

Executive Summary

BFL has been categorized as a Category B project, as the potential adverse environmental and social impacts on population within the Protected Areas or those living around who depend on the PA for their livelihoods or environmentally important areas are site-specific, reversible and can be readily mitigated.

Therefore, to ensure that all BFL funded projects and programs are environmentally and socially sustainable as well as in line with BFL's policies and guidelines, an Environmental and Social Management Plan (ESMP) involving stakeholder participation and timely public disclosure is required.

An Environmental and Social Management Plan (ESMP) for Biological Corridor (BC) 1 Paro describes mitigation measures/good practices at activity level which are required as per the screening protocol. All the screened activities which has potential risks to environment and social management have to prepare ESMP which include environment management and mitigation plans during pre-activity, activity implementation and closing phases. Hence, it contains description of the detailed actions including communities, roles, communication and reporting and monitoring processes required as part of the implementation.

In order to ensure that the issues of all stakeholders are taken into account, it includes a stakeholder engagement plan. The plan includes identification of stakeholders, method of engagement, timing and logistics. It is a requirement for all parks and biological corridors to keep record, reporting, review, auditing and update ESMP yearly as per the planned activities.

The activities that required ESMPs for the year 2025 under BC1 -Paro are as follows:

1. Construction of Haa Range Office
2. Maintenance of Shaba Forest Nursery

བཀོད་ཁྱབ་བཅུད་དོན།

འབྲུག་རྒྱལ་ཡོངས་སློབ་ཀྱི་ཚེ་སློག་མ་དདུལ་འདི་མཐའ་འཁོར་གནས་སྟངས་དང་མི་ཟེའི་འོས་འབབ་ཅན་གྱི་ལས་འགུལ་གྱི་དབྱེ་ཁག་ ཁ་བ་(Category B) རྒྱ་ལྷ་རྒྱུ་དེ་ཡོད་པ་ཡིན། དེ་ཡང་ལས་འགུལ་འདི་ལས་བརྟེན་ཏེ་སྤྱད་སྟོབ་ས་ཁོངས་ནང་སྤྱད་མེད་མི་སེར་དང་ ཡང་ན་ སྤྱད་སྟོབ་ས་ཁོངས་ཀྱི་མཐའ་སྐོར་ཏེ་འཚོ་བ་སྤྱད་སྟོབ་ས་ཁོངས་ལྷན་པ་བརྟེན་སྤྱད་མེད་མི་སེར་ ཡང་ན་ གཤམ་ཅན་གྱི་མཐའ་སྐོར་གནས་སྟངས་ཀྱི་ས་ཁོངས་ཚུ་ལྷན་པ་འབྱུང་ནི་ཉེན་ཁ་ཡོད་པ་དང་ གཤམ་སྤྱད་གཞོན་པ་འབྱུང་པ་ཅིན་ གཞོན་ཉེན་ཚུ་དམིགས་གསལ་ས་གནས་ནང་རྒྱུང་མ་ཅིག་འབྱུང་ནི་དང་ གཞོན་ཉེན་མར་པ་བརྒྱབ་ནི་དང་ ཅ་མེད་ཡང་གཏང་ཚུགས་པ་ཡིན།

དེ་འབད་མ་ལས་ འབྲུག་རྒྱལ་ཡོངས་སློབ་ཀྱི་ཚེ་སློག་མ་དདུལ་ཐོག་ལྷན་ རྒྱབ་སྐྱོར་འབད་ཡོད་པའི་ལས་འགུལ་དང་ལས་ལྷན་ཚུ་ མཐའ་འཁོར་གནས་སྟངས་དང་ མི་ཟེའི་གཉིས་ལྷན་བརྟེན་གྱི་པན་པ་ཡོད་པ་བཟོ་བ་གི་མ་ཚད་ འབྲུག་རྒྱལ་ཡོངས་སློབ་ཀྱི་ཚེ་སློག་མ་དདུལ་གྱི་སྤྱད་བྱས་ལམ་སྟོན་དང་འབྲེལ་ཐབས་ལྷན་ མཐའ་འཁོར་གནས་སྟངས་དང་མི་ཟེའི་འཛིན་སྐྱོང་འཆར་གཞི་འདི་དགོཔ་ད་ མི་དམངས་གྲོས་བསྟུན་དང་ ཏུས་དང་ཏུས་ལུ་མི་དམངས་ལྷན་གསལ་བ་བཤད་ནི་འདི་དགོཔ་ཡིན།

རང་བཞིན་གནས་སྟངས་དང་མི་ཟེའི་འཛིན་སྐྱོང་འཆར་གཞི་འདི་ནང་ སློབ་ཀྱི་དང་སློག་ཆགས་རྒྱན་ལམ་ཚུ་ནང་ལས་ལྷན་ཚུ་འབད་བའི་སྐབས་ ཐབས་ལམ་དང་བཟང་སྤྱད་ཚུ་གསལ་སྟོན་འབད་མ་ཡིན་པ་ད་ འདི་ཡང་ལས་ལྷན་གདམ་སེལ་ལམ་ལུགས་དང་འབྲེལ་ཏེ་ཡིན། གདམ་སེལ་འབད་ཡོད་པའི་ལས་ལྷན་གི་ནང་ལས་ མཐའ་འཁོར་གནས་སྟངས་དང་མི་ཟེའི་ལྷན་པ་ཡོད་པའི་ལས་ལྷན་ཚུ་གི་དོན་ལྷན་ མཐའ་འཁོར་གནས་སྟངས་དང་མི་ཟེའི་འཛིན་སྐྱོང་འཆར་གཞི་བཟོ་དགོ། འཛིན་སྐྱོང་འཆར་གཞི་འདི་ནང་ ལས་ལྷན་འགོ་མ་བཅུགས་པའི་ཉེ་མ་གཞི་བཅུགས་འབད་བའི་སྐབས་དང་མཚུགས་བསྟུན་པ་ལྷན་ མཐའ་འཁོར་གནས་སྟངས་འཛིན་སྐྱོང་དང་གཞོན་ཉེན་མར་པ་བརྒྱབ་ཀྱི་ཐབས་ལམ་ཚུ་བཅུགས་དགོཔ་ཡིན།

དེ་འབད་མ་ལས་འཛིན་སྐྱོང་འཆར་གཞི་འདི་ནང་ ལས་ལྷན་ མི་ཟེའི་ ལུ་འགན། བརྟེན་དང་སྟན་ལྷན་ལྷན་ དེ་ལས་ལྷན་ཚུ་གི་ལམ་ལུགས་ཚུ་གི་སྐོར་ལས་འགུལ་བཤད་ཁ་གསལ་ཚུད་དགོཔ་ཡིན། འཛིན་སྐྱོང་འཆར་གཞི་འདི་ནང་ལྷན་ གཤམ་གཏོགས་འབད་དགོ་པའི་ཁེ་གཏང་ཡོད་མི་ཚུ་གི་ཉོག་བཤད་ཚུ་ཚུད་དགོ་པའི་ཁར་ ཁེ་གཏང་ཡོད་པའི་མི་ཚུ་གི་དོན་ལྷན་གཤམ་གཏོགས་འཆར་གཞི་དགོ། གཤམ་གཏོགས་འཆར་གཞི་འདི་ནང་ ཁེ་གཏང་ཡོད་མི་ངོས་འཛིན་འབད་ནི་དང་གཤམ་གཏོགས་འབད་ནི་འོ་ལམ་ལུགས་ དེ་ལས་གཤམ་གཏོགས་ཀྱི་ཏུས་ཚོད་དང་བཅའ་སྤྱིམ་ཚུ་ཚུད་དགོཔ་ཡིན། སློབ་ཀྱི་དང་སློག་ཆགས་རྒྱན་ལམ་ཡིན་ཚད་ཚུ་གི་མཆར་གཞི་ལས་ལྷན་དང་འབྲེལ་ཏེ་ དུན་ཐོ་དང་སྟན་ལྷན་ བསྐྱར་ཞིབ་ ཆིས་དབྱུང་འབད་ནི། དེ་ལས་ མཐའ་འཁོར་གནས་སྟངས་དང་མི་ཟེའི་འཛིན་སྐྱོང་འཆར་གཞི་འདི་ལོ་བསྟར་བཞིན་ཏུ་ཏུས་མཐུན་བཟོ་དགོཔ་ཡིན།

