

**Bhutan for Life**  
**Environmental and Social Management Plan for**  
**Phibsoo Wildlife Sanctuary (2021)**

**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.

### **(D) Applicable law, policies, and regulation**

This ESMP is developed by following the guidelines as set forth in the BFL's ESMF.

Applicable RGoB laws and policies include the Constitution of the Kingdom of Bhutan, 2008; legislation on land and moveable property (Land Act of Bhutan 2007; Land Rules, 2007; The Moveable Cultural Property act of Bhutan, 2005); legislation and regulations on forests and protected areas (National Environment Protection Act, 2007; Forest and Nature Conservation Act of Bhutan, 1995; Forest and Nature Conservation Rules and Regulations of Bhutan, 2017;

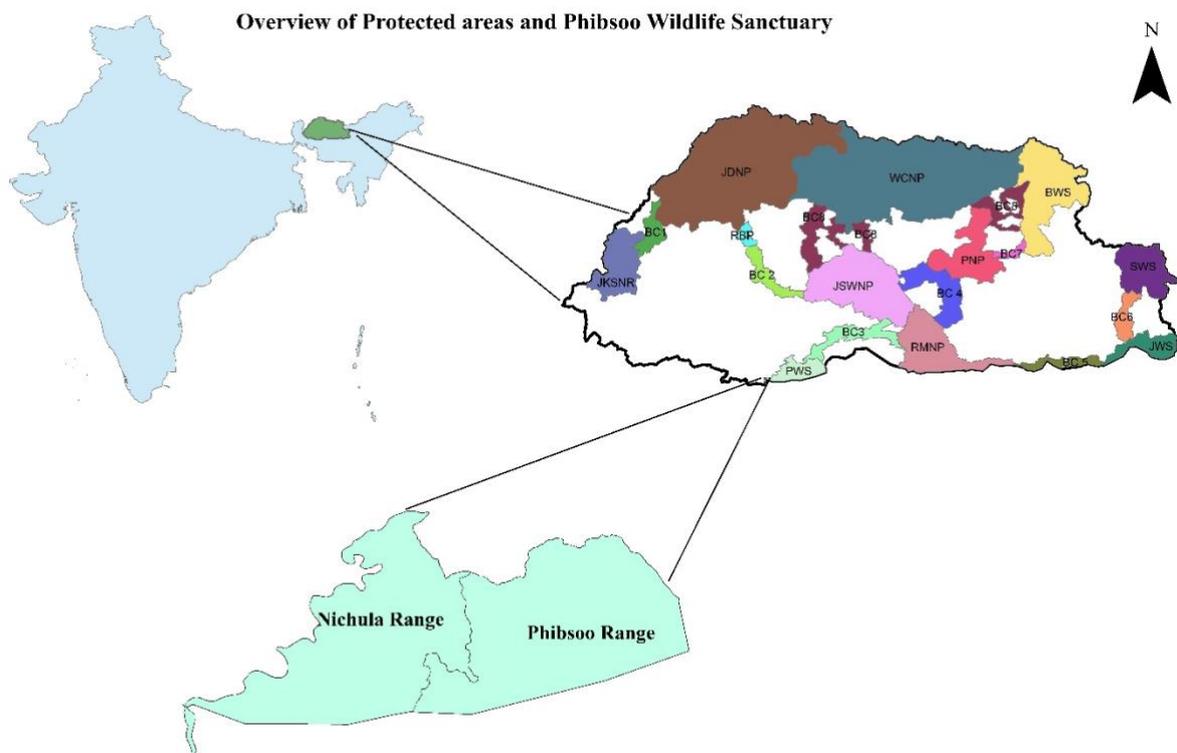
National Forest Policy, 2011); legislation on water and waste prevention (Water Act of Bhutan, 2011; Waste Prevention and Management Act, 2009); legislative requirements on environmental assessment (Environmental Assessment Act, 2000 and Regulations on the Environmental Clearance of Projects, 2001); and other relevant laws (The Local Government Act of Bhutan, 2009; Livestock Act of Bhutan, 2001; The Biodiversity Act of Bhutan, 2003; The Pesticides Act of Bhutan, 2000; The Penal Code of Bhutan, 2004; National Access and Benefit Sharing (ABS) Policy (Draft), 2014).

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

In general, RGoB's laws, policies, and guidelines are in line with 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 land owners 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.

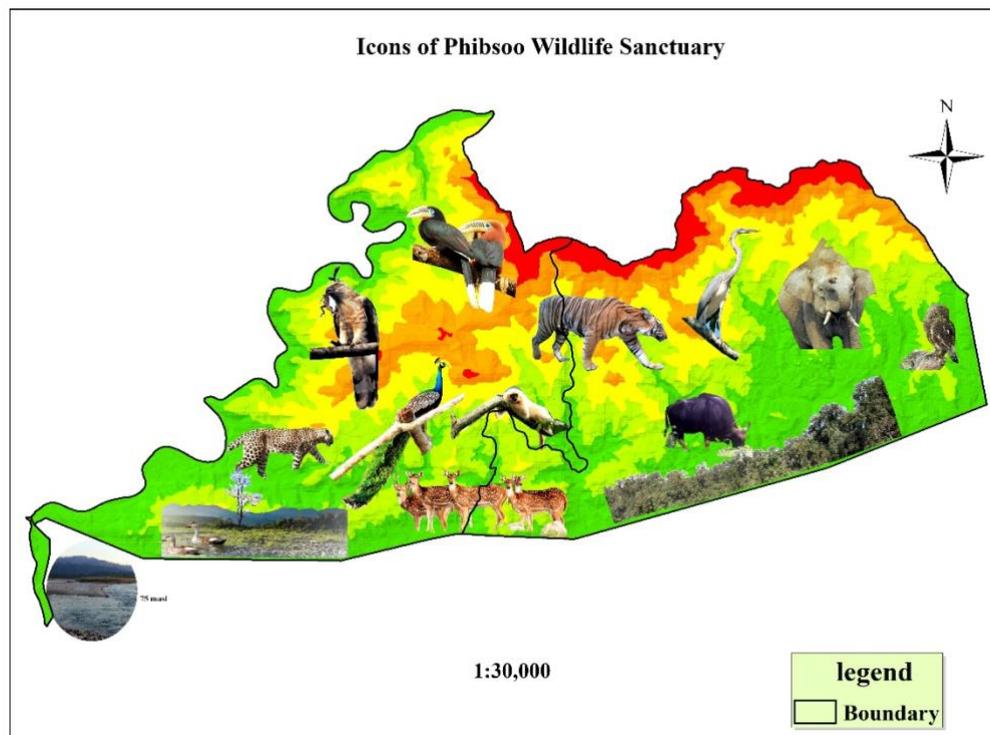
## 2. Environmental and Socio-Economic Conditions:

Phibsoo Wildlife Sanctuary (PWS) was created in 1974 along with five other protected areas as Phibsoo Reserved Forest. Later in 1993, it was upgraded to a wildlife sanctuary following a comprehensive review and revision of the national protected areas system. However, it only started its management independency in September 2014 upon separation from Sarpang Forest Division with its conservation management plan 2012-2017. PWS encompasses an area of 286.8 km<sup>2</sup> making it smallest among the ten protected areas in the country. It is located in the Himalayan foothills of south-central Bhutan, between 26°42' to 26°51' N latitude and 89°56' to 90°12' E longitude. Its southern boundary follows the Indo-Bhutan international border with Ripu-Chirang Reserved Forest on the Indian side. To the west, it is flanked by Sunkosh river, to the east by edge of Senge village with Indo-Bhutan border Pillar number 145/1, and to the north by BC3 along northern border of Nichula gewog under Dagana dzongkhag.



