# Initial Environmental Examination

Project number: 47282-009
October 2020

# Afghanistan: Energy Sector Development Investment Program (Tranche 7)

## Pul-e-Hashimi to Shindand 220 kV transmission line, Shindand and Farah Substations and associated distribution networks

Prepared by the Da Afghanistan Breshna Sherkat for the Asian Development Bank.

The Initial Environmental Evaluation (IEE) has been prepared by Earth Active based on information, data and reports produced by third parties and provided to us in September and October 2020 by the ADB-financed TA. The content of the IEE is contingent upon the accuracy, correctness, completeness and fitness for purpose of that information and data. Earth Active has not undertaken a complete verification of the data and information provided and makes no assurances, representations as to, or assumes any responsibility for, the accuracy, correctness, completeness or fitness for purpose of what has been provided.

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Note: Exchange rate (October 2020): 1 USD = 76.7346 Afghan Afghanis

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# A. Executive summary

### Project Context

Afghanistan is a net energy importer and, whilst national renewable energy and fossil fuel resources exist, they need to be developed. By 2032, the power demand in Afghanistan is forecast to reach 3,500 MW and electric consumption 18,400 GWh. Meeting this demand requires development of all viable import and local generation. The Asian Development Bank (ADB) therefore approved a multitranche financing facility (MFF) for the Afghanistan Energy Sector Development Investment Program (ESDIP) in December 2015. The Facility is financed from ADB's Special Funds resources (Asian Development Fund) and ADB-administered co-financing (through Afghanistan Infrastructure Trust Fund).

The MFF initially included six tranches to address the following sector challenges:

- lack of generation capacity,
- constraints on transmission and distribution systems,
- weak financial management and sustainability of sector entities because of suboptimal tariff frameworks,
- inadequate sector regulations.

The Government of Afghanistan has subsequently requested additional finance from ADB for Tranche 7 to extend the transmission and distribution infrastructure in Herat and Farah provinces of western Afghanistan.

**Provincial map of Afghanistan showing the location of the Project**


### Proposed Project

The Project will provide a new supply to over 25,000 end users in Farah and Herat provinces who currently rely on power supplied by diesel generators. In Farah, for example, electricity demand is currently provided by diesel sources with operating capacity of 2 MW but the power system is almost crippled as the supply is barely sufficient to meet the demand and efficiency is very low.

To help address this need, the Tranche 7 package comprises the following key elements:

- **Transmission Lines:** Construction and operation of two new 220kV Transmission Lines which will broadly follow the Herat-Kandahar Highway south from Pul-e-Hashimi. These will run for ~135km from the Pul-e-Hashimi Substation to the Shindand Substation (both in Herat province) and for ~176 km from the Shindand Substation to the Farah Substation (in Farah province).

- **Substations:** New 220kV system HV substations at Shindand (2x16 MVA capacity) and Farah (2x40 MVA capacity) and an upgrade to the Pul-e-Hashimi substation (two 220kV line bays) which will be constructed under WB financing.

- **Distribution:** Onward distribution networks into Shindand and Farah from the substations.

A map of the proposed project route is shown below.

**Project transmission line alignment and substation locations**


## Project Executing Agency

The Executing Agency (EA) of the Project is Da Afghanistan Breshna Sherkat (DABS) the Afghan national power utility company, which operates and manages electric power generation, import, transmission, and distribution throughout Afghanistan on a commercial basis.

## Project Categorisation

ADB uses a classification system to reflect the significance of a project's potential environmental impacts. A project's category is determined by the category of its most environmentally sensitive component, including direct, indirect, cumulative, and induced impacts in the project's area of influence. Each proposed project is scrutinized as to its type, location, scale, and sensitivity and the magnitude of its potential environmental impacts. Projects are assigned to one of four categories (A, B, C, or FI). The Project is classified as category "B" and therefore an IEE is required.

This IEE has been developed to meet the requirements of both the National Environmental Protection Agency of Afghanistan and the ADB 2009 Safeguard Policy Statement and 2012 Environment Safeguards: A Good Practice Sourcebook (Draft Working Document). It identifies the current baseline characteristics in the study area, assesses the potential environmental and social impacts of the proposed Project and outlines key mitigation measures required to avoid or reduce environmental and social impacts in line with the mitigation hierarchy (i.e. the sequential application of seeking to avoid, reduce, mitigate or compensate impacts). The study has sought to identify and address potential impacts to or from the project associated with the:

- physical environment including land, water and air
- ecological environment including flora, fauna and natural habitat
- socio-economic environment and Project Affected People (PAPs)

The IEE provides a detailed description of the direct and indirect environmental effects associated with the proposed Project during the key stages of construction and operation. More specifically, it:

- describes the existing socio-environmental conditions within the Project area
- describes the project design, construction activities and operational parameters
- describes the extent, duration and severity of potential impacts
- analyses all significant impacts
- formulates the mitigation actions and monitoring program and presents it all in the form of a Framework Environmental Management Plan (EMP)

## Description of the environment

The Project is located in a generally arid and relatively barren area with farmed areas near towns. Herat province is the second most populated province in Afghanistan with around 75% of its population living in rural areas. Farah province is a spacious and sparsely populated, and is a mostly rural tribal society. The economies of both provinces are overwhelmingly agricultural with a small amount of manufacturing and light industry. The districts along which the alignment will pass are connected by roads, with the Herat – Kandahar Highway and bypass being the main roads in the area.

No globally or nationally endangered flora were recorded during the study and faunal diversity is also low. Two IUCN vulnerable mammals may be present in the wider area (*Gazella subgutturosa*, the Goitered gazelle and *Vormela peregusna* the Marbled polecat) along with six endangered bird species and a further eight vulnerable species. Of these most of the bird species have been recorded passing through the area on migration (over a broad front). Six species may be resident in the Project area including the Saker falcon (*Falco cherrug*: EN), Egyptian vulture (*Neophron percnopterus*: EN), Asian houbara (*Chlamydotis macqueenii*: VU), Great bustard (*Otis tarda* VU); European turtle-dove (*Streptopelia turtur:* VU) and Yellow-Eyed Pigeon (*Columba eversmanni VU*). No Critical Habitat is present in the Project area, although the Hari Rud Valley, located at its closest

some 8km from the project is a designated IBA because of historical breeding populations of Yellow-Eyed Pigeon and Lesser Kestrel.

The existing air quality, noise and vibration and water resources baselines are largely uncharacterised; additional baseline air quality, noise and water quality monitoring datasets will be collected to supplement the limited data collected as part of this IEE study.

It is noted that because of the security situation in the area and the ongoing Covid-19 pandemic, it has not been possible to complete the baseline studies, which will need to be updated prior to construction.

**Anticipated environmental impacts and mitigation measures**

A number of impacts have been identified, principally associated with the construction and operation of the transmission routes. The magnitude of an impact is characterised in the absence of any mitigation; mitigation measures are then designed to reduce that impact to an acceptable level. Two impacts have been identified that are significant in the absence of mitigation as follows:

- Land acquisition impacts linked to the construction of the transmission lines
- Ecological impacts, specifically associated with risks of collision or electrocution of soaring birds, raptors and waterbirds from the operational transmission/distribution lines

Other impacts including construction phase impacts relating to e.g. air quality, water resources and noise and vibration are not significant and can be readily addressed through the implementation of good international industry practice (GIIP) mitigation measures.

Mitigation measures have been developed to ameliorate any impacts. The mitigation measures have been incorporated into a Framework Project Environmental and Social Management Plan (EMP), which covers both construction and operation.

**Analysis of alternatives**

'Do nothing' is not an option as the current power supplies, which rely on diesel generators, are unreliable and over capacity. The assessment of alternatives has therefore focused on the infrastructure elements and different options that could be employed and the environmental and social impacts associated with those options. The principal guiding environmental and social issue has been the desire to avoid land acquisition and to that end routing and siting decisions have focused on alternatives that enable government land to be used as far as possible.

**Information disclosure, consultation and participation**

Consultation meetings with the local people of the Project Area were held from January 13$^{th}$ – 26$^{th}$ 2019 and March 13$^{th}$ – 19$^{th}$ 2019 during the socio-economic and initial environmental baseline surveys carried out along the proposed project route alignment for the purpose of drafting the IEE. The main issues and concerns raised are summarized below:

- People are, in general, happy about the Project because it will improve the electricity supply in the area.
- There were several requests for the Project to revisit the design and change the Transmission Line route / alignment to prevent / reduce loss or damage to their property (including houses, cultivated land), to avoid loss of land, and to avoid crossing (or passing nearby) residential,

commercial and cultivated areas (for example for temporary access roads); these included a few requests to avoid interference with particular villages or areas.
- There were a few requests / stated expectations that the Project could support a few important and urgent needs of the local populations potentially affected by the Project, such as access to safe drinking water and the lack of healthcare facilities.
- Need to complete the land acquisition process before the start of construction.
- Job opportunities for local residents.

The Project will prepare and implement a Stakeholder Engagement Plan to guide the continued engagement with (and disclosure of project-related information to) all relevant stakeholders.

**Environmental Management Plan**

The Framework Environmental Management Plan (EMP), developed as part of this IEE, includes requirements for the contractor to develop and implement subject specific EMPs addressing issues such as Construction Waste, Labour and Working Conditions, Occupational Health and Safety, Air Quality, Noise and Vibration, Hazardous Materials, and Biodiversity.

Implementation of the majority of the mitigation measures will be the responsibility of the contractor during Project construction. This will be monitored and audited by DABS with the support of the independent support consultants who will undertake regular audits of the Project to assess environmental, social and health and safety performance during construction in accordance with the Bank's Guidelines and Performance Standards. The Bank will also monitor the Project through quarterly reporting during construction phase, annual E&S reports and carry out site visits, if and when required.

It is critical to ensure the implementation on the ground of an ADB-compliant Land Acquisition and Resettlement Plan (LARP), accompanied by a thorough monitoring and auditing of its implementation, in order to address the land acquisition impacts linked to the construction of the Transmission Lines.

In addition specific mitigation is to be included in the project design to minimize risks of collision or electrocution of birds (including raptors), in line with guidance as set out in good practice guides such as the *Migratory Soaring Bird Project Transmission Line Guidance*. The compliance with and implementation of the framework Biodiversity Action Plan is also critical.

**Conclusions and recommendations**

This IEE has been undertaken in accordance with the requirements of national and ADB guidance and standards. It has described the current physical, ecological and socio-economic environments in the area, considered and identified potential impacts that could result from the construction and operation of the Project, and specified suitable mitigation measures to reduce any impacts to an acceptable level.

The security situation in the area and the ongoing Covid-19 pandemic mean that it has not been possible to complete baseline studies, which will need to be updated prior to construction.

Two impacts that are considered to be significant in the absence of mitigation have been identified and Project-specific mitigation measures developed to reduce these specific impacts accordingly, namely the development and implementation of a framework Biodiversity Action Plan and Land Acquisition and Resettlement Plan.

Other impacts are not considered to be significant and can be mitigated through the plans developed as part of the framework Environmental Management Plan in accordance with good international industry practice.

Based on the findings of this IEE, the classification of the Project as Category B is confirmed, and an EIA is not required to comply with the ADB Safeguard Policy Statement (2009).

# B. Policy, Legal and Administrative Framework

## B.1 National Institutional Framework

This section identifies and summarises the overall prevailing policy and legislative framework relevant to the Project. National organisations considered of particular relevance to the Project are highlighted in the Table 1 below.

**Table 1: National organisations relevant to the Project**

| Organisation | Details |
|---|---|
| National Environmental Protection Agency (NEPA) | NEPA was established in 2005 and is Afghanistan's environmental policy-making and regulatory institution, whose role is to regulate, coordinate, monitor and enforce environmental laws. NEPA's goal is "to protect the environmental integrity of Afghanistan and support sustainable development of its natural resources through the provision of effective environmental policies, regulatory frameworks and management services that are also in line with the Afghanistan Millennium Development Goals (MDGs)". Further, NEPA is an autonomous body, responsible for implementation of Environmental Act, monitoring, conservation and rehabilitation of biodiversity. Hence, all national level IEE/EIA is reviewed and assessed by NEPA through an EIA/ESIA Board of Experts, and subsequently grant or refuse environmental clearance for different projects. |
| Ministry of Energy and Water (MoEW) | The MoEW is responsible for preparing and managing national policies of the energy sector with the exception of those management or implementation policies that are assigned to the yet-to-be established Afghanistan Energy Regulatory Authority (AERA) by the Electricity Law. The guiding and development direction of the planned energy sector of Afghanistan is subject to the policies under this law. The Ministry had the task of coordinating an effort to reintroduce power to areas of Afghanistan that had been cut off. The Ministry regulates electricity, identifies water resources and enterprises for generating power. It also sets energy policy and taxes on energy use; manages the planning and development of water systems for irrigating land. Further, develops water policy and administers water rights. |
| Other Central Government institutions | These include the following:<br>• Ministry of Mines and Industry,<br>• Ministry of Rural Rehabilitation and Development,<br>• Ministry of Agriculture, Irrigation and Livestock,<br>• Ministry of Information and Culture,<br>• Ministry of Frontiers and Tribal Affairs,<br>• Afghanistan National Disaster Management Authority,<br>• Central Statistics Office,<br>• Department of Meteorology. |
| Civil Society Organizations (CSO) | Save the Environment Afghanistan (SEA) is Afghanistan's only major grassroots and Afghan-managed conservation organization. SEA (then SAVE) was active in environmental issues during the civil war, when there was no active government involvement in environmental issues. SEA's mission is protection of the environment, sustainable resource utilization, conservation of biodiversity and integrated development of natural resources. SEA is member of IUCN, IUFRO (The Global Network for Forest Science Cooperation) and APAFRI (Asia Pacific Association of Forestry Research Institutions) and works closely with the International Crane Foundation, the World Wide Fund for Nature (WWF), the International Centre for Integrated Mountain Development (ICIMOD), the International Snow Leopard Trust and other environmental organizations.[1] |
| Da Afghanistan Breshna Sherkat (DABS) | The Executing Agency (EA) of the Project is the Afghan national power utility company (DABS), which is a limited liability company with all its equity shares owned by the Government of Afghanistan and was incorporated in 2008 (15 Saur 1387) to replace Da Afghanistan Breshna Moassassa (DABM). DABS operates and manages electric power generation, import, transmission, and distribution throughout Afghanistan on a commercial basis and has witnessed a tremendous growth in its number of customers nation-wide that has pushed it to increase imports in order to be able to meet the national electricity demand. Enhancement of capacity within DABS has enabled it to attract the trust of donors to assist |

[1] Afghanistan's Fifth National Report to the United Nation's Convention on Biological Diversity (2014) submitted by National Environmental Protection Agency (NEPA) on March 31, 2014 available at https://www.cbd.int/doc/world/af/af-nr-05-en.pdf

| Organisation | Details |
|---|---|
| | energy infrastructures. |

## B.2 The Environmental Act

The Government's regulation on environmental impact assessment is based on the Environmental Act of Islamic Republic of Afghanistan (Gazette No. 912) dated 23 Jadi, 1384 (25 January, 2007). This Environmental Law has formed a regulatory framework for the management and sustainable use of Afghanistan's natural resources and provided the base for the conservation and rehabilitation of the environment towards realizing specified economic, social, and ecological objectives. This law is based on international standards, which recognize the current state of Afghanistan's environment while setting a framework for the progressive development of governance, leading ultimately to effective environmental management. Furthermore, there are national environmental impact assessment policy, national environmental strategy, procedures for pollution prevention and work with wild animals in place, which are developed by NEPA. The environmental law defines the process of the development of a preliminary assessment, an environmental impact statement and mitigation plan to be conducted for certain projects and must be submitted to NEPA for approval.

The National Environmental Protection Agency (NEPA), as an independent institutional entity, is responsible for coordinating and monitoring conservation and rehabilitation of the environment, and for implementing this act. Article 16 and 17 of Chapter 3 of the Environmental Act describes the process of preparing a preliminary assessment, an environmental impact statement and a comprehensive mitigation plan to be conducted by the proponent of each project. Article 21 mentions public consultation is required for all the projects. Article 18 describes the approval procedure of environmental impact assessment. The NEPA will appoint an EIA Board of Experts to review, assess and consider applications and documents submitted by the proponent. Acting on the advice of the EIA Board of Experts, NEPA shall either grant or refuse to a grant permit in respect of the project. A permit granted would lapse in the event that the proponent fails to implement the project within three years of the date of which the permit was granted. Article 19 describes the appeal procedure. Any person may, within thirty days of the granting or refusal of a permit, appeal the decision to the Director-General of the NEPA. The Director-General shall review the appeal application and thereafter make an appropriate decision. Should the appellant wish to appeal the Director-General's final decision, the matter shall be referred to the relevant court.

## B.3 Other National Regulations and Requirements

Afghanistan's national environmental strategies are contained within the following key planning documents:

- The Millennium Development Goals: Vision 2020,
- The Afghanistan Compact,
- The Afghanistan National Development Strategy (ANDS 2008-2013),
- The National Environment Strategy

Other Government environmental legislative documents relevant to ESDIP Project are as follows:

- Water Law 2009;
- Law on Managing Land Affairs 2008;
- Nature Protection Law 1986/2000;
- Agricultural Quarantine Services Law 2000;
- Hunting and Wildlife Protection Law 2000;
- Draft Rangeland Management Law 2009;

- Draft Forest Law 2009;
- Agriculture Cooperative Development Law 2000;
- Charter for Development of Fertilizer and Agro-Chemicals 2000;
- Administrative Guidelines for Preparation of Environmental Impact Assessments, March 2007, Version Draft-2, as part of the Afghan Environmental Act (2005);
- Law for Appropriation of Property for the Public Welfare in Afghanistan.

Table 2 provides a summary of relevant NEPA's Environmental Regulations, Guidelines and Policies for the project,

**Table 2: NEPA's National Regulations, Guidelines and Policies**

| Regulation / Guideline / Policy | Key areas |
|---|---|
| Interim Environmental Impact Assessment Regulations (Draft 2.3) | These regulations govern the process of environmental impact assessment in Afghanistan on an interim basis pending the establishment of the EIA Board of Expert in terms of Article 20 of the Environmental Law and issuing of final regulations. These regulations provide the detailed process of EIA and list the projects into category A and B based on potential impacts. |
| Administrative Guidelines for the Preparation of Environmental Impact Assessments (June 2008) | The Director-General of NEPA issues this document in terms of Executive Order No. 1/87 dated 3 June 2008. These guidelines are in draft form and have been prepared by NEPA in coordination with UNEP. The purpose of guidelines is to provide guidance to proponents while undertaking a development project that may have a potential impact on the environment. The guidelines also provide guidance on how public should be consulted and define the roles and responsibilities of various stakeholders' in the process. |
| Environmental Impact Assessment Policy – "An Integrated Approach to Environmental Impact Assessment in Afghanistan" (November 2007) | NEPA with the assistance from UNEP has developed the EIA Policy of Afghanistan. The policy stipulates energy sector guidelines to the project proponents to integrate EIA in the process of development and the procedures to address environmental consequences and involve necessary institutions in the process of project implementation. |
| Environmental Impact Assessment Regulations (March, 2008) | These Regulations are issued in accordance with Article 22 of the Environmental Law in order to govern the process for environmental impact assessment. |
| National Strategy of Environment (December, 2007) | Afghanistan confirms the new ear of environmental regulation, so the strategy is that most of the development capacity of NEPA and its capabilities due to law enforcement activities & coordination should be increased. The policy focuses on existing scenarios to integrate the environment through environmental regulations including the National Development Strategy and Afghanistan Development Goals. |
| Multilateral Environmental Agreements: United Nations Environment Programme Post-Conflict and Disaster Management Branch A Handbook for Afghan Officials (March, 2008) | This handbook has been produced in both Dari and English and is an output of UNEP's Programme for Institutional and Capacity Building for Environmental Management in Afghanistan, which was initially implemented in 2003 and is funded by the European Commission, the Government of Finland and the Global Environment Facility. |

## B.4 International Agreements

Afghanistan has ratified a number of international agreements and conventions relating to the protection of the environment and biodiversity. Specific conventions relevant to the Project include those listed in Table 3 below.

**Table 3: Relevant international agreements and conventions**

| Convention | Details |
|---|---|
| World Heritage Convention (WHC) | An international agreement that was adopted by the General Conference of the United Nations Educational, Scientific and Cultural Organization (UNESCO) in 1972. It is based on the premise that certain places on earth are of outstanding universal value and should therefore form part of the common heritage of mankind. The Convention seeks to identify and safeguard the world's most outstanding natural and cultural heritage. Afghanistan became a Party to the Convention in March 1979. |
| Convention to Combat Desertification (UNCCD, Paris, 1994) | The objective of this is to combat desertification and mitigate the effects of drought in countries experiencing serious drought and/ or desertification. Afghanistan signed the UNCCD in 1995 and the Convention entered into force in December 1996. |
| United Nations Framework Convention on Climate Change (UNFCCC) | This sets an overall framework for intergovernmental efforts to tackle the challenge posed by climate change. Afghanistan signed the UNFCCC in June 1992. The Transitional Authority ratified the Convention in September 2002 and the Convention entered into force in December 2002. The Kyoto Protocol is an extension to the Convention adopted in 1997 that outlines legally binding commitments to emission cuts. Afghanistan has yet to accede to the Kyoto Protocol. |
| Convention on International Trade in Endangered Species (CITES) | This is an international agreement between governments, which came into force in 1975. Its aim is to ensure that international trade in specimens of wild animals and plants does not threaten their survival. Afghanistan acceded to CITES on 30 October 1986 but has not been actively implementing the Convention. |
| Convention on Biological diversity (CBD) in | Afghanistan signed this in 1992 and ratified it in 2002. Afghanistan submitted the Fourth National Report to the CBD Secretariat in 2009. |

## B.5 ADB Safeguard Requirements

The ADB requirements for the environmental assessment of projects are described in the 2009 Safeguard Policy Statement (SPS), which states that ADB requires an environmental assessment of all project loans, program loans, sector loans, sector development program loans, financial intermediation loans and private sector investment operations. Environmental assessment is a process and includes environmental analyses and environmental management planning that take place throughout the project cycle.

Furthermore, ADB's safeguard policies are central to achieving sustained development impact and poverty reduction. The objective of these policies is to avoid, minimize or mitigate adverse environmental impacts, social costs to third parties or the marginalization of vulnerable groups that may result from project development. Safeguard policies prescribe "do no harm" requirements that must be met for all ADB projects.

As well as the 2009 SPS, the following policies are also relevant to the Project:

- Access to Information Policy 2018
- Accountability Mechanism Policy 2012

ADB uses a classification system to reflect the significance of a project‘s potential environmental impacts. A project‘s category is determined by the category of its most environmentally sensitive component, including direct, indirect, cumulative, and induced impacts in the project‘s area of influence. Each proposed project is scrutinized as to its type, location, scale, and sensitivity and the magnitude of its potential environmental impacts.

The process of determining a project’s environment category is to prepare a Rapid Environmental Assessment (REA). REA uses a sector-specific screening checklist, taking into account the type, size, and location of the proposed project; sensitivity and vulnerability of environmental resources in project area; and the potential for the project to cause significant adverse environmental impacts and the availability of cost-effective mitigation measures.

A project is classified as one of the four environmental categories (A, B, C, or FI) based on the most environmentally sensitive component as set out below:

- Category A: Projects with potential for significant adverse environmental impacts. An environmental impact assessment (EIA) is required to address significant impacts.
- Category B: Projects judged to have some adverse environmental impacts, but of lesser degree and/or significance than those for category A projects. An initial environmental examination (IEE) is required to determine whether or not significant environmental impacts warranting an EIA are likely. If an EIA is not needed, the IEE is regarded as the final environmental assessment report.
- Category C: Projects unlikely to have adverse environmental impacts. No EIA or IEE is required, although environmental implications are still reviewed.
- Category FI: Projects are classified as category FI, if they involve a credit line through a financial intermediary or an equity investment in a financial intermediary. The financial intermediary must apply an environmental management system, unless all subprojects will result in insignificant impacts.

According to ADB Safeguard Policy Statement (2009) and Operational Manual (2013) and review of Rapid Environmental Assessment administered in sites, the Project is classified as category “B” and therefore an IEE is required for the Project.

## B.6 The environmental assessment process

This IEE has been developed to meet the requirements of both the National Environmental Protection Agency of Afghanistan and the ADB 2012 Environment Safeguards: A Good Practice Sourcebook (Draft Working Document). It identifies the current baseline characteristics in the study area, assesses the potential environmental and social impacts of the proposed Project and outlines key mitigation measures required to avoid or reduce environmental and social impacts in line with the mitigation hierarchy (ie the sequential application of seeking to avoid, reduce, mitigate or compensate impacts). The study has sought to identify and address potential impacts to or from the project associated with the:

- physical environment including land, water and air
- biological/ ecological environment including flora, fauna and natural habitat.
- socio-economic environment and Project Affected People (PAPs)

The IEE provides a road map to the environmental measures needed to prevent and/or mitigate negative environmental effects associated with the Project. The IEE provides a detailed description of the direct and indirect environmental effects associated with the proposed Project during key periods of work. More specifically, it:

- Describes the existing socio-environmental conditions within the Project area;
- Describes the project design, construction activities and operational parameters;
- Describes the extent, duration and severity of potential impacts;
- Analyzes all significant impacts; and
- Formulates the mitigation actions and monitoring program and presents it all in the form of an Environmental Management Plan (EMP).

In addition, the IEE has included an audit of the safety of the proposed design with regards to local communities, and a review of the potential economic gains and losses. It also includes development of an Environmental Management and Monitoring Plan (EMP) and Grievance Redress Mechanism (GRM) and determines the need, or otherwise for a full Environmental and Social Impact Assessment (ESIA).

The following documents have been taken into account in the overall IEE process:

- ADB Safeguard Policy Statement (SPS), June 2009, effective since January 2010
- ADB Operations Manual (OM) with relevant Bank Policies (BP), October 2013
- Environmental Assessment and Review Framework (EARF), prepared by DABS in July 2008 and updated in September 2012.

Documents and guidance relevant to the technical assessments (e.g. air quality, biodiversity etc.) are referred to in the individual chapter addressing that topic.

### Asian Development Bank Safeguard Policies 2009

The ADB has three safeguard policies that seek to avoid, minimize or mitigate adverse environmental impacts and social costs to third parties, or vulnerable groups as a result of development projects. The Project requires the application of both environmental safeguard and social safeguard.

### Table 4: ADB Safeguard Policies

| Safeguard Requirements 1: Environment |
|---|
| The objectives are to ensure the environmental soundness and sustainability of projects, and to support the integration of environmental considerations into the project decision-making process. Environmental safeguards are triggered if a project is likely to have potential environmental risks and impacts. Eleven 'Policy Principles' have been adopted as part of the ADBs Safeguard Policy Statement (SPS 2009), including: |
| Use a screening process for each proposed project, as early as possible, to determine the appropriate extent and type of environmental assessment so that appropriate studies are undertaken commensurate with the significance of potential impacts and risks. (The Project was screened by the ADB and classified as a Category B project). |
| Conduct an environmental assessment for the proposed project to identify potential direct, indirect, cumulative, and induced impacts and risks to physical, biological, socioeconomic (including impacts on livelihood through environmental media, health and safety, vulnerable groups, and gender issues), and physical cultural resources in the context of the project's area of influence. Assess potential transboundary and global impacts, including climate change. Use strategic environmental assessment where appropriate. |
| Examine alternatives to the project's location, design, technology, and components and their potential environmental and social impacts and document the rationale for selecting the particular alternative proposed. Also consider the no project alternative. |
| Avoid, and where avoidance is not possible, minimize, mitigate, and/or offset adverse impacts and enhance positive impacts by means of environmental planning and management. Prepare an environmental management plan (EMP) that includes the proposed mitigation measures, environmental monitoring and reporting requirements, related institutional or organizational arrangements, capacity development and training measures, implementation schedule, cost estimates, and performance indicators. Key |

| Safeguard Requirements 1: Environment |
|---|
| considerations for EMP preparation include mitigation of potential adverse impacts to the level of no significant harm to third parties, and the polluter pays principle. |
| Carry out meaningful consultation with affected people and facilitate their informed participation. Ensure women's participation in consultation. Involve stakeholders, including affected people and concerned nongovernment organizations, early in the project preparation process and ensure that their views and concerns are made known to and understood by decision makers and taken into account. Continue consultations with stakeholders throughout project implementation as necessary to address issues related to environmental assessment. Establish a grievance redress mechanism to receive and facilitate resolution of the affected people's concerns and grievances regarding the project's environmental performance. |
| Disclose a draft environmental assessment (including the EMP) in a timely manner, before project appraisal, in an accessible place and in a form and language(s) understandable to affected people and other stakeholders. Disclose the final environmental assessment, and its updates if any, to affected people and other stakeholders. |
| Implement the EMP and monitor its effectiveness. Document monitoring results, including the development and implementation of corrective actions, and disclose monitoring reports. (The IEE and its EMP outline a plan to monitor the implementation of the EMP and the institutional responsibilities for monitoring and reporting throughout the Project lifecycle. |
| Do not implement project activities in areas of critical habitats, unless (i) there are no measurable adverse impacts on the critical habitat that could impair its ability to function, (ii) there is no reduction in the population of any recognized endangered or critically endangered species, and (iii) any lesser impacts are mitigated. If a project is located within a legally protected area, implement additional programs to promote and enhance the conservation aims of the protected area. In an area of natural habitats, there must be no significant conversion or degradation, unless (i) alternatives are not available, (ii) the overall benefits from the project substantially outweigh the environmental costs, and (iii) any conversion or degradation is appropriately mitigated. Use a precautionary approach to the use, development, and management of renewable natural resources. (Critical habitats have been identified near the project site: Annex 1). |
| Apply pollution prevention and control technologies and practices consistent with international good practices as reflected in internationally recognized standards such as the World Bank Group's Environmental, Health and Safety Guidelines. Adopt cleaner production processes and good energy efficiency practices. Avoid pollution, or, when avoidance is not possible, minimize or control the intensity or load of pollutant emissions and discharges, including direct and indirect greenhouse gases emissions, waste generation, and release of hazardous materials from their production, transportation, handling, and storage. Avoid the use of hazardous materials subject to international bans or phase-outs. Purchase, use, and manage pesticides based on integrated pest management approaches and reduce reliance on synthetic chemical pesticides. |
| Provide workers with safe and healthy working conditions and prevent accidents, injuries, and disease. Establish preventive and emergency preparedness and response measures to avoid, and where avoidance is not possible, to minimize, adverse impacts and risks to the health and safety of local communities. (The IEE and its EMP outline the requirement for specific health and safety plans and emergency response plans). |
| Conserve physical cultural resources and avoid destroying or damaging them by using field-based surveys that employ qualified and experienced experts during environmental assessment. Provide for the use of "chance find" procedures that include a pre-approved management and conservation approach for materials that may be discovered during project implementation. (No physical and cultural resources have been identified that would be significantly impacted by the Project). |
| Safeguard Requirements 2: Involuntary Resettlement. |
| The objectives are to avoid involuntary resettlement wherever possible; to minimize involuntary resettlement by exploring project and design alternatives; to enhance, or at least restore, the livelihoods of all displaced persons in real terms relative to pre-project levels; and to improve the standards of living of the displaced poor and other vulnerable groups. The safeguard requirements underscore the requirements for undertaking the social impact assessment and resettlement planning process, preparing social impact assessment reports and resettlement planning documents, exploring negotiated land acquisition, disclosing information and engaging in consultations, establishing a grievance mechanism, and resettlement monitoring and reporting. |

| Safeguard Requirements 1: Environment |
|---|
| The involuntary resettlement requirements apply to full or partial, permanent or temporary physical displacement (relocation, loss of residential land, or loss of shelter) and economic displacement (loss of land, assets, access to assets, income sources, or means of livelihoods) resulting from (i) involuntary acquisition of land, or (ii) involuntary restrictions on land use or on access to legally designated parks and protected areas. Resettlement is considered involuntary when displaced individuals or communities do not have the right to refuse land acquisition that results in displacement. (There is no land acquisition in this project and only state land will be retrieved for the project purpose. The Project will have both permanent and temporary impacts related to the land retrieval and land allocation. A Resettlement Plan is prepared for the Project according to the requirements of ADB). |
| Safeguard Requirements 3: Indigenous Peoples. |
| The objective is to design and implement projects in a way that fosters full respect for Indigenous Peoples' identity, dignity, human rights, livelihood systems, and cultural uniqueness as defined by the Indigenous Peoples themselves so that they (i) receive culturally appropriate social and economic benefits, (ii) do not suffer adverse impacts as a result of projects, and (iii) can participate actively in projects that affect them. (The Project does not involve impacts to Indigenous Peoples and therefore no further actions relating to this safeguard are required). |

## B.7 Other relevant International Guidelines

Other relevant guidelines include the following:

- IFC Environmental, Health, and Safety Guidelines for Electric Power Transmission and Distribution, April 2007
- ICNIRP Guidelines for Limiting Exposure to time-varying Electric, Magnetic, and Electromagnetic Fields (UP TO 300 GHz) (International Commission on Non-Ionizing Radiation Protection);
- CIGRE 1998: High Voltage Overhead Lines – Environmental Concerns, Procedures, Impacts & Mitigation.

## B.8 Technical standards and guidance relevant to the project

### B.8.1 Air quality

Afghanistan has established its own ambient AQ standards (ANSA/TC14 AS109:2011), which are shown in Table 5 below along with international standards. In accordance with GIIP, whichever is the more stringent of the USEPA / WHO / IFC or national standards would be applied to the Project i.e. based on currently available information, the WHO/IFC standards for all pollutants except carbon monoxide, where the USEPA standard would be applied where relevant and ozone where the WHO/IFC and national standards are the same.

**Table 5: Comparison of international and local air quality standards**

| Pollutants | USEPA | | WHO/IFC | | Afg. NEQS | |
|---|---|---|---|---|---|---|
| | Avg. Time[1] | Standard | Avg. Time | Standard | Avg. Time | Standard |
| $SO_2$ | 3 hrs | 0.5 ppm | 24 hr | 20 μg/m$^3$ | 24 hr | 50 μg/m$^3$ |
| | 1 hr | 75 ppb | 10 min | 500 μg/m$^3$ | | |
| CO | 8 hrs | 9 ppm | - | - | 8 hrs | 10 μg/m$^3$ |

| Pollutants | USEPA | | WHO/IFC | | Afg. NEQS | |
|---|---|---|---|---|---|---|
| | Avg. Time[1] | Standard | Avg. Time | Standard | Avg. Time | Standard |
| | 1 hr | 35 ppm | - | - | 1 hr | 30 µg/m$^3$ |
| $NO_2$ | Annual Mean | 53 ppb | 1 yr | 40 µg/m$^3$ | Annual | 40µg/m$^3$ |
| | 1 hr | 100 ppb | 1 hr | 200 µg/m$^3$ | 24 hrs | 80µg/m$^3$ |
| $O_3$ | 8 hrs | 0.07ppm | 8 hrs daily max | 100 µg/m$^3$ | 8 hrs | 100 µg/m$^3$ |
| $PM_{10}$ | 24 hrs | 150 µg/m$^3$ | 1 yr | 20 µg/m$^3$ | Annual Mean | 70 µg/m$^3$ |
| | | | 24 hr | 50 µg/m$^3$ | 24 hrs | 150 µg/m$^3$ |
| $PM_{2.5}$ | Annual mean | 12 µg/m$^3$ | 1 yr | 10 µg/m3 | Annual | 35 µg/m$^3$ |
| | 24 hrs | 35 µg/m$^3$ | 24 hrs | 25 µg/m$^3$ | 24 hours | 75 µg/m$^3$ |

1: Refer to https://www.epa.gov/criteria-air-pollutants/naaqs-table#3 for specific details of averaging periods

### B.8.2 Noise and vibration

Afghanistan has set national noise standards (ANSA/TC14 AS279), which are set out in Table 6Table 6: Comparison of international and national noise standards applied to the Project.

**Table 6: Comparison of international and national noise standards**

| Category of Area / zone | Limit in dB(A) Leq | | | |
|---|---|---|---|---|
| | WHO / IFC | | National standard | |
| | Day time | Night time | Day time | Night time |
| Residential area | **55** | **45** | 60 | 55 |
| Commercial area | 70 | 70 | **70** | **60** |
| Industrial area | **70** | 70 | 75 | **65** |
| Sensitive zone | 55 | 45 | **50** | **45** |

1: Letters given in brackets correspond to the WHO/IFC and national category identifiers respectively

Provincial authorities are also required to prepare noise pollution zone maps, which will be submitted to NEPA for approval.

A construction noise limit of 75dB(A) daytime and 50dB(A) has also been set at the national level.

### B.8.3 Water resources

Afghanistan has developed a national standard for water resources quality (AS200:2012), the objective of which is to increase water quality, prevent pollution, protect public health through setting appropriate drinking water standards, and set appropriate standards for water used for agriculture and fisheries. The standard includes descriptive parameters for surface waters, as set out below, which require them to be:

- Free of suspended particles of dust, oil, pulp and other suspended materials
- Free from municipal of industrial waste or other disposable materials or materials from agricultural processes that produce dyes or odours

- Free of oils that create a visible layer on the surface of the water or causes it to change colour
- Without materials such as garbage, bottles, cane or any other undesirable material that is thrown into the water
- Free of animal and human waste materials.

National drinking water standards (ANSA/TC14 AS417:2013) are set out in Table 7 below as well as the WHO guideline values. National standards will be applied for all parameters listed except Arsenic where the WHO guideline value is more stringent.

**Table 7: Comparison of international and national drinking water standards**

| Parameter | WHO guideline (mg/l) | ANSA standard (mg/l) |
|---|---|---|
| Arsenic (As) | 0.01 | 0.05 |
| Potassium (K) | 10 | 10 |
| Sodium (Na) | - | 200 |
| Chloride ($Cl^-$) | - | 250 |
| Chlorine ($Cl_2$) | - | 250 |
| Magnesium (Mg) | - | 30 |
| Calcium (Ca) | - | 75 |
| Total hardness (as $CaCO_3$) | - | 500 |
| Total dissolved solids | - | 1000 |
| Sulphate ($SO_4$) | - | 250 |
| Carbonate ($CO_3$) | - | - |
| Bicarbonate ($HCO_3$) | - | - |

### B.8.4 Socio-economic

The Project's final version of the Land Acquisition and Resettlement Plan (LARP) contains a comprehensive Chapter of "Legal and Policy Framework", detailing:

- Afghanistan's Legal Framework on Land Acquisition and Resettlement;
- The ADB Safeguard Policy: Requirement 2: Involuntary Resettlement;
- Identification of Gaps between the ADB Policy and the Afghanistan Law;
- Principles and Policies adopted for this Project.

# C. Description of the Project

## C.1 The Afghanistan Energy Sector Development Investment Program MFF

Afghanistan is a net energy importer and whilst national renewable energy and fossil fuel resources exist they need to be developed. By 2032, the power demand in Afghanistan is forecast to reach 3,500 MW and electric consumption to touch 18,400 GWh. Meeting this demand requires development of all viable import and local generation. The Asian Development Bank (ADB) therefore approved a multitranche financing facility (MFF) for the Afghanistan Energy Sector Development Investment Program (ESDIP) in December 2015. The Facility is financed from ADB's Special Funds resources (Asian Development Fund) and ADB-administered co-financing (through Afghanistan Infrastructure Trust Fund).

The MFF initially included six tranches to address the following sector challenges:

- lack of generation capacity,
- constraints on transmission and distribution systems,
- weak financial management and sustainability of sector entities because of suboptimal tariff frameworks,
- inadequate sector regulations.

The Government of Afghanistan has subsequently requested additional finance from ADB for Tranche 7 to extend the transmission and distribution infrastructure in Herat and Farah provinces of western Afghanistan (Figure 1).

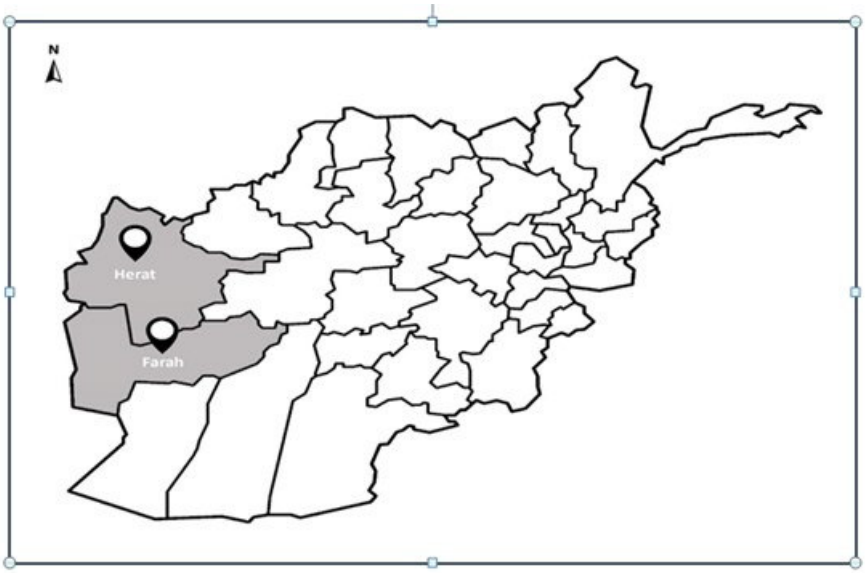



**Figure 1** Provincial Map of Afghanistan

## C.2 Project Overview and Area of Influence

The Project will provide a new supply to over 25,000 end users in Farah and Herat provinces who currently rely on power supplied by diesel generators. In Farah, for example, electricity demand is currently provided by diesel sources with operating capacity of 2 MW but the power system is almost crippled as the supply is barely sufficient to meet the demand and efficiency is very low.

To help address this the Tranche 7 package comprises the following key elements:

- **Transmission Lines:** Construction and operation of two new 220kV Transmission Lines which will broadly follow the Herat-Kandahar Highway south from Pul-e-Hashimi. These will run for ~135km from the Pul-e-Hashimi Substation to the Shindand Substation (both in Herat province) and for ~176 km from the Shindand Substation to the Farah Substation (in Farah province).

- **Substations:** New 220kV system HV substations at Shindand (2x16 MVA capacity) and Farah (2x40 MVA capacity) and an upgrade to the Pul-e-Hashimi substation (two 220kV line bays) which will be constructed under WB financing.

- **Distribution:** Onward distribution networks into Shindand and Farah from the substations.

A map of the proposed project route is shown below (Figure 2) and each of these project components is described further in the following section.

**Figure 2: Project transmission line alignment and substation locations**


The project has sought wherever practical to use non-agricultural or government-owned land and to keep the alignment of the transmission lines as straight as reasonably practical to minimize costs and in close proximity to an existing road to facilitate access. As a result most of the project affected area is located within an existing infrastructure corridor that includes the Turkmenistan-Afghanistan-Pakistan-India (TAPI) gas pipeline and the Herat-Kandahar Highway; much of the land away from the community areas of Hashemi, Shindand and Farah (see figures below) is considered to be of only limited social or environmental importance.


Jebrael
Herat
Hashemi Bridge


Shurab
Paj
Robat-E Sarkofteh
Shindand
Sabzawar


Farah

Whilst the AoI may vary somewhat with impact type / potentially affected receptor attributes it should include all areas within which significant impacts are likely to occur. This includes areas affected by the physical extent of the proposed works (i.e. land to be acquired or used, temporarily or permanently, by the Project), and areas in which impacts may be propagated beyond this physical boundary.

### C.2.1 Climate

The climate of the project area changes moving from north to south. The northern section (from Pul-e-Hashimi to Shindand) is cold semi-arid under the Köppen climate classification. January is the coldest month with an average minimum temperature 3-4$^{O}$C. Temperatures start rising from May while on average July is the warmest month having a maximum temperature around 36$^{O}$C. Rainfall is concentrated in the winter (January – March with the highest rainfall recorded during March) and May, June and July being the driest months.

