 189 respondents in 9 villages whom are living along the TL corridor, from the above mentioned amount 35 were women and 154 men, over 41% of respondents in the subproject area fall within the age category between 41 to 60 years followed by 39% falling in the age bracket of 25 to 40 years, 6% above the age of 60 years and 14% in the age category of bellow than 25 years.

Figure 5.6: Age Profile in Sub-Project Area



5.4.6. Marital Status of the Respondent

As indicated in the table below, 90% of the people interviewed in the sub-project area were married people. About 2% 0f the respondents were widows. The remaining 8% who are not married are mostly young people. This shows that the questionnaire survey covered both the young and old, married and unmarried.

Table 5.5: Marital Status of Respondents

Marital status	Percentage
Married	90
Unmarried	8
Widow	2

5.4.7. Household size

Majority of the married respondents (45%) said that their households consist of six to eight members while 50% said their size was over eight members. Only 5% had household members less than six. See **Table 5.6**.

Table 5.6: Household Size

Household size	Percentage
Above 8	50
6 to 8	45
Less than 6	5

5.4.8. Occupation

As shown in **Figure 5.7** below, the occupations of the respondents were found to be 75% farming and livestock rearing, while 20% of those interviewed said that they were both livestock keepers and laborers. Only 5% of the respondent were depended on employment.

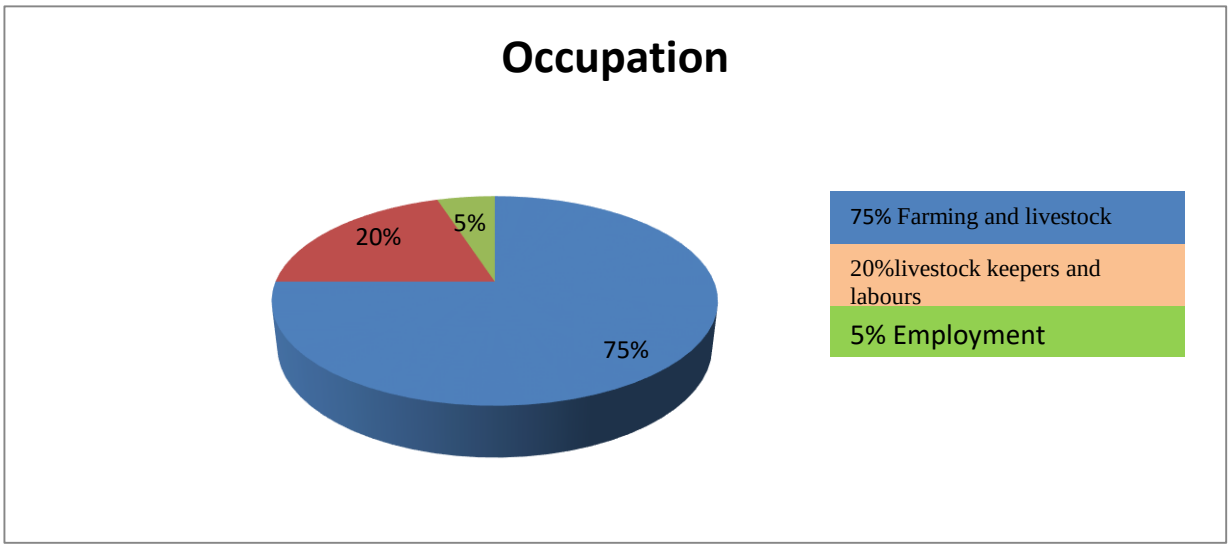


Figure 5.7: Occupations Sub-Project Area

5.4.9. Agriculture

As is the case with all rural areas of Afghanistan, the main stay of the people in the project area is cultivation and livestock rearing. The total cultivable land under Karokh district is calculated to be 42,354 ha of which only 19,449 ha is termed as rain fed. The total land mass is divided into cultivable land both irrigable and rain fed, settlement, grazing land and barren land or mountainous. **Table 5.7** presents the common crops and their yields in the Karokh district.

Table 5.7: Cultivation in Sub-project Area

	Item	Total Area (Jerib [a])	Yield (Kg per Jerib)
1	Wheat	65,979	800
2	Barely	15,176	400
3	Potato	660	2,600
4	Onion	463	2,700
5	Tomato	6,475	4,000
6	Carrot	77	3,221
7	Apple	200	350

	Item	Total Area (Jerib [a])	Yield (Kg per Jerib)
8	Almond	210	180
9	Grapes	900	320
10	Pomegranate	164	200
11	Plum	400	130
12	Mulberry	200	800
13	Walnut	160	500
14	Peach	200	300
15	Apricot	400	200
16	Alfalfa	12,600	
17	Clover	10,660	

Source: Karokh District Agriculture Department. [a] Jerib is about 0.2 ha or about 0.5 acres.

5.4.10. Education Level

As per socioeconomic survey there are reasonable educational institutions in the project area. They include 17 primary schools, 24 secondary schools and 18 high schools separately for girls and boys in Karokh district. The district has an enrolment of 29,604 students comprising 15,452 males and 14,152 females (see **Table 5.8**).

Table 5.8: Educational Facilities in Karokh District

	Name of school	Location	School Level	Number of Students		Total
				Male	Female	
1	Abdul Fat	Center	High School	1198		1198
2	Naswan e Markaz	Center	High School		1030	1030
3	Zokor Payan Mahla	Payan Mahla	High School	602		602
4	Naswan e Payan Mahla	Payan Mahla	High School		687	687
5	Zokor Haji Shah Alam	Qala e Sherbat	High School	727		727
6	Naswan e Haji Shah Alam	Qala e Sherbat	High School		834	834
7	Zokor e Majghandak	Majghandak	High School	330		330
8	Naswan e Majghandak	Majghandak	High School		473	473

	Name of school	Location	School Level	Number of Students		Total
				Male	Female	
9	Khuaja Ha	Ali Abad	High School	432	448	880
10	Naswan Dahan e Ghar	Dahan e ghar	High School		479	479
11	Naswan Sarab	Qala e Bala	High School		543	543
12	Sanjor	Sanjor	High School	174	230	404
13	Merza Bahar	Merza Bahar	High School	359	248	607
14	Zokor e Islamaban	Chaqmaq	High School	459		459
15	Naswan e Islamabad	Chaqmaq	High School		486	486
16	Janda Khan	Janda khan	High School	524	594	1118
17	Pahlawan Piri	Pahlawan Piri	High School	202	351	553
18	Sheikh Marouf	Deh Moqol	High School	298	310	608
19	Zokor Sarab	Qale Bala	Secondary School	386		386
20	Zokor Dahan e ghar	Dahan e ghar	Secondary School	384		384
21	Zokor Maloma	Maloma	Secondary School	495		495
22	Banefshak	Banefshak	Secondary School	330	252	582
23	Armaluq	Armaluq	Secondary School	329	294	623
24	Badamtoo	Badamtoo	Secondary School	365	329	694
25	Falezkar	Nehistan	Secondary School	310	288	598
26	Qale Qader Khan	Darakht e toot	Secondary School	281	264	545
27	Zinalha	Zinalha	Secondary School	207	87	294
28	Banefshdara	Banefshdara	Secondary School	593	229	822
29	Kamar Zard	Kamar Zard	Secondary School	219	179	398

	Name of school	Location	School Level	Number of Students		Total
				Male	Female	
30	Pahlawanha	Pahlawanha	Secondary School	152	102	254
31	Naswan Maloma	Maloma	Secondary School		417	417
32	Haji Adulrahman Taheri	Taheriyan	Secondary School	309	231	540
33	Dame jo	Dame jo	Secondary School	168	114	282
34	Said Abad	Ghorombo	Secondary School	301	194	495
35	Masjed Chobi	Masjed Chobi	Secondary School	138	108	246
36	Haji Esmael Sia	Bamirak	Secondary School	280	246	526
37	Shahid Molawi Said Ahmad	Cheshma Daraz	Secondary School	190	177	367
38	Qale Safid	Qale Safid	Secondary School	161	282	443
39	Saghariha	Saghariha	Secondary School	157	159	316
40	Payan Bolok	Shahrak Razi	Secondary School	1114	962	2076
41	Keshwarmand	Keshwarmand	Secondary School	227	269	496
42	Sang e sia	Khaje Khamab	Secondary School	142	129	271
43	Khaje Jir	Kandel boost Gale gash	Elementary School	76	41	117
44	Cheshma Noqra	Cheshma Noqra	Elementary School	151	159	310
45	Tarinha	Tarinha	Elementary School	193	223	416
46	Ali Mansour	Ali Mansour	Elementary School	65	71	136
47	Sofi Saleh	Chaqoha	Elementary School	156	205	361

	Name of school	Location	School Level	Number of Students		Total
				Male	Female	
48	Saidha e Karokhi	Tarinha e Sarpole	Elementary School	75	79	154
49	Sheikh al Islam	Ali Sirwani	Elementary School	85	102	187
50	Ali Afghan	Ali Afghan	Elementary School	106	136	242
51	Jonaidullah Hazeq	Bainanha	Elementary School	156	193	349
52	Shahabuddin Ghori	Ghoriha	Elementary School	134	126	260
53	Pashtan	Pashtan	Elementary School	195	56	251
54	Taheriyan	Molkiha	Elementary School	174	201	375
55	Zaid bin Hares	Darakht e Olia	Elementary School	85	85	170
56	Shahid Ahmad Wali Taheri	Sang e Zard	Elementary School	91	68	159
57	Lise Kaseer al Rashtawi	Center	Elementary School	0	0	0
58	Khososi Meraj	Shahrak Razi	Elementary School	563	192	755
59	Madrassa	Center	Elementary School	604	190	794
Total				**15452**	**14152**	**29604**

Source: District Education Department

The district has literacy rate of 35 % despite having 12 % of residents having primary education and 8% have secondary education and 10% having high school education.

Table below shows a majority (65%) of the respondents have never attended any school and over 30% had the mid lower level of education at primary and Secondary; while only 5% had university education. This implies that majority of the community members cannot read and write and that the illiteracy level of the community involved is very high.

Table 5.9: Highest Level of Education Attained

	Level of education	Percentage
1	Primary	12
2	Secondary	8
3	High school	10
4	Illiterates	6

Source: District Education Department

5.4.11. Schools in Sub-Project Area

Table 5.10 lists the schools that exist in the broad sub-project area but outside the direct footprint of the KTL.

Table 5.10: Schools in Sub-project Area

	Name of School	Village	Distance from KTL Route (m)
1	Abdul Fat	Center	2,000
2	Naswan e Markaz	Center	2,000
3	Zokor e Majghandak	Majghandak	1,200
4	Naswan e Majghandak	Majghandak	1,200
5	Banefshak	Banefshak	1,000
6	Qale Safid	Qale Safid	1,000
7	Saghariha	Qale Safid	3,000
8	Pashtan	Saghariha	800
9	Lise Kaseer al Rashtawi	Pashtan	2,000
10	Madrassa	Center	2,000

5.4.12. Livelihood Activities and Source of Income

A person's livelihood refers to their "means of securing the basic necessities -food, water, shelter and clothing- of life". Livelihood is defined as a set of activities involving securing water, food, fodder, medicine, shelter, clothing and the capacity to acquire above necessities

working either individually or as a group by using endowments (both human and material) for meeting the requirements of the self and his/her household on a sustainable basis with dignity. The activities are usually carried out repeatedly. Livelihoods in the proposed project area were captured through data obtained through questionnaires (total189 persons representatives from 189 households were interviewed and questionnaires were filled along the TL Corridor), the transect walks along the TL route from start point (Robat Sorkh village up to end point Karokh substation), interviewing of the villagers and field visits several time for FGD and baseline data collection.

Farming activities, livestock keeping, labor and a little bit of employment are the most important livelihood strategies in the project area. Farming and Livestock keeping are the predominant economic activity in the area in terms of employment, food security, income generation and overall contribution to the socio-economic wellbeing of the people. The livestock kept in the area include; cows, goats, sheep and donkey.

According to the questionnaires, the income of the respondents varied from household to household due to the different economic activity they were involved in. Majority (50%) of the household reported to earn less than AFN 9,000 per month as the most predominant amount while 26% earn between AFN 9,000 to 12,000 per month (see **Table 5.11**).

Table 5.21: Income Sources of Respondents

	Income (AFN)	Percentage
1	Less than 9,000	50
2	9,000 to 12,000	26
4	Greater than 12,000	24

5.4.13. Health Care Services

There are a few health care facilities within the project area, though the residents have to travel some distance to access government hospitals to the district center. Most the respondents interviewed preferred to get medication in the district governmental hospital. The most prevalent illnesses are malaria, common cold and diarrhea especially among the children than adults. **Table 5.12** illustrates the available health services in Karokh district.

Table 5.12: Health Services in Karokh District

	Health facilities	Location
1	Karokh district central hospital	District center
2	Khowja charshanba clinic	Khowaja charshanba
3	BHC of Janda khawan	Janda khawan
4	BHC of Pashtan	Pashtan
5	BHC of Hasan Abad	Hasan Abad

Source: District Health Office.

5.4.14. Access to Public Services

Water and Sanitation

Household water in the proposed project area is largely taken from boreholes, hand pumps, kariz, springs and streams. The respondents indicated low numbers of water borne diseases such as diarrhea and cholera due to contamination of the water sources. It was also recorded that all the households in the project utilize pit latrines.

Access Road

The road accessibility is relatively better all-round the year from province center to the district center. This road has been asphalted and provides easy access for transporting agricultural inputs, produces and other movements that are crucial for the livelihoods of the people in the area. Inside the district all the roads are in bad condition. Only about 40% of the roads are open to traffic in all seasons of the year. This causes difficulties during winter season due to their narrowness and lack of drainage systems. The fact that the valley is in close proximity to the main supply route, it has substantial leverage in terms of marketing and other supply chain endeavors.

Energy Sources

About 50% of the respondents use firewood and 50% use natural gas as a source of energy for cooking. Firewood is the most common cooking fuel. About 9% of the respondents stated that they use electricity as a source of lightening; this is because the area is connected to the central grid power of Herat city. The nine percent that has power connection was mostly from Robat Sorkh village which is near to Herat city and electrified from Herat city electrification network while 100 families of Machghandak village having micro hydro power. A further 30% use solar panels, 61% use oil lamps and lanterns.

5.4.15. Sensitive Receptors and Physical Cultural Resources

There are a few schools in the broad sub-project area however most of them are sufficiently away from the KTL route (see **Table 5.10**) and therefore unlikely to be directly impacted by the sub-project activities. There is one graveyard also located near the KTL route (see **Figure 5.1**). No other physical cultural resources (PCR) are known to exist in the area nor were any identified during the field investigations and consultations. The Chance Find procedures have however been included in the present ESIA.

6. Potential Environmental and Social Impacts and their Mitigation

This Chapter assesses the KTL sub-project for key environmental and social aspects, identifies significant potential impacts that may be caused by the sub-project activities and proposes appropriate mitigation measures to address these impacts.

6.1. Environmental Screening

The environmental assessment process during the present ESIA was initiated with environmental screening. A checklist was used to carry out this screening during a visit to the KTL corridor. **Annex A** (Volume II of present ESIA) presents the filled checklist.

6.2. Impact Assessment Methodology

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

6.2.1. Impact Magnitude

The potential implications of the project have been categorized as major, moderate, minor or nominal based on consideration of the parameters such as i) duration of the effect; ii) spatial extent of the impact; iii) reversibility; iv) likelihood; and v) legal standards and established professional criteria.

The magnitude of each potential impact of the Project has been identified according to the categories outlined in **Table 6.1**.

Table 6.1: Parameters for Determining Magnitude

Parameter	Major	Moderate	Minor	Minimal
Duration of potential impact	Long term (beyond the project life)	Medium Term Lifespan of the project (within the project life span)	Limited to construction period	Temporary with no detectable potential impact
Spatial extent of the potential impact	Widespread far beyond project boundaries	Beyond next project components, site boundaries or local area	Within project boundary	Specific location within project component or site boundaries with no detectable potential impact

Parameter	Major	Moderate	Minor	Minimal
Reversibility of potential impacts	Potential impact is effectively permanent, requiring considerable intervention to return to baseline	Environmental or social parameter needs a year or so with some responses to come back to baseline	Baseline returns naturally or with limited response within a few months	Baseline remains constant
Legal standards and established professional criteria	Breaches national standards and or international guidelines/obligations	Complies with limits given in national standards but violates international lender guidelines in one or more parameters	Meets minimum national standard limits or international guidelines	Not applicable
Likelihood of potential impacts occurring	Occurs under typical operating or construction conditions (Certain)	Happens under worst case (negative consequences) or best case (positive impact) working conditions (Likely)	Occurs under abnormal, exceptional or emergency conditions (occasional)	Unlikely to happen

6.2.2. Sensitivity of Receptor

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

Table 6.2: Criteria for Determining Sensitivity

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

6.2.3. Assigning Significance

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

Table 6.3: Criteria for Determining Impact Significance

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

6.3. Summary of Assessed Impacts

The KTL sub-project's potential impacts and their significance have been assessed using the methodology described in the above section. A summary of these impacts and their significance along with the mitigation measures are presented in **Table 6.4**; these impacts are discussed in the subsequent sections.

Table 6.4: Summary of Potential Impacts, their Significance and Mitigation Measures

Impact of various activities	Sensitivity	Magnitude	Significance before Mitigation	Mitigation and Enhancement Measure	Significance of Residual Impact
Impacts from Siting – Environmental Aspects					
Impact on natural vegetation due to permanent clearing of land for siting of towers and temporary clearing along ROW	Mild	Moderate to Major	Medium	Plantation in sub-project area	Negligible
Impact on wildlife habitats due to construction and maintenance of towers and ROW	Mild	Minimal	Negligible	General precautionary measures to avoid any harm to wildlife and habitat (eg, minimize vegetation clearing)	Negligible
Impacts from Siting – Social					

Impact of various activities	Sensitivity	Magnitude	Significance before Mitigation	Mitigation and Enhancement Measure	Significance of Residual Impact
Resettlement impacts (About 0.44 ha of cultivated/rain-fed land under the towers; about 7.66 ha of land under transmission line conductors; crop damage on about 8 ha of land; 7.65 ha under access tracks; felling of only 9 fruit trees) along the TL route. It is to be noted that these figures are total land impacts along the whole TL.	Severe	Major	High	Cash compensation at replacement cost for land, structures, and trees as per ARAP.	Medium
Impacts from Construction – Environmental					
Risk of soil pollution and soil erosion	Mild	Moderate	Medium	Pollution prevention plan and implementation of ECoPs	Negligible
Risk of water pollution	Mild	Moderate	Medium	Pollution prevention plan and implementation of ECoPs	Negligible
Dust and air pollution from construction activities	Mild	Moderate	Medium	Maintenance of construction equipment and vehicles; dust control measures as specified in ECoPs	Negligible
Noise and vibration from construction activities	Mild	Moderate	Medium	Maintenance of construction equipment and vehicles; noise control measures as specified in ECoPs	Negligible
Generation of spoils	Severe	Moderate	High	Disposal behind the revetments and approved locations	Negligible
Generation of solid waste and hazardous waste	Mild	Moderate	Medium	Minimize generation of waste. Proper collection and disposal of wastes in approved sites or to vendors; ECoPs.	Negligible

Impact of various activities	Sensitivity	Magnitude	Significance before Mitigation	Mitigation and Enhancement Measure	Significance of Residual Impact
Impact on quarry areas	Mild	Moderate	Medium	Use of existing quarry sties, ECoPs	Negligible
Impact on wildlife	Mild	Minor	Low	Implementation of ECoPs	Negligible
Impact on birds from land clearing and construction	Mild	Minor	Low	Control of noise and artificial lighting, ban on hunting, and checks for breeding birds during vegetation clearance	Negligible
Site clearance and Restoration	Severe	Minor	Medium	Cleaning of the construction sites	Negligible
Impacts from Construction – Social Aspects					
Impacts from labor influx during construction phase	Severe	Moderate	Medium	Preference to the local communities in the construction works, in coordination of local level GRC	Medium
Impacts from access roads and damages to local infrastructure	Severe	Major	High	Compensation as per ARAP, and relocation of utilities	Medium
Community health and safety from construction traffic and activities	Severe	Moderate	High	Traffic, noise and dust control measures in accordance with ECoPs; OHS management plan to be implemented.	Medium
Workers health and safety	Severe	Moderate	High	Occupational health and safety measures in accordance with ECoPs	Medium
Blocked access due to construction activities	Mild	Moderate	Medium	Traffic management plan to be implemented; Alternate routes to be identified in consultation with communities; GRM to be established.	Negligible

Impact of various activities	Sensitivity	Magnitude	Significance before Mitigation	Mitigation and Enhancement Measure	Significance of Residual Impact
Additional load on local resources	Mild	Moderate	Medium	Contractor to obtain water in a manner not to affect the local communities; liaison with local communities to be maintained; GRM to be established.	Negligible
Social conflict and privacy of women	Mild	Moderate	Medium	Camps to be established at least 500 m away from communities; contractor to enforce code of conduct to respect local norms and culture; liaison with local communities to be maintained; GRM to be established.	Negligible
Damage to sites/places of religious/cultural significance	Major	Moderate	High	Such sites to be demarcated and avoided during construction activities; liaison with local communities to be maintained; GRM to be established.	Negligible
Impacts from O&M – Environmental					
Risk of bird collision and electrocution	Severe	Moderate	High	Placing of bird markers on the transmission line cables.	Negligible
Impacts from tree cutting during maintenance activities	Mild	Moderate	Medium	-	Medium
Impacts from O&M – Social					
Diminution of land value in the width of Right of Way Corridor	Severe	Major	High	Compensation to the crop damage along the right of way	High

Impact of various activities	Sensitivity	Magnitude	Significance before Mitigation	Mitigation and Enhancement Measure	Significance of Residual Impact
Impacts from electric and magnetic fields from transmission lines on community health and safety	Severe	Minimal	Negligible	Complied with WHO recognized standards on EMF through design considerations	Negligible
Audible noise and radio interference from the transmission lines	Severe	Minimal	Negligible	Design considerations to comply with the standards	Negligible
Community health and safety risks	Severe	Major	High	Implementation of Standard operating procedures (SOPs) of DABS. Community awareness raising.	Medium
Workers health and safety during maintenance	Severe	Major	High	Implementation of Standard operating procedures (SOPs) of DABS.	Medium
Accidental fires caused by short-circuiting	Severe	Major	High	Implementation of Standard operating procedures (SOPs) of DABS.	Medium

6.4. Significant Environmental Impacts from Project Siting

6.4.1. Improved Power Supply in Karokh District

The KTL would supply electricity in Karokh district and contribute towards the overall HEP objectives. As stated in **Section 2.2** earlier, the HEP as well as the proposed KTL sub-project are expected to contribute to Da Afghanistan Breshna Sherkat's (DABS) overall objectives of alleviating poverty and ensuring inclusivity of access to electricity for all segments of the population. The Project is closely aligned with the Government's "New National Priority Program", especially the Citizen Charter's mission of providing electricity services and the National Infrastructure Plan. The Project is also consistent with the first and third pillars – 'Building Strong and Accountable Institutions' which aims to build the capacity and self-reliance of government institutions and improving service delivery, and 'Social Inclusion' which is aimed at reducing differences among the population in terms of access to services and vulnerability to shocks.

The improved electricity supply in Karokh will help improve the living conditions of the local population, facilitate enhanced performance and effectiveness of educational and healthcare

facilities in the area, and also help improve indoor and outdoor environmental quality of the area.