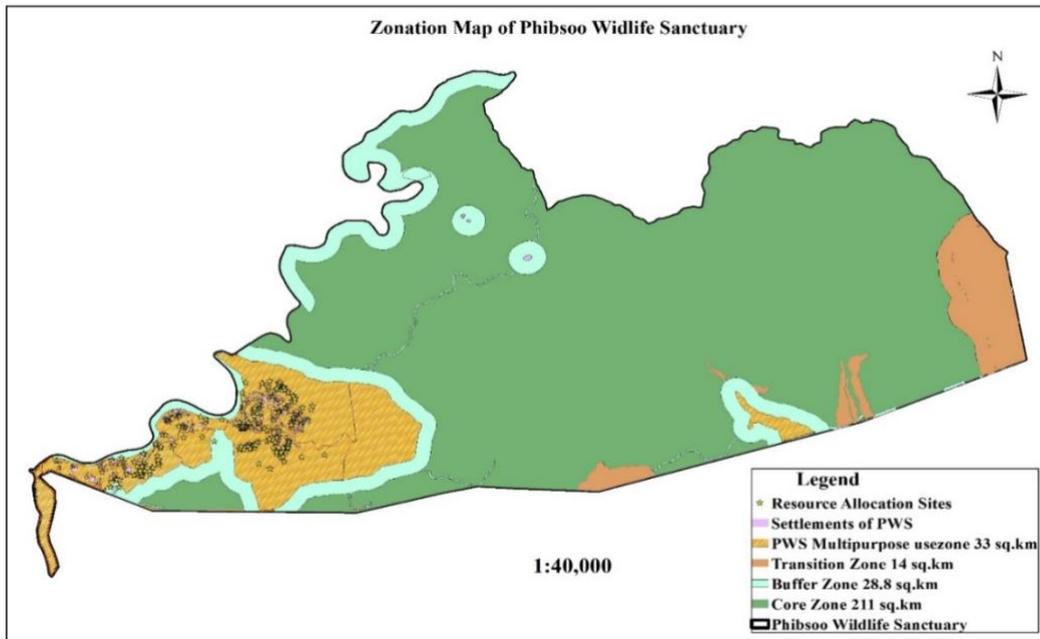
## Conservation Significance

PWS is of immense conservation significance for Bhutan, the region and the world at large. Not only does the sanctuary protect the country's southernmost variant of sub-tropical Himalayan forest ecosystem but is also critical source of several seasonal and perennial water bodies which contribute to the fertility of the Assam Duars. The sanctuary happens to be the easternmost limit of spotted deer (*Axis axis*), common pea fowl (*Pavo cristatus*) and sal (*Shorea robusta*) bearing forests. It is also the only place where natural stand of sal and spotted deer can be sighted. At the same time, PWS is the westernmost limit of the globally threatened golden langur (*Trachypithecus geei*) and the rare and valuable agar tree (*Aquillaria malaccensis*). It also provides refuge to a number of charismatic and globally threatened species including the Asian elephant (*Elephas maximus*), Bengal tiger (*Panthera Tigris Tigris*), Chinese Pangolin (*Manis pentadactyla*), Rufous-necked hornbill (*Aceros nipalensis*) and White-bellied Heron (*Ardea insignis*). Besides, lush alluvial grassland provide safe refuge to the prey species for keystone species. Few icons of PWS are represented in figure 1.



**Figure 2: Icons of Phibsoo Wildlife Sanctuary**

PWS is divided into four zones viz. Core, Transition, Buffer and Multipurpose Use as per the protected area management guideline 2019. The detail description of zones is as core with 73.6%, transition 4.9%, buffer 10% and multipurpose 11.5%;



**(a) Geological and topographical conditions**

PWS shares the fertile soil of southern Bhutan with loamy and sandy loam soil covering the entire region of Wildlife Sanctuary. The soil favors the growth of various cereals and crops to the resident of PWS. The Wildlife Sanctuary falls under humid subtropical climate of the country and experiences hot summer and cold winter ranging its elevation from 75masl - 1800masl. It is also known for the lowest elevation range in Bhutan at Nichula gewog under Dagana Dzongkhag. PWS receives incessant summer rainfall which remains wet for the entire season while winter is often welcomed by dry and sunny weather

**(b) Climatic conditions**

PWS falls in Sarpang and Dagana district with elevation ranging from less than 200 to 3000 meter above sea level (FRMD, 2017). Sarpang district experiences maximum temperature of 27.6° C with annual total rainfall of 5930.3 mm (BSC, 2017). The district is dominated by subtropical and warm broadleaved forest with forest coverage of 78% (NFI, 2016). On the other hand, Dagana district ranges its elevation from 100 m to 4700 m above sea level. It falls in subtropical zone with annual rainfall ranging from 750 mm to 2000 mm. Therefore, PWS experiences hot summer with incessant monsoon and cool winter at an average.



**Rangers crossing swollen rivers in Monsoon**



**Rangers clearing roadblocks**

### **(c) Hydrological conditions**

Beside perennial and transitional rivers formed during monsoon, Sunkosh River, one of the major river in Bhutan drains through the plains of the Wildlife Sanctuary. The river source two hydroelectric power projects in Bhutan viz. PHPA I and PHPA II. Perennials Rivers such as Longa River, Phibsoo River and Nichula River forms an important watershed of PWS. These rivers shelter the home to critically endangered White-bellied Heron in Bhutan. Waterholes and spring water sources are distributed in the Wildlife Sanctuary contributing to the functioning of ecosystem. Waterholes are distributed densely in lower foothills of the Wildlife Sanctuary

### **(d) Flora and fauna**

PWS is home to 637 recorded species of flowering plants of which 528 are dicotyledons and 109 monocotyledons. These include 199 trees, 143 herbs, 134 shrubs, 79 climbers, 34 grasses, 25 ferns, and 44 orchids. Number of these species, such as *Caryota urens*, *Arundina graminifolia*, *Typha elephantina*, *Acer oblongum*, *Ilex godjam*, *Aristolochia tagala*, *Mesua ferrea*, *Syzygium jambos*, *Aegle marmelos*, and *Aquillaria malaccensis* are known to be rare or globally threatened. PWS is also home to diverse fauna which include 36 mammals, 365 birds, 23 fishes, 60 butterflies and 60 herpeto-fauna as of June 2020. Birds contribute highest to the faunal diversity with 67% followed by 26% butterflies, 9% herpetofauna, 5% mammals and 4% fishes according to the latest rapid biodiversity assessment conducted in 2020. The wildlife Sanctuary in the year 2 has recorded three new snakes, one orchids and three birds to the country.