སྤྱི་ཐུན་བར་ལམ་དང་པའི་ དོན་ལྷན་ལོ་ ༢༠༢༥ རྒྱུ་ མཐའ་འཁོར་གནས་སྟངས་དང་མི་ཟེའི་འཛིན་སྐྱོང་འཆར་གཞི་དགོཔ་ཡོད་པའི་ལས་ལྷན་ཚུ་ཡང་།

༡༥ ཏུ་ སློབ་འཛིན་ཡིག་ཚང་ བཟོ་སྐྱུན་འབད་ནི་དང་།

༢༥ གཤམ་ལྷན་ བཤམ་གསོ་སྐྱོང་ཁང་རྒྱུ་སྐྱོང་འབད་ནི།

Bhutan for Life

Environmental and Social Management Plan for Biological Corridor 1 (2025)

1. Introduction

(A) Project Background

The Bhutan for Life (BFL) project aims to ensure a robust network of protected areas and biological corridors that secure human well-being and biodiversity conservation and increase climate resilience in Bhutan. The project provides a 14-year financial bridge that allows for immediate improvement in managing Bhutan's protected areas for climate resilience, and the prompt delivery of mitigation, adaptation and biodiversity gains, while the country gradually ratchets up its financing resources.

BFL seeks to achieve the following objectives:

- ❖ Help Bhutan remain carbon neutral by increasing forest and vegetative cover within the Protected Area System.
- ❖ Enhance the socio-economic wellbeing of communities in and in the vicinity of the PAS through climate-informed natural resources management.
- ❖ Maintain stable, thriving and diverse populations of key species contributing toward national and global biodiversity goals.
- ❖ Strengthening organizational, institutional, and financial capacity for effective management of PAS.

BFL includes five components that reflect these goals, divided into 16 milestones and over 80 detailed activities.

(B) Scope of ESMP

The preparation of this Environmental and Social Management Plan (ESMP) was required to manage the environmental and social impacts through and specific mitigation actions required to implement the project under the requirements of WWF's Social Safeguards Integrated Policies and Procedures (SIPP), the project's Environmental and Social Management Framework (ESMF), and applicable national legislation and regulations.

The ESMP provides an overview of the environmental and social baseline conditions on the routes of the proposed second segment of the project, summarizes the potential impacts associated with the proposed activities and sets out the management measures required to mitigate any potential negative impacts.

This ESMP will be implemented by BFL focal person in each park authority (PA) and biological corridor (BC), and by the contractor to be commissioned by each PA/BC for the project.

(C) Purpose of ESMP

This Site-Specific ESMP is a project-specific source document detailing the environmental and social protection requirements to mitigate and minimize the adverse impacts. ESMP's primary purpose is to ensure that the environmental requirements and social commitments associated with the project are carried forward into the implementation and operational phases of the project and are effectively managed. The specific objectives of this ESMP are as hereunder:

- ❖ Minimizing any adverse environmental, social and health impacts resulting from the project activities.
- ❖ Conducting all project activities under the relevant RGoB Laws and WWF's safeguard operational policies and guidelines.
- ❖ Preventing environmental degradation because of either individual subprojects or their cumulative effects.
- ❖ Enhancing the positive environmental and social outcomes of project activities.
- ❖ Ensuring that the proposed mitigation measures are feasible and cost-efficient.
- ❖ Providing an Action Plan to ensure that the project impact mitigation measures are properly implemented and monitored.
- ❖ Ensuring that all stakeholders are engaged in the project activities' preparation and implementation, and their concerns are fully addressed.

(D) Applicable law, policies, and regulations

This ESMP is developed by following the guidelines outlined in the BFL's ESMF. Applicable RGoB laws and policies include the Constitution of the Kingdom of Bhutan, 2008; legislation on land and moveable property (Land Act of Bhutan 2007; Land Rules, 2007; The Moveable Cultural Property act of Bhutan, 2005); legislation and regulations on forests and protected areas (National Environment Protection Act, 2007; Forest and Nature Conservation Act of Bhutan, 1995; Forest and Nature Conservation Rules and Regulations of Bhutan, 2017 and 2023; National Forest Policy, 2011); legislation on water and waste prevention (Water Act of Bhutan, 2011; Waste Prevention and Management Act, 2009); legislative requirements on environmental assessment (Environmental Assessment Act, 2000 and Regulations on the Environmental Clearance of Projects, 2001); and other relevant laws (The Local Government Act of Bhutan, 2009; Livestock Act of Bhutan, 2001; The Biodiversity Act of Bhutan, 2003;

The Pesticides Act of Bhutan, 2000; The Penal Code of Bhutan, 2004; National Access and Benefit Sharing (ABS) Policy (Draft), 2014).

WWF's safeguards policies that are relevant to this project are as follows: Policy on Environment and Social Risk Management; Policy on Protection of Natural Habitats; Policy on Involuntary Resettlement; Policy on Indigenous Peoples; Standard on Pest Management; Policy on Accountability and Grievance System; Standard on Physical Cultural Resources; as well as general standards on occupational and community health and safety and on energy efficiency.

In general, RGoB's laws, policies, and guidelines are in line with WWF's environmental and social safeguards requirements. However, there are a few differences between the two systems. Concerning environmental impacts, there are no direct contradictions between the RGoB laws and regulations and WWF's SIPP, but the requirements of the latter are more extensive. All project activities should fully comply with both the RGoB's regulations on the Environmental Clearance of Projects, and with the procedures and mitigation measures prescribed in this ESMF. In case the WWF's SIPP requirements are more extensive, stricter, or detailed than the RGoB legislation and policies, the former will apply to all project activities.

With regard to social impacts, the primary discrepancies between RGoB laws and regulations and the WWF's SIPP refer to the status of non-title holders and informal land use, and the commitment to participatory decision-making processes. First, according to WWF's SIPP, all users of land and natural resources (including people who lack any formal legal ownership title or usage rights) are eligible to some form of assistance or compensation if the project adversely affects their livelihoods. The RGoB laws only recognize the eligibility of landowners or formal users to receive compensation in such cases. Second, WWF's SIPP requires extensive community consultations as part of the development of various safeguards documents and during project activities. RGoB legislation does not include similar requirements. For the BFL project, the provisions of the WWF's SIPP shall prevail over the RGoB legislation in all cases of discrepancy.

2. Environmental and Socio-Economic Conditions

2.1. Geological and topographical conditions

Biological Corridor 1 is located between Jigme Dorji National Park (JDNP) and Jigme Khesar Strict Nature Reserve (JKSNR). The area was declared as a corridor based on the examination of satellite image and detailed land use maps as well as field verification, which confirmed its suitability as a corridor.

