Bhutan for Life
Environmental and Social Management Plan for Wangchuck Centennial National Park
(2022)

1. Introduction

(A) Project Background

The Bhutan for Life (BFL) project aims to ensure a robust network of protected areas and biological corridors that secures human well-being, biodiversity conservation and increase climate resilience in Bhutan. The project provides a 14-year financial bridge that allows for immediate improvement in the management of Bhutan's protected areas for climate resilience, and the prompt delivery of mitigation, adaptation and biodiversity gains, while the country gradually ratchets up its own 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;
- Strengthen organizational, institutional, and financial capacity for effective management of PAs.

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

(B) Scope of ESMP

The preparation of this Environmental and Social Management Plan (ESMP) was required in order to manage the environmental and social impacts through and specific mitigation actions required to implement the project in accordance with 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. The ESMP's primary purpose is to ensure that the environmental requirements and social commitments associated with the project are carried forward into 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 in accordance with the relevant RGoB Laws and WWF's safeguard operational policies and guidelines;
- Preventing environmental degradation as a result 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.
- This ESMP is developed by following the guidelines as set forth in the BFL's ESMF.

(D) Applicable law, policies, and regulations

This ESMP is developed in strict adherence and compliance to the guidelines set forth in 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; 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); and Local Government Act of Bhutan, 2009.

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
- General standards on occupational and community health and safety and energy efficiency.

In general, RGoB's laws, policies, and guidelines are in line with the WWF's environmental and social safeguards requirements. However, there are a few differences between the two systems. With regard to environmental impacts, there are no direct contradictions between the RGoB laws and regulations and the WWF's SIPP, but the requirements of the latter are more extensive. All project activities should fully comply both with the RGoB's Regulations on the Environmental Clearance of Projects and with the procedures and mitigation measures prescribed in this ESMF. In case that the WWF's SIPP requirements are more extensive, strict, 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 the 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 the WWF's SIPP, all users of land and natural resources (including people that 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, the WWF's SIPP require 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 purposes of 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:

Located in northern central region of the country spread over 4914 sq.km, it is the largest protected area of the country. It covers the northern frontiers and the central part of the country. There are nine *gewogs* of five different *Dzongkhags* (Gasa, Wangduephodrang, Trongsa, Bumthang and Lhuentse), which falls wholly or partly under the park's jurisdiction. It has around 860 households with more than 7300 residents inside the park. Majority of the Park residents depend on farming for their livelihoods and there are some communities (communities in highland areas), whose livelihood is solely depended on the *Cordyceps* and livestock rearing. With low-lying valleys to the snowcapped peaks, altitude of the Park ranges from 1390m to over 7500 meters above sea level. The Park has rich biodiversity and it is home to 693 species of vascular plants, 43 mammal species, 250 birds and 246 species of butterflies. The fauna list includes some of iconic species such as Tiger (*Panthera tigris tigris*), Snow leopard (*P. uncia*), Tibetan wolf (*Canis lupus*), Bhutan takin (*Budorcus taxicolor whitei*), Himalayan black bear (*Ursus thibetanus*), Himalayan musk deer (*Moschus chrysogaster*)and Red panda (*Ailurus fulgens*) as captured in Figure 1.

Figure 1: Some of the endangered and vulnerable mammals of the park

There is considerable seasonal and local variation in climatic conditions in the park, largely attributable to the latitudinal and altitudinal range, and the mountainous terrain. At more than

27^0 N of the equator, the park is north of the Tropic of Cancer, and thus in temperate realm. It is therefore influenced by seasonal changes. The complex mountainous terrain also contributes to local variation in climate, such as warmer and moister conditions in the southern river valleys and colder, drier conditions in the high elevations. Thus, the variation in altitude and rainfall also creates extremely variability in climate. The southwest monsoon rains from June to September contributes most of the annual rainfall in the park. The park is source to several streams and rivers which are very crucial for downstream areas.