**Table 8: Average temperature and precipitation in Herat Province**

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Avg. Temperature (°C) | 3.7 | 6.2 | 11.2 | 15.9 | 21.1 | 26.3 | 28.6 | 27.1 | 22.1 | 16 | 9.1 | 5.3 |
| Min. Temperature (°C) | -2.7 | -0.1 | 4.2 | 8.5 | 13.1 | 18.1 | 20.9 | 19 | 13 | 6.9 | 0.9 | -1.6 |
| Max. Temperature (°C) | 10.1 | 12.6 | 18.2 | 23.3 | 29.1 | 34.6 | 36.3 | 35.2 | 31.2 | 25.2 | 17.4 | 12.3 |
| Avg. Temperature (°F) | 38.7 | 43.2 | 52.2 | 60.6 | 70.0 | 79.3 | 83.5 | 80.8 | 71.8 | 60.8 | 48.4 | 41.5 |
| Min. Temperature (°F) | 27.1 | 31.8 | 39.6 | 47.3 | 55.6 | 64.6 | 69.6 | 66.2 | 55.4 | 44.4 | 33.6 | 29.1 |
| Max. Temperature (°F) | 50.2 | 54.7 | 64.8 | 73.9 | 84.4 | 94.3 | 97.3 | 95.4 | 88.2 | 77.4 | 63.3 | 54.1 |
| Precipitation / Rainfall (mm) | 52 | 59 | 60 | 37 | 4 | 0 | 0 | 0 | 0 | 3 | 11 | 35 |

Humidity is directly proportional to the temperature. The humidity graph shows that January has the highest value and July has the lowest value. 2019 weather station data for Shindand is given below[2].

**Table 9: 2019 weather station data for Shindand**

| Month | Temp °C Max | Temp °C Min | Precip mm Max | Precip mm Min |
|---|---|---|---|---|
| Jan 2019 | 27 | -8 | 114 | 0.0 |
| Feb 2019 | 16 | -6 | 289 | 0.0 |
| Mar 2019 | 23 | 1 | 211 | 0.0 |
| Apr 2019 | 32 | 2 | 278 | 0.0 |
| May 2019 | 33 | 9 | 15 | 0.0 |
| Jun 2019 | 38 | 10 | 0.0 | 0.0 |
| Jul 2019 | 44 | 20 | 16 | 0.0 |
| Aug 2019 | 43 | 16 | 0.0 | 0.0 |
| Sep 2019 | 42 | 13 | 0.0 | 0.0 |
| Oct 2019 | 33 | 4 | 0.0 | 0.0 |
| Nov 2019 | 23 | -4 | 72.9 | 0.0 |

[2]https://www.accuweather.com/en/af/shindand/4027/january-weather/4027?year=2019&view=list

| Month | Temp °C Max | Temp °C Min | Precip mm Max | Precip mm Min |
|---|---|---|---|---|
| Dec 2019 | 22 | 1 | 0.0 | 0.0 |

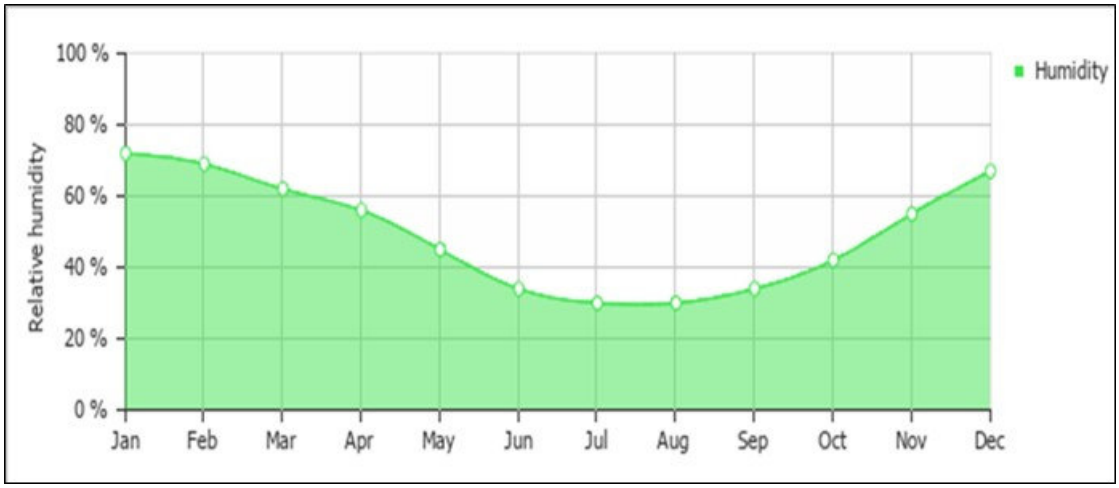



**Figure 3: Humidity in Herat Province: Pul-e-Hashimi-Shindand**

Farah province has a hot desert climate (Köppen climate classification: BWh) with wet winters and dry summers. Temperatures are again highest on average in July and lowest in January. Humidity is highest in January and lowest in June.

**Table 10: Average temperature and precipitation in Farah Province**

| | January | February | March | April | May | June | July | August | Septem-ber | October | Novem-ber | Decem-ber |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Avg. Temperature (°C) | 7.4 | 9.4 | 15.9 | 20.1 | 25.8 | 31.1 | 33.6 | 31.2 | 25.9 | 19.3 | 12.2 | 7.7 |
| Min. Temperature (°C) | -0.1 | 2.2 | 8.3 | 12.1 | 17 | 22 | 24.8 | 21.8 | 16.3 | 9.4 | 2.4 | -1 |
| Max. Temperature (°C) | 14.9 | 16.7 | 23.6 | 28.1 | 34.6 | 40.3 | 42.4 | 40.7 | 35.6 | 29.3 | 22.1 | 16.5 |
| Avg. Temperature (°F) | 45.3 | 48.9 | 60.6 | 68.2 | 78.4 | 88.0 | 92.5 | 88.2 | 78.6 | 66.7 | 54.0 | 45.9 |
| Min. Temperature (°F) | 31.8 | 36.0 | 46.9 | 53.8 | 62.6 | 71.6 | 76.6 | 71.2 | 61.3 | 48.9 | 36.3 | 30.2 |
| Max. Temperature (°F) | 58.8 | 62.1 | 74.5 | 82.6 | 94.3 | 104.5 | 108.3 | 105.3 | 96.1 | 84.7 | 71.8 | 61.7 |
| Precipitation / Rainfall (mm) | 18 | 22 | 13 | 8 | 3 | 0 | 0 | 0 | 0 | 0 | 4 | 10 |

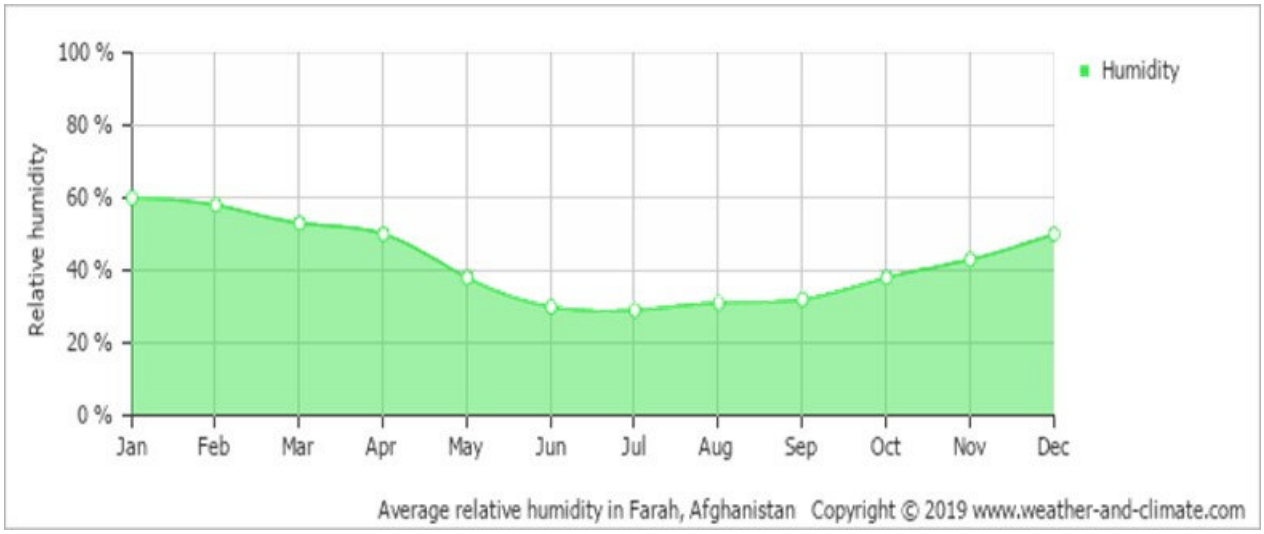



**Figure 4: Humidity in Farah Province**

### C.2.2 Geology and Soils

In the northern part of the AoI, in the vicinity of Pul-e-Hashimi substation, the ground is comprised of limestone and gravels with numerous rivers, flood channels and natural streams, with fertile flood plains. The East side of Herat Kandahar Highway is flat desert with granular sandy soil. Further south, Farah is characterized by sand blown hills with a high degree of desertification. Soils in Farah province are alluvial with more than 20% calcium carbonate content.

**Figure 5: Geology and Soil of the Project Area**

### C.2.3 Topography

The topography of the AoI varies between hilly, mountainous, flat and desert areas. The land of the Pule Hashimi substation is hilly and slightly sloped which decreases gradually when moving further south transitioning into a flat agricultural and then desert landscape before becoming hilly again. On reaching the Shawz Mountains the topography of the area changes from hilly to rocky. From this mountainous region, which is approximately 2.6 km long, the transmission line enters Farah Province, where the topography consists of low, rocky hills.

The transmission line crosses numerous flood channels and watercourses which are described in section D.4.

**Figure 6: Topography of the Project Area**

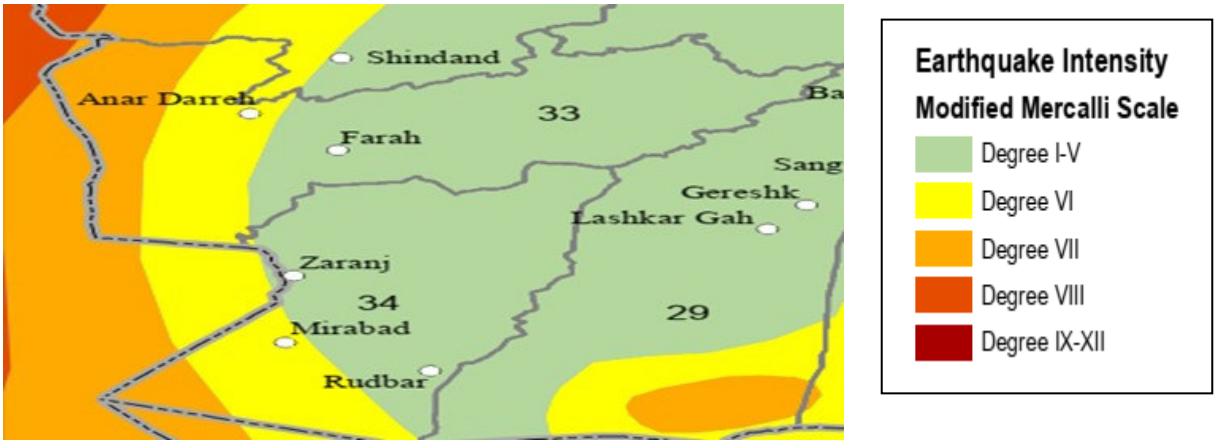
## C.2.4 Land use

Figure 7 shows the broad categories of landuse in the AoI classified as urban, agricultural and uncultivated.

**Figure 7: Broad land use categories**


## C.2.5 Seismic Activity

The risk of earthquakes in Herat province is high, especially in Ghoryan and Adraskan, with a greater than 20% chance of a potentially damaging earthquake occurring in the next 50 years. The absence of a synchronized grid, conflict, and internal migration in Afghanistan can amplify climate change and disaster risks.




According to Earthquake Intensity Modified Mercalli scale, the Project is located in a Degree I-V zone, which is described in Table 11 below.

**Table 11: Earthquake Intensity Table**

| Intensity | Shaking | Description/Damage |
|---|---|---|
| I | Not felt | Not felt except by a very few under especially favourable conditions. |
| II | Weak | Felt only by a few persons at rest, especially on upper floors of buildings. |
| III | Weak | Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated. |
| IV | Light | Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably. |
| V | Moderate | Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop. |

## C.3 Project Design and Layout

### C.3.1 The Transmission lines

Two sets of transmission lines are proposed namely:

- Pul-e-Hashimi Substation to Shindand Substation (~135 km long) and
- Shindand Substation to Farah Substation (~176 km long).

Around 1120 towers will be required to support these lines, the detailed design of which will be the responsibility of the contractor, who will also specify the final locations of the towers. The towers will mostly be constructed on uncultivated arid land sited along the Ring road and Herat Kandahar Highway. The following figures show the typical concrete pole or steel transmission towers that will be considered for the Project.

**Figure 8: Typical Transmission Tower Design, Concrete Poles**

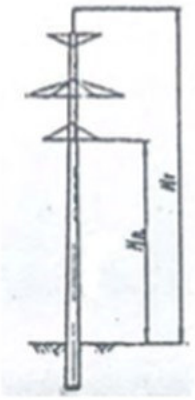
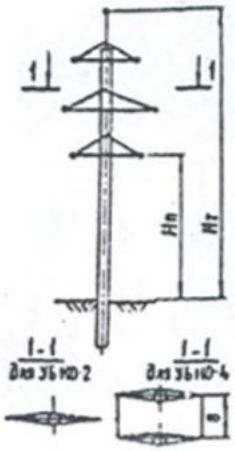
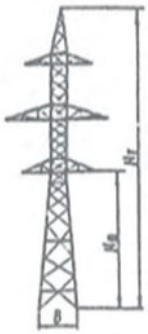
| Name | Concrete straight tower | Concrete anchor angle tower |
|---|---|---|
| Drawing |  |  |
| Height (H) | $H_T$: 22.2 m<br>$H_L$: 13.5 m | $H_T$: 19.0 m<br>$H_L$: 9.5 m |
| Maximum wind load | 29 m/s | 29 m/s |
| Wires | AS-70/11–AS-120/19 | AS-70/11–AS-240/32 |
| Angle | - | 0°~38° |
| Mass | 0.52 tons | 0.89 tons |

**Figure 9: Typical Transmission Tower Design, Steel Structure**

| Name | Straight tower | Anchor angle tower (1) | Anchor angle tower (2) |
|---|---|---|---|
| Drawing |  |  |  |
| Height (H) | $H_T$: 31.0 m<br>$H_L$: 19.0 m | $H_T$: 23.0 m<br>$H_L$: 10.5 m | $H_T$: 24.7 m<br>$H_L$: 10.5 m |
| Base width (B) | 2.5 m | 2.8 m | 4.8 m |
| Maximum wind load | 29 m/s | 29 m/s | 29 m/s |
| Wires | AS-70/11–AS-95/15 | AS-120/19 | AS-70/11–AS-240/32 |
| Angle | - | 0°-60° | 0°-60° |
| Mass | 2.74 tons | 4.65 tons | 7.79 tons |

Complete clearing of the 25m RoW would be required (12.5 meters on both sides of the alignment) allowing for stringing of conductors. Outside this strip but still inside the RoW, vegetation above 7 m height needs to be cleared, including possible tall trees outside but nearby the RoW corridor on approach roads, in accordance with the transmission line standards for the former Soviet Union which will be applied to the Project.

**Table 12: Clearance as per PUE for 220 kV transmission lines**

| Clearance | 220 KV Line |
|---|---|
| Above normal ground | 7.0 |
| To roads | 8.0 |
| To other OHLs | 3.0 |

### C.3.2 Substations

Two new substations will be constructed as follows:

- Shindand HV Substation: 220kV system with 2x16 MVA capacity (Herat province)
- Farah HV Substation: 220kV system with 2x40 MVA capacity (Farah province).

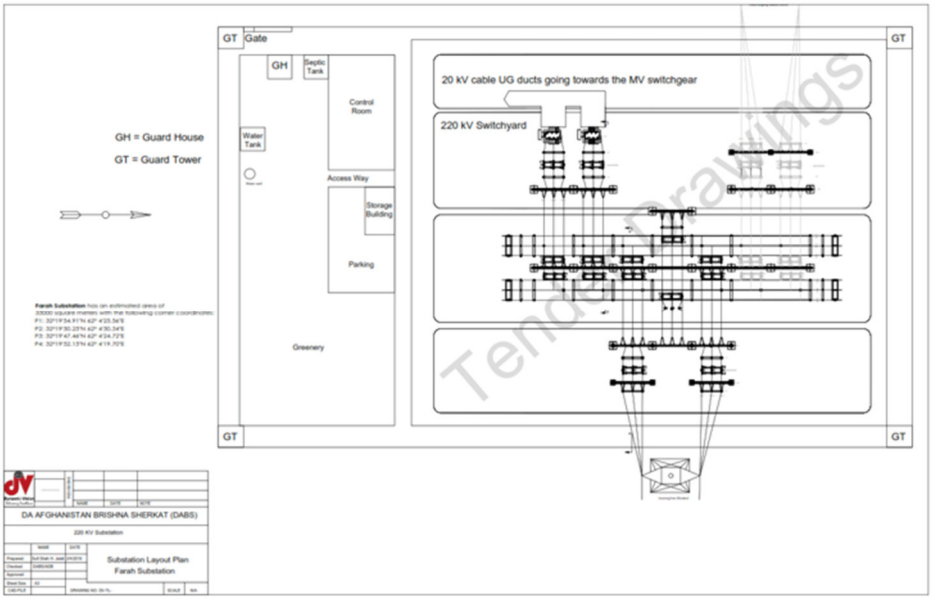
The transmission lines will also connect into a third substation at Pul-e-Hashimi at the northern end of the Project. The Pul-e-Hashimi substation has been separately financed by the World Bank but is essential for the success of the Project and is therefore considered by ADB to be an associated facility. The potential for cumulative effects has therefore been considered in Section C.9.

The total land requires for the two substations is 260,000 sq m (120,000 sq m for Farah and 140,000 sq m for Herat). Works required at the two substations broadly comprise:

- Installation of 220 KV line bays and 2X40 MVA (Farah) and 2 x 16 MVA (Herat) transformers
- Construction of foundations for transformers, switchyard and switchgear and other electrical related equipment
- Construction of control room and administration offices
- Installation of switchyard, switchgear and other electrical related equipment

A conceptual layout for Farah substation is shown in Figure 10 below.

**Figure 10: Conceptual layout for Farah substation**



### C.3.3 Distribution network

The distribution network is in two geographically discrete parts as follows:

- New distribution networks comprising 20 kv and low voltage distribution lines and power connections from the Shindand substation to local end users in Herat Province.

- New distribution networks comprising 20 kV and low voltage distribution lines and power connections from the Farah substation to local end users in Farah Province

The distribution network will provide reliable power to over 25,000 residential consumers in the two provinces; electricity in the area is presently provided by diesel generators, which are unreliable.

The distribution network principally comprises a large number of concrete and steel poles to carry the power lines with associated infrastructure comprising warehouses, transformers, meter boxes, panels etc. The number and exact locations of poles will be determined during detailed design and after site surveys. The routing of the distribution network follows existing road alignments wherever possible.

Acquisition of land and of other assets is strictly avoided for establishment of these power distribution networks. Consultations have been undertaken with limited number of people living and owing land/property alongside the line corridor at the design stage in order to define the most acceptable alignment.

Minimum ground clearances are as set out in Table 13, in accordance with the former Soviet Union (PUE) standards which are applied to the Project. A minimum clearance of 0.5m is required between structures and trees, unless specially insulated cabling (ABC) is used on LV systems which allows cables to safely exist with vegetation.

**Table 13: Minimum clearance standards applicable to the 20kV distribution network**

| Minimum Clearances | **MV** (m) | **LV** (m) |
|---|---|---|
| Ground accessible to pedestrians only | 6.5 | 5.0 |
| Open country | 6.0 | 5.0 |
| Roads, streets | 7.0 | 5.5 |
| Buildings, accessible points, flat roofs or those upon which a man may stand Power line (above or below):<br>Telecommunication lines | 5.0<br>2.5 | 2.7<br>0.3 |
| Trees | 2.5 | 0.3 |
| Any steel structure | 3.0 | 0.3 |

### C.3.4 General description of the project area and alignment

Surveys were undertaken in order to better be able to describe the characteristics of the areas that will be affected by the Project (i.e., the sites selected for the location of the Substations and the areas along the 220kV Transmission Lines), namely in terms of the current use/ occupation and ownership status of the land.

The survey results are described below for the substations and presented in Table 16 and Table 17 with regards to the two sections of the Transmission Lines (between substations).

### 220/20 kV Shindand Substation

The land allocated for the construction of the 220/20 kV Shindand Substation, with an area of 140,000 sqm = 14ha (Substation Site), is located in Chargoosh Lowa-e-Sabiqa village, in Shindand district, in Herat province (in the vicinity of the Herat – Kandahar Road). The distance between Herat city and Shindand Substation is about 114 km. This substation is located 8 km away from the Shindand district center, on the north side.

The land within the Site is totally government owned land (Figure 11), as is the surrounding area.

Table 14 shows the exact location (coordinates) of the substation.

**Table 14: GPS Coordinates of Shindand Substation**

| S.N | Corner Points | Easting | Northing |
|---|---|---|---|
| 1 | P1 | 62.160622 | 33.361208 |
| 2 | P2 | 62.162456 | 33.361036 |
| 3 | P3 | 62.161842 | 33.359367 |
| 4 | P4 | 62.159997 | 33.359547 |

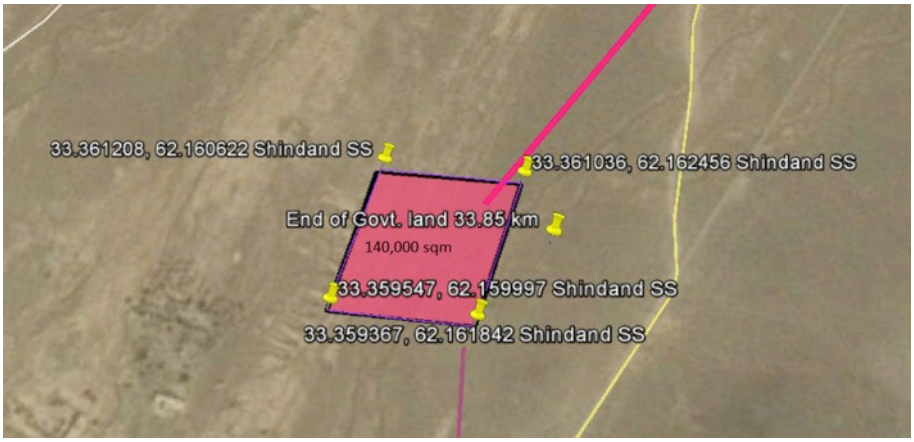



**Figure 11: Shindand Substation location**

It is barren land with no irrigation facilities and no crops, trees or other plants cultivated on this piece of land or in the vicinity. The allocated land has never been cultivated and is not suitable for agricultural purposes. No residential or other structures were also found on this land. The nearby villages are located at distances of 1.0 and 1.5 km respectively to the southern and western side of the land allotted for the substation.

### 220/20 kV Farah Substation

The land allocated for the construction of the 220/20 kV Farah Substation, with an area of 120,000 sqm = 12ha (Substation Site), is located to the south of Shorabad village, in Farah province capital. This substation is located 9 km to the South of Farah city. The land within the Site is totally government owned land (Figure 12), as it is the surrounding area. Table 15 shows the exact location (coordinates) of the substation.

**Table 15: GPS Coordinates of Farah Substation**

| S.N | Corner Points | Easting | Northing |
|---|---|---|---|
| 1 | P1 | 62° 4'33.24"E | 32°19'48.24"N |
| 2 | P2 | 62° 4'29.52"E | 32°19'57.42"N |
| 3 | P3 | 62° 4'15.12"E | 32°19'53.22"N |
| 4 | P4 | 62° 4'18.90"E | 32°19'43.74"N |


**Figure 12: Farah Substation location**

The land within the Site is barren land with no irrigation facilities and no crops cultivated (Figure 13). Similarly, there are no trees or other plants cultivated on this piece of land or in the vicinity (at a distance of up to 100 m). The allocated land has never been cultivated and is not suitable for agriculture. No residential or other structures were also found on this land. The nearby village is located at the distance of 0.5 km to the north-west of the Site.

**Figure 13: Farah Substation Site**

### Pul-e-Hashimi - Shindand 220 kV Transmission Line route

The majority of the Transmission Line from Pul-e-Hashimi to Shindand follows the Herat – Kandahar highway at an average 50 m offset (25 m at each side) and also avoids the TAPI route spacing. The survey shows that, out of the total length of this TL (134.88 km), 108 km (80.1%) crosses government owned land and the remaining 26.8 km (less than 20%) crosses privately owned land (Table 16).

**Table 16: Pul-e-Hashimi - Shindand 220 kV Transmission Line route in Government-owned and Private-owned land**

| Sub-sections | *TL Route in Govt. Owned Land (km) | *TL Route in Private Owned Land (km) |
|---|---|---|
| 1 | 2.25 | |
| 2 | | 18.21 |
| 3 | 42.48 | |
| 4 | | 0.46 |
| 5 | 18.2 | |
| 6 | | 0.42 |
| 7 | 1.25 | |
| 8 | | 1.00 |
| 9 | 2.43 | |
| 10 | | 0.22 |
| 11 | 5.52 | |
| 12 | | 0.59 |
| 13 | 2.10 | |
| 14 | | 5.90 |
| 15 | 33.85 | |
| **Sub-Total Length (km)** | 108.08 | 26.80 |
| **Total Length (km)** | 134.88 | |
| **Percentage (%)** | **80.1%** | **19.9%** |

** The numbers in the table correspond to the preliminary information from the field surveys*

As per the survey results, this section of the TL will pass alongside or parallel to the Herat – Kandahar highway in its 78.54 km length. Out of these 78.54 km, 58.32 km crosses through government owned land located alongside of the highway. The TL route is mainly a mix of different composites ranging from rocks, sand, hills, soft soil and agricultural areas.

Figure 14 and Figure 15 show the Transmission Line alignment between Pol-e-Hashimi and Shindand Substations, also identifying government and privately owned sections crossed by the TL.


**Figure 14. Pol-e-Hashimi - Shindand 220 kV Transmission Line route**


**Figure 15. Pol-e-Hashimi - Shindand 220 kV Transmission Line route, ending at Shindand Substation**

### Shindand - Farah 220 kV Transmission Line

Similarly, the majority of the Transmission Line from Shindand to Farah also follows the Herat – Kandahar highway at an average 50 m offset (25 m at each side) and also avoids the TAPI route spacing. The survey shows that, out of the total length of this TL (approximately 176 km), 140km (over 79%) crosses government owned land and the remaining 37 km (less than 21%) crosses privately owned land (Table 17).

**Table 17: Shindand - Farah 220 kV Transmission Line route in Government-owned and Private-owned land**

| Sub-sections | *TL Route in Govt. Owned Land (km) | *TL Route in Private Owned Land (km) |
|---|---|---|
| 1 | | 5.34 |
| 2 | 0.75 | |
| 3 | | 1.33 |
| 4 | 1.82 | |
| 5 | | 5.79 |
| 6 | 100.41 | |
| 7 | | 10.74 |
| 8 | 21.15 | |
| 9 | | 2.64 |
| 10 | 0.83 | |
| 11 | | 1.69 |
| 12 | 0.57 | |
| 13 | 0.21 | |
| 14 | | 1.15 |
| 15 | 5.87 | |
| 16 | | 1.69 |
| 17 | 7.44 | |
| 18 | | 6.4 |
| 19 | 1.13 | |
| **Sub Total Length (km)** | 140.2 | 36.8 |
| **Total Length (km)** | 176.95 | |
| **Percentage (%)** | **79.2%** | **20.8%** |

** The numbers in the table correspond to the preliminary information from the field surveys*

As per the survey results, this section of the TL will pass alongside or parallel to the Herat – Kandahar highway in its 78.78 km length, crossing exclusively government owned land alongside of the highway. The TL route is mainly a mix of different composites ranging from rocks, sand, hills, soft soil and agricultural areas.

Figure 16, Figure 17 and Figure 18 show the Transmission Line alignment between Shindand and Farah Substations, also identifying government and privately owned sections crossed by the TL.

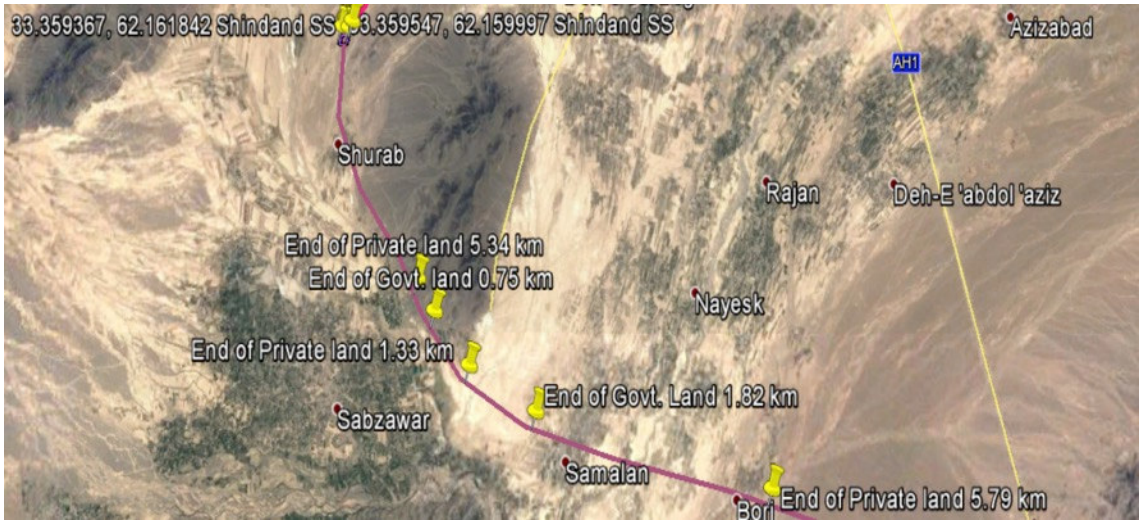



**Figure 16. Shindand - Farah 220 kV Transmission Line route**


**Figure 17. Shindand - Farah 220 kV Transmission Line route (Government land)**

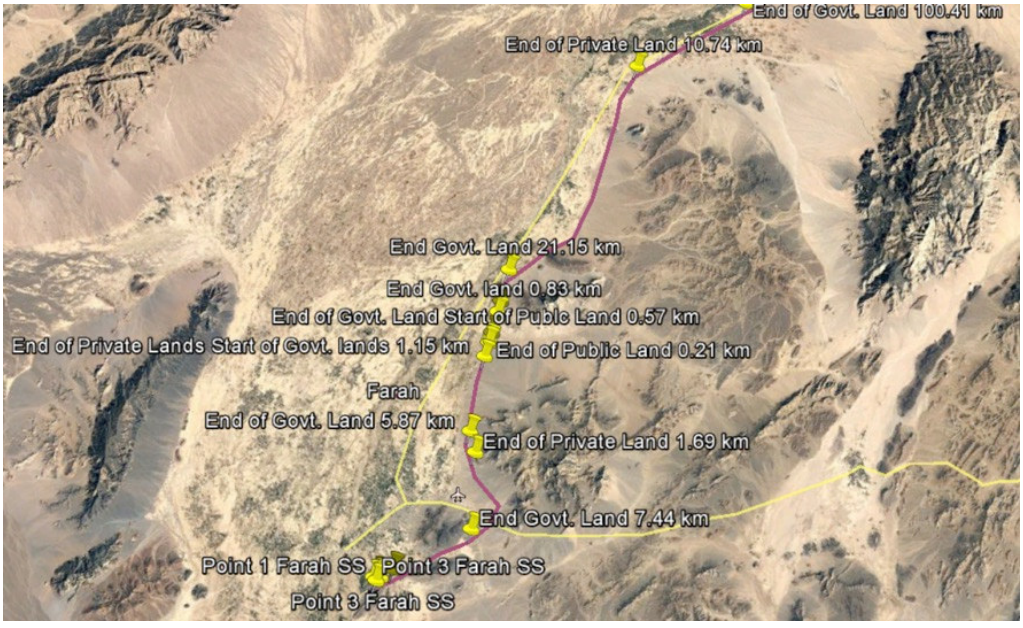



**Figure 18: Shindand - Farah 220 kV Transmission Line route**

## C.4 Project activities during Construction

Construction is expected to take around 32 months, although details of the construction methodology are not available at this time and some elements of design have also not yet been finalized (e.g. locations of transmission line towers). The following is a sequential description of the potential activities associated with the construction of transmission lines.

- **Surveying the Transmission Centerline, Other Project Features, and Work Areas** - Ground survey and staking will be performed to locate tower centers, right-of-way boundaries and temporary work areas.

- **Temporary and Permanent Access Roads** - Where possible, existing roads will be used for the initial transportation of materials and equipment from the staging and storage areas to locations where they will be needed along the transmission line right-of-way. During construction, dust control measures will be implemented on all roads.

- **Clearing and Grading Activities for the Right-of-Way, Tower Sites, Staging Areas and Batch Plants** - Clearing of natural vegetation will be required for construction purposes (access road, tower sites, pulling and tensioning areas), clearances for electrical safety, long-term maintenance, and reliability of the transmission line. Within the rights-of-way, mature vegetation will be selectively removed under or near the conductors to provide adequate electrical clearance as required by National Standards. Trees that could fall onto the transmission line, affect the transmission line during wind-induced conductor swing or otherwise present an immediate hazard to the transmission line, or have the potential to encroach within safe distance to the conductor as a result of bending, growing, swinging, or falling toward the conductor, will be removed.

- **Excavating and Installing Foundations** - Vertical excavations for foundations will be made with power drilling equipment. Where soils permit, a vehicle-mounted power auger or backhoe will be used. In rocky areas, the foundation holes will be excavated by drilling or blasting methods or installing special rock anchors. All safeguards associated with using explosives (e.g., blasting mats) will be employed. Cast-in-place footings will be installed by placing reinforcing steel and a tower stub into the foundation hole, positioning the stub, and encasing it in concrete. The foundation excavation and installation will require access to the site by power augers or drills, cranes, material trucks, and ready-mix concrete trucks.

- **Assembling and Erecting Towers with Temporary and Permanent Pad Sites** - Bundles of steel members and associated hardware (and often times insulators, hardware and stringing sheaves) will be transported to each tower site by truck. Wood blocking is hauled to each location and laid out, then the tower steel bundles are opened and laid out for assembly by sections and assembled into subsections of convenient size and weight. Typically, the leg extensions for the structures are assembled and erected by separate crews with smaller cranes to make ready for setting of the main structure assembly. The assembled subsections are then hoisted into place by means of a large crane and fastened together to form a complete tower. A follow-up crew then tightens all the bolts in the required joints.

- **String Conductors, Ground Wires, and Fiber Optic Cable** - Insulators, hardware, and stringing sheaves will be delivered to each tower site. The towers will be rigged with insulator strings and stringing sheaves at each ground wire and conductor position. For protection of the public during wire installation, guard structures will be erected over highways, railroads, power lines, structures, and other barriers. Following stringing and tensioning of all conductors, the guard structures will be removed, and the area restored. Pilot lines will be pulled (strung) from tower to tower by land operated equipment and threaded through the stringing sheaves at each

tower. Following pilot lines, a stronger, larger diameter line will be attached to conductors to pull them onto towers. This process will be repeated until the ground wire or conductor is pulled through all sheaves. Ground wires, fiber optic cable and conductors will be strung using powered pulling equipment at one end and powered braking or tensioning equipment at the other end of a conductor segment.

- **Installing Counterpoise (Tower Grounds) Where Needed** - Part of standard construction practices prior to conductor installation will involve measuring the resistance of the ground to electrical current near the tower structures. If the measurements indicate a high resistance, counterpoise will be installed, which will consist of trenching in- ground wire to a depth of 12 inches in non-cultivated land and 18 inches in cultivated land, with a ground rod driven at the end. The counterpoise will be contained within the limits of the rights- of-way and may be altered or doubled back-and-forth to meet the requirements of the projects. Typical equipment used for installing ground rods includes line trucks, backhoes and trenchers, etc.

- **Cleanup and Reclamation of Affected Areas** - Construction sites, material storage yards, and access roads will be kept in an orderly condition throughout the construction period. Refuse and trash will be removed from the sites and disposed of in an approved manner (e.g., in an approved landfill). In remote areas, trash and refuse could be removed to a construction staging area and contained temporarily until such time as it could be hauled to an approved site. No open burning of construction trash would occur. Contaminants such as oils, hydraulic fluids, antifreeze and fuels will not be dumped on the ground, and all spills will be cleaned up.

### C.4.1 Construction Approach

General construction mitigation measures are to be applied by the Contractor(s) in line with good international industry practice (GIIP)[3] as set out in the EMP. Whilst specific additional mitigation measures are included within individual topic chapters (air quality, noise, biodiversity, water resources etc) as appropriate the following measures are to be implemented across the project to minimize risks and impacts associated with pollution from construction activities:

- Handling of fuel, lubricants, oils and chemicals should take place in secure, bunded areas.
- Spill kits, including booms, should be provided to clean up any minor spills of fuel, lubricants, oils or chemicals.
- Secondary containment devices (drop cloths, drain pans) should be used to catch leaks or spill while removing or changing oils from vehicles or equipment. For small spills, absorbent materials must be used.
- Drip trays should be used under compressors, pumps, motors and any redundant plant and during refuelling. Drip trays should be emptied at regular intervals to prevent overflow.
- Fuel, oil or hazardous materials required to be stored, should be stored within secondary containment (designed to contain at least 110% of the total capacity of the storage containers) located greater than 100m from a watercourse or waterbody. Walls and floors should be constructed of concrete or other suitably impermeable material. No drains from the storage area should be installed.
- No more than 100 litres of fuel, lubricant or any other hazardous material stored at any one place
- On-site vehicles and equipment should be inspected regularly for leaks and all leaks shall be immediately repaired. Incoming vehicles and equipment should be checked for leaks. Leaking vehicles/equipment should not be allowed on-site.

[3]https://www.ifc.org/wps/wcm/connect/7d708218-2a9e-4fcc-879d-9d5051746e7d/4%2BConstruction%2Band%2BDecommissioning.pdf?MOD=AJPERES&CVID=ls62NKq

- When plant maintenance is carried out on site, used oil should be stored in a bunded area for collection. Oil and fuel filters should also be stored in a designated bin in a bunded area for separate collection.
- Construction equipment and vehicles should not be re-fuelled within 100m of a watercourse and re-fuelling should be undertaken on an impermeable surface.
- Plant and wheel washing to be carried out on an area of hardstanding at least 10 m from any watercourse or surface water drain.
- All exposed soil and any soil stockpiles should be covered to prevent erosion run-off of mobilised suspended solids or turfed with grass. Soil stockpiles should not be higher than 2m or have slopes greater than 25° to prevent run-off of sediment.
- Stockpiles of construction materials (e.g. aggregates sand and fill materials) should be covered with tarpaulin or a silt fence constructed using a suitable geotextile, as a matter of course, but particularly during rainstorms.
- Identify, and clear any existing drains or gullies that are blocked or not functioning correctly.
- Where practicable, local perimeter drains should be constructed around working areas to collect suspended run-off.
- The discharge of any untreated wastewater into surface waters should be prohibited.
- Sediment laden water from the work sites will be filtered through the ground or settlement lagoons prior to controlled release to a watercourse.
- Earth bunds should be created to prevent an accidental spill of hydrocarbons or other chemicals escaping from the work sites reaching the watercourse.
- Water quality should be monitored throughout the duration of the works and treated wastewater discharges should comply with specified water quality standards (including Project and national standards).
- All materials should be stored above flood level.
- No waste materials, including cement contaminated water and any concrete debris, to be disposed of in any surface waters.
- Portable toilets should be provided at construction sites near surface water sources.
- Washing of construction equipment or vehicles should be forbidden within 100m of watercourses.
- Generators should be located more than 20 meters from the river on impermeable surfaces.
- Areas where concrete mixers can wash out leftover concrete should be provided; this may be in the form of a lined settling pond at each site.
- Regular inspection and maintenance of the construction vehicles and equipment should be carried out.
- Erosion control measures such as ramming of topsoil immediately after excavation and silt controls will be provided to minimize erosion.
- Construction work should not be undertaken during heavy monsoon rains.
- A construction material borrowing and disposal plan should be prepared.
- A waste management plan should be prepared that identifies both appropriate storage locations and facilities for surplus materials and wastes prior to disposal and final disposal locations.

### C.4.2 **Health and safety during construction**

Construction activities pose risks to both workers and other people living or working in the nearby vicinity. These will be minimized by the development of robust health and safety management systems and the application of GIIP. This will include (but not be limited to) the following:

- Use of heavy machinery should be planned carefully, and only skilled persons should be allowed to operate the equipment;
- Appropriate signage should be provided to inform the local people about the activities.

- Appropriate Personal Protective Equipment (PPE) comprising helmets, gloves, dust masks, boots and earmuffs should be provided to workers;
- Adequate water supply and sanitation facilities should be provided at all construction compounds;
- Caution signboards for the road users and surrounding people will be provided to avoid any accidents at the work site;
- First aid facilities should be in place at all construction sites.

The EMP includes a requirement for a Construction Phase Health and Safety Plans to be developed.

### C.4.3 Covid-19

At the time of writing, restrictions associated with the Covid-19 pandemic are still in force globally. It is impossible to predict what the situation will be when pre-construction (surveys, site clearance) and construction take place. The contractor will therefore be required to implement appropriate measures in accordance with international best practice in accordance with guidance published by IFC, OSHA or others. Links to the current IFC[4,5] and OSHA[6] guidance have been provided but will need to be checked at the appropriate time to ensure that the latest versions are used.

### C.4.4 Unexploded ordnance

There is a risk of unexploded ordnance in the area; the EMP includes a requirement for working areas to be surveyed prior to commencement of any activities and cleared of any mines or other ordnance by professionals.

## C.5 Construction and operational phase health and safety considerations

Two key health and safety considerations – working at height and live power lines are relevant to both construction and operation of the Project. Recommendations for minimising the risks are given below and are drawn from the IFC EHS guidelines for the sector[7].

### C.5.1 Working at height

Prevention and control measures for working at height include:

- Testing structures for integrity prior to undertaking work
- Implementation of a fall protection program that includes training in climbing techniques and use of fall protection measures; inspection, maintenance, and replacement of fall protection equipment; and rescue of fall-arrested workers, among others;
- Establishment of criteria for use of 100 percent fall protection (typically when working over 2 meters above the working surface, but sometimes extended to 7 meters, depending on the activity). The fall protection system should be appropriate for the tower structure and necessary movements, including ascent, descent, and moving from point to point

[4] https://www.ifc.org/wps/wcm/connect/b27193d8-b024-4830-83cf-f93e931b240a/Tip+Sheet_Interim+Advice_Supporting+Workers_COVID19_April2020.pdf?MOD=AJPERES&CVID=n9s.6RO
[5] https://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/sustainability-at-ifc/publications/publications_tipsheet_covid-19_migrantworkers
[6] https://www.osha.gov/Publications/OSHA4000.pdf
[7] https://www.ifc.org/wps/wcm/connect/7b65ce6b-129d-4634-99dc-12f85c0674b3/Final%2B-%2BElectric%2BTransmission%2Band%2BDistribution.pdf?MOD=AJPERES&CVID=jqeI4Rs&id=1323162154847

- Installation of fixtures on tower components to facilitate the use of fall protection systems;
- Provision of an adequate work-positioning device system for workers. Connectors on positioning systems should be compatible with the tower components to which they are attached
- Hoisting equipment should be properly rated and maintained and hoist operators properly trained;
- Safety belts should be of not less than 16 millimeters (mm) two-in-one nylon or material of equivalent strength. Rope safety belts should be replaced before signs of aging or fraying of fibers become evident.
- When operating power tools at height, workers should use a second (backup) safety strap;
- Signs and other obstructions should be removed from poles or structures prior to undertaking work.
- An approved tool bag should be used for raising or lowering tools or materials to workers on structures.

### C.5.2 **Live power lines**

Workers may be exposed to occupational hazards from contact with live power lines during construction, maintenance, and operation activities. Prevention and control measures associated with live power lines include:

- Only allowing trained and certified workers to install, maintain, or repair electrical equipment.
- Deactivating and properly grounding live power distribution lines before work is performed on, or in close proximity, to the lines.
- Ensuring that live-wire work is conducted by trained workers with strict adherence to specific safety and insulation standards. Qualified or trained employees working on transmission or distribution systems should be able to achieve the following:
  - Distinguish live parts from other parts of the electrical system.
  - Determine the voltage of live parts.
  - Understand the minimum approach distances outlined for specific live line voltages.
  - Ensure proper use of special safety equipment and procedures when working near or on exposed energized parts of an electrical system.
- Workers should not approach an exposed energized or conductive part even if properly trained unless:
  - The worker is properly insulated from the energized part with gloves or other approved insulation; or,
  - The energized part is properly insulated from the worker and any other conductive object; or,
  - The worker is properly isolated and insulated from any other conductive object (live-line work).
- Where maintenance and operation is required within minimum setback distances, specific training, safety measures, personal safety devices, and other precautions should be defined in a health and safety plan.
- Workers not directly associated with power transmission and distribution activities who are operating around power lines or power substations should adhere to local legislation, standards, and guidelines relating to minimum approach distances for excavations, tools, vehicles, pruning, and other activities.
- Minimum hot stick distances may only be reduced provided that the distance remaining is greater than the distance between the energized part and a grounded surface.