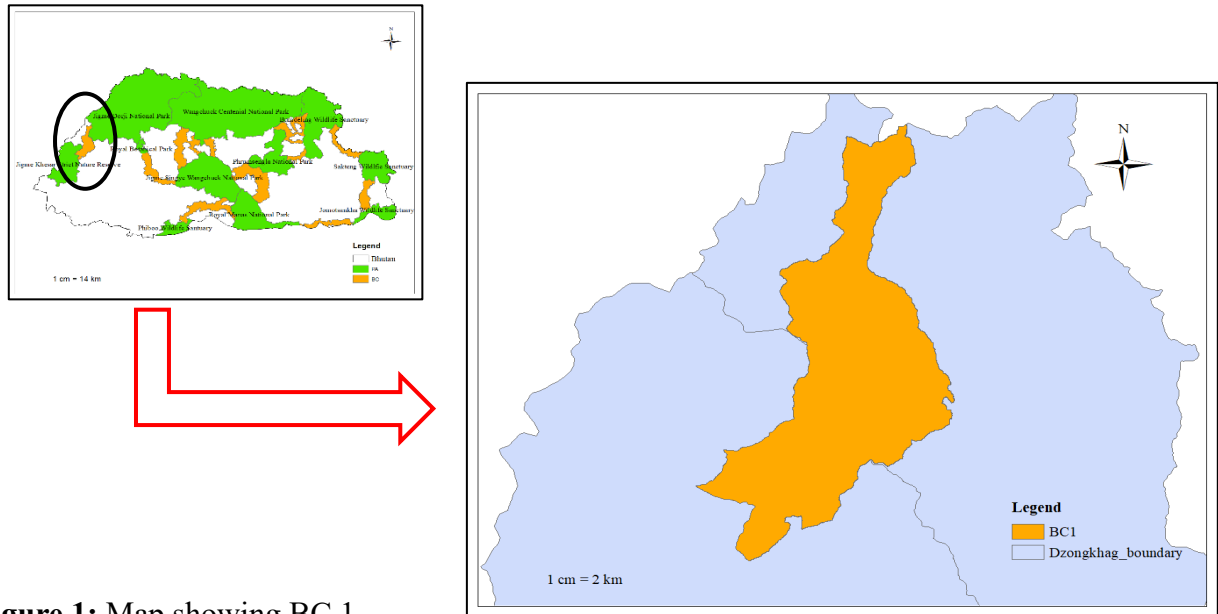


Figure 1: Map showing BC 1

BC-01 encompasses an area of 255.55 sq km of which 44.63% is covered by forests, and 36.63% is covered by shrubs. Forests and shrubs occupy the maximum area in BC-01 with a combined area coverage of more than 80%. The area covered by built-up structures and cultivated agriculture is the lowest, with built-up structures covering only 0.01% and 0.07% of the total area in BC-01.

The consideration of the physical and biological characteristics is an essential element of land use planning. The physical and biological base is defined and identified by physiographic, geologic, vegetative, hydrologic and cultural characteristics. The general terrain of the biological corridor is moderate to very steep, ranging from zero degrees to 77 degrees. Steep areas mostly occur along the ridges and at many places they are inaccessible to people.

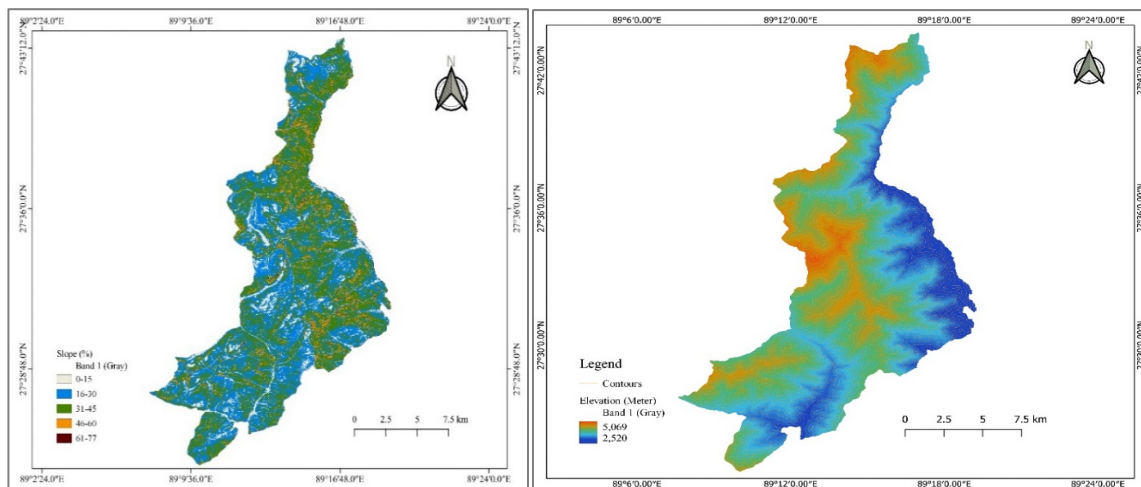


Figure 2: Map showing topography in BC-01

2.2. Climate conditions

Meteorological data derived from station records (Paro-DHHS, Class A & Haa Namgayling, Class A), Meteorology Section, Department of Hydromet Services, Ministry of Economic Affairs (Thimphu), shows that the weather data for the past 20 years recorded highest average maximum temperature of 23.08°C and lowest average minimum temperature of -3.96°C in 2009 at Paro Drugyal Dzong in August and December respectively. Similarly, highest average temperature of 18.15°C was recorded in 2009 in August and lowest average minimum temperature of 3.42°C was recorded in January 2007 at Haa Namgayling Dzong

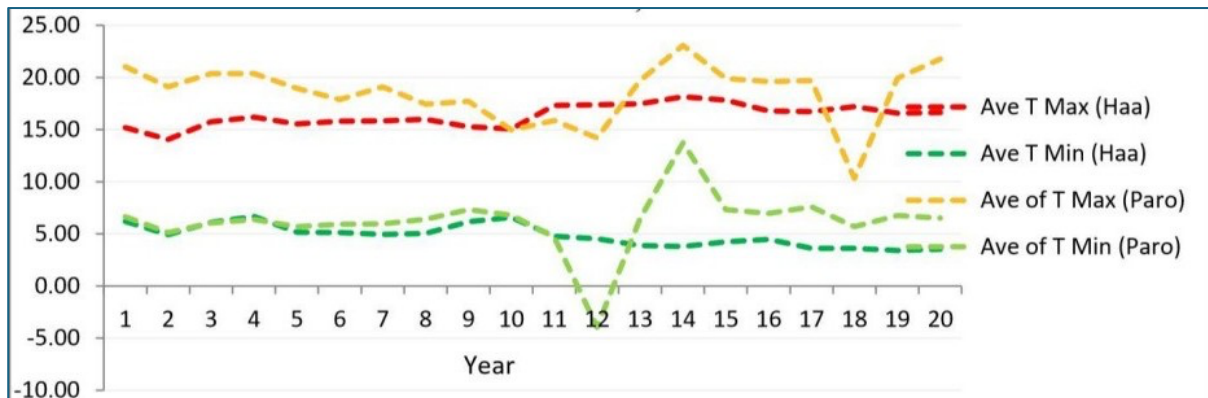


Figure 3: Average maximum and minimum temperatures for the 20 years of Paro and Haa.

2.3. Hydrological conditions

The freshwater and wetland ecosystems of BC-01 are also represented by high-altitude wetlands (alpine lakes), which are key components of the river basin system to the downstream. High altitude wetlands (alpine lakes) are treasured as sacred spots both in Haa and Paro dzongkhag's culture, and their preservation is crucial for the local people's myths and traditional beliefs. According to preliminary research, a total of 21 lakes of various sizes were found spread around the BC-01 area, serving as the watershed for tributaries of the Haa-Chhu and Pa chu rivers. Many marshy areas are also found scattered all along the alpine areas, making this corridor an important watershed for both Haa and Paro Dzongkhags. The mapping of wetland and marshy areas must be updated soon for proper management.



Figure 4: Google map showing the location of lakes

2.4. Flora and fauna

The survey recorded evidence of 21 mammal species, including Tiger, Snow leopard, Musk deer and Wild dogs. The photographic evidence from the camera traps showed that the biological corridor is not only home for key species like Tigers, Snow Leopard and Takins, but also inhabited by other cat species like the Asiatic golden cat, Leopard cat and common Leopard. Through the survey, it was also confirmed that the corridor is being used by Takin as it's summer habitat.



Figure 5. Mammals of DFO-Paro

The avian fauna survey recorded a total of 49 species belonging to 30 genera and 16 families. However, records from both the present and past surveys showed that the corridor is home to



Figure 6: Birds of DFO-Paro

around 183 bird species. The corridor is found an important habitat for vulnerable bird species like *Gallinago nemoricola* (Woodsnipe) and protected bird species under the FNCA, 2006, the *Lophophorus impejanus* (Himalayan Monal).

Globally Near Threatened bird species like *Tragopan satyra* (Satyr Tragopan) were also recorded during the survey. The presence of restricted-range bird species like *Actinodura nipalensis* (Hoary-throated Barwing) and significant and rare birds like *Lerwa lerwa* (Snow Partridge) was also recorded in BC-01.

