

Bhutan for Life

Environmental and Social Management Plan

for

Biological Corridor_7(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.

2. Environmental and Socio-Economic Conditions:

Geological and topographical conditions

Mongar Division looks after the conservation, protection and utilization of forest resources of two districts namely Mongar and Lhuntse. Two BCs were running separately in Lhuntse Dzongkhag; the North Corridor which connects Wangchuk Centennial National Park and Bumdeling Wildlife Sanctuary runs through Gangzur, Menbi and Minjey Geog was combined with BC 7 including Tsengkhar, Tsakaling and Tsamang Geog. Therefore, a revised Biological Corridor has been declared in the year 2020 and the area was increased to 419.66 square kilometre connecting three greater landscapes of Bumdeling Wildlife Sanctuary and Phrumsengla National Park and Wangchuk Centennial National Park.

Though BC 7 is basically created to support the focal species like Tiger, Red Panda and Musk Deer, it lacks management plan for monitoring the corridor. The takin is also found residing within the BC area.

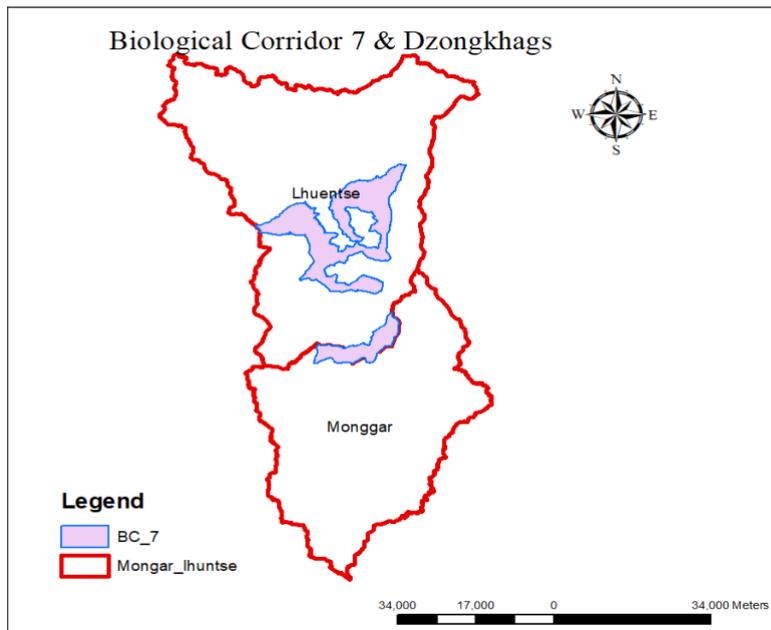
Biodiversity

Biological Corridor 7 falls in administrative jurisdiction of Mongar and Lhuntse Dzongkhag and therefore the management is taken care by Mongar Division. The recent biodiversity survey in BC 7 has been carried out with the fund provided by BFL (GCF). The biodiversity survey has helped BC 7 to identify the following:

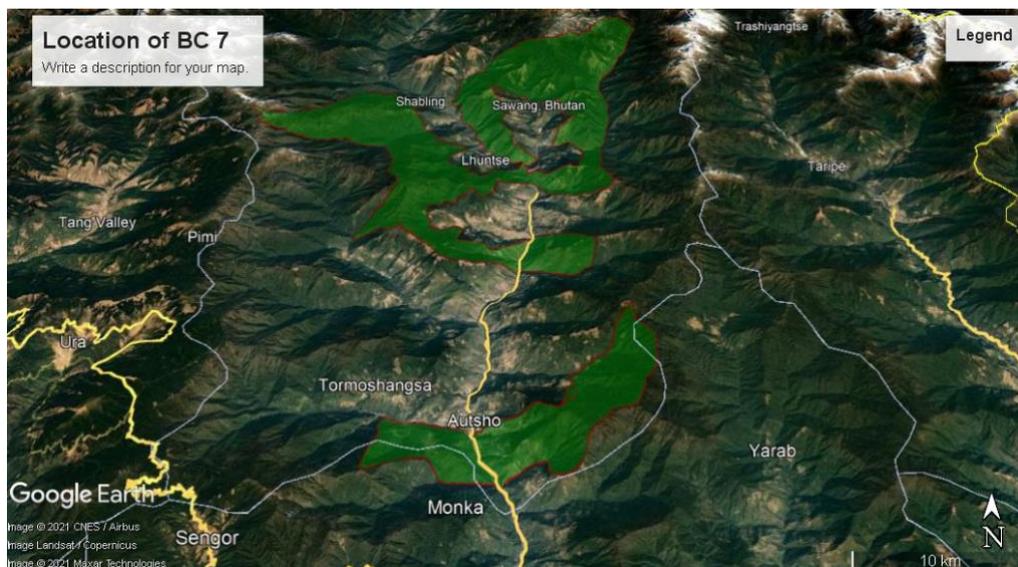
- Mammals= 26 species
- Birds = 162 species
- Fishes= 6 species
- Plants = under compilation
- Reptiles= Not assessed

Communities

There are about 193 households residing within BC 7. There are many important religious and cultural sites existing in BC 7 such as Namdruling Gonpa, Damar Ney, Yodra Gonpa, Rawabi Gonpa falls in BC 7. The activities planned for 2022 do not have any impacts as these communities.



Map 1 Map showing BC 7



Map Showing Location of BC 7

Socio-economic conditions

BC 7 comprises of seven geogs namely Gangzur, Menbi, Menji, Khoma, Tsengkhar, Tsamang and Tsakaling but only few villages falls within the boundary. Almost all the farmers of these geogs depend on subsistence farming. While lower part of the biological corridor have some cash crops such as mangoes and oranges, the upper part have no cash crop as such. Their incomes rely on working as labours or otherwise dependent on some small business. The farmers also rear cattle but rarely sell their product and enough for their own consumption only

3. Planned activities in Year 2022

The planned activities in BC 7 are the following:

Activity1. Maintenance of Beat office and Checkpost

- *BudgetProposed: Nu.0.5 million*
- *Timeline: August 2022-December 2022*
- *Location: Tangmachu, MenbiGeog*

The Beat Office and Checkpost were established sometime in the year 1998 to cater the forestry services to the public of Tangmachu and Menbi Geog. Since then, it played a vital role in forestry services delivery to the geogs. It would also serve as a central point for any activity in BC 7 since it is located in the centre of the BC.

Since establishment, the Beat Office remained same and needs maintenance critically. The one storied building serving as an office developed cracks and timber rotted. As part of this activity, the walls will be repaired and timber will be replaced with new one. There are only four permanent households residing within the vicinity of the Beat Office. The Office is located just above the junction of Secondary National Highway, Lhuntse to Takila on a gentle slope. The road to Takila runs from about 50 meters below while the checkpost is located on the edge of the highway.

The table below shows the work and the number of labours involved;

Table showing work and the number of labours

Sl No	Maintenance Work	No of Labors	Days	Remarks
1	Carpentry (Replacing of doors and windows)	6	15	Preference will be given to the local residence
2	Repairing walls and side drains	10	15	
3	Paintings	3	4	
4	Checkpost repairing	6	10	

The workers will commute from their home during the work.



Condition of Checkpost at Tangmachu Beat Office



Activity 2. Construction of Temporary carpentering shed for community wood skilling program for the upcoming 7th Royal Bhutan Flower Exhibition (RBFE) at Gyalpoizhing.