**Spotted Deer in PWS**



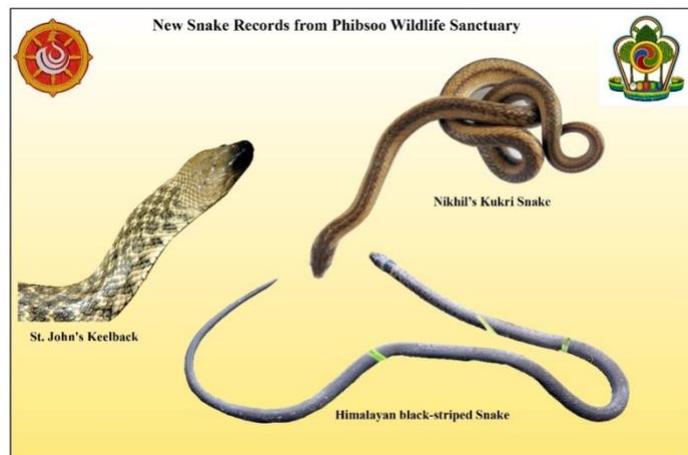
**Natural Sal Forest**



**Cats of Phibsoo Wildlife Sanctuary**



**Figure 1:** New Records of Birds from PWS through BFL year 2 Activities



**Figure 2:** New Records of Snakes from BFL through year 2 activities

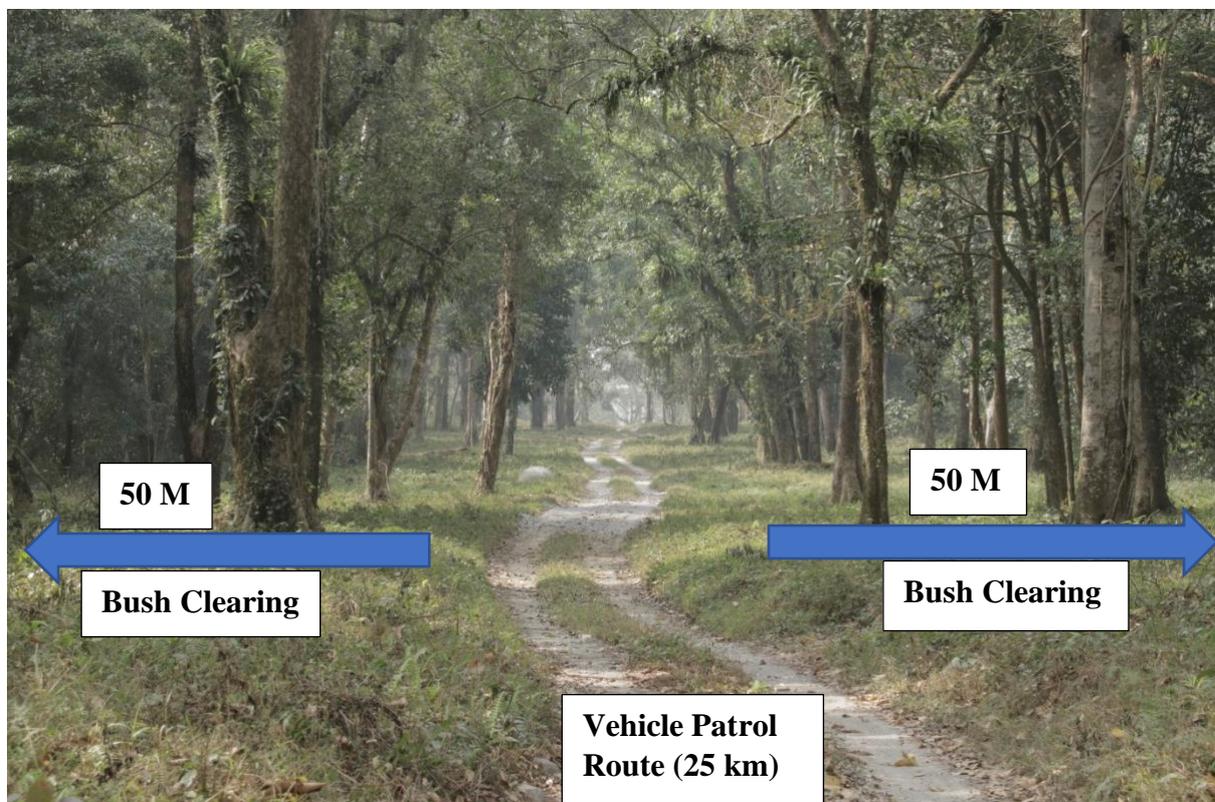
**(e) Socio-economic conditions**

The PWS socio-economic survey, carried out in May 2017, lists 21 villages and hamlets in PWS. These villages and hamlets shelter total population of 2,611, of which 1,254 people (48%) live inside the sanctuary with population density of 4.7 people /km<sup>2</sup>. PWS has settlements of two gewogs with total of 366 residents and 80 Gungtongs. The total population is 2957 with 1925 in Singye gewog and 1032 in Nichula Gewog.

### 3. Planned activities in Year 2021;

The activities planned in Year 3 for PWS are as detailed below;

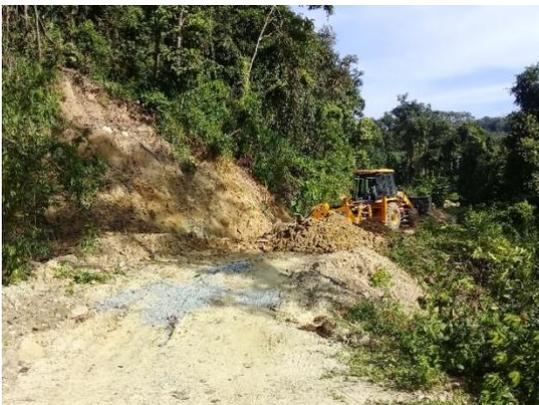
**Activity 1: Maintenance of Patrol Route:** Patrol Route connecting Singye gewog to Phibsoo outpost with distance of 25 km is important route connecting the Range office and outpost. The route is mainly used by Rangers of Phibsoo wildlife sanctuary as their Spatial Monitoring and Reporting Tool (SMART) routes, Royal Bhutan Army by their patrol routes protecting the wildlife and natural resources of the wildlife sanctuary. By the location of wildlife sanctuary in the southern region, incessant rainfall during summer leads to flashfloods and erosion which requires frequent interventions and maintenance. The road is maintained yearly with construction of causeways, filling of potholes and clearing of bushes with radius of 50 meter both the sides. The activity is mainly implemented to make sure the duty at outpost is not hampered throughout the year due to roadblocks and landslides. Moreover, clearing of bushes 50 meter radius form the road prevent rangers from being ambush by poachers and other miscreants (**Picture 1**). Keeping weather into consideration, the works are scheduled from July 2021 to December 2021 especially during winter when the season remains dry. The amount proposed and allocated form the activity is estimated Nu.**400000** (USD: 5700). The works will be started form third quarter of year three with completion in fourth Quarter.



**Picture 1: Bush clearing done in earlier Years**

Both vehicle and foot patrol route are managed by Rangers of Phibsoo wildlife Sanctuary. The patrol route maintenance involves filling of potholes with gravels, construction of small causeways in eroded areas besides bush clearing. Bushing clearing is done with involvement of local people of singye gewog. As per the past records, average of 60 workers are involved in bush clearing for 20 days. Filling of potholes will be carried out using JCB machines and trucks for loading of sands and gravels and digging foundation of eroded roads and walls. The workers will be accommodated in Phibsoo outpost during the entire work execution period. Basic amenities like water and shelter for the workers will be provided from wildlife sanctuary based past experiences.

The nearest distance to the work site from settlement is 5 Km with 13 household near to it. The people in the locality are dependent agriculture and farming for their livelihood. The activity will further have positive advantage for the people as it will create easy access to natural resources like firewood collection, NWFP collection and it also serve as route for their livestock. Maintenance of patrol route will also assist in controlling wildlife poaching through regular monitoring by making it easily accessible as and when required. The following images shows similar activities conducted in earlier years:



**Maintenance by JCB Machine**



**Flood Protection wall and causeways**



The environmental and social impact of the activities are as follows;

- **Noise Disturbance:** There are possible noise disturbance through movements of vehicles and machines as vehicle movement has to share the public road.
- **Air Quality:** Dust and Emissions from vehicles like trucks, JCB machine would create air pollution
- **Waste:** Waste would be generated due to use of cements, bricks, sand and plastics.
- **Erosion:** Digging of soil is likely to create erosion in some parts of the road
- **Worker's health and Safety:** Involvement of public in works is likely to create impact in their health as the works deals with excavation, digging and clearing.
- **Human Wildlife Conflict:** The connection of route to public will create easy movement of animals like elephants and wild pigs creating HWC in community.

*Activity 2: Construction of Office Retention Wall:* The ongoing construction of Phibsoo Range office will be completed in June 2021. The Range office will be used by 50 Rangers assisting PWS HQ in conservation activities and public service delivery. However, with incessant rainfall in summer the office is prone to flash floods and erosion. To prevent the range office from erosion, construction of retention wall is constructed as mitigation measures for it. The activity will be implemented in quarter 3 of BFL year 3 as soon as range office construction is completed. The budget allocated for the activity is Nu. **800000** (USD: 11800) and its implementation starts from July 2021 to December 2021.

The activity will be implemented in Phibsoo Range office to protect it from flash floods and erosion. The site was selected after seeing its environmental impacts like floods to the range office. Tendering process will be carried out for the work implementation. The work is likely to involve 20 workers mostly Bhutanese labors (Taking COVID 19 into consideration) for 30 days. Workers will be accommodated by the contractor at Phibsoo Range office where basic amenities like water is connected by PWS management. The drinking water is shared from PWS management water tank to avoid community issues. The site falls in Yarpelling chiwog with 82 households near to it. The communities depend to agriculture as their main source of livelihood while domestic animals equally contribute for their economy. Cash crops such as areca nut are their main income source. However, the implementation of work won't affect the community from basic nature resources collection. Instead, it would benefit the community

from flash floods and erosion as the wall stabilize the soil which is adjacent to their Basic Health Unit (BHU).

The environmental and social impact of the activity are as follows;

- **Waste:** Wastes generated from construction materials will be one of the issues.
- **Noise Disturbance:** The activity is likely to create noise pollution to the communities especially to Yarpheling Chewog.
- **Air Pollution:** Dust emissions from vehicles and frequent use of sands is likely to pollute air.
- **Workers healthy and Safety:** it will be another issues as it deals with construction activities.

**Activity 3: Improvement of Natural Waterholes and Saltlicks:** Waterholes and saltlicks are important wildlife habitat as it is the main source of nutrients and minerals. Waterholes plays important roles as a source of water especially in winter when season remains dry while saltlicks substitute minerals like potassium, sodium and calcium to wildlife. The main reason of implementing the activity yearly is to basically assist wildlife with basic needs like water and minerals especially in winter. This would also assist in reduction of human wildlife conflict as the availability of basic requirements in forest don't have much reason for wildlife to encroach settlements. Keeping weather into consideration, the activity will be implemented in Quarter 3 and Quarter 4 of BFL year 3 it brings to end of monsoon. The total amount estimated for implementation of activity is Nu.500000 (USD: 7400). The activity implementation will last for six months starting from July 2021 to December 2021. The similar kinds of activities implemented in earlier years are detailed below;



Waterhole revival will be carried out in Phibsoo Range which involve revival of three important dried water hole which are Longa Tar Tsho, Charno Tsho and Longa Basti Tsho. These waterholes were important ecosystem for wildlife in early years as wildlife derived water from it. Today with climate change and ecological issues, water has dried in those areas causing difficulty and challenging for the wildlife in winter. Water will be connected in natural waterholes and repairing in existing water holes at Phibsoo outpost will be carried out. Pipelines will be laid after digging pipeline trenches from water source to make water available in winter. The work is likely to involve 20 workers for 30 days. Basic amenities like water and shelter to workers will be provided from PWS management since the site is 25 km far from the settlement. Drinking water source will also be shared from the PWS management water source. The implementation of works doesn't have any impact on resource use by community as it is located far from the community (25 km) though the activity may create temporary disturbances to wildlife especially the small mammals. The main challenges of waterhole creation if not monitored well is it being poaching source as wildlife are easily spotted by poachers in those areas. Similar kind of works conducted in earlier years are represented below (**Figure: 3**).