A total of 51 trees and shrubs belonging to 17 families, 93 herb spp., 4 climber spp., 6 fern spp. and 8 orchid spp. were recorded from BC-01. From the recorded floral listings, 73 medicinal plants were identified. Cluster analysis of tree species with an arbitrary similarity index at a 25% threshold generated 5 different forest types, namely Juniper Forest, Fir Forest, Spruce Forest, Hemlock Forest and Bluepine Forest.



Figure 7: *Meconopsis superba* in its natural habitat at Chala Dophu and Nubree

2.5. Socio-economic conditions

The two geogs Tsento under Paro and Bji under Haa fall within the vicinity of BC-01. Tsento Gewog under Paro dzongkhag is constituted by 5 Chiwogs and 18 villages with 905 households with a population of 5,946 (PHCB, 2017). Bjee gewog under Haa dzongkhag is comprised of 9 chiwogs and 25 villages with a total of 279 households with a population of 3230 (PHCB, 2017). The main occupation of the people in both gewogs is agriculture (main crops grown are

wheat and barley), followed by livestock rearing (yak, jersey cross, local cattle, poultry, pig, horses and mules). A total of 239.6 acres of agricultural land is Kamzhing making it the largest agriculture land owned in terms of area. Kitchen gardens covering an area of 178.22 acres and chuzhing covering an area of 62.17 acres are the second and third largest owned agriculture land use in Bji and Tsento Gewogs.

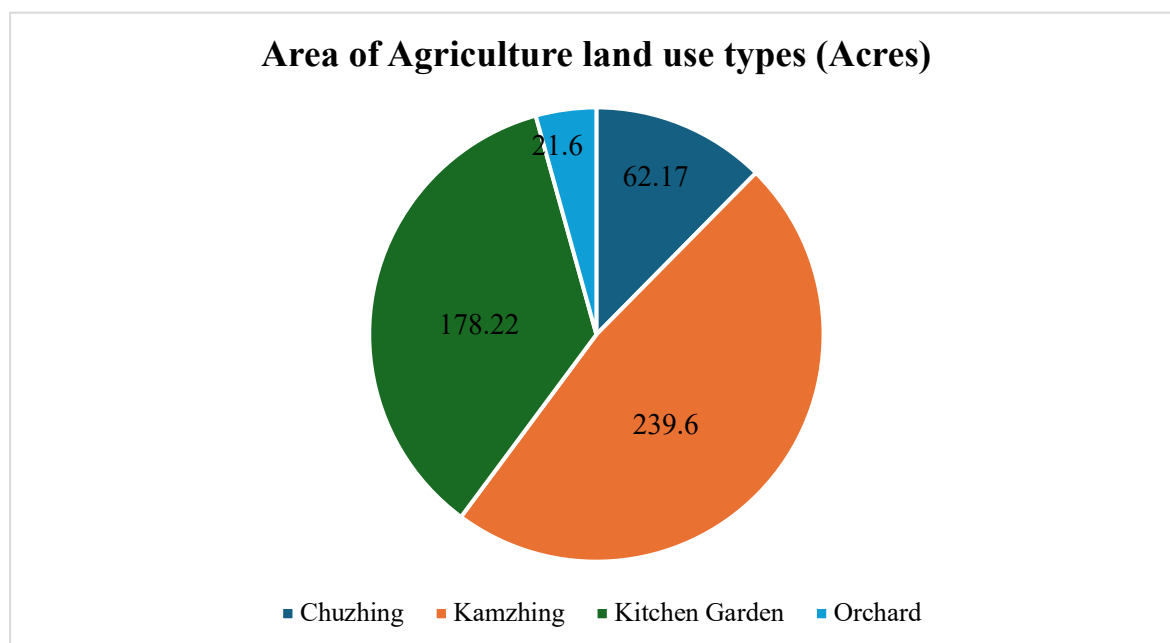


Figure 8: Agriculture land use holding

People of Bji and Tsento domesticate a wide range of animals. The most common being yak followed by cattle and horse. Since the population of yak and cattle are high in the 2 Gewogs, considerable pressure on the grassland and forests of the biological corridor is foreseen if the animals are not monitored.

3. Planned activities in Year 2025-2026

Activities that require ESMP are:

3.1. Construction of Haa Range cum FMU office (Nu. 10.00 m)

Project Overview

- ❖ **Activity:** Construction of 2-storied Range cum FMU office
- ❖ **Location:** Wangtsha, Katsho, Haa (27.378000° N, 89.290914°E)
- ❖ **Size:** 0.71 acres
- ❖ **Start Date:** July 1, 2025, **Completion date:** 30th June 2026
- ❖ **Cost:** Nu. 10.00 million



The proposed construction of a two-storied office for the Haa Range cum FMU will be carried out within the existing office compound institutionally owned and registered under the Divisional Forest Office, Paro. It will be replaced with the current structure since the current structure has become old and poses a risk for the staff while providing service to the public (figure 9)



Figure 9: Old infrastructure

The proposed site is not within core or critical zones of any protected area and does not intersect areas of ecological, religious or cultural sensitivity. No private land acquisition, tree felling,

commercial logging or displacement of individuals or assets is involved. The area is free from historical, spiritual and environmental sensitivities

The terrain is characterized by a gentle 10–15% slope, already modified for office use. There are no water bodies, natural drains, or forests in or near the site. The surrounding infrastructure includes a village road, a health center 500 meters away and a shop 100 meters away. No new roads or diversions are required.

Construction will generate minor dust and noise pollution, emissions from machinery, and small volumes of solid waste such as cement bags and wood scraps. These will be managed through green nets, proper dumping in designated sites and adherence to environmental safety norms. There is no anticipated impact on water bodies, endangered species, or flora and fauna. Electricity and water needs will be met through existing local sources. An estimated 20 laborers will be employed and safety protocols such as protective gear and restricted work hours will be enforced.

The project will not displace any communities or interfere with religious or cultural practices. Though forest access is regulated by law, the construction itself does not impose new restrictions and is expected to improve forestry service delivery in the region. Only one commercial shop is within 100 meters of the site, and there are no households directly affected. No additional pressure on local resources or potential for community conflict is foreseen.

The project will implement Occupational Health and Safety (OHS) standards, including providing safety boots, masks and signboards around the construction zone. Dust control measures and construction supervision will mitigate risks to workers and nearby communities. This project poses minimal environmental and social risks due to its location within an existing office compound and the absence of ecological or cultural sensitivities. Minor impacts from construction will be mitigated with standard safeguards, ensuring the project's alignment with BFL's Environmental and Social Standards. The activity will proceed after obtaining the necessary environmental and administrative clearances

3.2.Shaba Nursery management

Project Overview

- ❖ **Activity:** Shaba Nursery Management
- ❖ **Location:** Shaba, Paro (27.357915° N, 89.463930°E)
- ❖ **Size:** 1.457 acres
- ❖ **Start Date:** July 1, 2025
- ❖ **Cost:** Nu. 0.060 million



Figure 10: Location Map of the activity

The proposed activity involves minor maintenance of the Shaba Forest Nursery located in Shaba Gewog, Paro Dzongkhag. The activities include the replacement of the green net roofing, the collection of topsoil, sand, and leaf mould for seedling production. This is a maintenance activity within an existing government nursery area of 1.547 acres, operational for over a decade. The nursery is located approximately 150 meters from the nearest household in a community of 30 households.



Figure 11: Nursery bed

The surrounding communities rely primarily on agriculture for livelihood, and the nursery supports public and institutional greening efforts across Paro and Haa Dzongkhags.

Environmental and social safeguards screening confirmed that the activity does not involve any new construction, land use change, tree felling, or relocation. It is situated in a stable and plain area, 200 meters from the nearest river, with no presence of protected or sensitive habitats, historical or cultural sites, or areas of tourism value. The land is classified as government land and lies outside municipal planning boundaries, located 10 km from the nearest town.