6.4.2. Impact on Natural Vegetation

The natural vegetation including trees located under the transmission line towers will be permanently affected. It has been counted that nine fruit trees owned by private communities are located within the right of the transmission line.

It must be noted that the whole non-agricultural land cover underneath proposed transmission line is already subjected to considerable disturbance and human pressure. Thus, laying out the transmission line will merely place a provisional superfluous burden on a system that is already stressed as the plant species are considered to be of low conservation value. Hence the significance of the vegetation clearance has been assessed as medium, as shown in **Table 6.4**.

Further, no globally or nationally threatened species or endemic plant species were recorded in the study area.

Mitigation

Clearing of vegetation will be minimized to the extent possible. Camps will be established where the need of vegetation clearing and tree felling is minimum. For felling any private trees, compensation will be paid to the tree owners. In addition, five saplings will be planted for each tree felled at appropriate locations.

Residual Impact

After implementation of the above measures, the impacts of the project on natural vegetation would be adequately mitigated. Hence the significance of the residual impact will be negligible, as shown in **Table 6.4**.

6.4.3. Impact on Wildlife Habitats

As stated in **Section 5.2.2**, the sub-project area does not support any important or critical habitat. Owing to the proximity of human settlements, whatever wildlife species have survived in this area are those which have adapted to the modified nature of habitat and human presence. Hence laying of transmission line will cause quite negligible additional modification of the natural habitat. Hence the significance of the impacts on habitat has been assessed as medium, as shown in **Table 6.4**.

Mitigation

No mitigation measures are needed since the significance of the impacts on wildlife resources of the area have been assessed as negligible. General precautionary control measures will be followed including no-hunting, no-trapping, and no-harassment of wildlife. In addition, the

Environmental Code of Practice (ECoP) given in **Annex B** (Volume II of present ESIA) will be implemented.

6.5. Significant Social Impacts from Project Siting

6.5.1. Impacts on Land

The total area of the KTL's RoW is about 100 hectares (ha) (31km x 30 m). Of this, about 8 ha is cultivated land and the remaining is barren land; see **Table 6.5** below.

Table 6.5: Resettlement Impacts

	Resettlement Impacts	Quantity	Nature of Impact
A.	**Land under KTL Towers**		
1	Cultivated irrigated land (ha)	0.125	Expropriation of land in which towers to be erected. Decreased value and utility of affected land. No construction possible. Limited cultivation possible.
2	Cultivable rain-fed land (ha)	0.225	
3	Barren land (ha)	0.345	
	Total (ha)	***0.695***	
B	**Land under Conductors (but not under towers)**		
1	Cultivated irrigated land (ha)	0.27	Decreased value and utility of affected land. No high-rise construction possible. Cultivation possible, growing of tall trees not possible.
2	Cultivable rain-fed land (ha)	4.95	
	Total (ha)	***5.22***	
C.	**Affected area under crops**		
1	Total area of agriculture land to be impacted by tower installation and conductor stringing. (ha)	8.08	Crop damage
2	Area under access tracks (ha)	7.65	Crop damage
	Total (ha)	***15.73***	
D	**Affected trees**		
1	Privately owned Fruit Trees	9 sapling	Loss of trees and their produce
E	**Project Affected Households**		
1	Households losing land	21HH	
2	Households losing crops	23HH	
3	Households losing trees	1HH	
4	Vulnerable households	45	

Mitigation

The resettlement impacts described above will be mitigated in accordance with the national regulations and WB safeguard policies. An Abbreviated Resettlement Action Plan (ARAP), complete with entitlement matrix, compensation rates, and resettlement costs has been prepared and provided under a separate cover. A summary of the compensation estimates given in the ARAP is presented below.

Table 6.6: Resettlement Compensation Estimates

	Resettlement Impacts	Quantity	Unit Rate (000 AFN)	Amount (000 AFN)
A.	**Land under KTL Towers**			
1	Cultivated irrigated land (ha)	0.125	2250,000	281,250
2	Cultivable rain-fed land (ha)	0.225	750,000	168,750
3	Barren land (ha)	0.345	550,000	189,750
	Total (ha)	***0.695***		***639,750***
B	**Land under Conductors (but not under towers)**			
1	Cultivated irrigated land (ha)	0.27	125	33.75
2	Cultivable rain-fed land (ha)	4.95	125	618.75
	Total (ha)			
C.	**Affected area under crops**			
1	Total area of agriculture land to be impacted by tower installation and conductor stringing. (hectares)	8.08		(covered under B)
2	Area under access tracks (hectares)	7.65	125	956.25
	Total	***15.73***		
D	**Affected trees**			
1	Privately owned Fruit Trees	9	1000	9,000
	Total affected trees			
E	**Project Affected Households**			
1	Households losing crops	58		-
2	Households losing trees	1		-

Residual Impacts

Even after payment of the compensation summarized in **Table 6.6**, the impacts of the project on land and its value will not be completely mitigated. Hence the significance of residual impacts will be Medium, as shown in **Table 6.4**.

6.5.2. Impacts on Income and Livelihood Sources

The KTL project is likely to damage crops over an area of about 16 ha, as listed in **Table 6.5**. In addition, a total of nine trees will need to be felled. The damages to crops and felling of trees are going to affect the livelihood of 59 households.

Mitigation

For the crop damages, the affected households will be paid cash compensation equivalent to value of crops for one season. Similarly, the owner of fruit tree will be paid cash compensation based on lost production for the entire period needed to re-establish a fruit tree of equal productivity. The affected households will be paid compensation for damaged crops and or felled trees. Details are provided in the ARAP and summarized in **Table 6.6**.

Residual Impacts

After payment of the compensation summarized in **Table 6.6**, the impacts of the project on livelihood of the affected households particularly the vulnerable families will be mostly mitigated. Hence the significance of residual impacts will be Negligible, as shown in **Table 6.4**.

6.6. Significant Environmental Impacts during Construction

6.6.1. Risk of Soil Pollution and Soil Erosion

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

Disturbance of soils during construction including (and particularly) from movement of vehicles, may lead to destruction of the integrity of upper soil layers. Damaged soil is more readily eroded and washed into water courses during rainfall events and can also form dust during dry periods. This effect will be significant due to the need of access roads construction which will further damage the integrity of soil apart from vehicle movement.

Excavation for construction of transmission line towers particularly on slopes can cause soil erosion which can adversely affect the water quality of the rivers. High rainfall events can also potentially cause accelerated erosion particularly in excavated areas.

The significance of impact on soil pollution and soil erosion is characterized as Medium, as given in **Table 6.4**.

Mitigation

The following mitigation measures will be implemented:

- Contractor will prepare and implement a Pollution Prevention Plan prior to the start of the work. Proper baseline data will be collected.
  - Contractor will be required to implement the measures prescribed in the Environmental Code of Practices (ECoP), which will be included in the contracts. Detailed ECoPs are included in the **Annex B** (Volume II of present ESIA).
  - Contractor will be required to take appropriate measures to avoid and contain any spillage and pollution of the soil
  - Contractor to confine the contaminants immediately after such accidental spillage
  - Contractor to collect contaminated soils, treat and dispose them in environment friendly manner
  - All areas intended for storage of hazardous materials to be quarantined and provided with adequate facilities to combat emergency situations complying all the applicable statutory stipulation
  - Top soil to be stripped and stockpiled where practical.
  - Temporary stockpiles to be protected from erosion.
  - For sewage waste, appropriate treatment arrangement such as septic tanks and soakage pits will be installed on site. Water will percolate into the ground so there will be no discharge. Alternatively, sewage from construction camps and other facilities will be collected and transported to nearby municipal sewage treatments plans.

Residual Impacts

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

6.6.2. Risk of Water Pollution

The proposed transmission route crosses some small rivers and water streams, most of which are seasonal. During construction, there is a high risk of contamination of these rivers from the following activities:

- Run-off from excavation, crushed and ground rock material from drilling.
- Run off from earthmoving and spoil handling, open excavations, concrete batching for new tower construction

- Run-off from dampening systems to control dust emissions; dumping of spoil material
- Sanitary effluents from construction workers camp
- Oil and chemical spills; washing of vehicles and other machinery.

The significance of impact on soil pollution and soil erosion is characterized as Medium, as given in **Table 6.4.**

Mitigation

The following mitigation measures will be implemented:

- Contractor will prepare and implement a Pollution Prevention Plan prior to the start of the work. Proper baseline data will be collected.
  - Contractor will be required to implement the measures prescribed in the Environmental Code of Practices (ECoP), which will be included in the contracts. Detailed ECoPs are included in the **Annex B** (Volume II of present ESIA).
  - Contractor will be required to take appropriate measures to avoid and contain any spillage and pollution of the water
  - All areas intended for storage of hazardous materials to be quarantined and provided with adequate facilities to combat emergency situations complying all the applicable statutory stipulation
  - For the treatment of effluent to be discharged, sedimentation ponds will be provided to allow sediment to settle for periodic removal for disposal in designated site spoil areas. Water being discharged from these ponds will be regulated to ensure they are within turbidity limits.
  - Oil and water separators and settling ponds will be installed where appropriate to minimize the risk of contaminated construction water entering the river or groundwater and degrading water quality

Residual Impacts

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

6.6.3. Dust and Air Pollution from Construction Activities

Air quality will be affected, and dust will be generated during construction activities. Major sources of air quality pollution are drilling activities, excavations, emissions from construction related traffic and equipment. The construction activities will also generate airborne dust and particulate matter. Dust raised from the above activities will have impacts on crops, animals and public health. The significance of the impact has been assessed as Medium, as shown in **Table 6.4**.

Mitigation

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

- The equipment and vehicles used during the construction process will comply with the WBG EHS Guidelines on emission exhausts.
- Concrete batching and asphalt plants will be located minimum 500 m away from residential areas and will have appropriate dust/emission suppression mechanisms such as wet scrubbers.
- Contractor will implement dust prevention measures such as watering of roads near the residential areas and spraying of water on loose material where required and appropriate.
- Continuous air monitoring will be carried out near the sensitive receptors to ensure ambient air quality remains within the limits defined by WBG EHS Guidelines.
- Measures will be taken to protect the workers from excessive dust (i.e., usage of personal protective equipment).
- A GRM (discussed later in the document) will be put in place to receive complaints from public on various aspects of environmental issues, including air pollution. These grievances will be addressed by the contractor by adopting necessary pollution control measures. Continued consultations with the affected communities will be carried out during construction phase.
- In addition, the measures in ECoP on air quality management will be implemented (**Annex B**).

Residual impacts

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

6.6.4. Noise and Vibration from Construction Activities

The construction of the Project has the potential to generate significant noise and vibrations from crushing and piling activities. Off-site movement of construction related traffic also has the potential for significant noise generation. Potential noise levels have been estimated from various stages of construction activities and are presented in **Table 6.7**. In general, the noise levels are within the standards at a distance of 400m from the construction activities.

Table 6.7: Estimated Noise Levels during Construction

Stage of work	Description of works	Key activities	Activity LAeq,10m dB	Predicted noise at 400 m, dB	Predicted noise at 800 m, dB
Site preparation	Excavation and moving soil and fill	Earthmoving	90	59	47
		Excavation works	90	49	37

Stage of work	Description of works	Key activities	Activity LAeq,10m dB	Predicted noise at 400 m, dB	Predicted noise at 800 m, dB
	Site compounds and set-up	Transport and handling of soil/ materials	70	29	30
		Storage of soil/ materials	88	47	48
		Preparation of materials (cutting, grinding)	86	45	46
Tower foundation construction	Ground preparation	Earthworks	90	51	51
	tower foundation construction	Transport and handling of soil / materials	70	30	30
	New access road	Concrete batching	95	56	42

The impacts of noise and vibration from construction activities has been estimated as Medium, as shown in **Table 6.4**.

Mitigation

To mitigate impacts associated with noise generation, following measures will be taken:

- The equipment and vehicles used during the construction process will comply with the WBG EHS Guidelines on noise.
- Contractors will adopt appropriate noise attenuation measures to reduce the noise generation from construction activities. The noise attenuation measures will include, (i) fitting of high efficiency mufflers to the noise generating equipment; and (ii) keeping acoustic enclosures around drilling equipment.
- The construction activities near the settlements will not be carried out during night time.
- A GRM will be put in place to receive complaints from public on various aspects of environmental issues, including noise pollution. These grievances will be addressed by the contractor by adopting necessary pollution control measures. Continued consultations with the affected communities will be carried out during construction phase.
- In addition, the measures in ECoP on noise quality management (**Annex B**) will be implemented

Residual impacts

With the help of the above mitigation measures, the potential impacts associated with noise generation are likely to be adequately addressed and hence the residual impact is likely to be Negligible in significance.

6.6.5. Generation of Spoils

Excavations of the tower locations for foundations will generate excess spoils. In the hilly terrains, there are no flat places available for the spoil disposal. Improper disposal of spoils along the valley slopes may eventually deposited in to the cultivated lands or in to the rivers thus causing soil and water pollution. The spoils will also act source of dust. The significance of the impact has been assessed as High.

Mitigation

The first step towards addressing the impacts of spoil is to minimize the generation of spoils by recycling the excavated rock to the maximum extent possible by using them as aggregate material in the concrete works for the foundation and retaining walls. The excess spoils should be stored behind the retaining walls or placed in the lands provided by local communities for developing terraces or in the areas approved by the project management.

As per Karokh municipality the contractors obliged to dispose- off the spoils in the designated areas of Sangi Talaq and Shaste Kap, Karokh district, Herat province.

Residual impacts

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

6.6.6. Generation of Solid Waste and Hazardous Waste

Large construction works generate large quantities of excess materials from construction sites (concrete, steel cuttings, discarded material) and wastes from field camps and construction yards, including garbage, recyclable waste, food waste, and other debris. In addition, small quantities of hazardous waste will be generated from maintenance activities, contaminated soil, oil filters and other waste products. A large part of this waste is biodegradable. In addition, small quantities of hazardous waste will also be generated mainly from the vehicle maintenance activities (liquid fuels; lubricants, hydraulic oils; chemicals, such as anti-freeze; contaminated soil; spillage control materials used to absorb oil and chemical spillages; machine/engine filter cartridges; oily rags, spent filters, contaminated soil, etc.). It is imperative that such waste is responsibly disposed to avoid adverse environmental, human health and aesthetic impacts.

Mitigation

The following mitigation measures will be implemented:

- Contractor will prepare and implement pollution prevention plan
- The contractor will identify suitable sites for disposal of hazardous and non- hazardous waste or will be sold to vendors. The selection will be done in consultation with the local government authorities.

- Protocols and measures will be prescribed in the ECoPs to be included in the contracts with the contractors.
- Siting of any fuel and hazardous material storage sites, including refueling facilities, asphalt plants and construction yards are to be located minimal 100 m from the banks of any streams and at least 500 m away from any residential areas.

Residual impacts

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

6.6.7. Impact on Quarry Areas

Quarry material will be required for construction of tower foundations, retaining walls, and also for road construction. Sourcing of material from the quarry areas will have significant impacts on the local air quality and noise levels due to crushing activities. The topography and natural topography at the quarry sites will be affected by the quarrying. The transport of material from quarry sites to the construction areas will have impact on the local roads. The significance of the impact has been assessed as Medium.

Mitigation

Existing and government approved quarry sites located near the transmission lines will be used by the Project. If the new quarry sites are to be developed, they will be identified in consultation with local communities and local government. No new quarry areas will be developed in agricultural areas or ecologically sensitive areas. Quarry areas are to be restored after their use. Additional mitigation measures to address the impacts from quarry activities are given in ECoPs (**Annex B**).

Residual impacts

With the help of the above mitigation measures, the potential impacts associated with quarry activities are likely to be adequately addressed and hence the residual impact is likely to be Negligible in significance.

6.6.8. Impact on wildlife

Wildlife, including mammals, reptiles and birds, are likely to be affected by construction through habitat loss/degradation, disturbance (presence of people, artificial lighting and noise), injury or death owing to construction works (including trapping in deep excavations) and increased traffic, and temporary habitat fragmentation. The significance of the impact has been assessed as Medium.

Mitigation

Reduction and control of artificial lighting. Artificial lighting used on construction sites and camps at night will be shaded and directed downwards to avoid light spillage and disturbance to nocturnal birds, bats and other wildlife.

Ban on hunting and poaching. A ban on hunting and poaching by construction and operation staff will be implemented to reduce pressure on threatened and protected species in the Project areas and surroundings. All construction and operation staff will be required to follow company rules and code of conduct. Signage will be installed illustrating the hunting ban on any species throughout the Project areas.

Checks for breeding birds. To minimize the potential impact to all breeding bird species, vegetation clearance will be undertaken outside of the main bird breeding period if possible. Where this is not possible, the areas to be cleared will be checked for breeding birds prior to the clearance and if nesting birds are found, appropriate mitigation measures will be implemented. This may involve avoiding construction within 50m of the active nest until the chicks have fledged.

Vegetation clearance will be carried out in a methodical manner so that any fauna present in these areas can disperse. Where clearance of dense scrub is required, it will be preceded by a hand search for mammal and/or reptile species which may be present in the sward. The dense vegetation will only be cleared once it has been established that any individuals present have fled. The incidental creation of pockets of habitat or islands will be avoided. Before and during vegetation clearance or tree felling, any animals found will be removed and released to safe refugium. There should be no burning of natural vegetation.

Residual Impacts

With the help of the above mitigation measures, the potential impacts on wild life are likely to be adequately addressed and hence the residual impact is likely to be Negligible in significance.

6.6.9. Site Clearance and Restoration

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

Mitigation

The contractors will be required to remove all leftover construction material, debris, spoils, and other wastes from the construction sites. The camps sites will be completely cleaned and restored in original condition to the extent possible. No waste disposal will be carried out in the streams and rivers.

As per Karokh municipality the contractors obliged to dispose- off the spoils, debris and other leftovers in the designated areas of Sangi Talaq and Shaste Kap, Karokh district, Herat province.

Residual impacts

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

6.7. Significant Social Impacts during Construction

6.7.1. Employment Opportunities for Local Communities

As described in **Section 2.3.7**, the construction contractor(s) will have a work force of about 50-60 personnel. A large proportion of this workforce will be skilled and semi-skilled laborers including drivers, watchmen, camp staff, warehouse staff, and manual laborers. The local communities during the stakeholder consultations have shown great desire to be included in the project's workforce (stakeholder consultations have been discussed later in the document). In line with the aspirations of local communities, the contractors will be contractually bound to maximize employing the locals as appropriate. In addition to maintaining good relations with the local communities, maximizing local employment may also be cost effective since engaging workforce from other parts of the Country could be costlier.

Mitigation

This is a beneficial impact of the project and hence does not need any mitigation as such. The contractors will be required to formulate an employment policy to ensure equitable availability of employment opportunities to all communities within the project area particularly the project affected persons (PAPs).

6.7.2. Impacts from Access Roads and Damages to Local Infrastructure

The construction activities will require using/establishing tracks to access the RoW from the existing road network. It has been estimated that on average about 200 m long access track will be used for each tower location though it may not be possible to do so for some tower locations in the mountainous terrain. Though exact locations and hence ownership of the land under these access tracks is not known at this stage, it can however be estimated that crops will be damaged over about 21 ha of cultivated land (200m long x 15 m wide x 70 towers located in cultivated/rain fed cultivable areas, this information will be replicated in ARAP as well.

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

Mitigation

The crop damages caused by the establishing and use of access tracks will be compensated by paying cash compensation equivalent to value of crops for two seasons. The amount is included in the resettlement cost estimates summarized in **Table 6.6**; further details are presented in the ARAP.

For any inadvertent damage to the existing infrastructure, the contractor will be contractually liable to repair and or replace the damaged infrastructure to original or better condition. The GRM established at the site will also address any community grievances related to the damaged infrastructure.

Residual Impacts

After payment of the compensation summarized in **Table 6.6**, the impacts of the project on livelihood of the affected households will be mostly mitigated. Hence the significance of residual impacts will be Medium, as shown in **Table 6.4**. The impacts associated with the damaged infrastructure will be completely mitigated and hence the significance of residual impacts will be quite negligible.

6.7.3. Community Health and Safety from Construction Activities

Community health and safety impacts during the construction and decommissioning of transmission and distribution power lines are common to those of most large industrial facilities. These impacts include, among others, dust, noise, and vibration from construction vehicle transit, and communicable diseases associated with the influx of temporary construction labor.

Mitigation

The mitigation measures to address the project impacts on communities' health and safety will be addressed through the following measures:

- Construction camps will be located at least 500 m away from the communities. Entry of the site personnel in the local communities will be minimized to the extent possible/appropriate.
- The contractor will prepare and implement an Occupational Health and Safety (OHS) Plan that will also cover communities' health and safety aspects
- The community will be informed about the nature of construction activities and the associated health and safety risks; awareness raising of the communities will be carried out for this purpose with the help of training sessions, posters, signage, and other similar means.
- Awareness raising of communities will be carried out, in a culturally-sensitive manner, about the communicable diseases including sexually transmitted infections.
- The construction sites will be fenced as appropriate to minimize entry of the local communities particularly children in the work areas.

- Construction camps and other site facilities will be fenced.
- Liaison with the community will be maintained.
- GRM will be established to address community grievances related to health and safety aspects.

Residual Impacts

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

6.7.4. Workers Health and Safety

Site preparation, construction activities and the use of temporary workers' accommodation pose potential risks to the health, safety, security and therefore wellbeing of construction workers if not managed appropriately. Health and safety issues associated with the use of temporary accommodation sites include those relating to sanitation, disease, fire, cultural alienation, sleeping space, quality and quantity of food, personal safety and security, temperature control and recreation, amongst others.

Some of the Occupational Health and Safety risks which are likely to arise during the construction phase of the Project, and are typical to many construction sites, include: exposure to physical hazards from working on deep gorges and steep hill slopes, use of heavy equipment including cranes; trip and fall hazards; exposure to dust, noise and vibrations; falling objects; exposure to hazardous materials; and exposure to electrical hazards from the use of tools and machinery. Another likely OHS risk to Project workers includes exposure to extreme heat during summer especially if critical needs such as access to safe drinking water and places for rest are not available, a specific and separate GRM for workforce will be in place to redress the workers complaints as well.

Mitigation

The mitigation measures to address the project impacts on workers' health and safety will be addressed through the following measures:

- The contractor will prepare and implement an Occupational Health and Safety (OHS) Plan
- Contractors will have dedicated and qualified staff for ensuring compliance with the OHS Plan
- Regular trainings will be provided to the workers on OHS aspects.
- Awareness raising material will be used including posters, signage, booklets, and others

- All site personnel will be screened for communicable diseases including sexually transmitted infections.
- Use of appropriate personal protective equipment (PPE) will be mandatory. No worker (or even visitor) will be allowed on the site without the required PPE (such as hard hat, safety shoes).
- Firefighting equipment will be made available as required at construction sites, camp sites, and particularly near the fuel storage.
- Complete record of accidents and near-misses will be maintained.
- First aid facilities will be made available at the work sites and in the camps. The contractors will engage qualified first aider(s).
- Location and telephone numbers of the nearest hospital will be displayed at appropriate places at work sites and in construction camps. If necessary, the contractor will have an ambulance available at the site.
- The team, those conducted Karokh TL ESIA interrogated and the contractor also confirmed that explosive is not required, either for tower erection activities or level of access road because the terrain is not rocky.

Residual Impacts

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

6.7.5. Blockage of Local Routes

The construction activities can potentially block local roads and routes particularly because KTL is a linear project. This can adversely affect the local communities particularly in areas where accessibility is already an issue. Any such disturbance to the local community can also result in disruption of the construction works.