3. Planned activities in Year 2023

Activity 1: Maintenance of staff quarter at Sephu Park Range

a. Budget: Nu. **435342.97**

b. Timeline: January to June 2022

c. Location: Drubseyding, Saephu gewog under Wangdue Phodrang dzongkhag

The park has one range office established under Saephu gewog at Drubseyding and there is one office building and one two unit staff quarter. The office was established to cater services to the park residents of Saephu, Dangchu and Nubi gewogs and conduct conservation activities, patrolling and monitoring in the park jurisdiction. Presently the range office is manned with eight forestry staff including the Range Officer.

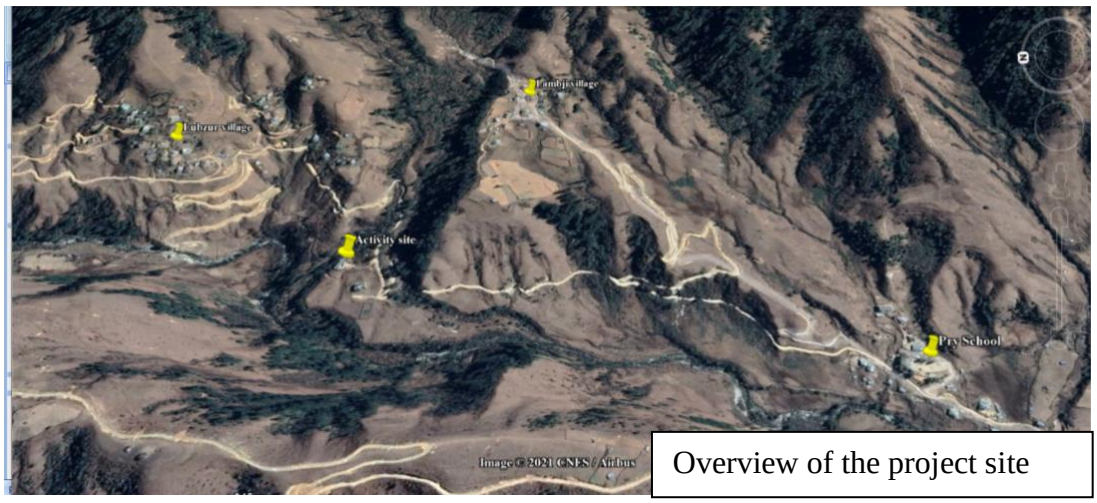
The two unit staff quarter was constructed in financial year 2012 to 2013 and it is occupied by two staff at present. Since then no maintenance were executed, further no panelling was done during the initial construction. Now the walls have started to break and cracks have developed which allows free inflow of air causing problem to the staff living there especially during harsh winter. Maintenance of plumbing and other civil and electrical works are also required for the office.

The proposed activity is within the compound of the range office and further it is meant to improve the staff quarter by providing wooden paneling for rooms and other improvement work to provide conducive accommodation to the staff dwelling in the quarter. Ultimately it aimed to strengthen the effectiveness and efficiency of staff in public service delivery and conservation efforts by providing a sound working environment. The project site is within the well fenced compound of the range office and there are no households in the site except for our two staff dwelling the quarter. The nearest villages in the vicinity of the project site are Lubzur and Lambji which are approximately 1000 metres away by road. The proposed project activity won't have adverse impact to the communities; it would rather enhance the

service delivery. The range office is located on the gentle slope. The project activity do not involve earth excavation or felling of trees as the main required resource is prefabricated panelling, which would be procured from local market. Approximately 5-7 local workers will be employed for the work and they will work on daily wage basis. They will commute from their house daily and will have their own packed lunch.

The main activities of the project are;

- Fixing and providing of prefabricated wall panelling with nails in all the rooms
- Fixing and providing plywood lining
- Application of wood stains varnishes and polish



Overview of the project site

Staff quarter proposed for maintenance

Potential social and environmental impacts of the activity are:

The proposed activity would have impact on social front rather would benefit communities through hire of labour on daily wage. There will be very minimal impact on environment during the implementation of activity. Following are some of the impacts, however, all can be easily managed.