The activity will not cause adverse environmental impacts. There is no generation of wastewater, nor will there be land disturbance, erosion, or disruption of natural drainage systems. The site is not vulnerable to natural hazards, and its surroundings include only access roads, with no interference with power lines or infrastructure.



Figure 12: Nursery bed

Resource use will remain minimal, with an estimated annual production of 100,000 seedlings. The collection of materials includes 5 truckloads of leaf mould, 3 truckloads of topsoil, and 1 truckload of sand. Two workers, including one ESP and a daily wage laborer, will be engaged. Only minor waste (poly pots) will be generated and safely disposed of at the designated municipal site.

The activity poses no risk to native biodiversity, as only native seedlings will be raised. It will not introduce invasive species or affect threatened flora or fauna.

From a social safeguard perspective, the activity does not restrict access to natural resources, cultural or religious sites, nor does it displace any households. There are no risks related to community health and safety, or potential for conflict with local communities. Occupational health and safety measures will be implemented, with proper use of safety gear for workers. The proposed nursery maintenance activity is low-risk and environmentally and socially sound.

4. Environmental and Social Impacts and Mitigation Measures

4.1. Construction of Haa Range cum FMU office

The potential impact of the construction of the office:

- ❖ Minor dust and air pollution during construction
- ❖ Noise pollution during construction hours
- ❖ Waste generation (solid and construction debris)
- ❖ Occupational health and safety risks to workers
- ❖ Temporary land disturbance during foundation work
- ❖ Resource use (water and electricity)

Potential impact	Impact scale	Proposed mitigation measures	Responsible party	Costs
Construction of Haa Range cum FMU office				Nu. 10.0 m
Dust and air pollution during construction	Short term- Minor	• Construction sites, transportation routes, and materials handling sites should be water-sprayed on dry and windy days. • Construction materials should be stored in appropriate and covered places to minimize dust. • Before allowing vehicles on site, a fitness and emission test of the vehicle shall be performed. • Vehicle loads likely to emit dust need to be covered • The worker should wear a protective mask if dust appears.	Contractor/Range Officer	

		• Vehicle speed should be restricted within the construction site. • Regular maintenance of vehicles and construction machinery should be performed to reduce any leakages of motor oils, emissions and dispersion of pollution. • Burning debris from ground clearance shall be prohibited		
Noise pollution during construction hours	Short term-Minor	• Noise level control should be carried out before the startup of construction activities. • The equipment should be fitted with appropriate noise devices that will reduce the sound level. • The construction work should not be permitted during the nights, the operations on site shall be restricted to the hours 7 am-7 pm. • Excessively noisy Vehicles shall not be operated until corrective measures have been taken. • Earplugs and protective devices shall be provided to the workers.	Contractor/Range Officer	
Waste generation (solid and construction debris)	Short term-Minor	• Identification of the different waste types at the project site (soil, asphalt, food, etc.). • Ensure that camps are located away from existing streams, rivers, or water sources, and that	Contractor/Range Officer	

		no discharge from camps is made into nearby water bodies. • Proper containers/waste bins should be provided at the project site. • Dumping of waste on the sides of the road, on private land, or in other non-designated places should be prohibited. • Dumping waste shall be prohibited on fragile slopes, forests, religious or other culturally sensitive areas or areas where livelihood is derived. • Collection, transportation and final disposal of all waste should be undertaken regularly on a weekly basis. • Possible hazardous waste (motor oils, vehicle fuels, etc.) should be collected separately and an authorized collector and transporters should be sub-contracted to transport and finally dispose. • All construction materials should be covered during transportation to avoid waste dispersion. • The options for reuse/recycling of the generated waste streams should be taken into		
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		consideration (e.g., excavated soil, etc.) - Burning of construction waste should be prohibited. After construction: - All waste shall be removed from the project site.		
Occupational health and safety risks to workers	Short term-Minor	- Comply with the BFL's occupational health and safety guidelines. - Ensure regular health screening for the workers, pre and during construction activities. - Ensure that no underage workers or children are engaged. - Ensure decent work conditions, including an appropriate salary, working hours, accommodation and food for workers shall be provided to all workers. - Ensure that workers are employed on the principle of equal opportunity and fair treatment, and there is no discrimination with respect to any aspects of the employment relationship, such as recruitment and hiring, compensation (including wages and benefits), working conditions and terms of employment, access to training, job assignment, promotion, termination of employment or	Contractor/Range Officer	

		retirement, and disciplinary practices. • Implement a grievance mechanism for workers (and their organizations, where they exist) to raise workplace concerns.		
Temporary land disturbance during foundation work	Short term-Minor	• Restore disturbed land post-construction and avoid tree cutting	Contractor/Range Officer	
Resource use (Electricity)	Short term-Minor	• Marking all energized electrical devices and lines with warning signs. • Checking all electrical cords, cables, and hand power tools for frayed or exposed cords and following manufacturer recommendations for the maximum permitted operating voltage of the portable hand tools • Double insulating/grounding all electrical equipment used in environments that are, or may become, wet; using equipment with ground fault interrupters (GFI) protected circuits • Protecting power cords and extension cords against damage from traffic by shielding or suspending above traffic areas • Appropriate labeling of service rooms housing high voltage equipment (electrical hazard?)	Contractor/Range Officer	

		and where entry is controlled or prohibited • Establishing “No Approach” zones around or under high voltage power lines • Conducting detailed identification and marking of all buried electrical wiring before any excavation work. • Every person who is working on an electric supply line or apparatus or both should be provided with tools and devices such as gloves, rubber shoes, and safety belts, ladders, earthing devices, helmets, line testers, hand lines, whichever is relevant for protecting him/her from mechanical and electrical injury.		
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4.2. Shaba Nursery Management (Maintenance)

The potential impact of the Nursery management:

- ❖ Minor disturbance to soil profile due to collection of soil/sand/leaf mould
- ❖ Waste generation (polypot).
- ❖ Occupational health and safety risks to workers

Potential impact	Impact scale	Proposed mitigation measures	Responsible party	Costs
Shaba Nursery Management				Nu. 0.06 m
Minor disturbance to soil profile due to the collection of soil/sand/leaf mould	Short term- Minor	• Source only from approved and stable sites, avoid slopes or erosion-prone areas	Nursery In-charge/RO Paro	

Waste generation (poly pot)	Short term-Minor	• Proper containers/waste bins should be provided at the project site. • Dumping of waste on the sides of the road, on private land, or in other non-designated places should be prohibited. • Dumping waste shall be prohibited on fragile slopes, forests, religious or other culturally sensitive areas or areas where livelihood is derived. • Collection, transportation and final disposal of all waste should be undertaken regularly every week. • Burning of polypot waste should be prohibited. After construction: • All waste shall be removed from the project site.	Nursery In-charge/RO Paro	
Occupational health and safety risks to workers	Short term-Minor	• Comply with the BFL's occupational health and safety guidelines. • Ensure regular health screening for the workers, pre and during construction activities. • Ensure that no underage workers or children are engaged. • Ensure decent work conditions, including an appropriate salary, working hours, accommodation	Nursery In-charge/RO Paro	

		and food for workers shall be provided to all workers. • Ensure that workers are employed on the principle of equal opportunity and fair treatment, and there is no discrimination with respect to any aspects of the employment relationship, such as recruitment and hiring, compensation (including wages and benefits), working conditions and terms of employment, access to training, job assignment, promotion, termination of employment or retirement, and disciplinary practices. • Implement a grievance mechanism for workers (and their organizations, where they exist) to raise workplace concerns.		
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5. ESMP Implementation arrangements

The implementation of project activities will be carried out by the BFL focal person and RO Haa consulting the Chief Forestry Officer. The focal person and RO Haa will be responsible for compliance with all procedures outlined in this ESMP, as well as compliance with any requirements to obtain clearance, permits, approvals, or consent documents from relevant authorities and stakeholders.