Mitigation

The mitigation measures to address impacts associated with the blockage of local routes will be addressed through the following measures:

- The contractor will prepare and implement a traffic management plan, in consultation and coordination with the local community
- The community will be informed about the nature of construction activities and possibility of any blocked route; alternate routes will be identified with the help of local/affected community. Duration of such blockage will be minimized to the extent possible.
- Liaison with the community will be maintained.
- The GRM described earlier will also address community grievances related to any blockage of local routes.

Residual Impacts

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

6.7.6. Additional Load on Local Resources and Supplies

The construction works and camp operation will require supplies such as water, fuel, and camp supplies. Obtaining these supplies from the local sources can exert additional pressure on these sources which may already be over-exploited and therefore adversely affect the local communities particularly in the remote and hilly areas. Any such impact on the local community can increase their hardship and even result in disruption of the construction works.

Mitigation

The mitigation measures to address impacts associated with the availability of local resources and supplies will be addressed through the following measures:

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

Residual Impacts

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

6.7.7. Social Conflict and Privacy of Women, Influx of Labor

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

Mitigation

The mitigation measures to address impacts associated with the social conflict will be addressed through the following measures:

- The contractor will prepare and implement a Code of Conduct for all site personnel, in consultation and coordination with the local community,
- All site personnel will be provided orientation and training on Code of Conduct. Awareness raising materials such as posters and signage will be used as appropriate.
- Privacy of women will be respected; routes and places used by them will be avoided as far as possible.
- As described earlier, construction camps will be located at least 500 m away from the communities. Entry of the site personnel in the local communities will be minimized to the extent possible/appropriate, it is to be mentioned there will be two construction camps during the course of the TL project; provincial level in the center of Herat city and district level at immediate project area in Karokh district, Herat.
- Liaison with the community will be maintained.
- The GRM described earlier will also address community grievances related to social conflict.
- The WB Guidance Note will be used to address potential impacts caused by temporary project induced labor influx (please see **Section 4.3.2**).

Residual Impacts

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

6.7.8. Impacts on Sites of Religious and/or Cultural Significance

Although the site surveys as part of the present study have not identified any sites or places of religious and or cultural importance such as graves and shrines that would be affected by the project activities, there is a possibility of any inadvertent damage to such sites. Any such impact can be detrimental to the project since it can potentially cause tension between the project and local communities and even disruption of construction works.

Mitigation

The mitigation measures to address impacts associated with the sites of religious and or cultural importance will be addressed through the following measures:

- The contractor will identify and demarcate any sites and places of religious and or cultural significance, in consultation with the local community
- Such sites will be 'no-go-areas' and will be avoided as far as possible.
- If unavoidable, then the contractor will prepare a plan to move/restore such places in consultation with local community and (related authorities if relevant and required)
- Such a plan will be implemented after obtaining complete consensus of the related community.
- Liaison with the community will be maintained.

- The GRM described earlier will also address community grievances related to any damage to sites of religious and or cultural importance.
- Chance Find Procedures will be implemented. These procedures are defined in the law on Maintenance of Historical and Cultural Monuments (Official Gazette, December 21, 2004), specifying the authorities and responsibilities of cultural heritage agencies if sites or materials are discovered in the course of project implementation. This law establishes that all moveable and immovable historical and cultural artifacts are state property, and further:

    1. The responsibility for preservation, maintenance and assessment of historical and cultural monuments rests with the Archaeological Committee under the Ministry of Information and Culture, which has representation at provincial level.
    2. Whenever chance finds of cultural or historical artefacts (moveable and immovable) are made, the Archaeological Committee should be informed. Should the continuation of work endanger the historical and cultural artifacts, the project work should be suspended until a solution is found for the preservation of these artifacts.
    3. If a moveable or immovable historical or cultural artifact is found in the countryside of a province, the provincial governor (*wali*) or district-in-charge (*woluswal*) should be informed within two weeks, and they should inform the Archaeological Committee. In case the immovable historical or cultural artifact is found in a city, the provincial branch of the Department of Maintenance of Historical Values of the Ministry of Information and Culture should be informed within two weeks (art. 18). If the find is made within the center, the Archaeological Committee must be informed directly within one week (art. 25).
    4. Failure to report a chance find within the stipulated time limit will be punished with a fine or imprisonment for a period of one week or up to one month (art. 72).
    5. If someone intentionally damages a historical or cultural artifact, the culprit shall pay compensation in accordance with the value of the artifact plus be imprisoned for a period of one month to ten years depending on the gravity of the crime (art. 71).

Residual Impacts

After implementing the above-listed mitigation measures, the impacts of the project associated with the places of religious and or cultural importance will be adequately mitigated. Hence the significance of residual impacts will be negligible, as shown in **Table 6.4**.

6.8. Significant Environmental Impacts during Operation and Maintenance

6.8.1. Avian Risk Assessment

Power line structures (towers) provide perching, roosting, and nesting substrates for some avian species especially for birds of prey (raptors). Due to their large wingspans, the raptors may simultaneously come in contact with two energized parts or one energized and one

neutral/grounded part of the transmission lines/their towers, potentially resulting in electrocution. Although raptors are most often considered when addressing electrocution risk, other birds such as crows, ravens, magpies, small flocking birds and wading birds can also be electrocuted. Closely-spaced exposed equipment, such as jumper wires on transformers, poses an electrocution risk to small birds.

The electrical design factor most crucial to avian electrocutions is the physical separation between energized and/or grounded structures, conductors, hardware, or equipment that can be bridged by birds to complete a circuit. As a general rule, electrocution can occur on structures with the following characteristics:

- Phase conductors separated by less than the wrist-to-wrist or head-to-toe (flesh-to-flesh) dimensions of a bird. The wrist is the joint toward the middle of the leading edge of a bird's wing. The skin covering the wrist is the outermost fleshy part on the wing.
- Distance between grounded hardware (e.g., grounded wires, metal braces) and any energized phase conductor that is less than the wrist-to-wrist or head-to-toe (flesh-to-flesh) distance of a bird.

Morphological features, in terms of length of the birds and wingspan of all large birds, raptors and threatened species of the project area are presented in **Table 6.8**.

The maximum length and wingspan of the birds are generally within 1.5 m and 3 m, respectively. Hence, mitigation to prevent or reduce the bird electrocution is possible by maintaining a minimum vertical distance of 1.5 m and horizontal distance of 3 m between the energized parts of the transmission line.

Table 6.8: Wing Spans of Large Birds that Might Cross KTL

	Name	Wingspan
1.	Black stork Cconia nigra	1.8 m
2.	White-necked Ciconia episcopus	1.80 m
3.	White stork Ciconia ciconia	up to 2 m.
4.	Black-necked stork Ephippiorhynchus asiaticus	2.3–2.7 m
5.	Graylag goose Anser anser	1.5 to 1.8 m
6.	Bar-headed goose Anser indicus	1.68 m
7.	Lammergeyer Gypaetus barbatus	2.3 - 2.8 m
8.	Eurasian griffon Gyps fulvus	2.3–2.8 m
9.	Himalayan griffon vulture Gyps himalyansis	2.6 m
10.	Short-toed eagle Circaetus gallicus	1.70-1.85 m
11.	Marsh harrier Circus aeruginosus	1.15 to 1.30 m

	Name	Wingspan
12.	Goshawk Accipiter gentilis	1.03–1.17 m
13.	peregrine falcon Falco peregrinus	0.78-1.22 m
14.	Eurasian Sparrow-hawk Accepter nisus	up to 0.80 m
15.	Tawny eagle Aquila rapex	1.59-1.83 m
16.	Steppe eagle Aquila rapex nepalensis	1.65 m
17.	Golden eagle Aquila chrysaetos	1.5 to 2.4 m
18.	Imperial eagle Aquila haliaca	2.14 m
19.	Bonnelli's eagle Hieraaetus fasciatus	1.5 – 1.8 m
20.	Booted eagle Hieraaetus pennatus	1.2 m
21.	Common crane Grus grus	1.8–2.4 m
22.	Demoiselle crane Anthropoids virgo	1.55–1.8 m
24.	Raven Corvus corax	up to 1.3 m

Avian risk assessment for the IUCN listed threatened birds is given in the **Table 6.9**.

Table 6.9: Avian Risk Assessment for IUCN Threatened Birds

	Names	Collision risk	Electrocution risk	IUCN status
1	Black-necked Stork Ephippiorynchus asiaticus;	These birds, as is documented, fly over river valleyes, often during the night. It is also recorded that during their passage migration these descend to lower heights to land at suitable places for short rest to recoup energy for further flight to their wintering areas. If they happen to be in an area where TLs cross the river, early in the morning, when it is sufficiently dark, these birds face risk of collusion, if they are flying low, before landing.	The distance between the wires is large enough that the wings or body cannot touch the plus and minus wires at a time. So no risk of electrocution.	Near Threatened
2	Peregrine falcon (Falco peregrinus);	This is a diurnal smart predator with sharp vision. There is no question of its blind collusion with TLs. However, very occasionally, an	Same as above.	Threatened

	Names	Collision risk	Electrocution risk	IUCN status
		inexperienced juvenile bird during its scoop attack on a bird sitting on TL can hit the wire.		
3	Western Horned Tragopan (Tragopan melanocephalus);	This is a diurnal ground feeding bird at almost upper tree limit in Hazara Kohistan and Swat Kohistan. These habitats are very far from TLs. These never fly high and long even when flushed suddenly. These are safe.	Same as above.	Threatened
4	Sociable Plover Chettusia gregaria	Different species of plovers usually fly in mixed flocks, most likely in moon lit nights or very early in the mornings to escape predation. These, were often observed by the author flying low early in the mornings. Their vision is good and these are not fast flying birds. If the TLs are strewn with white balls where these cross the river, it is likely that these plovers will not collide.	Same as above.	Threatened
5	White-tailed Lapwing Chettusia leucura	Same as above.	Same as above.	Least concern

Mitigation

The top conductor line of the transmission line will be installed with the bird diverters such as colored balls (red and white), when the transmission line crosses any rivers and streams. Towers on both sides of the river should have light beams focused on the balls on the power lines, at night, during 'mid-February to end March' and again from 'mid-September to mid-November'. Each tower on the flyway must have blinking light on its top. Bird collision and electrocution data will also be collected during early March and October.

Residual Impacts

After installation of bird diverters and colored bills, risks of bird collision and electrocution will be adequately mitigated. Hence the significance of residual impacts will be negligible.

6.9. Significant Social Impacts during Operation and Maintenance

6.9.1. Diminution of Land Value in Right of Way Corridor

The presence of transmission lines and towers will significantly reduce the market value and real estate potential of the land under the 30 m corridor of transmission line right of way. It basically means that the land under TL will be treated cheaper than of that which is not under the TL route, as per the country wide practice there is no provision of compensation for such reduced value of land. This impact would be relatively major particularly in the areas between Karokh district center and Robat Sorkh village.

Mitigation

The routing of transmission line has already been selected in such a way that it should not passes through any existing towns and settlements. There is a strong demand from the local communities for compensation for the temporarily affected land, crops and other assets at the result of TL implementation while they have voluntarily donated land for tower erection.

6.9.2. Public Health Impacts from Electro Magnetic Fields from Transmission Line

Transmission lines generate electrical and magnetic fields which are considered to be health hazards although it was not scientifically proven. Though public health is not a major concern, these are estimated for KTL line at various distances from the center of the transmission line and presented in **Table 6.10**. These values are estimated using the "Corona and Field Effects Program - Version 3", a computer program developed by the Bonneville Power Administration (BPA). The model requires detailed inputs regarding line configuration, conductors, sub-conductors, voltage and current.

The electric field denotes the difference in electric potential measured as a voltage between two points one meter apart. The electric field is generated by the line voltage on the conductors. The electric field of power lines depends on the voltage, on the circuit numbers, on the design of the circuits and on the design of the cable itself. Its strength lessens rapidly according to the distance. Normally, the field is strongest in the middle of the line span where the phase conductors have the greatest slag. The strength of the electric field is expressed in volts per meter, and in the power-line context usually in kV/m. Strong 50 Hz electric fields occur mainly in high voltage installations, i.e. inside switchyards and below transmission lines. Electric fields are shielded by objects which are earthed, such as trees and buildings.

The magnetic field around a power line is generated by the current in the conductors. Since the current is proportional to the line's load, the magnetic field often varies both over 24 hours and from one season to another. The magnetic field under a power line is strongest in roughly the same areas as the electric field. The magnetic field is expressed in terms of teslas [T] (1 T = 1

Vs/m2), which is a measure of the field's flux density. In the context of power lines, microteslas [μT] are used. Magnetic fields are not shielded by walls and roofs. Around power lines they are often weaker than those one may come into contact within many other contexts in everyday life at work such as cellular phones that use frequencies in the range of GHz.

The electric and magnetic field are believed to cause cancer and affect nervous system. Today, among scientists there is still a considerable difference of opinion as to the degree of possible detrimental health influence caused by these fields. There are several investigations and publications reporting a severe influence of electromagnetic fields, but the discussion about biological and health effects is still going on. The International Council on Large High Voltage Electric Systems (CIGRE), a permanent non-governmental and non-profit-making international association based in France, publishes from time to time summaries of latest researches on bio and health effects of electric and magnetic fields.

The exposure limits for EMF fields developed by the International Commission on Non-Ionizing Radiation Protection (ICNIRP) - a non-governmental organization formally recognized by WHO[6], are given in **Table 6.10**. WHO also concluded that EMF exposures below the limits recommended in the ICNIRP international guidelines do not appear to have any known consequence on health. The EMF fields of the proposed KTL are within the ICNIRP Standards.

Table 6.10: Electrical and Magnetic Fields from KTL

Distance from Centre of TL Alignment, m	Electric Field (kV/m)	Magnetic Field (μT)
40 (edge of ROW)	1.34	104.81
50	0.59	68.33
60	0.17	46.17
70	0.03	32.30
80	0.03	23.31
90	0.03	17.3
100	0.03	13.14
ICNIRP Standards	Public Exposure: 5; Occupational Exposure: 10	Public Exposure: 200; Occupational Exposure: 1000

Mitigation

Exposure to EMF has already been considered during the design of the transmission line conductors and right of way to ensure compliance with the internationally recognized standards. Hence no additional mitigation measures are proposed. The electric and magnetic

[6] EMF Fields, WHO Webpage http://www.who.int/peh-emf/standards/en/

fields will be regularly monitored during O&M phase to ensure compliance with the ICNIRP standards and if required additional mitigation measures will be proposed during O&M phase.

6.9.3. Audible Noise and Radio Interference from Transmission Lines

Audible Noise from Transmission Line occurs primarily in foul weather. In Dry Weather conditions, the conductor usually operates below corona inception level and generates few corona sources for audible noise. However, in wet conditions, water drops impinging or collecting on conductor produce a large number of corona discharges and thereby creating bursts of noise. Therefore, the audible noise increases to such an extent that sometimes it represents one of the limitations for the design of transmission line conductor. The audible noise for the proposed TL (Hexa-bundled Rail Conductors) has been estimated and presented in Table 8.6. The noise levels during fair weather are generally within the national standards. However, during rainy periods, the noise levels will exceed the night time standards up to 100m from the center of TL alignment.

Radio interference also called radio influence is a noise type that occurs in the Amplitude Modulation Radio reception including the standard broadcast band from 0.5 to 1.6 MHz. It does not take place in Frequency Modulation bands. Power line interference tends to be roughly in inverse proportion to the frequency. Radio interference can be predicted by applying Empirical or Comparative formula as a result of regression analysis performed on experimental data of Radio Interference of various variables such as conductor diameter, surface gradient, lateral distance from the line etc.

Instead of using absolute noise level, as a criterion for rating interference level, it is more logical to use a relative measure as signal to noise ratio. This parameter is generally employed to affect the effect of transmission noise on AM Radio broadcast. The radio interference is calculated and presented in **Table 6.11**.

No standard limit exists for Radio Interference but Canadian Standard Association (CSA) has developed the recommended limits for Electromagnetic Noise based on the line voltage. For high voltage level, the acceptable limit is 60dBA in fair weather measured at the distance 40 meter from center of tower. The estimated radio interference levels from KTL will be within these standards.

Table 6.11: Audible Noise and Radio Interference from KTL

Distance from Centre of TL Alignment (m)	Audible Noise (dBA)		Radio Interference (dBuV/m)	
	Rain Weather	Fair Weather	Rain Weather	Fair Weather
40 (edge of ROW)	51.5	26.5	59.6	42.6
50	50.8	25.8	57.4	40.4
60	50.1	25.3	55.2	38.2

Distance from Centre of TL Alignment (m)	Audible Noise (dBA)		Radio Interference (dBuV/m)	
	Rain Weather	Fair Weather	Rain Weather	Fair Weather
70	49.4	24.4	53.5	36.5
80	48.9	23.9	52.1	35.1
90	48.4	23.4	50.9	33.9
100	47.9	22.9	49.7	32.7
National or international Standards	Residential Area: Day time: 55; Night time: 45		Canadian Standard Association: 60	

Mitigation

Exposure to noise and radio interference from transmission lines has already been considered during the design of the transmission line conductors and right of way to ensure compliance with the national and international standards. Hence no additional mitigation measures are proposed.

6.9.4. Community and Workers Health and Safety during Operation and Maintenance

Workers may be exposed to occupational hazards from contact with live power lines during, maintenance, and operation activities. They are also exposed to occupational hazards when working at elevation and live wires, and exposure to electric and magnetic fields, and to fuels during maintenance, and operation activities. Similarly, communities are also exposed to safety hazards particularly electrocution caused by system fault, broken conductor and fallen tower. Electric short circuiting can also cause fires, which may pose additional safety risk to workers and communities.

Mitigation

DABS has Standard Operating Procedures (SOPs) on Workers Health and Safety and these will be implemented during the operation. Regular training will be provided to the staff on the SOPs and risk registers (reporting and recording of accidents and near misses) will be maintained. DABS's SPOs are explained below.

General Principles: Accident prevention can be accomplished only through possessing and applying safety know-how and wholehearted cooperation of all members of the organization. Learn and understand the following five basic principles in job safety to deal with the hazards:

a) IDENTIFY the Hazards.
b) ELIMINATE the hazards wherever practical.
c) CONTROL the hazards when they cannot be eliminated.
d) PROTECT against injuries in case a hazard gets out of control.
e) MINIMIZE the severity of an injury, if an accident occurs.

Neither management and supervision, nor the Safety Code can prevent accident without the help of each employee.

Unsafe workers are a danger to themselves, their fellow workers, the public property and the equipment with which they work. Due care and attention to all safety rules and devices is essential not only to prevent injury to the workers but also to protect equipment.

Capable and mentally alert employees will avoid accidents by learning all they can about their work, using proper safeguards and protective equipment and avoiding shortcuts and make shift work methods.

Good operation is safe operation. This is true for both employees and equipment. A job done safely is job done efficiently.

Accidents do not "just happen". Accidents are the avoidable result of unsafe condition or unsafe acts, usually a combination of both. Machinery and equipment generally are manufactured to perform safely within limits of design. In fact, statistics show that more than 90% of accidents are due to the human element, such as failure to use safety devices and observe safety rules and procedures.

UNSAFE CONDITIONS: Some examples of unsafe conditions which may cause accidents are: Improper Guarding such as unshielded moving parts of machine, in-barricaded floor openings and excavation, unenclosed high voltage equipment, lack of protective equipment and insufficient warning signs.

- *Defective Material* or equipment such as mushroomed-head chisels, split handles, deteriorated poles, poorly manufactured or weak equipment.
- *Hazardous Arrangements* such as those due to poor housekeeping at work locations, unsafe planning or inadequate working space.
- *Insufficient Light* unsuitable location producing glare or objectionable shadows.
- *Improper Ventilation* such as insufficient change of air or presence of harmful vapor, dust or gas.
- *Unsafe Clothing* that fits loosely and can become entangled in wires and machinery, and failure to use goggles, proper shoes and insulated gloves or sleeves.
- *Unsafe Design* and Construction due to deviations from standard design and specifications and poor workmanship.
- *UNSAFE ACTS:* Some examples of unsafe acts which may cause accidents are:
- *Operating Without Authority or Warning* such as closing switches without authority, operating hoists and trucks without warning, failure to place warning signs or signal man where needed, failure to block equipment against unexpected movement, failure to observe work clearance procedures.
- *Operating or Working at Unsafe Speed* such as driving too fast, throwing material or tools to another worker, jumping from vehicles or platforms or running.
- *Making Safety Devices Inoperative* such as removing guards from machines, using oversize fuses, blocking safety valves, bypassing interlocks and isolating fire protection etc.

- *Use of Unsafe Equipment or Improper Use of Equipment* such as using dull cutting tools, mushroom-head chisels, pipe extension on wrenches not designed for them, or the wrong tool for the job, or using hands instead of hand tools.
- *Unsafe Loading* such as overloading cranes and winches, carrying too heavy load.
- *Placing or Leaving Objects* where they are likely to fall.
- *Mixing Improper Packing* or combining chemicals to form a dangerous mixture.
- *Taking Unsafe Position or Posture* such as working on live conductors from above instead of below, walking under suspended loads or too close to openings, lifting while in awkward position, entering areas where there are dangerous gases or fumes, passing on curves of hills, riding on running boards or other unsafe places on vehicles.
- *Working on Equipment without Taking Proper Precautions* such as installing and removing temporary earth, cleaning, oiling or adjusting moving machinery, and working on or near live electrical equipment.
- *Distracting, Teasing or Startling* such as practical joking, horseplay, quarrelling or annoying.
- *Failure to Use Safe Clothing or Protective Equipment* such as failure to use insulated gloves, hardhat or goggles or other personal protective equipment (PPE).

The community awareness will be raised through pamphlets and warning signage placed at appropriate locations (such as at each tower). SOP discussed above will also help in reducing exposure of the community to unsafe conditions.

GRM for workers should be in place

7. Stakeholder Consultations

This Chapter presents process and outcome of the consultations carried out with various stakeholders while conducting the ESIA.

7.1. Public Consultation Framework Adopted

The NEPA and World Bank policies call for effective stakeholder participation during the ESIA process. Stakeholder engagement is a key part of this ESIA study process. One of the key aims of the stakeholder engagement exercise is to ensure that all relevant stakeholders are provided with the opportunity to express their concerns and opinions, which are incorporated as early as possible in the project development: at planning, implementation and operation phase and in the effect minimize the potential unexpected opposition of the proposed project and potential adverse effects to the environment. It is also very beneficial in incorporating the views of the public into the design process for the adoption of the best workable models and systems. The stakeholder engagement exercise also provides DABS with the necessary information to assist it in making an informed decision about the Project.