- Solid waste generation at site by labourers
- Noise production
- Health hazard to workers

Activity 2. Construction of river bank protection wall at Tandingang

Budget: Nu. 2.20

Timeline: January to June 2022

Location: Tandingang, Tang, Bumthang dzongkhag

Community of Tandingang has been using current site to commute people and cattle since their ancestral period. In the recent years there was flash flood and the bridge was washed away. People have constructed wooden bridge, but again the river started eroding the base and embankment of the bridge and it may wash away the bridge during monsoon season.

The proposed activity will be executed within short stretch of river to prevent further eroding of bank during the monsoon season. There is a traditional bridge built by the communities. The bridge is the main passage for the people of Tandingang (20 households) to the agricultural field on the other side of the river. People also use the bridge for cattle passage to pasture land on almost daily basis. During the summer when river wash away the base of bridge and at times change the course slightly causing problem and even posing risk to the people and livestock. There is also one main access point of the popularly known phabila trek in Bumthang. The treks used to be frequently used by international tourists (trekkers) and local people of Tang and Chokhortoe.

The proposed site is situated on a gentle slope very close to the confluence of the river (Machhu) and a stream. On the left side of the site there is mixed conifer forest and the area is used as the worship place of their local deity. Along the left bank few poplar and willow trees with some shrub species are available.

After completion of the proposed activity, the local people will be benefited with secure bridge and reduced risk of river diversion to field during the rainy seasons. With base and the

flanks of bridge reinforced and protected people will have regular access to their field, grazing areas, and other resources from the forest.

As the proposed activity will benefit the community, they are willing to take up the work on community contact by themselves to ensure timely completion and also the work quality. Approximately 20 people will be engaged at the work site for completion of work which may take few weeks. The site is located nearby the village (approximately 400 to 500 m) so the workers will commute for work from their respective home use the water resource from the nearby river.

There will be chairman and other committee members to monitor the work at site who will also oversee the safety measures and waste management. Further, Officials from Gewog Administration and the park management will visit site to monitor the work and ensure safety measures and proper waste management at site.

Regarding the restriction of access during construction, in dry season livestock and people can cross the stream. therefore, there won't be much restriction of access. if required there is alternative route located around 1.5 kilometres upstream from the construction site.

The main activities of the project are;

- Collection of stone/boulder
- Construction of gabion wall on either side of the stream.