This ESMP should be part of the contract that the PA will sign with the Contractor(s) for implementation of the planned activities in BC-01 in 2025. The Contractor is obliged to perform all proposed preventive or mitigation environmental and social measures in this plan and to keep the evidence of any documents related to applying these measures (e.g., letter asking the municipality for disposal of inert waste, records on OHS information session performed for all workers before the start of activities, all developed EHS plans, etc.). An OHS information

session should be organized by the Contractor for all workers before starting the project activities and before any specific tasks with high health risks.

The Supervising Engineer needs to monitor the implementation of proposed measures by the Contractor and the Contractor's subcontractors with visual checking, reviewing the records of evidence that the measures have been applied and ask the Contractor to apply the measures as soon as possible. Non-compliances should be recorded and the report on non-compliances should be reported to the ESS Officer and M& E Officer at PCU immediately. The ESS Officer will report it to the PCU (M&E Officer). Each non-compliance should be disclosed with appropriate measures and the evidence should be kept.

Disbursement of project funds to the PA will be contingent upon their full compliance with the safeguard requirements.

6. ESMP monitoring arrangements

The BFL focal person and RO Haa will closely monitor the implementation of all planned activities and the required mitigation measures and ensure that they fully comply with this ESMP and with the terms and conditions included in the environment clearances issued by RGoB's national authorities. BC-01 is also fully responsible for the compliance of all external contractors and service providers working in BC-01 with the safeguard requirements outlined in the ESMP. The means of verification will be done through a physical visit and reports.

The monitoring of activities under this ESMP will be carried out in the following manner:

6.1. Monitoring by implementing entities:

- Field monitoring – 1st quarter (constant monitoring till completion of work)
- Monthly reports prepared by implementing entities and submitted to ESS Officer or M& E Officer - July 2025 till completion

6.2. Monitoring by ESS consultants:

- One time field visits by ESS consultants – February 2026
- Quarterly reports by BFL focal to the PCU (M&E officer) – September 2025, APR-December 2025.
- Bi-annual reports by PCU (M&E officer) to Secretariat- July 15, 2025, January 15, 2026
- Bi-annual reports by the Secretariat to WWF US (as part of mid-year and final APRs)- July 30, 2025, January 30, 2026.

7. Capacity Need and Budget

The budget for each of the activities is:

- Construction of Haa Range cum 3 FMU office: Nu.10.00m
- Shaba Nursery Management (maintenance): Nu. 0.06 m
- Consultation of ESMP: Nu. 0.10 m for two meetings.

8. Consultation and Disclosure Mechanisms

This ESMP has been prepared based on ESS screening results and ESMP guidelines consultation with Section Heads, Range Officer and Staff to inform them regarding the planned project activity (i.e. construction of Haa Range cum FMU office) to solicit their opinions and enable them to question proposed mitigation measures. The main issues that were discussed during the consultation meeting were the obtaining of necessary clearance (forestry and environment clearance, administrative approval from the Dzongkhag), the potential impact and mitigation measures. The community and LG consultation will be carried out after the approval of ESMP and before the start of construction.

The detailed minutes of the consultation meeting will be kept as a requirement for this ESMP, along with a full list of participants (disaggregated by gender and age). The full English version of this ESMP, as well as an executive summary in Bhutanese, shall be disclosed on the website of MoENR, BFL and WWF-US GCF, Hard copies of the ESMP should also be available at the PA Management Office and the PCU Office.

9. Stakeholder engagement plan

The local community that resides in the vicinity of the project activities will be engaged throughout the implementation of the activities. The consultation meeting will be conducted with the community and LG. The consultation meeting will commence before the start of construction in July 2025 and subsequent consultations will be held annually for both activities. The BFL focal person and RO Haa must submit the official minutes of consultation meetings (along with a list of participants, disaggregated by gender and age) to ESS consultants within one week after the completion of the consultation. The BFL Focal Officer will submit the consultation reports to the PCU (M&E officer) one week after their receipt. The PCU (M&E officer) will report to the Secretariat on an annual basis.

10. Grievance Redressal Mechanisms

This ESMP and its mitigation measures are required to be disclosed to communities 30 days before the start of implementation of activities.

In addition, the BFL focal point is responsible for making local communities aware of the grievance mechanisms: the BFL-specific grievance mechanism, WWF's Grievance Mechanism, and the GCF Independent Review Mechanism.

10.1. BFL-specific Grievance Mechanism

A grievance redressal mechanism (GRM) is in place to address any grievances arising from the implementation of BFL activities, on resources, non-performances of project obligation including safeguards, violation of law and/or corruption, project governance and implementation, fair access and benefit sharing, stakeholder engagement, labor-related issues and incidents, gender related issues and others.

If the stakeholders have any grievances related to the BLF project, they can report their grievances via letter, phone call or verbally to nearby gewog or forest offices. The report can also be sent to the BFL PCU office or WWF office. The specific brochure for the GRM is attached to the annexure for any grievance related to the implementation of the project activities.

10.2. WWF Grievance Mechanism

A grievance can be filed with the Project Complaints Officer (PCO), a WWF staff member fully independent from the Project Team, who is responsible for the WWF Grievance Mechanism and who can be reached at:

Email: SafeguardsComplaint@wwfus.org

Mailing address: Project Complaints Officer, Safeguards Complaints, World Wildlife Fund, 1250 24th Street NW, Washington, DC 20037.

Stakeholders may also submit a complaint online through an independent third-party platform at <https://secure.ethicspoint.com/domain/media/en/gui/59041/index.html>.

10.3. GCF Independent Review Mechanism

The Independent Review Mechanism (IRM) provides recourse to those affected or who may be affected by GCF projects. Complainants can find information on filing a complaint and proceed to file a complaint on the GCF IRM website: <https://irm.greenclimate.fund/case-register/file-complaint>.

Annexure 1: GRM for DFO, Paro



HOW TO FILE YOUR COMPLAINT

To file your complaint, please contact any of the designated individuals provided below. You may maintain anonymity if you prefer.

HEAD OFFICE

- Chief Forestry Officer
- 17939275
- namgay@moenr.gov.bt
- Divisional Forest Office, Paro

PARO RANGE OFFICE

- Kezang Dorji
- 17619872
- lopdrimpon2021@gmail.com
- Range Office, Paro

JITSEPHU BEAT OFFICE

- Dorji Gyeltshen
- 17656247
- gyeltshendorji007@gmail.com
- Beat Office, Jitsephu, Paro

YOU MAY ALSO CONTACT THE BFL PROJECT COORDINATION UNIT (PCU) OR FUND SECRETARIAT (FS) AT:

BFL FUND SECRETARIAT (FS)

- Kuenzang Tobgay
- 17750414
- kuenzangtobgay@bfl.org.bt
- Bhutan For Life Fund Secretariat, Royal Textile Academy, Thimphu

BFL PROJECT COORDINATION UNIT (PCU)

- Ugyen Dechen
- 17491881
- ugyendeichen@gmail.com
- BFL Project Coordination Unit, Department of Forests and Park Services, Ministry of Energy and Natural Resources, Thimphu

IF THE NATIONAL PROCESS OF GRM IS UNABLE TO RESOLVE THE GRIEVANCE, COMPLAINTS MAY ALSO BE FILED WITH WORLD WILDLIFE FUND (WWF).

Write to the WWF GCF Accredited entity at:
SafeguardsComplaint@wwfus.org
Project Complaints Officer, Safeguards Complaints,
World Wildlife Fund 1250 24th Street NW
Washington, DC 20037

COMPLAINTS MAY ALSO BE FILED WITH GCF INDEPENDENT REDRESS MECHANISM (IRM) OPTION. COMPLAINT CAN BE FILED BY:

- Sending it by mail or email at irm@gcfund.org
- Sending a voice or video recording
- Filling out the online complaints form available at:

<https://gcf.isight.com/external/case/new/group=Complaint>

A complaint for IRM should generally include:

- Name, address and contact information
- A description of the programme (caused adverse impacts to the complainant)
- A description of how the complainants have been/maybe adversely impacted by the project/programme
- Whether confidentiality is being requested and the reasons for it.

COMPLAINTS MAY ALSO BE FILED WITH THE WWF THIRD PARTY GRIEVANCE REPORTING MECHANISM BY USING ETHICS POINT WEBSITE AT:

<https://secure.ethicspoint.com/domain/media/en/gui/59041/index.html>

This mechanism can receive reports online or by phone in multiple languages.