7.2. Public Consultation and Participation/Stakeholder Engagement Objectives

The main objective of the exercise was to inform stakeholders about the project and its likely effects, which in turn would incorporate their inputs, views and concerns, and thus enable their views to be taken into account during the decision-making. The specific objectives of the consultations were geared towards:

- Informing the stakeholders about the project and its potential impacts.
- Obtaining local and traditional knowledge that may be useful to decision making
- Facilitating consideration of alternatives, mitigation measures and trade-offs (if any)
- Ensuring that important impacts are not overlooked and benefits are maximized
- Reducing chances of conflict through early identification of contentious issues
- Providing an opportunity for stakeholders to influence the Project design and operational plan in a positive manner
- Improving transparency and accountability of decision making
- Increasing public confidence in the ESIA process

7.3. Stakeholder Consultations

The stakeholder engagement exercise was undertaken in the following steps:

- Stakeholder identification and analysis to establish the level and mode of engagement per stakeholder group

- Stakeholder engagement through the use of appropriate tools and methods

7.3.1. Stakeholder Identification and Analysis

The first step in the process of public participation process was stakeholder identification. The main aim was to determine all organizations and individuals who may be directly or indirectly (positively or negatively) affected by the proposed project. In the end, the stakeholders were grouped into two main categories depending on their various needs, interest, and potential influence to the project. These included:

Primary Stakeholders – The directly affected by the project. These included the local leaders and Local Communities along where the power line will pass through

Secondary Stakeholders – The indirectly affected by the project but may influence development through project implementation. These included:-

- National Government
- District Government

7.3.2. Stakeholder Consultations during ESMF Preparation

DABS conducted consultations on the ESMF during March 2017 with wider stakeholders including communities in order to share the updated ESMF and to get their comments and feedback. Please see **Annex D** (Volume II of present ESIA) for a summary of proceedings of public consultation on ESMF.

7.3.3. Stakeholder Engagement during ESIA

The one-on- one interviews were applied in all the official meetings. Interviews were conducted in participants' language of choice, depending on the language they were comfortable with. During consultation meeting on draft ESIA on 16 September 2018 stakeholders were given a brief of the project and the objectives as well as ESIA findings and envisaged impacts before they gave their opinions.

Key stakeholders who were interviewed with this project comprised individuals from all levels (local community levels, national government). These stakeholders included:

- Local community members administered with the household Socio-economic questionnaires.
- National Government
- District Government

The meetings were held separately with both male by male safeguard team and female by female employee of Herat Breshna with community members around the project area. The community meetings targeted the local residents from locations within the project area. These meetings were held in the following villages:

- Saghari ha
- Qala e Safid
- Machghandak
- Qala e Dasht
- Banafshak
- Ehsan Abad
- Qasab
- Pashtan
- Robat sorkh

7.4. Outcome of Stakeholders Engagement

From the field work, it was apparent that the majority of the stakeholders were not aware of the proposed project, therefore the safeguard team explained to the public and relevant stakeholders that the proposed development would involve construction of a 110kV transmission line from Salma- Herat existing transmission line to Karokh substation and also responded to the queries that the public sought to know about the project. The proposed project was nevertheless received with mixed reactions by the community as they anticipated numerous impacts (both negative and positive). The local communities and major stakeholders independently gave their views, opinions, and suggestions in their best interest, bringing out the factors that affected the circumstances, influences, and conditions under which their organizations exist. However, all the environmental and social issues which were raised can be adequately mitigated exhaustively as explained in chapter eight of this report. Other issues surrounding the project were successfully settled during the public meetings since ESIA team responded to the issues which were unclear to the public. The consultant particularly gave close attention to persons within the proposed way leave corridor. The views of these stakeholders were considered and their names, address were taken for future references.

7.4.1. Issues Raised

Interviews with the key stakeholders were carried out on 12th to 20th May 2018 through questionnaires. Comprehensive public participation meetings were held on 19th May 2018 with various administrative leaders, community leaders and the residents who are likely to be affected by the project along the way leaves trace.

The views of these stakeholders were captured. The views/ concerns of the stakeholders were noted. The meetings minutes and lists of attendance are attached in **Annexes E** and **F** (Volume II of the present ESIA), respectively.

The following is a summary of the views of the stakeholders interviewed:

- The project is good for the development of the Karokh district since it will boost power supply and improve on industrial development and should therefore be undertaken.
- The project will improve businesses in the area and also create job opportunities to the local youth during construction phase.
- The project will enhance security due to lighting in the neighborhood at night. Attraction of innovation and invention leading to new investments due to adequate power access which will promote the local and national economy.
- There would be increased pollution from transport vehicles during construction.
- There would be electromagnetic radiations and risk of electrocution that may affect those residing near the way leave.
- There would be possibility of insecurity in the areas due to the influx of other people during construction phase.
- Some community members were wary of the presence of the high-voltage wires in their immediate environment.
- Hiring of unskilled labor from effected villages.
- Electrification at first phase to those villages which are affecting by the TL project.
- Requesting for starting physical work as soon as possible.
- Special attention to those families who are poor.
- Residents of the Karokh district have very limited resources of irrigation water therefore, they suggested DABS to not double charge them for utilizing/spending extra electricity (example; when it exceeds from 200 or 300 kw something like this) so that they will be able to provide irrigation water for their lands by digging of wells.
- Residents of Payeen Bolook (10 CDCs) requested that they have prepared electrical equipment from NSP program and they have erected poles, boxes etc. at residential area of (10 CDCs) therefore they requested from project and Herat Breshna to pay attention to them and cover their villages at the first phase of electrification because they have already done some job in this regard.
- Residents of Pashtan village expressed that they are excluded from more development projects therefore requesting from the project to include this village in the project first priority.
- More participants of the meetings requested for starting of project work physically and complained from delay in project implementation.
- The meeting participants requested to do the project activities in consultation to the community representatives.
- The contractor should do their activities in coordination to the local representatives
- The Proponent should ensure proper environmental management practices are put in place.
- Noise pollution should be controlled.

During the survey findings, a minority of the community members indicated that they had prior information about the project while the majority did not have any information. However, all the community members supported the implementation of the project and promised to support the TL project and reassured us from smooth implementation.

The concerns of the communities and responses to their concerns in each village are tabulated in the following table.

Table 77.1: Community Consultation Meetings along KTL Corridor

Village	Number of Participants	Community Concerns	Responses/Action Points
Saghari Ha	18	Jobs availability to the locals. Delay in starting of physical work in the site. Electricity supply to village residents at first phase. Avoid or minimize the TL negative impacts.	-The Social specialist assured the locals of temporary employment such as unskilled labor and he added that local manpower will be deployed. The project safeguard team updated participants from TL project progress and mentioned that the physical work will be start soon. The project safeguard team explained that, the electricity is high voltage, it will be taken to a substation for standardization then be made available to all villages surrounding the district. There are mitigation measures to all the negative Impacts well stated in the ESIA report which will be put to place.
Qala e Safid	15	Hiring of locals as unskilled labor. Requesting for starting physical work as soon as possible. Requested to do the project activities in consultation to the community representatives.	Jobs will be availed to the locals in time of operation phase. The project safeguard team updated participants from TL project progress and mentioned that the physical work will start soon. The social specialist assured that all activities will be done in consultation to the GRC members and community representatives.

Village	Number of Participants	Community Concerns	Responses/Action Points
Machghandak	22	Electricity supply to Machghandak village residents. -Employment of local residences not outsiders. Right of way size and possibility of use of land after installation of towers and completion of project	The social specialist explained that, the electricity is high voltage, it will be taken to a substation for standardization then be made available to all villages surrounding the district include of Machghandak village. He assured the locals of temporary employment such as unskilled labor and added that local manpower will be deployed. The Social specialist reported that the RoW size is 15 by 15 meters thus 30 meters. He also insisted that building under the transmission line is illegal or planting trees under the same line. He explained that only short plants such as wheat, barley, maize and Vegetables can be planted on that land.
Qala e Dasht	11	Jobs availability to the locals. Transparency during project implementation. Requested information about project negative impacts.	The Social specialist assured the locals of temporary employment such as unskilled labor and he added that local manpower will be deployed. The ESIA consulting team promised transparency all through the project There are mitigation measures to all the negative impacts well stated in the ESIA report which will be put to place.
Banafshak	34	Distribution of electrification at first phase to those villages which are affected by the TL route. Hiring of locals as unskilled labor.	The social specialist explained that, the electricity is high voltage, it will be taken to a substation for standardization then be made available to all villages

Village	Number of Participants	Community Concerns	Responses/Action Points
		Complaint from delay in starting of physical work.	surrounding the district include of effected villages. All unskilled labor will be hired from local in coordination of GRC members. The project safeguard team updated participants from TL project progress and mentioned that the physical work will be start soon.
Ehsan Abad/ Zaman Abad	17	How will the negative impacts of the project be handled? Risks of power line failure Causing disaster. Transparency during the project implementation. Jobs availability to the locals. Right of way size and possibility use of land after installation of towers and completion of project	There are mitigation measures to all the negative Impacts well stated in the ESIA report which will be put to place. The transmission will be done by experts Professionally to avoid such disaster. The ESIA consulting team promised transparency all through the project. Jobs will be availed to the locals in time of operation phase. The Social specialist reported that the RoW size is 15 by 15 meters thus 30 meters. He also insisted that building under the transmission line is illegal or planting trees under the same line. He explained that only short plants such as wheat, barley, maize and Vegetables can be planted on that land.
Qasab	15	The contractor should do their activities in coordination to the local representatives. The residents have requested some changes in the location of three towers; they want the TL	The Project ESIA team assured that all activities will be done in consultation to the GRC members and community representatives. The safeguard team mentioned that the contractor will hold a meeting with the villagers and

Village	Number of Participants	Community Concerns	Responses/Action Points
		to be shifted away from the current surveyed route. How will the negative impacts of the project be handled?	select proper place for erection of towers which have less impacts. There are mitigation measures to all the negative impacts well stated in the ESIA report which will be put to place.
Pashtan/Painblok villages	17	The villagers requested to include this village in the first priority. Transparency during implementation. Jobs availability to the locals	The project ESIA team explained that, the electricity is high voltage, it will be taken to a substation for standardization then be made available to all villages surrounding the district. The ESIA consulting team promised transparency all through the project Jobs will be availed to the locals in time of implementation phase
Robat e Sorkh	9	Jobs availability to the locals. Requested to do the project activities in consultation to the community representatives.	All unskilled labor will be hired from local in consultation to the community elders and GRC members. The Project ESIA team assured that all activities will be done in consultation to the GRC members and community representatives.

In all the meetings, there was a brief of the project given by the DABS safeguard team to aid in the understanding of the project and enable community members to raise their concerns and comments. Those with concerns commented and contributed issues of concern in-person. This feedback was recorded and reflected back in the minutes to ensure accuracy. Minutes of all meetings, attendance record, and pictorial evidence are presented in **Annex E**, **F**, and **G** (Volume II of the present ESIA), respectively.

7.5. Disclosure

A national level consultation meeting was held with all relevant national stakeholders in Herat on 16, September, 2018. This ESIA is also updated based on the comments and feedback received from the national consultation .The ESIA along with translation of its executive summary is disclosed through DABS website on 01 February, 2019 and are made available at concerned offices in Karokh, Herat DABS office and distributed among the affected communities.

Annex A: Environmental and Social Screening Checklist

"The checklist has been filled through observation in the field and interpersonal visit during screening stage"

1. **Project Location: Karokh District, Qasab village**
2. **Date: 17 May 2018**

	ISSUES	None	Minor/ Small	Moderate/ Medium	Significant/ Large
A.	**Zoning and Land Use Planning**				
1	Will the TL project involve land acquisition or site clearance?			✓	
2	Will the TL project land be subject to potential encroachment by urban or industrial use or located in an area intended for urban or industrial development?	✓			
B	**Utilities and Facilities**				
3	Will the TL project have an impact on existing public utilities?	✓			
C	**Environment**				
4	Will the TL project cause loss of migratory birds/fish species due to the impediment posed by the proposed TLP structure?		✓		
5	Will the TL project result in potential soil or water contamination (e.g., from oil, grease and fuel from equipment yards)?		✓		
6	Will the TL project lead to the destruction of vegetation and soil in the right-of-way, borrow pits, waste dumps, and equipment yards?		✓		
7	Will the TL project cause environmental		✓		

	ISSUES	None	Minor/ Small	Moderate/ Medium	Significant/ Large
	degradation from increased pressure on land?				
8	Will the TL project cause decrease in agriculture products?	✓			
D.	**Noise and Air Pollution Hazardous Substances**				
9	Will the TL project increase the levels of harmful air emissions?	✓			
10	Will the TL project increase ambient noise levels?		✓		
E.	**Fauna and Flora**				
11	Will the TL project cause loss of precious ecological values and wild lands and wildlife habitat; destruction of fish spawning/breeding and nursery grounds, and disruption of birds migration routes?	✓			
12	Will the TL project involve the disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes)?	✓			
13	Will the TL project lead to the disruption/destruction of wildlife through interruption of migratory routes, disturbance of wildlife habitats, and noise-related problems?	✓			
F.	**Destruction/ Disruption of Land and Vegetation**				
14	Will the TL project lead to the unplanned use of the infrastructure being developed?	✓			
15	Will the TL project lead to long-term or semi-permanent destruction of soils in cleared areas not	✓			

	ISSUES	None	Minor/ Small	Moderate/ Medium	Significant/ Large
	suited for agriculture?				
16	Will the TL project lead to the interruption of subsoil and overland drainage patterns (in areas of cuts and fills)?		✓		
17	Will the TL project lead to landslides, slumps, slips and other mass movements in excavation of land	✓			
18	Will the TL project lead to health hazards and interference of plant growth adjacent to roads by dust raised and blown by vehicles?	✓			
G.	**Cultural Property**				
19	Will the TL project cause loss of archaeological, historical or cultural monuments?	✓			
20	Will the TL project have an impact on religious monuments, structures and/or cemeteries?	✓			
H.	**Expropriation and Social Disturbance**				
21	Will the TL project involve the land expropriation or demolition of existing structures?		✓		
22	Will the TL project lead to induced settlements by workers and others, causing social and economic disruption?	✓			
23	Will the TL project lead to environmental and social disturbance by construction camps?	✓			

Site Related Environmental and Social Issues

	Issues	Yes	No
1	Will the TL project cause dislocation or involuntary resettlement of people?		✓
2	Will the TL project cause disruption/destruction of tribal groups?		Because there are no several tribes and migratory community at the TL corridor,
3	Will the TL project negatively impact livelihoods?	✓	
4	Is the TL project located in an area with security problems?		✓
5	Is the sub-projected located on land reclaimed from floods (the ownership here may be contested)		✓
6	Is the TL project located in an area with designated natural reserves?		✓
7	Is the TL project located in an area with unique natural features?		✓
8	Is the TL project located in an area with endangered or conservation-worthy ecosystems, fauna or flora?		✓
9	Is the TL project located in an area falling within 500 meters of national forests, protected areas, wilderness areas, wetlands, biodiversity, critical habitats, or sites of historical or cultural importance?		✓
10	Is the TL project located in an area which would create a barrier for the movement of conservation-worthy wildlife or livestock?		✓
11	Is the TL project located in a sensitive (politically & security) area?		✓

	Issues	Yes	No
12	Is the subproject located in an area of high visual and landscape quality?		✓
13	Is the TL project located in a densely-populated area?		✓
14	Is the TL project located on prime agricultural land?		✓
15	Is the TL project located in an area of tourist importance?		✓
16	Is the TL project located near a waste dump?		✓
17	Is the TL project located far (1-2 km) from access roads?		✓
18	Is the TL project located in an area with a wastewater network?		✓
19	Is the TL project located in the urban plan of the city?		✓
20	Is the TL project area adjacent to or within the Wetland?		✓

Social Impacts

Probable Impacts	Yes	No
1. Is the TL project likely to cause any damage to or loss of infrastructure, i.e. housing, other assets, or use of natural resources?		✓

Probable Impacts	Yes	No
2. Is the site privately owned, will this be purchased or obtained through voluntary donation?	The ownership of land under TL route comprised from Governmental land Communal land and private land and is mostly desert and none cultivated, more details will be provide in ARAP.	
3. If the parcel of land has to be acquired, is the actual plot size and ownership status known?	✓	
4. Is the land acquisition or clearance for material mobilization, storage, contractor's camp or transport for the civil works available within the private/government owned land?	In some places it is belong to government while some other parts are private land, for temporary acquisition of private owned land compensation will be provided by contractor	
5. Are there any non-titled people (not the legal owners of the land) who live/do business on the proposed site/land for civil works?	As per census survey it has known that there is no non-titled people along the TL route	✓
6. Will there be loss or damage to agricultural lands (encroached or owned), standing crops, trees etc.?	✓	
7. Will there be a loss of incomes and livelihoods (means/source of income)?	✓	
8. Will people permanently or temporarily lose use or access to land, facilities, services, or natural resources i.e. pastures waterways etc.?	✓	
9. Are any religious or ethnic minorities affected?	ARAP will provide relevant information	✓

Probable Impacts	Yes	No
10. Will the affected owners of land and/or structures and crops lose more than 10% of their land?		No
11. If so, are these land / structure owners willing to voluntarily donate the required land for this sub-project?	Damage to crops have to be compensated by the contractor, the land for tower erection has voluntarily and in the informed consent of owners been detonated by the community and individuals, and it is documented and acknowledged by relevant parties. It is to be mentioned that 34 out of139 towers will be erected in privately owned land.	

Annex B: Environmental Code of Practice

Introduction

The objective of the Environmental Code of Practices (ECoPs) is to address all potential and general construction related impacts during implementation of Karokh Transmission Line (KTL) (the Project). The ECoPs will provide guidelines for best operating practices and environmental management guidelines to be followed by the contractors for sustainable management of all environmental issues. These ECoPs shall be annexed to the general conditions of all the contracts, including subcontracts, carried out under the Project.

The list of ECoPs prepared for the Project is given below.

- ECoP 1: Waste Management
- ECoP 2: Fuels and Hazardous Goods Management
- ECoP 3: Water Resources Management
- ECoP 4: Drainage Management
- ECoP 5: Soil Quality Management
- ECoP 6: Erosion and Sediment Control
- ECoP 7: Top Soil Management
- ECoP 8: Topography and Landscaping
- ECoP 9: Quarry Areas Development and Operation
- ECoP 10: Air Quality Management
- ECoP 11: Noise and Vibration Management
- ECoP 12: Protection of Flora
- ECoP 13: Protection of Fauna
- ECoP 14: Protection of Fisheries
- ECoP 15: Road Transport and Road Traffic Management
- ECoP 16: Construction Camp Management
- ECoP 17: Cultural and Religious Issues
- ECoP 18: Workers Health and Safety

Contractors will prepare site specific management plans, namely Construction Environmental and Social Management Plan (CESMP), in compliance with World Bank and Government guidelines and based on the guidance given in the ECoPs. The CESMP will form the part of the contract documents and will be used as monitoring tool for compliance. It is mandatory for the main contractors procured directly by the project to include these ECoPs in their subcontracts. Violation of the compliance requirements will be treated as non-compliance leading to the corrections or otherwise imposing penalty on the contractors.

ECP 1: Waste Management

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
General Waste	Soil and water pollution from the improper management of wastes and excess materials from the construction sites.	The Contractor shall • Develop site specific waste management plan for various specific waste streams (e.g., reusable waste, flammable waste, construction debris, food waste etc.) prior to commencing of construction and submit to supervision consultant for approval. • Organize disposal of all wastes generated during construction in the designated disposal sites approved by the Project. • Minimize the production of waste materials by 3R (Reduce, Recycle and Reuse) approach. • Segregate and reuse or recycle all the wastes, wherever practical. • Vehicles transporting solid waste shall be covered with tarps or nets to prevent spilling waste along the route. • Train and instruct all personnel in waste management practices and procedures as a component of the environmental induction process. • Provide refuse containers at each worksite. • Request suppliers to minimize packaging where practicable. • Place a high emphasis on good housekeeping practices. • Maintain all construction sites in a cleaner, tidy and safe condition and provide and maintain appropriate facilities as temporary storage of all wastes before transportation and final disposal. • Potable water should be supplied in bulk containers to reduce the quantity of plastic waste (plastic bottles). Plastic bag use should be avoided.
Hazardous Waste	Health hazards and environmental impacts due to improper waste management practices	The Contractor shall • Collect chemical wastes in 200 litre drums (or similar sealed container), appropriately labelled for safe transport to an approved chemical waste depot. • Store, transport and handle all chemicals avoiding potential environmental pollution.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		• Store all hazardous wastes appropriately in bonded areas away from water courses. • Make available Material Safety Data Sheets (MSDS) for hazardous materials on-site during construction. • Collect hydrocarbon wastes, including lube oils, for safe transport off-site for reuse, recycling, treatment or disposal at approved locations. • Construct concrete or other impermeable flooring to prevent seepage in case of spills.

ECP 2: Fuels and Hazardous Goods Management

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Fuels and hazardous goods.	Materials used in construction have a potential to be a source of contamination. Improper storage and handling of fuels, lubricants, chemicals and hazardous goods/materials on-site, and potential spills from these goods may harm the environment or health of construction workers.	The Contractor shall • Prepare spill control procedures and submit them for supervision consultant approval. • Train the relevant construction personnel in handling of fuels and spill control procedures. • Store dangerous goods in bunded areas on top of a sealed plastic sheet away from watercourses. • Refueling shall occur only within bunded areas. • Store and use fuels in accordance with material safety data sheets (MSDS). Make available MSDS for chemicals and dangerous goods on-site. • Transport waste of dangerous goods, which cannot be recycled, to a designated disposal site. • Provide absorbent and containment material (e.g., absorbent matting) where hazardous material are used and stored; and ensure personnel trained in the correct use. • Provide protective clothing, safety boots, helmets, masks, gloves, goggles, to the construction personnel, appropriate to materials in use. • Make sure all containers, drums, and tanks that are used for storage are in good condition and are labeled with expiry date. Any container, drum, or tank that is dented, cracked, or rusted might eventually leak. Check for leakage

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		regularly to identify potential problems before they occur. • Store and use fuels in accordance with material safety data sheets (MSDSs). • Store all liquid fuels in fully bunded storage containers, with appropriate volumes, a roof, a collection point and appropriate filling/decanting point. • Store hazardous materials above flood level considered for construction purposes • Put containers and drums in temporary storages in clearly marked areas, where they will not be run over by vehicles or heavy machinery. The area shall preferably slope or drain to a safe collection area in the event of a spill. • Take all precautionary measures when handling and storing fuels and lubricants, avoiding environmental pollution. • Avoid the use of material with greater potential for contamination by substituting them with more environmentally friendly materials.