Overview of project site

Ground situation at the proposed site

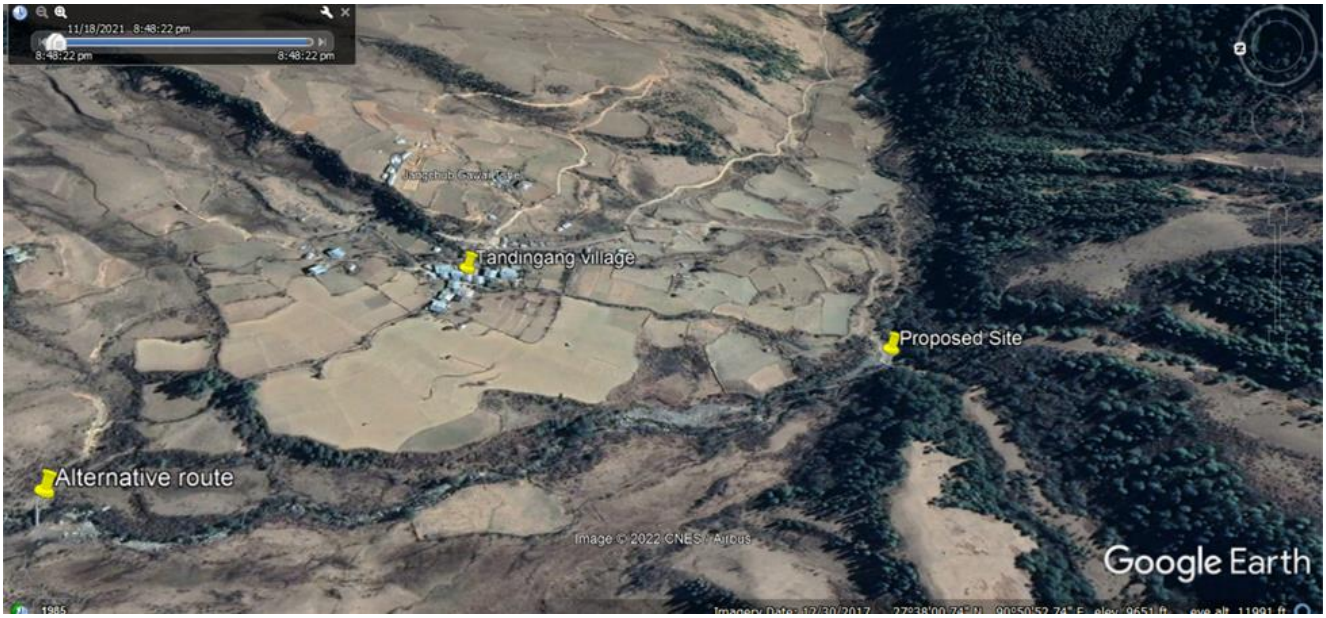


Figure showing the alternative route for the commuters (if need be)

Potential social and environmental impacts of the activity are:

The project activity will be implemented by beneficiary community; therefore, there shall be no social impact. As there are no proposed activities like earth excavation or use of heavy machineries impact on environment would be very less.

4. Mitigation Measures for Environmental and Social Impacts

Potential impact	Impact scale	Proposed mitigation measures	Responsible Party	Costs (million)
Activity 1: Maintenance of staff quarter at Sephu range				**Nu. 0.43**
Worker's health and safety including precautions related to COVID-19	Short term minor	• Follow the workers' health and safety guidelines as attached to the ESMP (BFL guidelines). • Ensure regular health screening for the workers pre and during activities • Ensure that no underage workers, or children are engaged. • Decent work conditions, including an appropriate salary, working hours, accommodation and food for workers shall be provided to all workers. • 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, job assignment, termination of employment or retirement, and disciplinary practices. • A grievance mechanism for workers to raise work place concerns should be in place. • Follow Covid safety protocols circulated by Ministry of Health (MoH).	Range officer Contractor Project focal	
Generation of waste as result of construction	Short term minor	• Identification and segregation of the different waste types at the project site.	Range officer Contractor	

activities		• 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; • Collection, transportation and final disposal of all waste will be undertaken regularly	Project focal	
Noise disturbance: Possible noise disturbance while fixing prefabricated panelling.	Short term minor	• The construction work will not be permitted during the nights, the operations on site shall be restricted to working hours	Range officer Contractor Project focal	
Activity 2: Construction of river bank protection wall at Tandingang, Tang				**Nu. 0.220**
Worker's health and safety	Short term minor	• Follow the workers' health and safety guidelines as attached to the ESMP (BFL guidelines). • Ensure regular health screening for the workers pre and during activities • Ensure that no underage workers, or children are engaged. • Decent work conditions, including an appropriate salary, working hours, accommodation and food for workers shall be provided to all workers. • 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, job assignment, termination of employment or retirement, and disciplinary practices.	Community leader Project focal	

		• A grievance mechanism for workers to raise work place concerns should be in place. • Follow Covid safety protocols circulated by Ministry of Health (MoH).		
Generation of waste as result of construction activities	Short term minor	• Identification and segregation of the different waste types at the project site. • 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; • Collection, transportation and final disposal of all waste will be undertaken regularly		NA

5. ESMP Implementation Arrangements

The BFL focal person in WCNP will carry out the implementation of project activities under its supervision. The park management and the project focal person will be responsible for the compliance of all procedures outlined in this ESMP, as well as compliance with any requirements to obtain clearances, 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 WCNP in 2022. The Contractor/Worker is obligated 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 start of activities, all developed EHS plans, etc.). The Contractor should organize an OHS information session for all workers prior to the start the project activities and prior any specific tasks with high health risks.