IF YOU ARE UNSATISFIED WITH THE COMPLAINT RESOLUTION PROCESS, YOU CAN APPEAL TO:

GRM Appeal Committee, Bhutan For Life Project, DoFPS, Thimphu, Bhutan.

General Facility Design and Operation

Integrity of Workplace Structures

Permanent and recurrent places of work should be designed and equipped to protect occupational health and safety:

- Surfaces, structures and installations should be easy to clean and maintain and not allow for accumulation of hazardous compounds.
- Buildings should be structurally safe, provide appropriate protection against the climatic conditions, and have acceptable light and noise conditions.
- Fire resistant, noise-absorbing materials should, to the extent feasible, be used for cladding on ceilings and walls.
- Floors should be level, even, and non-skid.
- Heavy oscillating, rotating or alternating equipment should be in dedicated buildings or structurally isolated sections.

Severe Weather and Facility Shutdown

- Workplace structures should be designed and constructed to withstand the expected elements for the region and have an area designated for safe refuge (e.g., in case of earthquake).

Workspace and Exit

- The space provided for each worker, and in total, should be adequate for safe execution of all activities, including transport and interim storage of materials and products.

Fire Precautions

The workplace should be designed to prevent the start of fires. Other essential measures include:

- The workplace shall be provided with adequate means of protection and escape in case of fire.
- The workplace shall be provided with an adequate number of relevant fire extinguishers.
- Workers shall wear shoes without iron or steel nails or any other exposed ferrous materials which are likely to cause sparks by friction.
- Smoking, lightning, or carrying matches, lighters or smoking materials shall be prohibited within and around the construction sites.

All other precautions, as are reasonably practicable, shall be taken to prevent initiation of ignition from all other possible sources such as open flames, frictional sparks, overheated surfaces of machinery or plant, chemical or physical, chemical reaction and radiant heat.

- At every workplace adequate provision of water supply for firefighting shall be provided and maintained.
- Facilities shall be equipped with firefighting equipment (e.g., fire extinguishing bottles). The equipment should be maintained in good working order and be readily accessible. It should be adequate for the dimensions and use of the premises, equipment installed, physical and chemical properties of substances present, and the maximum number of people present.
- Manual firefighting equipment shall be easily accessible and simple to use.
- Fire extinguishers and emergency alarm systems that are both audible and visible should be in place.
- Fire exits should be identified and marked in Dzongkha and English- all workers should be made aware of the fire exits.

Lavatories and Showers

- Adequate lavatory facilities (toilets and washing areas) should be provided for the number of people expected to work in the facility (one for at least one for every 20 workers). Toilet

facilities should also be provided with adequate supplies of water and soap and also be connected to a sewerage system.

Potable Water Supply

- Adequate supplies of clean drinking water should be provided to workers at the work site.

Clean Eating Area

- Where there is potential for exposure to poisonous substances by ingestion, suitable arrangements are to be made for the provision of clean eating areas where workers are not exposed to hazardous or noxious substances.

Lighting

- Workplace should receive adequate natural light and if required supplemented with artificial illumination to promote worker's safety and enable safe equipment operation.
- Emergency lighting of adequate intensity should be provided in case of failure of the powerline.

Safe Access

- Passageways for pedestrians and vehicles within and outside buildings should be segregated and provide for easy, safe, and appropriate access.
- Equipment and installations requiring service, inspection, and/or cleaning should have unobstructed, unrestricted, and ready access.
- Covers need to be provided wherever necessary, if there is risk of falling of overhead object.
- Measures to prevent unauthorized access to dangerous areas should be in place.

First Aid

- The employer should ensure that qualified first-aid can be always provided. Enough first aid boxes or cupboards shall be provided and maintained so as to be readily available during all working hours, provided that the distance of the nearest first aid box or a cupboard shall be not more than 200m from any working place.
- First aid kits include all equipment outlined in Annex 1 to these Guidelines.
 - Each first aid box or a cupboard shall be distinctly marked "FIRST AID"

Air Supply

- Workplace should have adequate ventilation for fresh air

2.Information Provision on Occupational Health and Safety (OHS)

2. The Contractor is responsible to hold an information session to familiarize all workers with the OHS procedures specified in these guidelines, to ensure they are apprised of the basic site rules of work at / on the site and of personal protection and preventing injury to fellow workers.
3. The information session should consist of basic hazard awareness, site-specific hazards, safe work practices, and emergency procedures for fire, evacuation, and natural disaster, as appropriate. Any site-specific hazard or color coding in use should be thoroughly reviewed as part of orientation training.

3. Physical Hazards

Physical hazards represent potential for accidents or injury or illness due to repetitive exposure to mechanical action or work activity.

Rotating and Moving Equipment

Injury or death can occur from being trapped, entangled, or struck by machinery parts due to unexpected starting of equipment or unobvious movement during operations. Recommended protective measures include:

- Designing machines to eliminate trap hazards and ensuring that extremities are kept out of harm's way under normal operating conditions. Examples of proper design considerations include two-hand operated machines to prevent amputations, or the availability of emergency stops dedicated to the machine and placed in strategic locations.
- Where a machine or equipment has an exposed moving part or exposed pinch point that may endanger the safety of any worker, the machine or equipment should be equipped with, and protected by, a guard or other device that prevents access to the moving part or pinch point. Guards should be designed and installed in conformance with appropriate machine safety standards.

Noise

- No worker should be exposed to a noise level greater than 90 dB(A) for a duration of more than 8 hours per day without wearing ear plugs/earmuffs.
- Exposures to impulsive or impact noise shall not exceed 140dB(A).
- For every 3 dB(A) increase in sound levels from the permissible limit of noise, the 'allowed' exposure period or duration should be reduced by 50 percent.
- Where it is not practicable to reduce the noise, the employer must limit the duration of time persons employed or working in the workplace are exposed to the noise so that such persons are not exposed to excessive noise.
- Prior to the issuance of hearing protective devices as the final control mechanism, use of acoustic insulating materials, isolation of the noise source, and other engineering controls should be investigated and implemented, where feasible.
- Periodic medical hearing checks should be performed on workers exposed to high noise levels.

Vibration

In any workplace where people are at work in any process or operation which involves exposure to vibration which may constitute a risk to their health, it shall be the duty of the employer to provide, so far as is reasonably practicable, effective means to reduce the vibration.

Electrical

Exposed or faulty electrical devices, such as circuit breakers, panels, cables, cords and hand tools, can pose a serious risk to workers. Overhead wires can be struck by metal devices, such as poles or ladders, and by vehicles with metal booms. Vehicles or grounded metal objects brought into close proximity with overhead wires can result in arcing between the wires and the object, without actual contact. Recommended actions include:

- Marking all energized electrical devices and lines with warning signs
- Locking out (de-charging and leaving open with a controlled locking device) and tagging out (warning sign placed on the lock) devices during service or maintenance
- Checking all electrical cords, cables, and hand power tools for frayed or exposed cords and following manufacturer recommendations for maximum permitted operating voltage of the portable hand tools

- Double insulating / grounding all electrical equipment used in environments that are, or may become, wet; using equipment with ground fault interrupter (GFI) protected circuits
- Protecting power cords and extension cords against damage from traffic by shielding or suspending above traffic areas
- Appropriate labeling of service rooms housing high voltage equipment (electrical hazards) and where entry is controlled or prohibited
- Establishing “No Approach” zones around or under high voltage power lines
- Conducting detailed identification and marking of all buried electrical wiring prior to any excavation work
- Every person who is working on an electric supply line or apparatus or both shall be provided with tools and devices such as gloves, rubber shoes, and safety belts, ladders, earthing devices, helmets, line testers, hand lines whichever is relevant for protecting him/her from mechanical and electrical injury.

