

# **Bhutan for Life**

## **Environmental and Social Management Plan for**

### **Phibsoo Wildlife Sanctuary (2022)**

#### **1. Introduction**

##### **1.1 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.

##### **1.2 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.

### **1.3 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.

### **1.4 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.

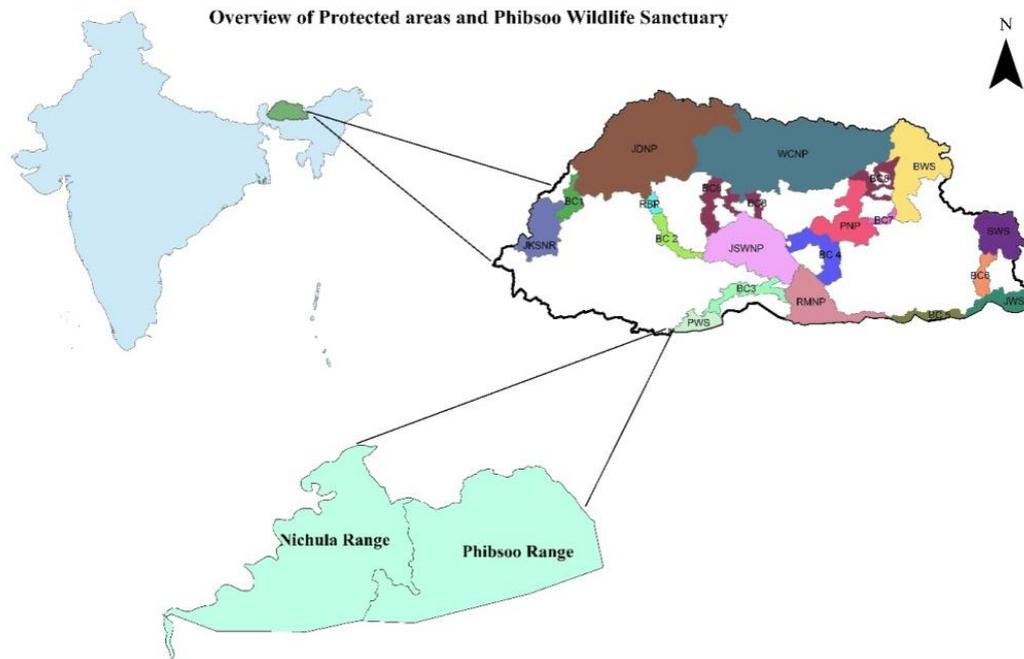
## **2. Environmental and Socio-Economic Conditions:**

Phibsoo Wildlife Sanctuary (PWS) was created in 1974 along with five other protected areas as Phibsoo Reserved Forest. Later in 1993, it was up graded 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. Phibsoo Wildlife Sanctuary, the smallest protected area in Bhutan encompasses an area of 286.68sq.km. It is located in the Himalayan foothills of south-central Bhutan. The wildlife Sanctuary is divided into two range offices, Phibsoo Range with 147.78 sq.km to the east and Nichula Range office with 138.9 sq.km to the west. The northern part of wildlife sanctuary shares Beteni gewog boundary under Tsirang Dzongkhag between 26°51'51.04"N, 90°1'12.88"E to 26°50'58.69"N, 90°7'51.52"E with Biological Corridor (BC3) connecting the wildlife sanctuary on north eastern side. Eastern part of wildlife sanctuary falls in Singe gewog under Sarpang Dzongkhag between 26°51'0.02"N, 90°8'43.85"E to 26°46'22.37"N, 90°11'35.01"E. It's southern boundary follows Indo Bhutan international border with Ripu-Chirang Reserved Forest on the Indian side starting from Border pillar 117/1 to 145/1 till Senge gewog. While it's western boundary shares the gewog boundary of Lhamoyzingkha, Deorali, and Tsendagang from 26°42'36.01"N, 89°51'40.45"E to 26°51'5.56"N, 89°59'26.59"E flanked by Sunkosh river.