## C.6 Operational Considerations

### C.6.1 Electromagnetic fields

Electric and magnetic fields (EMF) are emitted by and surround any electrical device (e.g. power lines and electrical equipment). Electric fields are produced by voltage and increase in strength as the voltage increases. Magnetic fields result from the flow of electric current and increase in strength as the current increases. Electric fields are shielded by materials that conduct electricity, and other materials, such as trees and building materials. Magnetic fields pass through most materials and are difficult to shield. Both electric and magnetic fields decrease rapidly with distance.

Although there is public and scientific concern over the potential health effects associated with exposure to EMF, there is no empirical data demonstrating adverse health effects from exposure to typical EMF levels from power transmissions lines and equipment. However, while the evidence of adverse health risks is weak, it is still sufficient to warrant limited concern.

Recommendations applicable to the management of EMF exposure include[8]:

- Evaluating potential exposure to the public against the reference levels developed by the International Commission on Non-Ionizing Radiation Protection (ICNIRP).
- Considering siting new facilities so as to avoid or minimize exposure to the public. Installation of transmission lines or other high voltage equipment above or adjacent to residential properties or other locations intended for highly frequent human occupancy, (e.g. schools or offices), should be avoided.

**Occupational exposure**

Electric utility workers typically have a higher exposure to EMF than the general public due to working in proximity to electric power lines. Occupational EMF exposure should be prevented or minimized through the preparation and implementation of an EMF safety program including the following components:

- Identification of potential exposure levels as a result of the Project and the use of personal monitors during working activities.
- Training of workers in the identification of occupational EMF levels and hazards;
- Establishment and identification of safety zones to differentiate between work areas with expected elevated EMF levels compared to those acceptable for public exposure, limiting access to properly trained workers;
- Implementation of action plans to address potential or confirmed exposure levels that exceed reference occupational exposure levels developed by international organizations such as the ICNIRP (as setout in Table 18 below).
- Personal exposure monitoring equipment should be set to warn of exposure levels that are below occupational exposure reference levels (e.g. 50%). Action plans to address occupational exposure may include limiting exposure time through work rotation, increasing the distance between the source and the worker, when feasible, or the use of shielding materials.

[8] IFC EHS Guidelines Electric Power Transmission and Distribution https://www.ifc.org/wps/wcm/connect/7b65ce6b-129d-4634-99dc-12f85c0674b3/Final%2B-%2BElectric%2BTransmission%2Band%2BDistribution.pdf?MOD=AJPERES&CVID=jqeI4Rs&id=1323162154847

**Table 18: ICNIRP exposure limits for occupational exposure to electric and magnetic fields.**

| Frequency (Hz) | Electric Field (V/m) | Magnetic Field (μT) |
|---|---|---|
| 50 | 10,000 | 500 |
| 60 | 8,300 | 415 |

**Community exposure**

Table 19 gives recommended limits for community exposure to EMF.

**Table 19: ICNIRP exposure limits for community exposure to electric and magnetic fields.**

| Frequency (Hz) | Electric Field (V/m) | Magnetic Field (μT) |
|---|---|---|
| 50 | 5,000 | 100 |
| 60 | 4,150 | 83 |

If EMF levels are confirmed or expected to be above the recommended exposure limits, application of engineering techniques should be considered to reduce the EMF produced by power lines, substations, or transformers. Examples of these techniques include:

- Shielding with specific metal alloys
- Burying transmission lines
- Increasing height of transmission towers
- Modifications to size, spacing, and configuration of conductors

Given the relatively low population density along the route of the transmission lines it is considered that exposure can be managed to an appropriate extent through route selection.

### C.6.2 Community health and safety

The greatest potential hazard to the local population during operation of the Project is the risk of electrocution from direct contact with high-voltage electricity or from contact with tools, vehicles, ladders, or other devices that are in contact with high-voltage electricity. Recommended techniques to prevent these hazards include:

- Use of signs, barriers (e.g. locks on doors, use of gates, use of steel posts surrounding transmission towers, particularly in urban areas), and education / public outreach to prevent public contact with potentially dangerous equipment;
- Grounding conducting objects (e.g. fences or other metallic structures) installed near power lines, to prevent shock.

## C.7 Project Decommissioning

The major infrastructure associated with the project - transmission line towers, substations and conductors have a minimum 50 years lifespan and will be completely dismantled at the end of their life. Materials, in particular metal components will be recycled where possible. Decommissioning is not considered further in this IEE, given the assumed design life of the Project, and because decommissioning impacts are not expected to be worse than those considered during the construction and operational phases.

## C.8 Analysis of alternatives

The factors considered in the analysis of alternatives are summarised in **Error! Reference source not found.**20 below. Do nothing is clearly not an option given the current situation with respect to energy supply in the area. The issues considered by DABS therefore focussed principally on alternative routes and locations for the key infrastructure elements of the transmission lines and the substations and have utilised a 'mitigation by design' approach whereby the design itself incorporates appropriate mitigation measures e.g. by routing the transmission lines so that impacts on private land are minimised as set out below.

**Table 20: Key design criteria and alternatives**

| Alternative | Key design criteria |
|---|---|
| Do nothing | This would see the local population continue to use polluting and unreliable diesel generators and has been discounted for this reason. |
| Alternative Routes (Transmission lines) | The transmission lines routing has sought to use non-agricultural or government-owned land where practical. The following have been specifically avoided where possible:<br>• Urban, densely populated, settlements, schools, buildings and market places areas<br>• Religious buildings such as Shrines, mosques and churches,<br>• Historical, national parks, monuments, game reserves and protected areas<br>• Forest and water catchment zones<br>• Areas of ecological interest supporting endangered flora and fauna species, and bird nesting sites and migration zones<br>• Areas prone to flooding and erosion, intermittent watercourses and runoff areas,<br>• Areas prone to high wind speeds<br>• Agricultural land – where traversing such land is unavoidable, the shortest feasible route is chosen<br>The route alignment has also been selected to reduce potential impacts associated with the electrical and magnetic fields (including TV interference) and audible noise. |
| Alternative solutions | The technical solution of an above-ground 220kV transmission line is one already successfully employed in other electrification projects in Afghanistan and will allow compatibility between the Project and other projects already implemented. Although there is a visual impact resulting from an above-ground solution, the significant increased construction costs associated with an underground solution, as well as higher ongoing operation and maintenance costs, cannot be justified given the low population density and land uses in the area |
| Substation locations | Avoidance of the need for land acquisition was a key factor in the selection of the locations of the two substations at Shindand and Farah. Questions considered in the site selection process included the following:<br>• Will there be land acquisition<br>• Is the site for land acquisition known<br>• Is the ownership status and current usage of land to be acquired known<br>• Will easement be utilized within an existing Right of Way (ROW)<br>• Will there be loss of shelter and residential land due to land acquisition<br>• Will there be loss of agricultural and other productive assets due to land acquisition<br>• Will there be losses of crops, trees, and fixed assets due to land acquisition<br>• Will there be loss of businesses or enterprises due to land acquisition<br>• Will there be loss of income sources and means of livelihoods due to land acquisition<br>• Will people lose access to natural resources, communal facilities and services?<br>• If land use is changed, will it have an adverse impact on social and economic activities<br>• Will access to land and resources owned communally or by the state be restricted |
| Distribution network | The detailed design of the distribution networks was undertaken following surveys of topography, land use and vegetation cover in the area and taking into account the |

| Alternative | Key design criteria |
|---|---|
| | following criteria:<br>• Alignment should be as straight as reasonably possible between the starting and end points so as to minimize costs of construction and materials;<br>• Wherever possible, the alignment should be in close proximity to an existing road to facilitate access during construction and maintenance;<br>• Minimize the need to expropriate land, particularly village holy forest, village cemetery, cultural or historical sites, plantation areas, and farm land;<br>• Avoid areas of water catchment zones and other environmentally sensitive areas;<br>• Ensure adequate clearance requirements as per the given standard<br>• Avoiding traversing or close by-passing of residential and commercial urban areas, densely populated areas, settlements, schools, public buildings and market places;<br>• Avoiding traversing or close bypassing of shrine, historical places, tourist places, national parks and protected areas;<br>• Keep electrical field, magnetic field, audible noise and TV interference as far as possible below national/ international accepted levels;<br>• Keep impact on flora, fauna, nesting places, animal trails, migration zones and sensitive ecological areas to a minimum. |

## C.9 Associated facilities and cumulative effects

### C.9.1 Introduction

Associated facilities are facilities that are not funded as part of the project and would not have been constructed or expanded if the project did not exist and without which the project would not be viable[9].

The Pul-e-Hashimi substation, which is being funded by the World Bank as part of the Herat Electrification Project, is an essential component of the Project. Although the Project itself would not be viable without the substation, the substation will supply power to other areas and is therefore not dependent on the Project. It is therefore not considered by ADB as an associated facility, but should be considered as a cumulative impact as outlined below.

### C.9.2 Assessment of impacts

Information in this section has been drawn from the EMP for the Pul-e-Hashimi substation produced by DABS and dated November 2019.

The proposed Pul-e-Hashimi Substation is located in Taraka village in the Zinda Jan District of Herat province. Key characteristics of the location relevant to potential environmental and social impacts are as follows:

- The site is in state ownership.
- Close to the existing Zinda Jan-Herat road with easy access to the site.
- No populated areas or community land uses / facilities nearby.
- Land is desert / barren land with no vegetation or agriculture in the vicinity.
- Site is some 1.5 – 2 km from the Harirod river.
- No known cultural heritage interest.

[9]https://www.ifc.org/wps/wcm/connect/c02c2e86-e6cd-4b55-95a2-b3395d204279/IFC_Performance_Standards.pdf?MOD=AJPERES&CVID=kTjHBzk

Construction phase impacts will be managed through the EMP and associated Plans developed by DABS. The majority of construction phase impacts are considered to be low-medium significance and can be mitigated through measures specified in the ESMP. Although there are not considered to be mines and unexploded ordnance in the area, an investigation, and demining as necessary, will be undertaken prior to any construction activities in accordance with World Bank requirements. Specific plans in addition to the overall ESMP will be developed in relation to inter alia Health and Safety, Camp Management, Solid Waste Management, Mine Risk Management, Emergencies etc.

### C.9.3 Conclusion

The careful selection of the site for the Pul-e-Hashimi substation means that there are no potentially significant environmental or social impacts associated with its location and any construction phase impacts can be appropriately mitigated in accordance with the ESMP developed by DABS. No potentially significant cumulative effects are expected to be associated with the Pul-e-Hashimi associated facility.

## C.10 Transboundary effects

Herat and Farah provinces both share a border with Iran to the west. Herat additionally borders Turkmenistan to the north. It is therefore necessary to consider the potential for construction and operation of the Project to have effects in Iran and Turkmenistan.

Power is currently imported from both Iran and Turkmenistan into Herat province via the existing substations at Kohshan and Mir Dawod and Noor Jahad respectively. Power for the Project could be supplied to the Pul-e-Hashimi substation from three sources – 132kV from Iran, 500kV from Turkmenistan as well as a domestic supply of 200kV from Noor Jahad.

Given the distance to the international borders from the Project, and the fact that the Project itself will not involve infrastructure in close proximity to the borders, it is considered that there will be no transboundary effects that need to be considered in the assessment.

# D. Description of the Environment

## D.1 Introduction

This section describes the current baseline conditions across the study area under the three subheadings of physical, ecological and socio-economic environment. Any areas where there are gaps or uncertainties in the baseline data are identified.

## D.2 Study area / Area of Influence/Investigation Area

The study area or area of influence (AoI) for the Project varies dependent on the particular component under consideration. In general, a 500 m buffer has been defined, although this is extended for the consideration of biodiversity impacts as discussed below. The Right of Way (RoW) in relation to the transmission line is calculated to be 50 m (25 m on both sides of the centre line) on the basis of the span-width, the proposed line swinging and the electrical safety distance. It should be noted that there is no national standard relating to RoW.

## D.3 Baseline data

Some baseline data were collected during February and March 2019 covering land use, land cover, land environment, ambient air quality, water environment, biological environment, and socioeconomic / cultural factors. The security situation in the region, and now the COVID-19 pandemic, has prevented a full data gathering and baseline characterisation programme being implemented.

The existing air quality, noise and vibration and water resources baselines are largely uncharacterised; additional baseline air quality, noise and water quality monitoring datasets will be collected to supplement the limited data collected as part of this IEE study and included as an addendum to this IEE study. Similarly additional socio-economic baseline data will be collected to supplement the existing baseline. The timing for the additional studies is not yet fixed but will be completed prior to any construction work being undertaken.

## D.4 Physical environment

The broader physical environment in terms of climate, topography, land use, geology and soils and seismic activity has been described in section C.1. Whilst the AoI may vary somewhat with impact type / potentially affected receptor attributes it should include all areas within which significant impacts are likely to occur. This includes areas affected by the physical extent of the proposed works (i.e. land to be acquired or used, temporarily or permanently, by the Project), and areas in which impacts may be propagated beyond this physical boundary.

### D.4.1 Air quality

There is very little information available on background air quality in Afghanistan although the absence of major industrial sources in the AoI means that air quality is assumed to be generally good away from urban centres and roads. A limited baseline monitoring exercise has been undertaken as set out in
Table 21: Results of ambient air quality monitoring at Farah Rud for two locations at the southern end of the AoI near Farah. No project-specific data are available for any other locations.

Temporary deterioration in ambient air quality is experienced during high winds due to suspension of particulates from arid land.

High $PM_{10}$ concentrations have been measured in initial samples under the ADB Kabul Air Quality Management (KAQM) Project in 2004 and in previous short-term studies conducted during 2003 by an Environmental and Industrial Health Hazard (EIHH) Special Support Team (SST) (annual mean of 401 $\mu g/m^3$ and 24 hours average of 247 $\mu g/m^3$) - no other information is available in support of these figures.

**Table 21: Results of ambient air quality monitoring at Farah Rud[10]**

| Item No. | Sampling Location | UTM Coordinates (m) | | | Short Description of Location |
|---|---|---|---|---|---|
| | | Easting | Northing | Zone | |
| 1 | AQ1 | 461,909 | 3,625,489 | 41N | near Farah Rud |
| 2 | AQ2 | 461,492 | 3,625,262 | 41N | near Farah Rud |

| Parameter\Location ID | NEPA AQS | WHO AQS | AQ1 | AQ2 |
|---|---|---|---|---|
| CO | 10 $mg/m^3$ | 35 (PPM) NAAQS | 7.07 | 4.32 |
| $NO_2$ ($\mu g/m^3$) | N/A | 200 $\mu g/m^3$ | 45 | 58 |
| $O_3$ ($\mu g/m^3$) | 100 $\mu g/m^3$ | 100 $\mu g/m^3$ | 132 | 117 |
| $PM_{10}$ ($\mu g/m^3$) | N/A | 50 $\mu g/m^3$ | 26 | 29 |
| $PM_{2.5}$ ($\mu g/m^3$) | N/A | 25 $\mu g/m^3$ | 8 | 3 |
| $SO_2$ ($\mu g/m^3$) | N/A | 500 $\mu g/m^3$ | 0 | 26 |

\ = not available, ** Grey cells represent exceedances of the WHO and/or NEPA 8-hour AQS.

### D.4.2 Noise and vibration

For the majority of the AoI, the principal contribution to background noise will be from vehicle movements with agricultural equipment and the industrial area of the Ziaratjah desert contributing at a local level in specific areas. Overall levels are considered to be low. Anecdotal evidence indicates that there are no local concerns about background noise in the AoI.

Limited background noise monitoring has been undertaken from a single point in the south of the AoI as shown in Table 22 below. However, as the sampling duration was only one hour (08:00 – 09:00) on a single day (21.03.2019), the results should be treated with caution.

**Table 22: Ambient noise measurement at Farah Rud**

| Item No. | Sampling Location ID | UTM Zone 41N | | Description of Location | Area Classification | $L_{Aeq\ 1h}$ (dB)[1] |
|---|---|---|---|---|---|---|
| | | Easting | Northing | | | |
| 1 | Farah Rud | 464,318 | 3,625,982 | Proposed location of Noise Measurement At approx. 2.5 km away from a main road and a residential area. | N/A* | 43.0 |

This is the overall $L_{Aeq\ T}$ level calculated by logarithmically averaging the three individual 15 minutes measurements recorded at each location

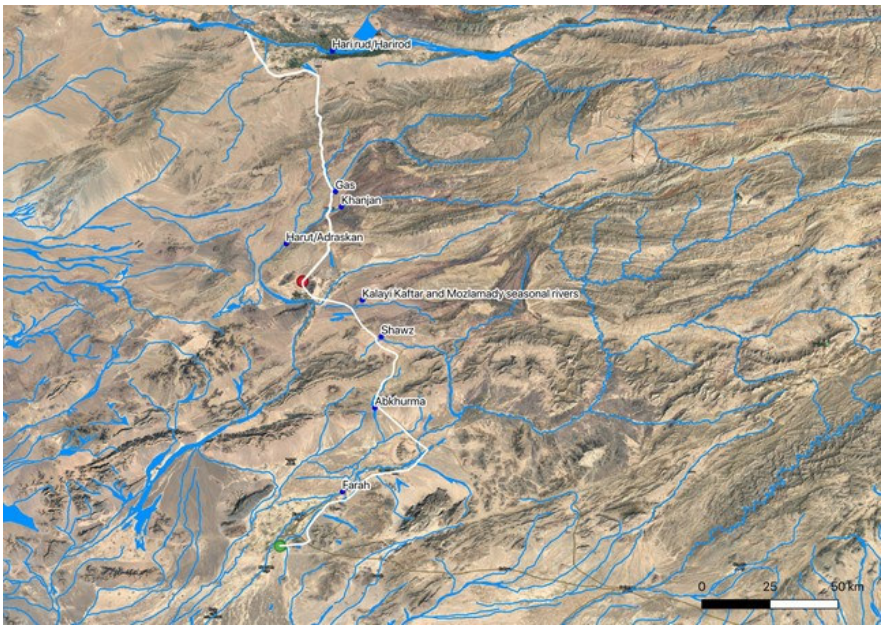
10 It should be noted that the monitoring undertaken was of very short duration (eight hours in total and one hour for each parameter using a Series 500 – Portable Air Quality Monitor) and so the results should be treated with caution.

### D.4.3 Water resources

Afghanistan is rich in water resources mainly due to snow melt from the mountain ranges such as Wakhan, Hindokush and Baba, leading to intensely seasonal surface and groundwater resources.

The Project lies in the Hari Rod-Murghab(Western river basin) with the Harirod, Gas, and Khanjan rivers being the main surface water resources in the AoI. Surface water resources are shown on Figure 19. Several of the seasonal watercourses such as the Kalayi kaftar, Mozlamady and Shawz seasonal rivers are a significant width in places – up to 300m. Further south in Farah province, a number of the rivers e.g. the Qashqa, Jagyan and Abkhurma river are prone to flooding and given that they are up to 300 m naturally can represent a significant hazard.

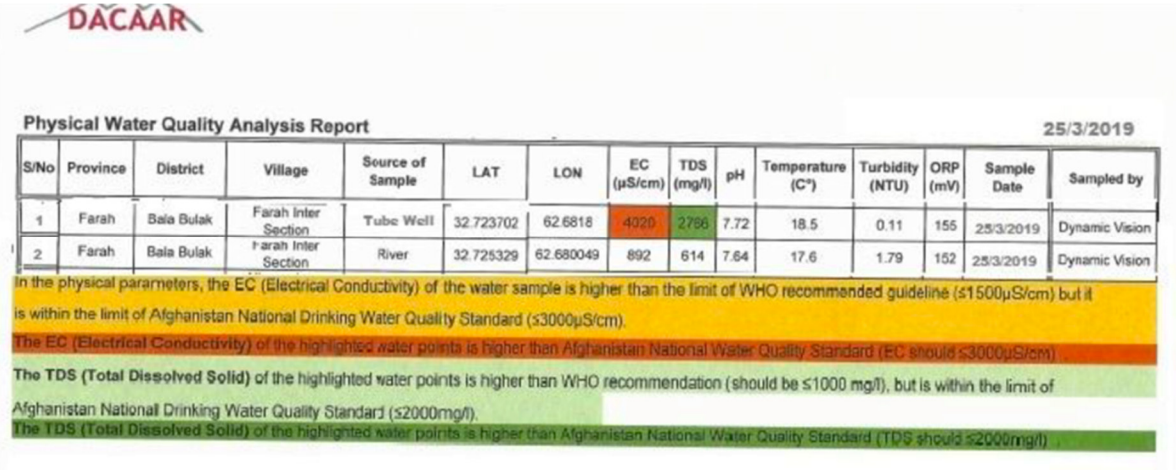
**Figure 19: Surface water resources**




Note that there is no distinction between seasonal and permanent watercourses on the figure.

Water quality samples were collected from two locations in Farah and are shown in Figure 20 below. One of the samples shows exceedance of the national standard for E.coli and dissolved solids but, in common with the air quality and noise monitoring data, only a single sample has been taken and there is no information available as to context or sampling methodology at the time of writing.

**Figure 20: Water quality analysis results**



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| S/No | Province | District | Village | Source of Sample | LAT | LON | EC (µS/cm) | TDS (mg/l) | pH | Temperature (C°) | Turbidity (NTU) | ORP (mV) | Sample Date | Sampled by |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Farah | Bala Bulak | Farah Inter Section | Tube Well | 32.723702 | 62.6818 | 4020 | 2786 | 7.72 | 18.5 | 0.11 | 155 | 25/3/2019 | Dynamic Vision |
| 2 | Farah | Bala Bulak | Farah Inter Section | River | 32.725329 | 62.680049 | 892 | 614 | 7.64 | 17.6 | 1.79 | 152 | 25/3/2019 | Dynamic Vision |

In the physical parameters, the EC (Electrical Conductivity) of the water sample is higher than the limit of WHO recommended guideline (≤1500µS/cm) but it is within the limit of Afghanistan National Drinking Water Quality Standard (≤3000µS/cm).

The EC (Electrical Conductivity) of the highlighted water points is higher than Afghanistan National Water Quality Standard (EC should ≤3000µS/cm)

The TDS (Total Dissolved Solid) of the highlighted water points is higher than WHO recommendation (should be ≤1000 mg/l), but is within the limit of Afghanistan National Drinking Water Quality Standard (≤2000mg/l).

The TDS (Total Dissolved Solid) of the highlighted water points is higher than Afghanistan National Water Quality Standard (TDS should ≤2000mg/l)

The groundwater in the AoI is typically found at an average depth of 7 – 16 m and is extracted through hand pumps, solar water pumps and tube wells. Farjayi channel stream (8.4 km from Pul-e-Hashimi Substation) serves as a groundwater source and a natural surface spring. Along the transmission line route the average depth is 16m in the Ziaratjah Desert, Guzara and Zendahjan districts and 8m in Adraskan district. Groundwater quality varies from village to village but is generally poor in the AoI, particularly in Farjayi, Shams Abad, and Noor Abad and Qoran and requires treatment because of its high salinity.

## D.5 Ecological environment

### D.5.1 Designated Sites

There are no nationally designated protected areas within 50km of the project site but the 35,000 ha Hari Rud valley Important Bird area (IBA) is located around 8km from the project alignment at its closest point. The valley is designated for the breeding populations of Yellow-eyed Pigeon (*Columba eversmanni*), a globally vulnerable species (VU) and Lesser Kestrel (*Falco naumanni)* an IUCN Least Concern species, with 20 and 16 pairs having been recorded historically.

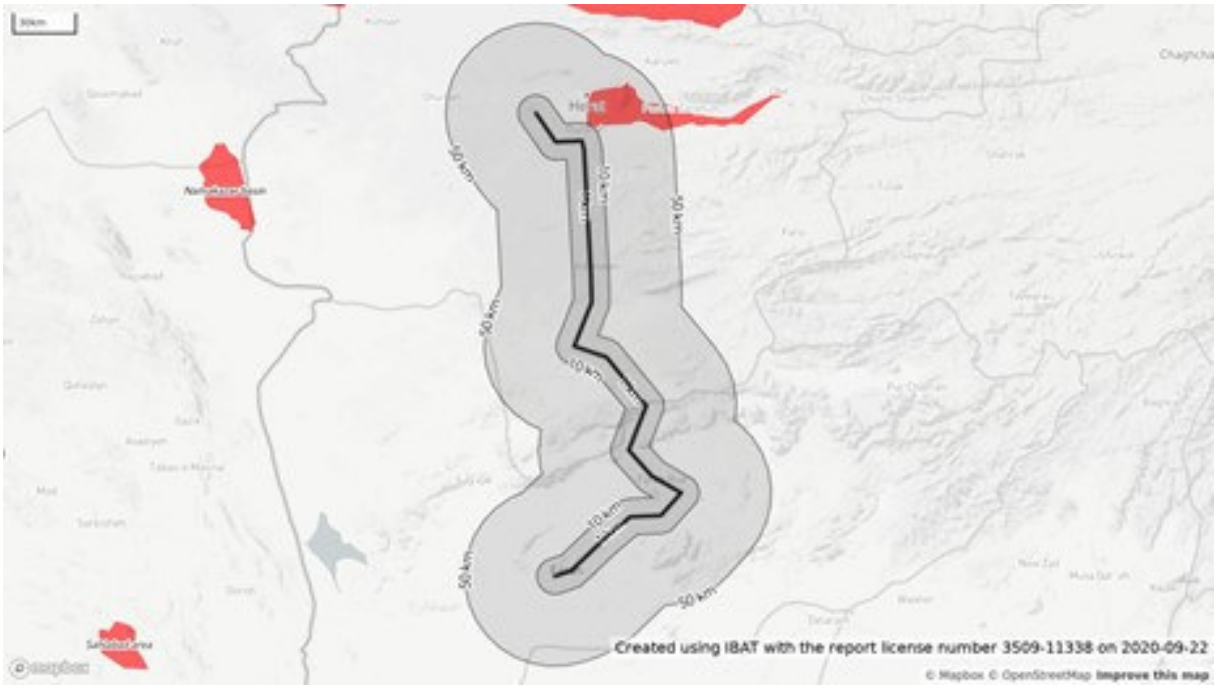



**Figure 21: Proximity of Hari Rud valley IBA to the proposed project**

The valley itself stretches for some 112-km from Herat city (1,050 m) east to Obeh (1,830 m), and is considerably wide towards Herat (even at Obeh it is c.15 km wide), Habitats comprise of barren, desert hills and plains with sparse vegetation and cultivation, with some watercourses where stands of Tamarix prevail and there are Populus groves and some apricot orchards.

In addition to the pigeon and kestrel the valley supports breeding populations of several IUCN Least Concern species, including Shikra (*Accipiter badius)* Scaly-bellied woodpecker (*Picus squamatus flavirostris*), Oriental skylark (*Alauda gulgula*), Citrine wagtail (*Motacilla citreola*) and pied bush chat (*Saxicola caprata*). Common Pheasant (*Phasianus colchicus principalis*) formerly occurred in the valley, mainly to the west of Herat, but is probably extinct there now. The following LC species are also likely to breed, given their presence 100 km further down the valley by the river and on the plains around Kohsan: Little bittern (*Ixobrychus minutus*), Long-legged buzzard (*Buteo rufinus)*, Spotted crake (*Porzana porzana*), Cream-colored courser (*Cursorius cursor*), Little tern (*Sterna albifrons*), Bimaculated lark (*Melanocorypha bimaculate*), Hume's short-toed lark (*Calandrella acutirostris*), Clamorous reed warbler (*Acrocephalus stentoreus*), Sykes's warbler (*Hippolais rama*) and Trumpeter finch (*Rhodopechys githaginea*).

The site is not known to have been subject to proactive conservation measures. Current threats are also not known, but the apparently rapid decline of the global yellow-eyed pigeon population since c.1980 gives rise for concern for the colonies at this site, the current state of which remains completely unknown. Herat is one of the largest cities in Afghanistan thus the pressure on the surrounding semi-desert vegetation by grazing or agricultural improvement, together with the effects of years of war may mean that they no longer exist.

### D.5.2 Rare or Endangered Species

An initial screening for notable species within 50km of the study area undertaken using the IBAT tool recorded some 422 species within the wider area as per the Table below. Of these only 19 were considered critically endangered, endangered or vulnerable at a global level as described further below.

**Table 23: Species present or potentially present within 50km of the proposed route alignment.**

| Group | Critically Endangered | Endangered | Vulnerable | Near Threatened, Least Concern, Data Deficient | Total |
|---|---|---|---|---|---|
| Birds | 2 | 4 | 8 | 224 | **238** |
| Mammals | 0 | 0 | 5 | 60 | **65** |
| Reptiles | 0 | 0 | 0 | 21 | **21** |
| Amphibians | 0 | 0 | 0 | 3 | **3** |
| Fish | 0 | 0 | 0 | 4 | **4** |
| Invertebrates | 0 | 0 | 0 | 42 | **42** |
| Plants | 0 | 0 | 0 | 48 | **48** |
| Fungi | 0 | 0 | 0 | 1 | **1** |
| **Total** | **2** | **4** | **13** | **403** | **422** |

### D.5.3 Flora

The study area is generally highly drought affected and relatively barren (see figures below) apart from near the farmed areas near the towns. No globally or nationally endangered flora were recorded from IBAT or during the field surveys and in total only some 25 herb and eight tree species were recorded as shown in the table below.

| **Group** | **No of Species** | **Species identified** (Local names for Herbs Scientific names of only few species could be obtained). |
|---|---|---|
| Herbs | 25 | Polosh (*Cassia Fistula*); Maswak (*Salvadora Persica*); Mokhlisa (*Melissa Officinalis*); Goli Gaw Zaban (*Borage Officinalis)*; Khar Shotori (*Alhagimaurorum*); Gaz (*Tamarixgallica*); Lokh (*Typha Latifolia*); Tarakh (*Artemisia Dracunculus*); Talkhcha (*Sophora Pachycarpa*); Kharpofak (*Onopordum Acanthium*); Khar Moghilan (*not known*); Kalpora (*Teucrium Polium*); Ghon (*Astragalus*); Awol (*not known*); Chapora (*Ferulago Angulata*); Chakhcha (*Salvia Hispanica*); Hom (*Ephedra Procera*); Charkha (*Launaea Acanthodes*); Sebghan (*Acantho Phyllum Squarrosum Bioss*); Kharbozi (*Alhagi Maurorum*); Khozba (*not known*); Talkhcha (*Acroptilon Repenes*); Nan (*Artocarpus Altilis*); Kalaq (*Falcaria Vulgaris*) Katak (*not known*); Spand (*Peganum Harmala*). |
| Trees | 8 | Poplar (*Populus);* Sallow (*Alyssum Maritimum*); Berry (*Morus*); Apple (*Malus pumila*); Almond (*Prunus dulcis*); Apricot (*Prunus armeniaca*); Withy (*not known*); Juniper (*Juniperus*). |

*Figure 2 - General environmental conditions of project area*

During the field surveys most observations of flora were limited to common species such as:

| Family | Species Scientific Name | Common Name | Status |
|---|---|---|---|
| Fabaceae | *Alhagi persarum* | Camelthorn | Native |
| Nitrariaceae | *Peganum harmala* | Espand | Crop |
| Fabaceae | *Vachellia erioloba* | Camelthorn | Native |
| Euphorbiaceae | *Euphorbia milii* | Thorny | Native |
| Tamaricaceae | *Tamarix* sp. | Tamarix | Native |
| Gundelia | *Gundelia tournefortii* | Gundelia | Native |
| Poaceae | *Zea mays* | Corn | Crop |
| Asteraceae | *Liatris* | unknown | Native |

### D.5.4 Fauna Mammals

Whilst the Study area will support a range of common mammals (wild and domestic), only five globally endangered species have been identified from the desk studies as being potentially present within the wider study area as shown in the table below.

**Table 24: Vulnerable Species potentially present.**

| Species name | Common name | IUCN Category | Taxonomic Class |
|---|---|---|---|
| Gazella subgutturosa | Goitered gazelle | VU | Mammalia |
| Ovis orientalis | Mouflon | VU | Mammalia |
| Panthera pardus | Leopard | VU | Mammalia |
| Ursus thibetanus | Asiatic black bear | VU | Mammalia |
| Vormela peregusna | Marbled polecat | VU | Mammalia |

Of these Marbled polecat (*Vormela peregusna*) was potentially recorded during the field surveys. Whilst this species is found across much of Asia and the Middle East, the IUCN range maps indicate that it is not usually found in this area and further confirmation is sought. Goitered gazelle (*Gazella subgutturosa*) may also be present but further confirmatory surveys are required. The remaining species are considered unlikely to be regularly encountered in the AoI.

### D.5.5 Fauna: Resident Bird Species

IBAT data indicates that six globally endangered/ critically endangered species and a further eight globally vulnerable species have been recorded present within 50km of the route as shown in the table below.

**Table 25: Endangered and Critically Endangered Species potentially present.**

| Species name | Common name | IUCN Category | Taxonomic Class |
|---|---|---|---|
| Gyps bengalensis | White-rumped vulture | CR | Aves |
| Vanellus gregarius | Sociable lapwing | CR | Aves |
| Aquila nipalensis | Steppe eagle | EN | Aves |
| Falco cherrug | Saker falcon | EN | Aves |
| Neophron percnopterus | Egyptian vulture | EN | Aves |
| Oxyura leucocephala | White-headed duck | EN | Aves |
| Aquila heliaca | Eastern imperial eagle | VU | Aves |
| Aythya ferina | Common pochard | VU | Aves |
| Chlamydotis macqueenii | Asian houbara | VU | Aves |
| Clanga clanga | Greater spotted eagle | VU | Aves |
| Marmaronetta angustirostris | Marbled teal | VU | Aves |
| Otis tarda | Great bustard | VU | Aves |
| Streptopelia turtur | European turtle-dove | VU | Aves |
| Columba eversmanni | Yellow-eyed pigeon | VU | Aves |

Of these the following 6 species are considered as potential residents within the AoI:

- *Falco cherrug* **Saker falcon** (EN) Estimated 10-100 breeding in Afghanistan. The species is believed to have bred (and may still do so) in regions bordering Turkmenistan and Iran.
- *Neophron percnopterus* **Egyptian vulture** (EN) Common near towns and may breed in the area.
- *Chlamydotis macqueenii* **Asian houbara** (VU) Potential resident. The region also forms part of the migratory route for birds migrating further south to Pakistan.
- *Otis tarda* **Great bustard** (VU) Potentially present. May overwinter in the Northern parts of the project area.
- *Streptopelia turtur* **European turtle-dove** (VU) A very widespread species, that may breed in the area
- *Columba eversmanni* **Yellow-Eyed Pigeon** (VU) Known to breed in the Hari Rud Valley (see designated sites) and likely to migrate through it.

Despite this, only one species of bird, the Afghan Snowfinch *Montifringilla theresae* (LC), was actually recorded during the field surveys.

### D.5.6 Fauna: Migratory Bird Species

Afghanistan is an important part of the Central Asian Flyway, with many bird species migrating from breeding grounds further North to overwintering sites particularly in Pakistan and India. The Project area is part of this much wider migratory flyway which is hundreds of kilometres wide as birds are funnelled around the Hindu Kush and associated mountain ranges to the East. A number of migratory species of particular note use the flyway and the following are recorded in the study area in IBAT:

- *Vanellus gregarius* **Sociable lapwing (**CR): Migratory data suggests they pass to the east of the project alignment, but birds may on occasion pass through the area. No stopover locations have been identified where this species may be concentrated.

- *Aquila nipalensis,* **Steppe eagle** (EN) Present in passage only and individuals may pass over during each migratory season.
- *Aquila heliaca* **Eastern imperial eagle** (VU) May pass through the area during each migratory season.
- *Clanga clanga* **Greater spotted eagle** (VU) Present likely only in passage, potentially overwinter.

There is no evidence from either satellite tagging data or topographic/geographic features that the Project area is a particular bottleneck within the broader flyway however.

The figures below show the migration routes of satellite tagged birds for four different globally threatened species. For all species the migration routes pass over a very wide corridor, with different individuals taking different routes, some over the mountains to the east, without any evidence that they pass through a bottleneck site. Satellite data from European cranes and bird ringing data from a range of ducks and geese show a similar trend. This is supported by the general topography, which is fairly uniform and flat, with a few areas of higher relief but no steep valleys likely to bottleneck species.

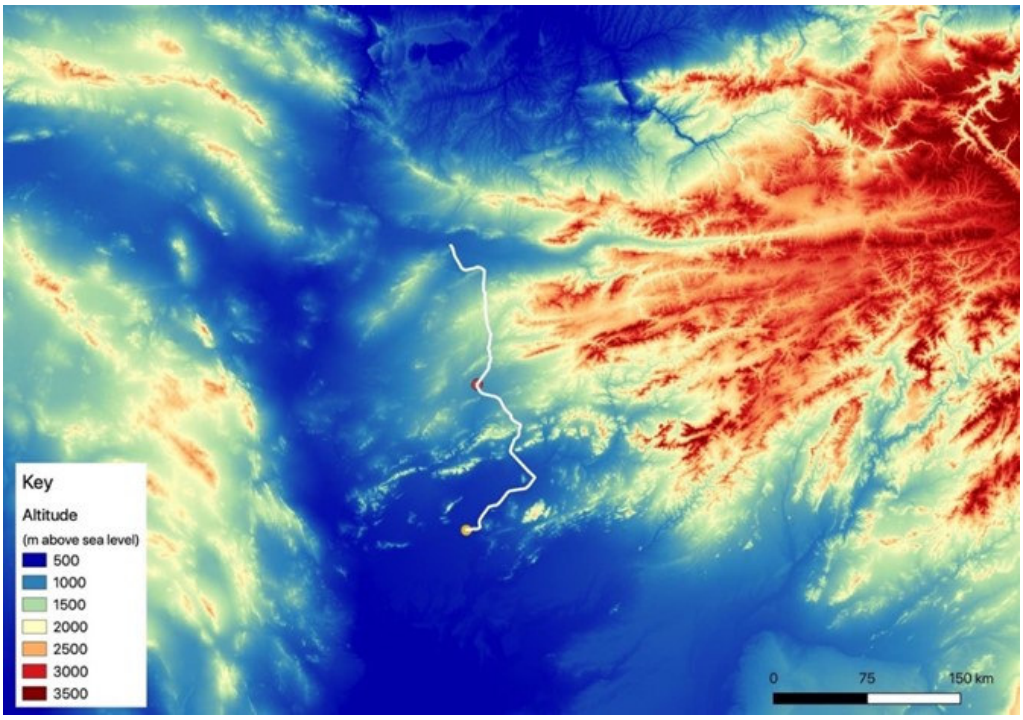
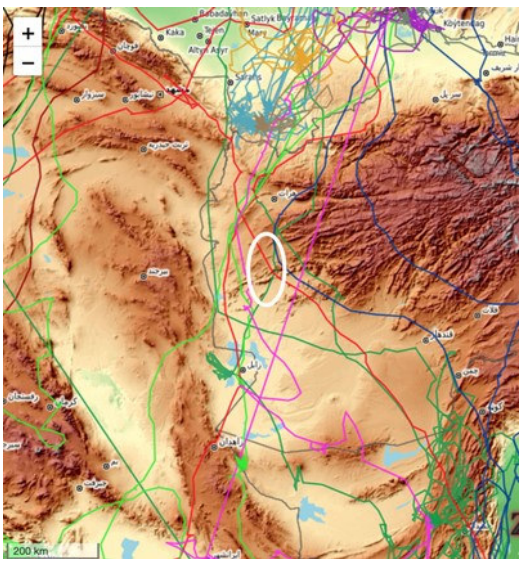
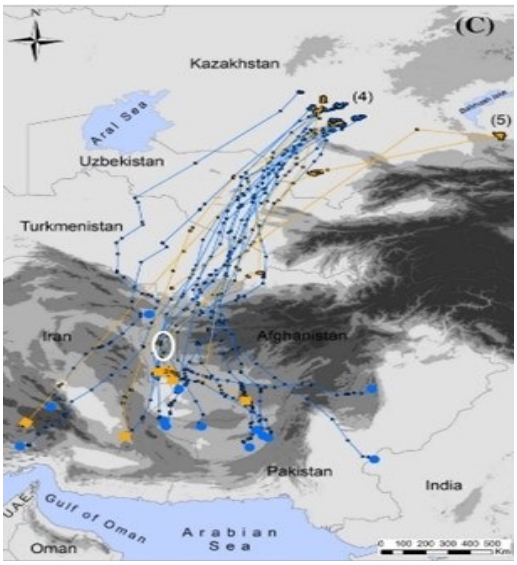
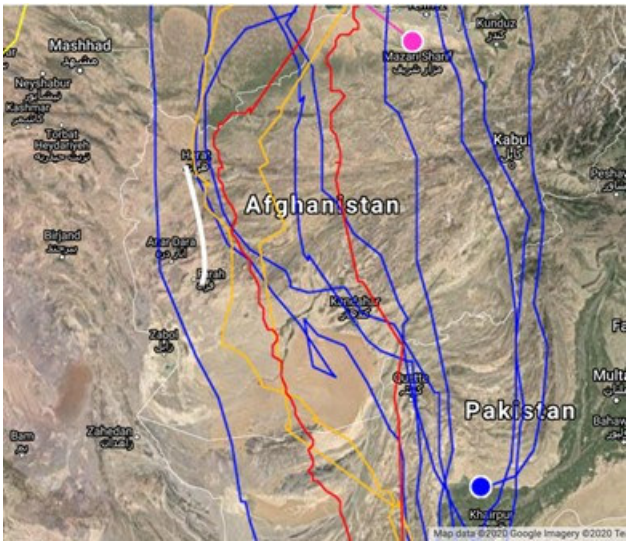


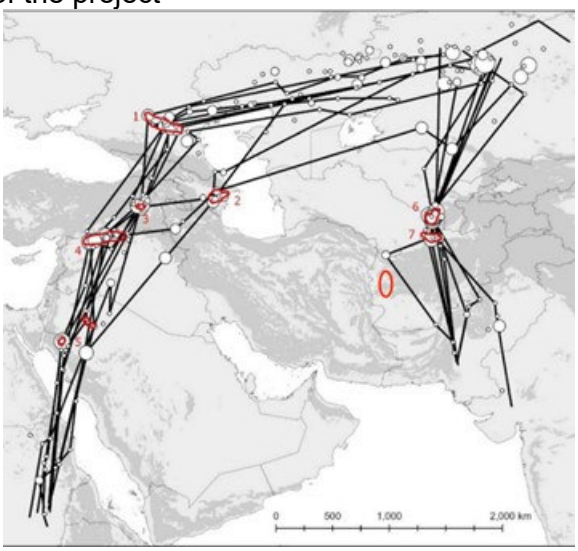

**Figure 22:** Altitude map and detailed route alignment (units are m above sea level)






Steppe Eagle (left) and Asian Houbara (right) migratory routes. White ovals show the approximate location of the project



Eastern Imperial and Greater spotted Eagle (left)and Sociable Lapwing (right) migratory routes. Red circle (right) shows approximate location of the project, white line (left) shows the approximate transmission line alignment.

A further three notable species recorded in IBAT are associated with overwintering wetland habitats such as the Hamoun wetlands on the Iraqi border some 80km south of the project (although these have undergone severe habitat degradation in the last few decades). These species, which may also pass over on passage to these sites, include the IUCN Endangered *Oxyura leucocephala* **White-headed duck** (EN) and the IUCN Vulnerable *Marmaronetta angustirostris* **Marbled teal** (VU) and *Aythya ferina* **Common pochard** (VU).

The Project landscape is however largely barren and arid and no major standing water bodies have been identified which would create stopovers for migratory waterbirds. Whilst some species such as the Houbara bustard are known to stop-off in desert and semi-desert habitat, the important stopover for this species in Afghanistan is thought to be the Registan desert, around 200km to the South of the project. Raptor species may also stopover in the area but there is no reason to imply this region has a greater abundance of prey than the rest of the broad migration corridor and so it is very unlikely they stop over in significant concentrations. This is further supported by the fact that the project area does not contain any KBAs or IBAs designated for migratory or congregatory species.