The WCNP supervising Engineer should monitor the implementation of proposed measures by the Contractor and site managers 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 any non- compliances should be reported to the ESS officer immediately, and the ESS officer will report it to the PCU (M&E Officer). Each non-compliance to the guidelines should be resolved with appropriate measures and the evidence should be maintained.

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

6. ESMP Monitoring Arrangements

The BFL focal person of the Wangchuck Centennial National Park in collaboration with concern range officers will closely monitor the implementation of all planned activities and the required mitigation measures, and ensure that they fully comply with this ESMP. The terms and conditions included in the environment clearances issued by RGoB's national authorities wherever and whenever required must be strictly followed. WCNP is also fully responsible for the compliance of all external contractors and service providers working in the WCNP with the safeguards requirements outlined in the

Protocol for monitoring of activities under this ESMP will be carried out as follow;

Sl#	Activities	Monitoring team	Timeline		Location	Means of Verification
			Start	Complete		
1	Maintenance of staff quarter at Sephu range	Field Focal	February, 2022	April, 2022	Sephu	Field visits
		ESS focal	March, 2022	April, 2022		Reports and field visits
2.	Construction of river bank protection wall at Tandingang	Field Focal	January 2022	April, 2022	Tandingang	Field visits
		ESS focal	February, 2022	April, 2022		Reports from field focal and visits

Activity 1: Maintenance of staff quarter at Sephu

Monitoring by implementing entities:

- The range Officer will be at site most of the time
- Field visits at least twice by the project focal—during the intervention and within three months after the intervention
- Reports by the implementing entities submitted to ESS officer within a week after each field visit

Monitoring by ESS officer at PCU:

- Monitoring through photographic/video evidence submitted by the IAs during the implementation as per the given dateline in the table above.
- Reports by ESS officer to BFL Fund Secretariat – Annual report submitted to the BFL Fund Secretariat in January, 2023.
- Bi-annual reports of the Secretariat to WWF US (as part of mid-year and final APRs)

Activity 2: Construction of river bank protection wall at Tandingang.

Monitoring by implementing entities:

- Field visits—at least weekly
- Monthly reports by the implementing entities submitted to ESS officer

Monitoring by ESS officer at PCU:

a. Field monitoring by ESS officer – monitoring of the work once during the implementation and through field report from IAs after completion of the work.
b. Reports by ESS officer to BFL Fund Secretariat – Annual report submitted to the BFL Fund Secretariat in January, 2023.

Bi-annual reports of the Secretariat to WWF US (as part of mid-year and final APRs)

7. Capacity Need and Budget

Activities under this ESMP will be implemented by the BFL focal person, supervising engineer/staff, and a contractor that will employ workers as mentioned in the contract agreement.

- *The budget for each of the activities is: (last section)*

Sl#	Activity	Amount (Nu.)	Budget for ESS mitigation
1	Maintenance of staff quarter at Sephu	435342.00	Will be met from the activity cost.
2	Construction of river bank protection wall	220000.00	
Total		**455342.00**	

The proposed activities are of very small scale and do not involve huge construction and use of heavy machineries and equipment there no adverse social and environmental impacts which require mitigation measures. Therefore, separate fund for mitigation measures is not proposed.

8. Consultation and Disclosure Mechanisms

Maintenance of staff quarter at Sephu was discussed with the range officer and other staff working in the range. The need for the proposed activity was brought to the management by the Range Officer therefore further consultation for this activity is not required. Consultation with the local communities may not be required for this activity as there will be no impact to them. The work will be awarded to the contractors as per the provisions of procurement rules.

Construction of river bank protection wall at Tandingang under Tang geog of Bumthang dzongkhag was discussed with village headman (tshogpa) and Gup prior to site identification. Before the execution of the work consultation on work awarding and working modalities will be discussed with the people of Tandingang. The consultation will be conducted in month of January 2022 with people and Gewog administration.

The detailed minutes of the consultation meeting/ official correspondences 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/uploaded on the website of MoAF, BFL and WWF, Bhutan Program. The hard copies of the ESMP would be made available at the PA Management Office and at the PCU Office.