ECP 3: Water Resources Management

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Hazardous material and Waste	Water pollution from the storage, handling and disposal of hazardous materials and general construction waste, and accidental spillage	The Contractor shall • Follow the management guidelines proposed in ECPs 1 and 2. • Minimize the generation of sediment, oil and grease, excess nutrients, organic matter, litter, debris and any form of waste (particularly petroleum and chemical wastes). These substances must not enter waterways or storm water systems.
Discharge from construction sites	Construction activities, sewerages from construction sites and work camps may affect the surface water quality. The construction works will modify groundcover and topography changing the surface water drainage patterns of the area. These changes in hydrological regime lead to increased rate of	The Contractor shall • Install temporary drainage works (channels and bunds) in areas required for sediment and erosion control and around storage areas for construction materials. • Install temporary sediment basins, where appropriate, to capture sediment-laden run-off from site. • Divert runoff from undisturbed areas around the construction site.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
	runoff, increase in sediment and contaminant loading, increased flooding, and effect habitat of fish and other aquatic biology.	• Stockpile materials away from drainage lines • Prevent all solid and liquid wastes entering waterways by collecting solid waste, oils, chemicals, bitumen spray waste and wastewaters from brick, concrete and asphalt cutting where possible and transport to an approved waste disposal site or recycling depot. • Wash out ready-mix concrete agitators and concrete handling equipment at washing facilities off site or into approved bunded areas on site. Ensure that tires of construction vehicles are cleaned in the washing bay (constructed at the entrance of the construction site) to remove the mud from the wheels. This should be done in every exit of each construction vehicle to ensure the local roads are kept clean.
Soil erosion and siltation	Soil erosion and dust from the material stockpiles will increase the sediment and contaminant loading of surface water bodies.	The Contractor shall • Stabilize the cleared areas not used for construction activities with vegetation or appropriate surface water treatments as soon as practicable following earthwork to minimize erosion. • Ensure that roads used by construction vehicles are swept regularly to remove dust and sediment. • Water the loose material stockpiles, access roads and bare soils on an as required basis to minimize dust. Increase the watering frequency during periods of high risk (e.g. high winds).
Construction activities in water bodies	Construction works in the water bodies will increase sediment and contaminant loading, and effect habitat of fish and other aquatic biology.	The Contractor Shall • Dewater sites by pumping water to a sediment basin prior to release off site – do not pump directly off site. • Monitor the water quality in the runoff from the site or areas affected by dredge/excavation plumes, and improve work practices as necessary. • Protect water bodies from sediment loads by silt screen or other barriers. • Minimize the generation of sediment, oil and grease, excess nutrients, organic matter, litter, debris and any form of waste (particularly petroleum and chemical wastes). These substances must not enter waterways or storm water systems.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		• Do not discharge cement and water curing used for cement concrete directly into water courses and drainage inlets.
Drinking water	Untreated surface water is not suitable for drinking purposes due to presence of suspended solids and ecoli.	The Contractor Shall • Provide the drinking water that meets NATIONAL standards. Drinking water to be chlorinated at source, and ensure presence of residual chlorine 0.1 ~ 0.25 ppm as minimum after 30 minutes of chlorine contact time.

ECP 4: Drainage Management

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Excavation and earth works, and construction yards	Lack of proper drainage for rainwater/liquid waste or wastewater owing to the construction activities harms environment in terms of water and soil contamination, and mosquito growth.	The Contractor shall • Prepare drainage management procedures and submit them for supervision consultant approval. • Prepare a program to prevent/avoid standing waters, which supervision consultant will verify in advance and confirm during implementation. • Provide alternative drainage for rainwater if the construction works/earth-fillings cut the established drainage line. • Establish local drainage line with appropriate silt collector and silt screen for rainwater or wastewater connecting to the existing established drainage lines already there. • Rehabilitate road drainage structures immediately if damaged by contractors' road transports. • Build new drainage lines as appropriate and required for wastewater from construction yards connecting to the available nearby recipient water bodies. Ensure wastewater quality conforms to national standards, before it is being discharged into the recipient water bodies. • Ensure that there will be no water stagnation at the construction sites and camps. • Provide appropriate silt collector and silt screen at the inlet and manholes and periodically clean the drainage system to avoid drainage congestion.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		• Protect natural slopes of drainage channels to ensure adequate storm water drains. • Regularly inspect and maintain all drainage channels to assess and alleviate any drainage congestion problem.
Ponding of water	Health hazards due to mosquito breeding	• Do not allow ponding of water especially near the waste storage areas and construction camps. • Discard all the storage containers that are capable of storing of water, after use or store them in inverted position.

ECP 5: Soil Quality Management

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Storage of hazardous and toxic chemicals	Spillage of hazardous and toxic chemicals will contaminate the soils	The Contractor shall • Strictly manage the wastes management plans proposed in ECP1 and storage of materials in ECP2. • Construct appropriate spill contaminant facilities for all fuel storage areas. • Establish and maintain a hazardous material register detailing the location and quantities of hazardous substances including the storage, and their disposals. • Train personnel and implement safe work practices for minimizing the risk of spillage. • Identify the cause of contamination, if it is reported, and contain the area of contamination. The impact may be contained by isolating the source or implementing controls around the affected site. • Remediate the contaminated land using the most appropriate available method.
Construction material stock piles	Erosion from construction material stockpiles may contaminate the soils	The Contractor shall • Protect the toe of all stockpiles, where erosion is likely to occur, with silt fences, straw bales or bunds.

ECP 6: Erosion and Sediment Control

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Clearing of construction sites	Cleared areas and slopes are susceptible for erosion of top soils, which affects the growth of	The Contractor shall • Prepare site specific erosion and sediment control measures and

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
	vegetation and causes ecological imbalance.	submit them for supervision consultant approval. • Reinstate and protect cleared areas as soon as possible. • Cover unused area of disturbed or exposed surfaces immediately with mulch/grass turf/tree plantations.
Construction activities and material stockpiles	The impact of soil erosion are (i) Increased run off and sedimentation causing a greater flood hazard to the downstream, and (ii) destruction of aquatic environment by erosion and/or deposition of sediment damaging the spawning grounds of fish	The Contractor shall • Locate stockpiles away from drainage lines. • Protect the toe of all stockpiles, where erosion is likely to occur, with silt fences, straw bales or bunds. • Remove debris from drainage paths and sediment control structures. • Cover the loose sediments of construction material and water them if required. • Divert natural runoff around construction areas prior to any site disturbance. • Install protective measures on site prior to construction, for example, sediment traps. • Install 'cut off drains' on large cut/fill batter slopes to control water runoff speed and hence erosion. • Observe the performance of drainage structures and erosion controls during rain and modify as required.
Soil erosion and siltation	Soil erosion and dust from the material stockpiles will increase the sediment and contaminant loading of surface water bodies.	The Contractor shall • Stabilize the cleared areas not used for construction activities with vegetation or appropriate surface water treatments as soon as practicable following earthwork to minimize erosion. • Ensure that roads used by construction vehicles are swept regularly to remove sediment. • Water the material stockpiles, access roads and bare soils on an as required basis to minimize dust. Increase the watering frequency during periods of high risk (e.g. high winds).

ECP 7: Top Soil Management

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Land clearing and earth works	Earthworks will impact the fertile top soils that are enriched with nutrients required for plant growth or	The Contractor shall • Strip the top soil to a depth of 15 cm and store in stock piles of height not exceeding 2m.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
	agricultural development.	• Remove unwanted materials from top soil like grass, roots of trees and similar others. • The stockpiles will be done in slopes of 2:1 to reduce surface runoff and enhance percolation through the mass of stored soil. • Locate topsoil stockpiles in areas outside drainage lines and protect from erosion. • Construct diversion channels and silt fences around the topsoil stockpiles to prevent erosion and loss of topsoil. • Spread the topsoil to maintain the physico-chemical and biological activity of the soil. The stored top soil will be utilized for covering all disturbed area and along the proposed plantation sites. • Prior to the re-spreading of topsoil, the ground surface will be ripped to assist the bunding of the soil layers, water penetration and revegetation
Transport	Vehicular movement outside ROW or temporary access roads will affect the soil fertility of the agricultural lands	• Limit equipment and vehicular movements to within the approved construction zone. • Plan construction access to make use, if possible, of the final road alignment.

ECP 8: Topography and Landscaping

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Land clearing and earth works	Construction activities especially earthworks will change topography and disturb the natural rainwater/flood water drainage as well as will change the local landscape.	The Contractor shall • Prepare landscaping and plantation plan and submit the plan for supervision consultant approval. • Ensure the topography of the final surface of all raised lands (construction yards, approach roads and rails, access roads, etc.) are conducive to enhance natural draining of rainwater/flood water. • Keep the final or finished surface of all the raised lands free from any kind of depression that causes water logging. • Undertake mitigation measures for erosion control/prevention

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		by grass-turfing and tree plantation, where there is a possibility of rain-cut that will change the shape of topography. • Cover immediately the uncovered open surface that has no use of construction activities with grass-cover and tree plantation to prevent soil erosion and bring improved landscaping. • Reinstate the natural landscape of the ancillary construction sites after completion of works.

ECP 9: Quarry Areas Development and Operation

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Development and operation of borrow areas	Borrow areas will have impacts on local topography, landscaping and natural drainage.	The Contractor shall • Prepare quarry area management plan and submit the plan for supervision consultant approval. • Use only approved quarry and borrow sites • Identify new borrow and quarry areas in consultation with Project Director, if required. • Reuse excavated or disposed material available in the project to the maximum extent possible. • Store top soil for reinstatement and landscaping. • Develop surface water collection and drainage systems, anti-erosion measures (berms, revegetation etc.) and retaining walls and gabions where required. Implement mitigation measures in ECP 3: Water Resources Management, ECP 6: Erosion and Sediment Control • The use of explosive should be used in as much minimum quantity as possible to reduce noise, vibration and dust. • Control dust and air quality deterioration by application of watering and implementing mitigation measures proposed in ECP 10: Air Quality Management • Noise and vibration control by ECP 11: Noise and Vibration Management.

ECP 10: Air Quality Management

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Construction vehicular traffic	Air quality can be adversely affected by vehicle exhaust emissions and combustion of fuels.	The Contractor shall • Prepare air quality management plan (under the Pollution Prevention Plan) and submit the plan for supervision consultant approval. • Fit vehicles with appropriate exhaust systems and emission control devices. Maintain these devices in good working condition. • Operate the vehicles in a fuel efficient manner. • Cover hauls vehicles carrying dusty materials moving outside the construction site. • Impose speed limits on all vehicle movement at the worksite to reduce dust emissions. • Control the movement of construction traffic. • Water construction materials prior to loading and transport. • Service all vehicles regularly to minimize emissions. • Limit the idling time of vehicles not more than 2 minutes.
Construction machinery	Air quality can be adversely affected by emissions from machinery and combustion of fuels.	The Contractor shall • Fit machinery with appropriate exhaust systems and emission control devices. Maintain these devices in good working condition in accordance with the specifications defined by their manufacturers to maximize combustion efficiency and minimize the contaminant emissions. Proof or maintenance register shall be required by the equipment suppliers and contractors/subcontractors. • Focus special attention on containing the emissions from generators. • Machinery causing excess pollution (e.g. visible smoke) will be banned from construction sites. • Service all equipment regularly to minimize emissions. • Provide filtering systems, duct collectors or humidification or other techniques (as applicable) to the concrete batching and mixing plant to control the particle emissions in all its stages, including unloading, collection, aggregate handling,

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		cement dumping, circulation of trucks and machinery inside the installations.
Construction activities	Dust generation from construction sites, material stockpiles and access roads is a nuisance in the environment and can be a health hazard, and also can affect the local crops;	The Contractor shall • Water the material stockpiles, access roads and bare soils on an as required basis to minimize the potential for environmental nuisance due to dust. Increase the watering frequency during periods of high risk (e.g. high winds). Stored materials such as gravel and sand shall be covered and confined to avoid their being wind-drifted. • Minimize the extent and period of exposure of the bare surfaces. • Restore disturbed areas as soon as practicable by vegetation/grass-turfing. • Store the cement in silos and minimize the emissions from silos by equipping them with filters. • Establish adequate locations for storage, mixing and loading of construction materials, in a way that dust dispersion is prevented because of such operations. • Not water as dust suppression on potentially contaminated areas so that a liquid waste stream will be generated. • Crushing of rocky and aggregate materials shall be wet-crushed, or performed with particle emission control systems. • Not permit the burning of solid waste.

ECP 11: Noise and Vibration Management

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Construction vehicular traffic	Noise quality will be deteriorated due to vehicular traffic	The Contractor shall • Prepare a noise and vibration management plan (under the Pollution Prevention Plan) and submit the plan for supervision consultant approval. • Maintain all vehicles in order to keep it in good working order in accordance with manufactures maintenance procedures. • Make sure all drivers will comply with the traffic codes concerning maximum speed limit, driving hours, etc. • Organize the loading and unloading of trucks, and handling operations for the purpose of minimizing construction noise on the work site.
Construction	Noise and vibration may	The Contractor shall

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
machinery	have an impact on people, property, fauna, livestock and the natural environment.	• Appropriately site all noise generating activities to avoid noise pollution to local residents. • Use the quietest available plant and equipment. • Maintain all equipment in order to keep it in good working order in accordance with manufactures maintenance procedures. Equipment suppliers and contractors shall present proof of maintenance register of their equipment. • Install acoustic enclosures around generators to reduce noise levels. • Fit high efficiency mufflers to appropriate construction equipment. • Avoid the unnecessary use of alarms, horns and sirens.
Construction activity	Noise and vibration may have an impact on people, property, fauna, livestock and the natural environment.	The Contractor shall • Notify adjacent landholders prior any typical noise events outside of daylight hours. • Educate the operators of construction equipment on potential noise problems and the techniques to minimize noise emissions. • Employ best available work practices on-site to minimize occupational noise levels. • Install temporary noise control barriers where appropriate. • Notify affected people if major noisy activities will be undertaken, e.g. blasting. • Plan activities on site and deliveries to and from site to minimize impact. • Monitor and analyze noise and vibration results and adjust construction practices as required. • Avoid undertaking the noisiest activities, where possible, when working at night near the residential areas.

ECP 12: Protection of Flora

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Vegetation clearance	Local flora are important to provide shelters for the birds, offer fruits and/or timber/fire wood, protect	The Contractor shall • Prepare a plan for protection of flora and submit the plan for supervision consultant approval.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
	soil erosion and overall keep the environment very friendly to human-living. As such damage to flora has wide range of adverse environmental impacts.	• Minimize disturbance to surrounding vegetation. • Use appropriate type and minimum size of machine to avoid disturbance to adjacent vegetation. • Get approval from supervision consultant for clearance of vegetation. • Make selective and careful pruning of trees where possible to reduce need of tree removal. • Control noxious weeds by disposing of at designated dump site or burn on site. • Clear only the vegetation that needs to be cleared in accordance with the engineering plans and designs. These measures are applicable to both the construction areas as well as to any associated activities such as sites for stockpiles, disposal of fill a, etc. • Not burn off cleared vegetation – where feasible, chip or mulch and reuse it for the rehabilitation of affected areas, temporary access tracks or landscaping. Mulch provides a seed source, can limit embankment erosion, retains soil moisture and nutrients, and encourages re-growth and protection from weeds. • Return topsoil and mulched vegetation (in areas of native vegetation) to approximately the same area of the roadside it came from. • Avoid work within the drip-line of trees to prevent damage to the tree roots and compacting the soil. • Minimize the length of time the ground is exposed or excavation left open by clearing and re-vegetate the area at the earliest practically possible. • Ensure excavation works occur progressively and re-vegetation done at the earliest • Provide adequate knowledge to the workers regarding nature protection and the need of avoid felling trees during construction • Supply appropriate fuel in the work camps to prevent fuel wood collection.

ECP 13: Protection of Fauna

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Construction activities	The location of construction activities can result in the loss of wild life habitat and habitat quality,	The Contractor shall • Prepare a plan for protection of fauna and submit the plan for supervision consultant approval. • Limit the construction works within the designated sites allocated to the contractors. • Check the site for animals trapped in, or in danger from site works and use a qualified person to relocate the animal.
	Impact on migratory birds, its habitat and its active nests	The Contractor shall • Not be permitted to destruct active nests or eggs of migratory birds. • Minimize the tree removal during the bird breeding season. If works must be continued during the bird breeding season, a nest survey will be conducted by a qualified biologist prior to commence of works to identify and locate active nests. • If bird nests are located/ detected within the ledges and roadside embankments then those areas should be avoided. • Petroleum products should not come in contact with the natural and sensitive ecosystems. Contractor must minimize the release of oil, oil wastes or any other substances harmful to migratory birds' habitats, to any waters, wetlands or any areas frequented by migratory birds.
Vegetation clearance	Clearance of vegetation may impact shelter, feeding and/or breeding and/or physical destruction and severing of habitat areas	The Contractor shall • Restrict the tree removal to the minimum numbers required. • Relocate hollows, where appropriate. • Fell the hollow bearing trees in a manner which reduces the potential for fauna mortality. Felled trees will be inspected after felling for fauna and if identified and readily accessible will be removed and relocated or rendered assistance if injured. After felling, hollow bearing trees will remain unmoved overnight to allow animals to move of their own volition.
Night time lighting	Lighting from construction sites and construction camps may affect the visibility of night time migratory birds that use	The Contractor shall • Use lower wattage flat lens fixtures that direct light down and reduce glare, thus reducing light pollution,

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
	the moon and stars for navigation during their migrations.	• Avoid flood lights unless they are absolutely required. • Use motion sensitive lighting to minimize unneeded lighting. • Use, if possible, green lights that are considered as bird's friendly lighting instead of white or red colored lights. • Install light shades or plan the direction of lights to reduce light spilling outside the construction area.
Construction camps	Illegal poaching	The Contractor shall • Provide adequate knowledge to the workers regarding protection of flora and fauna, and relevant government regulations and punishments for illegal poaching. • Ensure that staff and Subcontractors are trained and empowered to identify, address and report potential environmental problems.

ECP 14: Protection of Fish

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Construction activities in River	The main potential impacts to fisheries are hydrocarbon spills and leaks from riverine transport and disposal of wastes into the river	The Contractor shall • Prepare procedures for protection of fish and submit them for supervision consultant approval. • Ensure the construction equipment used in the river are well maintained and do not have oil leakage to contaminate river water. • Contain oil immediately on river in case of accidental spillage from equipment; make an emergency oil spill containment plan (under the Fuels and Hazardous Substances Management Plan) to be supported with enough equipment, materials and human resources. • Do not dump wastes, be it hazardous or non-hazardous into the nearby water bodies or in the river.
Construction activities on the land	The main potential impacts to aquatic flora and fauna River are increased suspended solids from earthworks erosion, sanitary discharge from work camps, and hydrocarbon spills	The Contractor shall • Follow mitigation measures proposed in ECP 3: Water Resources Management and EC4: Drainage Management.

ECP 15: Road Transport and Road Traffic Management

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Construction vehicular traffic	Increased traffic use of road by construction vehicles will affect the movement of normal road traffics and the safety of the road-users.	The Contractor shall • Prepare a traffic management plan and submit the plan for supervision consultant approval. • Strictly follow the Project's 'Traffic Management Plan' and work with close coordination with the Traffic Management Unit. • Prepare and submit additional traffic plan, if any of his traffic routes are not covered in the Project's Traffic Management Plan, and requires traffic diversion and management. • Include in the traffic plan to ensure uninterrupted traffic movement during construction: detailed drawings of traffic arrangements showing all detours, temporary road, temporary bridges temporary diversions, necessary barricades, warning signs / lights, road signs etc. • Provide signs at strategic locations of the roads complying with the schedules of signs contained in the national Traffic Regulations.
	Accidents and spillage of fuels and chemicals	The Contractor shall • Restrict truck deliveries, where practicable, to day time working hours. • Restrict the transport of oversize loads. • Operate vehicles, if possible, to non-peak periods to minimize traffic disruptions. • Enforce on-site speed limit.

ECP 16: Construction Camp Management

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Siting and Location of construction camps	Campsites for construction workers are the important locations that have significant impacts such as health and safety hazards on local resources and infrastructure of nearby communities.	The Contractor shall • Prepare a construction camp management plan and submit the plan for supervision consultant's approval. • Locate the construction camps within the designed sites or at areas which are acceptable from environmental, cultural or social point of view; and approved by the supervision consultant.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		• Consider the location of construction camps away from communities in order to avoid social conflict in using the natural resources such as water or to avoid the possible adverse impacts of the construction camps on the surrounding communities. • Submit to the supervision consultant for approval a detailed layout plan for the development of the construction camp showing the relative locations of all temporary buildings and facilities that are to be constructed together with the location of site roads, fuel storage areas (for use in power supply generators), solid waste management and dumping locations, and drainage facilities, prior to the development of the construction camps. • Local authorities responsible for health, religious and security shall be duly informed on the set up of camp facilities so as to maintain effective surveillance over public health, social and security matters.
Construction Camp Facilities	Lack of proper infrastructure facilities, such as housing, water supply and sanitation facilities will increase pressure on the local services and generate substandard living standards and health hazards.	Contractor shall provide the following facilities in the campsites • Adequate housing for all workers. • Safe and reliable water supply, which should meet NATIONAL STANDARDS. Drinking water to be chlorinated at source, and ensure presence of residual chlorine 0.1 ~ 0.25 ppm as minimum after 30 minutes of chlorine contact time (WHO guideline). • Hygienic sanitary facilities and sewerage system. The toilets and domestic waste water will be collected through a common sewerage. Provide separate latrines and bathing places for males and females with total isolation by location. The minimum number of toilet facilities required is one toilet for every ten persons. • Treatment facilities for sewerage of toilet and domestic wastes. • Storm water drainage facilities. • Paved internal roads. • Provide child crèches for women working construction site. The crèche should have facilities for dormitory, kitchen, indoor and outdoor play

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		area. Schools should be attached to these crèches so that children are not deprived of education whose mothers are construction workers. • Provide in-house community/common entertainment facilities. Dependence of local entertainment outlets by the construction camps to be discouraged/prohibited to the extent possible.
Disposal of waste	Management of wastes is crucial to minimize impacts on the environment	The Contractor shall • Ensure proper collection and disposal of solid wastes within the construction camps. • Insist waste separation by source; organic wastes in one container and inorganic wastes in another container at household level. • Store inorganic wastes in a safe place within the household and clear organic wastes on daily basis to waste collector. Establish waste collection, transportation and disposal systems with the manpower and equipment/vehicles needed. • Do not establish site specific landfill sites. All solid waste will be collected and removed from the work camps and disposed in approval waste disposal sites.
Fuel supplies for cooking purposes	Illegal sourcing of fuel wood by construction workers will impact the natural flora and fauna	The Contractor shall • Provide fuel to the construction camps for their domestic purpose, in order to discourage them to use fuel wood or other biomass. • Made available alternative fuels like natural gas or kerosene on ration to the workforce to prevent them using biomass for cooking. • Conduct awareness campaigns to educate workers on preserving the protecting the biodiversity and wildlife of the project area, and relevant government regulations and punishments on wildlife protection.
Health and Hygiene	There will be a potential for diseases to be transmitted including malaria, exacerbated by inadequate health and safety practices. There will be an increased risk of work crews spreading	The Contractor shall • Provide adequate health care facilities within construction sites. • Provide first aid facility round the clock. Maintain stock of medicines in the facility and appoint fulltime designated first aider or nurse.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
	sexually transmitted infections and HIV/AIDS.	• Provide ambulance facility for the labourers during emergency to be transported to nearest hospitals. • Initial health screening of the labourers coming from outside areas. • Train all construction workers in basic sanitation and health care issues and safety matters, and on the specific hazards of their work. • Provide HIV awareness programming, including STI (sexually transmitted infections) and HIV information, education and communication for all workers on regular basis. • Provide adequate drainage facilities throughout the camps to ensure that disease vectors such as stagnant water bodies and puddles do not form. Regular mosquito repellent sprays during rainy season in offices and construction camps and yards. • Not dispose food waste openly as that will attract rats and stray dogs. • Carryout short training sessions on best hygiene practices to be mandatorily participated by all workers. Place display boards at strategic locations within the camps containing messages on best hygienic practices.
Safety	In adequate safety facilities to the construction camps may create security problems and fire hazards	The Contractor shall • Provide appropriate security personnel (police or private security guards) and enclosures to prevent unauthorized entry in to the camp area. • Maintain register to keep a track on a head count of persons present in the camp at any given time. • Encourage use of flameproof material for the construction of labour housing / site office. Also, ensure that these houses/rooms are of sound construction and capable of withstanding wind storms/cyclones. • Provide appropriate type of firefighting equipment suitable for the construction camps • Display emergency contact numbers clearly and prominently at strategic places in camps. • Communicate the roles and responsibilities of labourers in case of

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		emergency in the monthly meetings with contractors.
Site Restoration	Restoration of the construction camps to original condition requires demolition of construction camps.	The Contractor shall • Dismantle and remove from the site all facilities established within the construction camp including the perimeter fence and lockable gates at the completion of the construction work. • Dismantle camps in phases and as the work gets decreased and not wait for the entire work to be completed. • Give prior notice to the labourers before demolishing their camps/units. • Maintain the noise levels within the national standards during demolition activities. • Different contractors should be hired to demolish different structures to promote recycling or reuse of demolished material. • Reuse the demolition debris to a maximum extent. Dispose remaining debris at the designated waste disposal site. • Handover the construction camps with all built facilities as it is if agreement between both parties (contactor and land-owner) has been made so. • Restore the site to its condition prior to commencement of the works or to an agreed condition with the landowner.