### D.5.7 Fauna: Other species

No other notable fauna have been recorded for the Study Area in IBAT. Two other common species were recorded during the field studies namely *Varanus bengalensis* the Common Indian Monitor (LC) and *Phrynocephalus ornatus* the Striped Toad Agama (LC). Whilst other species will undoubtedly be present no specific concerns have been raised for other fauna as a result of the project.

### D.5.8 Critical Habitat

Critical Habitat (CH) is defined in the ADB Safeguard Policy Statement (SPS) (2009) as a subset of both natural and modified habitat that has high biodiversity value and deserves particular attention. Critical Habitat is fundamentally based on the following seven criteria:

1. habitat required for the survival of critically endangered or endangered species
2. areas having special significance for endemic or restricted-range species
3. sites that are critical for the survival of migratory species
4. areas supporting globally significant concentrations or numbers of individuals of congregatory species
5. areas with unique assemblages of species or that are associated with key evolutionary processes or provide key ecosystem services
6. areas having biodiversity of significant social, economic, or cultural importance to local communities

The SPS also states that CH includes areas either legally protected or officially proposed for protection, such as areas that meet the criteria of the World Conservation Union classification, the Ramsar List of Wetlands of International Importance, and the United Nations Educational, Scientific, and Cultural Organization's world natural heritage sites.

A stand-alone Critical Habitat Assessment has been undertaken and is provided as an appendix to this report. This has been developed in line with guidance included in the International Finance Corporation (IFC) Guidance Note (GN) 6 which gives specific numerical thresholds that can be applied to the Critical Habitat Requirements set by the ADB SPS. These thresholds are broadly based upon globally standardised numerical thresholds published in IUCN's *A Global Standard for the Identification of Key Biodiversity Areas* and *Red List Categories and Criteria*. The thresholds are indicative and serve as a guideline for decision-making only. As part of the precautionary approach all five IFC Critical Habitat criterion have been assessed as part of this process. The results of the CH Screening and Scoping stage assessment are summarised below for each the seven SPS criteria.

**Table 26: Summarised results**

| # | Requirement | Findings |
|---|---|---|
| 1 | Endangered Species | 6 globally endangered/critically endangered species were identified as being potentially present within 50km of the route, together with a further 13 globally vulnerable species. Of these 4 were out as not "regularly occurring" in the Project Area. A further seven species are migratory and are only known to occur in the project area in passage. They do not overwinter in the project area nor do they use it as an important stop-off site during migration. Therefore, they were assessed under criterion 3. For the remaining species Critical Habitat thresholds are not met for any of these species. The local population sizes are not deemed large enough to meet the criteria set out in IFC GN6. Full justification of this for each species is detailed in Appendix 1. **Thus, the project does not trigger Critical Habitat for Criterion 1, see** |

| # | Requirement | Findings |
|---|---|---|
| | | **Table 5.** Despite the species not triggering Critical Habitat it is recognised that these species are globally vulnerable or endangered and the project must ensure the protection of their conservation status at least and no deterioration of it. If present, avoidance or mitigation may be needed to prevent net harm or loss for these globally threatened species, particularly Endangered Saker Falcon and Egyptian Vulture. As such a Biodiversity Action plan is recommended. It will provide details of any further surveys and mitigation measures necessary. |
| 2 | Restricted - range Species | None were found to be present. This is not surprising as Afghanistan, and central Asia as a whole, does not have high rates of endemism compared to other geographic locations, with the majority of species widely distributed but rare across their range. **Therefore, the project area does not contain Critical Habitat under Criterion 2.** |
| 3 & 4 | Migratory and Congregatory species | The project area does not contain Critical Habitat under Criteria 3 and 4. Nonetheless, the data suggests that the wider area is of importance to migratory species. Transmission line developments in this migratory corridor present a risk to these species and the project should aim to mitigate potential impacts to at least no net loss. They may otherwise have disproportionate effects on the global population |
| 5 | Evolutionary processes and Ecosystem services | The project area is not thought to contain any habitat associated with key evolutionary processes, nor is it thought to provide key ecosystem services. The AoI does cross multiple waterways, however these tend to be seasonal and flow when rainfall is high, as vegetation is sparse and so the area does not act as a good water catchment. The project area does not contain Critical Habitat under Criterion 5.<br>As part of our precautionary approach and because the methods are informed by IFC GN6, the IFC 'Criterion 4 'Highly Threatened or Unique Ecosystems' has also been assessed in this section. No IUCN red listed ecosystems have been identified in Afghanistan, and therefore IFC guidance is instead to look to 'high priority area for conservation by regional or national systematic conservation planning'. The AoI consists of barren, desert hills and plains with sparse vegetation as well as areas of cultivated areas and multiple seasonal watercourses, all common habitats across Afghanistan. No habitat types of local or national conservation significance were identified in the AoI and therefore the project area does not constitute Critical Habitat under IFC Criterion 4 (IFC GN6 2019). |
| 6 | Community importance | No Species of significant social, economic or cultural importance have been identified. Although hunting of wild species such as Houbara Bustard and Gazelle occurs these are not thought to be present in high enough numbers to constitute any significant economic importance. Therefore, the project area does not contain Critical Habitat under Criterion 6. |
| 7 | Protected or designated areas | There are no protected areas within 50km of the project site. However, there is one Important Bird areas (IBA) within the 50km buffer zone.<br>IBAs do not technical trigger Critical Habitat under ADB guidelines. However, they have been assessed as part of the precautionary approach as they are internationally recognised sites which can support important bird concentrations and/or globally threatened species. Hari Rud valley IBA is approximately 8km from the project alignment at its closest point. The IBA is not within the Area of Impact for this project and thus no direct impacts are anticipated on the site. However, the biodiversity features that the site has been designated for may move beyond the IBA boundaries, and could require more detailed analysis if they potentially trigger other CH requirements. The Hari Rad Valley is designated for the Yellow-eyed Pigeon (VU), which did not come up on IBAT but has been assessed under Criterion 1 because of its Vulnerable status. The project area does not contain Critical Habitat under Criterion 7. |

## D.6 Socio-economic environment

### D.6.1 Political and administrative context of Herat and Farah provinces

Afghanistan is deivied into 34 provinces, with the Project located in Herat and Farah provinces in the west of the country. The province of Herat is divided into about 19 districts and contains over 1,000 villages, with the city of Herat the primary city of the province, where the administrative capital is located.

According to the Central Statistics Office (CSO), Herat province has a total a population of about 1,780,000, making it the second most populated province in Afghanistan, after Kabul Province. The population is multi-ethnic, but largely Persian-speaking.

Herat province borders with Iran to the west and Turkmenistan to the north, making it an important trading province. The Turkmenistan – Afghanistan – Pakistan – India (TAPI) pipeline project for transmission of natural gas is expected to pass through Herat from Turkmenistan to Pakistan and India in the south. The province has two airports: Herat International Airport in the capital of Herat and another located at 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.

The province is home to 90% of Afghanistan's saffron production (an estimated $12 million industry in 2014). In 2015, the World Bank noted that saffron cultivation had provided a steady source of income, jobs for both men and women, and a decreased dependency on poppy cultivation forthe famers of this province.

Due to the lack of urbanization in Herat Province, around 75% of the population live in rural areas and economic activities are therefore heavily dependent on agriculture and horticulture production (saffron, rugs, cumin, marble, animal skins and wool) with around 82% of the economic activity coming from these activities in 2011. Marble manufacturing and light industry are the other principal economic activities. The population of Shindand town is mixed, and includes Pashtuns, Tajiks and others, though Pashtuns make up the majority.

Farah province is located to the south of Herat province, in the western part of the country, adjoining Iran (to the west). It is a spacious and sparsely populated province, divided into 11 districts and contains hundreds of villages. It has a population of about 925,016, which is multi-ethnic and is a mostly rural, tribal society.

Farah Airport is located near the city of Farah, the capital of the province. Farah is linked with Iran via the Iranian border town of Mahirud. The province is home to several castles in ruins, including the "Castle of the Infidel", just south of Farah City.

Farah's economy is overwhelmingly agricultural although the province is also rich in minerals such as gypsum, lime and construction stones, coal and uranium. 74% of rural households reported either agriculture or livestock to be their main source of income and 24% reported that trade and services (including non-farm labor) are their main source of income.

More than 80% of the province consists of ethnic Pashtuns (excluding Kuchi nomads) followed by Tajiks as second largest group residing mainly in Farah city and Baluchis as the third group. The primary Pashtun tribes in Farah province are the Eshaqzai, Alizai, Barakzai, and Nurzai. However, the Kuchi nomads, a Pashtun group, make a sizeable population in winter.

In the existing local system of both provinces, the administrative representatives who are directly elected through open competition, also form the Electoral College for the selection of members of the next higher tiers. In this way, generally it is ensured that districts, alaqadaries (sub-districts), and markaz-e-wulaiyat (provincial center districts) have a sizeable representation from all segments of the society such as famers, business men / self-employed, and the vulnerable groups including landless, laborers and female-headed families.

### D.6.2 Settlement Pattern and Population

The alignment of the Project's 220kV 220 kV Transmission Lines passes through four districts of Herat province (with a total of 295 villages) and two districts of Farah Province (with a total of 195 villages). Out of these, the TL route will actually cross around 30 villages. The Shindand Substation is located close to Shindand city centre (to the north), in Shindand district (Herat province) and the Farah Substation is located in the south side of Farah city (Farah province). No village will be directly affected by their footprint.

The proposed transmission line will pass through urban areas, small towns and rural areas (villages), and the Project is expected to affect both rural and urban populations located along the alignment (RoW), although during the field surveys, it was assessed that more than 90% of population located along the TL route belongs to rural areas.

The following table shows the total population by district.

**Table 27: Population of the Project area districts[11]**

| Province Name | District Name | Total Population of District (Urban + Rural) | Population of the Area that Comes Under the Respective District |
|---|---|---|---|
| Herat | Shindand | 44,828 | 2,265 |
| Farah | Balabuluk | 75,369 | 11,352 |
| Farah | Provincial Center District | 118,804 | 6,886 |

Around three quarters (77%) of the population of Herat and Farah provinces lives in rural districts while just under a quarter (23%) lives in urban areas. The average household size is six members.

The closest villages to the Shindand substation, which will be situated in the vicinity of the Chargoosh Lowa-e-Sabiqa village (in Herat province), are located at distances of 1.0 and 1.5 km respectively to the southern and western side of the land allotted for the substation. It will therefore not affect directly any village. Similarly, the closest village to the Farah substation – Shorabad village (in Farah province) – is located at a distance of 0.5 km to the north-west of the Site. It will therefore also not affect directly any village.

Detail of the villages (and some property) through which the Transmission Lines will pass, and whether private or Governmental land is crossed, is tabulated below.

**Table 28: Population of the villages along the Transmission Line**

[11] Central Statistics Organization (CSO) ( to publish the Afghanistan Population Estimates for the year 1396 ) 2017 -18

| Province | District | Village | Private/State Land |
|---|---|---|---|
| **Herat-Shindand TL** | | | |
| Herat | Zindajan | Cement Project Area | Governmental |
| Herat | Zindajan | Kabotar Khan | Governmental |
| Herat | Zindajan | Kabotar Khan | Private |
| Herat | Zindajan | Mayan | Private |
| Herat | Zindajan | Kopak | Private |
| Herat | Zindajan | Gaw Siya | Private |
| Herat | Guzara | Karez Sofi | Private |
| Herat | Guzara | Tezan | Private |
| Herat | Guzara | Hasan Abad | Private |
| Herat | Guzara | Zairat Ja | Private |
| Herat | Guzara | Ziarat Jah Desert | Governmental |
| Herat | Guzara | Qalandaran | Governmental |
| Herat | Guzara | Mir Dawood | Governmental |
| Herat | Guzara | Karez Monji | Private |
| Herat | Guzara | Karez Monji | Governmental |
| Herat | Adraskan | Shah Bed | Governmental |
| Herat | Adraskan | Mir Ali | Private |
| Herat | Adraskan | Mir Ali | Governmental |
| Herat | Adraskan | Karwangah | Governmental |
| Herat | Adraskan | Said Abad | Private |
| Herat | Adraskan | Now Abad | Private |
| Herat | Adraskan | Bazar Adraskan | Private |
| Herat | Adraskan | Takhte Adraskan | Private |
| Herat | Adraskan | Khwaja Riya | Governmental |
| Herat | Shindand | Shidand Airport | Governmental |
| Herat | Shindand | Shidand Airport | Private |
| **Shindand-Farah TL** | | | |
| Herat | Shindand | Shorab | Private |
| Herat | Shindand | Khwaja Noor | Private |
| Herat | Shindand | Khwaja Noor | Governmental |
| Herat | Shindand | Samalan | Private |
| Herat | Shindand | Burj | Private |
| Herat | Shindand | Burj | Governmental |
| Herat | Shindand | Kalai Kaftar | Governmental |
| Herat | Shindand | Mozlamadi | Governmental |
| Herat | Shindand | Shawz | Governmental |
| Farah | Balabluk | Ab Khurma | Governmental |
| Farah | Balabluk | Farah Rud | Governmental |
| Farah | Balabluk | Farah Rud | Private |
| Farah | Balabluk | puze Langar | Governmental |
| Farah | Balabluk | Dezak | Private |
| Farah | Balabluk | Shemonzay | Private |

| Province | District | Village | Private/State Land |
|---|---|---|---|
| Farah | Balabluk | Shemonzay | Governmental |
| Farah | Balabluk | Kenesk | Governmental |
| Farah | Center | Shahrake Mahajirin | Private |
| Farah | Center | Shorab | Governmental |
| Farah | Center | Sartakht | Governmental |
| Farah | Center | Se Chang | Private |
| Farah | Center | Se Chang | Governmental |
| Farah | Center | Kalai Kohna | Governmental |
| Farah | Center | Kalai Kohna | Private |
| Farah | Center | Ashraf Abad | Governmental |
| Farah | Center | Nangabad | Private |
| Farah | Center | Kadanak | Private |
| Farah | Center | Kadanak | Governmental |

### D.6.3 Gender Ratio

Based on the primary and secondary data collected during this study, around 50% of the population is male and 50% is female.

### D.6.4 Languages

In Afghanistan several languages are in place due to different ethnic groups' existence, although the main languages are Dari and Pashto, which are spoken by 98% of the population. The rest of the people speak Turkmeni and Uzbeki. The main languages spoken nationally are given in the following table.

**Table 29: Languages spoken in Afghanistan**

| Language | 2018 |
|---|---|
| Dari | 77% |
| Pashto | 48% |
| Uzbek | 11% |
| Turkmen | 3% |
| Balochi | 1% |
| Pashayi | 1% |
| Nuristani | 1% |
| Arabic | 1% |
| English | 6% |
| Urdu | 3% |

Ref: The Asia Foundation. ***Afghanistan in 2018: A Survey of the Afghan People.***

The provincial dominant languages (in Farah) are Pashto and Dari (Afghan Persian). Pashto is spoken by around 80%, followed by around 10%-15% Dari.

### D.6.5 Culture

Herat province is historically known as a cradle for literature, particularly poetry, and knowledge. Herat was once the capital of Alexander the Great with the Herat Arg (Qala-i-Ikhtiaruddin) the sign of dignity at that time. The great poet and Sufi Khwaja Abdullah Ansari and Abdul Rahman Jami are among culturists that contributed to the beauty of Herat.

Currently, the province has leading poets, singers and writers. There are multiple literary and cultural associations such as Herat Cultural Association, Ustad Mashal, Peer-i-Herat, Poem and Literary Association, Ustad Kamaluddin Behzad Art Association, Khwaja Abdullah Ansar Social Association, Ghor People Union, Turkmen Social Union, Youths Union, Education and Ethics Union, Ahmad Shah Masoud Social and Cultural Association, Youth Movement Association, Spena Adi Cultural Association, Malala Cultural Association, Wer Literary Association, Students Cultural and Social Association, Shindand Penmen Association, Mashriqi Social Association, Mohmands's Association, Wardak's Association, Maidanians Association and the Afghans Association, which contribute to the progress and prosperity of the arts, culture and literature and the province as well.

### D.6.6 Ethnic Groups

Herat was a frontier area between different geographical and cultural zones, bringing together the Turkman steppes, the deserts of Sistān, the Iranian plateau, and the Hindu Kush.

There are several Turkic, Turko-Mongol, and Iranian tribes, including the Hazāra of Qalaʿ-ye Naw, the Jamšidi of K̲ošk, and the Turkman tribes, who have contributed to build the culture and economy of this region. As a result, this area is extremely socially-heterogeneous, a mix of Turkman, Tajik, Uzbek, Jamšidi, Taimani, Firuzkuhi, and Hazāra communities.

The primary Pashtun tribes in Farah province are the Alizai, Barakzai, and Nurzai[12]. However, the Kuchi nomads, a Pashtun group, make a sizeable population in winter[13].

### D.6.7 Transportation

Transport infrastructure is important to allow mobility within cities and connect to other cities, provinces and other countries. The districts along which the alignment will pass though are connected through primary roads, secondary roads and highways. The Herat – Kandahar Highway and bypass are the main roads in the Project Area. The Project alignment runs parallel to the bypass road until it crosses the Herat – Kandahar Highway. While villages usually have a network of secondary, as well as tertiary unmetalled roads and unpaved, some will need to be upgraded to allow the movement of heavy vehicles during construction works. The mode of transportation in the Project Area is mostly pickups, double door pickups, loader trucks and private cars.

[12] "Farah Provincial Overview". Program for Conflict and Culture Studies. Naval Postgraduate School (NPS). Retrieved 2013-01-13
[13] "Provincial Development Plan, Farah Provincial Profile" (PDF). Afghanistan Ministry of Rural Rehabilitation and Development and the United Nations Development Programme (UNDP). Archived from the original (PDF) on 2 December 2010

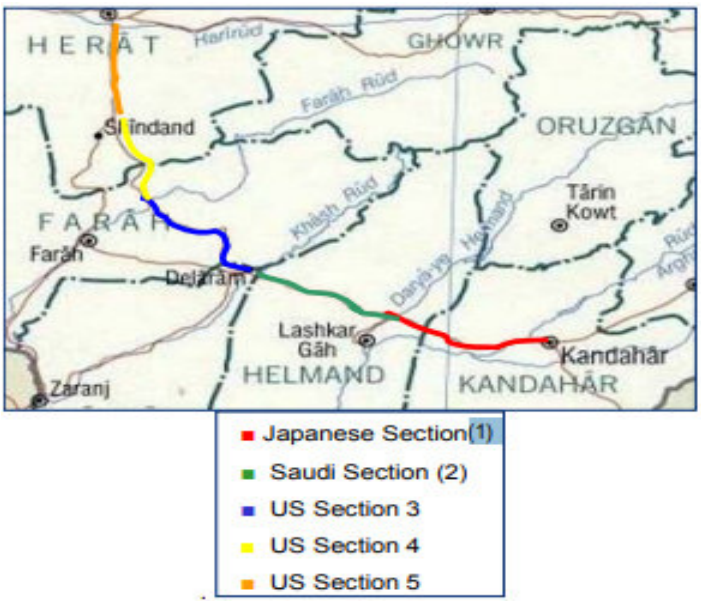



**Figure 23: Kandahar – Herat Highway**

The Kandahar – Herat Highway stretches along 557km, linking southern and western Afghanistan. This highway is part of a larger road network, the "Ring Road", that is critical to developing Afghanistan's economy. Japan is contributing to 116km of Section 1, and Saudi Arabia is responsible for 115 km of Section 2. USAID funds are used for the construction of 326 km of the highway, corresponding to Sections 3, 4, and 5, and also for the security, de-mining, design, and construction management of the Saudi section.[14]

Route 515 is the main road in Bakwa District. It is a compact gravel road that travels east-west and connects Delaram on the east terminus with Farah City on the west terminus. The road is about 75km long and Delaram is about 38km away from the Bakwa District Center. Even though Farah is close to the border with Iran, there are no direct roads connecting to and across the border. Farah has a very clear grid of roads distributed through the higher density residential areas. However, barren land (35%) and vacant plots (25%) are the largest land uses, making up for 60% of total land use[15].

[14] http://www.usaid.gov/locations/asia_near_east/afghanistan/weeklyreports/roadweekly_051006.pdf

[15] The State of Afghan Cities report 2015". Archived from the original on 2015-10-31.

**Figure 24: Route 515 - Main Road connecting Shindand City**

In Herat province, 56% of the roads are accessible all year round and 9% of the province has no road access. The main East-West road runs from the border with Iran, following the course of the Hari Rud, to the border with Ghowr. The major North-South road runs from Turkmenistan through the cities of Kushk, Herat, and Adraskan, before it forks near the district border between Adraskan and Shindand. The Southeast fork runs through the city of Shindand before exiting into Farah, while the Southwestern fork runs in that direction and exits into Farah.

The Delaram – Zaranj Highway, also known as Route 606, is a 217km long (135 mi) two-lane road built by India in Afghanistan, connecting Delaram in Farah Province with Zaranj in neighboring Nimruz Province, near the Iranian border [16].

https://en.wikipedia.org/wiki/Kandahar%E2%80%93Herat_Highway - cite_note-hindu-handover-5
It connects the Afghan – Iranian border with the Kandahar – Herat Highway in Delaram, which provides connectivity to other major Afghan cities via A01. Route 606 reduces travel time between Delaram and Zaranj from the previous 12–14 hours to just 2 hours.

### D.6.8 Healthcare facilities

The villages through which the Transmission Lines will pass do not have enough healthcare facilities to meet the villagers' needs meaning that patients have to travel long distances for treatment. Following the alignment of the Transmission Line route, from Pul-e-Hashimi Substation to Guzara district, only Kaftar khan village has a healthcare facility. It is located at a distance of 4.52km from Pul-e-Hashimi Substation and 0.85km to south of the transmission line route. A number of villages (i.e. Chaka, Ghochanak, Shamsabad,Gholbagaz and Gholoshah) do not have any healthcare facility. Residents of these villages need to travel to Dehnaw Health care clinic for treatment. In turn, villagers of Ghoran and Polsangi village use Malan Clinic as a health centre.

Herat province has the largest of all hospitals, Herat Regional Hospital, which provides a wide range of services besides the four main functions of a general hospital. Because of the large number of beds in the hospital, the ratio of population per bed in the province is relatively low

[16] "India hands over strategic highway to Afghanistan". Hindu. 2009-01-23. Retrieved 2011-08-10.

(1,950). However, most of the provincial population has little access to hospital services, especially in the eastern part of the province. Shindand Hospital and Ghoryan Hospital have a small number of beds and correspond better to the definition of a health centre with beds, rather than to that of a hospital. The Ghoryan Hospital provides mainly maternity services. The number of beds in these hospitals is shown in the table below [17].

**Table 30: Government hospitals in Herat Province**

| No. | Name and Address | Beds | Owner/administrator |
|---|---|---|---|
| **1** | Herat Regional Hospital | 91 | Afghan government |
| **2** | Guzara District Hospital | 6 | Afghan government |
| **3** | Shindand Hospital | 3 | Afghan government |
| **4** | Ghoryan Hospital | 0 | Afghan government |

The following table lists the Hospitals in Herat province.

**Table 31: Private hospitals in Herat Province**

| No. | Name and Address | Owner/administrator |
|---|---|---|
| 1 | Children Hospital Herat, A77, Herat, | Private |
| 2 | Rezaei Obstetric Hospital Herat, Martyr Mirvais Sadeq Rd | Private |
| 3 | Hakim Sanayi Clinic Herat, Al Mahdi Town, Jebrael | Private |
| 4 | Afghan Aria Hospital Herat, Qomandani Amniya Street | Private |
| 5 | Kisha Health Care Herat, Baghe-Azadi Street, Herat | Private |
| 6 | Tabiban Clinic Herat, Baghe-Azadi Street, Herat | Private |
| 7 | Saba Hospital Herat, Afghanistan | Private |
| 8 | Emergency Ward Herat, Khaja Ali Movafaq Rd, Herat | Private |
| 9 | Hakim Al Birooni Hospital Herat, Bagh -e- Azadi Ave | Private |
| 11 | Herat Regional Hospital, Welayat Rd, Herat | Private |
| 12 | Public Ward Herat, Mahbas St, Herat | Private |
| 13 | Clinic Obaidi Herat, Shahzadegan Rd, Herat 040 | Private |
| 14 | Kisha Health Care Herat, Baghe-Azadi Street, Herat | Private |
| 15 | Burn Ward Herat, Mahbas St, Herat | Private |
| 16 | Fushanj Hospital Zindah Jān, Zendeh Jan, Afghanistan | Private |
| 17 | ول شفاخانه Ghōriyān, Ghourian, Afghanistan | Private |

## D.6.9 Educational Facilities

The overall literacy rate (6+ years of age) fell from 36% in 2005 to 25% in 2011[18]. The overall net enrolment rate (6–13 years of age) fell from 55% in 2005 to 52% in 2011. Herat University is Afghanistan's second largest university with over 10,000 students, 14 faculties and 45 departments (2014). A school in Herat Province is shown in the following figure.

[17] Afghanistan National Hospital Survey August 2004 Volume 1/3 Final Report
[18] "Herat". *cimi,cweb.org*. 2014-05-31. Archived from the original on 2014-05-31. Retrieved 2019-08-13

**Figure 25: A school in Herat Province**

Chaka and Ghochanak villages, located along the transmission line route, have only one school ("Chaka and Ghochanak School"), which is located 8.1km from Pul-e-Hashimi Substation at a distance of 0.83 km to the south of the transmission line. Kopak, Mayon and Kaftar khan villages all use the same shared school ("Bibi Mariam School"), which is located 4.52km from Pul-e-Hashimi Substation, at a distance of 1km to the west of transmission line.

Based on the field surveys, the table below shows the details of the closest schools located along the transmission line route. The close proximity of several schools to the alignment will require careful planning during the construction and operation of the Project to minimise health and safety hazards and risks.

**Table 32: Location and Distance of School from Transmission line**

| Sr. No | Name | Village | Distance from T Line |
|---|---|---|---|
| **1** | Farjayi School | Farjayi | 1.20 km |
| **2** | Shams Abad School | Shams Abad | 0.41 km |
| **3** | Zangan, Gholba Gaz and Gholoshah School | Gholba Gaz and Gholoshah | 1.13 km |
| **4** | Ghoran School | Ghoran | 0.11 km |
| **5** | Ziartjah School | Ziaratjah | 1.42 km |
| **6** | Gawsiah School | Gawsiah | 1.47 km |
| **7** | Kariz Sofi School | Kariz Sofi | 1.90 km |
| **8** | Tizan School | Tizan School | 4.30 km |
| **9** | Hassan Abad School | Hassan Abad | 0.85 km |
| **10** | Mir Ali | Mir Ali | 0.37 km |
| **11** | Adraskan High School | Bazare Adraskan | 0.85 km |

### D.6.10 **Main occupations**

The main occupations of the people who live in the Study Area are agriculture, gardening, farming, animal husbandry, with few of them linked to activities such as masonry, street hawking, business, industrial and official jobs. Gardening, animal husbandry and saffron cultivation require greater investment, but potentially generate higher income, when compared to other activities or crops. However, due to economic issues and poverty, the majority of the people cannot afford to cultivate these crops and so are forced to cultivate other less profitable crops.

Approximately 1.5km to the north of the transmission line route, there is a significant industrial area in the Ziaratjah Desert. Due to the generally poor economic conditions, people prefer to work abroad, namely in neighbouring countries like Pakistan and Iran; around 30% of youth are emigrant workers in Iran.

A small number of people in rural areas work in the handicrafts industry, producing rugs, silk scarves etc. The table below shows people's net income from common cultivated crops and animal husbandry.

**Table 33: Major crops within the Project rea**

| Sr. No | Name of Crops | Area | Net income per year |
|---|---|---|---|
| **1** | Wheat | 2,000 $m^2$ | 10,000 Afg |
| **2** | Barley | 2,000 $m^2$ | 10,000 Afg |
| **3** | Saffron (after 4 year) | 2,000 $m^2$ | 100,000 Afg |
| **4** | Vineyard (with 4,000 grape vines) | 6,000 $m^2$ | 200,000 Afg |

People living in the villages along the Transmission Line route have livestock (such as goats, sheep, cows and buffalos), from which they derive different benefits, generally selling their meat and milk.

### D.6.11 Historical Monuments

UNESCO has listed Herat province in the World Cultural Heritage Program. Pul-i-Malan, Minarets of Herat, the Congregational Mosque of Kherqa, Herat Arg, Herat Mosque, Herat Peer, Shahrukh Mirza, Maulana Jami, Imam Fakhr Razi, Shehzada Qasim, Shehzada Abdullah, Sultan Agha, Khwaja Ghaltan Wali, Mullah Waiz Kashifi, Khwaja Abdullah Ansari and the Gauhar Arshad Begum Mosque are amongst some of the most important historical monuments.

No historical monument is known to be located close to the Project Area and therefore no effects on tangible cultural heritage are expected during the construction activities.

# E. Anticipated Environmental Impacts and Mitigation Measures

## E.1 Introduction

This section describes the approach and methodology adopted for the assessment of the Project, which has involved the following key stages:

- Preliminary Social and Environment Impact Assessment
- Collection of drawings of the project alignment
- Desk studies - review of available data, documents, drawings, maps
- Field Surveys: (physical, biological, social and cultural baseline data) including preparation of survey formats / tools & Training
- Data tabulation, processing and analysis
- Identification of Project Affected Persons (PAPs)
- Preparation of Environmental Mitigation and Monitoring Plan based on the significant impacts that are identified at pre-construction, construction and operation phase
- Preparation of Grievance Redress Mechanism

Following on from the description of the assessment process, this section provides an assessment of the environmental and social impacts of the Project, specifies appropriate mitigation measures to reduce significant impacts and finally identifies residual effects – i.e. those that remain after mitigation.

## E.2 The assessment process

### E.2.1 Characterisation of impacts

The assessment of impacts and the identification of significance is generally undertaken in two stages. An assessment in the absence of any mitigation measures identifies those impacts that are significant and require mitigation. A further assessment considers the impact assuming the mitigation measures are implemented and results in a prediction of the residual effect.

Characteristics taken into account in the identification of impacts are summarised in Table 34 below.

**Table 34: Impact Characterization Matrix**

| Sr. No | Categories | Characteristics |
|---|---|---|
| 1 | **Nature** | ***Direct:*** The environmental parameters are directly affected by the construction or operation of the Project<br>***Indirect:*** The environmental parameter changes as a result of alteration in another parameter. |
| 2 | **Duration** | ***Short-term:*** the impacts that last only during the construction of the proposed Project e.g., noise from the construction activities.<br>***Medium-term:*** lasting for a period of few months to a year before naturally reverting to the original condition such as loss of vegetation due to clearing of campsite, contamination of soil or water by fuels or oil.<br>***Long term:*** lasting for period much greater than medium term impact before naturally reverting to the original condition such as loss of soil due to erosion or visual impacts from the infrastructure itself. |
| 3 | **Geographical Extent** | The geographical extent may be local or regional (spatial dimension). |

| Sr. No | Categories | Characteristics |
|---|---|---|
| 4 | **Timings** | Pre-construction (designing), Construction and Operational |
| 5 | **Reversibility** | ***Temporary:*** Impacts that occur over a short duration e.g. dust associated with construction activities<br>***Permanent:*** Impacts that cannot be reversed |
| 6 | **Likelihood** | The probability of a particular impact occurring is assessed on a scale from Certain (impact will definitely occur) – Likely – Possible – Unlikely – Rare (impact is unlikely to occur or only under exceptional circumstances). |
| 7 | **Severity** | ***Major:*** When an activity causes irreversible damage to a unique environmental feature; causes a decline in abundance or change in distribution over more than one generation of an entire population of species of flora or fauna; has long-term effects (period of years) on socio-economic activities of significance or regional level.<br>***Moderate:*** When an activity causes long-term (period of years), reversible damage to a unique environmental feature; causes reversible damage or change in abundance or distribution over one generation of a population of flora or fauna; has short-term effects (period of months) on socio-economic activities of significance on regional level.<br>***Minor:*** When an activity causes short-term (period of few months) reversible damage to an environmental feature; slight reversible damage to a few species of flora or fauna within a population over a short period; has short term (period of months) effects on socio-economic activities of local significance.<br>***Negligible:*** When no measurable damage to physical, socio-economic, or biological environment above the existing level of public concern; and conformance with legislative of statutory requirements. |
| 8 | **Impact based on Significance** | Through consideration of the likelihood and severity of each impact, an assessment can be made of the significance of the impact, which is categorized as high, medium, or low. |

The final stage of the characterization of impacts as set out in Table 34 above is to determine the overall significance of the impact taking into account the receptor sensitivity and the likelihood and severity of the impact to arrive at an overall assessment of significance as set out in Table 35 below.

**Table 35: Impact significance matrix**

| Receptor Sensitivity | Impact Likelihood / Severity | | | | |
|---|---|---|---|---|---|
| | Beneficial | Negligible / unlikely-rare | Minor / possible | Moderate / likely | Major / certain |
| High | | L | M | H | H |
| Moderate | | N | L | M | H |
| Low | | N | N | L | M |
| Not sensitive | | N | N | N | L |

## E.2.2 Mitigation measures

Impact assessment is designed to ensure that decisions on projects are made in full knowledge of their likely impacts. A vital step within the process is the identification of measures that will be taken by a project to mitigate its impacts. In some instances, mitigation will be inherent in design and in others mitigation measures will need to be identified during the IEE process. In this instance, negative impacts have been identified and then recommendations made for technically and financially feasible and cost-effective means of mitigating those impacts to levels that are deemed acceptable.

# Contents

### E.2.3 Residual impacts

Following the identification of appropriate mitigation measures, where necessary, the impacts have been re-assessed to identify the magnitude of the impact that would remain with the mitigation measures in place.

## E.3 Physical environment

### E.3.1 Introduction

There are not predicted to be any potentially significant environmental impacts on climate, topography, land use, geology and soils, or seismicity, which are therefore not considered further in this section.

Potential impacts associated with liquid and solid construction wastes, soil management, and storage, treatment and disposal of wastes will be addressed through the development and implementation of Project-specific management plans as set out in section C4, which described the approach to construction and the requirement for GIIP and in the Framework Environmental Management Plan (Section H).

### E.3.2 Air quality

There is limited information available relating to current air quality and proposed construction methodologies and so the assessment is necessarily qualitative in nature.

The most significant air quality impacts that may arise during the construction and operation of the Project are expected to occur during the construction period, specifically related to dust deposition, resulting in the soiling of surfaces and elevated $PM_{10}$ concentrations, as a result of dust generating activities on site. The locations of construction compounds and the transmission lines towers themselves are unknown and so it is not possible to undertake an assessment with respect to impacts on specific receptors in the AoI at this stage.

However, it is possible to identify specific groups, or types of sensitive receptors that may be affected. It should be noted that receptor sensitivity may vary dependent on the specific impact under consideration as set out below for two key air quality impacts; sensitivity to dust soiling and health effects of particulates. Key receptors to be considered include schools, hospitals and health centres, and residential properties as identified in section D6.

Sensitivity to dust soiling effects:

- High sensitivity receptor – land where users can reasonably expect enjoyment of a high level of amenity, or the appearance, aesthetics or value of their property would be diminished by soiling; and the people or property would reasonably be expected to be present continuously, or at least regularly for extended periods. Examples include dwellings, museums and other culturally important collections, medium and long term car parks.

- Medium sensitivity receptor - users would expect to enjoy a reasonable level of amenity, but not to the same level as their home, users would not reasonably be expected to be present regularly for extended periods. Examples include parks and places of work.

- Low sensitivity receptor - enjoyment of amenity would not reasonably be expected, there is only transient exposure with users generally only present for limited periods. Examples include playing fields, most farmland and roads.

Sensitivity of people to health effects of $PM_{10}$

In assessing the sensitivities to the health effects of $PM_{10}$, three levels are generally defined dependent on whether or not the receptor is likely to be exposed to elevated concentrations over a 24-hour period as follows:

- High sensitivity receptor - locations where individuals may be exposed for eight hours or more in a day such as residential properties. hospitals, schools and residential care homes.
- Medium sensitivity receptor - locations where workers may be exposed for eight hours or more in a day.
- Low sensitivity receptor - locations where human exposure is transient such as footpaths, playing fields, parks and shopping streets.

The locations of the substations mean that significant effects on receptors are not expected. Similarly, the construction activities expected in relation to the distribution network, although in close proximity to residents etc. are not expected to give rise to any significant effects. Although dust soiling is likely to occur given the arid nature of the land along the majority of the AoI, the relatively low population density along much of the route means that significant adverse effects are not expected overall and the impacts are predicted to be direct, short-term, local, likely and minor i.e. low overall impact.

Transportation of construction materials to and from the site will cause a temporary deterioration in air quality from vehicle emissions in the immediate vicinity as will the used of diesel-powered equipment on site. Emissions from vehicles decrease rapidly with distance from the source and therefore any impacts are predicted to be direct, short-term, local, likely, and minor i.e. low overall impact.

The nature of the Project means that there are not expected to be any potentially significant effects on air quality associated with the operational phase. Given that the Project will provide an alternative source of power to the current solution of diesel generators, it is expected that there will be an improvement in air quality at the local level although it is not possible to quantify any benefit at this time.

**Proposed mitigation – air quality**

Although impacts on air quality are predicted to be generally of minor significance, there will be areas in the AoI where construction activities are close to potentially sensitive receptors. Once the proposed locations of construction compounds have been identified and the transmission line alignment, and hence locations of towers, fixed, the assessment of impacts will be revisited to identify if there are any specific potentially sensitive receptors that need special additional consideration or mitigation measures because of their proximity to the sources of impact. Any additional information required, or assessment undertaken, will either be included as an addendum to this IEE or contained within the EMP.

Outline mitigation measures in accordance with GIP have been set out in Table 36 below and are grouped into general good practice mitigation measures as well as those specific to demolition, earthworks, construction and trackout. These measures will be detailed further in a construction

phase Air Quality Management Plan (AQMP) to be developed by the Principal Contractor in consultation with the competent authority and ABD and in accordance with GIIP.

**Table 36: Proposed air quality mitigation measures**

| Issue | Mitigation Measures |
|---|---|
| Site management | • Maintain records of dust and air quality complaints in the Air Quality Management Plan. Identify causes and measures taken to reduce emissions.<br>• Record any exceptional incidents that cause dust or air emissions. |
| Monitoring | • Undertake regular off-site inspections, where sensitive receptors are nearby (within 100m of site boundary).<br>• Increase frequency of inspections when activities with a high potential to produce dust are being undertaken and during prolonged windy or dry conditions. |
| Site preparation and maintenance | • Plan site layout so that machinery and dusty activities are located away from receptors where possible<br>• Erect solid screens or barriers around dusty activities or site boundary that are at least as high as any stockpiles.<br>• Keep site fencing, barriers etc. clean using wet methods.<br>• Cover stockpiles with the potential to produce dust. |
| Site vehicles and equipment | • Vehicle loading and movements to be optimised, with backfilling where possible, to minimise the number of journeys<br>• Maximum speed limits on surfaced and un-surfaced haul route and work areas to be specified<br>• Ensure all vehicles switch off engines when stationary.<br>• All onsite and on road vehicles and machinery to be appropriately maintained and to comply with relevant emission standards. |
| General construction activities | • Cutting, grinding or sawing equipment should be fitted with, or used in conjunction with, suitable dust suppression techniques such as water sprays or local extraction.<br>• Drop heights to be minimised and fine water sprays to be used when appropriate.<br>• Ensure an adequate water supply on site for effective dust suppression / mitigation using non-potable water where possible |
| Demolition | • Ensure effective water suppression during demolition operations.<br>• Soft-strip inside buildings before demolition, retaining walls and windows to contain dust. |
| Earthworks | • Re-vegetate exposed areas / soil stockpiles as soon as practicable to stabilise surfaces where possible and practicable |
| Construction | • Ensure sand and aggregates are stored in bunded areas and not allowed to dry out.<br>• Bulk cement and other fine powder materials to be delivered in enclosed tankers and stored in silos with suitable control systems to prevent overfill. |
| Trackout | • Haul routes and construction site to be damped down to minimise dust generation<br>• Vehicles leaving the site or bringing materials such as sand, gravel etc. to the site to be covered.<br>• Dry sweeping of large areas to be avoided. |

### Residual effects

With the implementation of the mitigation measures identified above, it is not considered that there will be any significant residual construction phase effects on ambient air quality. There are no residual operational phase effects on ambient air quality.

## E.3.3 Noise and vibration

### Assessment of impacts

There is limited information available relating to current noise levels and proposed construction methodologies and so the assessment is necessarily qualitative in nature.

Construction phase noise impacts are expected to be relatively short-term and transient in nature as the Project progresses along the route of the transmission lines and the distribution networks and to occur over a longer-term during construction of the substations. The locations of the substations mean that significant impacts on receptors are not expected but the construction of the towers has the potential to cause a significant impact dependent on the proximity to sensitive receptors and the construction techniques employed.

However, as the duration of the construction phase and the locations of construction compounds and the transmission line towers themselves are unknown, it is not possible to undertake an assessment with respect to impacts on specific receptors in the AoI at this stage. Once the alignment of the transmission lines and tower locations are fixed, the assessment will be revisited to identify if there are any specific potentially sensitive receptors that need special additional consideration or mitigation measures because of their proximity to the sources of impact. Any additional information required, or assessment undertaken, will either be included as an addendum to this IEE or contained within the EMP.

Certain construction activities, such as piling or dynamic ground stabilisation, may have the potential to generate ground borne vibration. However, whether this vibration becomes perceptible or even detrimental to amenity in the surrounding area depends not only upon the magnitude and duration of the source but also the ground type and the separation distances between the source and receptor. Typical construction techniques would not generally give rise to significant vibratory issues discernible outside of the immediate vicinity of the operation.

Vehicle movements associated with transportation of construction materials to and from the construction sites will also add to the prevailing background noise although these impacts will be of very short duration.

Given the lack of available data with respect to existing background noise levels, proposed construction methodologies and the location of key elements of the Project, such as the towers, a precautionary approach has been taken with respect to the assessment of noise and vibration impacts which are assessed as direct, short-term, local, likely, and moderate i.e. medium overall impact.

The nature of the Project means that there are not expected to be any potentially significant effects on noise and vibration associated with the operational phase.

**Proposed mitigation – noise and vibration**

Given the uncertainty of the predicted noise and vibration impacts discussed above, it is therefore proposed that construction noise and vibration should be addressed within the scope of a Construction Noise and Vibration Management Plan (CNVMP) once the specifics of the program and working methodology are known and understood.

A primary control of construction noise and vibration impacts would be through the specification of allowable construction hours, generally restricted to 06:00 – 21:00 or daylight hours, whichever is more stringent, where potentially sensitive receptors are present.

If blasting, piling or dynamic ground stabilisation are proposed then ground borne vibration should be considered and evaluated once the specifics of the construction phase are known, and the exact techniques necessary to realise the Project are concluded. Where piling is proposed in close proximity (within 100m) of any schools, religious premises, hospitals or residences, a building condition survey should take place prior to construction.

Outline construction phase noise mitigation measures where potentially sensitive receptors are present (i.e. in close proximity to houses and settlements) are summarised below. These measures will be detailed further in a construction phase Noise and Vibration Monitoring Plan (CNVMP) to be developed by the Principal Contractor in consultation with the competent authority and ABD and in accordance with GIP.

- Appropriately silenced and well-maintained plant would be used at all times;
- Worker exposure to noise should be controlled below a level equivalent to 85 dBA for eight hour day
- Machinery, including vehicles, would be shut down or throttled back when not in use;
- Engine compartments would be closed when equipment is in use and the resonance of body panels and cover plates reduced by the addition of suitable dampening materials;
- Semi-static and static equipment would be sited and orientated as far as is reasonably practicable away from noise-sensitive receptors and have localised screening where deemed necessary;
- Static plant known to generate significant vibration levels would be isolated or fitted with appropriate dampening to reduce transmission into the ground;
- Generators and water pumps required for 24-hour operation would be silenced or screened as appropriate; and their location carefully considered to minimise disturbance;
- Crane spindles, pulley wheels, telescopic sections and moving parts of working platforms would be adequately lubricated in order to prevent undue screeching and squealing.

**Residual effects**

With the implementation of the mitigation measures identified above, it is not considered that there will be any significant residual construction phase effects. There are not predicted to be any residual operational phase effects.

### E.3.4 Water resources

**Assessment of impacts**

The length of the transmission lines means that the route runs in close proximity to a number of watercourses and several crossings of seasonal and permanent watercourses, some of which are a significant width, are required. Groundwater, where present, is generally close to the surface. The construction of the transmission lines is therefore considered to have the potential to affect water resources in the AoI.