Saltlick enrichment will be carried out in both range offices of PWS (Phibsoo Range and Nichula Range). The activity basically involves spraying of salt in natural saltlicks. The works is usually done by Rangers during their planned SMART patrolling. The works will be implemented in 11 saltlicks identified by PWS (Longa kalikhar, Longa Basti Khar,Dangya Kalikhar, Garbu Nun Thali, Char Number Bill, Phibsoo Kalikhar, Thulu Balu Kalikhar, Sanu Balu Kalikhar, Wangchulingka Khar,Shetey Khar and Nichula Khar).

The environmental and social impact of the activities are as follows:

- **Waste issues:** Digging of soil and installation pipelines is likely to create waste issues
- **Noise Pollution:** maintenance works like digging of waterholes and transportation of material are likely to create noise pollution.
- **Human Wildlife Conflict:** if waterholes and saltlicks are not monitored well, it can be potential source of wildlife poaching creating HWC.
- **Workers Health and Safety:** since the work involve local people, certain health and safety issues are likely to occur.

**Activity 4: Improvement of Lowland Grassland:** PWS is known for vast grassland with more than **500 hectares** under coverage. It is an important habitat for mammals like spotted deer, barking deer, elephant, guar and etc. Grassland in PWS is being managed yearly for wildlife purposes. However, grassland has to be managed twice a year before the invasive species like *Mikania micrantha*, *Chromolena odorata* and *Sida acuta* invasion takes place. The main reason for managing the lowland grassland twice a year is to make the area suitable for herbivores to graze and control the invasive species. Winter is suitable for clearing of bushes and prescribe burning while early spring is suitable for uprooting of regenerated invasive species. The activity will be implemented twice a year in two prescribed seasons. It will be carried out in winter (November to February) and once in spring (April to June). The estimated amount for the work is Nu.1000000 (USD 14,700).



**Figure: Management of grassland through uprooting**

Around 50 hectares of grassland will be managed in year 3 of BFL. First phase of works in winter will mainly be focused for clearing of bushes and uprooting of invasive species. Prescribe burning will be carried out after clearing the bushes. Second phase of work will be carried out in early spring which involve uprooting of invasive species which has just germinated. Clearing of bushes for 50 hectares is likely to involve 40 staffs which will

approximately take 60 days to complete. Basic amenities like water and shelter will be provided from PWS management. The drinking water for the workers will be shared from PWS management source.



**Prescribe Burning carried out in Grassland**

The environmental and social impact of the activities are as follows;

- **Air Pollution:** The burning of bushes and invasive species are likely to create air pollution.
- **Grassland Fire:** If control burning is not well managed, grassland fire is likely to occur.
- **Workers Health and Safety:** since it involves public, certain health and safety issues are likely to occur.

#### 4. Environmental and Social Impacts and Mitigation Measures

Potential impact	Impact scale	Proposed mitigation measures	Responsible party	Costs
<b>Activity 1: Maintenance of Patrol Route</b>				<b>Nu.400000</b>
<ul style="list-style-type: none"> <li><b>Noise Disturbance:</b> There are possible noise disturbance through movements of vehicles and machines as vehicle movement has to share the public road.</li> </ul>	Short term/Minor	<p><b>Pre-maintenance:</b> requirement to reduce noise pollution should be included in work order officials will be informed and sites will be monitored.</p> <p><b>During Maintenance:</b></p> <ul style="list-style-type: none"> <li>The trucks and excavator should be performed or checked for noise level control at RSTA.</li> <li>The maintenance shall be carried out only in day time from 9 am to 5 pm.</li> <li>Noisy vehicle without fitness certificate are not allowed.</li> </ul>	<p>BFL focal and concern section</p> <p>Site in charge</p>	
<ul style="list-style-type: none"> <li><b>Air Quality:</b> Dust and Emissions from vehicles like trucks, JCB machine would create air pollution</li> </ul>	Short term/Minor	<p><b>Precondition:</b> Requirement to limit emission should be included in work order and site in charge should be well informed.</p> <p><b>During maintenance:</b> Patrol route, materials and vehicles should be water-sprayed on dry and windy days.</p>	BFL focal and concern section	

		<ul style="list-style-type: none"> <li>• Fitness and emission test of the vehicles shall be performed.</li> <li>• Ensure there is use of protective masks for the workers in dust.</li> <li>• Vehicles speed must be regulated in dust areas</li> <li>• Vehicles and machines maintenance are done regularly to reduce the leakages of motor oils and emissions</li> </ul>	Site in charge	
<ul style="list-style-type: none"> <li>• <b>Waste:</b> Waste would be generated due to use of cements, bricks, sand and plastics.</li> </ul>	Short term/Minor	<p><b>Pre-maintenance:</b> requirements for appropriate waste management should be included in work order.</p> <ul style="list-style-type: none"> <li>• <b>During Maintenance:</b> segregation of different waste types at work site (soil, cement, sand, and food, plastic etc.)</li> <li>• Provide proper container and waste bins at project sites.</li> <li>• Waste dumping beside designated sites prohibited.</li> <li>• Waste disposable and dumping done weekly</li> <li>• Concept of Reuse, Recycle must be followed and implemented.</li> <li>• Burning of waste is prohibited.</li> </ul>	<p>BFL focal and concern section</p> <p>Site In charge</p>	

<ul style="list-style-type: none"> <li>• <b>Erosion:</b> Digging of soil is likely to create erosion in some parts of the road</li> </ul>	Short term/ Minor	<p><b>Precondition:</b> Proper drainage to be formed to avoid gully erosion.</p> <p><b>During Maintenance:</b> Unnecessary excavation and digging to be avoided.</p> <ul style="list-style-type: none"> <li>• Maintain proper drainage as far as possible</li> <li>• Felling of trees avoided to retain soil carrying capacity.</li> </ul>	Site In charge.	
<ul style="list-style-type: none"> <li>• <b>Worker's health and Safety:</b> Involvement of publics in works is likely to create impact in their health as the works deals with excavation, digging and clearing.</li> </ul>	Short term Minor	<ul style="list-style-type: none"> <li>• Follow the workers' health and safety guidelines as attached to the ESMP (BFL guidelines).</li> <li>• Ensure regular health screening for the workers pre and during activities</li> <li>• Ensure that no underage workers, or children are engaged.</li> <li>• Decent work conditions, including an appropriate salary, working hours, accommodation and food for workers shall be provided to all workers.</li> <li>• 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,</li> </ul>	BFL Focal and site in charge	

		<p>termination of employment or retirement, and disciplinary practices.</p> <ul style="list-style-type: none"> <li>• A grievance mechanism for workers to raise workplace concerns should be in place.</li> </ul>		
<ul style="list-style-type: none"> <li>• <b>Human Wildlife Conflict:</b> The connection of route to public will create easy movement of animals like elephants and wild pigs creating HWC in community</li> </ul>	Short term/minor	<ul style="list-style-type: none"> <li>• Regular patrolling to be conducted.</li> <li>• Farmers call to chase wildlife attended regularly.</li> <li>• Quick Response to be kept in place for emergency calls</li> </ul>	BFL Focal and Range office.	

Potential impact	Impact scale	Proposed mitigation measures	Responsible party	Costs
<i>Activity 2: Construction of Retention wall</i>				<i>Nu.800000</i>
<ul style="list-style-type: none"> <li>• <b>Noise Disturbance:</b> There are possible noise disturbance through movements of vehicles and machines as vehicle movement has to share the public road.</li> </ul>	Short term/Minor	<p><b>Pre-maintenance:</b> requirement to reduce noise pollution should be included in bidding documents and in charge will be well informed</p> <p><b>During Maintenance:</b></p> <ul style="list-style-type: none"> <li>• The trucks and excavator should be performed or checked for noise level control at RSTA.</li> </ul>	<p>BFL focal and contractor</p> <p>Site in charge</p>	