ECP 17: Cultural and Religious Issues

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Construction activities near religious and cultural sites	Disturbance from construction works to the cultural and religious sites, and contractors lack of knowledge on cultural issues cause social disturbances.	The Contractor shall • Communicate to the public through community consultation regarding the scope and schedule of construction, as well as certain construction activities causing disruptions or access restriction. • Not block access to cultural and religious sites, wherever possible. • Restrict all construction activities within the foot prints of the construction sites. • Stop construction works that produce noise (particularly during prayer time) should there be any

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		mosque/religious/educational institutions close to the construction sites and users make objections. • Take special care and use appropriate equipment when working next to a cultural/religious institution. • Stop work immediately and notify the site manager if, during construction, an archaeological or burial site is discovered. It is an offence to recommence work in the vicinity of the site until approval to continue is given. • Provide separate prayer facilities to the construction workers. • Show appropriate behaviour with all construction workers especially women and elderly people. • Allow the workers to participate in praying during construction time. • Resolve cultural issues in consultation with local leaders and supervision consultants. • Establish a mechanism that allows local people to raise grievances arising from the construction process. • Inform the local authorities responsible for health, religious and security duly informed before commencement of civil works so as to maintain effective surveillance over public health, social and security matters.

ECP 18: Worker Health and Safety

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Best practices	Construction works may pose health and safety risks to the construction workers and site visitors leading to severe injuries and deaths. The population in the proximity of the construction site and the construction workers will be exposed to a number of (i) biophysical health risk factors, (e.g. noise, dust, chemicals, construction material, solid waste, waste water, vector transmitted diseases etc.), (ii) risk	The Contractor shall • Prepare an Occupational Health and Safety plan and submit the plan for supervision consultant's approval. • Implement suitable safety standards for all workers and site visitors which should not be less than those laid down on the international standards (e.g. International Labour Office guideline on 'Safety and Health in Construction; World Bank Group's 'Environmental Health and Safety Guidelines') and contractor's own national standards or statutory regulations, in addition to complying with National standards. • Provide the workers with a safe and healthy work environment, taking into account inherent risks in its particular

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
	factors resulting from human behaviour (e.g. STD, HIV etc.) and (iii) road accidents from construction traffic.	construction activity and specific classes of hazards in the work areas. • Provide personal protection equipment (PPE) for workers, such as safety boots, helmets, masks, gloves, protective clothing, goggles, full-face eye shields, and ear protection. Maintain the PPE properly by cleaning dirty ones and replacing them with the damaged ones. • Safety procedures include provision of information, training and protective clothing to workers involved in hazardous operations and proper performance of their job. • Appoint an environment, health and safety manager to look after the health and safety of the workers. • Inform the local authorities responsible for health, religious and security duly informed before commencement of civil works and establishment of construction camps so as to maintain effective surveillance over public health, social and security matters.
	Child and pregnant labour	The Contractor shall • not hire children of less than 14 years of age and pregnant women or women who delivered a child within 8 preceding weeks.
Accidents	Lack of first aid facilities and health care facilities in the immediate vicinity will aggravate the health conditions of the victims	The Contractor shall • Ensure health care facilities and first aid facilities are readily available. Appropriately equipped first-aid stations should be easily accessible throughout the place of work. • Document and report occupational accidents, diseases, and incidents. • Prevent accidents, injury, and disease arising from, associated with, or occurring in the course of work by minimizing, so far as reasonably practicable, the causes of hazards, in a manner consistent with good international industry practice. • Identify potential hazards to workers, particularly those that may be life-threatening and provide necessary preventive and protective measures. • Provide awareness to the construction drivers to strictly follow the driving rules. • Provide adequate lighting in the construction area, inside the tunnels,

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		inside the powerhouse cavern and along the roads.
Construction Camps	Lack of proper infrastructure facilities, such as housing, water supply and sanitation facilities will increase pressure on the local services and generate substandard living standards and health hazards.	The Contractor shall provide the following facilities in the campsites to improve health and hygienic conditions as mentioned in ECP 16 Construction Camp Management • Adequate ventilation facilities • Safe and reliable water supply. • Hygienic sanitary facilities and sewerage system. • Treatment facilities for sewerage of toilet and domestic wastes • Storm water drainage facilities. • Recreational and social facilities • Safe storage facilities for petroleum and other chemicals in accordance with ECP 2 • Solid waste collection and disposal system in accordance with ECP1. • Arrangement for trainings • Paved internal roads. • Security fence at least 2 m height. • Sick bay and first aid facilities
Water and sanitation facilities at the construction sites	Lack of Water sanitation facilities at construction sites cause inconvenience to the construction workers and affect their personal hygiene.	The contractor shall • Provide portable toilets at the construction sites, if about 25 people are working the whole day for a month. Location of portable facilities should be at least 6 m away from storm drain system and surface waters. These portable toilets should be cleaned once a day and all the sewerage should be pumped from the collection tank once a day and should be brought to the common septic tank for further treatment. • Provide safe drinking water facilities to the construction workers at all the construction sites.
Other ECPs	Potential risks on health and hygiene of construction workers and general public	The Contractor shall follow the following ECPs to reduce health risks to the construction workers and nearby community • ECP 2: Fuels and Hazardous Goods Management • ECP 4: Drainage Management • ECP 10: Air Quality Management • ECP 11: Noise and Vibration Management • ECP 15: Road Transport and Road Traffic Management

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Trainings	Lack of awareness and basic knowledge in health care among the construction workforce, make them susceptible to potential diseases.	The Contractor shall • Train all construction workers in basic sanitation and health care issues (e.g., how to avoid malaria and transmission of sexually transmitted infections (STI) HIV/AIDS. • Train all construction workers in general health and safety matters, and on the specific hazards of their work. Training should consist of basic hazard awareness, site specific hazards, safe work practices, and emergency procedures for fire, evacuation, and natural disaster, as appropriate. • Implement malaria, HIV/AIDS and STI education campaign targeting all workers hired, international and national, female and male, skilled, semi- and unskilled occupations, at the time of recruitment and thereafter pursued throughout the construction phase on ongoing and regular basis. This should be complemented by easy access to condoms at the workplace as well as to voluntary counselling and testing.

Annex C: Procedures for Mine Risk Management

Background

The following procedures are designed to respond to the risks caused by the presence of mines in Afghanistan, in the context of:

Community rehabilitation/construction works to be identified and implemented by the communities themselves (for small projects of up to $100,000 each);

Small and medium-size works to be identified by local authorities and implemented by local contractors (for projects up to $5m each);

Works to be implemented directly by Government departments/agencies, without use of contractors;

Large works to be implemented by contractors (for projects above $5m);

General comment applying to all following procedures: All risk assessment and clearance tasks shall be implemented in coordination with the Mine Action Centre for Afghanistan (MACA). These procedures may need to be amended in the future depending on evolving circumstances.

Procedure for Community-Managed Works

Applicability: This procedure applies to community rehabilitation / construction works to be identified and implemented by the communities themselves (for small projects of up to $100,000 each).

Overall approach: The communities should be responsible for making sure that the projects they propose are not in mine-contaminated areas, or have been cleared by MACA (or a mine action organization accredited by MACA).

Rationale: Communities are best placed to know about mined areas in their vicinity, and have a strong incentive to report them accurately as they will carry out the works themselves.

Communities are required to submit a reply to a questionnaire regarding the suspected presence of mines in the area where Bank-funded community-managed projects will be implemented.

This questionnaire should be formally endorsed by the Mine Action Program for Afghanistan (MAPA). It will be a mandatory attachment to the project submission by the communities and should be signed by community representatives and the external project facilitator. External project facilitators will receive training from MAPA. Financing agreements with the communities should

make clear that communities are solely liable in case of a mine-related accident.

If the community certifies that there is no known mine contamination in the area, the ministry responsible for the selection of projects should check with MACA whether any different observation is reported on MACA's data base.

If MACA's information is the same, the project can go ahead for selection. The community takes the full responsibility for the assessment, and external organizations cannot be made liable in case of an accident.

If MACA's information is different, the project should not go ahead for selection as long as MACA's and community's statements have not been reconciled.

If the community suspects mine contamination in the area.

If the community has included an assessment/clearance task in the project agreed to be implemented by MACA (or by a mine action organization accredited by MACA), the project can go ahead for selection.

If the community has not included an assessment / clearance task in the project, the project should not go ahead for selection as long as this has not been corrected.

Mine clearance tasks must be implemented by MACA or by a mine action organization accredited by MACA. Communities will be penalized (subsequent funding by World-Bank funded projects shall be reduced or cancelled) if they elect to clear mines on their own.

Procedure for Small and Medium-size Works Contracted Out

Applicability: This procedure applies to small- and medium-size works to be identified by local authorities and implemented by local contractors (for projects up to $5m each).

Overall approach: MACA (or a mine action organization accredited by MACA) should provide detailed information on the mine-related risks (either based on previously done and updated general

survey or on a new general survey) before projects are considered for selection. Only project sites assessed to have a nil-to-low risk would be eligible for selection, unless they have been demined by MACA or by a mine action organization accredited by MACA.

Rationale: Neither local authorities nor local contractors have the capacity to assess the mine-related risks in a systematic way, while they may have incentives to underestimate them.

Prior to putting up a project for selection, a general survey should be carried out by MACA (or a mine action organization accredited by MACA) to assess mine-related risks in the area of the project (this should include checking information available in the MACA data base).

If MACA provides information suggesting a nil-to-low risk in the proposed project area, the project can go ahead for selection.
The contract between the responsible ministry and the contractor will include a clause stating that in case of an accident, legal liability would be fully and solely borne by the contractor.

1. If MACA assesses a potentially high risk in the area (whether due to the presence of mines or uncertainty.

- If the project includes an assessment/clearance task agreed to be implemented by MACA (or by a mine action organization accredited by MACA), it can go ahead for selection based on agreed funding modalities (clearance may be funded either under a contract with a Bank-funded project or under existing donor agreements with the mine action organization);
- If the project does not include an assessment / clearance task, it should not go ahead for selection as long as this has not been corrected.

Procedure for Works to be Implemented Directly by Government Departments/Agencies, Without the Use of Contractors

Applicability: This procedure applies to works to be implemented directly by Government

departments/agencies, without use of contractors.

Overall approach: MACA (or a mine action organization accredited by MACA) should provide detailed information on the mine-related risks (either based on previously done and updated general survey or on a new general survey) before works or installation of goods/materials are carried out in any given area. Work would only be allowed to proceed in areas assessed to have a nil-to-low risk, unless they have been demined by a mine action organization accredited by MACA .

Rationale: Government departments and agencies responsible for providing services currently do not have the capacity to assess the mine-related risks in a systematic way, and currently follow a process of consulting with MACA prior to carrying out activities.

2. Prior to carrying out work, the Government department/agency will consult with MACA to assess mine-related risks in the area (this should include checking information available in the MACA data base). If not already done, a general survey should be carried out by MACA (or by a mine action organization accredited by MACA) to assess mine-related risks in the area.

3. If MACA provides detailed information on mine-related risks which suggest a nil-to-low risk in the proposed area, the work can proceed. The Government would be solely liable in case of a mine-related accident.

4. If information provided by MACA cannot support the assessment of a nil-to-low risk in the proposed area (whether due to the presence of mines or uncertainty), works should not go ahead before MACA (or a mine action organization accredited by MACA) carries out the necessary further assessment and/or clearance for risks to be downgraded to nil-to-low, based on agreed funding modalities (clearance may be funded either under a contract with a Bank-funded project or under existing donor agreements with the mine action organization).

Procedure for Large Works Using Contractors

Applicability: This procedure applies to large works to be implemented by large contractors (projects above $5m).

Overall approach: The main contractor should be responsible for dealing with mine-related risks, in coordination with the UN Mine Action Center.

5. As part of the preparation of the bidding documents, a general survey should be carried out by MACA (or a mine action organization accredited by MACA) on all the areas where contractors may have to work (broadly defined). This survey should provide detailed information on mine-related risks in the various areas allowing for an un-ambiguous identification of areas that have a nil-to-low risk of mine/UXO contamination and areas where the risk is either higher or unknown. The survey should be financed out of the preparation costs of the bidding documents.

6. All survey information should be communicated to the bidders (with sufficient legal caveats so that it does not entail any liability), as information for the planning of their activities (e.g., location of campsites, access roads to quarries).

7. Depending on the nature and location of the project and on the available risk assessment, two different options can be used.

Option 1 – Mine clearance activities are part of the general contract

a. Based on the general survey results, a specific budget provision for mine action during construction is set aside as a separate provisional sum in the tender documents for the general contract.

b. As a separately identified item in their bid, the bidders include a provision for a further detailed mine assessment and clearance during construction.

c. On the instruction of the Supervision Engineer and drawing on the specific provisional sum for mine action in the contract, the contractor uses one of several nominated sub-contractors (or a mine action organization accredited by MACA) to be rapidly available on call, to carry out assessment prior to initiation of physical works in potentially contaminated areas, and to conduct clearance tasks as he finds may be needed. The Contractor may also hire an international specialist to assist him in preparing and supervising these tasks. The Contractor is free to choose which of the accredited sub-contractors to use, and he is fully responsible for the quality of the works and is solely liable in case of accident after an area has been demined.

To avoid an "over-use" of the budget provision, the Contractor is required to inform the Supervision Engineer in writing (with a clear justification of the works to be carried out) well in advance of mobilizing the mine-clearing team. The Supervision Engineer has the capacity to object to such works.

Option 2 – Mine clearance activities are carried out under a separate contract

a. Specific, separately-awarded contracts are issued for further surveying and/or clearing of areas with a not-nil-to-low risk (under the supervision of the Engineer) by specialized contractors (or a mine action organization accredited by MACA). The definition of the areas to be further surveyed/cleared should be limited to those areas where any contractor would have to work, and should not include areas such as camp sites and quarries/material sites which are to be identified by the Contractor during and after bidding of the works. As a result of these further surveys and possibly clearance works, mine-related risk in the entire contract area is downgradedtonil-to-low.

b. The contract with the general Contractor specifies the extent of the portion of the construction site of which the Contractor is to be given possession from time to time, clearly indicating restrictions of access to areas where the mine risk is not nil-to-low. It also indicates the target dates at which these areas will be accessible. Following receipt of the notice to commence works from the Engineer, the Contractor can start work in all other areas.

c. The general Contractor is invited to include in its bid an amount for mine-security, to cover any additional survey / clearance he may feel necessary to undertake the works.

In case of an accident, a Board of Inquiry is assembled by MACA to investigate on the causes of the accident and determine liabilities. Large penalties should be applied on the Contractor if the Board determines that the accident resulted from a breach of safety rules.

All parties involved in this process are required to closely coordinate with MACA and to provide the

Government, local communities, MACA, as well as any interested party the full available information on mine-related risks that may reasonably be required (e.g., maps of identified minefields, assessments for specific areas).

Annex D: Consultations during ESMF Preparation

SUMMARY OF PROCEEDINGS FROM PUBLIC CONSULTATION ON ESMF AND RPF

SUMMARY OF PROCEEDINGS FROM PUBLIC CONSULATIONS
On
Summary of Proceeding from Public consultation on ESMF
On
DRAFT ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK (ESMF)

For Herat Electrification Project

And
Field visit to Karokh district.

Date: March 07, 2017
Trip to Herat covered the following Parts:
Part-A: Minutes of Public consultation (VENUE: HERAT, ARG HOTEL).
Part-B: field visit to Karokh district.

Part-A:
Introduction
The ESMF has been developed to address environmental and social concerns and impacts that may arise during the development and implementation of DABS 'investment projects. The framework provides general guidelines, codes of practice and procedures for the management of environmental and social issues. The consultations with various stakeholders, will help improve a project's design, effectiveness and to achieve its sustainability.
Executive summary of the draft ESMF summary was translated into Dari and Pashto and circulated to participants.

Brief Summary Report of the ESMF Consultation
Kabul DABS senior officials (Deputy Director in Technical Affairs, DABS planning and Capacity Support Project Manager, HEP Project Manager, the DABS media manager, Environmental and Social Specialists), Herat DABS senior officials have conducted the Consultation meeting on March 07, 2017. The purpose of the event was to introduce the ESMF and engage stakeholders including locally based residents of 4 targeted districts (Karukh, Pashtun Zarghon, Obe and Chesht Sharif), district governors as well the provincial government officials, Provincial Council members, NGO representatives, women actors and the CSOs(please see below a list of participants).
Interactive sessions including introduction on the HEP, presentation on the ESMF and RPF, questions and answers, group work among 4 district representatives on the key challenges and mutual support to the project have conducted. In the presentation it is highlighted, that the state's legislation and laws and the World Bank safeguards policies and procedures on environmental and social aspects are embedded in the ESMF and its related documents to ensure convey the role and engagement of local communities and other direct stakeholders throughout the project implementation. Key figures invited from Provincial Council, Community representatives and from the governor office focused on the quality of project implementation and supported the overall project design including the ESMF however, they demanded for good quality of work.
Opening session: Herat DABS staff (Qari Abdul Basit) recited verses from Holy Quran and then Mr. Kamrani the Herat DABS Director welcomed everyone and highlighted the project progress and required achievements and the project components with required fund donated by the World

Bank ($ 35 Millions). Mr.Kamarani confirmed that the purpose of the meeting was to discuss and receive feedback from participants on the draft ESMF for the Herat Electrification project and He encouraged active participation from all present. Folks from the governor office, directorate of

economy, women affairs directorate, provincial council members and other provincial directorate also had their thanking and encouraging message to DABS and World Bank.

Project briefings: Engineer Abdul Ahad Barekzai the Deputy Director in technical affairs of DABS have highlighted the project background, project components, targeted areas where the project will be implemented and provided expected descriptions on quantity both of number of coverage areas and the quantity of electricity to be provided. People were much enthusiastic knowing about the possible timeline of the project implementation. Mr. Ahad said, it is not only related to the DABS but various government bodies and the World Bank is involved in the process of the project, he said, still the project documents are now with the evaluation committee in Kabul.

Presentation on ESMF and RPF: A comprehensive and valuable presentation on the HEP project ESMF part has given by Mr. Rahmatullah Safi the DABS planning and Capacity Support Project Manager. The details on the ESMF and RPF have highly appreciated, welcomed and applauded by the participants all together.

Mr. Barat, environmental expert of provincial governor 's office had short explanation on environmental and social aspects to the participants. Group Work:

The purpose of the group work was to obtain the feedback of the meeting participants and enhance the engagement and involvement of local stakeholders in the project design as well as social and environmental issues. Related questions ensured that they openly and without any disturbance internally discussed those issues. There were issues which they had raised and asked during the past sessions but in the group work they pointed out and revealed their hidden views behind these questions.

Participants of the 4 districts including women have divided into 4 groups, provided them questions (1. What would be rule of locals during the project implementation, 2. Why consultation is needed to be done with locals, 3. What would be positive and negative impacts of the project, 4. For a better implementation of the project what support can be provided by the locals and 5.A separate group has created of women and asked what will be the rule of women in project implementation.

All groups did work on their group assignments, they had long discussions revealed issues which were not told to the DABS even and came with the following results of the group work:

Positive Impacts: Locals life condition will be improved, most of the daily life problems will be solved through electricity, and electricity is a corridor for a better economy and development.

Negative Impacts: there might be conflicts and disputes raised because of land issue, trees and pasture would be removed, and houses will be damaged or would remain under affects.

Team response: for sure during design and implementation of the project to avoid the disputes and our main focus will be to avoid any conflicts and damages to the community if not able to avoid then DABS will try to minimize the impacts.

Support from Locals: Locals participants who participated the consultation meeting will deliver the key messages of the project to locals while in Friday prayers, people were committed to provide support to the project during implementation the participants also mentioned that they are poor and expected the government support, work of the project should be expedited, labor should be hired from the same area as peoples can contribute in the security, social equity should be considered and people should have an equal access to electricity,

Team's response: local access for electricity is the main objective of the project, for design and implementation of the project DABS will hire contractor to complete the project labor will be hired as per the company requirement and DABS benefit based on professional technical skill.

Peoples Participation: The project should consider not to destroy the pasture and other green areas, for a better implementation of the project there is need for a local level GRC to be established for further support of environment and social issues and grievance redress, DABS should have regular meetings with local discussing the progress and other support required, provide trainings for local how to take consider safeguard aspects.

Team's response: DABS will establish a GRC at different level and DABS will train them how to manage Grievance and how to deal with environmental and social issues.

Consultation with locals are **Important**: People are the owner of the project, peoples should take care of the environment, to take of the water not to be miss used, to take care of the residential places and

irrigated land not to be damaged, a better and suitable place for the sub-stations and poles will be chosen in close consultation with locals, peoples will monitor the progress of the project, abatement of frequent replacement of poles from one place to another, about Pashtun Zarghon sub-station we highly consider that this station should be constructed at the south of the river near to main bazaar.

Team's response: the installation of poles and substation is pure technical in distribution network DABS will also discussed with community for proper solution of scheme.

Women rule in the project implementation: women group suggestions on given topic were as: (e.g. Women will have an important role in the implementation of the project, women can support in the villages for safe and secure use of electrical equipment). Women can get economy development opportunities form the project that they can start small businesses (couture, embroidery, dairy processing, catsup & ketchup, carpet weaving and others).

Open Discussion, Questions and Answers: Nevertheless, the DABS team provided enough information and clarifications about the Social and Environment issues but the most concentration remained on physical works and electricity provisions. During the event partially and collectively participants from districts both men and women and other government entities, provincial council members have asked various questions and responded as following:

On a collective way a question has asked by Mr. Salahudeen Twakali the DDA member from Obe district asked, when physical work starts where you already have erected the poles as on unprofessional way in Obey and Chesht-e-Sharif?

Team response: the project is in National Procurement Committee (NPA) which is expected to finalize soon. In relation to the electrieity poles, DABS added that it was an emergency plan forecast by the DABS but when we received the support of World Bank, now the location of poles will be merely changed according to the new design and survey results.

A collective question asked about the proportion of electricity to each of the targeted districts. DABS response: Mr. Ahad responded that in total we will provide about 17,000 connections against 16 MW electricity for all 4 districts, but the distribution will be variable based on the bulk of population in intensity in each district. In addition, Mr. Kamrani the Herat DABS Director supported the response of Mr. Ahad and added that proportionally we will provide 4 MW electricity for each district.

A question asked that how we would be assured that electricity will come within 1396 or 2017.

DABS response: Mr. Kamrani responded, sure we expect too that we will have electricity within mentioned but it depends on proper and collective work, he said, Insha Allah the agreement will be signed within 40-45 days.

A question asked by Mr. Haji Faqirullah the DDA representative from Chesht-e-Sharif, what are the details and current progress now of the contract?