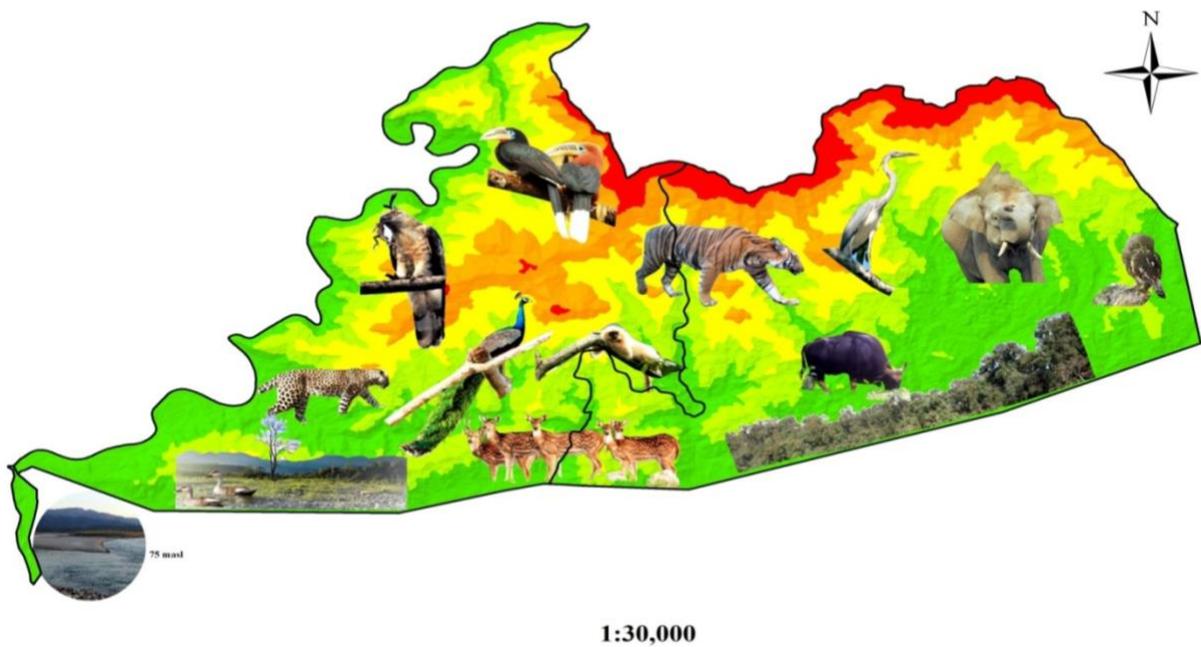
### **(a) Conservation Significance**

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 western most 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 provides safe refuge to the prey species for keystone species. Location of PWS is represented in figure 1 and icons in figure 2.