- *Budget Proposed: Nu.0.070 million*
- *Timeline: February 2022 to April 2022*
- *Location: Gyalpoizhing, Mongar Gewog*

Apart from agriculture work, the wood craft works plays an important source of income for the livelihood of Kengkhar geog. The wood products from Kengkhar are known for its beauty and superior quality which are marketed to other parts of the country. The traditional wood working groups in the gewog were initially started under the direction of Tarayana Foundation, during which DoFPS provided royalty free timber to produce different wood products and market to improve their livelihood. The communities were later encouraged to take up community forest management and meet their timber requirement. Currently there are three community forests in Kengkhar from which surplus timbers are being utilised in meeting the requirement of wood craft works. However, over the years, gradually wood craft workers are confined to few senior citizens. It has been a concern for the community that younger generations are not taking up the work. This has led to decline in the production capacity as well as quality production and has also encouraged inferior quality of products from other nearby gewogs. Today, Kengkhar gewog produces crafts like Jandom (wine vessel), Bap (masks), Patras (different sculptures) and Alter (Choesam).

Therefore, as part of this activity temporary shed will be constructed to house the trainees for community wood skilling program for the upcoming 7th Royal Bhutan Flower Exhibition (RBFE) near Gyalpoizhing Forest Range Office compound where there is half acre blank unoccupied area. The temporary shed construction won't have any disturbances to the nearby residents as the town is located about 200 metres away from the proposed location. Community skill development is felt necessary to revive and strengthen their craftsmanship in producing wide varieties of wooden products such as sculptures and pots replacing plastics. This skill development will give youth hands on training on making traditional products as well as the contemporary wooden products. For the carpentry work (timber collection, water and electricity connection) for construction of temporary shed around 5 labours will be engaged for about one week. Materials such as wooden poles/posts and CGI sheet for roofing will be used for the construction of temporary shed. Wooden poles/post will be used from SRF by thinning of the forest and the CGI sheets will be procured from the market. Approximately 40 numbers of poles/post will be required and 24 nos of CGI sheets will be required for the construction. The workers for the construction will be local residents and will commute to work from their house.

For the skilling program on making wooden planters, 20 participants will be engaged for about 15 days. The community trainee/participants will be accommodated in the Forest Range office complex. Once the proposal is approved, the Divisional Forests Office will initiate consultation meeting with the Gewog Administration and identify highly skilled

sculptor as resource person from the locality. Other existing sculptor and younger generation, who were able to attend school and staying in the villages will be selected as trainee participants to enhance their skills. If possible, an external resource person will also be engaged to share ideas in diversifying the products for the group.

The additional beauty of the 7th RBF E will be plastic free, where all flower pots shall be made of wood. After the training, those who are engaged in the capacity building will be engaged in making wooden flower pots of flower presentation. This will help encourage the local community engage in commercial business. As the preparation for the RBF E 7 has begun in November 2021 through to April 2022, the integration of RBF E 7 program and community could complement each other creating scope for community in floriculture skills and create scope for community to contribute.