9. Stakeholder Engagement Plan

In general the local communities who are near the planned BFL activities in WCNP will be engaged throughout the implementation of these activities. Even if we cannot involve them directly in our

activities, we would consult them informally and indirectly to know their point of views and suggestions. However, for activities like maintenance of staff quarter community and stakeholder consultation are not required as the work will be implemented in already existing structure.

The consultation meeting for construction of river bank protection will be held in the month of January 2022 with the Gewog administration and the Tandingang community.

The BFL focal person will submit the official minutes of consultation meetings (along with a list of participants- disaggregated by gender and age) to ESS focal within one week after the completion of the consultation. The ESS focal 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 a semi-annual basis.

Annexure I-

BFL: Suggested Occupational Health and Safety Standards

Employers and supervisors are obliged to implement all reasonable precautions to protect the health and safety of workers. Implementing entities should hire contractors that have the technical capability to manage the occupational health and safety issues of their workers, extending the application of the hazard management activities through formal procurement agreements.

This section provides guidance and examples of reasonable precautions to implement in managing principal risks to occupational health and safety. It is based on the IFC's Environmental, Health, and Safety Guidelines (April 30, 2007)[1] and the Occupational Health and Safety Guidelines of Bhutan's Construction Development Corporation Ltd., which relies on the national Regulation on Occupational Health, Safety and Welfare 2012, Regulation on Working Conditions 2012 and Labour Act 2007, and in compliance to Sl. No. 21 of Regulation on Occupational Health, Safety and Welfare 2012.

1. **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 climate, 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 located 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 through the implementation of fire codes applicable to industrial settings. 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 adequate number of relevant fire extinguishers.
- Workers shall wear shoes without iron or steel nails or any other exposed ferrous materials which is likely to cause sparks by friction.
- Smoking, lightening, or carrying of matches, lighters or smoking materials shall be prohibited.
- 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.
- Equipping facilities with firefighting equipment (e.g., fire extinguishing bottle). 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.

Lavatories and Showers

- Adequate lavatory facilities (toilets and washing areas) should be provided for the number of people expected to work in the facility (at least one for every 20 workers). Toilet facilities should also be provided with adequate supplies of hot and cold running water and soap.

Potable Water Supply

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

Clean Eating Area

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

Lighting

- Workplaces should, to the degree feasible, receive natural light and be supplemented with sufficient artificial illumination to promote workers' safety and health, and enable safe equipment operation. Supplemental 'task lighting' may be required where specific visual acuity requirements should be met.
- Emergency lighting of adequate intensity should be installed upon failure of the principal artificial light source to ensure safe shut-down, evacuation, etc.

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 servicing, inspection, and/or cleaning should have unobstructed, unrestricted, and ready access.
- Covers should, if feasible, be installed to protect against falling items.
- Measures to prevent unauthorized access to dangerous areas should be in place.

First Aid

- The employer should ensure that qualified first-aid can be provided at all times. A sufficient number of 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 stall be not more than 200m from any working place.
- First aid kits include all equipment outlined in Annex 1 to these Guidelines.
- Remote sites should have written emergency procedures in place for dealing with cases of trauma or serious illness up to the point at which patient care can be transferred to an appropriate medical facility.

Work Uniform

- The contractor shall provide a working uniform to each worker.
- All workers shall be required to attend the duty in proper uniform unless otherwise instructed by the Contractor.

Air Supply

- Sufficient fresh air should be supplied for indoor and confined workspaces. Factors to be considered in ventilation design include physical activity, substances in use, and process related emissions. Air distribution systems should be designed so as not to expose workers to draughts.
- Re-circulation of contaminated air is not acceptable. Heating, ventilation and air conditioning (HVAC) systems should be equipped, maintained and operated so as to prevent growth and spreading of disease agents (e.g. Legionnella pneumophilia) or breeding of vectors (e.g. mosquitoes and flies) of public health concern.