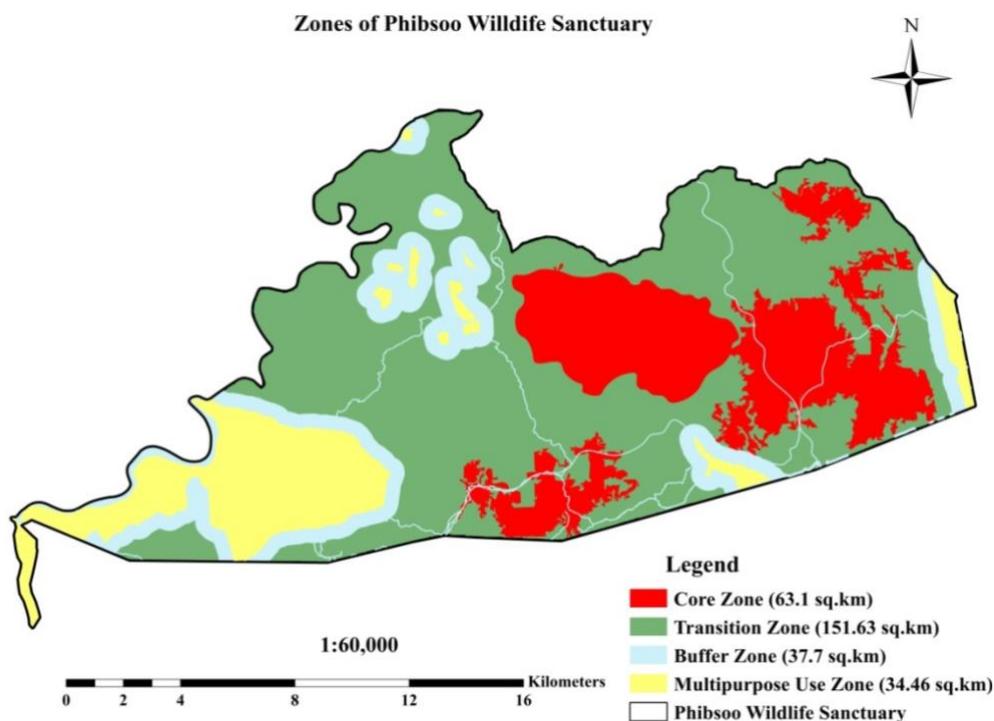


**Figure 1: Location of Phibsoo Wildlife Sanctuary**



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

Zonation of the wildlife sanctuary was carried out following protected area zonation guideline 2020 which constitute of four zones; Core zone (22%), Transition zone (52.86%), Buffer zone (13.14%) and Multiple use zone (12%) (Figure 3). Maxent modeling of 26 species of wildlife such as Tiger, Asiatic golden cat, Clouded leopard, Common leopard, Elephant, Dhole, Gaur, Golden Langur, Hog deer, Goral, Great Hornbill, Wreathed Hornbill, Oriental Pied Hornbill, Rufous-necked Hornbill, White-bellied Heron, Black Stroke, Civet, Pangolin, Marbled cat, Mongoose, Serrow, spotted deer, Bear, Barking deer, Wild Pig, Saltlick and waterhole areas were carried out using Spatial Monitoring and Reporting Tool (SMART) and camera trap survey data of last three years. The species are selected based on IUCN Category and their role towards survival of keystones species. Prey species like deer and wild pig were also considered due to their import role in survival of keystone species. The results were analyzed using zonation software and processed in Arc gis 10.3.



**Figure 3: Zones of Phibsoo Wildlife Sanctuary**

### **(b) 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

### **(c) 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**

### **(d) 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

### (e) Flora and fauna

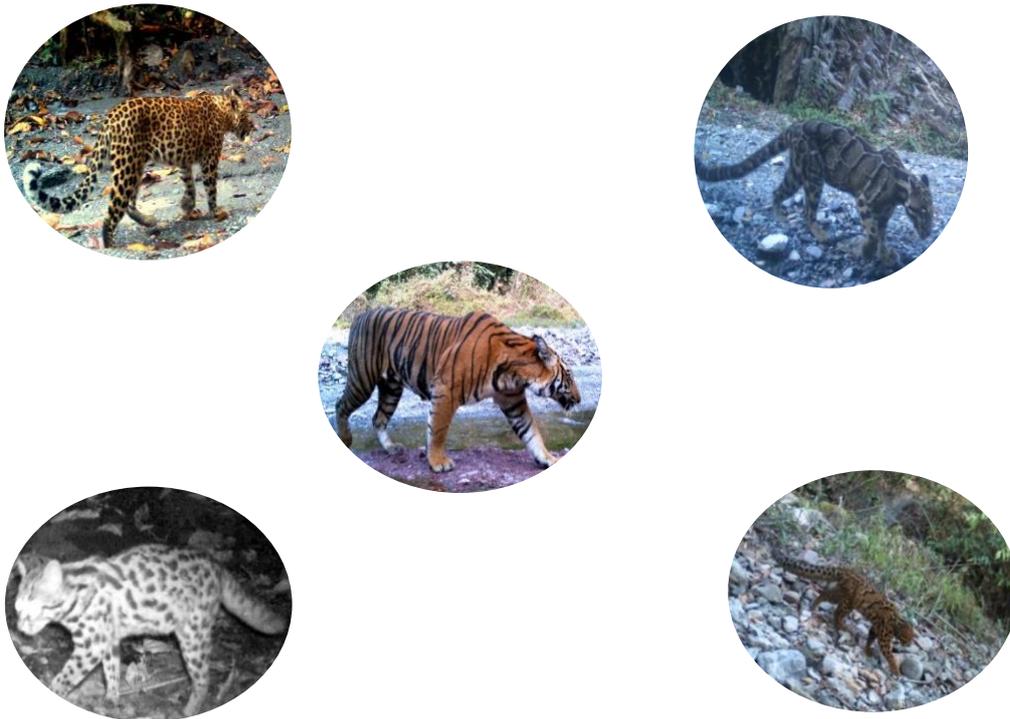
PWS is home to 637 recorded species of flowering plants of which 528 are dicotyledons and 109 monocotyledons. These include 199 trees, 143 herbs, 134 shrubs, 79 climbers, 34 grasses, 25 ferns, and 44 orchids. Number of these species, such as *Caryota urens*, *Arundina graminifolia*, *Typha elephantina*, *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**