It has been assumed that in-channel works will not be required. However, ground clearance and earthworks have the potential to alter site levels and gradients and soils can become compacted leading to reduced permeability and abstraction from rivers to provide water for construction activities also has the potential to alter the hydrological regime. Given the strong seasonality of the water resources, any impacts on the hydrological regime are expected to be direct, medium-term, local, possible, and minor i.e. low overall impact.

Changes in water quality during construction could arise as a result of site clearance and groundworks and spillages of chemicals, fuels and materials.

Removal of topsoil and vegetation and general construction activities cause dusts, leading to increased turbidity, sedimentation, and potentially nutrient load, in watercourses. Sediment loads and nutrient levels in watercourses vary naturally and aquatic biota can cope with a range of

concentrations. However, prolonged periods of elevated levels of sediment concentrations can exert serious stresses on watercourses and associated habitats. Given the strong seasonality of the water resources, any impacts on water quality are expected to be direct, short-medium term, local, likely and minor i.e. low overall impact, depending on the duration of the construction activities and the prevailing flow regime of the river.

Impacts from spillages of incorrectly stored materials or from accidents on site will vary according to the amount spilled and its location in relation to water resources. Impacts are therefore predicted to be direct, short-medium term, local, likely and minor – moderate i.e. low – medium overall impact.

There are not considered to be any potential impacts associated with the operation of the Project.

**Proposed mitigation**

The generic mitigation measures set out in section C.5 will provide appropriate mitigation for the majority of potential impacts on water resources including those associated with the construction of the substations and distribution networks.

Specific mitigation measures that may be required in relation to the transmission lines are set out below.

- Foundation works for any structures in or close to surface water resources to take place when river levels are low.
- If construction works cannot be avoided when there are flows in the river, appropriate isolation techniques should be employed i.e. the installation of a coffer dam, to keep water out of the works area and controls installed downstream of the works to trap sediments such as silt fences, rock groynes, geo-fabric barriers and hay bales. In addition, turbidity should be monitored daily if sensitive biodiversity or human receptors are present, immediately upstream and downstream of the work site. If turbidity levels are shown to exceed specified standards, operations in the river should cease until the river is flowing more clearly again.
- Where technically feasible, work on crossings should be carried out from the banks above the channel, avoiding direct intervention in the watercourse, unless the existing bank needs to be reinforced.
- Sensitive areas of watercourses should be protected from vehicles and other construction activities via fencing or other appropriate means.

**Residual impacts**

With the implementation of the mitigation measures identified above, it is not considered that there will be any significant residual construction phase effects on water resources. There are not predicted to be any residual operational phase effects on water resources.

## E.4 Ecological environment

### E.4.1 Assessment of impacts

This section considers the likely significant effects of the Project on the biodiversity and conservation potential of the region. Data has been obtained through a combination of desk studies and limited field surveys undertaken by the local consultants. Where data are limited a precautionary approach has been taken to the assessment.

The following specific approach has been applied to the ecological impact assessment:

- **Desk Study Area:** For the desk-based elements of this assessment we have taken an initial study area of 50km either side of the proposed transmission route alignment to research for protected sites, habitats and species. The many hundreds of potential ecological receptors within this area have then been systematically screened on the basis of professional judgement to confirm if they are likely to regularly occur within or near the Project Area of Influence (AoI) and therefore might be impacted upon by the Project.
- **Project AoI:** The AoI itself is defined as that area within which there is the potential for direct impacts on local habitats or species as a result of project construction or operation. International good practice typically considers a buffer of 250m around project activities as an appropriate AoI for linear infrastructure projects such as transmission lines (this is the distance within which significant adverse disturbance, air and noise impacts are recorded). This assessment has however applied a precautionary approach to biodiversity issues so a wider AoI of a 1km buffer surrounding project activities has been adopted, extending downstream to 2km to allow for impacts of water pollution. A similar precautionary approach has also been taken to the inclusion post-screening of highly mobile species, including most birds in the assessment. More static species such as plants have been screened out if their requisite habitat type is not in the AoI.
- **Critical Habitat** All ecological receptors that are present or potentially present in the AoI have also been assessed to determine if they meet the SPS Critical Habitat (CH) criteria. If it is feasible that a species meets CH thresholds, and it is appropriate, an Ecologically Appropriate Area of Analysis (AoA) has been established for the species dependent on the ecological characteristics of the species e.g. the species population, distribution, range, behaviour, habitat requirements, prey, seasonal mitigation and so on. An assessment is then made to confirm whether the AoA could support enough a great enough population to trigger CH.

**Construction**

The Project will result in the loss of vegetation along the transmission and distribution line RoWs and on the substation sites as well as in other areas with temporary project activities (access roads, laydown areas, construction camps etc). Whilst the flora of the area is not considered particularly sensitive, and no endangered species have been recorded, the following impacts are expected:

- any trees under the transmission and distribution lines will need to be removed permanently and unmitigated impacts are considered of moderate adverse significance;
- whilst flora in other areas, including self-seeding shrubs, will grow back over time, the arid nature of much of AoI means that this will take considerable time and is therefore also considered a moderate adverse impact.

Little wildlife has been recorded from the Project AoI, and impacts to wildlife are readily mitigated through the application of GIIP. This will include a ban on worker hunting and/or use of dogs during the construction period. With these controls in place impacts on fauna from construction are therefore considered to be of only minor/low adverse significance.

The exception to this is disturbance of breeding birds (eg as a result of any blasting operations required during construction). Specific surveys will be needed for breeding birds (especially endangered or vulnerable species such as Egyptian vulture and Saker falcon) in advance of construction commencing. Should any such species be found to be present and breeding an adaptive management approach must be adopted and construction delayed until appropriate mitigation has been put in place (this may include delay of works until after breeding is finished).

**Operation**

During operation, trees within the transmission line corridor will need to be periodically cleared/trimmed to maintain a suitable distance from the conductor cables. This is assessed to a minor/low significance impact only. No significant impacts are expected on other flora from the operational Project.

Impacts on fauna from the operational project are expected to be restricted to birds, which face particular risks of collision and electrocution from the transmission lines. The proposed Project is within a broad migratory flyway used by multiple species, including soaring species like eagles which can be particularly vulnerable to collision with transmission lines. The area is also used by Asian Houbara, a species for which and collision with transmission lines has been identified as a key threat. The Endangered Saker Falcon and Egyptian Vulture are also particularly vulnerable to electrocution on distribution lines and for Saker falcon this can represent their single biggest threat in some countries (a 2004 study in Mongolia by Gombobaatar *et al.* found that electrocution was responsible for 54% of all adult saker falcon mortality). Collision frequency is also thought to be a contributing factor in on-going population declines in several species of cranes, bustards and diurnal raptors.

Direct impacts on birds are primarily associated with medium and high voltage lines and low visibility cables are particularly associated with collision risks, especially during adverse weather conditions. Thin earth (shield) wires found above the thicker high voltage conductor wire are a particular concern but as these are usually connected to pylons with long suspended insulators, electrocution risk at high voltage power lines is typically low. Other large, heavy-bodied birds such as herons, cranes, swans and pelicans are also frequently reported casualties because of their large wingspans and lack of agility. Many species of ducks are vulnerable when flying at low altitudes because of their high flight speed. Flying in flocks also restricts maneuverability.

Medium and low voltage distribution lines (~1 kV to 60 kV) are more likely to result in electrocution, due to birds making a connection between two live components. This electrocution risk is most commonly associated with poles and perching areas. For such lines the risk of collision is generally less as the conductors are usually arranged at the same height and relatively low to the ground. Compared to the wingspan of raptors, the relatively close separation between conductors and conductors-to-ground is one of the leading causes of electrocutions. Juvenile raptors also lack the experience and flight control of adult birds and, as a result, are more frequently electrocuted than adults.

Birds can also cause damage and disruptions in many ways with larger raptors cause some of the more challenging problems. This is especially so as poles can increase their range of vision and attack speed when hunting; they provide good hunting and roosting platforms; they are favorable sites for raptors to broadcast territory boundaries and a good prey base often exists along the RoW. Woodpeckers destroy wood poles, causing structural failures. Parakeets are known to destroy the housings of polymer insulators. In stations, birds cause outages by attracting predators like cats, raccoons and snakes and they can cause insulator flashovers due to accumulation of bird droppings or as a result of nests in the gaps and on the structures in substations.

Overall, unmitigated impacts on avifauna are expected to be significant (but see mitigation below).

## E.4.2 Proposed mitigation

### Construction

The loss of trees during construction will be mitigated by planting of new trees in the ratio of 5 (new trees):1 (lost tree). The location and species will be agreed with the Contractor, Regulator and Bank in advance. Impacts as a result of other habitat loss will be mitigated by restoration of the RoW, access roads and areas of temporary land use. The approach to such land restoration will be agreed with the Contractor, Regulator and Bank in advance. Residual impacts after the application of this mitigation are expected to be of minor adverse significance.

Impacts on fauna during operation will include application of GIIP such as avoidance of disturbance to bird nesting areas, protecting waterbodies and avoiding undertaking construction activities near water outside of the dry season where practical. With such mitigation in place impacts are expected to be of only minor adverse significance.

### Operation

Impacts from the loss of trees during maintenance will be mitigated by planting of new trees in the ratio of 5 (new trees):1(lost tree). The location and species will be agreed with the Contractor, Regulator and Bank in advance. Residual impacts are expected to be of minor significance.

Mitigation for impacts to fauna during operations will focus on avoiding impacts to birds. This will include appropriate design of the project during the detailed design phase following good practice designs such as those set out in the Migratory Soaring Bird Project Transmission Line Guidance (see: http://migratorysoaringbirds.undp.birdlife.org/en/sectors/energy/electrical-power-lines-toc#gsc.tab=0) This will include, but need not be limited to consideration of the following:

- Ensuring live wires are at least 2 m apart with full insulation of supporting structures, with insulators, transformers etc. pointing down from cross poles.
- Installation of bird deflectors along sections of the line with high levels of flight activity to increase line visibility by thickening the appearance of the line by a minimum of 20 cm over a length of 10-20cm. Markers should be moveable, of contrasting colours (e.g. black and white), contrast with the background, protrude above and below the line, and be placed 5-10 m apart
- Removing the thin neutral or earth (shield) wire above the high voltage transmission lines. An alternative to removing overhead static wires is to mark the wire with devices like aerial marker spheres, spiral vibration dampers, conductor cover-up, swinging plates, bird-flight diverters and flappers.
- Where practicable, bundle high voltage wires to reduce the area and using spacers to increase visibility.
- Minimising the vertical spread of power lines by arranging lines in a horizontal plane to reduces collision risk. If practicable, arrangement of project transmission line route in parallel with physical features such as the escarpment to avoid collisions with birds.
- If raptors are found to nest on transmission poles or structures during operation consideration will be given to providing them with a nearby alternative, usually a dummy pole with a platform installed near the existing nest site. The dummy pole has no conductors attached to it and is placed generally within 100 ft (30 m) of the power line. The platform is made taller than the line to make it the preferred perch.

With the above mitigation in place impacts to birds are expected to be of only minor-moderate adverse significance. If large numbers of bird kills are recorded, this approach will be reconsidered

and further mitigation (and or offsets) put in place. In addition, the project will adapt a precautionary approach for key species identified during this study and a Biodiversity Action Plan / Species Management Plan will be prepared to help manage and monitor the possible impacts during construction and operation on key bird species at greatest risk (soaring birds, saker falcon and bustards). Given the absence of focused data at this stage a framework Biodiversity Action Plan has been created and will be developed into a full Biodiversity Action Plan if the recommended actions confirm the need.

**Residual impacts**

With the implementation of the mitigation outlined above, no significant adverse residual impacts are expected to biodiversity from the project.

## E.5 Socio-economic environment

### E.5.1 Impact assessment

This section identifies and assesses the likely significant effects of the Project on the socio-economic environment of the region. Data has been obtained through a combination of desk studies and field surveys undertaken by the local consultants, as well as including the site visit surveys conducted in the Project Area between 21st of Feb and 25th of March 2019 by a team consisting of a Social Safeguard specialist and a field surveyor, for the purpose of producing Land Acquisition and Resettlement Plans (LARP) for each of the two sections of the TL. Where data are limited, a precautionary approach has been taken to the assessment.

*Note: All information and numbers used in the assessment of social impacts, in particular those related with Land Acquisition, come from the draft versions of the Land Acquisition and Resettlement Plans (LARP) produced separately for the two sections of the TL (Pule Hashimi to Shindand 220 kV double circuit TL and Shindand to Farah 220 kV double circuit TL) currently being updated (work versions used date October 2020). Considering these two partial LARPs are still being finalised, no updated version of a consolidated LARP report is available at this stage. The 'consolidated' numbers presented below result from an analysis of the two partial draft reports.*

**Introduction**

The project activities can be categorized in the following three phases, in order to determine their respective impacts:

- Pre-Construction Phase (Planning & Design Phase);
- Construction Phase; and
- Post Construction Phase (Implementation, Operations & Maintenance Phase)

The Project has the potential to have social impacts on the population at local, regional and national levels.

By promoting rural electrification, the Project is expected to have significant permanent positive impacts associated with the consequent economic growth and improvement of the wellbeing of the population. It is also expected to have moderate temporary positive impacts associated with the creation of job opportunities during the construction phase, whilst during operations this positive impact is expected to be become permanent, even though of minor significance (reduced number of potential job opportunities compared with the construction phase).

However, some adverse impacts are unavoidable. These will be further detailed throughout the following Sections, but the main negative impacts expected are:

- permanent loss of land due to permanent land acquisition for erecting the 220 kV towers (no land acquisition will be required for the construction of the Substations);
- loss of crops and fruit and non-fruit trees during civil works;
- limited losses to properties: houses, adjoining buildings, walls, and other properties with marginal and partial impacts;
- interference with land that may be required temporarily for RoW, for areas around the towers for stringing and erection, as well as for access roads to approach the towers' locations.
- usual social impacts during construction, most of which are manageable though the implementation of an EMP in accordance with Good International Construction Practice as set out in the Framework EMP included within this IEE.

**Pre-Construction (planning and design phase)**

At different stages i.e. design, pre-feasibility and feasibility stages, different options have been considered for the location of the several project components, i.e., the Substations and the Transmission Line route, by a team of experts, which include design engineers, planners, environmentalists, sociologists, economists, and many other technical experts.

The potentially most significant social impacts of this type of project is usually related to the fact that there may be people currently owning and / or using (for their residence and / or economic / subsistence activities) part of the land necessary for the Project. When this is the case, that land needs to be made available for the Project, considering it is a project of National Interest. Land acquisition will adversley affect the present uses, and users, of the land, who may be subject to physical and / or economic displacement.

The first approach to increase the social sustainability of infrastructure projects is to try and avoid / prevent impacts in the first place in accordance with the mitigation hierarchy. In this instance, this would require the Project to be entirely located on / across government-owned and currently unused land. Whilst this has been achicved for the location of the substations, it is not possible for the alignment of the Transmission Lines (additionally subject to strict technical constraints); it is usually impossible to totally avoid crossing private and unoccupied land. This need to cross some private land (currently in use) will require its acquisition, and will necessarily induce at least some interference with current uses.

The challenge of the design team is then to design the Project in a way that attempts to maximise the use of government land and minimise the use of 'valuable' land currently in use, in particular if privately owned. This would minimise Land Acquisition and the associated physical / economic displacement impacts on the current uses / users.

The current project design, including the route for the Transmission Lines and siting of the Substations, has therefore been defined bearing in mind the above approach. It was established following the definition, study and consideration of alternative route alignments and locations for the Substations. This is therefore the design for which this IEE has been conducted, as it is considered that it is the one that that better manages to:

- Maximise the occupation of government-owned land: both Substations (260,000m$^2$) and over 80% of the total area to be permanently occupied by the TL towers (221,050 out of 275,000 m$^2$)

will be built in government-owned land; this means only around 10% of the total land to be permanently used for the Project will need to be acquired from private owners;

**Note:** the Project will require the permanent use of 260,000m$^2$ of land for the two substations (140,000 m$^2$ for Shindand Substation and 120,000 m$^2$ for Farah Substation). It will also define a linear corridor for the HV Transmission Lines, requiring the construction of 1,037 towers, which will permanently occupy a total area of another 275,000m$^2$.

- Avoid, to the extent possible, urban areas, areas densely populated, settlements, schools, buildings and market places;
- Avoid places having religious buildings like Shrines, mosques and churches, historical monuments, national parks, game reserves, monuments and protected areas (so as to minimize the loss or damage to these places/structures);
- Follow, to the extent possible (with regards to the alignment of the Transmission Lines), the alignment of existing roads and in particular the Herat – Kandahar highway, thus avoiding the creation of a new 'corridor', rather making use of the existing one;
- Avoid, to the extent possible, interfering with other existing and/ or planned infrastructure, which crossing might cause technical difficulties, such as the TAPI pipeline route spacing;
- Avoid, to the extent possible (so as to minimise environmental and indirectly socio-economic impacts):
  - forest and water catchment zones;
  - ecological areas having birds nets, trees, endangered flora and fauna species, migration zones;
  - keep electrical field, magnetic field, audible noise and TV interference as far as possible below national/ international accepted levels;
  - Areas prone to flooding and erosion, intermittent water courses and runoff areas, areas of alluvial sediment.

However, some areas of private land will still need to be acquired by the Project, though only around 10% of the total area to be permanently occupied. This acquisition will induce a wide variety of negative impacts on the current uses / users of the land, which will need to be adequately mitigated, managed, compensated for and monitored.

The process to acquire this land and to deal with the associated resettlement and compensation needs, shall follow Afghanistan Land Acquisition Law, as well as the ADB guidelines.

**Substations**

The location for the construction of both the Shindand and the Farah substations was determined based on preliminary design reports, site visits, documents review, and stakeholder consultation.

The Project design defined the location of these two substations as barren, empty and unused government-owned land, therefore eliminating the potential social impacts (namely in terms of land acquisition) associated with these project components. Overall, considering that the area occupied by the substations represents almost half (48.6%) of the total area that will be permanently allocated to the Project, the siting of the substations in alignment with the Project selection/ design criteria (described above), significantly minimizes the overall social impacts of the Project, namely potential involuntary resettlement impacts linked to land acquisition.

It is considered that the remaining potential social impacts that could be accounted for during this phase have also been avoided and minimised to such a level, that they do not require further development.

DABS, through its PMPIC and Social Safeguard Department, carried out a social safeguards Due Diligence of both the Shindand and the Farah Substation sub-projects.

According to the respective reports, the land allocated to these substations has been released from the Ministry of Urban Development and Land and there is no physical or economic displacement of people in the respective areas.

Shindand 220/20 kV substation

A team comprising of a Senior Engineer from DABS, a Social Safeguard Expert from the Social Safeguard and Environmental Department, and a representative from DABS Provincial (Herat) Department visited the substation site at Shindand in March and December 2019.

The land allocated for the construction of Shindand Substation, with an area of 140,000 sqm = 14ha (Substation Site), is located in Chargoosh Lowa-e-Sabiqa village, in Shindand district, in Herat province (in the vicinity of the Herat – Kandahar Road).

Based on site visits, preliminary design reports, and consultation with Land and other Provincial Government Departments involved in land identification/ determination process as well as with a number of elders, Head of Shura and farmers from the villages located closest to the Site (consultation included public meetings in Abkalan and Aligada), the team confirmed that:

- the Site is owned by the Government of Afghanistan and has been formally released from the Ministry of Urban Development and Land and transferred to DABS for the construction of the 220/20 kV Shindand Substation;
- the Site is free of any encumbrances and legal cases: the land is not used for any purposes and there are no claims for its ownership by any party or individuals;
- no livelihood activities have been identified within the Site: it is barren land, with no trees, no irrigation facilities and no crops cultivated (the same for the Site vicinity) and has never been cultivated, as it is not feasible for agricultural purposes;
- no residential or other structures were found on the Site and its immediate proximity; the two closest villages are located at distances of 1.0 and 1.5 km, respectively to the southern and western side of the Site;
- no encroachers have been observed within the Site;
- the whole surrounding area (north, south, east and west of the Site) is also government owned property without agricultural or other livelihood activities and/ or structures that could be affected;
- The access to the Site is also free of livelihood and other business-related activities.

As a consequence, the construction of the substation is not expected to induce any permanent or temporary impacts to households, farmers and/ or any private legal entities or to affect in any way the livelihood of the nearby villages / communities or their access to economic and agricultural related activities.

It was observed that activities relating to possession of land and the construction of the substation have not been started as yet at the site, except for the installation, at the southwest of the Site, of a Public Protection Base. This base also does not have any resettlement and livelihood impacts on the substation and/ or the nearby villages, neither on the access to the Site: it does not affect

economic activities in the areas other than to secure the area. This Base will be more effective in terms of security of the substation during its construction and operation phases.

In summary, the construction of the 220/20 kV Shindand Substation is not expected to induce any impacts associated with land acquisition. In particular, no physical/ economic displacement of people is expected in this area, that may trigger involuntary resettlement.

Farah 220/20 kV substation

The same team described above also visited the substation site at Farah in March and December 2019.

The land allocated for the construction of Farah Substation, with an area of 120,000 sqm = 12ha (Substation Site), is located to the south of Shorabad village, in Farah province capital.



Figure 26: Farah Substation site

Based on site visits, preliminary design reports, and consultation with Land and other Provincial Government Departments involved in land identification / determination process as well as with a number of elders, Head of Shura and farmers from the villages located closest to the Site (consultation included public meetings in Sharaki Muhajereen and Kadanak), the team confirmed that:

- the Site is owned by the Government of Afghanistan and has been formally released from the Ministry of Urban Development and Land and transferred to DABS for the construction of the 220/20 kV Farah Substation;
- the Site is free of any encumbrances and legal cases: the land is not used for any purposes and there are no claims for its ownership by any party or individuals;
- no livelihood activities have been identified within the Site: it is a barren land, with no trees, no irrigation facilities and no crops cultivated (it has never been cultivated, as it is not feasible for agricultural purposes); the immediate surroundings have the same characteristics, with the closest agricultural lands located around 100m from the substation boundary;
- no residential or other structures were found on the Site and its immediate proximity; the closest village is located at a distance of 0.5 km to the north-west of the Site;
- no encroachers have been observed within the Site;

- the whole surrounding area (north, south, east and west of the Site) is also government owned property without structures or livelihood activities that could be affected, except for minimal agricultural activities carried out more than 100m away;

- The site has proper existing access roads and there is adequate buffer space in the surrounding area to accommodate the construction- related activities and security forces, if required;
- The access to the Site is also free of livelihood and other business-related activities.

As a consequence, the construction of the substation is also not expected to induce any permanent or temporary impacts to households, farmers and/ or any private legal entities or to affect in any way the livelihood of the nearby villages/communities and/ or their access to the economic and agricultural related activities, even though there is some agricultural land at approximately 100m away from Site.

It was observed that no activities relating to possession of land and the construction of the substation have started as yet at the Site.

In summary, the construction of the 220/20 kV Farah Substation is not expected to induce any impacts associated with land acquisition. In particular, no physical/ economic displacement of people is expected in this area, that may trigger involuntary resettlement.

**Transmission Lines**

For the construction of the 220 kV Transmission Line from Pul-e-Hashimi to Shindand Substation, and onward from Shindand to Farah Substation, a total of 1,037 towers (of five different types, each having a different footprint) will need to be installed. These towers will permanently occupy a total area of 275,000m$^2$ of land.

- Land Acquisition

  The design of the TLs (in particular the alignment and siting of the towers) was developed in accordance with the Project design criteria, in line with the mitigation hierarchy, with the aim of avoiding / preventing (to the extent possible) the allocation of privately owned land for the location of the towers, in order to avoid the impacts associated with Land Acquisition. However, when it was no longer possible to avoid private land, the Project has tried to minimise the induced impacts (reducing the areas to be affected to the extent possible), and will compensate those affected for the induced impacts.

  It is important to note that a balance has to be found between minimizing the land acquired at the expense of increasing other impacts. For example, reducing the areas considered as affected (and therefore compensated) to the footprint or very small areas around the towers, might lead to situations where houses or other infrastructure (or even agricultural land) would remain excessively close from the towers (without compensation for the associate impacts).

  Draft Land Acquisition and Resettlement Plans (LARPs) have been prepared for each of the two sections of the TL. The draft LARPs were based on site visit surveys conducted in the Project Area between 21$^{st}$ of Feb and 25$^{th}$ of March 2019 and on information from the Preliminary Technical Design Report. The aim was to identify with accuracy the impacts induced by the land acquisition, in order to adequately assess them and define the adequate mitigation and compensation measures required.

Table 37 shows the total number of towers of the different types that will be required for the construction of the Transmission Lines and those that the design could not avoid placing within private land, as well as the respective areas.

**Table 37: Number of towers and affected land**

| Type of Tower | Affected Land per tower ($m^2$) | No. of Towers | Affected Land ($m^2$) | No. of Towers on private land | Total affected private land ($m^2$) |
|---|---|---|---|---|---|
| A | 300 | 706 | 211,800 | 112 | 33,600 |
| B | 250 | 69 | 17,250 | 23 | 5,750 |
| C | 200 | 141 | 28,200 | 46 | 9,200 |
| D | 150 | 113 | 16,950 | 36 | 5,400 |
| E | 100 | 8 | 800 | 0 | 0 |
| **Total** | | **1037** | **275,000** | **217** | **53,950** |

Of the total 1,037 towers that will need to be installed for the TLs, 820 towers (79.1%) will be constructed on Governmental land. Therefore, less than 21% of the towers (217) will be constructed on privately owned land, where potential impacts can be induced on current uses (such as agriculture) and potential future uses (such as hindering housing development). Similarly, more than 80% of the total area of land that will be affected by the Towers will be Governmental land.

However, a total area of around 53,950$m^2$ of private land will still have to be permanently acquired from the current owners, leading to the displacement (physical and/ or economical) of the current owners/ users of the land. These will therefore have to be resettled and/ or compensated, as a means to reduce the significance, to acceptable levels, of the negative impacts induced.

According to the draft versions of the LARPs, a total of 217 households are estimated to be affected by the TLs component of the Project – see Table 40. The main socio-economic impacts associated with this land acquisition include the following:

- Permanent Loss of Land (for affected land owners)

  It must be noted that the area of land that will be permanently lost is the area that will be used for erecting the towers of the TLs. It will therefore correspond to 217 plots of land, with areas ranging from 100$m^2$ (10 x 10m) to a maximum of 300 $m^2$ (approximately 18 x 17m), which are relatively small plots of land. On the other hand, the towers will be located, on average, 300m away from each other. It is therefore unlikely that the same household will lose more than one plot of land, which limits the magnitude of the potential impacts.

  The significance of this impact (permanent loss of one plot of land) will vary according to the characteristics of the plot, namely its current use and quality of the land (whether it is baren or agricultural land and whether it contains different types of trees and/ or crops, gardens etc) and the existence of any structures in the plot (houses, adjoining buildings, shops, walls, field paths etc).

According to the draft LARP, a total of 300 households are estimated to be affected by permanent loss of land.

It is worth noting that the construction of Transmission Line towers on private land may also hinder future housing development (potential indirect impact).

- Loss Property / Structures / Houses

In line with the Project design criteria, loss of houses and structures will be avoided wherever possible. However, it will not always be possible to avoid installing a tower in a plot that contains a house or part of a house; there may also be the case that the tower needs to be so close to the house, that the impact is considered lower if the household is compensated and relocates, and the house demolished. In these cases, the loss of land is accompanied by loss of houses and/ or other structures, and the impact is aggravated (more severe).

According to the draft LARPs, an estimated 30 households (in the worst-case scenario) will be physically displaced and need relocation, as their houses will need to be demolished for the construction of the TL towers. Another 3 households will partially be affected: only boundary walls would be destroyed, according to the current design. Therefore, in the case it is not possible to avoid significant impacts to these houses during the detailed design, these households will also need to be relocated due to the potential long-term impacts of electromagnetic fields on the residents, and will then be added to the list of households needing relocation.

Still according to the draft LARPs, a total of 2,912$m^2$ and 750$m^3$ of physical structures will also be affected which include houses, shops and perimeter walls – see Table 38. Other property, such as field paths and gardens, could also be damaged during stringing.

**Table 38: Description of type of Structure to be affected**

| Type of Structure | Herat-Shindand TL | Shindand-Farah TL | TOTAL |
|---|---|---|---|
| Houses/Buildings (Mud/brick/wood) - $m^2$ | 1,426 | 1,486 | 2,912 |
| Perimeter Walls (Mud/brick/wood) - $m^3$ | 370 | 380 | 750 |

So far, there is no evidence of any major potential adverse impacts on business and income sources along the Transmission Line route. Apart from some houses, mud buildings and agriculture land, the field surveys identified 12 shops which would be temporarily displaced during the civil works within the TLs corridor. Compensation for such temporary displacement and any potential permanent damages has been accounted for in the LARPs.

In summary, according to the draft LARPs, a total of 30 households are estimated to be affected by permanent loss of residential structures, therefore requiring relocation. These are considered to be amongst the most severely impacted households.

- Loss of Agricultural Land

Sometimes, the plots for the towers fall in agricultural land currently in use for different types of crops and/ or may contains different types of trees. Its permanent use by the project will cause a recurrent loss of the income that would be generated by the trees and/ or crops that (could)

exist there. The significance of this impact will depend on the level of income generated by the type of trees/ crops that will be lost, as well as the proportion of household income associated with these.

Losses to agricultural production may also occur on irrigated land. However, as vegetable gardens (only irrigated) are small and they take up only a small percentage of the area used by households, it is believed it will generally be possible to avoid damaging these during detailed design stage/ construction works and either eliminate or significantly minimize this impact.

In the worst-case scenario, all works would be carried out during the cropping seasons of spring and summer (this shall, however, be avoided as far as feasible). The total area of private agricultural land estimated to be affected is 35,400m$^{2,}$ , 16,450m$^2$ of which is wheat (Table 39).

Crop cultivation within the corridor can continue after the stringing of lines are laid out. Inside the RoW, vegetation above 7 m height needs to be permanently cleared, including possible tall trees outside but nearby the RoW corridor. A total of 1,484 trees (524 timber trees and 960 fruit trees) will be lost – see Table 39.

- Livelihood Impacts

Considering the relatively small areas of land each affected household is expected to lose permanently (unlikely to exceed the 300 m$^2$, i.e. 18 x 17m the most), potential livelihood impacts are not expected to be significant (even though the final LARPs should confirm this on a case-by-case basis). At this stage it is considered that the permanent loss of land induced by the Project will not cause affected people to completely or significantly lose their means of subsistence or prevent them from maintaining a similar standard of living (albeit in a different nearby location).

- Vulnerable Households

The draft LARPs (from the findings of the Consultation meetings) identify a total of 47 households that are considered to be vulnerable for living below the poverty line (household earning less than a dollar per day) as set out in Table 40. The surveys carried out did not identify any women-headed households amongst those affected.

Summary of Land Acquisition- related socio-economic impacts

Table 39 summarises the magnitude of the main socio-economic impacts caused by the land acquisition required for the construction of the Transmission Lines.

**Table 39: Summary of impact magnitude**

| Impact Type | Herat-Shindand TL | Shindand-Farah TL | TOTAL |
|---|---|---|---|
| | Quantity (m$^2$ or No of trees) | | |
| Private agricultural lands | 8,850 | 26,550 | 35,400 |
| Private residential lands | 2,700 | 4,600 | 7,300 |

| Impact Type | Herat-Shindand TL | Shindand-Farah TL | TOTAL |
|---|---|---|---|
| | Quantity ($m^2$ or No of trees) | | |
| Loss of crops (wheat) | 7,960 | 8,490 | 16,450 |
| Fruit and Non-fruit trees | 238 timber trees<br>384 fruit trees<br>622 - total trees | 286 timber trees<br>576 fruit trees<br>862 - total trees | 524 timber trees<br>960 fruit trees<br>1,484 - total trees |

Table 40 identifies the number of Project Affected Households affected by the most relevant socio-economic impacts caused by the land acquisition required for the construction of the Transmission Lines.

**Table 40: Project Affected Households – for different land acquisition- related impacts**

| Category | Herat-Shindand TL | Shindand-Farah TL | TOTAL TLs |
|---|---|---|---|
| **Affected Households (AHs)** | | | |
| Total No. of AHs | 101 | 116 | **217** |
| No. of AHs losing land | 101 | 116 | **217** |
| No. of AHs losing crops in addition to land | 96 | 109 | **205** |
| No. of AHs losing trees in addition to land | 4 | 5 | **9** |
| No. of households losing 100% of their structures | 13 | 18 | **31** |
| No. of Households needing relocation | 12 | 18 | **30** |
| No. of Severely Affected Households (considering more than 10% loss of productive assets or losing more than 25% of structures) | 21 | 23 | **44** |
| Vulnerable AHs | 21 | 26 | **47** |
| **Affected Persons (APs)** | | | |
| Total No. of affected persons (considering the average size of HHs in the given region) | 808 | 928 | **1736** |
| No. of Severely Affected Persons (8 ppl / HH) | 168 | 184 | **352** |

The above assessment was specifically carried out for the alignment route considered in the preliminary design; there may be some changes when the detailed design is finalised by the civil contractor.

It is also worth noting that it may still be possible to further minimise the above impacts, as it may be possible – during final detailed design/ construction – to refine the location of some towers on islands of barren land within agricultural areas or on public space along streets or on other types of government-owned land, to avoid interference with private land ownership rights.

Significance of impacts

It is important to note that, without mitigation, most of the above negative impacts would be certain and generally long-term: all would begin before the start of construction; some would be temporary (see below); but others would extend throughout the construction phase and persist for operations

(becoming permanent impacts), such as the permanent loss of land in the footprint and close proximity to the towers, or the loss of structures (including houses).

The temporary impacts on private land (temporary loss of access to land where crops are grown along the alignment) caused due to access to tower sites and stringing operations are considered of medium significance, primarily because of their short duration; at each tower location and between towers, the installation of towers and stringing is anticipated to last up to eight weeks. The severity of these impacts would therefore vary between moderate and major.

All factors considered, even though a few of these impacts could be considered of medium significance, they are, in general, of high significance (if not mitigated), as indicated above.

**Construction Phase**

Generic potential socio-economic impacts associated with the construction of projects of this nature are identified, described and classified (before the implementation of any mitigation) in Table 41.

**Post Construction Phase (Implementation, Operations & Maintenance Phase)**

Potential socio-economic impacts associated with the operational phase of the Project are identified, described and classified (before the implementation of any mitigation) in Table 42.

**Table 41: General potential socio-economic impacts associated with the construction of long linear projects (prior mitigation)**

| Aspect | Impact | 'Direction' | Nature | Duration (within the Project phase) | Geographical Extent | Reversibility | Likelihood | Severity | Significance before Mitigation |
|---|---|---|---|---|---|---|---|---|---|
| Land Acquisition | Physical and/ or economic displacement linked to land acquisition and restrictions to the use of the land: Project Affected People will need to be relocated and and/ or compensated before the start of mobilisation/ construction activities. These impacts have therefore been addressed in the previous section (Pre-construction Phase) | | | | | | | | |
| Land Acquisition | Public unrest in the case of non-compliance with the LARP, namely the timely (before mobilisation/ start of construction) payment of compensations | - | Direct | Long-term | Local Regional | Permanent (during CP) | Possible | Major | High |
| Land Acquisition | Potential submission of land ownership claims | - | Direct | Long-term (whole duration of C Ph) | Local Regional | Permanent (during CP) | Unlikely | Major | High |
| Land Acquisition | Opening of new access roads - increased damage / interference with private property | - | Direct | Long-term | Local | Permanent | Certain | Moderate | Medium |
| Accessibility infrastructure | Damage and/or accelerated deterioration of existing roads as a result of project related heavy traffic. However, there may be the need to upgrade some roads to allow the traffic of HLVs for the Project, and this would become a positive impact | - | Direct | Long-term | Local and Regional | Permanent | Likely | Moderate | Medium |
| Services | Accidental or planned disruptions to the water / electricity / gas / telephone and | - | Direct | Short-term | Local | Temporary | Possibly | Major | High |

| Aspect | Impact | 'Direction' | Nature | Duration (within the Project phase) | Geographical Extent | Reversibility | Likelihood | Severity | Significance before Mitigation |
|---|---|---|---|---|---|---|---|---|---|
| | internet supply, as well as damages to sewerage systems during construction works | | | | | | | | |
| Employment | Potential Project employment will increase the level of income available at the level of individuals and households, especially benefiting those in rural areas | + | Direct Indirect | Long-term (whole duration of C Ph) | Local Regional | Temporary (would end after the end of construction) | Possible | Moderate | Medium Positive |
| Influx of external work force | Social tensions resulting from competition for employment between locals and people attracted to the area due to temporary job opportunities during construction | - | Direct | Long-term (whole duration of C Ph) | Local Regional | Temporary (would end after the end of construction) | Possible | Major | Medium |
| Design - TLs Alignment | Public unrest due to poor management of expectations that the project will not affect people's property and/ or benefit their settlement, following indications during the public consultation meetings | - | Direct | Long-term (whole duration of C Ph) | Local Regional | Permanent | Possible | Major | High |
| Employment | Social tensions resulting from competition for employment | - | Direct | Long-term(whole duration of C Ph) | LocalRegional | Temporary(would end after the end of construction) | Likely | Moderate | Medium |
| Labour and Working conditions | Inadequate management of labour issues (i.e. late payment of wages to labour, workplace facilities and etc.) | - | Direct | Long-term (whole duration of C Ph) | Local Regional | Temporary (would end after the end of construction) | Likely | Major | High |
| Labour and Working conditions | Child and forced labour | - | Direct | Long-term (whole duration of C Ph) | Local Regional | Temporary (would end after the end of construction) | Likely | Major | High |
| Worker Accommodation Camps and community interactions | Impacts over local communities related with the presence of construction workers and accommodation camps | - | Direct | Long-term (whole duration of C Ph) | Local Regional | Temporary (would end after the end of construction) | Certain | Major | High |

| Aspect | Impact | 'Direction' | Nature | Duration (within the Project phase) | Geographical Extent | Reversibility | Likelihood | Severity | Significance before Mitigation |
|---|---|---|---|---|---|---|---|---|---|
| Labour and Working conditions | Inadequate accommodation of construction workers | - | Direct | Long-term (whole duration of C Ph) | Local Regional | Temporary (would end after the end of construction) | Likely | Major | High |
| Labour and Working conditions | Workplace Sexual Harassment (WSH) | - | Direct | Long-term (whole duration of C Ph) | Local Regional | Temporary (would end after the end of construction) | Possible | Major | High |
| Labour and Community | Sexual Exploitation and Abuse (SEA) | - | Direct | Long-term (whole duration of C Ph) | Local Regional | Temporary (would end after the end of construction) | Possible | Major | High |
| Labour and Community | Social tensions related to influx of non-local workers | - | Direct | Long-term (whole duration of C Ph) | Local Regional | Permanent (during CP) | Likely | Moderate | Medium |
| Presence of construction workers | The surrounding residential area (rural setup) is inhabited by people with a very particular set of cultural values, who are not used to and generally struggle to adjust to the presence of outsiders in their areas even during short periods of time. There is therefore a potential cultural conflict with the local communities due to the presence of construction workers in the area. | - | Direct | Long-term (whole duration of C Ph) | Local Regional | Permanent (during CP) | Possible | Major | High |
| Community | Gender-Based Violence (GBV) risk | - | Direct | Long-term (whole duration of C Ph) | Local Regional | Permanent (during CP) | Possible | Major | High |
| Community H&S | Disproportionate use of force by Security Forces, namely in their interactions with the local communities | - | Direct | Long-term (whole duration of C Ph) | Local Regional | Permanent (during CP) | Likely | Major | High |

| Aspect | Impact | 'Direction' | Nature | Duration (within the Project phase) | Geographical Extent | Reversibility | Likelihood | Severity | Significance before Mitigation |
|---|---|---|---|---|---|---|---|---|---|
| Community H&S | Increased risk of accidents, namely involving members of the Local Communities, due to construction-induced traffic for the transport of materials for the Project and movement of vehicles and equipment for the construction activities | - | Direct | Long-term(whole duration of C Ph) | LocalRegional | Permanent (during CP) | Likely | Major | High |
| Community H&S | Health and safety risks to the local communities | - | Direct | Long-term (whole duration of C Ph) | Local Regional | Permanent (during CP) | Likely | Major | High |
| Cultural heritage - Historical monuments | Historical monuments - no historical monument is known to be located close to the Project Area, and therefore expected to be affected in any way (disturbed or demolished) during the construction activities. However, it is possible to find unknow elements of cultural heritage during the course of the construction works | - | Direct | Long-term (whole duration of C Ph) | Local Regional | Permanent (during CP) | Unlikely | Negligible | Low |
| Cultural heritage | Impacts on Graveyard/ Mosques from the construction activities - unknown and not expected to be found/ affected by the construction activities. | - | Direct | Long-term (whole duration of C Ph) | Local Regional | Permanent (during CP) | Unlikely | Negligible | Low |
| Temporary Land Take | Impacts over land temporarily occupied | - | Direct | Long-term (whole duration of C Ph) | Local Regional | Permanent | Likely | Moderate | Medium |
| Vulnerable groups and/ or Indigenous Peoples | Potential impacts on vulnerable groups such as the Kuchi nomads | - | Direct | Long-term (whole duration of C Ph) | Local Regional | Permanent (during CP) | Unlikely | Major | Medium |

Table 42: potential socio-economic impacts during the Operational Phase of the Project (prior mitigation)

| Aspect | Impact | 'Direction' | Nature | Duration (within the Project phase) | Geographical Extent | Reversibility | Likelihood | Severity | Significance before Mitigation |
|---|---|---|---|---|---|---|---|---|---|
| Power supply | Over 25,000 residential consumers in the two provinces will potentially benefit from more reliable and cheap energy (considering that electricity in the area is presently provided by diesel generators, which are unreliable). | + | Direct | Long-term | Local Regional | Permanent (during Op) | Certain | Major | High Positive |
| Settlement and Housing | Perceived decrease of property value due to proximity of the High Voltage Transmission Lines to the houses (for the houses located in the AoI). | - | Direct | Long-term | Local Regional | Permanent (during Op) | Likely | Moderate | Medium |
| Land use | Decrease of property value due to the restrictions imposed by the presence of High Voltage Transmission Lines | - | Direct | Long-term | Local Regional | Permanent (during Op) | Likely | Minor | Low |
| Land use | Potential temporary loss of crops for landowners/users in case of maintenance activities | - | Direct | Short to mid-term | Local Regional | Temporary | Possible | Moderate | Low |
| Public Utilities, Services and Transport infrastructure | Accidental events involving potentially causing electrocution during normal maintenance activities or illegal attempts to steal electricity through illegal connections | - | Direct | Long-term | Local Regional | Permanent (during Op) | Likely | Major | High |
| Economic activities | Increase stability of macroeconomic environment and greater business opportunities due to energy security | + | Direct | Long-term | Local Regional | Permanent (during Op) | Certain | Major | High Positive |
| Livelihood | Public perception of negative impacts of the project, especially for those not benefiting from compensation | - | Direct | Short to mid-term | Local Regional | Temporary | Possible | Minor | Low |

| Aspect | Impact | 'Direction' | Nature | Duration (within the Project phase) | Geographical Extent | Reversibility | Likelihood | Severity | Significance before Mitigation |
|---|---|---|---|---|---|---|---|---|---|
| Employment | Improved skills through training (during construction) and know-how for employees, potentially to be used in other projects | + | Direct | Long-term | Local Regional | Permanent (during Op) | Possible | Moderate | Medium Positive |
| Health and Safety | Perceived health safety risks at the level of the community living in the proximity of the Transmission Lines (magnetic fields) | - | Direct | Long-term | Local | Permanent (during Op) | Possible | Moderate | Medium |
| Health and Safety | Better health and increased safety linked to the reduction of the use of generators - and potential access to cleaner electricity | + | Direct | Long-term | Local Regional | Permanent (during Op) | Likely | Minor | Low Positive |

## E.5.2 Proposed mitigation

### Pre-Construction Phase

### Land Acquisition

The implementation on the ground of an ADB-compliant Land Acquisition and Resettlement Plan (LARP), accompanied by thorough monitoring and auditing of its implementation, is considered **the** mitigation measure for all the Land Acquisition-related impacts identified and described in relation to the transmission lines in Section E.5.1, recognising that no land acquisition is required for the substations.

The aim of the LARPs is to identify with accuracy, though surveys and stakeholder engagement, the impacts induced by the land acquisition (what is affected, who is affected, and how that impact affects the affected person) in order to adequately assess such impacts and, through consultation, define the adequate measures to mitigate and compensate for those impacts.