		<ul style="list-style-type: none"> <li>The maintenance shall be carried out only in day time from 9 am to 5 pm.</li> <li>Noisy vehicle without fitness certificate are not allowed.</li> </ul>		
<ul style="list-style-type: none"> <li><b>Air Quality:</b> Dust and Emissions from vehicles like trucks, JCB machine would create air pollution</li> </ul>	Short term/Minor	<p><b>Precondition:</b> Requirement to limit emission should be included bidding document and site in charge should be well informed.</p> <p><b>During maintenance:</b> Patrol route, materials and vehicles should be water-sprayed on dry and windy days.</p> <ul style="list-style-type: none"> <li>Fitness and emission test of the vehicles shall be performed.</li> <li>Ensure there is use of protective masks for the workers in dust.</li> <li>Vehicles speed must be regulated in dust areas</li> <li>Vehicles and machines maintenance are done regularly to reduce the leakages of motor oils and emissions</li> </ul>	BFL focal and contractor  Site in charge	
<ul style="list-style-type: none"> <li><b>Waste:</b> Waste would be generated due to use of cements, bricks, sand and plastics.</li> </ul>	Short term/Minor	<p><b>Pre-maintenance:</b> requirements for appropriate waste management should be included in work order.</p> <ul style="list-style-type: none"> <li><b>During Maintenance:</b> segregation of different waste types at work site (soil, cement, sand, and food, plastic etc.)</li> <li>Provide proper container and waste bins at project sites.</li> <li>Waste dumping beside designated sites prohibited.</li> <li>Waste disposable and dumping done weekly</li> </ul>	BFL focal and concern section  Site In charge and Contractor	

		<ul style="list-style-type: none"> <li>• Concept of Reuse, Recycle must be followed and implemented.</li> <li>• Burning of waste is prohibited.</li> </ul>		
<ul style="list-style-type: none"> <li>• <b>Worker's health and Safety:</b> Involvement of publics in works is likely to create impact in their health as the works deals with excavation, digging and clearing.</li> </ul>	Short term Minor	<ul style="list-style-type: none"> <li>• Follow the workers' health and safety guidelines as attached to the ESMP (BFL guidelines).</li> <li>• Ensure regular health screening for the workers pre and during activities</li> <li>• Ensure that no underage workers, or children are engaged.</li> <li>• Decent work conditions, including an appropriate salary, working hours, accommodation and food for workers shall be provided to all workers.</li> <li>• 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.</li> <li>• A grievance mechanism for workers to raise workplace concerns should be in place.</li> </ul>	BFL Focal and site in charge	

Potential impact	Impact scale	Proposed mitigation measures	Responsible party	Costs
<b>Activity 3: Improvement of Natural Waterholes and Saltlick</b>				<i>Nu.500000</i>
<ul style="list-style-type: none"> <li><b>Noise Disturbance:</b> There are possible noise disturbance through movements of vehicles and machines as vehicle movement has to share the public road.</li> </ul>	Short term/Minor	<p><b>Pre-maintenance:</b> requirement to reduce noise pollution should be included in bidding documents and in charge will be well informed</p> <p><b>During Maintenance:</b></p> <ul style="list-style-type: none"> <li>The trucks and excavator should be performed or checked for noise level control at RSTA.</li> <li>The maintenance shall be carried out only in day time from 9 am to 5 pm.</li> <li>Noisy vehicle without fitness certificate are not allowed.</li> </ul>	<p>BFL focal and site In charge</p> <p>Site In charge</p>	
<ul style="list-style-type: none"> <li><b>Waste:</b> Waste would be generated due to use of cements, bricks, sand and plastics.</li> </ul>	Short term/Minor	<p><b>Pre-maintenance:</b> requirements for appropriate waste management should be included in work order.</p> <ul style="list-style-type: none"> <li><b>During Maintenance:</b> segregation of different waste types at work site (soil, cement, sand, and food, plastic etc.)</li> <li>Provide proper container and waste bins at project sites.</li> <li>Waste dumping beside designated sites prohibited.</li> </ul>	<p>BFL focal and concern section</p> <p>Site In charge and Contractor</p>	

		<ul style="list-style-type: none"> <li>• Waste disposable and dumping done weekly</li> <li>• Concept of Reuse, Recycle must be followed and implemented.</li> <li>• Burning of waste is prohibited.</li> </ul>		
<ul style="list-style-type: none"> <li>• <b>Worker's health and Safety:</b> Involvement of publics in works is likely to create impact in their health as the works deals with excavation, digging and clearing.</li> </ul>	Short term Minor	<ul style="list-style-type: none"> <li>• Follow the workers' health and safety guidelines as attached to the ESMP (BFL guidelines).</li> <li>• Ensure regular health screening for the workers pre and during activities</li> <li>• Ensure that no underage workers, or children are engaged.</li> <li>• Decent work conditions, including an appropriate salary, working hours, accommodation and food for workers shall be provided to all workers.</li> <li>• 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.</li> <li>• A grievance mechanism for workers to raise workplace concerns should be in place.</li> </ul>	BFL Focal and site in charge	
<ul style="list-style-type: none"> <li>• <b>Human Wildlife Conflict:</b> if waterholes and saltlicks are not monitored well, it can</li> </ul>	Short term/Minor	<ul style="list-style-type: none"> <li>• Constant monitoring and SMART patrolling at least once a week</li> <li>• Plan intelligence Patrolling.</li> </ul>	BFL focal and Range office.	

be potential source of wildlife poaching creating HWC				
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Potential impact	Impact scale	Proposed mitigation measures	Responsible party	Costs
<b>Activity 4: Management or Improvement of Lowland grassland</b>				<i>Nu.1000000</i>
<ul style="list-style-type: none"> <li><b>Air Pollution:</b> The burning of bushes and invasive species are likely to create air pollution.</li> </ul>		<p><b>Precondition:</b> Time of prescribe burning should be informed to site in charge.</p> <p><b>During Improvement:</b></p> <ul style="list-style-type: none"> <li>Avoid unnecessary grassland fires</li> <li>Prescribe burning to be done in morning</li> </ul>	BFL focal and In charge	
<ul style="list-style-type: none"> <li><b>Grassland fire:</b> If control burning is not well managed, grassland fire is likely to occur.</li> <li></li> </ul>	Short term Minor	<ul style="list-style-type: none"> <li>Control burning to be initiated in morning hours</li> <li>Burning in windy days avoided</li> </ul>	Site In charge	
<ul style="list-style-type: none"> <li><b>Worker's health and Safety:</b> Involvement of publics in works is likely to create impact in their health as the</li> </ul>	Short term Minor	<ul style="list-style-type: none"> <li>Follow the workers' health and safety guidelines as attached to the ESMP (BFL guidelines).</li> </ul>	Site In charge	

<p>works deals with excavation, digging and clearing.</p>		<ul style="list-style-type: none"> <li>• Ensure regular health screening for the workers pre and during activities</li> <li>• Ensure that no underage workers, or children are engaged.</li> <li>• Decent work conditions, including an appropriate salary, working hours, accommodation and food for workers shall be provided to all workers.</li> <li>• 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.</li> <li>• A grievance mechanism for workers to raise workplace concerns should be in place.</li> </ul>		
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## **5. ESMP Implementation arrangements**

The implementation of project activities will be carried out by the BFL focal person in PWS. The focal person will be responsible for 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 PWS in 2021. The contractor/site in charge 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/ work implementers for all workers prior start the project activities and prior any specific tasks with high health risks.

The PWS's 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 noncompliance 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 safeguards requirements.

## **6. ESMP monitoring arrangements**

The BFL focal person in PWS 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. PWS's PA is also fully responsible for the compliance of all external contractors and service providers working in the PWS with the safeguards requirements outlined in the ESMP.

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

Sl.No	Activities	Monitoring team	Timeline		Location	Means of Verification
			Start	Complete		
1	<i>Maintenance of Patrol Route</i>	Field focal	July 2021	December 2021	PWS	Monitoring, progress and completion report.
		ESS officer	3 <sup>rd</sup> week Dec, 2021			Monitoring report
2	<i>Construction of Retention wall</i>	Field focal	July 2021	December 2021	PWS range office.	Monitoring, progress and completion report. (Construction site in charge will monitor the activity soon after the start)
		ESS officer	3 <sup>rd</sup> week Dec, 2021			
3	<i>Improvement of Natural Water holes and Saltlicks</i>	Field focal	July 2021	December 2021	<p><b>Waterholes:</b> Longa Tar Tsho, Charno Tsho and Longa Basti Tsho</p> <p><b>Saltlicks:</b> Longa kalikhar, Longa BastiKhar, Dangya Kalikhar, Garbu Nun Thali, Char Number Bill, Phibsoo Kalikhar, Thulu Balu Kalikhar, Sanu Balu</p>	Progress of the work including completion report

					Kalikhar, Wangchulingka Khar, Shetey Khar and Nichula Khar	
		ESS officer	1 <sup>st</sup> week Oct, 2021			Monitoring report
4	<b><i>Improvement or management of lowland grassland</i></b>	Field focal	July 2021	December 2021		Monitoring, progress and completion report.
		ESS focal	3 <sup>rd</sup> week oct, 2021			Monitoring report

*PWS falls under high-risk zone and movement of people and vehicles for and to high-risk area is restricted. Therefore, physical monitoring of the activities by ESS officer is not possible as of now. If the situation improves, physical monitoring for the construction work will be carried out as per the schedule given above*

## **1. Maintenance of Patrol Route**

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 through photographic/video evidence submitted by the IAs during the implementation as per the given dateline in the table above.
- a. Reports by ESS officer to BFL Fund Secretariat – Annual report submitted to the BFL Fund Secretariat in January, 2022.