**Figure 4: Cats of PWS**



**Figure 5: New Records of Birds**

**(f) 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 2022;

The activities planned in Year 4 for PWS are as detailed below;

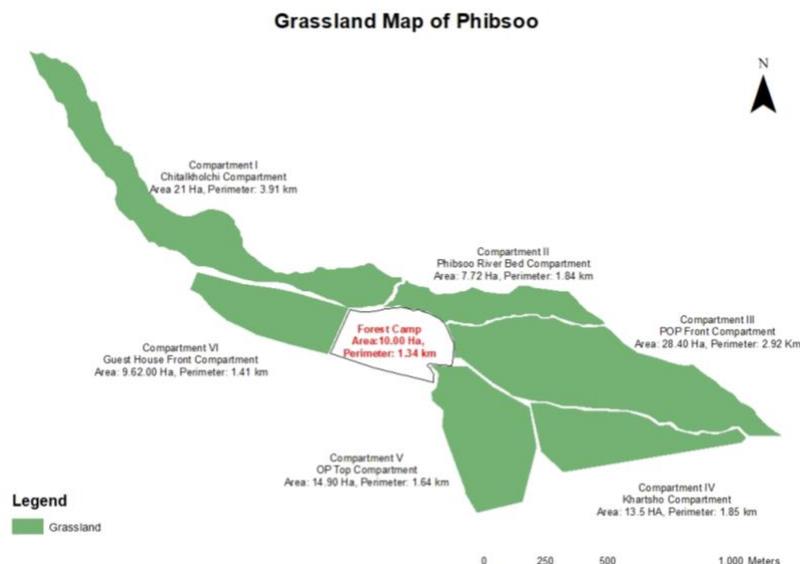
#### Activity 1: Improvement of Lowland Grassland and Establishment of *Themedia* grass

**Budget:** Nu.1200000 (USD 18000).

**Timeline:** January 2022-December 2022

**Location:** Phibsoo Outpost

PWS is known for vast grassland with more than 100 hectares. It is an important habitat for mammals like spotted deer, barking deer, elephant, guar and etc. The activity will be conducted in Phibsoo Outpost which has vast grassland playing pivotal role towards wildlife ecology (Figure 6). Preliminary Surveys were carried out to understand the grassland ecosystem and ecology in Phibsoo Wildlife Sanctuary. Seasonal removal of grasses with twice a year, uprooting and prescribe burning compartment wise are recommended for management of grassland in Phibsoo Wildlife Sanctuary.



**Figure 6: PWS Grassland**

The activity will be implemented twice a year in two prescribed seasons as per the recommendation and result of survey. It will be carried out in winter (November to February) and once in spring (April to June). Total of 92 hectares of grassland will be managed in year 4

of BFL. The management will be done as per the results and recommendation of preliminary survey conducted in third year. Approximately 30 to 40 staffs will be involved in the activity for at least one month. They will be accommodated in Phibsoo Outpost and basic amenities like water and housing will be provided from Phibsoo Outpost. Since activity site is located far from the settlement area (25 km away), they won't be sharing community resources rather will be provided from Phibsoo outpost. The recommendations of the surveys and activity to be conducted are bulleted and detailed below;

*Chromolaena odorata* and *Mikania micrantha* are abundant and most prolific seed dispersal weeds which impacted the health of grassland in PWS. Seasonal uprooting of these invasive species once in summer and once in winter is found to be necessary so that the invasive species can be controlled. Further, for a proper scientific management sub compartments were developed so that uprooting can be taken effectively. Uses of machines are also not recommended even though the rate of working is faster because it completely expose the soil surface and invites more invasive species to take over the grassland



Prescribe burning in compartment wise is recommended, which would give small mammals, herpetofauna and rodents a space to find shelter and movement (Wangmo et al., 2018). Traditional burning seems to have impacted on the small mammals as the grassland is put to fire without any proper prescription. So, to have safe space for small animals during burning the grassland, compartments will be developed. In between the compartments minimum



distance of 15 meters will be maintained to control the spread of fire to other compartments. This 15-meter gap will be maintained and cleaned for fire line without the presence of any fuel wood.

The media grasses will be collected by staffs from nearby forest offices especially Royal Manas National Park and raised in PWS nursery. Seeds will be also sown in 72 hectares of Phibsoo outpost compartment wise and established. The work will be carried out by staffs living in outpost with their designated compartment.