Preparation of Project-specific LARPs is ongoing; the draft dated October 2020 has been used to support the impact assessment carried out above. However, it will be fundamental to update and finalise the LARPs based on the final detailed design in order to ensure its accuracy and fairness.

Even though it will be subject to change, following the finalisation of the LARP, the draft Matrix of Entitlement is presented in Table 43, for illustrative purposes, in order to make it clear, transparent and consistent, for all Project Affected Households, what exactly will be compensated, who is eligible to compensation, and the Compensation Entitlements.

The project supervision consultant will then verify and confirm that the Project proponent has fulfilled their obligations in terms of the full implementation, on the ground, of the land acquisition process in full compliance with the final approved LARP. In particular the payment of any compensation due shall be completed **prior to the start of construction activities**. The LARP implementation will be monitored internally by the PMO and externally by the construction supervision consultants (CSC).

### Table 43: Entitlements Matrix

| Item | Application | Eligibility | Compensation Entitlements |
|---|---|---|---|
| Permanent agricultural/ residential/ commercial land loss | Land affected by right-of-way (RoW) corridor of impact (CoI) and tower locations | AP with title, formal/customary deed, or traditional land right as vouched by local Jirga, elders or Community Development Council10. | - Compensation at replacement cost either through replacement plots of same value or in cash based on full replacement cost based on fair market value to be negotiated and agreed with the AP and approved by the council of ministers.<br>- Replacement cost based on fair market value at a valuation date will be updated/adjusted as per market rate at compensation payment date.<br>- All fees, taxes or other charges, as applicable under relevant laws, are to be borne by the project. |
| Structure loss | Residential/ commercial or auxiliary structures affected | Owners of structures (including informal settlers) | - Cash compensation for affected structure and other fixed assets at replacement cost of the structure free of depreciation, taxes/fees and salvaged materials.<br>- Compensation for partial impact may be allowed if complied with building safety requirements and AP's will to keep the remaining structure, where replacement cost compensation will be provided for affected part of structure and replacement cost required to restore remaining structure, all free of depreciation, taxes/fees and salvaged materials.<br>- Right to salvage material from demolished structure<br>- Rental allowance of 6 months for loss of residential building |
| Crop losses | Crops on affected land | Owners of crops / sharecroppers | - Cash compensation equal to replacement cost of crop loss plus cost of replacement seeds and restoration of future crop activities (including any forgone harvests)<br>- Compensation is provided for all crops located within ROW/COI. |
| Tree Losses | Trees on affected land | Owner of trees (including informal settlers) | - Fruit bearing trees or perennial crops will be compensated at the market value of 1 harvest multiplied by the number of years needed to re-grow a tree at the same production level of the tree/perennial crop lost and full replacement cost of a saplings for each grown tree/perennial crop seed.<br>- Non–fruit bearing/timber trees will be valued based on the market value of their dry wood volume.<br>- The compensation of the tree will be free of deduction for the value of the wood left to the AH.<br>- Compensation is provided for all affected trees located within ROW/COI. |
| Business losses | Permanent / temporary | Business / shop owners (including informal settlers) | - Owners: Business compensation based on monthly income from that business by month of business stoppage. The compensation for business loss will be calculated based on tax receipts or when these are not available based on fixed rates as per the average monthly income.<br>- Employer: indemnity for lost wages of 3 months income<br>- Employees: indemnity for lost wages of 3 months income to be paid directly to employee. |

| Item | Application | Eligibility | Compensation Entitlements |
|---|---|---|---|
| Transitional Allowance | Relocating households | All relocating households (including renters and informal settlers) | - Transitional allowance per household for livelihood losses at AF7,500 multiplied by 3 months = AF22,500 |
| Relocation Allowance | Relocating households | All relocating households (including renters and informal settlers) | - Relocation allowance per household of AF7,500 |
| Assistance to Vulnerable Affected Households | Affected by land acquisition, resettlement, etc. | AH which are: female-headed; poor (below poverty line) or headed by handicapped/ disabled persons | - Additional cash assistance equivalent to 3 months average household income at district level as per the national statistics data (AF45,000)<br>- Preferential employment in project related jobs, if qualified for the position. |
| Severe Impact | Physical displacement<br>10% or higher loss of productive income source (e.g., land, structure, rental income, etc.) | All severely affected AHs including informal settlers | - Agricultural land impact: Additional crop compensation equal to one year yield from the affected land;<br>- For other formalized non-agricultural impacts: an allowance covering 12 months net formalized income (tax or equivalent reports); or<br>- For other non-formalized non-agricultural impacts: a fixed amount on the average 12 months net income of people residing in the relevant project areas. |
| Temporary land occupation/Temporary impacts on land | Title holders (formal and informal) lease holders and/or crop owners | - Additional compensation for 1 season harvest (crops and trees) for all crops and productive trees within ROW/COI<br>- Complete plot rehabilitation/reinstatement<br>- Cost of one season lease to formal/semi-formal lease holders. | - Temporary land occupation/Temporary impacts on land |
| Unidentified Impacts | | | - Unforeseen impacts compensated based on above entitlements accordance with SPS 2009 during project implementation by EA. |
| Impact on irrigation channels | Temporary or permanent loss due to the Project activities | Community/affected households | - Irrigation channels are diverted and rehabilitated to previous standards |

| Item | Application | Eligibility | Compensation Entitlements |
|---|---|---|---|
| Loss of community, cultural, religious, or Government sites | Temporary or permanent loss due to the transmission line component activities | - Conservation, protection & cash compensation for replacement (schools, communal centers, markets, health centers, shrines, other religious or worship sites, tombs.<br>- Cash compensation for affected structures based on the above structures' entitlements. | Loss of community, cultural, religious, or Government sites |
| Permanent agricultural/ residential/ commercial land loss | Land affected by right-of- way (ROW) | AP with title, formal/customary deed, or traditional land right as vouched by local Jirga, elders or Community Development Council. | - Compensation at replacement cost either through replacement plots of similar value or in cash based on replacement/current market to be approved by the council of ministers. All fees, taxes, or other charges, as applicable under relevant laws are to be borne by the project. |
| Structure loss | Residential/ commercial or auxiliary structures affected | Owners of structures (including informal settlers) | - Cash Compensation for affected structure and other fixed assets at replacement cost of the structure free of depreciation, taxes/fees and salvaged materials.<br>- in case of partial impacts full cash assistance to restore remaining structure.<br>- Right to salvage material from demolished structure |
| Crops losses | Crops on affected land | Owners of crops / sharecroppers | - Cash compensation equal to replacement cost of crop lost plus cost of replacement seeds and restoration of future crop activities. |
| Trees Losses | Trees on affected land | Owner of trees (including informal settlers) | - Fruit bearing trees will be compensated at the value of 1 harvest multiplied by the number of years needed to re-grow a tree at the same productive level of the tree lost.<br>- Non-fruit bearing/timber trees will be valued based on the market value of their dry wood volume.<br>- The compensation of the tree will be free of deduction for the value of the wood left to the AH. |

| Item | Application | Eligibility | Compensation Entitlements |
|---|---|---|---|
| Business losses | Permanent / temporary | Business / shop owners (including informal settlers) | - Owners: Business compensation based on monthly income from that business by month of business stoppage. The compensation for business loss will be calculated based on tax receipts or when these are not available based on fixed rates.<br>- Employees: indemnity for lost wages up to 3 months income. |
| Transitional Allowance | Relocating households | All relocating households (including renters and informal settlers) | - Transitional allowance per household for livelihood losses at AF 5,200 multiplied by 3 months |
| Relocation Allowance | Relocating households | All relocating households (including renters and informal settlers) | - Relocation allowance per household of AF 5,000 |
| Assistance to Vulnerable Affected Households | Affected by land acquisition, resettlement, etc. | AH which are: female-headed; poor (below poverty line) or headed by handicapped/ disabled persons | - Additional cash assistance equivalent to 3 months average household income (AF28,500)<br>- Preferential employment in project related jobs. |
| Severe Loss of Agricultural Land | Agricultural land | | - Allowance for severe land impacts equal to replacement cost of a year's net income from crop yield of land lost. |
| Temporary land occupation | | Title holders (formal and informal) lease holders | - Rent for duration of use equal to potential crop loss plus plot rehabilitation. Tenants to share the lump-sum with land-use certificate holders as per their contract. |
| Unidentified Impacts | | | - Unforeseen impacts compensated based on above entitlements during project implementation by EA. |
| Loss of Community, Cultural, Religious, or Government Sites | Temporary or permanent loss due to the transmission line component activities | | - Conservation, protection and cash compensation for replacement (schools, communal centers, markets, health centers, shrines, other religious or worship sites, tombs. Cash compensation for affected structures based on the above structure’s entitlements. |
| Impact on irrigation channels | Temporary or permanent loss due to the Project activities | Community/affected households | - Irrigation channels are diverted and rehabilitated to previous standards. |

**Construction Phase**

Table 44 presents the recommended mitigation measures for specific negative (and enhancement measures for the positive) socio-economic impacts previously identified for the Construction Phase. It also presents, in the last column, the classification of the residual impacts.

With regards to mitigation measures more directly related with the construction activities, with the generation of noise, waste, emissions (to air, water, soil) also affecting quality of life, please refer to the assessment and mitigation of those impacts in the respective Sections.

As a general mitigation measure (to be further discussed in Section F), the Project shall develop and implement a Project-specific Stakeholder Engagement Plan (SEP) in order to ensure that (and define how) it will keep communicating with all affected stakeholders throughout the construction and operation phases of the Project. The SEP shall incorporate actions related to the consultation of and engagement with all the PAPs, with regards to the Land Acquisition Process. Alternatively, a specific SEP shall be developed for this purpose, under the Land Acquisition Plan.

The Project shall also establish and implement a robust Grievance Redress Mechanism (to be further discussed in Section G, including a social survey by n independent expert to find out if grievances have been settled.

In order to ensure the above is achieved, the Project shall establish an environmental & social team responsible for carrying out the engagement (as per the Stakeholder Engagement Plan) and the timely information dissemination.

In addition, it is highly recommended that the project proponent considers some Corporate Social Responsibility measures in order to benefit the most affected local communities, in line with the feedback of the Public Consultation meetings.

**Table 44: Recommended mitigation and enhancement measures for the socio-economic impacts during the Construction Phase and classification of residual impacts**

| Aspect | Impact | Significance before Mitigation | Mitigation / Enhancement Measures | Significance after Mitigation | NOTES |
|---|---|---|---|---|---|
| Land Acquisition | Physical and/ or economic displacement linked to land acquisition and restrictions to the use of the land: Project Affected People will need to be relocated and and/ or compensated before the start of mobilisation/ construction activities. These impacts have therefore been addressed in the previous section (Pre-construction Phase) | | Even though the Project has been designed to minimize resettlement and land acquisition issues, use Government land with no residents or private dwellers where practical (during final design and construction). | | |
| Land Acquisition | Public unrest in the case of non-compliance with the LARP, namely the timely (before mobilisation/ start of construction) payment of compensations | High | Ensure the full and timely implementation of the LARP, in particular the payment of compensations before mobilisation/ start of construction, as per requested repeatedly during the Public Consultation meetings | Medium | Severity would reduce to Moderate or Minor |
| Land Acquisition | Potential submission of land ownership claims | High | Maintain and implement the LARP to address potential land ownership claims through the Project's Grievance Mechanism. | Medium | Severity would reduce to Moderate or Minor |
| Land Acquisition | Opening of new access roads - increased damage / interference with private property | Medium | Stakeholder engagement with the local communities in an attempt to define the routes of new access roads necessary for the Project in a way that minimises affecting particularly valuable land and property. This could even become a positive impact if some of the roads are also useful to the local communities, and the Contactor leave those after construction after finalising the Project. Contractor to restore temporary access roads to the previous condition after end of construction in the case roads are not useful to the communities. | Low | Impact would become temporary, Possible and of Minor severity or even negligible. It could become a positive impact if does not impact severely on existing property and activities and locals value and would use those roads after construction |

| Aspect | Impact | Significance before Mitigation | Mitigation / Enhancement Measures | Significance after Mitigation | NOTES |
|---|---|---|---|---|---|
| Accessibility infrastructure | Damage and/or accelerated deterioration of existing roads as a result of project related heavy traffic. However, there may be the need to upgrade some roads to allow the traffic of HLVs for the Project, and this would become a positive impact | Medium | Include in the ESMP a Roads and Traffic Management Plan, assessing the condition of the existing road infrastructure to be used by the Project and the potential need to upgrade some roads; at the end of the construction period, any roads damaged due to use by the Project will need to be restored to at least the same condition they were at the start of construction | Low | Impact would become temporary and eventually short- to mid- term (depending how fast repairs would be done) and Severity would become Minor to Negligible |
| Services | Accidental or planned disruptions to the water / electricity / gas / telephone and internet supply, as well as damages to sewerage systems during construction works | High | Contractor needs to meet with the services providers in order to ensure awareness of the location of all infrastructure and to plan to avoid any interference.Contractor to adequately plan and inform the communities about planned disruptions to the provision of any of these servicesContractor needs to be contractually made responsible for repairing any damage to any of these infrastructure in a way that ensures the shortest possible interruption of the service | Low | Impact would become unlikely and of Moderate severity |
| Employment | Potential Project employment will increase the level of income available at the level of individuals and households, especially benefiting those in rural areas | Medium Positive | Ensure minimum number of workers to be employed from the nearby villages, in particular those more directly affected/ crossed by the TLs, with priority jobs to the PAPs, to the higher level of skills they possess. In advance to the start of construction activities, identify job opportunities and required skills and, through engagement, identify PAPs interested and provide them training to increase their chances of getting a better job in the Project. There are also many indirect opportunities of materials and services that can be provided for the construction of the project. | High Positive | Impact might become certain and permanent (skills from training would remain available to people for other projects or for the operations phase) |
| Influx of external work force | Social tensions resulting from competition for employment between locals and people attracted to the area due to temporary job opportunities during construction | Medium | Priority employment to be given to local residents. Unskilled workers to be hired from local community. | Low | Severity would reduce to Moderate |

| Aspect | Impact | Significance before Mitigation | Mitigation / Enhancement Measures | Significance after Mitigation | NOTES |
|---|---|---|---|---|---|
| Design - TLs Alignment | Public unrest due to poor management of expectations that the project will not affect people's property and/ or benefit their settlement, following indications during the public consultation meetings | High | Review the feedback of the Public Consultation meetings and confirm whether the alignment has changed in the locations where there were people presenting concerns during the public consultation meetings and include measures in the Stakeholder Engagement Plan to re-engage with the PAPs about the project | Low | Severity would reduce to Moderate or Minor and Likelihood to Unlikely for the simple fact that people are not taken by surprise and are informed about the Project |
| Social tensions resulting from competition for employment | Social tensions resulting from competition for employment | Medium | Include a Local Recruitment Procedure in the Labour and Working Conditions Management Plan (LWCMP). A clear and transparent recruitment mechanism is required to minimise the risk of conflict between local community members. The procedure shall establish local recruitment targets. The contractor will be liable to engage at least 50% of its required (unskilled) labour force from within or around the project area.<br>Use Stakeholder Engagement to disclose and be transparent about conditions for employment and, as per above, ensure a minimum number of vacancies to local people. | Low | Impact would become Possible or Unlikely and severity Minor |
| Labour and Working conditions | Inadequate management of labour issues (i.e. late payment of wages to labour, workplace facilities and etc.) | High | Establish a Human Resources Policy that ensures commitment to adhere to national labour law and to international good practice in terms of Recruitment and Labour conditions Include in the ESMS a Labour and Working Conditions Management Plan adequately addressing all relevant HR and Labour issues (minimum wage, overtime, rest time, …). Ensure close and regular monitoring and auditing of the implementation of the MP and all Human Resources- related Plans and Procedures | Medium | Likelihood would reduce to Possible and Severity to Moderate |
| Labour and Working conditions – child and forces labour | Child and forced labour | High | Establish a Human Resources Policy that commits to not employ children and use forced labour in any circumstances. Materialise this commitment in the Project's Labour and Working Conditions Management Plan (included in the ESMS). Ensure close and regular monitoring and auditing of the implementation of the MP and all Human Resources- related Plans and Procedures | Medium | Likelihood would reduce to Possible and Severity to Moderate |

| Aspect | Impact | Significance before Mitigation | Mitigation / Enhancement Measures | Significance after Mitigation | NOTES |
|---|---|---|---|---|---|
| Worker Accommodation Camps and community interactions | Impacts over local communities related with the presence of construction workers and accommodation camps | High | Worker camps to be selected with regard to cultural norms of the area to avoid undue interference of workers with local residents. | Medium | Severity would reduce to Moderate |
| Worker accommodation camps | Inadequate accommodation of construction workers | High | Prepare and implement a Worker Accommodation Management Plan that will include at least the following:<br>• A worker accommodation strategy for workers that will not stay at their own residence during the construction phase.<br>• For the worker accommodation camp, the relevant requirements to ensure that the design will be in compliance with the IFC / EBRD Guidance Note on Worker Accommodation will be incorporated. | Medium | Likelihood would reduce to Possible and Severity to Moderate |
| Labour and Working conditions | Workplace Sexual Harassment (WSH) | High | Establish a Human Resources Policy and related MPs, including the Labour and Working Conditions Management Plan, which shall include specific and implementable commitments on non-discrimination and equal opportunities for employees, worker organisations and rights to collective bargaining, measures preventing child and forced labour and measures relating to wages, benefits and conditions of work. It must prohibit and penalise any form of workplace sexual harassment. The LWCMP shall reference applicable ILO Conventions. The requirements of the LWCMP will be binding for all parties, including subcontractor and to suppliers as applicable. include in the ESMP a Code of Conduct and provide Induction training to all workers about the requirements and behaviours expected. Ensure transparent and anonymous Work Place GRM and encourage people to report any episode. | Medium | Likelihood would reduce to Possible and Severity to Moderate |

| Aspect | Impact | Significance before Mitigation | Mitigation / Enhancement Measures | Significance after Mitigation | NOTES |
|---|---|---|---|---|---|
| Labour and Community – sexual exploitation and abuse | Sexual Exploitation and Abuse (SEA) | High | Include in the ESMP a Code of Conduct and provide Induction training to all workers about the culture of the local communities and the requirements and behaviours expected. Ensure transparent and anonymous Community GRM and encourage people to report any episode | Medium | Likelihood would reduce to Possible and Severity to Moderate |
| Labour and Community | Social tensions related to influx of non-local workers | Medium | To be addressed in the Labour and Working Conditions Management Plan, part of the ESMS | Low | Likelihood would reduce to Likely and Severity to Minor |
| Cultural conflicts with local communities due to the presence of construction workers | The surrounding residential area (rural setup) is inhabited by people with a very particular set of cultural values, who are not used to and generally struggle to adjust to the presence of outsiders in their areas even during short periods of time. There is therefore a potential cultural conflict with the local communities due to the presence of construction workers in the area. | High | Include in the ESMP a Code of Conduct and provide Induction training to all workers about the culture of the local communities and the requirements and behaviours expected. Ensure transparent and anonymous Community GRM and encourage people to report any episode.<br><br>Engage local work force as much as possible, and also develop and implement a strong community communication and participation plan. | Medium | Likelihood would reduce to Possible and Severity to Moderate |
| Gender-Based Violence (GBV) risk | Gender-Based Violence (GBV) risk | High | Use Stakeholder Engagement and Focus Discussions to provide awareness and try to prevent episodes in particular enhanced by the presence of the project, and try to manage the issue perhaps with the support of local NGOs. Develop and implement a Gender Management Plan, as part of the ESMS, in order to adequately manage potential impacts related with the local way of living and 'reclusion' of women, in a new context where a lot of outsiders, in particular men, will be present in the area | Medium | Likelihood would reduce to Possible and Severity to Moderate |

| Aspect | Impact | Significance before Mitigation | Mitigation / Enhancement Measures | Significance after Mitigation | NOTES |
|---|---|---|---|---|---|
| Community H&S | Disproportionate use of force by Security Forces, namely in their interactions with the local communities | High | Prepare and implement a project specific Security Management Plan (as part of the ESMS) compliant with the UN Voluntary Principles on Security and Human Rights and the IFC Good Proactive Handbook on the Use of Security Forces. The Plan shall incorporate procedures to ensure strict adherence to the Lender's requirements, in terms of the principles of proportionality, hiring, rules of conduct, training, screening, equipping and monitoring of security personnel. The worker accommodation security provisions will also fall under the scope of the SMP. | Medium | Likelihood would reduce to Possible and Severity to Moderate |
| Community H&S | Increased risk of accidents, namely involving members of the Local Communities, due to construction-induced traffic for the transport of materials for the Project and movement of vehicles and equipment for the construction activities | High | Develop and implement a Roads and Traffic Management Plan for the ESMS to address increased risk of accidents, namely involving members of the Local Communities, due to construction-induced traffic for the transport of materials for the Project and movement of vehicles and equipment for the construction activities<br><br>All drivers will receive specific training on the defensive driving before driving for the project. All vehicles will be inspected before being accepted onsite. | Medium | Likelihood would reduce to Possible and Severity to Moderate |
| Community H&S | Health and safety risks to the local communities | High | Develop and implement a Community Health and Safety Management Plan addressing community health and safety impacts and risks not addressed in other ESMS Plans, including but not limited to influx management, interaction between workers and local communities, communicable diseases, safe passage to community members through the site and community emergency preparedness and response. | Medium | Likelihood would reduce to Possible and Severity to Moderate |

| Aspect | Impact | Significance before Mitigation | Mitigation / Enhancement Measures | Significance after Mitigation | NOTES |
|---|---|---|---|---|---|
| Cultural heritage - Historical monuments | Historical monuments - no historical monument is known to be located close to the Project Area, and therefore expected to be affected in any way (disturbed or demolished) during the construction activities. However, it is possible to find unknow elements of cultural heritage during the course of the construction works | Low | Provide and implement a Chance Find procedure (as part of the Project Construction ESMMP) in order to account for negative impacts on unknown elements of cultural heritage. Include the CFP in the induction training and toolbox talks for all workers engaging in site excavation works.<br><br>Confirm that no known important historical monument is located close to the Project Area (namely those mentioned in this document). If any significant impact is found, it is recommended to change the transmission line route alignment in order to avoid any interference. | Low | |
| Cultural heritage | Impacts on Graveyard/ Mosques from the construction activities - unknown and not expected to be found/ affected by the construction activities. | Low | Include in the ESMS a Chance Finds Procedure | Low | |
| Temporary Land Take | Impacts over land temporarily occupied | Medium | Temporary land to be rented for the camp site and equipment yard will be restored to initial conditions (or as agreed with owner) on completion of work. | Low | Severity would reduce to Minor |
| Vulnerable groups and/ or Indigenous Peoples | Potential impacts on vulnerable groups such as the Kuchi nomads | Medium | In the event that nomadic or seminomadic groups (e.g. the Kuchi nomads) pass through or establish themselves temporarily or permanently in the area, in particular in the Area of the Substations, engage with them as part of the standard stakeholder engagement process, and determine if they can be classified as Indigenous Peoples. | Low | Severity would reduce to Minor |

| Aspect | Impact | Significance before Mitigation | Mitigation / Enhancement Measures | Significance after Mitigation | NOTES |
|---|---|---|---|---|---|
| Land Acquisition | Physical and/ or economic displacement linked to land acquisition and restrictions to the use of the land: Project Affected People will need to be relocated and and/ or compensated before the start of mobilisation/ construction activities. These impacts have therefore been addressed in the previous section (Pre-construction Phase) | | Even though the Project has been designed to minimize resettlement and land acquisition issues, use Government land with no residents or private dwellers where practical (during final design and construction). | | |
| Land Acquisition | Public unrest in the case of non-compliance with the LARP, namely the timely (before mobilisation/ start of construction) payment of compensations | High | Ensure the full and timely implementation of the LARP, in particular the payment of compensations before mobilisation/ start of construction, as per requested repeatedly during the Public Consultation meetings | Medium | Severity would reduce to Moderate or Minor |
| Land Acquisition | Potential submission of land ownership claims | High | Maintain and implement the LARP to address potential land ownership claims through the Project's Grievance Mechanism. | Medium | Severity would reduce to Moderate or Minor |
| Land Acquisition | Opening of new access roads - increased damage / interference with private property | Medium | Stakeholder engagement with the local communities in an attempt to define the routes of new access roads necessary for the Project in a way that minimises affecting particularly valuable land and property. This could even become a positive impact if some of the roads are also useful to the local communities, and the Contactor leave those after construction after finalising the Project. Contractor to restore temporary access roads to the previous condition after end of construction in the case roads are not useful to the communities. | Low | Impact would become temporary, Possible and of Minor severity or even negligible. It could become a positive impact if does not impact severely on existing property and activities and locals value and would use those roads after construction |

| Aspect | Impact | Significance before Mitigation | Mitigation / Enhancement Measures | Significance after Mitigation | NOTES |
|---|---|---|---|---|---|
| Accessibility infrastructure | Damage and/or accelerated deterioration of existing roads as a result of project related heavy traffic. However, there may be the need to upgrade some roads to allow the traffic of HLVs for the Project, and this would become a positive impact | Medium | Include in the ESMP a Roads and Traffic Management Plan, assessing the condition of the existing road infrastructure to be used by the Project and the potential need to upgrade some roads; at the end of the construction period, any roads damaged due to use by the Project will need to be restored to at least the same condition they were at the start of construction | Low | Impact would become temporary and eventually short- to mid- term (depending how fast repairs would be done) and Severity would become Minor to Negligible |
| Services | Accidental or planned disruptions to the water / electricity / gas / telephone and internet supply, as well as damages to sewerage systems during construction works | High | Contractor needs to meet with the services providers in order to ensure awareness of the location of all infrastructure and to plan to avoid any interference.Contractor to adequately plan and inform the communities about planned disruptions to the provision of any of these servicesContractor needs to be contractually made responsible for repairing any damage to any of these infrastructure in a way that ensures the shortest possible interruption of the service | Low | Impact would become unlikely and of Moderate severity |
| Employment | Potential Project employment will increase the level of income available at the level of individuals and households, especially benefiting those in rural areas | Medium Positive | Ensure minimum number of workers to be employed from the nearby villages, in particular those more directly affected/ crossed by the TLs, with priority jobs to the PAPs, to the higher level of skills they possess. In advance to the start of construction activities, identify job opportunities and required skills and, through engagement, identify PAPs interested and provide them training to increase their chances of getting a better job in the Project. There are also many indirect opportunities of materials and services that can be provided for the construction of the project. | High Positive | Impact might become certain and permanent (skills from training would remain available to people for other projects or for the operations phase) |
| Influx of external work force | Social tensions resulting from competition for employment between locals and people attracted to the area due to temporary job opportunities during construction | Medium | Priority employment to be given to local residents. Unskilled workers to be hired from local community. | Low | Severity would reduce to Moderate |

| Aspect | Impact | Significance before Mitigation | Mitigation / Enhancement Measures | Significance after Mitigation | NOTES |
|---|---|---|---|---|---|
| Design - TLs Alignment | Public unrest due to poor management of expectations that the project will not affect people's property and/ or benefit their settlement, following indications during the public consultation meetings | High | Review the feedback of the Public Consultation meetings and confirm whether the alignment has changed in the locations where there were people presenting concerns during the public consultation meetings and include measures in the Stakeholder Engagement Plan to re-engage with the PAPs about the project | Low | Severity would reduce to Moderate or Minor and Likelihood to Unlikely for the simple fact that people are not taken by surprise and are informed about the Project |
| Social tensions resulting from competition for employment | Social tensions resulting from competition for employment | Medium | Include a Local Recruitment Procedure in the Labour and Working Conditions Management Plan (LWCMP). A clear and transparent recruitment mechanism is required to minimise the risk of conflict between local community members. The procedure shall establish local recruitment targets. The contractor will be liable to engage at least 50% of its required (unskilled) labour force from within or around the project area.<br>Use Stakeholder Engagement to disclose and be transparent about conditions for employment and, as per above, ensure a minimum number of vacancies to local people. | Low | Impact would become Possible or Unlikely and severity Minor |
| Labour and Working conditions | Inadequate management of labour issues (i.e. late payment of wages to labour, workplace facilities and etc.) | High | Establish a Human Resources Policy that ensures commitment to adhere to national labour law and to international good practice in terms of Recruitment and Labour conditions Include in the ESMS a Labour and Working Conditions Management Plan adequately addressing all relevant HR and Labour issues (minimum wage, overtime, rest time, …). Ensure close and regular monitoring and auditing of the implementation of the MP and all Human Resources- related Plans and Procedures | Medium | Likelihood would reduce to Possible and Severity to Moderate |
| Labour and Working conditions – child and forces labour | Child and forced labour | High | Establish a Human Resources Policy that commits to not employ children and use forced labour in any circumstances. Materialise this commitment in the Project's Labour and Working Conditions Management Plan (included in the ESMS). Ensure close and regular monitoring and auditing of the implementation of the MP and all Human Resources- related Plans and Procedures | Medium | Likelihood would reduce to Possible and Severity to Moderate |

| Aspect | Impact | Significance before Mitigation | Mitigation / Enhancement Measures | Significance after Mitigation | NOTES |
|---|---|---|---|---|---|
| Worker Accommodation Camps and community interactions | Impacts over local communities related with the presence of construction workers and accommodation camps | High | Worker camps to be selected with regard to cultural norms of the area to avoid undue interference of workers with local residents. | Medium | Severity would reduce to Moderate |
| Worker accommodation camps | Inadequate accommodation of construction workers | High | Prepare and implement a Worker Accommodation Management Plan that will include at least the following:<br>• A worker accommodation strategy for workers that will not stay at their own residence during the construction phase.<br>• For the worker accommodation camp, the relevant requirements to ensure that the design will be in compliance with the IFC / EBRD Guidance Note on Worker Accommodation will be incorporated. | Medium | Likelihood would reduce to Possible and Severity to Moderate |
| Labour and Working conditions | Workplace Sexual Harassment (WSH) | High | Establish a Human Resources Policy and related MPs, including the Labour and Working Conditions Management Plan, which shall include specific and implementable commitments on non-discrimination and equal opportunities for employees, worker organisations and rights to collective bargaining, measures preventing child and forced labour and measures relating to wages, benefits and conditions of work. It must prohibit and penalise any form of workplace sexual harassment. The LWCMP shall reference applicable ILO Conventions. The requirements of the LWCMP will be binding for all parties, including subcontractor and to suppliers as applicable. include in the ESMP a Code of Conduct and provide Induction training to all workers about the requirements and behaviours expected. Ensure transparent and anonymous Work Place GRM and encourage people to report any episode. | Medium | Likelihood would reduce to Possible and Severity to Moderate |

| Aspect | Impact | Significance before Mitigation | Mitigation / Enhancement Measures | Significance after Mitigation | NOTES |
|---|---|---|---|---|---|
| Labour and Community – sexual exploitation and abuse | Sexual Exploitation and Abuse (SEA) | High | Include in the ESMP a Code of Conduct and provide Induction training to all workers about the culture of the local communities and the requirements and behaviours expected. Ensure transparent and anonymous Community GRM and encourage people to report any episode | Medium | Likelihood would reduce to Possible and Severity to Moderate |
| Labour and Community | Social tensions related to influx of non-local workers | Medium | To be addressed in the Labour and Working Conditions Management Plan, part of the ESMS | Low | Likelihood would reduce to Likely and Severity to Minor |
| Cultural conflicts with local communities due to the presence of construction workers | The surrounding residential area (rural setup) is inhabited by people with a very particular set of cultural values, who are not used to and generally struggle to adjust to the presence of outsiders in their areas even during short periods of time. There is therefore a potential cultural conflict with the local communities due to the presence of construction workers in the area. | High | Include in the ESMP a Code of Conduct and provide Induction training to all workers about the culture of the local communities and the requirements and behaviours expected. Ensure transparent and anonymous Community GRM and encourage people to report any episode.<br><br>Engage local work force as much as possible, and also develop and implement a strong community communication and participation plan. | Medium | Likelihood would reduce to Possible and Severity to Moderate |
| Gender-Based Violence (GBV) risk | Gender-Based Violence (GBV) risk | High | Use Stakeholder Engagement and Focus Discussions to provide awareness and try to prevent episodes in particular enhanced by the presence of the project, and try to manage the issue perhaps with the support of local NGOs. Develop and implement a Gender Management Plan, as part of the ESMS, in order to adequately manage potential impacts related with the local way of living and 'reclusion' of women, in a new context where a lot of outsiders, in particular men, will be present in the area | Medium | Likelihood would reduce to Possible and Severity to Moderate |

| Aspect | Impact | Significance before Mitigation | Mitigation / Enhancement Measures | Significance after Mitigation | NOTES |
|---|---|---|---|---|---|
| Community H&S | Disproportionate use of force by Security Forces, namely in their interactions with the local communities | High | Prepare and implement a project specific Security Management Plan (as part of the ESMS) compliant with the UN Voluntary Principles on Security and Human Rights and the IFC Good Proactive Handbook on the Use of Security Forces. The Plan shall incorporate procedures to ensure strict adherence to the Lender's requirements, in terms of the principles of proportionality, hiring, rules of conduct, training, screening, equipping and monitoring of security personnel. The worker accommodation security provisions will also fall under the scope of the SMP. | Medium | Likelihood would reduce to Possible and Severity to Moderate |
| Community H&S | Increased risk of accidents, namely involving members of the Local Communities, due to construction-induced traffic for the transport of materials for the Project and movement of vehicles and equipment for the construction activities | High | Develop and implement a Roads and Traffic Management Plan for the ESMS to address increased risk of accidents, namely involving members of the Local Communities, due to construction-induced traffic for the transport of materials for the Project and movement of vehicles and equipment for the construction activities<br><br>All drivers will receive specific training on the defensive driving before driving for the project. All vehicles will be inspected before being accepted onsite. | Medium | Likelihood would reduce to Possible and Severity to Moderate |
| Community H&S | Health and safety risks to the local communities | High | Develop and implement a Community Health and Safety Management Plan addressing community health and safety impacts and risks not addressed in other ESMS Plans, including but not limited to influx management, interaction between workers and local communities, communicable diseases, safe passage to community members through the site and community emergency preparedness and response. | Medium | Likelihood would reduce to Possible and Severity to Moderate |

| Aspect | Impact | Significance before Mitigation | Mitigation / Enhancement Measures | Significance after Mitigation | NOTES |
|---|---|---|---|---|---|
| Cultural heritage - Historical monuments | Historical monuments - no historical monument is known to be located close to the Project Area, and therefore expected to be affected in any way (disturbed or demolished) during the construction activities. However, it is possible to find unknow elements of cultural heritage during the course of the construction works | Low | Provide and implement a Chance Find procedure (as part of the Project Construction ESMMP) in order to account for negative impacts on unknown elements of cultural heritage. Include the CFP in the induction training and toolbox talks for all workers engaging in site excavation works.<br><br>Confirm that no known important historical monument is located close to the Project Area (namely those mentioned in this document). If any significant impact is found, it is recommended to change the transmission line route alignment in order to avoid any interference. | Low | |
| Cultural heritage | Impacts on Graveyard/ Mosques from the construction activities - unknown and not expected to be found/ affected by the construction activities. | Low | Include in the ESMS a Chance Finds Procedure | Low | |
| Temporary Land Take | Impacts over land temporarily occupied | Medium | Temporary land to be rented for the camp site and equipment yard will be restored to initial conditions (or as agreed with owner) on completion of work. | Low | Severity would reduce to Minor |
| Vulnerable groups and/ or Indigenous Peoples | Potential impacts on vulnerable groups such as the Kuchi nomads | Medium | In the event that nomadic or seminomadic groups (e.g. the Kuchi nomads) pass through or establish themselves temporarily or permanently in the area, in particular in the Area of the Substations, engage with them as part of the standard stakeholder engagement process, and determine if they can be classified as Indigenous Peoples. | Low | Severity would reduce to Minor |
| | | | | | |

### Operations Phase

As set out in Section E.5.1, most socio-economic impacts during this phase are positive.

The proposed mitigation measures for each potential social impact / risk will be addressed through the definition of the Project's EMS and respective Management Plans, and its implementation on the ground. These will include the Stakeholder Engagement Plan (SEP) and the Land Acquisition and Resettlement Plan (LARP), which are of upmost importance for the successful implementation of this Project, in all phases. In particular with regards to the Operations Phase, implementation of these Plans will ensure that operations and maintenance are carried out in accordance with Good International Industry Practice.

Table 45 presents the recommended mitigation measures for the negative (and enhancement measures for the positive) socio-economic impacts previously identified for the Operations Phase. It also presents, in the last column, the classification of the residual impacts.

In addition, it is highly recommended that the project proponent considers some Corporate Social Responsibility measures in order to benefit the most affected local communities, in line with the feedback of the Public Consultation meetings.

**Table 45: Recommended mitigation and enhancement measures for the socio-economic impacts during the Operations Phase and classification of residual impacts**

| Aspect | Impact | Significance before Mitigation | Mitigation / Enhancement Measures | Significance after Mitigation | NOTES |
|---|---|---|---|---|---|
| Power supply | Over 25,000 residential consumers in the two provinces will potentially benefit from more reliable and cheap energy (considering that electricity in the area is presently provided by diesel generators, which are unreliable). | High Positive | (positive impact directly related with the implementation of the Project) | High Positive | |
| Settlement and Housing | Perceived decrease of property value due to proximity of the High Voltage Transmission Lines to the houses (for the houses located in the AoI). | Medium | Include in the LARP measures to address the perceived decrease of property value due to proximity of the High Voltage Transmission Lines to the houses (for the houses located in the AoI). | Medium | |
| Land use | Decrease of property value due to the restrictions imposed by the presence of High Voltage Transmission Lines | Low | Include in the LARP measures to address the perceived decrease of property value due to the restrictions imposed by the presence of High Voltage Transmission Lines | Low | |
| Land use | Potential temporary loss of crops for landowners/users in case of maintenance activities | Low | Include in the LARP and in the SEP for the Operational Phase measures to address and communicate potential temporary loss of crops for landowners/users in case of maintenance activities | Low | |
| Public Utilities, Services and Transport infrastructure | Accidental events involving potentially causing electrocution during normal maintenance activities or illegal attempts to steal electricity through illegal connections | High | Prepare and implement a Health and Safety Management Plan for Operations Phase covering regular maintenance activities. Include measures to identify potential illegal connections and to eliminate them and include in the SEP measures to inform the communities of the H&S / death risks associated with establishing such connections. This is to address/ prevent accidents potentially causing electrocution during normal maintenance activities or illegal attempts to steal electricity through illegal connections | Medium | Likelihood would reduce to Possible |
| Economic activities | Increase stability of macroeconomic environment and greater business opportunities due to energy security | High Positive | (positive impact directly related with the implementation of the Project) | High Positive | |

| Aspect | Impact | Significance before Mitigation | Mitigation / Enhancement Measures | Significance after Mitigation | NOTES |
|---|---|---|---|---|---|
| Livelihood | Public perception of negative impacts of the project, especially for those not benefiting from compensation | Low | Include in the LARP and in the SEP for the Operational Phase measures to address public perception of negative impacts of the project, especially for those not benefiting from compensation | Low | |
| Employment | Improved skills through training (during construction) and know-how for employees, potentially to be used in other projects | Medium Positive | This positive impact can be enhanced though ensuring an adequate identification of training needs that can benefit the project during the construction phase, but that can also be used by local community members for other projects after construction is finished. Project can also train some community members to carry out at lease some of the maintenance activities during the operations phase, e.g., to ensure compliance with the requirements for the RoW. | Medium Positive | |
| Health and Safety | Perceived health safety risks at the level of the community living in the proximity of the Transmission Lines (magnetic fields) | Medium | Carry out additional studies and/ or investigation on the health safety risks at the level of the community living in the proximity of the Transmission Lines associated with magnetic fields and disclose it as per the SAP to address, in order to address these perceived risks. | Medium | Might reduce to Low, according to the results of the Studies |
| Health and Safety | Better health and increased safety linked to the reduction of the use of generators - and potential access to cleaner electricity | Low Positive | (positive impact directly related with the implementation of the Project) | Low Positive | |

# F. Information Disclosure, Consultation and Participation

## F.1 Introduction

Stakeholder engagement is an inclusive process conducted throughout the project life cycle. Where properly designed and implemented, it supports the development of strong, constructive and responsive relationships that are important for successful management of a project's environmental and social risks. Stakeholder engagement is most effective when initiated at an early stage of the project development process, and is an integral part of early project decisions and the assessment, management and monitoring of the project's environmental and social risks and impacts.

## F.2 Public Consultation Requirements

ADB Safeguard Policy Statement (2009) requires that:
"The borrower/client will carry out meaningful consultation with affected people and other concerned stakeholders, including civil society, and facilitate their informed participation. Meaningful consultation is a process that it:
(i) Begins early in the project preparation stage and is carried out on an ongoing basis throughout the project cycle;
(ii) Provides timely disclosure of relevant and adequate information that is understandable and readily accessible to affected people;
(iii) Is undertaken in an atmosphere free of intimidation or coercion;
(iv) Is gender inclusive and responsive, and tailored to the needs of disadvantaged and vulnerable groups; and
(v) Enables the incorporation of all relevant views of affected people and other stakeholders into decision making, such as project design, mitigation measures, the sharing of development benefits and opportunities, and implementation issues.
Consultation will be carried out in a manner commensurate with the impacts on affected communities. The consultation process and its results are to be documented and reflected in the environmental assessment report."

## F.3 Stakeholder engagement during Planning Phase (IEE)

### F.3.1 Introduction

This chapter describes the stakeholder engagement undertaken to date as well as the main concerns of key stakeholders (including project area people) that have been raised to date. The ongoing involvement of stakeholders in the Project development will be vital to the effectiveness of the Environment Management Plan implementation.
ADB guidelines recognise stakeholder consultation as critical to enable the Project to:

- disseminate project information;
- record concerns (positive or negative) of individuals/ communities/ relevant departments regarding the project);
- promote better transparency and accountability in decision making;
- reduce conflict through the early identification of contentious issues, and working through these to find acceptable solutions; and
- help those involved with planning the project to ensure that benefits of the project are maximized and that no major impacts have been overlooked.

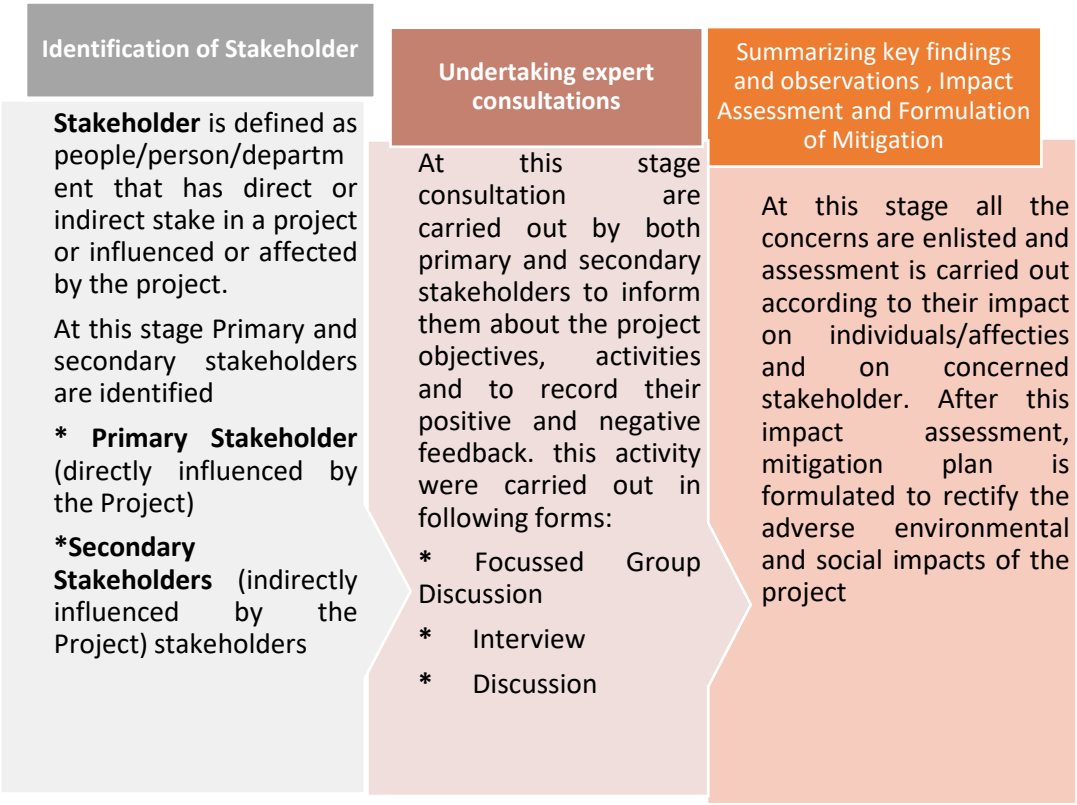
This process has also helped in the development of the Environmental Management Plan by helping to identify significant project impacts and appropriate mitigation measures that are suited

to the needs of the stakeholders. Extensive planning was carried out to deliver an effective consultation and disclosure processes and help all stakeholders (primary and secondary) to be well informed about project activities.