2. <u>Information Provision on</u> Occupational Health and Safety (OHS)

- The Contractor is responsible to hold an information session to familiarize all workers with the OHS procedures specified in these guidelines, in order 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.
- 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. <u>Physical Hazards</u>

Physical hazards represent potential for accident 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 85 dB(A) for a duration of more than 8 hours per day without hearing protection. In addition, no unprotected ear should be exposed to a peak sound pressure level (instantaneous) of more than 140 dB(C).
- The use of hearing protection should be enforced actively when the equivalent sound level over 8 hours reaches 85 dB(A), the peak sound levels reach 140 dB(C), or the average maximum sound level reaches 110dB(A). Hearing protective devices provided should be capable of reducing sound levels at the ear to at least 85 dB(A).
- Although hearing protection is preferred for any period of noise exposure in excess of 85 dB(A), an equivalent level of protection can be obtained, but less easily managed, by limiting the duration of noise exposure. For every 3 dB(A) increase in sound levels, the 'allowed' exposure period or duration should be reduced by 50 percent.
- 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

Exposure to hand-arm vibration from equipment such as hand and power tools, or whole-body vibrations from surfaces on which the worker stands or sits, should be controlled through choice of equipment, installation of vibration dampening pads or devices, and limiting the duration of exposure.

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 hazard') and where entry is controlled or prohibited
- Establishing "No Approach" zones around or under high voltage power lines

- Rubber tired construction or other vehicles that come into direct contact with, or arcing between, high voltage wires may need to be taken out of service for periods of 48 hours and have the tires replaced to prevent catastrophic tire and wheel assembly failure, potentially causing serious injury or death
- Conducting detailed identification and marking of all buried electrical wiring prior to any excavation work

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.
- Provisions should be made for persons who have to wear prescription glasses either through the use overglasses or prescription hardened glasses.

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 work station (a solid piece of light metal, canvas, or plywood designed to block welding light from others). Devices to extract and remove noxious fumes at the source may also be required.

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, and avoiding consumption of alcoholic beverages

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:

- Facility and workstation design with 5th to 95th percentile operational and maintenance workers in mind

- 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
- 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 area, 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 life-lines
- 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 arrested 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 work station 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 mask. 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 overhang shirt, jackets, mufflers etc.
- Tuck shirt and jacket well.
- Secure helmet with belt under the chin.
- Tuck the bottom sleeves of trouser inside safety boot.

- Dress with reflector

5. Standards for workers' accommodation[2]

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 worksite safe and free.
- The living facilities are built using adequate materials, kept in good repair and kept clean and free from rubbish and other refuse.

2. Drainage

- The site is adequately drained.

3. 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 or WHO standards.
- 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 is regularly monitored.

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 rubbish collection are provided and emptied on a regular basis.
- Pest extermination, vector control and disinfection are undertaken throughout the living facilities at least once.

6. Rooms/dormitories facilities

- Rooms/dormitories are kept in good condition.
- Rooms/dormitories 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.
- Mobile partitions or curtains are provided.
- Adequate number of furniture such as table, chair, mirror, and lamps are provided for all workers.
- Separate sleeping areas are provided for men and women.

7. Bed arrangements and storage facilities

- A separate bed is provided for every worker.

- The practice of “hot-bedding” is prohibited.
- There is a minimum space of 1 meter between beds.
- The use of double deck bunks is minimized.
- If double deck bunks are in use, there is enough clear space between the lower and upper bunk of the bed.
- Workers are provided with comfortable mattresses. Workers may be expected to use their own pillows and bed linens.
- Workers wash bed linen frequently and applied with adequate repellents and disinfectants (where conditions warrant).
- 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 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 hand wash basins and showers/bathrooms facilities are provided.
- Shower facilities are provided with water heating facilities.

9. Cooking and laundry facilities

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

10. Leisure, social and telecommunications facilities

- Basic social collective spaces should be available to workers.
- Workers are provided with dedicated places for religious observance, as appropriate.
- The employer provides workers with local sim cards that can be used for communication on their personal cell phones.

Contents of first aid box or cup-boards

The first aid boxes or cup-boards 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)
19. A supply of suitable splint