Team response: Mr. Ahad responded that the pre bedding meeting evaluation report has is sent to NPA for their review and the BiD/contract is spilt into 3 Lots (The construction and establishment of 4 sub-stations, extending transmission line and the distribution of electricity). In addition, Mr. Shaheer the senior representative of the Provincial Governor Office urged, we support DABS at any stage of this project and expect DABS to work accurately and honestly, no matter of the time we need a good quality of work also he said we much demand is the water rather than electricity, he pointed out that Salma dam is the life for us. Moreover, Mr. Shaheer urged that H.E. President has promised us the provision of 100 MW of electricity.

Municipality representative suggested that DABS should take care of the environmental issues and attend the meetings conducted by Municipality.

Team's response: In response Mr. Kamrani said, as we did so far in the past, now also we have been attending all the meetings with Municipality but unfortunately we still have not been completed the city plan (Master Plan). Mr. Kamrani added, sure we will much strengthen our future communication and coordination as we much need each other and our work is co-related to each other.

Elders of Pashtun Zarghon district both verbally and in group work suggested that the sub-station should be constructed at the South of the river (District Center) because of security and easy access. They also said that labors should be hired from the same district.

Team response: in response Mr.Kamrani said, this is pure technical issue and we did base on our

assessment , for design and implementation of the project DABS will hire contractor to complete the project, labor will be hired as per the company requirement and benefit based on professional technical skills.
Women collectively suggested that in such process before women were ignored or segregated, hope in the future we will be considered and we will have chance to suggest and our opinions.

Team's response: Mr. Kamrani said, absolutely women will be treated equally and in our future events women will have equal opportunity and would be active dominant part in decision making
The Mayor of Obey district criticized DABS and said, your engineers never been contacted us while survey and design process.
Team response, this will be considered!
Question from the participant: There are clear and comprehensive environmental laws and regulations with clear procedures and processes already in place. Why is it necessary to produce an ESMF?
Team's Response: Consideration of, and compliance with, all relevant National laws and regulations are an essential requirement of the ESMF.

Participants Evaluation of the Consultation Meeting:
For a better understandings an evaluation on the consultation meeting has raised through written questions have raised. Participants came with their written suggestions and views on the raised questions, most of them came with positive reactions and were agree and understood the points and actions described about Social and Environment. Details are annexed as (9.4)

Part-B: field visit to Karukh District
Consultation in field visit: The districts visit plan has shared and communicated with Herat DABS senior management. They said, at the moment there are much security trends as sequentially in Chesht-e-Sharif, Obey merely bad in Pashtun Zarghon and good security in Karukh district. They suggested if you are keen to have a trip to the first line insecure districts then we need to inform the (ANA + ANP and NDS) to come up with security provisions, but the ESS team including Herat DABS team and the Herat electrification project manager suggested that the final survey and design of the project is not completed yet rather than only the location of sub-stations in the districts. Ultimately, we decided that as sample we will visit the most secure district first (Karukh). On March 08, 2017 a team consisted of ESS specialist, Herat electrification project manager and the technical experts from Herat DABS traveled to Karukh district. We visited the district governor (Mr. Waheedullah Azadani, Tell: 0796900682 and the villages affairs department head (Mr. Mohammad Jawad Faroqi Tell: 0798284003) and some other DDA members not came with their names at the moment. They welcomed and again the ESS specialist explained about the ESS policies to be considered and portions of HEP activities. We visited the sub-station location, it is about 2 KM far from the district compound at the northeast of the district (left of the main road) non-irrigated but rain fed area, the owner glebe 15 Jirab of land and the legal documents are processed by the district, provincial and Arazi authorities. the total destination from Herat city till the district center is calculated 35 KM but the transmission line will be extended into two curves, the one from the point originate the transmission line from taken from the main line extended from Salma to Noor-e-Jihad station located in Robat Soliaman village to the peak of the hill over the newly constructed dam (Pashan) and the second line will be extended to the sub-station of Karukh planned at the left of road (North side). Details of the villages located along the transmission line of Karukh district, named from the Karukh sub-station (Naw Abadi Markaz, Naser Abad, Shatoor Nazar, Qala-e-Safeed, Qala-e-Dasht, Ehsan Abad, Majghandak, Qasab, Zori Ha, Pashtan, Chaqmaq, Robat Sulaiman).

Almost most of the land is owned by persons (private) less land hills of (Pashan dam) is owned by the government. Along the way of transmission line, we saw villages, residential houses, irrigated and rain fed land, pasture land, cemetery, orchards and shops).

List of participants of the ESMF consultation dated March 07, 2017

There were men and women participated in the consultation meeting. *Please refer to No. 17, 25,*

34 and 35 in the participants list (women participants).

NO	NAME	POSITION	OFFICE / LOCATION	ADDRESS	CONTACT
1	Dr. Ghulam Sakhi Rahimyan	Districts affairs specialist	Provincial governor office	Herat	0729751212
2	Eng. Wakil Ahmad Barak	Environmental specialist	Provincial governor office	Herat	0799346312
3	Mr. Ghulam Ghaws Nikbeen	Deputy of Herat municipality	Directorate of Herat Municipality	Herat	0786000477
4	Mr. Habibullah Huran	Deputy of river basin	Harirod river basin directorate	Herat	0799350706
5	Mr. Mohammad Yousuf Jami	Agriculture faculty director	Herat university	Herat	0700418243
6	Mr. Mohammad Rafiq Shaheer	Director of specialists association	Association of specialist	Herat	0799157015
7	Mr. Abdul Azim Karbarzayee	Representative in provincial council	Provincial council	Herat	0799872223
8	Mr. Haji Wahid Ahmad	Karokh district governor	Karokh district	Herat	0796900682
9	Mr. Sayed Aqa jan	Chairman	Karokh Ulema association	Herat	0799294046
10	Mr. Haji Mohammad Zaman Khan	Chairman	Karokh DDA	Herat	0797481686
11	Mr. Haji Toryalai Jamshidi	Chairman	Karokh CDC	Herat	0799033667
12	Mr. Mohammad Jawad	Manager of village affairs	Karokh district	Herat	0798284003
13	Mr. Nisar ahmad popal	District governor	Pashtoon zargoon district	Herat	
14	Mr. Said Kamal	Chairman	Village Shura of pashtoon zargoon	Herat	0797315790
15	Mr. Rafiullah	Chairman	Member of Village Shura of pashtoon zargoon	Herat	0798476764
16	Mr. Abdul Razaq	Treasurer	Pashtoon zargoon CDC	Herat	0796186251
17	Ms. Gulsoom	Member	Village Shura of pashtoon zargoon	Herat	0793109343
18	Mr. Mohammad qasam	manager	Village Shura of pashtoon zargoon	Herat	0798400295
19	Mr. Mohammad	Elder	Pashtoon zargoon district	Herat	0798718641

NO	NAME	POSITION	OFFICE / LOCATION	ADDRESS	CONTACT
	nabi Talib				
20	Mr. Rahmat-ul-din	District governor	Obeh district	Herat	0797548084
21	Haji abdul baser	Deputy	Obeh district CDC	Herat	0797637523
22	Mr. Salahuddin	Chariman	Obeh district village CDC	Herat	0790420700
23	Mr. Said Jalil	Deputy	Obeh district village CDC	Herat	0799114425
24	Mr. Mawlawi Abdul ali	Chairman	Obeh district Ulema Shura	Herat	0798662880
25	Ms. Maria	Member	Obeh district village CDC	Herat	درادن
26	Mr. Abdul Sabor	Manager	Village council of Obeh district	Herat	0793251175
27	Mr. Said faqirulah	Chairman	Chest sharif DDA	Herat	0797286932
28	Haji gull mohammad	Chairman	Chest sharif village council	Herat	0784379515
29	Mr. Zafran	Chairman	Chest sharif CDC	Herat	0791988910
30	Mr. Said shafiq	Mayor	Chest sharif district	Herat	0799080989
31	Haji said Abdullah	Elder	Chest sharif district	Herat	0782592070
32	Mr. Said abdul haq	Member	Chest sharif CDC	Herat	0789729634
33	Mr. Said roknulddin	Deputy	Chest sharif CDC	Herat	0794667774
34	Ms. Mari	Member	Chest sharif CDC	Herat	0794800010
35	Ms. Sumaia	Member	Chest sharif CDC	Herat	0797286932
36	Mr. Mohammad Musa	Mayor	Karokh district	Herat	0795203325
37	Mr. Qamar Gull	Member	Member	Herat	0728847605
38	Mr. Noor Mohammad Radmanash	Employee	On Farm Water Management of Herat	Herat	0798423009
39	Mr. Jalal din haqani	Member	Chest Sharif DDA	Herat	0780679796
40	Eng. Abdul Ahad Barakzai	Deputy director of Operation	DABS HQ	Kabul	
41	Mr. Rahmatullah Safi	Project manager DABS - TA	DABS HQ	Kabul	0729002873
42	Mr. Sayed Jawad Hadi	Project manager HEP	DABS HQ	Kabul	0795610411

NO	NAME	POSITION	OFFICE / LOCATION	ADDRESS	CONTACT
43	Mr. Ahmad Masood Nikzad	Manager of public relation	DABS HQ	Kabul	0729002800
44	Mr. Sharif Akhtar	Social Specialist	DABS HQ	Kabul	0700009104
45	Mr. Wahdatullah Wardak	Environmental Specialist	DABS HQ	Kabul	0787315464
46	Mr. Wahid ahmad Kamrani	Director Herat DABS	Herat DABS	Herat	0729197298
47	Eng. Muradi	Deputy Herat DABS	Herat DABS	Herat	
48	Eng. Nasrullah	Head of planning and engineering	Herat DABS	Herat	
49	Mr. Hamed Reza Farhang	Manager of planning and engineer	Herat DABS	Herat	0729197312
					52
50	Mr. Wasiq	Manager of public relation	Herat DABS	Herat	0799416464
51	Mr. Samim	Procurement manager	Herat DABS	Herat	0729003878

Note: The signed attendance sheets of Public Consultation Meeting are available with Herat DABS.

Herat Electrification Project
Stakeholder consultation-Herat ARG Hotel, March 07, 2017 Evaluation form

1. Did you understand the environmental and social management framework? Ans 1. Yes
Ans2. Yes it was understandable
Ans3. Yes, environmental protection is a serious need during the project implementation due attention should be driven.
Ans4. Yes I understand the framework of the ESMF.
Ans5. It was a very fruitful meeting for environmental awareness. Ans6. It was a very fruitful meeting for environmental awareness
Ans7. Thanks to Heat DABS for the fruitful workshop, we have learned a lot from the participants on ESMF.
Ans 8. Yes .
Ans 9. Yes .
Ans 10. Yes .
Ans

11.
Yes
.
Ans
12.
Yes
.
Ans13. Yes it was understandable

2. Was the time enough for your inquiries?

3. Was this
useful? Ans1.
Yes, very
much.
Ans2. Yes the session
was useful. Ans3. Yes.
Ans4. It is really useful for us, our
awareness raised. Ans5.yes, we have
learned a lot.
Ans6. Yes, it was very useful program we are going to share it to others.
Ans7.yes, it was fruitful and we have learned a lot from the experience of the participants.

Ans8. Yes, very much useful.
Ans9. Yes.
Ans10. Yes.
Ans11. Yes.
Ans12. Yes.
Ans13. Yes, we have learned a lot.
4. What would you do differently?
Ans1. Project implementation affairs should be consulted with the stakeholders.
Ans2. We suggest the relevant officials to solve the project problems in consultation with people.
Ans3.local people should be deployed in the project works.
Ans4.we elders, religious scholars and CDC executive members are in support and fever of the project.
Ans5.Peoples cooperation is the fundamental term in the implementation of the project.
Ans6.Such consultation meetings with influential and educated people will result in free of problem project implementation.
Ans7.Our foremost desire is the speedy implementation of the project.
Ans8.The erection of electric poles is not normative along the road of Herat – Chest Sharif because the road is going to be wide in the future and the poles will be removed again.
Ans9. The erection of electric poles is not normative in Pashtoon Zargoon district because the road is going to be wide in the future and the poles will be removed again.
Ans10. No. The erection of electric poles is not normative in districts because the road is going to be wide in the future and the poles will be removed again, people and local municipality must be consulted in future and during erection of electric poles.
Ans11. No. The erection of electric poles is not normative in districts, 150 poles are erected and possibly lots of them will be removed and locate to other places because it is not coordinated with the people and local municipality, people and local municipality must be consulted in future and during erection of electric poles
Ans12. No. The erection of electric poles is not normative in districts, here us, here us. Ans13.

The project implementation should be speedy and quality should be in priority and people will help with local DABS and government institutions.

Annex E: Minutes of Consultation Meetings during ESIA Preparation/Draft ESIA

A. Minutes of Meeting Held at Machghandak village Karokh district, of Herat province

MINUTES OF PUBLIC CONSULTATION MEETING FOR THE PROPOSED KAROKH ELECTRICITY TRANSMISSION LINE (110KV) HELD ON 16TH MAY, 2018 AT VILLAGE MASQUE, KAROKH DISTRIC, HERAT PROVENCE, AFGHANISTAN.

Participants

See the attached C. list of participants.

AGENDA

1. Opening Remarks.
2. Project Description
3. Issues/ concerns raised
4. Suggestions
5. A.O.B

Preliminary

The meeting was called to order at 10.00 am, chaired by the DABS safeguard team, The Safeguard team briefed the community about the meeting agenda and called upon the community members present to air their opinions and concerns about the project.

Min 1: Opening Remarks

The safeguard team gave a brief overview of the social and environmental concerns. They explained that in the Environmental and Social Impact Assessment process public consultation was a must, acknowledging that the public meeting was an important stage as is a requirement. They also stated that the purpose of the meeting was to create awareness of the proposed transmission line

project, to obtain views/ concerns of the stakeholders, and to clarify issues that are not clear about the project.

Min 2: Project Description

The safeguard team gave a brief description of the project to the community members in attendance on Project area, location and beneficiaries; Administration of the project; Need for the project; Project design; Components of the system and Layout of the electricity line, They added that the project will have a power substation at Karokh district center to boost the power supply in Karokh district. The community members present were made aware that the project has aim of access the district residences to grid electricity.

The safeguard team emphasized that the project is very friendly to the environment since it will promote access to more andreliable electricity which will improve the living standards of the locals as well as attract more investments among others.

Min 3: Issues/ Concerns Raised

The safeguard team invited the community members to give their views regarding the project as they wished, and the following concerns were raised:

Positive impacts

The community applauded the project construction and appreciated the public participation in the ESIA study with each of them giving go ahead of the Project. Some of the reasons for the project appraisal were as follows:-

1. Job creation for the community: the community felt that the project development would create job vacancies at all levels of the construction and implementation process, hence improving means of livelihood of thepeople.
2. Access of electricity power supply source at the district for all residences.
3. Enhanced Security due to lighting in the neighborhood at night.
4. Increased business in the locality.
5. Attract more region investments and promote industrial activity.
6. Contribution to the national economy growth.

7. Increase in land value.

	Community Concerns	Responses
1	Electricity supply to Machghandak village residents.	The social specialist explained that, the electricity is high voltage, it will be taken to a substation for standardization then be made available to all villages surrounding the district include of Machghandak village. He assured the locals that their area would be in the national electricity grid.
2	Employment of local residences not outsiders in the project implementation.	The Social specialist assured the locals of temporary employment such as unskilled labor and he added that local manpower will be deployed.
3	Right of way size and possibility of use of land after installation of towers and completion of project	The Social specialist reported that the RoW size is 15 by 15 meters thus 30 meters. He also insisted that building under the transmission line is illegal or planting trees under the same line. He explained that only short plants such as wheat, barley, maize and Vegetables can be planted on that land.

Min 4: Way Forward.

The safeguard team requested the people present to follow-up on any communications and memorandum issued so that the final Environmental Impact Assessment Study Report put in their comments for further action, and that NEPA will also request for Public comments. It was also said that the report would be available at the project area, where the residents and other stakeholders may go to review it and give their comments. The safeguard team assured the residents that recommendations for the project will be made accordingly.

Min 5: Closing

There no other business for discussion the meeting was adjourned at 12:00 am with prayer from the one of the locals.

B. Minutes of Meeting Held at Ehsan Abad/ Zaman Abad village, Karokh District, Herat Province

MINUTES OF PUBLIC CONSULTATION AND PARTICIPATION MEETING FOR PROPOSED KAROKH 110KV TRANSMISSION LINE HELD ON 14TH May 2018 AT ZAMAN ABAD VILLAGE INFRONT OF VILLAGE MOSQUE,

IN ATTENDANCE

See the attached C list of Participants.

AGENDA

1. Introduction
2. Briefing and Sensitization
3. Discussion, concerns and address
4. Way forward
5. Closing

Minute 01: Introduction.

The DABS safeguard team social officer called the meeting to order at 3:00pm and requested a volunteer to recite few verses from Holy Quran. He then made the opening remarks and allowed the DABS safeguard team to introduce themselves to the attendants and after that, welcomed everyone to the meeting.

Minute 2: Briefing and Sensitization

The audiences were made aware of the details of the project as follows;

- The line starts at Robat sorkh village and ends in Karokh district centre (Saghari Ha village).
- Probable impacts of the project were listed to the PAPS, both positive and negative.
- The project intervention among others was explained.
- The concepts of right of way of the proposed line were explained.
- The structures expected to be put up so as to come with the lines like towers were explained and the measures to be put in place to ensure the construction is safe.

Minute 03: Discussions, Concerns and Address.

The DABS/ PIU Safeguard team emphasized that the project is very friendly to the environment and the benefits of such a high voltage power line may not be felt directly but as a long term benefit where by the power will be more reliable.

They also insisted that adequate awareness on the project should be made to the local community, local authority as well as the people who will affected by the project.

The locals however raised some issues that required clarification on the following.

	Community Concerns	**Responses**
1	How will the negative Impacts of the project be handled?	There are mitigation measures to all the negative Impacts well stated in the ESIA report which will be put to place.
2	Risks of power line failure causing disaster	The transmission will be done by experts professionally to avoid such disaster
3	Transparency during the project implementation	The ESIA consulting team promised transparency all through the project

4	Jobs availability to the locals	Jobs will be availed to the locals in time of operation phase.

Minute 04: Way forward.

The village elder (Arbab Zaman khan) appreciated the participation of all members present and assured the consulting team cooperation though out the exercise.

The community members agreed to fill a questionnaire which would inform the ESIA report for equal participation of the community.

All members in attendance agreed that the project is more beneficial thus a decision was made on a public consultation that the project should go on.

Minute 05: Closing

There being no other business, the meeting was ended at 5:00 pm with a word of prayer.

C. Minutes of Meeting Held at Pashtan and Payanbulok villages

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MINUTES OF PUBLIC CONSULTATION AND PARTICIPATION MEETING FOR PROPOSED KAROKH 110KV TRANSMISSION LINE HELD ON 16TH May 2018 AT PASTAN DAM AREA, KAROKH, HERAT , AFGHANISTAN

IN ATTENDANCE

See the attached C list of Participants.

AGENDA

1. Introduction
2. Briefing and sensitization

3. Comments, concerns and address
4. Way forward
5. Closing

Minute 01: Introduction.

The safeguard team social officer called the meeting to order at 1:00pm and requested a volunteer to recite few verses from Holy Quran. He then made the opening remarks and allowed the team to introduce themselves to the attendants and after that, welcomed everyone to the meeting

Minute 2: Briefing and Sensitization

The audiences were made aware of the details of the project as follows;

- The line starts at Robat e Sorkh village and ends in Karokh district center.
- Probable impacts of the project were listed to the PAPS, both positive and negative.
- The project intervention among others was explained.
- The concepts of right of way of the proposed line were explained.
- The structures expected to be put up so as to come with the lines liketowers were explained and the measures to be put in place to ensure the construction is safe.

Minute 03: Comments, Concerns and Address.

The DABS/ PIU safeguard team emphasized that the project is very friendly to the environment and the benefits of such a high voltage power line may not be felt directly but as a long term benefit where by the power will be more reliable.

They also insisted that adequate awareness on the project should be made to the local community, local authority as well as the people who will affected by the project.

The locals however raised some issues that required clarification on the following.

	Community Concerns	Responses
1	How will the negative Impacts of the project be handled?	There are mitigation measures to all the negative Impacts well stated in the ESIA report which will be put to place.
2	Risks of power line failure causing disaster	The transmission will be done by experts professionally to avoid such disaster
3	Transparency during implementation of the project	The ESIA consulting team promised transparency all through the project
4	Jobs availability to the locals	Jobs will be availed to the locals in time of implementation phase.

Minute 04: Way forward.

The village elder appreciated the participation of all members present and assured the consulting team cooperation though out the exercise.

The community members agreed to fill a questionnaire which would inform the ESIA report for equal participation of the community.

All members in attendance agreed that the project is more beneficial thus a decision was made on a public consultation forum that the project should go on.

Minute 05: Closing.

There being no other business, the meeting was ended at 2:30 pm with a word of prayer. Minutes of Meeting Held at Sagharee Ha

2018 AT SAGHAREE Ha VILLAGE, KAROKH DISTRICT, HERAT PROVINCE, AFGHANISTAN.

IN ATTENDANCE

See the attached C list of Participants.

AGENDA

6. Introduction
7. Briefing and sensitization
8. Comments, concerns and address
9. Way forward
10. Closing

Minute 01: Introduction.

The ESIA safeguard team social officer called the meeting to order at 3:00pm and requested a volunteer to recite few verses from Holy Quran. He then made the opening remarks and allowed the safeguard team to introduce themselves to the attendants and after that, welcomed everyone to the meeting.

Minute 2: Briefing and Sensitization

The audiences were made aware of the details of the project as follows;

- The line starts at Robate Sorkh and ends in Karokh district center.
- Probable impacts of the project were listed to the PAPS, both positive and negative.
- The project intervention among others was explained.
- The structures expected to be put up so as to come with the lines like towers were explained and the measures to be put in place to ensure the construction is safe.

Minute 03: Comments, Concerns and Address.

The DABS / PIU safeguard team emphasized that the project is very friendly to the environment and the benefits of such a high voltage power line may not be felt directly but as a long term benefit where by the power will be more reliable.

He also insisted that adequate awareness on the project should be made to the local community, local authority as well as the people who will affected by the project.

The locals however raised some issues that required clarification on the following.

s/n	**Community Concerns**	**Responses**
1	How will the negative Impacts of the project be handled?	There are mitigation measures to all the negative impacts well stated in the ESIA report which will be put to place
2	Risks of power line failure causing disaster	The transmission will be done by experts professionally to avoid such disaster
3	Transparency during implementation of the project	The ESIA consulting team promised transparency all through the project
4	Jobs availability to the locals	Jobs will be availed to the locals in time of operation phase.

Minute 04: Way forward.

The team appreciated the participation of all members present and assured the consulting team cooperation though out the exercise.

The community members agreed to fill a questionnaire which would inform the ESIA report for equal participation of the community.

All members in attendance agreed that the project is more beneficial thus a decision was made on the public consultation meeting that the project should go on.

Minute 05: Adjournment.

There being no other business, the meeting was adjourned at 5:00 pm with a word of prayer.