### F.3.2 Legitimacy of Stakeholder Consultations

ADB Safeguard Policy Statement (2009) and Afghanistan Environmental Law require stakeholder consultation and disclosure to raise community awareness in the Project Area about the project. This has informed the following generic approach:

### F.3.3 Approach and Methodology for Public Consultation and Information Disclosure




### F.3.4 Identification of Stakeholders

Project stakeholders were prioritized by identifying direct and indirect stakeholders, making them aware of project activities, benefits and potential impacts and identifying their respective specific project concerns. The following primary and secondary stakeholders have been identified.

- **Primary Stakeholders:**

  a) Individuals;

  b) Owners/ farmers of the land, who are expected to be affected or benefited;

  c) People other than farmers/ owners;

  d) Communities.

- **Secondary stakeholders**:

a) Local, Tehsil and District Government Administration offices.

b) Departments like Public Health, Food, Health, Agriculture, Electricity Generation Department, Water and Soil, NGO's and CBO's and etc.

### F.3.5 Information Disclosure

The Public Consultation process has commenced and initial project information has been shared with stakeholders and their feedback recorded. Levels of engagement have varied between stakeholders and some have made minor comments. No outright opposition to the proposed project has been stated.

### F.3.6 Stakeholder Consultation Meetings

For the Consultation meetings, local people of the Project Area were informed in advance and asked to assemble at a common place (dera). Initial consultation meetings were held from January 13th-26th 2019 and March 13th-19th 2019 during socio-economic and environmental baseline surveys carried out along the proposed project route alignment. Details are provided in Annex 4 about the primary and secondary stakeholders consulted, issues and concerns raised, and project feedback. The table below indicates the number of participants who attended each Consultation meeting, and summarises the main concerns presented.

**Table 46: Details of Consultation Meetings with Primary Stakeholders**

| # | Venue | Date | Number Present | Main Concerns |
|---|---|---|---|---|
| 1 | Kabotarkhan village Hall | 13-01-2019 | 8 | Participants appreciated the project because it will improve the electricity supply in their district/area. They also highlighted the following issues:<br>Safe drinking water is not available in this area and this problem should be fixed as early as possible.<br>Due to current transmission route alignment, it may be that they will lose large areas of cultivated land. Therefore, they requested to revisit the design or route of the transmission line to avoid loss of land. |
| 2 | Chaka Mosque | 14-01-2019 | 7 | After taking detailed project brief, villagers of this village appreciated the project but they highlighted following concerns about proposed transmission line route.<br>At construction stage erection of electricity poles will require access road. In result their gardens will be damaged. Hence they requested to revisit the proposed transmission line route alignment to avoid its passage from residential and cultivated areas. |
| 3 | Ghochanak Mosque | 15-01-2019 | 12 | People of this village appreciated the project but were very concerned about the damages that will happen to their cultivated land. Therefore, they suggested to redesigning the route because **in case if it will damage their property, they will not allow its passage from their land**. They also highlighted that there is not a single healthcare facility in this village and they have to travel long distance to take medical treatment in case of illness. It is requested to Government authorities to pay attention at this issue. |
| 4 | Farjayi School | 15-01-2019 | 3+4 | This project and all other similar projects are appreciated by the participants of the FGD, but expressed their concerns about land/property losses due to its passage from their land. They |

| # | Venue | Date | Number Present | Main Concerns |
|---|---|---|---|---|
| | | | | requested to **diverge this path from Farjayi residential area and gardens**. Participants also highlighted the **unavailability of drinking water** as well as **healthcare facilities** that are required to be resolved on priority basis. |
| 5 | Shamsabad village Governor house | 15-01-2019 | 12 | Participants of this FGD are happy to see the energy project in their area but concerned about **loss of their property**. Therefore they asked to reconsider designed route alignment to **reduce loss of property and lives**. |
| 6 | Gholba Gaz Mosque | 16-01-2019 | 10 | Participants of this village appreciated the project but showed their concern that Afghanistan has to produce its own energy through dams construction and use of solar energy instead of importing it from other countries.<br>They also raised the issue of **property damage** due to current designed TL alignment. Therefore, it is requested to **change the transmission line route**. |
| 7 | Ghoran Village Governor House | 16-01-2019 | 3+4 | The main occupation of the Ghoran villagers is gardening and has 72 types of grapes for the production of vine. As transmission line is passing through their agricultural land and gardens this will hamper their activities and gardens. Therefore, are **not in favour of current transmission line route**.<br>They also stated that they have lack of **healthcare services** and requested Government to start healthcare projects in this village to safe life of people. |
| 8 | Pule Sangi mosque | 17-01-2019 | 15 | People of this village are attached with seeking employment in industries due to large industrial area in Herat province. They suggested to **change the transmission line route alignment because this route alignment is passing from residential area and from over their houses**. **That's why the Pule Sangi people are not allowing this project to be implemented.** |
| 9 | Mayon mosque in Kopak and Mayon Village | 21-01-2019 | 14 | Villagers appreciated the project but based on their past bad experience of "construction of Bypass road", they are **not willing to allow this transmission line to pass from their villages before completion of land acquisition process**. Because during bypass construction project they were promised to be compensated against their property but such promises have not yet been fulfilled. |
| 10 | Gawsiah Mosque at Gawasiah Village | 21-01-2019 | 15 | |
| 11 | Kariz sofi Village elder house | | 5 | Kariz Sofi people are busy with gardening and agriculture and some of them are immigrant workers in Iran.<br>They appreciated the project and showed that process of **land acquisition should be completed before start of construction stage**. |
| 12 | Tizan mosque | 22-01-2019 | 10 | Tizan village is one of the biggest villages in Guzara district, about 3000 residents lives there. Community of this village is facing a deficiency of **health and drinking water facilities** but Government didn't pay attention to these issues. Tizan land is divided in three part and only one part of the Tizan land have drinking water and other two parts have salty water. So, **if the transmission line passes from our land the Government or World Bank should satisfy our needs.** |
| 13 | Mosque at Hassan abad | 22-01-2019 | 13 | Hassan Abad village is near to bypass road so any transmission line that pass from the north of bypass **will** |

| # | Venue | Date | Number Present | Main Concerns |
|---|---|---|---|---|
| | village | | | **directly affect their gardens and houses**.<br>They suggested changing the transmission line route because it is passing to bypass road. In this case we will lose less land and be more satisfied. |
| 14 | Kabotarkhan village Hall | 13/01/ 2019 | | They appreciate all those project that are for Afghanistan improvement.<br>But their main concern is **loss of land and property** which will be resolved by changing the route of the transmission line **or** through **completion of land acquisition process before start of construction**. |
| 15 | Ab Kalan Blook Village | 25/01/ 2019 | 9 | Participants appreciated the project and ensured their cooperation for its successful implementation.<br>Participants are happy to see the development activity in their project area but also highlighted that they don't have **access to clean drinking water**. This problem should also be considered at priority to resolve it.<br>Implementation of the project is the concern of the project area residents because they said that such type of projects remained at feasibility studies stage and not implemented in real.<br>It seems that some of private lands will be in the project path and **people will not allow to destroy their houses and gardens**. Therefore, it is requested to reconsider the project route alignment to minimize losses. |
| 16 | Ali Gada Village | 19/03/ 2019 | 7 | |
| 17 | Ashraful Holy Mosque | 17/03/ 2019 | 11 | |
| 18 | Bala Balook | 17/03/ 2019 | 4 | |
| 19 | Chakran Village, Adraskan | 14/03/ 2019 | 12 | |
| 20 | Changan Sofla Village | 14/03/ 2019 | 10 | |
| 21 | Nayesk Village | 19/03/ 2019 | 8 | |
| 22 | Shahrak Mahajrin | 16/03/ 2019 | 8 | |
| 23 | Shaka New Village | 16/03/ 2019 | 15 | |
| 24 | Shawa Bala Village | 18/03/ 2019 | | |
| 25 | Shawolga village | 16/03/ 2019 | 11 | |
| 26 | Shoorab Pahin Village | 17/03/ 2019 | 10 | |
| 27 | Sia Hasar Village | 25/01/ 2019 | 7 | |
| 28 | Soorab Bala | 26/01/ 2019 | 7 | |

**Table 47: Details of Consultation Meetings with Secondary Stak**

| Sr. No | Name of District | Name of concern Department/Institute/organization/General Public | | | Concerns of Stakeholders regarding project |
|---|---|---|---|---|---|
| | | Participant | Dep. | Designation | |
| **1** | Chaghcharan | Engineer Mir Hatam | DABS | Director of Farah DABS | This project if implemented properly will bring economic prosperity in the region by increasing access through electricity distribution enhancement. |
| **2** | Farah Center | Dr.Abdul Hakim | Farah Centeral hospital | Doctor | One of most critical problem in Farah hospital is lack of access to electricity. By implementation of this power transmission project healthcare facilities will take the benefit by this and will have a better serving condition for our patient. |

Meeting of public consultation with local administration, NGOs, CBOs, and other concerned Govt. authorities were not done specially for the substation, but for the project as a whole.

### F.3.7 Concerns and Feedback of Stakeholders

The key concerns raised can be summarised as follows:

1. People appreciated the project because it will improve the provision of electricity supply in their district/area.
2. It is highlighted that safe drinking water is not available in the study area and this problem is also required to be fix as early as possible.
3. Due to current transmission line route alignment, residents of the project area suggested to redesign the transmission line route to avoid impacts on worked land;
4. To avoid its passage within or nearby residential, commercial, flood porn and cultivated land
5. To minimize the risk to flora, fauna and humans due to electromagnetic field creation and hazards due to electricity.
6. They are concerned to provide job opportunity to local residents of the project area during construction and operation phase.
7. At construction stage erection of electricity poles and other construction activities require formation/construction of access road at some places. That may affect their gardens and loss of land. Hence they requested to revisit the transmission line route alignment to avoid its passage from residential and cultivated areas.
8. Alternate route/ Traffic management plan should be properly implemented to avoid inconvenience in movement to the residents of project area.
9. In case of land acquisition, compensation should be paid according to current market rate and in time.
10. After construction of the Sub-Stations and erection of electricity towers/poles proper monitoring should be done for clearance and rehabilitation of project area.

**Figure 27: Photos taken during the Stakeholder Consultation Meetings**




## F.4 Future Stakeholder Engagement

### F.4.1 Objectives of future engagement

Continued Stakeholder Engagement will be undertaken during all phases of the project to ensure that adequate and timely information is provided to project-affected people and other stakeholders, and that these groups are given sufficient opportunity to voice their opinions and concerns. Specific objectives include

- To create opportunities for information sharing and disclosure in readily understandable formats.
- To offer opportunities for stakeholders to raise their concerns and submit their opinions.
- To create a mechanism for giving feedback to the stakeholders and respond to stakeholder concerns, suggestions.
- To create an avenue for participatory project impacts monitoring as well as cumulative impacts monitoring.
- To foster strong project community relationships.
- To promote social acceptability of the project.

### F.4.2 Principles for future stakeholder engagements

The following principles will be followed during the stakeholder consultation process:

- Provision of meaningful information in a format and language that is readily understandable and tailored to the needs of the target stakeholder group(s);
- Dissemination of information in ways and locations that make it easy for stakeholders to access it;
- Respect for local traditions, languages, timeframes, and decision-making processes;
- Two-way dialogue that gives both sides the opportunity to exchange views and information, to listen, and to have their issues heard and addressed;
- Inclusiveness in representation of views, including women, vulnerable and/or minority groups;
- Processes free of intimidation or coercion;
- Clear mechanisms for responding to stakeholder concerns, suggestions, and grievances.
- Incorporating feedback into project or program design and reporting back to stakeholders.

### F.4.3 **Stakeholder Engagement Plan**

The Project will develop and implement a Project Stakeholder Engagement Plan (SEP), as part of the EMP to ensure that (and define how) it will keep communicating with all affected stakeholders throughout the next phases (construction and operation) of the Project. The SEP shall incorporate actions related to the consultation of and engagement with all the PAPs, with regards to the Land Acquisition Process. Alternatively, a SEP shall be developed for this purpose, under the Land Acquisition Plan.

# G. Grievance Redress Mechanism (GRM)

## G.1 Introduction

This Grievance Redress Mechanism (GRM) has been developed to facilitate the Project Management Unit (PMU) to manage affected persons grievances to environmental and social performance arising during project life cycle more importantly construction and possibly during operational stage of this transmission line project. Activities at Pre-construction, Construction and implementation stage activities like clearance of land for construction camp installation, land acquirement (if required), health and safety incidents and etc. may become a source of community grievances which will be redressed according to the same procedure defined in this chapter. The GRM is based on four guiding principles of the Project Management Unit which include:

- Transparency
- Fairness
- Respect
- Accountability

### G.1.1 Affected Persons

In this project, affected person is anyone who is directly or indirectly affected by the project activities in an area of influence (AOI) i.e. 50m both ways of the transmission line alignment however the Right of Way (RoW) is taken as 25m on both sides of the transmission line alignment. Persons affected by any project activity coming in AOI and RoW of transmission line and grid station facility will be eligible to submit a grievance and dissatisfactions to the project management office of DAB through a defined mechanism discussed under heading 10.4.4.
In the GRM, not only affected persons (APs) should be able to raise their grievances and be given an adequate hearing, but also satisfactory solutions should be found that mutually benefit both the APs and the project. It is equally important that APs have access to legitimate, reliable, transparent, and efficient institutional mechanisms that are responsive to their complaints.

## G.2 Objective of GRM

Stated below objectives of GRM for this generation project are very clear and precise.

- Rights and interests of every affected person by degraded environmental performance or social management of the project are protected; and
- Issues of the affected persons arising from the poor performance of the project during mainly construction and probably operation activities are effectively and timely addressed.

Therefore, it helps PMO to provide a predictable, transparent, and credible process to all parties, resulting in outcomes that are seen as fair, effective, and lasting[19].

## G.3 Scope of GRM

GRM is usually closest to the affected persons and respond to a wide scope of social and environmental issues so that many Affected Persons20 can approach it easily with their diverse concerns.

[19]Office of the Compliance Advisor/Ombudsman for the International Finance Corporation (CAO). 2008. Advisory Note: A Guide to Designing and Implementing Grievance Mechanisms for Development Projects, Washington, D.C.

For this particular project, there is a formation of grid stations and erection of towers and the GRM for this transmission line project, is to deal with all the environmental and social grievances associated with project activities at pre-construction (excepted land acquisition activity), construction and post-construction stages.
The issues identified to redress will be dealt by a single GRM in this project, where the Grievance Redress Committee (GRC) has the widest scope, excluding only land acquisition and compensation issues, which will be addressed by the Land Acquisition and Resettlement Committee (if, in case there is requirement of land acquisition); and construction-related issues, which were handled by the contractor and managed through the Public Complaints.

## G.4 Types of Grievances

Grievances are classified in two types i.e. External Grievances and Internal Grievances which are raised if project related activities are having an adverse impact on the quality of life, livelihood or environment, which they want the appropriate management to address; such a concern can be classified as a complaint or grievances.

### G.4.1 External Grievances

External grievances are usually the type of complaints received from the community, local administrative setup, community groups / NGOs, and media groups based on project activities, employee / worker-community conflicts, and other project related issues. Such type of grievances will be directly/indirectly controlled by PMO/ contractor.

The surrounding community of the project is considered as important stakeholder by the Project. The possible grievances of the community could be:

- Issues related to the health security;
- Grievances associated with improper disposal of solid and liquid waste;
- Land and compensation related issues;
- Damage to crops, trees and any other infrastructure;
- Grievances associated with life losses during construction and operation stage;
- Delay in the payment of the compensation;
- Livelihood restoration issues and associated benefits;
- Adverse impacts on privacy of the community due to induction of external labor during construction activities;
- Community development, employment and other issues
- Risks to community, health & safety (e.g. traffic);
- Accidents (e.g. involving livestock);
- Unethical Behavior by EMC or its sub-contractors;
- Noise/dust/air emissions or any other impact on environment caused by project or subcontractors;
- Demand for development interventions in the community;
- Issues owing to behavior of the security personnel and general attitude of the local community;
- Issues related to cultural conflicts or opportunity conflict owing to presence of migrant workers in the community or in the nearby areas;
- Nomads and Squatters, if any, coming in the AOI may be eligible of grievances. In case the number of nomads and squatters are above 1000, they maybe adjust in Resettlement Action Plan or Land Acquisition and Resettlement Plan (whichever may be suitable)

### G.4.2 Internal Grievances

Internal Grievances in this project is related to the parties associated or interlinked during the whole project cycle i.e. PMO of proponent, contractor and EMC etc.

- Complaints pertaining to amount of wage, salary, other remuneration or benefits, as per company's centralized HR Policy
- Working condition, health and safety of the employees;
- Unethical behaviour between senior and subordinate employees;
- Internal disputes among the associated working parties etc.;
- Financial and work-related grievances
- Issues related with child labour and different management plans (Health, Safety and Environment Plan, Traffic Management Plan, Waste Disposal Plan, etc.)

### G.4.3 Contractors and Labour Related Grievance

The workers include the local and migrant workers are likely to have the grievance related to the following issues:

- Risk to health and safety of the labors or workers hired by the contractors;
- Working condition of the labor;
- Wage discrimination among the labor;
- Timing of the payments;
- Adequate facilities in the labor camps (during construction stages) including water supply and sanitation;
- Unjustified deduction from the wages;
- Minimum wage rates for the labor;
- Extended working hours;
- Prevention and protection of child labor from hazardous work condition;
- Issue of forced labor;
- Gender discrimination.

### G.4.4 Redressal Process

The redressal process has been developed to deal with internal as well as external grievances. The process flow diagram for grievances are shown in Figures 10-1 below and process are described in subsequent sections.

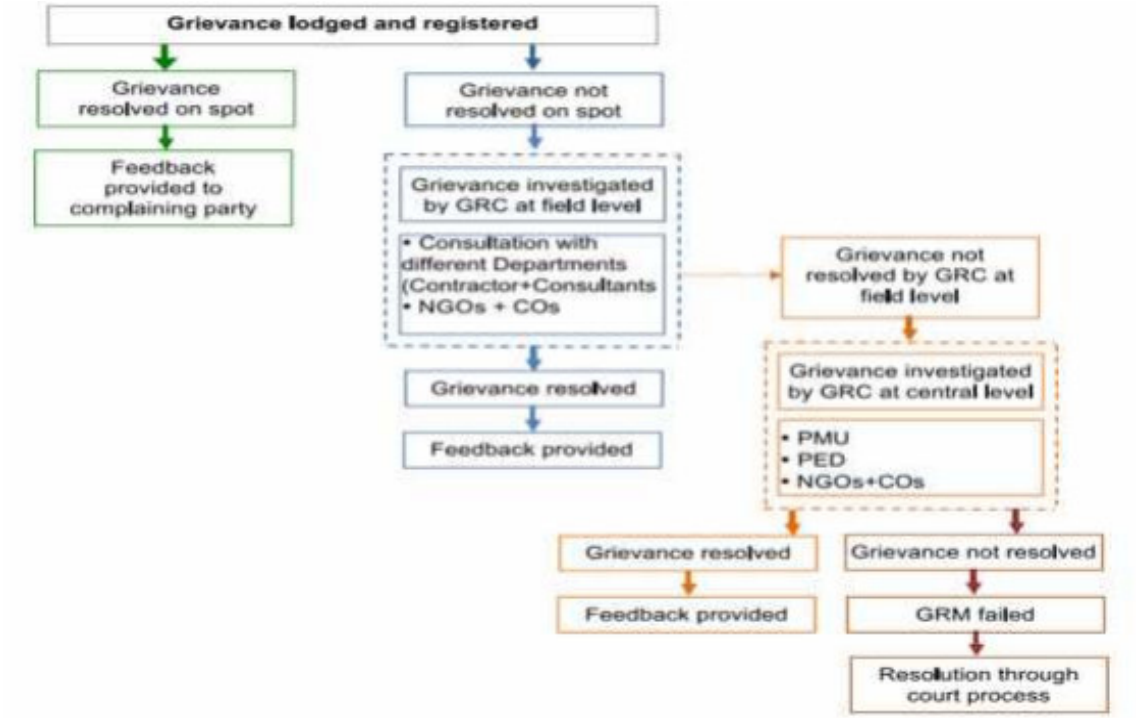



**Figure 28: Process flow diagram of Grievance Redressal System**

## G.5 Implementing a Grievance Redress Mechanism

### G.5.1 Institutional Arrangements

The GRM should be set up to deal with different types of grievances. It is comprised of three levels i.e. 1st level Manager from Contractor, 2nd level Manager from EMC, 3rd level from PMO in addition to Project Director/coordinator/manager as well as Manager Environment and Social Safeguard. So the complainants can move to a higher level if they are not satisfied with the grievance redress suggested or provided, and they should be designed to provide appropriate responses to specific types of grievances.

The grievances can be of many types, who were to lose their valuable assets as well as by activist groups and organizations such as environmentalists and human rights groups that were concerned with potential damage to ecological and social resources during the design stage. This type of grievance should not be handled at the field level but should be managed in a transparent manner and responded to professionally by the executing and aid agencies responsible for the project.

### G.5.2 Grievance Redress Committees

Secretary Energy/Project Director is a competent authority to notify the GRC committee. The members of the GRC for this project include the project manager, a member of a recognized nongovernment organization, and a community leader. The GRC has a right to request the project technical staff, and officers from relevant state or non-state institutions to attend the meetings and provide information. A complainant has the right to appear in person, to be accompanied by a family member, and/or to request to be represented by a village elder.

## A. Mechanism to Manage Construction-Related Complaints

Construction-related complaints can be numerous and managing them is the contractor's responsibility under its contract with the Government. Usually this kind of complaints are described as environmental impacts and include issues related to:

- Dust,
- Street flooding
- Excavation (noise, vibration, evacuation)
- Lost access, dangers to life, damage caused to public roads from heavy machinery
- Deteriorating water quality and quantity,
- Damage to property and crops, soil erosion, and others

In this concerned project, the Environmental Management and Monitoring Plan clarifies the mitigation measures for the social and environmental impacts, and the supervision consultant's report the types of complaints, measures taken, and status of resolution on a fortnightly/ monthly or quarterly basis (depend on number of cases/issues registered). The complaints received by the supervision consultants are entered into a computer database, and the following information is included, nature of the complaint; complaint category, i.e., excavation, street flooding, noise, property damage, etc.; source and date of receiving the complaint; impact location, name and address of the complainant; action taken; and current status. Data entered on action taken and current status on complaints is analyzed by the supervision consultants in the form of graphs and charts. Data for the complaint is collected from the complainant by filling a specified form which is developed according to the ADB guidelines and attached as Annex 5. Format for recording the proceedings of grievance redress committees is attached as Annex 5.

## B. Implementing Steps

The process of implementing a GRM involves the following steps:

- Assign focal points.
- Receive and register complaints.
- Screen and refer the complaints to concerned departments.
- Coordinate with GRM and LARC.
- Assess the complaint.
- Formulate a response.
- Select a resolution approach.
- Implement the approach.
- Settle the issues.
- Track, document, and evaluate the process and results.

### i) Complaint Centres

The focal points for receiving and registering complaints from AP (affected people) in GRM should be clearly identified and established. GRM can have focal points to receive and register grievances. It is equally important to have someone who has overall responsibility for tracking and following up on issues and complaints raised. The descriptions of the GRM functions should clearly stipulate the official designations and the roles of the focal points so that they can really be held accountable for performing their functions.

#### a. Complaint Registration Process

Grievances may be reported to local police stations in absence of site manager/assistant manager. If this is the case, they should be referred to project staff, registered by the designated focal point, and referred to the appropriate GRM. Complaints can be presented in a variety of

forms ranging from verbal communications to formal and written complaints. Annex 5 provides a format to record and register a complaint according to ADB guidelines.

**b. Complain Scrutinization Process**

Having received and registered a complaint, the next step in the complaint-handling process is for the focal points to establish the eligibility of the complaint received. The complainant is identifiable and has provided a name and contact details. The complainant is affected by the project. The complaint has a direct relationship to the project. The issues raised in the complaint fall within the scope of the issues that the GRM is mandated to address.
If the complaint is not eligible, the complainant should be informed of the reasons. If the complaint can be referred to another GRM, the complainant should be informed accordingly.

**c. Coordination with other Departments**

GRM do not operate in a vacuum. They are embedded in networks of agencies and actors and in the course of their operations may relate to APs, GRM implementers, their executing and support agencies, project implementers, intermediaries used for presenting complaints and funding agencies. On the other hand, APs may relate to GRM in diverse forms. As such, coordination among different Departments and bodies like LARC etc., as well as among other external agencies and actors with whom the GRM interact in their operations, is an important aspect of good GRM design. It is necessary to identify and establish a central point to carry out these coordinating and communication functions.

**d. Complaint Assessment and Response Formulation**

If the initial assessment establishes the eligibility of the complaint to be pursued, a further assessment is recommended of the seriousness of the complaint classified in terms of high, medium, or low and its impact on both the complainant and the project. Assessing the seriousness of a complaint is not easy, as it could be subject to biases. Criteria will be established based on the following components:

- Severity of the problem,
- Potential impact on the well-being of an individual or group,
- Potential impact on the project, and
- Assessing the severity of a complaint will require additional data collection through field visits to the sites, discussions and interviews with complainants and other relevant persons or groups in the community, and cross-checking the information already provided.

Having completed the complaint assessment, a response can be formulated on how to proceed with the complaint. This response should be communicated to the complainant. The response should include the following elements:

- Acceptance or rejection of the complaint;
- Reasons for acceptance or rejection;
- Next steps—where to forward the complaint;
- A time frame and (if accepted) further documents or evidence required for investigation, e.g., field investigations.

**ii) Grievance Resolution Process**

Approaches that are difficult or culturally and socially alien to APs should be avoided as much as possible. Possible approaches to grievance redress include mediation through local and traditional institutions such as village elders, temple priests, or community-based organizations

that have a close understanding of the issues affecting their community members; these local institutions can be integrated into the formal GRM;

- Direct negotiations and dialogue between the aps and the relevant agency or agencies;
- Facilitated negotiations through a third party;
- Investigation of a complaint through review of documents, field investigation,
- Assessments from technical agencies, and/or interviews of different parties and referrals to other judicial and administrative processes.
- Depending on the nature and the severity of the complaint/s, the chairperson of the GRM, in consultation with the APs, should identify and decide on an approach for grievance resolution. Where appropriate, APs should be given the choice of selecting an affordable approach with which they are comfortable and confident and that is beneficial to them.

**iii) Implementation Approach**

The following are important aspects to be considered in the implementation of a project- based GRM:

- Undertaking field inspections (if necessary) to assess and verify the grievances reported;
- Referring the complaints for technical assessments (if necessary) to validate and
- Referring to the relevant laws, rules, and regulations that bind the decision-making processes, inviting other relevant agencies or persons, e.g., technical officers, to provide additional information required;
- Creating opportunities for negotiation and exchange;
- Assuring the aps that decision-making processes are independent and fair;
- Documenting the grievance redress process and its outcome; and
- Communicating the grievance redress outcome to the AP and the relevant Departments/agencies

**iv) Grievance Resolution**

Project-based GRM may propose a variety of strategies to settle grievances, including requesting the relevant agencies responsible for the grievance to take appropriate measures to remove the cause of grievance, e.g.

- Contractors to clear access roads or provide alternative roads, clear canals and other irrigation systems
- Desilt rice fields, and/or remove garbage
- Signing agreements between APs and the project for solutions mutually agreed upon; assuring the APs to address their grievances at the end of completing the project-related work.
- E.g., repairing the houses; and initiating a monitoring process (after addressing the causes of the problem or paying compensation) to assess any further impacts of project-related work on the properties and livelihoods of the APs.

**v) Track, Document, and Evaluate the Process and Results**

The GRM have the responsibility for tracking and monitoring the process of grievance redress and the implementation of the decisions made and of seeing that redress is granted to APs in a timely and efficient manner. They also have the responsibility for giving regular feedback to the complainants about the progress of the grievance redress process. The monitoring should include the progress of implementation of grievance resolutions and the timeliness of grievance redress, follow up grievances to be sure they are attended to, and document details of complaints received and the progress in solving them. Grievances provide information to project managers about project implementation and actual and potential problems.

An evaluation system should assess the overall effectiveness and the impact of the GRMs. Such evaluations can take place either annually or biannually, and their results should contribute to improving the performance of the GRM and provide valuable feedback to project management.

## C. Capacity Building for GRM

Capacity refers not only to providing training for and building the skills of the GRM implementers, but also to a range of other capabilities for which a mechanism should be set in place to facilitate and promote effective service delivery. The overall capabilities of a GRM include the general orientation of the GRM and its approaches to dealing with, differential environmental and social issues.

The GRM implementers, drawn from different sectors would not have the specific and essential skills and the capacity to engage in an effective grievance resolution process. Therefore, it is important that such GRM implementers be provided with adequate orientation and training on grievance resolution. Such capacity building training should start immediately after setting up the GRM and can be integrated into the project launch training for project implementers. Also, it can be included in the project operations manual. The subject matter for such training/orientation programs should include the following:

- Procedural training on receiving, registering, and sorting grievances;
- Effective communication, negotiation, and facilitation skills;
- Management of the grievance redress process (developing flow charts, assigning roles, monitoring performance of staff dealing with complaints, and providing incentives);
- Creating awareness of the usefulness of a GRM as an important source of feedback;
- Problem solving; dispute resolution; and decision making; and their respective parameters, standards, and techniques; and
- Documentation and reporting, including the use of "customer feedback" as part of an ongoing organizational learning process for the implementing agency.

## D. Publicizing Grievance Redress Mechanism

GRM should be widely publicized among stakeholder groups such as the affected communities, government agencies, and civil society organizations. Lack of knowledge about GRM results in people not approaching and using them, and they eventually lose the relevance and the validity of the purpose for which they were created. People should also be informed about their options, depending on the types of complaints, but should not be encouraged to submit false claims. Criteria for eligibility need to be communicated. An effective awareness campaign launched to give publicity to the roles and functions of the GRM should include the following components:

- scope of the project, planned construction phases, etc.;
- purposes for which the GRM can be accessed, e.g., construction-related
- grievances, land acquisition and compensation-related grievances if applicable;
- types of grievances not acceptable to the GRM;
- who can access the GRM;
- how complaints can be reported to the GRM and to whom, e.g., phone and facsimile
- numbers, postal and email addresses, and websites of the GRM as well as information
- that should be included in a complaint;

A variety of methods can be adopted for communicating information to the relevant stakeholders:

- display of posters in public places such as in government offices, project offices,
- community centres, etc.;
- distribution of brochures;
- village-level government officers to hold small-group discussions;

## G.6 Disclosure of GRM

The disclosure for GRM will be done with the appropriate community, employees and stakeholders to fulfil the specific purpose based on the requirement through suitable communication.

# H. Environmental Management Plan

## H.1 Introduction

This section presents the Environmental and Social Management and Monitoring Plan (EMP) framework and provides a reference point and scope for the development of more detailed Environmental and Social Management and Monitoring Plans (ESMMPs) for the Project. These ESMMPs will be further developed and implemented by DABS and their Partners (notably the EPC and O&M Contractors) to manage environmental and social risks associated with the construction, operation and decommissioning of the Project.

The EMP framework has been developed to demonstrate how the Project intends to fulfil the requirements presented in the SPS especially with regards to the Assessment and Management of Environmental and Social Risks and Impacts. It also takes into account Good International Industry Practice (GIIP) including that in the World Bank/IFC General Environmental, Health, and Safety Guidelines and the Guideline on Electric Power Transmission and Distribution, as well as other relevant International Standards and Guidelines.

The EMP framework, and subsequent ESMMPs, is intended to provide the structure to enable environmental and social (including community health and safety) risks to be identified and assessed throughout construction and operation, and mitigation measures to be developed, implemented and appropriately managed. It will also assist DABs to comply with relevant authorizations, legal requirements in a systematic and structured way.

## H.2 Scope of the ESMMPs

The ESMMPs will be developed specifically for the Project based on this EMP framework. They will cover all activities conducted by or on behalf of the Project, including those of contractors. They will provide for the management of significant environmental and social risks, incorporating the community as well as the health and safety of the Project personnel, contractors and visitors. The ESMMPs will be "dynamic" documents and will be reviewed and updated from time to time to continually improve the management of environmental and social impacts. Changes may be based on the Project phase, the environmental and social performance of the Project, or updated to reflect changes in operations, the receiving environment, legislation, stakeholders, and personnel.

## H.3 Institutional Arrangements and Responsibilities

The effective implementation of this EMP (and the subsequent ESMMPs) is dependent on established and clear roles, responsibilities and reporting lines across the Project organisations. Activities will also need be coordinated with the relevant local government agencies and the community *shura*. Key roles and responsibilities can be summarised as below.

- **DABS** as the Executing Agency of the Project, has overall responsibility for ensuring that all standards and procedures are followed during construction and operational activities and that all monitoring requirements, including progress reporting are fulfilled. DABS will be supported in this role by the Project management office (PMO). The DABS-PMO will be responsible for the overall technical supervision and execution of the project. The staffing of DABS-PMO will include experts in project management, electrical transmission engineering, institution and finance, environment, socioeconomic, land acquisition and resettlement. The mitigation measures that are incorporated into the design will be verified by the DABS-PMO before

providing technical approvals. DABS will also be specifically involved in the planning and implementation of resettlement and rehabilitation program working with the Provincial and District governments.

- The National Environmental Protection Agency (NEPA) will be responsible for coordinating and monitoring conservation and rehabilitation of the environment. Following successful Project review by an EIA Board of Experts, NEPA issues permits to construct and operate facilities.

- Construction Contractor (CC). The CC is responsible for enforcing day-to-day Project HSSE requirements construction. These will be included as part of the Special Conditions of Contract. It is currently planned that this will be done as a turnkey contract in two lots (one for the transmission line component and one for the substations).

- Construction Supervision Consultant (CSC or SC) The CSC (or an external EHS-Auditor subcontracted by CSC) be responsible for monitoring the correct implementation of the EMP according to international best practice. Audits will take place as agreed with the Bank but at least three times during the construction process for each of the two lots. The mitigation measures that are incorporated as part of the contract documents will also be verified by CSC before the contract is signed between the DABS-PMO and the contractor. CSC will assist PMO in supervising the EMP implementation and compiling reports on environmental performance as well as in conducting training for building capacity on EMP implementation.

- O&M Contractor will be responsible for day to day maintenance of the distribution network including oversight of environmental and social issues including but not limited to pollution, mitigation and monitoring. This will be detailed in the O&M Contract.

## H.4 Organisational Capacity

DABS currently has no HSSE Department and the creation of such a department and associated staff training will be required. The CSC will assist the PMO in designing and implementing a capacity building program and conducting training to enhance the EMP implementation capacities. DABS EHS staff should be trained “on-the-job” how to implement the EMP during mitigation and monitoring actions performed by internationally experienced experts. Training should include a wide range of health, safety, environmental and social including (but not limited to) issues such as:

- electric and magnetic fields, how to use an EMF meter and interpret the results
- working at height, working under high voltage conditions
- monitoring of the implementation of all requirements stipulated in the EMP.
- application of ADB Safeguard Policy and monitoring procedures.

Local administration staff will need to be trained to handle public consultation, expropriation, compensations and dealing with complaints (grievance mechanism - GRM).

Through this capacity building a number of specific roles will be put in place which are considered critical in delivery of this EMP. Expected roles and responsibilities are shown in the table below.

| Role | Responsibility |
|---|---|
| Project Manager | The Project Manager (PM) is the senior representative for the Site and, as such, is the ultimate authority on all matters including environmental and social management. The PM will be appointed by the Consortium. The objective is to actively work towards the |

| Role | Responsibility |
|---|---|
| | elimination of Company and Sub-contractor environmental damage. The PM is responsible for providing the human and financial resources necessary for ensuring compliance to the ESMMP. The PM must be fully conversant with the conditions of the environmental approval and ensure that all stipulations within the ESMMP are communicated and adhered to by the construction team (and any subcontractors). |
| Site Manager | The Site Manager shall be responsible for the day-to-day operations of the Contract and may deputise for the Project Manager if required. They will be appointed by the EPC contractor and are expected to be in place throughout construction and operation. The Site Manager reports directly to the Project Manager, oversees site work and liaises with the construction team. The Site Manager's responsibilities include:<br>• To ensure that all Supervisors and employees are familiar with the contents of the ESMMP.<br>• Advise or instruct any person on site in matters related to environmental, social, health and safety management.<br>• To attend environmental committee meetings when required.<br>• To achieve compliance with all Statutory Acts, Regulations and Codes of Practice.<br>• Report to the Project Manager on all accidents and incidents and corrective and preventative measures.<br>• Report to the Project Manager any public grievances (the responsibility for the grievance mechanism will be outlined in detail in the Stakeholder Engagement Plan) or concerns raised by the local communities with respect to the project.<br>• Project related Health and Safety. |
| Environmental, Social, Health and Safety Manager | The Environmental, Social, Health and Safety Manager (EHS) Manager will be responsible for the day-to-day environmental and social management. The EHS Manager is responsible for implementing the monitoring programmes and maintaining the monitoring databases as well as the reporting of the results. During the Project development phase, the EHS Manager will report directly to the E&S lead of the Consortium. During the Project construction phase, the EHS manager will report directly to the Project company CEO and others as required through the Environmental Management Committee (EMC). |
| Environmental, Social, Health and Safety Officer | The local Environmental, Social, Health and Safety (EHS) Officer will be appointed by the Consortium and will support the EHS Manager in their duties and receive on-the-job training from the EHS Manager. The role of the EHS Manager will be gradually transitioned to the EHS Officer during the first six months of construction. Thereafter, the EHS Officer will assume the role of EHS Manager for the remainder of the construction phase and for continuation into the operational phase. |
| Community Liaison Officer | The Community Liaison Officer (CLO) will be appointed by the Consortium and will be responsible for grievances and will hold/own a grievance log to manage and resolve them with support from the EHS Manager and Project Manager. The CLO will also be responsible for communication between the Project and non-governmental stakeholders e.g. members of local communities. The CLO will report directly to the EHS Manager. |
| Workers and Employees | Key responsibilities of each Project worker/ employee include:<br>• Reading and understanding the requirements contained in this ESMM framework and ESMMP;<br>• Attending EHS training as required;<br>• Being responsible for observing measures for their own safety and for others who may be affected by their acts or omissions;<br>• Co-operating with the Consortium management on environmental, social, health and safety related measures;<br>• Adhering to safety rules at all times;<br>• Specific responsibilities as defined by the ESMMP;<br>• Seeking out hazards and reporting them for correction;<br>• Intervening when they come across unsafe work/conditions and use right/ obligation to stop work, unless act/condition is safe; and<br>• Adhering to EHS rules at all times. |

***A minimum estimated provision for training requirements of 50,000 USD is proposed.***

## H.5 Contractor Management, Inspection, Monitoring and Audit

A Contractor Management Plan will be developed and the management and mitigation actions identified in this EMP will form part of this plan. Inspection and monitoring of the HSSE impacts of the Project activities is critical to the effectiveness of this EMP. Through the process of inspection and auditing, the Project will ensure that the conditions stipulated in this EMP (and in the various permits) are complied with. The inspection and audits will be done by Project HSSE staff in coordination with contractors and any other external agencies identified. The entire process of inspections and audits should be documented. The inspection and audit findings are to be implemented by the Project staff in-charge in their respective areas.

## H.6 Documentation, Record Keeping, Monitoring and Reporting

Documentation is an important step in implementing the EMP and the Project will establish a robust documentation and record keeping system, to include updating of documents. This will address at least the following:

- Environment, Social, Health and Safety Management System (and manual);
- Legal register;
- Operation control procedures;
- Work instructions;
- Incident reports;
- Emergency preparedness and response procedures;
- Training records;
- Monitoring reports;
- Auditing reports; and
- Complaints register and issues attended/closed.

The EHS Manager is responsible for ensuring that communication with regulatory agencies and stakeholders are maintained as per the requirements of all Statutory Acts, Regulations and Codes of Practice. All complaints and enquiries are to be appropriately dealt with and records are to be maintained in a Complaint/Enquiry Register by the responsible member of the EHS team. All communications made to regulatory agencies should also be reported to the Consortium's EHS Manager. Inspection and audit findings, along with their improvement program, are to be regularly reported to the senior management for their consideration. The same are also to be communicated within the staff working on the Project. To maintain an open communication between the staff and management on EHS issues the following communication methods will be adopted: Team briefings; On-site work group meetings; Work specific instructions; and Meeting with stakeholders.

The EMP acts as an HSSE management tool which needs to be reviewed periodically to address changes in the organisation, process or regulatory requirements. Following a review, the EHS Manager will be responsible for making the amendments in the EMP and seeking approval from the Project Manager. The amended EMP will be communicated to all staff to which changes are relevant. Environmental and social monitoring will be conducted in accordance with the requirements of the EMP.

The Project will develop and implement a programme of reporting through all stages of the Project cycle. Delegated personnel shall be required to fully comply with the reporting programme including both timely submissions of reports and acceptable level of detail. Reporting

will include maintaining an incident record register and EHS performance reports (weekly, monthly, quarterly, half yearly, yearly etc.).

In addition to any specific monitoring and reporting requirements set out in the EMP, the PMO shall also submit the following monitoring reports to ADB:

| Report | Contents |
|---|---|
| Baseline Monitoring Report: | This will ensure that all environmental issues are covered in the EMP to minimise the risk of unexpected environmental impacts. The Baseline Monitoring Report shall be submitted to ADB prior to commencement of civil works and will include the detailed EMP (including data collection locations, parameters and frequency), base line environmental data, relevant standards and data collection responsibilities. |
| Semi-annual Environmental Monitoring Reports: | The semi-annual environmental monitoring report will include environmental mitigation measures undertaken, site-specific environmental monitoring activities undertaken, details of monitoring data collected, and analysis of monitoring results, recommended mitigation measures, environmental training conducted, and environmental regulatory violations. The environmental monitoring reports will be submitted to ADB twice annually during the construction period and annually for three years after completion of construction. |
| Project Completion Environmental Monitoring Report | After completion of construction a Project Completion Environmental Monitoring Report shall be submitted to ADB, summarizing the overall environmental impacts from the project. |

***Costs for environmental monitoring and mitigation will be included in the Contractors' civil works contract.***

## H.7 Project Plans

The IEE process has identified plans (and policies) that will be prepared by the Project and its chosen Contractor(s) prior to the commencement of construction as part of an integrated HSSE Management system. Some of these plans maybe combined where appropriate but the following content is expected:

- Construction Management Plan;
- Hazardous Materials Management Plan;
- Water and Wastewater Management Plan;
- Waste Management Plan;
- Traffic Management Plan;
- Emergency Preparedness and Response Plan;
- Chance Finds Procedure;
- Biodiversity Action Plan;
- Workforce Code of Conduct;
- Stakeholder Engagement Plan (including Grievance Mechanism);
- Influx Monitoring Plan;
- Community Development Plan;
- Human Resources Policy and Management Plan (including Workers Grievance Mechanism and Local Procurement Policy);
- Human Rights Plan;
- Security Management Plan;
- Explosives: Transport, Storage, Handling, Charging and Blasting Plan; and
- Camp Management Plan (including food hygiene procedure).

## H.8 IEE Commitments and Actions

This section tabulates the commitments and actions that need to be taken forward through the next stages of the Project to ensure appropriate mitigation and management of Project related environmental and social impacts. It includes specific mitigation measures and monitoring actions to be applied during the design, construction and operation phases. A further plan will be developed for decommissioning at the appropriate time. The EMP also includes commitments to help ensure that adequate resources and appropriately trained staff are available to deliver the required environmental and social safeguards.

The commitments and actions in this table form the basis for the development of the overarching EMP and related plans and policies. Where developed, listed alongside each commitment or action are the party responsible for implementation; the means of verification; timings and frequency; and reporting requirements and applicable standards. The Project will also require its Contractors (and any subcontractors) to apply Good international Industry Practice (GIIP) to their activities to further reduce risks and impacts. The EMP is provided in Table 48 below It includes specific mitigation measures to address issues such as:

- Land Mine Clearance,
- Avoidance of major settlements in the RO
- Minimization of access road construction;
- Avoidance of damages to river ecosystems at river crossings;
- Avoidance of soil run off and water pollution;
- Compensation for crop damages;
- Avoidance of historical and cultural sites and implementation of a chance find procedure
- Implementation of EHS Management Plans.