*The environmental and social impacts of the activities are as follows;*

- ✓ Occurrence of non-native species due to grassland improvement work
- ✓ Cutting down of trees and plants that are encroaching on the Lowland grassland negatively affects the ecosystem of the lowland grasslands (e.g., grazing areas are diminished)/ fallen logs affect wildlife movements
- ✓ Accidental Forest fire during burning of residual debris
- ✓ Accidental removal of Endangered and ecologically significant species
- ✓ Growth of non-palatable species
- ✓ Air Pollution: The burning of bushes and invasive species are likely to create air pollution.
- ✓ Worker's health and Safety: Involvement of public in works is likely to create impact in their health as the works deal with excavation, digging and clearing.

## **Activity 2: Installation of Hybrid Solar System in Phibsoo Outpost**

**Budget:** Nu.2 million (USD 25000).

**Timeline:** January 2022-December 2022

**Location:** Phibsoo Outpost

Phibsoo outpost is the only outpost in Bhutan without electricity connection and a place where field rangers live for six months a year guarding natural resources (Figure 7). In 2014, a generator has been established with support from WWF Bhutan, it has been providing 2 hours lighting every day which is good enough to charge the handset batteries. Lack of skills in maintenance and servicing in Bhutan, the generator has been susceptible to frequent damages from lightning and heat. Electricity connection is not feasible as outpost is located 25 km far from the community. It would also cause damages to important habitat of wildlife and maintenance would cost huge to the government. Therefore, looking for an alternative

energy source has been found very important for which solar energy harnessing has been found very relevant.

Till date a generator has been providing lighting source for rangers and for two hours daily which isn't enough for them to fully charge their equipment and gadgets. Moreover, they face very harsh heat during summer without fan. Therefore, solar lighting would serve them at least 5 hours of lighting and if possible, for 24 hours of fan during summer. The solar system will avoid clearing of corridors unlike electricity which will be cost effective, will not disrupt the wildlife movement and most importantly be environment friendly. Moreover, installing solar in outpost is an opportunity for PWS to provide efficient service delivery on time.

The activity involves fixing of hybrid solar system in Phibsoo Outpost. Solar system will be installed by staffs of Phibsoo Wildlife Sanctuary after seeking technical assistance from Bhutan Power Corporation and other agencies which



**Figure 7: Phibsoo Outpost**

deals with solar system. Quality solar panel and batteries will be purchased after seeking assistance from Nature Conservation Division. Since the activity site is located 25 km away from settlement, public won't be disturbed during the establishment. Technical persons and staffs will be accommodated in Phibsoo Outpost which has all basic amenities like continuous water and housing.

*The environmental and social impacts of the activities are as follows;*

- ✓ Risk that lack of proper maintenance of the solar panels will result in environmental waste
- ✓ Risk of exposure to the solar battery acids
- ✓ Workers Health and Safety: since it involves staffs and some public, certain health and safety issues are likely to occur.

### **Activity 3: Maintenance of PWS HQ through fixing of ceiling, partition and painting**

**Budget:** Nu.700000 (USD 10500).

**Timeline:** January 2022-December 2022

**Location:** Phibsoo Outpost

PWS Headquarter is located in Senge gewog falling under Yarphelling Chewog. It is located just above Singye Primary School and Basic Health Unit with 82 household near to it. The wildlife sanctuary provides basic assistance like response to HWC, solar fencing monitoring and duty as and when required. The office was constructed in 2011 and minor maintenance was carried out in Year 2 through BFL project but major parts of works were left uncompleted due to fund shortage. The activity will be conducted in first quarter of Year 4 which will cover all the maintenance work left uncovered in year 2. The activity involves fixing of ceilings, painting of walls and fixing of partitions in head office which can be used as conference and office for various section.

The works will be done by local workers and staffs which is likely to take around 60 days. The workers will be accommodated in Phibsoo Range and PWS HQ an area currently occupied by workers of Phibsoo Range Construction. They will depend on PWS office water source which remain adequate for 24/7 hours. Even though, the activity site is in center of community it won't affect the public since it is a minor maintenance and such activities are normal in the area. Moreover, activity happens only in PWS compound giving reasonable buffer to the community.