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

## **2. Construction of Retention wall**

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 through photographic/video evidence submitted by the IAs during the implementation as per the given dateline in the table above.
- b. Reports by ESS officer to BFL Fund Secretariat – Annual report submitted to the BFL Fund Secretariat in January, 2022.

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

## **3. Improvement of Natural Water holes and Saltlicks**

Monitoring by implementing entities:

- a. Field visits at least twice—during the intervention and then monthly as part of the “SMART patrolling” activity (will be adapted based on field conditions, and also based on the availability of SMART patrolling activities).
- b. Reports by the implementing entities submitted to ESS officer once during the intervention and once after the completion of work.

Monitoring by ESS officer at PCU:

- c. Field monitoring by ESS officer –monitoring through photographic/video evidence submitted by the IAs during the implementation as per the given dateline in the table above.
- d. Reports by ESS officer to BFL Fund Secretariat – Annual report submitted to the BFL Fund Secretariat in January, 2022.

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

## **4. Improvement or management of lowland grassland**

Monitoring by implementing entities:

- a. Field visits at least twice—during the intervention and within three months after the intervention
- b. Reports by the implementing entities submitted to ESS officer within a week after each field visit

Monitoring by ESS officer at PCU:

- c. Field monitoring by ESS officer –monitoring through photographic/video evidence submitted by the IAs during the implementation as per the given dateline in the table above.
- d. Reports by ESS officer to BFL Fund Secretariat – Annual report submitted to the BFL Fund Secretariat in January, 2022.

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 contractor that will employ workers as mentioned in the contract agreement. The budget for the activities are as bulleted below;

- Maintenance of Patrol route: **Nu.400000** (USD:5700)
- Construction of Retention Wall: **Nu.800000** (USD:11,800)
- Maintenance of Waterholes and saltlick: **Nu.500000** (USD: 7400)
- Management of Lowland grassland: **Nu.1000000** (USD:14,700)

## 8. Consultation and Disclosure Mechanisms

This ESMP has been prepared in a participatory manner, and a community consultation was carried out on the following dates and location to inform local communities regarding the planned project activities, solicit their opinions, and enable them to question proposed mitigation measures. The main issues that were raised during the consultation meeting include the following:

- ❖ **Patrol Route Maintenance:** Due to COVID 19 restrictions, meetings and consultations are not allowed. However, main bodies of community including local leaders (Tshokpa, Mangmi and Gup) were informed about the works that need be to be carried out in PWS via PWS/ADM/2020-2021/ dated 15<sup>th</sup> February 2021. The notification assisted in managing of labors and help in addressing grievances to public as per earlier. Moreover, past experiences show good story of effective community coordination with the work as it is win-win measure.
- ❖ **Construction of Retention Wall:** The detail consultation was done on 27/01/2020 during public consultation meeting. Moreover, notification on retention wall construction was issued to local leader on 15/02/2021 with letter PWS/FPES-01/2020-2021/315

- ❖ **Maintenance waterholes and Saltlick:** Consultation was held on: 29/11/2019 for Nichula and 27/01/2020 for Singye gewog on awareness on waterholes restoration grassland management and forest management. Moreover, notification of similar kind of activity conduct were issued to public with letter PWS/FPES/2020-2021/315
- ❖ **Management of Lowland grassland:** Consultation was held on 6/12/2019 for Nichula and 27/01/2020 for Singye gewog on importance of grassland management, waterhole and forest management to Nichula and Singye gewog. The notification on similar kind of activities to public are issued with letter PWS/FPES/2020-2021/ 315

The detailed minutes of the consultation meeting are attached to this ESMP, along with a full list of participants (disaggregated by gender and age).

The full English version of this ESMP, as well as an executive summary in Bhutanese, shall be disclosed on the website of MoAF and WWF, Bhutan Program. Hard copies of the ESMP should also be available at the PA Management Office and at the PCU Office.

## 9. Stakeholder engagement plan

The local community that resides in the vicinity of the planned BFL activities in PWS will be engaged throughout the implementation of these activities.

### Construction of Retention Wall:

- ❖ **Date of Consultation:** Consultation for construction was done on 27/01/2020
- ❖ **Location:** Singye gewog
- ❖ **Notification on Construction of activity** **PWS/FPES-03/2020-2021/315**
- ❖ **Agenda:** Information on construction of office including conservation awareness to Singye gewog.

### Maintenance of Waterholes and Saltlicks

- ❖ **Dates of consultation:** 29/11/2019 for Nichula and 27/01/2020 for Singye gewog,
- ❖ **Notification of reminder of similar activities as per** **PWS/FPES-03/2020 2021/315**
- ❖ **Agenda:** Conservation awareness to Nichula and Singye gewog which include importance of saltlick and waterhole management.
- ❖ **Location:** Singye and Nichula gewog

## Management of Lowland Grassland

- ❖ **Dates of Consultation:** 6/12/2019 for Nichula and 27/01/2020 for Singye gewog
- ❖ **Agenda:** Conservation awareness on importance of grassland management, waterhole and forest Mangement
- ❖ **Location:** Nichula and Singye Gewog
- ❖ Notification on similar kind of activities issued as per **PWS/FPES-01/2020-2021/315**

## Feedbacks and Issues raised during public Consultation

PWS has completed year two activity without a single issue raised by people regarding BFL funded activities. Rather, most people share their agreement on the importance of habitat management to their livelihood and wildlife. They believe management of grassland effectively assist for wildlife and cattle forage besides creating job opportunities to community during implementation. Moreover, habitat enrichment activity like saltlick enrichment, waterhole creation and habitat enrichment are believed by the people to reduce human wildlife conflict. People shared their stories of how in past the forest were filled with fodder trees and waterholes, and HWC occurring very minimal in such scenario in the past.

Implementation of BFL activities are the hopes of people to bring back that minimum HWC occurrence like in the past. Besides that, conservation awareness have also brought much of awareness to importance of wildlife and environment to the society. People shared their support for work implementation of such works.

**Annexures:** list of participants (disaggregated by gender and age) for the consultation.

APA Progress, FNCR 2017 Review, BFL Five Year Target setting, Pre-consultation (zonation) and E-Pems Awareness Meeting

Venue: Nichula Range

Date: December 4<sup>th</sup> 2019

Sl. No.	Name of Participant	Gender		Designation	Signature
		Male	Female		
1	Laxmi Rabten	✓		PM, PWS	
2	Wangmo Alidup	✓		PRO	
3	Cheten Wangden	✓		Sr. FR	
4	Phuntsho Tsoyay	✓		Sr FO	
5	Kencho Rigzin	✓		F.O.	
6	Laxman Tamay	✓		Sr. FR	
7	Tashi Phuntsho	✓		FR-II	
8	Karma Chedup	✓		FR-II	
9	Tenzel Wangdi	✓		FR-II	
10	Shewab Dorji	✓		Driver	
11	Sonam Dorjee	✓		AA I	
12	Nangay Dorji	✓		ASST. Fr	
13	Karma	✓		- " -	
14	Chandra Maya Gurung		✓	Canteenier	
15	Sanja Zangpo		✓	Adm. Asst.	
16	Lynza Nubor	✓		FO	
17	Deki Teshay		✓	Sr. FR	

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Public Consultation for Local Forest Management Plan Preparation

Venue: Nichula Range

Date: December 5<sup>th</sup> 2019

Sl. No.	Name of Participant	Gender		Village	Signature
		Male	Female		
1.	Karna Bdr. Powrel	✓		Dangrebu	
2.	Toya Nath	✓		Dangrebu	
3.	Bal Bdr. Bista	✓		Alley	
4.	Nar Bir Gurung	✓		"	
5.	Ganja Man Karki	✓		Dangrebu	
6.	purna Bdr Bista	✓		Dangrebu	
7.	Humay Kharka	✓		"	
8.	Dhak Bdr Bista	✓		Dangrebu	
9.	Man Bdr. Bhandari	✓		Alley	
10.	Saraswati Adhikari		✓	"	
11.	Rabina Sdr. Poudel	✓		Katara	
12.	Chandra Bhattarai	✓		Danchina	
13.	Rajesh Mongar	✓		Gangtokha	
14.	Kharka Bdr. Bhattarai			Gangtokha	
15.	Biswajit Rai	✓		Daragan	
16.	Bhimraj Lambu	✓		Gangtokha	
17.	Lala Bdr. Khatri	✓		Gangtokha	
18.	ASH Bdr. Tamang	✓		Karpheling	
19.	Ganga Bir Gurung	✓		Soluday/Mangpheli	