Minute of consultation meeting on draft ESIA

Consultation on draft ESIA of Karokh TL was conducted on 26/11/2018 with GRC and other relevant stockholders in Karokh district canter, Herat province and the following table summarizes the key concerns and points:

S.N	participants	Key points discussed	Participants suggestion and commitments
1	Karokh district governmental authorities, GRC members, relevant Stakeholders and district development council members	- Explained update information about current status of projects like transmission line, Substation and distribution of electrification. - Findings of draft ESIA: The Safeguard team provided the participants with a summary of ESIA findings, which included notable social and environmental impacts and its mitigation measures - Importance of GRM, the role and responsibilities of GRC.	Participants suggested for starting construction activities of transmission line and distribution network as soon as possible. The participants warmly welcomed the ESIA findings they repeated their commitments regarding helping in smooth implementation of the project in the meanwhile they requested either a shift in the location of seven towers 500 m away from its original surveyed places or decreasing the numbers of towers, their suggestion was taken into consideration and the issue was thoroughly discussed with the team and top management and the result there will be to possibilities decreasing the number towers from seven to five are shifting. The meeting participants reassured that they are standing on their previous commitment and

			agreement regarding donating land for tower erection, while they added that in case of any damage to their crops and other properties they will ask the contractor for compensation. Deploying the manpower from the project area was another strong suggestion from the meeting participants Starting of practical implementation of project was another request from the meeting participants.

Annex F: Attendance Lists

A. Meeting at Machghandak village

LIST OF PARTICIPANTS (لیست اشتراک کننده گان در بحث های گروپی)

Sl. No شماره	Name of the Participant اسم اشتراک کننده	Relation to the Head of the Households ارتباط با ریس خانه واده	Occupation شغل/وظیفه	Signature امضا/شصت
1	غلام دستگیر	کلان قوم	دهقان	
2	حاجی محمد رفیق	کلان قوم	دهقان	
3	غلام غوث	کلان قوم	دهقان	
4	حاجی محمد نعیم	کلان قوم	قریه دار	
5	جمعه خان	پسر کلان قوم	معلم	
6	محمد امین	کلان قوم	دهقان	
7	محبوب	پسر کلان قوم	دهقان	
8	عزیز الله	کلان قوم	سرباز	
9	محمد نظام الدین	کلان قوم	دریور	
10	خلیل احمد	کلان قوم	آزاد	
11	مصباح	کلان قوم	دهقان	
12	عبد العزیز	کلان قوم	دهقان	
13	محمد قاسم	کلان قوم	دهقان	
14	نصر الله	کلان قوم	دهقان	
15	حاجی مجنون	کلان قوم	دهقان	
16	عبد الظاهر	کلان قوم	دهقان	
17	محمد موسی	کلان فامیل	دهقان	
18	حاجی حسام الدین	کلان فامیل	دهقان	
19	عزیز احمد امیری	کلان فامیل	کارمند محیط زیست	
20	عبد الرسول	پسر کلان	دهقان	
21	احمد راشد	عضو فامیل	کارمند تعمیر برشنا	
22	محمد طیب	عضو فامیل	[illegible]	

ولایت ... ولسوالی کرخ ... سال ۱۳۹۴ ... حاجی محمد عمر قریه دار قریه (مچقندک)

7.5.1.

B. Meeting with Ehsan Abad / Zaman Abad

LIST OF PARTICIPANTS (لیست اشتراک کننده گان در بحث های گروپی)

Sl. No شماره	Name of the Participant اسم اشتراک کننده	Relation to the Head of the Households ارتباط با ریس خانه واده	Occupation شغل/وظیفه	Signature امضا/شصت
1	عبدالوزیر	کلان فامیل	کارگر	
2	احمد جان	بزرگ فامیل	دهقان	
3	حبیب الله	بزرگ فامیل	کارگر	
4	محمد قاسم	بزرگ فامیل	دهقان	
5	غلام رسول	بزرگ فامیل	دهقان	
6	فیض احمد	بزرگ فامیل	دهقان	
7	رضا	عضو فامیل	کارگر	
8	عبدالحی	بزرگ فامیل	دهقان	
9	عبدالنعیم	بزرگ فامیل	کارگر	
10	عطاالله	بزرگ فامیل	دهقان	
11	محمد اکبر	بزرگ فامیل	دهقان	
12	حاجی ارباب زمان خان	کلان فامیل	ارباب قریه	
13	شیر گل	بزرگ فامیل	کارگر	
14	ضیا احمد		مدیر صحت زراعتی	
15	اسدالله	عضو فامیل	کارمند [illegible]	
16	محمد طیب	عضو فامیل	مسئول حفظ و مراقبت اجتماعی	
17	عزیز احمد امیری	--	کارمند محیط زیست	
18				
19				
20				

ولایت هرات ولسوالی کرخ سال ۱۳۹۵ ه ش

C. Pashtan and Payan bulok villages’ community consultation meeting p

LIST OF PARTICIPANTS (لیست اشتراک کننده گان در بحث های گروپی)

Sl. No شماره	Name of the Participant اسم اشتراک کننده	Relation to the Head of the Households ارتباط با ریس خانه واده	Occupation شغل/وظیفه	Signature امضا/شصت
1	اکرم	پسر کلان خانه	بومه کار	
2	عبدالقیوم	کلان خانه	بیکار	
3	دلاور	کلان خانه	دهقان	
4	ارباب عبدالحلیم	کلان خانه	آزاد	
5	احمد شاه	کلان خانه	دهقان	
6	حاجی عبدالوهاب	کلان خانه	دهقان	
7	عبدالحکیم	کلان خانه	دهقانی	
8	محمد رستم	کلان خانه	مالداری / کشاورزی	
9	منصور رمضان علی	کلان خانه	بنا	
10	جاوید	پسر کلان خانه	بنایی	
11	نقیب الله	پسر کلان خانه	خیاط	
12	حسین علی	کلان خانه	بنا	
13	عزیز احمد احمدی	کلان خانه	کارمند محیط زیست	
14	محمد طیب	عضو فامیل	مسئول حفظ و مراقبت اجتماعی	
15	محب الحکیم	کلان خانه		
16	امرالله	عضو فامیل	کارمند حکومه برنا	
17	عزیز احمد احمدی	کلان فامیل	کارمند محیط زیست	
18				
19				
20				

Participants list

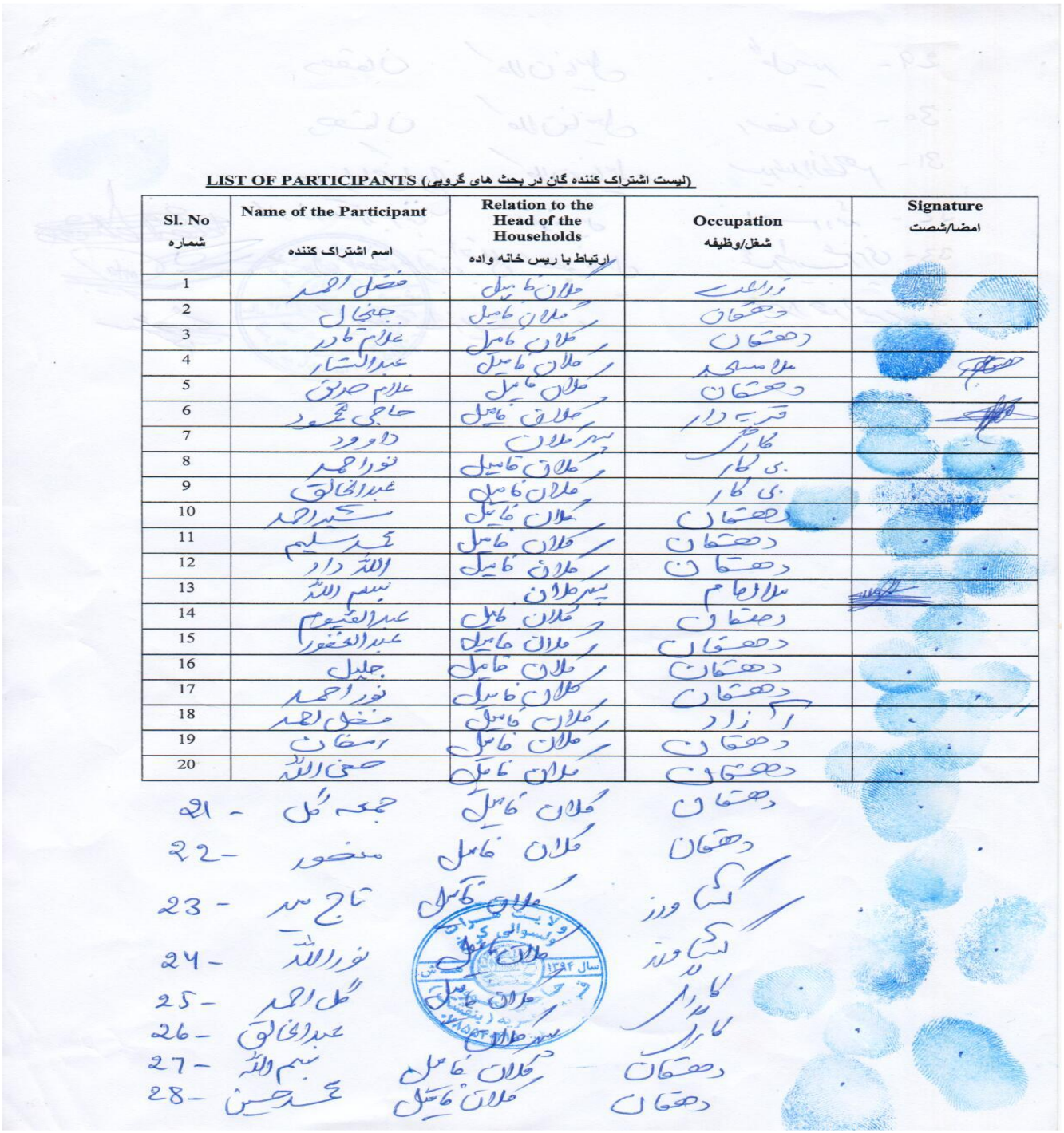
D. Saghare Ha village consultation meeting participants list

LIST OF PARTICIPANTS (لیست اشتراک کننده گان در بحث های گروپی)

Sl. No شماره	Name of the Participant اسم اشتراک کننده	Relation to the Head of the Households ارتباط با ریس خانه واده	Occupation شغل/وظیفه
1	غلام محمد	کلان فامیل	دهقان
2	حاجی اسحق	کلان فامیل	دهقان
3	سید آغا	کلان فامیل	دهقان
4	عبداللطیف عبداللطیف	کلان فامیل	کارگر
5	جلال	کلان فامیل	دهقان
6	ثناءالله	کلان فامیل	کارگر
7	شاه محمد	کلان فامیل	دهقان
8	نعمت الله	کلان فامیل	دهقان
9	عبدالظاهر	کلان فامیل	کارگر
10	عصمت الله	کلان فامیل	دهقان
11	شاه نواز	کلان فامیل	دهقان
12	امیرجان	کلان فامیل	دهقان
13	محمد ابراهیم	کلان فامیل	دهقان
14	محب [illegible]	کلان فامیل	انجنیر ساحه
15	سید محمد الظاهر	کلان فامیل	مدیر عمومی اراضی [illegible]
16	اسدالله	عضو فامیل	کارمند [illegible] برشنا
17	محمد طیب	عضو فامیل	مسئول [illegible] اجتماعی
18	عزیز احمد امیری	،،	کارمند محیط زیست
19			
20			

ولایت هرات
ولسوالی کرخ
سال ۱۳۹۴ هـ ش
غلام محمد «محمدی» قریه دار قریه (ساغری های علیا و سفلی)
موبایل: ۰۷۸۷۸۹۳۲۰۶

Benafshak village community consultation meeting participants list



LIST OF PARTICIPANTS (لیست اشتراک کننده گان در بحث های گروپی)

Sl. No شماره	Name of the Participant اسم اشتراک کننده	Relation to the Head of the Households ارتباط با ریس خانه واده	Occupation شغل/وظیفه	Signature امضا/شصت
1	فضل احمد	فلان فامیل	زراعت	
2	جمال	فلان فامیل	دهقان	
3	غلام قادر	فلان فامیل	دهقان	
4	عبدالستار	فلان فامیل	ملا مسجد	
5	غلام صدیق	فلان فامیل	دهقان	
6	حاجی محمود	فلان فامیل	قریه دار	
7	داود	پسر فلان	کارگر	
8	نور احمد	فلان فامیل	بی کار	
9	عبدالخالق	فلان فامیل	بی کار	
10	سکندر احمد	فلان فامیل	دهقان	
11	محمد سلیم	فلان فامیل	دهقان	
12	الله داد	فلان فامیل	دهقان	
13	نسیم الله	پسر فلان	ملا امام	
14	عبدالقیوم	فلان فامیل	دهقان	
15	عبدالغفور	فلان فامیل	دهقان	
16	جلیل	فلان فامیل	دهقان	
17	نور احمد	فلان فامیل	دهقان	
18	فضل احمد	فلان فامیل	آزاد	
19	رمضان	فلان فامیل	دهقان	
20	صفی الله	فلان فامیل	دهقان	
21 -	جمعه گل	فلان فامیل	دهقان	
22-	منصور	فلان فامیل	دهقان	
23 -	تاج میر	فلان فامیل	کشاورز	
24-	نورالله	فلان فامیل	کشاورز	
25-	گل احمد	فلان فامیل	کارگر	
26-	عبدالخالق	پسر فلان	کارگر	
27-	نسیم الله	فلان فامیل	دهقان	
28-	محمد حسین	فلان فامیل	دهقان	

Islamic Republic of Afghanistan

Da Afghanistan Breshna Sherkat (DABS)

Herat Electrification Project (HEP)

Consultation meeting on feedbacks and suggestions of project beneficiaries

Participant list

Date: 26/12/2018 Location: Karokh district

S/No	Name/نام	Position /موقف	Office/Location/ اداره/ موقعیت	Contact / شماره تماس	Signature / امضا
1	فضل الباری	رییس	مرکز ولسوالی	۰۷۹۹۰۳۳۳۶۶۷	
2	احمد ضیا	عضو شورا	ولسوالی	۰۷۹۹۷۹۹۵۶۹	
3	[illegible]	شاروال کرخ	دفتر ولسوالی کرخ	۰۷۹۰۴۴۰۵۵۰	
4	[illegible]	عضو [illegible]	ولسوالی کرخ	۰۷۹۴۸۴۸۴۱	
5	سید قاسم	عضو کمیته	ولسوالی کرخ	۰۷۹۹۲۷۵۹۹۵	
6	غلام فاروق	عضو کمیته	کرخ	۰۷۹۷۹۱۳۷۹۵	
7	[illegible]	عضو کمیته	کرخ	۰۷۹۳۱۸۰۱۰۸	
8	[illegible]	عضو	کروخ	۰۷۹۷۶۷۴۰۷۸	
9					
10					
11					
12					
13					
14					
15					

Scanned with CamScanner

8.

Annex G: Selected Photographs






8.1.1. Consultation meetings with Pashtan villagers

Consultation meeting with Ehsan Abad / Zaman Khan Villagers, governor of karokh district, agriculture department head of Karokh district, Karokh district Arazi representative and so other stakeholders

Community Consultation meeting with Machghandak villagers

Public consultation and participation meeting held at Benafshak village

Public consultation meeting and Focus Group Discussion with Female CDC.

Consultation meeting on Draft ESIA with GRC and stakeholders in Karokh district.

consultation meeting on Draft ESIA with GRC and stakeholders in Karokh district.

Annex H: Chance Find Procedures

1. Cultural property include monuments, structures, works of art, or sites of significant points of view, and are defined as sites and structures having archaeological, historical, architectural, or religious significance, and natural sites with cultural values. This includes cemeteries, graveyards and graves.

2. Chance find procedures will be used as follows:

(a) Stop the construction activities in the area of the chance find;

(b) Delineate the discovered site or area;

(c) Secure the site to prevent any damage or loss of removable objects. In cases of removable antiquities or sensitive remains, a night guard shall be present until the responsible local authorities and the Archaeology Institute take over;

(d) Notify the supervisory Engineer who in turn will notify the responsible local authorities and the Archaeology Institute immediately (within 24 hours);

(e) Responsible local authorities and the Archaeology Institute would be in charge of protecting and preserving the site before deciding on subsequent appropriate procedures. This

would require a preliminary evaluation of the findings to be performed by the archaeologists from the Archaeology Institute (within 72 hours). The significance and importance of the findings should be assessed according to the various criteria relevant to cultural heritage; those include the aesthetic, historic, scientific or research, social and economic values;

(f) Decisions on how to handle the finding shall be taken by the responsible authorities from the Archaeology Institute. This could include changes in the layout (such as when finding an irremovable remain of cultural or archaeological importance) conservation, preservation, restoration and salvage;

(g) Implementation authority for the decision concerning the management of the finding shall be communicated in writing by the Archaeology Institute; and

(h) Construction work will resume only after permission is given from the responsible local authorities and the Archaeology Institute concerning safeguard of the heritage.

3. These procedures must be referred to as standard provisions in construction contracts, when applicable. During project supervision, the Site Engineer shall monitor the above regulations relating to the treatment of any chance find encountered are observed.

4. Relevant findings will be recorded in World Bank Project Supervision Reports, and

Implementation Completion Reports (ICRs) will assess the overall effectiveness of the project's cultural property mitigation, management, and activities, as appropriate.

Appendix I: Sample household questionnaires for the proposed Karokh TL

Environmental and Social Impact Assessment for propose 110 KV transmission line of Karokh

This questionnaire will help us obtain information that will be used to identify potential socioeconomic impacts of the proposed TL project and hence proposed adequate mitigation measures to be adhered during project implementation

(Socio-Economic Baseline Survey)

Date: 13 May 2018

1. IDENTIFICATION

Name of Respondent: Saiid Gul
Father's Name: Abdul Ghani
Address: Zaman Abad village of karokh. Herat

2. CATEGORY OF RESPONDENT:

Status of Respondent *(Tick the relevant)*:

Resident Owner [✓], Resident Tenant [ ]
Business Owner [ ], Business Tenant [ ]
Farm HH [ ], Business Tenant [ ]

3. DEMOGRAPHIC PROFILE

Total Family member (No.) [8] Male (No.) [3] Female (No.) [5]
Children below 10 years (No.) [4] Male (No.) [2] Female (No.) [2]

Sr. No.	Sex (M / F)	Age (Yrs.)	Education	Occupation		Monthly Income (AFN)		Other* Annual Income (AFN)
				Main	Secondary	Main Occupation	Secondary Occupation	
1.	M	40	illiterate	Farm	livestock	Farm livestock	Wages	NO
2.	M	10	Class 6th	-	-	-	-	-
3.	M	5	First class					
4.	F	70	illiterate	House Wife		-	-	-
5.	F	30	"	House wife		-	-	-
6.	F	8	third class	-	-	-	-	-
7.	F	3		-	-	-	-	-
8.	F	1		-	-	-	-	-
9.								
10.								

***Other:** Rent from property, remittances, pension and other incomes during the year. NO
He has incomes from livestock. Wages and agriculture.

6. AVERAGE MONTHLY EXPENDITURE ON FOOD AND NON-FOOD ITEMS

Food and Non-Food Items

Food Items	Kgs	Value (AFN)	Non-Food Items	No.	Value (AFN)	Utilities Bills			Amount (AFN)
Meat (*beef/chicken*)	1	210	Washing soap	5	100	Electricity		-	-
Vegetables	-	-	Bathing soap	-	-	Telephone		-	-
Fruit	-		Kerosene oil	-	-	Liquid gas			180
Milk	only in lactation period from his livestock		Auto Fuel		Fuel collected by his self	Water supply		-	-
Ghee/Butter	10	700	Other (*specify*)			Other (*specify*)			
Sugar	2	100				clothes			500
Flour	50	1100							
Rice	50	1500							
Other (*specify*)	Medicine	300							

Average monthly consumption of the household: 4700AFN

7. HOUSING CONDITIONS

Type of Room	No. of Room	Mud made (*tick*)	Concrete (*tick*)	Mud + Concrete (*tick*)	Other	Present Value (AFN)
Living rooms	2	☑	☐	☐	☐	
Animal shed/room	1	☑	☐	☐	☐	
Other shed etc.		☐	☐	☐	☐	
Bathroom	1	☑	☐	☐	☐	

LATRINE

- Open	☐	☐	☐	☐
- Flush	☐	☐	☐	☐
- Other	☐	☐	☐	☐

local latrine ✓

4. AGRICULTURE

4.1 Land Utilization

Area owned (Jeribs): irrigable (1000 m^2) Rain fed ( )
Area rented/shared out (Jeribs): 2 Jerib
Cultivated area (Jeribs): 1000 m^2 Irrigable ( ) Rain fed ( )
Area rented-in/shared-in (Jeribs) 2 jerib
Average Land Rent per Jeribs 2/3
- Winter Crops: Wheat Barley
- Summer Crops: ~~Vegetables~~. chickpea, pea, been, watermelon, Animal fodder.

4.2 Cropping Pattern, Yield and Cost

S/N	Major Crops	Area sown (Jeribs)	Av. Yield/ (Jerib)	Price/ KGs (AFN)	Total cost incurred (AFN)
1	Wheat	2	600 KG	20	12.000
2	Barley	1000 m^2	200 KG	25	5000
3					
4					
5					
6					
7					

Average monthly income of the household: 5000 AFS (Agriculture, Livestock, Wages)

5. Household Durable Goods

Item	No.	Value (AFN)	Item	No.	Value (AFN)
X Refrigerator/ Deep freezer			X Car		
X Television/VCR			X Van/Pickup		
X Washing machine			Telephone/Mobile		
X Geyser			X Air Conditioner		
X Electric fan			X Computer		
X Electric iron			Other		
√ Sewing machine	1	2000			
X Motorcycle/ scooter					

8. ACCESS TO SOCIAL AMENITIES

Social Amenities	Tick	Distance (Km)
Electricity	☒	[ ]
Liquid Gas	☒	[ ]
Water Supply	☒	[ ]
Telephone	☒	[ ]
Sewerage/Drainage	☒	[ ]
Kerosene oil	☒	[ ]
Fuel wood	☐	[ ]
Other (*specify*)	☐	[ ]

9. ASSETS DATA

	Value (AFN)
House: ✓	100.000
Business: x	
Form:	
Infrastructure: x	
Trees: x	
other (*specify*):	

10. LIVESTOCK INVENTORY

Livestock	No.	Present Value (AFN)
x Cows		
x Horse		
x Donkey		
x Camel		
√ Sheep/Goat	10	40000
Other		

11. WOMEN PARTICIPATION IN DIFFERENT ACTIVITIES

11.1 Extent of women involvement in different household activities:

Activities	Extent of Participation (%)/
Household activities	100
Child caring	100
Farm/crop activities	50
Livestock rearing	50
Sale & Purchase of properties	0
Social obligations *(marriage, birthday & other functions)*	50
Local representation *(councilor/ political gathering)*	30
Other (*specify*):	0

12. COMMUNITY's PERCEPTIONS OF ACTIONS ASSOCIATED WITH THE PROJECT

Extent of Impact

Possible impacts/effects of the Project	% Increase	% Decrease
Employment opportunities	10	
Marketing facilities	30	
Living standard	50	
Unemployment		
Income generating activities	30	
Other specify___		

13. GENERAL REMARKS OF THE RESPONDENTS
(Social Issues/Concerns and Mitigation Measures)

Since the residents of this area are generaly dependant on agriculture and livestock. So in the availibility of electricity we can increase our products. improve process of products. promoting of market facilities and etc. therefore we support the project.

14. GENERAL OBSERVATIONS OF INTERVIEWERS

The residents of the project area are eager and willing the project because they will for the first time experience electricity thus. they are supportive and committed. from other hand the project has less adverse impacts on environment and social aspects the route of TL slected with due attentionand consultation with the beneficiaries as well as relevant stakeholders

Name & Signature of Interviewer: M. Tawoos Wafa
Social Specialist