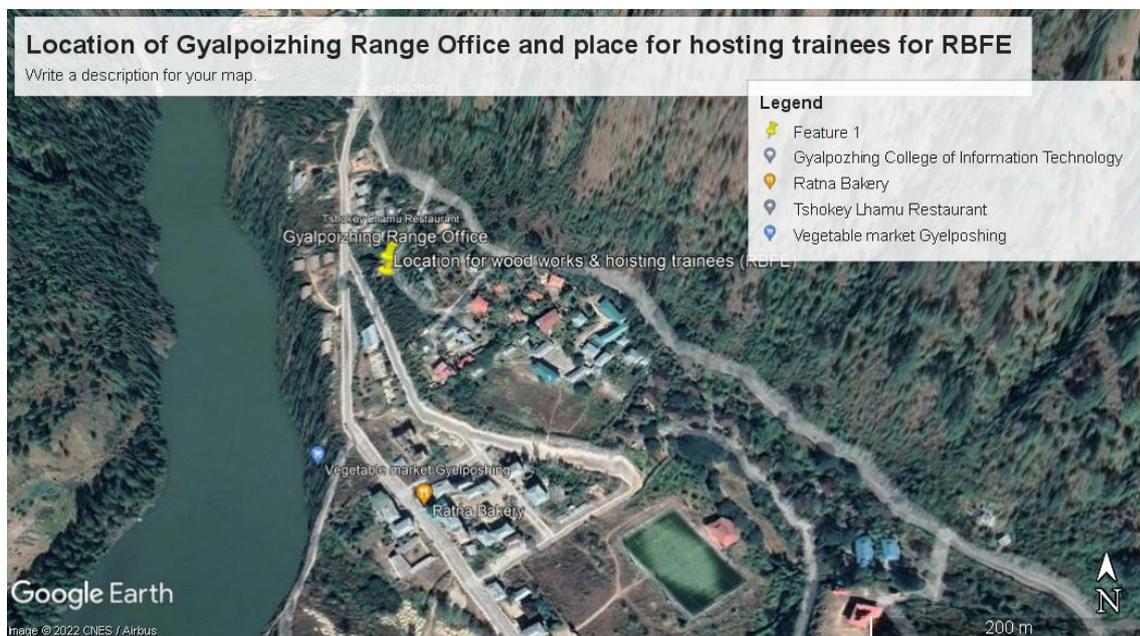


Figure 1: Proposed site for construction of temporary carpentry shed

The potential environmental and social impact for this activity includes:

- Generation of waste as a result of camping and construction works
- Workers' health and safety
- Minor Conflict between participants for wood community skilling program and town resident

4. Mitigation Measures for Environmental and Social Impacts

1. Maintenance of Beat Office & Checkpost

The potential environmental and social impact for this activity includes:

- Generation of waste as a result construction works
- Workers' health and safety

Potential impact	Impact scale	Proposed mitigation measures	Responsible Party	Costs (million)
<i>Activity 1:</i> Maintenance of Beat Office and Checkpost				Nu. 0.5
Waste: Generation of waste as a result of construction activities	Short term minor	<ul style="list-style-type: none"> • Pre-construction: Requirements for appropriate waste management should be briefed to the contractors/workers. • During construction: <ul style="list-style-type: none"> ○ Ensure that camps are located away from existing stream, river, or water sources, and that 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 	BFL Focal, Lhuntse Range Officer,	

		<p>or other culturally sensitive areas or areas where livelihood is derived;</p> <ul style="list-style-type: none"> ○ Collection, transportation and final disposal of all waste should be undertaken regularly ○ All construction materials should be covered during the transportation to avoid waste dispersion; ○ The options for reuse/recycling of the generated waste should be taking into consideration (e.g. excavated soil, etc.). ○ Burning of construction waste should be prohibited. <ul style="list-style-type: none"> ● After construction: <ul style="list-style-type: none"> ○ All waste shall be removed from the project site. 	Contractors	
<p>Water quality: Contamination of local water sources may occur due to waste water and sewage from construction sites</p>	Short term minor	<ul style="list-style-type: none"> ● Pre-construction:Briefing for requirements for appropriate measures to prevent water contamination should be given to the contractor/worker ● During construction: <ul style="list-style-type: none"> ○ An environment-friendly toilet (e.g., pit toilet) and washing facilities should be made available, built with locally available materials ○ Open defecation in the vicinity of project sites should be prohibited ○ Throwing waste in water sources should be prohibited ○ Surface run off directly from the construction site to the nearby stream should be avoided ● After construction <ul style="list-style-type: none"> ○ Pit toilets are dismantled and pits are covered ○ All waste is removed from the project site 	BFL Focal, LhuntseRange Officer, Contractor	

<p>Workers' health and safety including COVID-19 precautions</p>	<p>Short term minor</p>	<ul style="list-style-type: none"> • Comply with the workers' health and safety guidelines • Access to health facilities for the workers pre and during construction activities need to be available and ensure first aid kit is available at construction site all the time • Ensure that no underage workers, or children are engaged • Ensure decent work conditions, including an appropriate salary, working hours, accommodation and other essential amenities as per the Operational Health and Safety Guidelines are available for 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, and disciplinary practices. • Implement a grievance mechanism for workers (and their organizations, where they exist) to raise workplace concerns • Strictly abide by COVID prevention protocols (use masks, maintain distance, wash hands regularly etc.) 	<p>BFL Focal, Lhuntse Range Officer, Contractor</p>	
<p>Conflict between temporary workers and local communities</p>		<ul style="list-style-type: none"> • Workers shall be widely briefed about the local culture and traditions, as well as the legal consequences of harassment and intimidation, especially with regards to sexual harassment and gender-based violence • Local communities shall be made aware of the engagement of temporary workers in project sites. 	<p>Lhuntse Range & Contractor</p>	