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Sl. No.	Name of Participant	Gender		Designation	Signature
		Male	Female		
20	Jit Bdr. Majhi	✓		Apasachi/Omchugang	
21	Ash Kumar Majhi	✓		Langtotecha	
22	Anta Raj Limbo	✓		Omchugang	
23	Kabi Raj Gurung	✓		Yampheling	
24	Pendel Wangdi	✓		FR-II	
25	Karma Chedup	✓		"	
26	Wheing Nichup	✓		As-FR	
27	Klinga Wonda	✓		FO	
28	Phutko Tolsay	✓		Sr. FO	
29	Keneho Rigzin	✓		FO	
30	Sorji Rabten	✓		FM	
31	Sanam Dorjee	✓		AA I	
32	Sayga Zayma		✓	Adm. Asst.	
33	Chiten Woyda	✓		Sr. FR	
34	Tashi Phunso	✓		FR-II	
35	Laxman Tany	✓		Sr. FR	
36	Karma	✓		Asst. Forester	
37	Chandra Maya		✓	Caretaker	
38	Shresth Dorj	✓		Driver	
39	Deleki Yeshey		✓	Sr. FR	
		17	3		
		38	4		
		17	3		

Public Consultation Workshop for Management Zonation of PWS

Venue: Nichula Range

Date: December 6<sup>th</sup> 2019

Sl. No.	Name of Participant	Gender		Village	Signature
		Male	Female		
1/	Sawaswati Adhikari		✓	Atley	
2/	Man Bdr. Bhandari	✓		"	M/B/B
3/	Karna Bdr. Powrel	✓		Dangrebu	
4/	Toya Nath	✓		"	
5/	Garja Man Karkei	✓		"	
6/	Bal Bdr. Bista	✓		Atley	
7/	Nar Bis Gurung	✓		"	
8/	Purna Bdr. Bista	✓		Dangrebu	
9/	Kumar Karkei	✓		"	
10/	Dhak Bdr. Bista	✓		"	
11/	Katna Bdr. Powrel	✓		Katarang	
12	Ana Nath Bhattarai	✓		Danuchuna	
13	Rajesh Mungwa	-		Gang Lake	
14	Khaaka Bdr. elke			Gaugotokha	
15	Biswas	✓		Darogson	
16	Bhain Roy Lambu			Narayan	
	lal Bdr. Khatri			Narayan	
18	Ash Bdr. Tamang			Yar-Pheling	
19	Ganga Bdr. Gurung	✓		Yarpheling	

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Sl. No.	Name of Participant	Gender		Designation	Signature
		Male	Female		
20	Jit Betr. Majhi	✓		Omchugang	
21	Ash Kumar Majhi	✓		Gangtokha	
22	Aita Raj Limbu	✓		Omchugang	
23	Kabi Raj Gurung	✓		Yarpheling	
24	Tendel Wangdi	✓		FR-II	Handwritten signature
25	Karma Chedup	✓		"	Handwritten signature
26	Pashi Phuntsho	✓		"	Handwritten signature
27	Zheing elidup	✓		SI FR	Handwritten signature
28	Linga Nambu	✓		FO	Handwritten signature
29	Phutsho Tolsay	✓		SI. FO	Handwritten signature
30	Kencho Rigzin	✓		FO	Handwritten signature
31	Lorji Rabten	✓		SM	Handwritten signature
32	Sonam Derge	✓		AA I	Handwritten signature
33	Sanga Zangmo		✓	Adm. Asst.	Handwritten signature
34	Cheta Wangdi	✓		SI. FR	Handwritten signature
35	Laxman Tam	✓		- II -	Handwritten signature
36	Karma	✓		Asst. Forester	Handwritten signature
37	Chandra Maya		✓	Caretaker	Handwritten signature
38	Sherab Dor	✓		Driver	Handwritten signature
39	Deki Yeshey		✓	SI. FR	Handwritten signature
		31	3		
		35	4		

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Conservation Awareness

Venue: Nischinagar GT Hall

Date: 2/12/2019

Sl. No.	Name of Participant	Gender		Designation	Signature
		Male	Female		
1.	Ganjan Man Karki	✓		Dangrebu	
2.	Lal Bdr. Khatri	✓		Gangtokha	
3.	Bhim Raj Limboo	✓		"	
4.	Kabi Raj Gurung	✓		Yarpheeling	
5.	Saraswati Adhikari		✓	Damchuna	
6.	Ashi Bdr. Tamang	✓		Yarpheeling	
7.	Ganga Maya Bhattarai		✓	Damchuna	
8.	Toya Nath Maidali	✓		Dangrebu	
9.	Rajesh Mouger	✓		Gangtokha	
10.	Karka Bdr. Chettri	✓		Gangtokha	
11.	Ganga Bir Gurung	✓		Yarpheeling	
12.	Man Bdr. Bhandari	✓		Damchuna	
13.	Ratna Bdr. Powel	✓		Damrekesa	
14.	Bal Bdr. Bista	✓		Damchuna	
15.	Nar Bir. Gurung	✓		"	
16.	Oma Nath Bhattarai	✓		"	
17.	Purna Bdr. Bista	✓		Dangrebu	
18.	Padam Bdr. Gurung	✓		Yarpheeling	
19.	Mangal Singh Maje	✓		Gangtokha	
20.	Phib Raj Limboo	✓		"	
21.	Deepa Maya Rai		✓	"	

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Sl. No.	Name of Participant	Gender		Designation	Signature
		Male	Female		
22.	Leela Rai		✓	Gangtokha	
23.	Som Maya Limbu		✓	Omchugang	
24.	Chongku Gooal		✓	"	
25.	Karna Bdr. Pawrel	✓		Dangrebu	
26.	Kumar Karki	✓		Dangrebu	
27.	Dilip Kc Gurung	✓		Solmokey, GUP	
28.	Sonam Choden		✓	GAO,	
29.	Tendel Wangdi	✓		FR-II	
30.	Tashi Phuentsho	✓		"	
31.	Karma Chedup	✓		"	
32.	Zsheng Alchep	✓		Sr. FIR	
33.	Kings Nudra	✓		FO	
34.	Phutsho Tsogay	✓		Sr. FO	
35.	Kencho Rigzin	✓		FO	
36.	Lojji Rabten	✓		PM	
37.	Sonam Dargje	✓		AA I	
38.	Sanga Zangmo		✓	Adm. Asst.	
39.	Chetan Wangda	✓		Sr. FR	
40.	Karman Tamg	✓		Sr. FR	
41.	Shankar Koirala	✓		Damchuna	
42.	Karma	✓		Asst. Forester	
43.	Dilip Basnet	✓		Dangrebu	

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Conservation Awareness to Communities of Nichula Geog

Venue: Nichula Range

Date: December 7<sup>th</sup> 2019

Sl. No.	Name of Participant	Gender		Village	Signature
		Male	Female		
1.	Rajesh Mongar	✓		Gangtokha	<i>[Signature]</i>
2.	Saraswati Adhikari		✓	Damchuna	<i>[Signature]</i>
3.	Ganga Maya		✓	Damchuna	Ganga
4.	Bal Bdr. Bista	✓		"	<i>[Signature]</i>
5.	Mon Bdr. Bhandari	✓		"	<i>[Signature]</i>
6.	Omnath Bhattarai	✓		"	<i>[Signature]</i>
7.	Nar Bir Gurung	✓		"	<i>[Signature]</i>
8.	Lal Bdr. Khati	✓		Gangtokha	<i>[Signature]</i>
9.	Naini Maya Rai		✓	"	<i>[Signature]</i>
10.	Lela Rai		✓	"	<i>[Signature]</i>
11.	Ganga Bir Gurung	✓		Yarphelling	<i>[Signature]</i>
12.	Toyanath Maidali	✓		Dangrebu	<i>[Signature]</i>
13.	Ishor Kumar Karki	✓		Dangrebu	<i>[Signature]</i>
14.	Kumar Karki	✓		"	<i>[Signature]</i>
15.	Kabiraj Gurung	✓		Yarphelling	<i>[Signature]</i>
16.	Karna Bdr.	✓		Dangrebu	<i>[Signature]</i>
17.	Kharka Bdr.	✓		Gangtokha	<i>[Signature]</i>
18.	Ratna Bdr. Jorwal	✓		Kalaray	<i>[Signature]</i>
19.	Ash Bdr. Tamang	✓	+	Yarphelling	<i>[Signature]</i>