*The environmental and social impacts of the activity are as follows;*

- ✓ Cutting down vegetation: cutting down of trees and other vegetation for Maintenance purposes
- ✓ Noise disturbance: Possible noise disturbance as a result of outdoor equipment usage and transportation vehicles driving around the maintenance site
- ✓ Waste: generation of waste as a result of construction activities
- ✓ COVID-19 related risk
- ✓ 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.

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

Potential impact	Impact scale	Proposed mitigation measures	Responsible party	Costs
<i>Activity 1: Management or Improvement of Lowland grassland</i>				<i>Nu.1200000</i>
<ul style="list-style-type: none"> <li>Occurrence of non-native species due to grassland improvement work</li> </ul>	Minor	Assess appropriateness of species in terms of biodiversity, water efficiency, forest fire, local needs, cultural sensitivity, survival, etc.	NCS Section, BFL Focal, Range Office	
		Ensure that only native species are planted	BFL Focal and Range Office	
<ul style="list-style-type: none"> <li>Cutting down of trees and plants that are encroaching on the Lowland grassland negatively affects the ecosystem of the lowland grasslands (e.g., grazing areas are diminished)/ fallen logs affect wildlife movements</li> </ul>	Minor	Ensure that no accidental damage is caused to local vegetation—major trees that are supposed to be cut shall be clearly marked, and only marked trees will be cut;	NCS, Range Office	
		Removal of trees needs to be done in an environmentally sustainable way (e.g., removal of branches);	Range Office	
<ul style="list-style-type: none"> <li>Accidental Forest fire during burning of residual debris</li> </ul>		If fire is required as control measure, controlled/ prescribed burning (fire lines, fuel load reduction, backfiring etc.) need to be carried out.	Range Office	10000

<ul style="list-style-type: none"> <li>Accidental removal of Endangered and ecologically significant species</li> </ul>		<p>Preliminary assessment of species composition and species mapping need to be carried out before implementation of the activity</p>	<p>BFL Focal</p>	
<ul style="list-style-type: none"> <li>Growth of non-palatable species</li> </ul>		<p>Regular weeding and control measures need to be carried out. Biological control measures (broadcasting desired species) need to be emphasized</p>	<p>NCS, BFL focal</p>	
<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>	<p>BFL focal and In charge</p>	
<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>	<p>Short term Minor</p>	<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> </ul>	<p>Site In charge</p>	

		<ul style="list-style-type: none"> <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 work place concerns should be in place.</li> </ul>		
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Potential impact	Impact scale	Proposed mitigation measures	Responsible party	Costs
<b>Activity 2: Installation of Hybrid Solar System in PWS Outpost</b>				<i>Nu.1200000</i>
<ul style="list-style-type: none"> <li>Risk that lack of proper maintenance of the solar panels will result in environmental waste</li> </ul>		<p>Ensure that proper maintenance plan is in place and implemented</p> <p>Retrieval of the un-functional or damaged panels and deposit to relevant agency.</p>	NCS Section, BFL Focal, Range Office	
<ul style="list-style-type: none"> <li>Risk of exposure to the solar battery acids</li> </ul>		Ensure compliance to the safety guidelines	Range Office	

		Ensure proper sealing of the batteries and use protective gears while handling with the batteries		
<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 work place concerns should be in place.</li> <li>Follow Covid safety protocols circulated by</li> </ul>	Site In charge	

		Ministry of Health (MoH).		
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Potential impact	Impact scale	Proposed mitigation measures	Responsible party	Costs
<b>Activity 3: Maintenance of PWS HQ</b>				<i>Nu.700000</i>
<ul style="list-style-type: none"> <li>Cutting down vegetation: cutting down of trees and other vegetation for Maintenance purposes</li> </ul>	Short term Minor	Pre-maintenance: Design the maintenance in a way that minimizes the need to cut down trees (by selecting proper activity sites and ensuring that damage to vegetation is minimized on each selected site)	PWS HQ/ BFL focal	
		During maintenance: Ensure that no accidental damage is caused to local vegetation	PWS HQ/ BFL focal	
		Major trees that are supposed to be cut shall be clearly marked, and only marked trees will be cut;	PWS HQ/ BFL focal	
		<b>After maintenance:</b> Development of the maintenance site with ornamentals plants/fruit trees in place of the cut trees	PWS HQ/ BFL focal	
<ul style="list-style-type: none"> <li>Noise disturbance: Possible noise disturbance as a result of outdoor equipment usage and transportation vehicles driving around the</li> </ul>	Short term Minor	<b>Pre-maintenance:</b> requirements to limit noise pollution should be included in the bidding documents, as a precondition for the contractor's selection	BFL Focal	
		<b>During-maintenance:</b> The construction work should not be	BFL Focal	