## Table 48: Environmental Management Plan

**A. Design Phase EMP**

| Potential Impact | Mitigation Measures | Monitoring Indicators | Monitoring and Reporting Frequency | Responsible Parties |
|---|---|---|---|---|
| Design Review | | | | |
| Correct identification of impacts and mitigation measures | Impacts and associated mitigation measures identified in the IEE, and plans required under this EMP, to be reviewed against the final design of the transmission lines (routeing and locations of towers), to ensure that impacts have been correctly identified and assessed and mitigation measures and management plans are fit for purpose. | Report identifying where impacts and mitigation measures, and associated ESMMPs, need to be amended. | Review of final design | Consultants, design team, implementing agency; (NEPA / DABS-PMO) |
| Topic Specific Management Plans | | | | |
| HSSE incidents | Development of Topic specific management plans as outlined in main text above (and in construction table below) | Compliance with provision of key environmental inputs and maintaining safe distance from sensitive receptors and high risk/impact area. | As outlined above | Design Consultant |
| Bird and Bat friendly design | | | | |
| Avoidance of bird collision or electrocution | • Incorporate design measures into transmission line to remove electrocution risk for bats and birds. Live wires at least 2 m apart, full insulation of supporting structures, with insulators, transformers etc. pointing down from cross poles.<br>• Design to include installation of bird deflectors along sections with high levels of flight activity. These should increase line visibility by thickening the appearance of the line by a minimum of 20 cm over a length of 10-20cm.<br>• Markers should be moveable, of contrasting colours (e.g. black and white), contrast with the background, protrude above and below the line, and be placed 5-10 m apart<br>• Removing the thin neutral or earth (shield) wire above the high voltage transmission lines where feasible, and where this is not possible, mark the line to make it more visible.<br>• Where practicable, bundle high voltage wires to reduce the area and using spacers to increase visibility.<br>• Minimising the vertical spread of power lines by arranging lines in a horizontal plane to reduces collision risk.<br>• If practicable, arrangement of project transmission line route in parallel with physical features such as the escarpment to avoid collisions with birds | As built drawings' to be developed as part of internal procedures. | Review of final design | Design consultant |
| Stakeholder Engagement | | | | |
| Social issues | Develop and implement **Stakeholder Engagement Plan.** Continue stakeholder engagement and timely disclosure of design with all relevant stakeholders. | Minutes of meetings of stakeholders' consultation | Once before initiation of construction works | Consultants Implementing Agency (NEPA / DABS-PMO) |
| NOC engagement | Continued stakeholder engagement and proper coordination with relevant departments for timely approvals. | NOCs from relevant departments (if required) | Once before initiation of construction works | Implementing Agency (NEPA / DABS-PMO) |
| Land Acquisition and loss of physical assets | | | | |

| Potential Impact | Mitigation Measures | Monitoring Indicators | Monitoring and Reporting Frequency | Responsible Parties |
|---|---|---|---|---|
| LARP | Prepare (update and finalise) an ADB-compliant **Land Acquisition and Resettlement Plan** (LARP) based on the Project final detailed design (the Project has already commissioned the preparation of such LARP (draft version, April 2019). However, it is fundamental to update it in order to ensure its accuracy and fairness). Ensure the full and timely implementation **on the ground** the final Land Acquisition and Resettlement Plan (LARP) and monitor/ audit its implementation. | To be defined in the LARP Compensation and land acquisition record keeping | To be defined in the LARP Before initiation of construction works (if required) | Consultants Implementing Agency (NEPA / DABS-PMO) |
| LARP | Avoid and minimize land acquisition and related impacts whilst finalizing the Detailed Design – as per the LARP. | To be defined in the LARP | Once before finalization of the Detailed Design | Consultants; Detailed Design Team; Implementing Agency (NEPA / DABS-PMO) |
| Payment of compensations | Ensure all PAPs (Project Affected Persons) are compensated before mobilisation/ start of construction and in full compliance with the LARP (compensation for impacts that cannot be avoided, as a way to compensate for land acquisition - as per requested repeatedly during the Public Consultation meeting on land acquisition and related impacts) | Compensation and land acquisition record keeping | ·Before initiation of construction works (if required) | Consultants Implementing Agency (NEPA / DABS-PMO) |
| CLOs | Ensure adequate resources are allocated for the implementation of the LARP. Community Liaisons Officers (CLOs) will need to be hired for the Construction Phase (this will be an absolute requirement). However, it is recommended to hire them as soon as possible in the process, namely, to support the Land Acquisition process. | To be defined in the LARP | To be defined in the LARP | Consultants Implementing Agency (NEPA / DABS-PMO) |
| Design consideration: Disruption to Public Life | | | | |
| Cultural Issues | While finalizing construction schedules, special consideration will be given to the calendar of social and religious events. It will be ensured that the construction work does not cause undue impediments to the general public life close to, and during, such events. | Grievance mechanism | As required | DABS-PMO |

**Construction Phase EMP (cost to be included in contractor bids, no specific additional cost expected beyond GIIP**

| Issue | Mitigation Measures | Monitoring Indicators | Monitoring and Reporting Frequency | Responsible Parties |
|---|---|---|---|---|
| Health and safety | | | | |
| Worker health and safety | Contractor is required to develop an **Occupational Health and Safety Management Plan** (OHS-MP) \| to include, but not be limited to, the items listed in this EMP, including:<br>• All tasks to have job risk analysis and workers to be provided with appropriate personal protective equipment (PPE) by contractor with its use mandated<br>• Specific safety precautions (including PPE) used for hazardous jobs or when handling and store hazardous substances and wastes.<br>• Risk of electrocution (worker and community)<br>• Working at height | Competed C-OHSP to be reviewed and verified by the SC prior to construction commencing | Monthly reporting | Construction Contractors Monitoring by SC and reporting to EMC. |
| Site security | Develop and Implement a **Security Management Plan** Ensure site security to be in line with GIIP and IFC Good Practice Guide | Security Management Plan in place.<br>daily checks | Daily (visual Checks) Grievance mechanism | DABS-PMO Construction Contractor |
| Fire Prevention | Firefighting equipment to be provided at the camps, substations and other key places and all workers to have fire training. Appropriate firefighting resources to be accessible. | Health & safety plan in place | Monthly reporting | Construction Contractors Monitoring by SC and reporting to EMC. |
| Unexploded ordnance | All working areas to be surveyed prior to commencement of any activities and cleared of any mines or other ordnance by professionals | Pre-construction clearance reports | Monthly reporting | Construction Contractor |
| COVID-19 | A COVID-19 Plan to be developed in accordance with prevailing national or international guidance at the time | Plan in place and reported against | Monthly | Construction Contractor Monitoring by SC and Reporting to EMC |
| EMF and non-ionizing radiation | • Potential exposure to the public to be evaluated against the reference levels developed by the International Commission on Non-Ionizing Radiation Protection (ICNIRP).<br>• If EMF levels are confirmed or expected to be above the recommended exposure limits, appropriate techniques to be employed to reduce the levels | Predicted exposure to be below recommended limits | Prior to the completion of detailed design | Completed by the contractor and verified by the SC |
| Pollution Prevention | | | | |
| Solid Waste Management | Contractor to develop a **Solid Waste Management Plan** (WMP) that identifies both appropriate storage locations and facilities for surplus materials and wastes prior to disposal and final disposal locations. Ensure proper disposal of construction waste at designated disposal sites Take approval for selection of solid waste disposal site if landfill is not available from SC in written. An impervious liner shall be laid to waste sites before the dumping of solid waste. The approval for impervious liner shall be granted by SC in written. Re-vegetate exposed areas / soil stockpiles as soon as practicable to stabilise surfaces | Completed C-WMP<br>Visual inspection | Monthly Reporting | Monitoring by SC and EMMP implementation reporting to EMC |
| Liquid waste management and impacts to water (and land) resources | Contractor to develop a Construction phase **Water Resources Management Plan** (WRMP) and/or **Pollution Prevention Plan** to include all appropriate mitigation measures outlined in this EMP Earth bunds should be created to prevent an accidental spill of hydrocarbons or other chemicals escaping from the work sites reaching the watercourse.<br>• Handling of fuel, lubricants, oils and chemicals should take place in secure, bunded areas.<br>• Spill kits, including booms, should be provided to clean up any minor spills of fuel, lubricants, oils or chemicals.<br>• Secondary containment devices (drop cloths, drain pans) should be used to catch leaks or spill while removing or changing oils from vehicles or equipment. For small spills, absorbent materials must be used.<br>• Drip trays should be used under compressors, pumps, motors and any redundant plant and during refueling. Drip trays should be emptied at regular intervals to prevent overflow.<br>• Fuel, oil or hazardous materials required to be stored, should be stored within secondary | Competed C-WRMP to be reviewed and verified by the SC prior to construction commencing. | As per WRMP to include regular monitoring and reporting of key waterbodies | Construction Contractor·<br>Monitoring by SC and EMMP Implementation reporting to EMC |

| Issue | Mitigation Measures | Monitoring Indicators | Monitoring and Reporting Frequency | Responsible Parties |
|---|---|---|---|---|
| | containment (designed to contain at least 110% of the total capacity of the storage containers) located greater than 100m from a watercourse or waterbody. Walls and floors should be constructed of concrete or other suitably impermeable material. No drains from the storage area should be installed.<br>• No more than 100 litres of fuel, lubricant or any other hazardous material stored at any one place<br>• Regular inspection and maintenance of the construction vehicles and equipment should be carried out<br>• When plant maintenance is carried out on site, used oil should be stored in a bunded area for collection. Oil and fuel filters should also be stored in a designated bin in a bunded area for separate collection.<br>• Construction equipment and vehicles should not be re-fueled within 100m of a watercourse and re-fueling should be undertaken on an impermeable surface.<br>• Plant and wheel washing to be carried out on an area of hardstanding at least 10 m from any watercourse or surface water drain.<br>• All exposed soil and any soil stockpiles should be covered to prevent erosion run-off of mobilised suspended solids or turfed with grass. Soil stockpiles should not be higher than 2m or have slopes greater than 25° to prevent run-off of sediment.<br>• Stockpiles of construction materials (e.g. aggregates sand and fill materials) should be covered with tarpaulin or a silt fence constructed using a suitable geotextile, as a matter of course, but particularly during rainstorms.<br>• Sediment laden water from the work sites will be filtered through the ground or settlement lagoons prior to controlled release to a watercourse.<br>• The discharge of any untreated wastewater into surface waters should be prohibited.<br>• Identify, and clear any existing drains or gullies that are blocked or not functioning correctly.<br>• Where practicable, local perimeter drains should be constructed around working areas to collect suspended run-off.<br>• All materials should be stored above flood level.<br>• Generators should be located more than 20 meters from the river on impermeable surfaces.<br>• A construction material borrowing and disposal plan should be prepared<br>• Areas where concrete mixers can wash out leftover concrete should be provided; this may be in the form of a lined settling pond at each site.<br>• Erosion control measures such as ramming of topsoil immediately after excavation and silt controls will be provided to minimize erosion<br>• No waste materials, including cement contaminated water and any concrete debris, to be disposed of in any surface waters.<br>• Washing of construction equipment or vehicles should be forbidden within 100m of watercourses.<br>• Portable toilets should be provided at construction sites near surface water sources<br>• Construction work should not be undertaken during heavy monsoon rains.<br>• Bulk cement and other fine powder materials to be delivered in enclosed tankers and stored in silos with suitable control systems to prevent overfill.<br>• Haul routes and construction site to be damped down to minimise dust generation, Vehicles leaving the site to be covered, Dry sweeping of large areas to be avoided<br>• Mixing of waste into fresh water sources shall not be allowed Proper sewerage disposal arrangements to be provided such as septic tank and soaking pits for construction camps and work sites. | Monitoring as per WRMP of compliance to NEQS of sanitary wastewater generated from campsite. Waste management plan in place· Photographic record | | |

| Issue | Mitigation Measures | Monitoring Indicators | Monitoring and Reporting Frequency | Responsible Parties |
|---|---|---|---|---|
| Working near water – Procedures for working in or near watercourses and crossing plan | Ensure adequate protection of water resources when works are adjacent / over watercourses, particularly in relation to construction of transmission routes Foundation works for any structures in or close to surface water resources to take place when river levels are low.<br>If construction works cannot be avoided when there are flows in the river, appropriate isolation techniques should be employed i.e. the installation of a coffer dam, to keep water out of the works area and controls installed downstream of the works to trap sediments such as silt fences, rock groynes, geo-fabric barriers and hay bales. In addition, turbidity should be monitored daily if sensitive biodiversity or human receptors are present, immediately upstream and downstream of the work site. If turbidity levels are shown to exceed specified standards, operations in the river should cease until the river is flowing more clearly again.<br>Where technically feasible, work on crossings should be carried out from the banks above the channel, avoiding direct intervention in the watercourse, unless the existing bank needs to be reinforced.<br>Sensitive areas of watercourses should be protected from vehicles and other construction activities via fencing or other appropriate means. | As per WRMP | Competed procedure to be reviewed and verified by the SC prior to construction commencing | Construction Contractor |
| Soil Management | | | | |
| Borrow Pits | Prepare **material borrowing and disposal plan** Avoid cultivation fields for borrowing material to the extent possible Keep photographic record (before, during, after) for borrow and disposal areas. Leveling of borrow sites as far as possible wasteland or natural areas with a high elevation will be demarcated for borrowing earth material. Strip and stockpile the top 300 mm of the plough layer for redressing the land where the use of agriculture land is unavoidable. Where deep ditching is to be carried out, the top 1 m layer of ditching area will be stripped and stockpiled. The ditch will be initially filled with scrap material from construction and then leveled with the stockpiled topsoil Ditches or borrow pits that cannot be fully rehabilitated will be landscaped Landowners will be compensated according to the terms of lease agreement | · Evidence of HSE plan in place. Photographic record Monthly rent receipts | · Visual checks on daily basis and follow up of health, safety and environment plan submitted by the construction contractor Semiannual reporting Fortnightly monitoring Semiannual reporting | Construction Contractor Monitoring by SC and reporting to EMC. |
| Overburden | Consider wind direction while selecting sites for stockpiles. Keep Stockpiles of overburden covered | Visual inspections Monitoring Particulate Matter PM10 monitoring once before construction work and after that every 6 months | · Daily monitoring visual checks Semiannual monitoring report submission according to ADB guidelines | · Construction Contractor Monitoring by SC and reporting to EMC |
| Soil erosion | Avoid vehicular traffic on unpaved roads as far as possible. | Log of vehicle and equipment repairs | · Visual checks whenever there is a movement of transport for construction material lodging and unlodging vehicle Semiannual reporting | Construction Contractor Monitoring by SC and reporting to EMC. |
| Soil contamination | Vehicles and equipment shall not be repaired in the field and all the repairing work will be done at designated workshop facilities. If unavoidable, impervious sheathing shall be used to avoid soil and water contamination | | | |
| Noise | | | | |
| Construction noise and vibration | Develop and implement a **Construction Noise and Vibration Management Plan** (C-NVMP) to include, but not be limited to, the following:<br>• Appropriately silenced and well-maintained plant to be used at all times;<br>• Worker exposure to noise to be controlled below a level equivalent to 85 dBA for eight-hour day<br>• Machinery, including vehicles, to be shut down or throttled back when not in use;<br>• Engine compartments to be closed when equipment is in use and the resonance of body panels and cover plates reduced by the addition of suitable dampening materials; | As per NVMP | Completed C-NVMP to be reviewed and verified by the SC prior to construction commencing Site audit once every two weeks Semiannual | Construction Contractor Monitoring by SC |

| Issue | Mitigation Measures | Monitoring Indicators | Monitoring and Reporting Frequency | Responsible Parties |
|---|---|---|---|---|
| | • Semi-static and static equipment to be sited and orientated as far as is reasonably practicable away from noise-sensitive receptors and have localised screening where deemed necessary;<br>• Static plant known to generate significant vibration levels to be isolated or fitted with appropriate dampening to reduce transmission into the ground;<br>• Generators and water pumps required for 24-hour operation to be silenced or screened as appropriate; and their location carefully considered to minimise disturbance;<br>• Crane spindles, pulley wheels, telescopic sections and moving parts of working platforms to be adequately lubricated to prevent undue screeching and squealing. | | monitoring of compliance to NEQS for noise at 7m distance from the source. The duration of sampling shall be 24 hours @ 15 seconds interval over 15 minutes every hour (averaged) | |
| Noise reduction devices | Fit noise reduction devices on high noise equipment Regular inspection, maintenance and lubrication of construction vehicle and equipment Vehicles to have exhaust mufflers (silencers) | As per NVMP | Daily checks on construction vehicle and noise generation activities. | Construction Contractor Monitoring by SC and Reporting to EMC |
| Transport of Materials | Nighttime traffic shall be avoided near the communities. Inform local population beforehand if nighttime traffic is unavoidable. | Log of vehicle movement time | Ambient noise level monitoring once before construction work and after that every 6 months | Construction Contractor |
| Air Quality | | | | |
| Management of air quality impacts during construction of the Project | Develop a Construction phase **Air Quality Management Plan** (AQMP) to include mitigation measures as outlined in this EMP. To include but not be limited to the following:<br>• Maintain records of dust and air quality complaints. Identify causes and measures taken to reduce emissions. Record any exceptional incidents that cause dust or air emissions.<br>• Plan site layout so that machinery and dusty activities are located away from receptors where possible Erect solid screens or barriers around dusty activities or site boundary that are at least as high as any stockpiles.<br>• Keep site fencing, barriers etc. clean using wet methods.<br>• Cover stockpiles with the potential to produce dust.<br>• Optimise vehicle loading and movements with backfilling where possible, to minimise the number of journeys<br>• Maximum speed limits on surfaced and un-surfaced haul route and work areas to be specified<br>• All machinery/ equipment to be maintained so emissions meet National Environmental Quality Standards of Afghanistan/GIIP Vehicles shall be kept in good working condition and properly tuned, in order to minimize the exhaust emissions, ensure all vehicles switch off engines when stationary.<br>• All onsite and on road vehicles and machinery to be appropriately maintained and to comply with relevant emission standards.<br>• Cutting, grinding or sawing equipment should be fitted with, or used in conjunction with, suitable dust suppression techniques such as water sprays or local extraction.<br>• Drop heights to be minimised and fine water sprays to be used when appropriate.<br>• Ensure an adequate water supply on site for effective dust suppression / mitigation using non-potable water where possible.<br>• Ensure effective water suppression during demolition operations.<br>• Soft strip inside buildings before demolition, retaining walls and windows to contain dust.<br>• Re-vegetate exposed areas / soil stockpiles as soon as practicable to stabilise surfaces<br>• Ensure sand and aggregates are stored in bunded areas and not allowed to dry out. | Daily visual checks | Daily checks<br>Reporting as per AQMP | Construction Contractor Monitoring by SC and reporting to EMC. |

| Issue | Mitigation Measures | Monitoring Indicators | Monitoring and Reporting Frequency | Responsible Parties |
|---|---|---|---|---|
| | • Bulk cement and other fine powder materials to be delivered in enclosed tankers and stored in silos with suitable control systems to prevent overfill.<br>• Haul routes and construction site to be damped down to minimise dust generation,<br>• Vehicles leaving the site to be covered, Dry sweeping of large areas to be avoided.<br>• Hazardous materials management plans to be in place | | | |
| Traffic and Infrastructure Plans | | | | |
| Traffic Plans | Develop and implement a **Traffic Management Plan** (TMP). To include measures that:<br>• minimize civil traffic disruption<br>• minimize number and length of access roads (to be carefully selected)<br>• ensure any damaged infrastructure is restored to original or better condition. | As per TMP | Fortnightly monitoring ·Semiannual reporting | Construction Contractor Monitoring by SC and reporting to EMC. |
| Traffic Safety | Road signage fixed at appropriate locations Low vehicle speeds 15 km/hr. near / within the communities Train all drivers on defensive driving | Health & safety plan in place | Monthly reporting | Monitoring by SC and reporting to EMC. |
| Biodiversity | | | | |
| Biodiversity Management | Develop and Implement a Biodiversity Management Plan based around GIIP and including (but not limited to) the items below | Implemented Plan | On completion | Construction Contractor Monitoring by SC and reporting to EMC. |
| Tree Protection | Workers to use LPG as cooking fuel. Use of fuel wood shall not be allowed. Tree/shrub cutting to be done only when necessary, with prior approval from the Proponent. | Use of LPG cylinders at campsite Tree cutting approvals | Fortnightly monitoring (visual checks) | Construction Contractor Monitoring by SC and reporting to EMC. |
| Compensatory Planting | Compensatory tree plantation in consultation with PHA. Replacement rates of one (01) tree should be compensated by plantation of five (5) trees Tree plantation plan shall be followed for the plantation activity. · | Pictorial evidence of compensatory tree plantation | Complete line survey after construction | Monitoring by SC and reporting to EMC. |
| Restoration of temporary land take | Re-plantation to restore the land quality at feasible places where temporary land take | Success of restoration work | On completion | ·Monitoring by SC and reporting to EMC. |
| Impacts on fauna (birds) | Implementation of Avifauna protection measures as outlined under design criteria and **Project Framework Biodiversity Action Plan (F-BAP)**. Monitoring of bird strikes/mortality to determine if adaptive management required (also operations). | As F-BAP Monitoring of implementation of bird flappers/ markers | Quarterly reporting | Monitoring by SC and reporting to EMC. |
| **Stakeholder Engagement** | | | | |
| Stakeholder Engagement | Develop and implement a Project **Stakeholder Engagement Plan (SEP)**, as part of the ESMS, in order to ensure that (and define how) it will keep communicating with all affected stakeholders throughout the construction and operation phases of the Project. The SEP shall incorporate actions related to the consultation of and engagement with all the PAPs, with regards to the Land Acquisition Process. Alternatively, another SEP shall be developed for this purpose, under the Land Acquisition Plan. | To be defined in the SEP | To be defined in the SEP | Consultants<br>DABS-PMO<br>Construction Contractor |
| Stakeholder engagement | Project to establish an environmental & social team responsible for stakeholder engagement and timely information dissemination | Minutes of meetings of stakeholders' consultation | Quarterly reporting | Contractor/RE/ SC/ EMC/ |
| Grievance Mechanism | Project to establish and implement a robust grievance mechanism including social survey by independent expert to find out if grievances have been settled. | Evidence of response to grievances and agreement on closure | GM to be subject to regular review (at least quarterly during construction stage) | Consultants<br>DABS-PMO<br>Construction Contractor |
| **Land Acquisition** | | | | |
| Permanent | Project has been designed to minimize resettlement and land acquisition issues. Use Govt | Use Govt Land with no | Quarterly reporting | DABS-PMO |

| Issue | Mitigation Measures | Monitoring Indicators | Monitoring and Reporting Frequency | Responsible Parties |
|---|---|---|---|---|
| Land Take | Land with no residents or private dwellers where practical | residents or private dwellers where practical | | |
| Land Acquisition | Maintain and implement the LARP to address potential land ownership claims through the Project's **Grievance Mechanism**. | To be defined in the Project's Grievance Mechanism | To be defined in the Project's Grievance Mechanism | ADBS-PMO and Construction Contractor |
| Land Acquisition | Opening of new access roads - increased damage / interference with private property - Stakeholder engagement with the local communities in an attempt to define the routes of new access roads necessary for the Project in a way that minimises affecting particularly valuable land and property. This could even become a positive impact if some of the roads are also useful to the local communities, and the Contactor leave those after construction after finalising the Project. Contractor to restore temporary access roads to the previous condition after end of construction in the case roads are not useful to the communities | To be defined in the SEP | To be defined in the SEP | DABS-PMO<br>Construction Contractor |
| Temporary Land Take | Temporary land to be rented for the camp site and equipment yard will be restored to initial conditions (or as agreed with owner) on completion of work. | Evidence of rental agreements. Restoration check on completion | Quarterly reporting | · DABS-PMO |
| **Infrastructure, Employment and Services** | | | | |
| Accessibility infrastructure | Damage and/or accelerated deterioration of existing roads and upgrade some roads to allow the traffic of HLVs for the Project, and this would become a positive impact: include in the ESMP a **Roads and Traffic Management Plan**, assessing the condition of the existing road infrastructure to be used by the Project and the potential need to upgrade some roads; at the end of the construction period, any roads damaged due to use by the Project will need to be restored to at least the same condition they were at the start of construction | To be defined in the Roads and Traffic Management Plan | To be defined in the Roads and Traffic Management Plan | Consultants<br>DABS-PMO<br>Construction Contractor |
| Services | Accidental or planned disruptions to the water / electricity / gas / telephone and internet supply, as well as damages to sewerage systems during construction works: Contractor needs to meet with the services providers in order to ensure awareness of the location of all infrastructure and to plan to avoid any interference. Contractor to adequately plan and inform the communities about planned disruptions to the provision of any of these services Contractor needs to be contractually made responsible for repairing any damage to any of these infrastructures in a way that ensures the shortest possible interruption of the service | To be defined in the SEP | To be defined in the SEP | DABS-PMO<br>Construction Contractor |
| Employment | Ensure minimum number of workers to be employed from the nearby villages, in particular those more directly affected/ crossed by the TLs, with priority jobs to the PAPs, to the higher level of skills they possess. In advance to the start of construction activities, identify job opportunities and required skills and, through engagement, identify PAPs interested and provide them training to increase their chances of getting a better job in the Project. There are also many indirect opportunities of materials and services that can be provided for the construction of the project. | To be defined in the Human Resources Policy, namely in the Local Recruitment Procedure and the Labour and Working Conditions Management Plan (LWCMP) | To be defined in the Human Resources Policy, namely in the Local Recruitment Procedure and the Labour and Working Conditions Management Plan (LWCMP) | DABS-PMO<br>Construction Contractor |
| Influx of external work force | Priority employment to be given to local residents. Unskilled workers to be hired from local community, | Policy and information on local employment | Quarterly Report submission by SC | Monitoring by SC and Reporting to EMC |
| Design - TLs Alignment | Review the feedback of the Public Consultation meetings and confirm whether the alignment has changed in the locations where there were people presenting concerns during the public consultation meetings and include measures in the Stakeholder Engagement Plan to re-engage with the PAPs about the project. Purpose is to avoid public unrest due to poor management of | To be included in the SEP | To be defined in the SEP | Consultants<br>DABS-PMO<br>Construction Contractor |

| Issue | Mitigation Measures | Monitoring Indicators | Monitoring and Reporting Frequency | Responsible Parties |
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| | expectations that the project will not affect people's property and/ or benefit their settlement, following indications during the public consultation meetings | | | |
| Social tensions resulting from competition for employment | Include a **Local Recruitment Procedure** in the **Labour and Working Conditions Management Plan (LWCMP)**. A clear and transparent recruitment mechanism is required to minimise the risk of conflict between local community members. The procedure shall establish local recruitment targets. The contractor will be liable to engage at least 50% of its required (unskilled) labour force from within or around the project area. Use Stakeholder Engagement to disclose and be transparent about conditions for employment and, as per above, ensure a minimum number of vacancies to local people. | To be defined in the Local Recruitment Procedure and the Labour and Working Conditions Management Plan (LWCMP) and included in the SEP | To be defined in the Local Recruitment Procedure and the Labour and Working Conditions Management Plan (LWCMP) and included in the SEP | Consultants<br>DABS-PMO<br>Construction Contractor |
| **Labour and Working Conditions & Worker Accommodation** | | | | |
| Labour and Working conditions | Establish a **Human Resources Policy** that ensures commitment to adhere to national labour law and to international good practice in terms of Recruitment and Labour conditions Include in the ESMS a **Labour and Working Conditions Management Plan** adequately addressing all relevant HR and Labour issues (minimum wage, overtime, rest time, …). Ensure close and regular monitoring and auditing of the implementation of the MP and all Human Resources-related Plans and Procedures | To be defined in the Human Resources Policy and the Labour and Working Conditions Management Plan (LWCMP) | To be defined in the Human Resources Policy and the Labour and Working Conditions Management Plan (LWCMP) | Consultants<br>DABS-PMO<br>Construction Contractor |
| Child and forced labour | Establish a Human Resources Policy that commits to not employ children and use forced labour in any circumstances. Materialise this commitment in the Project's Labour and Working Conditions Management Plan (included in the ESMS). Ensure close and regular monitoring and auditing of the implementation of the MP and all Human Resources- related Plans and Procedures | To be defined in the Human Resources Policy and associated Plans and procedures | To be defined in the Human Resources Policy and associated Plans and procedures | Consultants<br>DABS-PMO<br>Construction Contractor |
| Labour and Working conditions | Establish a Human Resources Policy and related MPs, including the Labour and Working Conditions Management Plan, which shall include specific and implementable commitments on non-discrimination and equal opportunities for employees, worker organisations and rights to collective bargaining, measures preventing child and forced labour and measures relating to wages, benefits and conditions of work. It must prohibit and penalise any form of workplace sexual harassment. The LWCMP shall reference applicable ILO Conventions. The requirements of the LWCMP will be binding for all parties, including subcontractor and to suppliers as applicable. include in the ESMP a Code of Conduct and provide Induction training to all workers about the requirements and behaviours expected. Ensure transparent and anonymous Workplace GRM and encourage people to report any episode. | To be defined in the Human Resources Policy and associated Plans and procedures | To be defined in the Human Resources Policy and associated Plans and procedures | Consultants<br>DABS-PMO<br>Construction Contractor |
| Worker Camps and community interactions | Worker camps to be selected with regard to cultural norms of the area to avoid undue interference of workers with local residents. | Worker camp plans submitted by the construction contractor | Quarterly monitoring check | Execution by Construction Contractor |
| Worker Accommodation Camps | Prepare and implement a **Worker Accommodation Management Plan** that will include at least the following:<br>• A worker accommodation strategy for workers that will not stay at their own residence during the construction phase.<br>• For the worker accommodation camp, the relevant requirements to ensure that the design will follow the IFC / EBRD Guidance Note on Worker Accommodation will be incorporated. | To be defined in the Worker Accommodation Management Plan | To be defined in the Worker Accommodation Management Plan | Consultants<br>DABS-PMO<br>Construction Contractor |

| Issue | Mitigation Measures | Monitoring Indicators | Monitoring and Reporting Frequency | Responsible Parties |
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| **Community Health and Safety** | | | | |
| Labour and Community | Social tensions related to influx of non-local workers to be addressed in the Labour and Working Conditions Management Plan, part of the ESMS | To be defined in the Labour and Working Conditions Management Plan | To be defined in the Labour and Working Conditions Management Plan | Consultants<br>DABS-PMO<br>Construction Contractor |
| Cultural conflicts with local communities due to the presence of construction workers | Include in the ESMP a Code of Conduct and provide Induction training to all workers about the culture of the local communities and the requirements and behaviours expected. Ensure transparent and anonymous Community GRM and encourage people to report any episode. Indeed, the people inhabiting the rural areas surrounding the Project Sites have a very particular set of cultural values and are not used to (and generally struggle to adjust to) the presence of outsiders in their areas even during short periods of time. Engage local work force as much as possible, and also develop and implement a strong community communication and participation plan. | To be defined in the Human Resources Policy and associated Plans and procedures, including Code of Conduct | To be defined in the Human Resources Policy and associated Plans and procedures, including Code of Conduct | Consultants<br>DABS-PMO<br>Construction Contractor |
| Community H&S | Prepare and implement a project specific **Security Management Plan** (as part of the ESMS) compliant with the UN Voluntary Principles on Security and Human Rights and the IFC Good Proactive Handbook on the Use of Security Forces, so as to address potential disproportionate use of force by Security Forces, namely in their interactions with the local communities. The Plan shall incorporate procedures to ensure strict adherence to the Lender's requirements, in terms of the principles of proportionality, hiring, rules of conduct, training, screening, equipping and monitoring of security personnel. The worker accommodation security provisions will also fall under the scope of the SMP. | To be defined in the Security Management Plan | To be defined in the Security Management Plan | Consultants<br>DABS-PMO<br>Construction Contractor |
| Community H&S | Develop and implement a Traffic Management Plan for the ESMS to address increased risk of accidents, namely involving members of the Local Communities, due to construction-induced traffic for the transport of materials for the Project and movement of vehicles and equipment for the construction activities<br>All drivers will receive specific training on the defensive driving before driving for the project. All vehicles will be inspected before being accepted onsite. | To be defined in the Traffic Management Plan | To be defined in the Traffic Management Plan | Consultants<br>DABS-PMO<br>Construction Contractor |
| Community H&S | Develop and implement a Community Health and Safety Management Plan addressing community health and safety impacts and risks not addressed in other ESMS Plans, including but not limited to influx management, interaction between workers and local communities, communicable diseases, safe passage to community members through the site and community emergency preparedness and response. | To be defined in the Community Health and Safety Management Plan | To be defined in the Community Health and Safety Management Plan | Consultants<br>DABS-PMO<br>Construction Contractor |
| Sexual Exploitation and Abuse (SEA) | Contractor to develop a Code of Conduct and provide Induction training to all workers about the culture of the local communities and the requirements and behaviours expected. Ensure transparent and anonymous Community GRM and encourage people to report any episode | To be defined in the Human Resources Policy and associated Plans and procedures, including Code of Conduct | To be defined in the Human Resources Policy and associated Plans and procedures, including Code of Conduct | Consultants<br>DABS-PMO<br>Construction Contractor |
| Gender-Based Violence (GBV) risk | Use Stakeholder Engagement and Focus Discussions to provide awareness and try to prevent episodes in particular enhanced by the presence of the project, and try to manage the issue perhaps with the support of local NGOs<br>Develop and implement a Gender Management Plan, as part of the ESMS, in order to adequately manage potential impacts related with the local way of living and 'reclusion' of women, in a new context where a lot of outsiders, in particular men, will be present in the area. | To be included in the SEP and Gender Management Plan | To be included in the SEP and Gender Management Plan | Consultants<br>DABS-PMO<br>Construction Contractor |
| **Vulnerable/Indigenous Groups** | | | | |
| Vulnerable groups and/ or | In the event that nomadic or seminomadic groups (e.g. the Kuchi nomads ) pass through or establish themselves temporarily or permanently in the area, in particular in the Area of the | To be included in the SEP | To be defined in the SEP | Consultants<br>DABS-PMO |

| Issue | Mitigation Measures | Monitoring Indicators | Monitoring and Reporting Frequency | Responsible Parties |
|---|---|---|---|---|
| Indigenous Peoples | Substations, engage with them as part of the standard stakeholder engagement process, and determine if they can be classified as Indigenous Peoples. | | | Construction Contractor |
| **Cultural Heritage** | | | | |
| Sites of cultural significance | No sites of Historical, Cultural, Archeological or Religious significance are expected to be affected but following measures should be taken in case if any, will be found in AOI of project during construction; | Evidence of maps in place with these sites shown. | To be defined in the Chance Find procedure | ·Construction Contractor |
| Cultural heritage - Historical monuments | Provide and implement a Chance Find procedure (as part of the Project Construction ESMMP) in order to account for negative impacts on unknown elements of cultural heritage. Include the CFP in the induction training and toolbox talks for all workers engaging in site excavation works. Confirm that no known important historical monument is located close to the Project Area (namely those mentioned in this document). If any significant impact is found, it is recommended to change the transmission line route alignment in order to avoid any interference. Stop the work immediately in case of chance find of any sites or artifacts of historical, cultural, archeological or religious significance | Records of appropriate action taken in case of chance find. Photographic record of chance find | Immediately after chance find, to be reported in next quarter. | Consultants<br>DABS-PMO<br>Construction Contractor |
| Training | Construction staff to be trained about the location and importance of any cultural sites and Contractor to ensure that these sites are not affected by the construction related activities. | Evidence of maps in place with these sites shown. ·Evidence of training provided to contractor staff. | | Monitoring by SC and reporting to EMC. |

**Post Construction Phase EMP (Implementation, Operations & Maintenance Phase)**

| Potential Impact | Mitigation Measures | Monitoring Indicators | Monitoring and Reporting Frequency | Responsible Parties |
|---|---|---|---|---|
| Impacts from Operations and Maintenance | Develop operational management plans | Plans signed off | Monitor as per plans | O&M Contactor. Signed off by DABS EMC |
| Soil Contamination Degradation of soil top layer and erosion may also be seen after some time | Fitting transformers with oil pits beneath to collect leaking oil | Fitting transformers with oil pits connected to a drainage system | Annual Reporting | EMC |
| Impact on Aesthetic and Scenic Quality The construction and operational activities of the project may affect adversely the aesthetic and scenic quality of the area. | The good scenic and aesthetic views of the project areas need to be preserved and protected. | Visual observation control of planning and implementation of re-plantation activities | Quarterly Reporting | EMC/ Local |
| | Plantation of bushes around grid station | Beautification | | Government Departments |
| Ground water contamination in command area In case of improper drainage ground water will be contaminated | Ground water monitoring wells should be established in command area to monitor the salinity of ground water. | Monitoring as per environment management plans submitted for operational phase | Daily visual checks | DABS-EMC |
| | | | Annual reporting | |
| Disposal of waste: Health and environmental issues | Proper monitoring of maintenance activities and generated waste along the line corridor and grid station. | Visual inspection Monitoring records keeping and evaluation according to WMP | Semi-annually reporting Periodic monitoring | DABS, EPA-Afghanistan EMC |
| Periodic cleaning and maintenance of the system Solid waste generation | Ensure proper disposal of waste at designated landfill/disposal sites. | Visual inspection | Semi-annually reporting | DABS and NEPA EMC |
| | | Filling of waste management checklists as per WMP | | |
| Biological Resources Damage to re-planted trees and shrubs | Implementation of seasonal tree plantation campaigns and continuous monitoring for the maintenance of social forestry | Record keeping and plantation inventory | Semi annual | EMC/ Local |
| | | | | Government Departments/ PHA |
| Biodiversity- Bird Kill | Monitor for collisions and electrocution of birds as per the F-BAP. Include searches of bird carcass Put in place adaptive management if triggered. | Records of bird accidents and actions as per F-BAP | quarterly | DABS/O&MC |
| Settlement and Housing | Include in the LARP measures to address the perceived decrease of property value due to proximity of the High Voltage Transmission Lines to the houses (for the houses located in the Aol). | To be addressed in the LARP | To be addressed in the LARP | Consultants Implementing Agency (NEPA / DABS |
| Land use | Include in the LARP measures to address the perceived decrease of property value due to the restrictions imposed by the presence of High Voltage Transmission Lines | To be addressed in the LARP | To be addressed in the LARP | Consultants Implementing Agency (NEPA / DABS |
| Land use | Include in the LARP and in the SEP for the Operational Phase measures to address and communicate potential temporary loss of crops for landowners/users in case of maintenance activities | To be addressed in the LARP and in the SEP for the Operational Phase | To be addressed in the LARP and in the SEP for the Operational Phase | Consultants Implementing Agency (NEPA / DABS-PMO) |

| Potential Impact | Mitigation Measures | Monitoring Indicators | Monitoring and Reporting Frequency | Responsible Parties |
|---|---|---|---|---|
| Public Utilities, Services and Transport infrastructure | Prepare and implement a Health and Safety Management Plan for Operations Phase covering regular maintenance activities. Include measures to identify potential illegal connections and to eliminate them and include in the SEP measures to inform the communities of the H&S / death risks associated with establishing such connections. This is to address/ prevent accidents potentially causing electrocution during normal maintenance activities or illegal attempts to steal electricity through illegal connections | To be included in the Health and Safety Management Plan for Operations Phase and in the in the SEP for the Operational Phase | To be included in the Health and Safety Management Plan for Operations Phase and in the in the SEP for the Operational Phase | Consultants<br>Implementing Agency (NEPA / DABS-PMO) |
| Livelihood | Include in the LARP and in the SEP for the Operational Phase measures to address public perception of negative impacts of the project, especially for those not benefiting from compensation | To be addressed in the LARP and in the SEP for the Operational Phase | To be addressed in the LARP and in the SEP for the Operational Phase | Consultants<br>Implementing Agency (NEPA / DABS-PMO) |
| Employment | Positive impact related with *Improved skills through training (during construction) and know-how for employees, potentially to be used in other projects*<br>can be enhanced though ensuring an adequate identification of training needs that can benefit the project during the construction phase, but that can also be used by local community members for other projects after construction is finished. Project can also train some community members to carry out at least some of the maintenance activities during the operations phase, e.g., to ensure compliance with the requirements for the RoW. | To be included in a Training Plan | To be included in a Training Plan | Consultants<br>Implementing Agency (NEPA / DABS-PMO) |
| Health and Safety | Carry out additional studies and/ or investigation on the health safety risks at the level of the community living in the proximity of the Transmission Lines associated with magnetic fields and disclose it as per the SAP to address, in order to address these perceived risks. | To be included in the SEP | To be included in the SEP | Consultants<br>Implementing Agency (NEPA / DABS-PMO) |

Outline costs for monitoring are given in Table 49 below, and have been provided by DABS. The costs are indicative at this stage and will be refined as the detailed Environmental and Social Management and Monitoring Plans are developed.

**Table 49: Outline costs for monitoring**

| # | Parameters | Unit cost (M Afg) | Location for sampling | Before construction | | During construction | | Operation 2 years | | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Frequency | Cost | Frequency | Cost | Frequency | Cost | |
| 1 | Environmental monitoring by lab (air, water, wastewater, noise) | 0.08 | 4 | 0 | 0 | 2 (twice / year) | 1.6 | 2 (twice / year) | 3.2 | 4.80 |
| 2 | Internal environmental auditing | 0.10 | - | 0 | 0 | 1 | 0.1 | 2 (once / year) | 0.20 | 0.30 |
| 3 | Environmental training | 0.05 | - | 0 | 0 | 1 | 0.05 | 2 (once / year) | 0.10 | 0.15 |
| 4 | Social cost (meeting, visit, tour etc.) | 0.02 | - | 2 | 0.04 | 2 | 0.04 | 4 | 0.08 | 0.16 |
| 5 | Area development projects[1] | 0.05 | - | 0 | 0 | 0 | 0 | 2 | 1 | 1.00 |
| 6 | Environmental reporting & review | 0.05 | - | 0 | 0 | 2 | 0.1 | 2 | 0.10 | 0.20 |
| 7 | Environment office | - | - | - | - | - | - | - | - | 1.00 |
| Total | | | | | | | | | | 7.61 |
| Operation and maintenance (5%) | | | | | | | | | | 0.38 |
| Contingencies (7%) | | | | | | | | | | 0.53 |
| Grand total | | | | | | | | | | 8.52 |

1: Area development projects: cleaning activity and tree plantation plan

# I. Conclusions and Recommendations

This IEE has been undertaken in accordance with the requirements of national and ADB guidance and standards. It has described the current physical, ecological and socio-economic environments in the area, considered and identified potential impacts that could result from the construction and operation of the Project, and specified suitable mitigation measures to reduce any impacts to an acceptable level.

The security situation in the area and the ongoing Covid-19 pandemic mean that it has not been possible to complete baseline studies, which will need to be undertaken prior to construction.

Two impacts that are considered to be significant in the absence of mitigation have been identified:

- Land acquisition impacts linked to the construction of the transmission lines
- Ecological impacts, specifically associated with risks of collision or electrocution of soaring birds, raptors and waterbirds from the operational transmission/distribution lines.

Project-specific mitigation measures have therefore been developed to reduce these specific impacts accordingly, namely the development and implementation of a Land Acquisition and Resettlement Plan and a Biodiversity Action Plan.

Other impacts are not considered to be significant and can be mitigated through the plans developed as part of the Environmental and Social Management and Monitoring Plans in accordance with good international industry practice. These plans will address construction and operation phase impacts across the physical, ecological and socio-economic environment and include requirements for capacity-building and ongoing monitoring.

The Safeguard Policy Statement defines a Category B project as one where “potential adverse environmental impacts are less adverse than those of category A projects. These impacts are site-specific, few if any of them are irreversible, and in most cases mitigation measures can be designed more readily than for category A projects” whereas Category A projects have “significant adverse environmental impacts that are irreversible, diverse, or unprecedented. These impacts may affect an area larger than the sites or facilities subject to physical works”.

It can be clearly seen from the findings of this IEE and these excerpts that Category B is the correct classification for the Project and that EIA is not required.

# Annexes

Annex 1: Critical Habitat Assessment
Annex 2: Framework Biodiversity Action Plan
Annex 3: Stakeholder engagement records
Annex 4: Grievance Redress Mechanism