Eye Hazards

Solid particles from a wide variety of industrial operations, and/or a liquid chemical spray may strike a worker in the eye causing an eye injury or permanent blindness. Recommended measures include:

- Use of machine guards or splash shields and/or face and eye protection devices, such as safety glasses with side shields, goggles, and/or a full-face shield. Frequent checks of these types of equipment prior to use to ensure mechanical integrity is also good practice.
- Where machine or work fragments could present a hazard to transient workers or passers-by, extra area guarding or proximity restricting systems should be implemented, or PPE required for transients and visitors.

Welding / Hot Work

Welding creates an extremely bright and intense light that may seriously injure a worker’s eyesight. In extreme cases, blindness may result. Additionally, welding may produce noxious fumes to which prolonged exposure can cause serious chronic diseases. Recommended measures include:

- Provision of proper eye protection such as welder goggles and/or a full-face eye shield for all personnel involved in, or assisting, welding operations. Additional methods may include the use of welding barrier screens around the specific workstation.

Working Environment Temperature

Exposure to hot or cold working conditions in indoor or outdoor environments can result temperature stress-related injury or death. Use of personal protective equipment (PPE) to protect against other occupational hazards can accentuate and aggravate heat-related illnesses. Extreme temperatures in permanent work environments should be avoided through implementation of engineering controls and ventilation. Where this is not possible, such as during short-term outdoor work, temperature-related stress management procedures should be implemented which include:

- Monitoring weather forecasts for outdoor work to provide advance warning of extreme weather and scheduling work accordingly
- Providing temporary shelters to protect against the elements during working activities or for use as rest areas
- Use of protective clothing
- Providing easy access to adequate hydration such as drinking water or electrolyte drinks.

Ergonomics, Repetitive Motion, Manual Handling

Injuries due to ergonomic factors, such as repetitive motion, overexertion, and manual handling, take prolonged and repeated exposures to develop, and typically require periods of weeks to months for recovery. These OHS problems should be minimized or eliminated to maintain a productive workplace. Controls may include:

- Use of mechanical assists to eliminate or reduce exertions required to lift materials, hold tools and work objects, and requiring multi-person lifts if weights exceed thresholds (adult man-50kg, adult female-25kg)
- Selecting and designing tools that reduce force requirements and holding times, and improve postures
- Incorporating rest and stretch breaks into work processes, and conducting job rotation
- Implementing quality control and maintenance programs that reduce unnecessary forces and exertions

Working at Heights

Fall prevention and protection measures should be implemented whenever a worker is exposed to the hazard of falling more than two meters; into operating machinery; into water or other liquid; into hazardous substances; or through an opening in a work surface. Fall prevention / protection measures may also be warranted on a case-specific basis when there are risks of falling from lesser heights. Fall prevention may include:

- Installation of guardrails with mid-rails and toe boards at the edge of any fall hazard area
- Proper use of ladders and scaffolds by trained workers
- Use of fall prevention devices, including safety belt and lanyard travel limiting devices to prevent access to fall hazard areas, or fall protection devices such as full body harnesses used in conjunction with shock absorbing lanyards or self-retracting inertial fall arrest devices attached to fixed anchor point or horizontal lifelines

Appropriate training in use, serviceability, and integrity of the necessary PPE

- Inclusion of rescue and/or recovery plans, and equipment to respond to workers after an arrest fall

Illumination

Work area light intensity should be adequate for the general purpose of the location and type of activity, and should be supplemented with dedicated workstation illumination, as needed. Controls should include:

- Use of energy efficient light sources with minimum heat emission
- Undertaking measures to eliminate glare / reflections and flickering of lights
- Taking precautions to minimize and control optical radiation including direct sunlight.
- Exposure to high intensity UV and IR radiation and high intensity visible light should also be controlled
- Controlling laser hazards in accordance with equipment specifications, certifications, and recognized safety standards. The lowest feasible class Laser should be applied to minimize risks.

4. Personal safety equipment for workers

All workers are equipped with the following personal safety equipment: helmet, gloves, ordinary boots and reflective vest.

Workers that are exposed to dust should also be provided with eye protection glasses and face masks. Workers that are exposed to noise should be provided with ear plugs. Workers that need to work in the dark should be provided with hand and cap lamps.

Workers are instructed regarding safety equipment as follows:

- Always wear complete set of protective wear.
- Do not wear loose clothing, such as an overhang shirt, jackets, mufflers etc.
- Tuck shirt and jacket well.
- Secure helmet with a belt under the chin.
- Tuck the bottom sleeves of the trousers inside the safety boot.
- Dress with reflector

5. Standards for workers' accommodation²

1. General living facilities

- The location of the facilities is designed to avoid flooding or other natural hazards
- The living facilities are located within a reasonable distance from the worksite.
- Transport is provided to the worksite safe and free if the accommodation is reasonably far from the worksite.
- The living facilities are built using adequate materials, kept in good repair and kept clean and free from waste and refuse.

2. Drainage

- The site is adequately drained.

Heating, air conditioning, ventilation and light

- Living facilities are provided with adequate heating, ventilation, and light systems including emergency lighting.

4. Water

- Workers have easy access to a supply of clean/potable water in adequate quantities.
- The quality of the water complies with national/local requirements and is regularly monitored.
- Tanks used for the storage of drinking water are constructed and covered to prevent water stored therein from becoming polluted or contaminated.
- The quality of the drinking water

5. Wastewater and solid waste

- Wastewater, sewage, food and any other waste materials are adequately discharged in compliance with national and/or international standards and without causing any significant impacts on camp residents, the environment or surrounding communities.
- Specific containers for waste collection are provided and emptied on a regular basis.

6. Rooms/dormitories facilities

- Rooms/dormitories are kept in good condition. They are aired and cleaned at regular intervals.
- Rooms/dormitories are built with easily cleanable flooring material.
- Rooms/dormitories and sanitary facilities are located in the same buildings.
- Residents are provided with enough space.
- The number of workers sharing the same room/dormitory is minimized.
- Doors and windows are lockable and provided with mosquito screens when necessary.
- Separate sleeping areas are provided for men and women.
- A separate bed is provided for every worker and use of double deck bunks is minimized.
- Workers are provided with comfortable mattresses. Workers may be expected to use their own pillows and bed linens.
- Adequate facilities for the storage of personal belongings are provided.

- Separate storages for work clothes and PPE and depending on condition, drying/airing areas are provided.

8. Sanitary and toilet facilities

- Sanitary and toilet facilities are constructed from materials that are easily cleanable.
- Sanitary and toilet facilities are cleaned frequently and kept in working condition.
- Toilets, showers/bathrooms and other sanitary facilities are designed to provide workers with adequate privacy including ceiling to floor partitions and lockable doors.
- Separate sanitary and toilet facilities are provided for men and women.
- Toilet and shower facilities are conveniently located and easily accessible.
- Toilet facilities are environmentally friendly (e.g., pit toilet) and sewage is not disposed into the worksite.
- Open defecation in the vicinity of project sites should be prohibited.
- An adequate number of handwashing basins and showers/bathrooms facilities are provided.

9. Cooking and laundry facilities

Cooking and laundry facilities should be available for workers at the worksite or in close vicinity to it. These facilities should be kept in clean and sanitary conditions.

Annex 1. Contents of first aid box or cupboards

The first aid boxes or cupboards shall be distinctively marked with white cross on a green background and shall contain the following equipment:

1. Small sterilized dressings (12)
2. Medium size sterilized dressings (6)
3. Large size sterilized dressings (6)
4. Large size sterilized burn dressings (6)
5. (1/2 oz.) Sterilized cotton wool (6 packets)
6. (2oz.) Bottle containing a two per cent alcoholic solution of iodine (1)
7. (2oz.) Bottle containing Betadine (antiseptic solution) having the dose and mode of administration indicated on the label (1)
8. Roll of adhesive plaster (1)
9. A snake bite lancet (1)
10. Torch light (1)
11. Pair of scissors (1)
12. Tablets Aspirin (5gms) 2 dozen
13. Burn Ointment (2 tubes)
14. Dettol (2 phial, about 2 ozs)
15. Bandages 4 inches wide
16. Bandages 2 inches wide
17. Triangular bandages (2)
18. Packets of safety pins (1)