		<ul style="list-style-type: none"> • Strict monitoring shall be carried out to ensure conflicts are minimized 		
Activity 2: Construction of Temporary carpentry shed for Royal Bhutan Flower Exhibition (RBF E) community wood skilling program				Nu. 0.070
Waste: Waste production due to construction of temporary shed and making of wooden flower planters	Short term minor	<ul style="list-style-type: none"> • Pre-construction: Proper waste management shall be briefed to the staff and community wood skilling participants. Ensure to place proper waste bins. • During construction: <ul style="list-style-type: none"> ○ Ensure that camps are located away from existing stream, river, or water sources, and that no discharge from camps is made into nearby water bodies; ○ Proper waste bins should be placed at construction site; ○ Dumping of waste on the sides of the road, on private land and town area 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 ○ All construction materials and used should be covered during the transportation to avoid waste dispersion; 	BFL Focal, RBF E focal officer, Gaylapoizhing Range Officer, staff coordinator, wood skilling program participant's	

		<ul style="list-style-type: none"> ○ The options for reuse/recycling of the generated waste should be taking into consideration (e.g. excavated soil, etc.). ○ Burning of temporary construction waste should be prohibited. ● After construction: ● All materials used for construction of temporary shed and other items used for making wooden flower planters during community skilling program shall be removed properly from the construction site. 		
Workers' health and safety including COVID-19 precautions	Short term minor	<ul style="list-style-type: none"> ● Comply with the participant's health and safety guidelines ● Access to health facilities for the participant's and staff pre and during construction and skilling activities need to be available and ensure first aid kit is available at temporary construction site all the time ● Ensure that no underage community participants, or children are engaged ● Ensure decent work conditions, including an appropriate TADA, working hours, accommodation and other essential amenities as per the Operational Health and Safety Guidelines are available for participants. ● 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, and disciplinary practices. ● Implement a grievance mechanism for participants to raise workplace 	BFL Focal, RBFE focal officer, Gaylapoizhing Range Officer, staff coordinator, wood skilling program participant's	

		<p>concerns</p> <ul style="list-style-type: none"> • Strictly abide by COVID19 prevention protocols (use masks, maintain distance, wash hands regularly etc.) 		
<p>Conflict between wood community skilling program participant's and town residents</p>		<ul style="list-style-type: none"> • Community participants shall be fully briefed about the town area norms, as well as the legal consequences of harassment and intimidation, especially with regards to sexual harassment and gender-based violence • Town residents shall be made aware of the engagement of community skilling program at project sites. • Carryout strict monitoring to ensure to reduce conflicts 		<p><i>NU. 20000 for consultat ion</i></p>

5. ESMP Implementation Arrangements

The implementation of project activities will be carried out by the BFL focal person in BC7, Mongar Division. The focal will be responsible for a compliance with 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 BC7 in 2022. The Contractor 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.). An OHS information session should be organized by the Contractor for all workers prior start the project activities and prior any specific tasks with high health risks.

The BC7 Supervising Engineer needs to monitor the implementation of proposed measures by the Contractor and 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 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 should be closed with appropriate measure/s and the evidence should be kept.

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

6. ESMP Monitoring Arrangements

The BFL focal person in Mongar Division 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.