15 4

Sl. No.	Name of Participant	Gender		Designation	Signature
		Male	Female		
20	Januka Rizal		✓	Katavey	J. W. S.
21	Ash Kumar Majhi	✓		Gangtokha	
22	Chandra Bdr. Biswa	✓		— — —	<i>[Signature]</i>
23	Aita Raj Limbu	✓		Omchungang	
24	Tenzel Wangdi	✓		FR-II	<i>[Signature]</i>
25	Karma Chodup	✓		"	<i>[Signature]</i>
26	Shering Nidup	✓		Sr. FR	<i>[Signature]</i>
27	Kizge Nobs	✓		FO	<i>[Signature]</i>
28	Phuntshe Tobgay	✓		Sr. FO	<i>[Signature]</i>
29	Kunho Rigzin	✓		FO	<i>[Signature]</i>
30	Sorji Rabten	✓		FR	<i>[Signature]</i>
31	Sonam Danjee	✓		AAI	<i>[Signature]</i>
32	Sanga Zangmo		✓	Adm. Asst.	<i>[Signature]</i>
33	Chitan Wangdi	✓		Sr. FR	<i>[Signature]</i>
34	Tashi Phuntshe	✓		FR-II	<i>[Signature]</i>
35	Laxman Tam	✓		Sr. FR	<i>[Signature]</i>
36	Karma	✓		Asst. Forester	<i>[Signature]</i>
37	Chandra Maya		✓	Caretaker	<i>[Signature]</i>
38	Shovans Baji	✓		Driver	<i>[Signature]</i>
39	Delhi Tshay		✓	Sr. FR	<i>[Signature]</i>
		16	4		
		31	6		

8/12/2019  
 Gangtokha Community Forest  
 Certificate Handing Taking Ceremony

Sl. No.	Name of Participant	Gender		Designation	Signature
		Male	Female		
1.	Rajesh Monger	✓		Gangtokha	
2.	Deepa Maya Rai		✓	"	
3.	Deki Yangzom		✓	"	
4.	Naini Maya Rai		✓	"	
5.	Leela Rai		✓	"	
6.	Aita Raj Limbo	✓		Omchugang	
7.	Barun Kumar Khati	✓		Gangtokha	
8.	Lal Bdr. Khati	✓		"	
9.	Bhim Raj Limbo	✓		"	
10.	Chungku Gyal		✓	"	
11.	Shanti Maya Kumar		✓	"	
12.	Nima Zangmo		✓	"	
13.	Maita Bdr. Limbo	✓		"	
14.	Karka Bdr. Chetri	✓		"	
15.	Ash Kumar Majhi	✓		"	
16.	Bircha Bdr. Biswa	✓		"	
17.	Chandra Bdr. Biswas	✓		"	
18.	Damber Bdr. Khati	✓		"	
19.	Ganga Bdr. Kami	✓		"	
20.	Dinesh Rai	✓		"	
21.	Mangali Maya Kami		✓	"	
22.	Pabitra Biswas		✓	"	

13 9

Dangrebu Community Forest  
Handing Taking Ceremony 8/12/2019

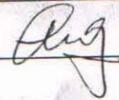
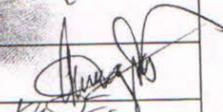
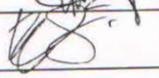
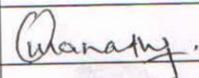
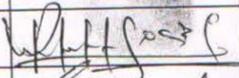
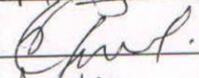
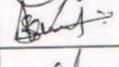
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		Male	Female		
1.	Bir Bdr. Darjee	✓		Gang Dangrebu	
2.	Anuka Basnet		✓	"	
3.	Man Maya Bista		✓	"	
4.	Pal Man Darjee	✓		"	
5.	Toya Nath Maidali	✓		"	
6.	Tul Bdr. Bista	✓		"	
7.	Bal Bdr. Bhattarai	✓		"	
8.	Shankar Koirala	✓		"	
9.	Hom Bdr. Guragai	✓		"	
10.	Rudra Bdr. Darjee	✓		"	
11.	Rajesh Monger	✓		"	
12.	Ran Bdr. Bhattarai	✓		"	
13.	Nirparat Basnet	✓		"	
14.	Dak Bdr. Bista	✓		"	
15.	Ratna Bdr. Subba	✓		"	
16.	Sumita Basnet		✓	"	
17.	Nar Bada Bhattarai		✓	"	
18.	Purna Bdr. Bista	✓		"	
19.	Damber Kr. Basnet		✓	"	
20.	Bishnu Lal Maidali	✓		"	
21.	Kumar Karki	✓		"	
22.	Yen Bdr. Bista	✓		"	

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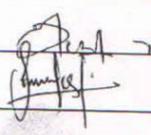
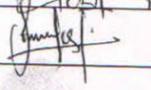
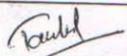
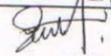
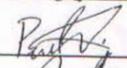
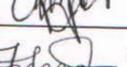
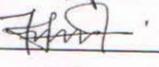
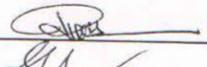
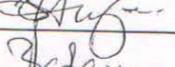
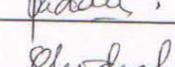
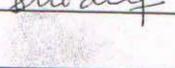
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8/12/2019

Non-wood Forest Produce Group, Nichula Geog  
Handing Taking Ceremony

Sl. No.	Name of Participant	Gender		Designation	Signature
		Male	Female		
1.	Bal Bdr. Bista	✓		Damchung	
2.	Ash Bdr. Tamang	✓		Yarpheling	
3.	Sarawati Adhikari		✓	Damchung	
4.	Narbir Gurung	✓		"	
5.	Dal Bdr. Powrel	✓		Damrekesa	
6.	Hem Bdr. Powrel	✓		"	
7.	Jagat Bdr. Gurung	✓		"	
8.	Badri Kedar Kayley	✓		Yarpheling	
9.	Padam Bdr. Gurung	✓		"	
10.	Kabi Raj Gurung	✓		"	
11.	Pem Tshering Sherpa		✓	Damchung	
12.	Ban Maya Bhattarai		✓	"	
13.	Omanath Bhattarai	✓		"	
14.	Devi Chara Rizal	✓		Damrekesa	
15.	Pema Wangdi	✓		FMCL Manager	
16.	Ratna Bdr. Powrel	✓		Damrekesa	
17.	Santosh kr Nangar	✓		FMCL	
18.	Narath Rizal	✓		Kataray	
19.	Narapati Adhikari	✓		Damrekesa	
20.	Tara Prasad Adhikari	✓		"	
21.	Ganga Bir Gurung	✓		Yarpheling	
22.	Amrikey Subba	✓		"	

19 3

Sl. No.	Name of Participant	Gender		Designation	Signature
		Male	Female		
23.	Ganga Maya Adhikari		✓	Damrekesa	Gf9
24.	Dal Bdr. Bista	✓		Damchuna	
25.	Santa Kumar Subba	✓		"	
26.	Kamala Devi Rizal		✓	Damrekesa	
27.	Uma Devi Subedi		✓	"	
28.	Tajet Bdr. Gurung	✓		Damchuna	
29.	Tanka Bdr. Karki	✓		"	
30.	Bonam Uhamo		✓	NFE Instructor	
31.	Kamala D. Kenzi		✓	Sale Executive	
32.	Sangay Chopel	✓		Monk	
33.	Lenba Dorji	✓		"	
34.	Pemba Rabten	✓		" P	
35.	Ugyen Dorji	✓		"	
36.	Rimzin Sherpa	✓		"	
37.	Hanka Subba	✓		Driver	
38.	Hash Bdr Rai	✓		Gewog Gadchun	
39.	Gerje Khar Kach	✓		Dangrebu	
40.	Sonam Dorjee	✓		Aff I	
41.	Padam Bdr. Pawel	✓		Mangni	
42.	Sonam Choden		✓	GAD, Nichula	
43.	Ruka Devi Adhikari		✓	Kataray	
44.	Dolma Tamang		✓	Damchuna	

14 8

APA 2019-2020 Review and MTR Progress Reporting  
 Post Consultation Analysis and Data Gap Analysis 9/12/2019

Sl. No.	Name of Participant	Gender		Designation	Signature
		Male	Female		
1	Laji Rabten	✓		PM	<i>Laji</i>
2	Dolgyalodup	✓		R/O	<i>Dolgyalodup</i>
3	Sanya Zayuo		✓	Adm. Asst.	<i>Sanya Zayuo</i>
4	Deki Yeshey		✓	SFR	<i>Yeshey</i>
5	Kencho Rigzin	✓		FO	<i>Kencho Rigzin</i>
6	Laxman Tamag	✓		Sr. FR	<i>Laxman Tamag</i>
7	Kunga Noda	✓		FO	<i>Kunga Noda</i>
8	Shurab Dorji	✓		Driver	<i>Shurab Dorji</i>
9	Tashi Phuntso	✓		FR-II	<i>Tashi Phuntso</i>
10	Kasma Chedup	✓		"	<i>Kasma Chedup</i>
11	Phuntshu Tdsang	✓		Sr. FO	<i>Phuntshu Tdsang</i>
12	Deki Yeshe	9	2		
		42	13		

## **Annexure . 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)<sup>1</sup> 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 shall 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. Legionella pneumophila) or breeding of vectors (e.g. mosquitoes and flies) of public health concern.

### **2. Information Provision on 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. 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 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 of 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<sup>2</sup>**

#### 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

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- 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 be 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