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

Sl#	Activities	Monitoring	Timeline	Location	Means of
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		team	Start	Complete		Verification
1	Maintenance of Beat Office & Checkpost	Field Focal	August 2022	Nov 2022	Tangmachu	Field Reports
		ESS focal	Oct, 2022			
2	Construction of Temporary carpentering shed for community skilling program for the 7 th RBFE	Field Focal	February, 2022		April, 2022	Field Reports
		ESS focal	March, 2022			

Activity 1: Maintenance of Beat Office & Checkpost

I. Monitoring by implementing entities:

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

II. Monitoring by ESS officer at PCU:

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

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

Activity 2: Construction of Temporary carpentering shed for community skilling program for the 7th RBFE

I. Monitoring by implementing entities:

- Field visits— once every week.
- Monthly reports by the implementing entities submitted to ESS officer

II. Monitoring by ESS officer at PCU:

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

III. 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, and a contractor that will employ workers as mentioned in the contract agreement.

The budget for each activity is as follows:

Sl.No.	Activity	Amount (Nu)	Budget for ESS mitigation (Nu)
1	Maintenance of Beat Office & Checkpost	500,000	Will be met from the activity cost
2	Construction of Temporary carpentering shed for community skilling program for the 7 th Royal Bhutan Flower Exhibition	70000	20000 for consultation
Total		570000	20000

8. Consultation and Disclosure Mechanisms

For the maintenance of Beat office, ESMP has been prepared in consultation with the current staff working in the Beat Office. Since it is maintenance and repairing of the existing office, the public consultation was not felt necessary. However, the ESMP will be disclosed to the local residence during the implementation and their concerns, if any will be addressed.

For the construction of temporary shed, ESMP has been prepared in consultation with the current staff working in the Gyalpoizhing Range Office and staff involved in RBFE preparation. Since it is temporary shed construction is for the important event which will benefit the local community, the local community welcomes the idea and support it. The local residents are located away from the project area therefore consultation with the town residents at this point was not felt necessary. However, consultation will be held with the local community for awarding the work and selection of the trainees and participants before implementation of the work. Consultation with the local communities before implementing the work will also be held to raise awareness on the planned activity and also to discuss if there is going to be any social implications due to trainees and trainers gathered for the

program from various areas. ESMP will be disclosed to the local town residents before the implementation and their concerns, if any will be addressed.

9. Stakeholder Engagement Plan

The four households residing within the vicinity of the Beat Office and other nearby villages will be engaged during the implementation of the activity. Preferences will be given to the local community to work during the maintenance work.

For the construction of temporary shed, the local town Tshogpa will be informed before implementation of the activity, and engaged whenever required during the implementation of the activity. Preferences for temporary shed construction will be given to the local town resident if there are.

The report on the involvement of the stakeholders and communities (along with a list of participants, disaggregated by gender and age) will be submitted by BFL focal to ESS officer at PCU within one week after the completion of the proposed activity. The ESS 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 a semi-annual basis.

Annexure III- BFL: 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

<https://www.ifc.org/wps/wcm/connect/1d19c1ab-3ef8-42d4-bd6b-cb79648af3fe/2%2BOccupational%2BHealth%2Band%2BSafety.pdf?MOD=AJPERES&CVID=1s62x8l>.

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 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 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. 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 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 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.
- 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 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 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

- 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 servicing, inspection, and/or cleaning should have unobstructed, unrestricted, and ready access.
- Covers need to be provided where ever 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 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 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, 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.
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 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 90 dB(A) for a duration of more than 8 hours per day without wearing ear plugs/ear muffs.
- 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 persons 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 hazard') 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 work station.

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 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' 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 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.

3. Heating, air conditioning, ventilation and light

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

4. Water

² Based on Workers' accommodation: processes and standards—A guidance note by IFC and the EBRD (August 2009): https://www.ifc.org/wps/wcm/connect/60593977-91c6-4140-84d3-737d0e203475/workers_accomodation.pdf?MOD=AJPERES&CACHEID=ROOTWORKSPACE-60593977-91c6-4140-84d3-737d0e203475-jqetNIh

- 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 hand wash 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 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