maintenance site		permitted during the nights, the operations on site shall be restricted to the hours 7am—7pm		
		Vehicles that are excessively noisy shall not be operated until corrective measures have been taken;	BFL Focal	
		Earplugs and protecting devices shall be provided to workers on site if necessary	BFL Focal	
<ul style="list-style-type: none"> <li>Waste: generation of waste as a result of construction activities</li> </ul>		Pre-construction: requirements for appropriate waste management should be included in the bidding documents, as a precondition for the contractor's selection	BFL Focal	
		Identification of the different waste types at the project site (soil, construction waste, asphalt, food, etc.)	BFL Focal	
		Ensure that camps are located away from existing stream, river, or water sources, and that no discharge from camps is made into nearby water bodies;	BFL Focal	
		Proper containers/waste bins should be provided at the project site;	BFL Focal	5000
		Dumping of waste on the sides of the road, on private land, or in other non-designated places should be prohibited;	BFL Focal	
		Burning of construction waste should be prohibited.	BFL Focal	

		The options for reuse/recycling of the generated waste should be taking into consideration (e.g. excavated soil, etc.).	BFL Focal	
<ul style="list-style-type: none"> <li>Conflict between temporary workers and local communities</li> </ul>		Workers shall be made aware of local culture and traditions, as well as the legal consequences of harassment and intimidation, especially with regards to sexual harassment and gender-based violence	BFL Focal	
		<ul style="list-style-type: none"> <li>Strict monitoring shall be carried out to ensure conflicts are minimized</li> </ul>	BFL Focal	
<ul style="list-style-type: none"> <li><b>COVID-19 related risk</b></li> </ul>		<ul style="list-style-type: none"> <li>Follow Covid safety protocols circulated by Ministry of Health (MoH).</li> </ul>	BFL Focal	
<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</li> </ul>	Site In charge	

		<p>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.</p> <ul style="list-style-type: none"><li>• A grievance mechanism for workers to raise work place 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 safeguard's 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 safeguard's requirements outlined in the ESMP.

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

**1. Management or improvement of Lowland Grassland**

- Monitoring by implementing entities:
  - Field visits at least twice—during the intervention and within three months after the intervention
  - Reports by the implementing entities submitted to ESS officer within a week after each field visit
- Monitoring by ESS officer at PCU:
  - 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 below.
  - Reports by ESS officer to BFL Fund Secretariat – Annual report submitted to the BFL Fund Secretariat in January, 2023.
- Bi-annual reports of the Secretariat to WWF US (as part of mid-year and final APRs)

**2. Installation of Hybrid Solar System in PWS & 3. Maintenance of PWS HQ**

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:

- 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 below.
- Reports by ESS officer to BFL Fund Secretariat – Annual report submitted to the BFL Fund Secretariat in January, 2023.

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

Sl.No	Activities	Monitoring team	Timeline		Location	Means of Verification
			Start	Complete		
1	Management or improvement of Lowland Grassland	Field Focal	January 2022	December 2022	Phibsoo Outpost	Field report and pictures
		ESS officer	October 2022		PWS	
2	Installation of Hybrid Solar System in PWS	Field Focal	January 2022	September 2022	PWS Outpost	Progress report and pictures
		ESS officer	September, 2022		PWS	
3	Maintenance of PWS HQ	Field Focal	January 2022	September 2022	PWS HQ	Field report and pictures
		ESS officer	September 2022		PWS	

## 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 budgets for the activities are as tabulated;

Sl. No	Activity	Amount (Nu)	Budget for ESS mitigation
1	Management or Improvement of Lowland Grassland including <i>Themedia</i> seed sowing and raising	10,00000 + 200000	10000
2	Installation of Hybrid Solar System	200000	5000
3	Maintenance of PWS HQ	700000	0

## 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.

**For the 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, notification on similar kind of activities to public are issued with letter PWS/FPES/2020-2021/ 315. Since this is continuous activity, awareness on importance of such activities is imparted to people of Nichula Range. The selected grassland area in PWS is all away from settlement with 25 km buffer. Therefore, there are no communities in the vicinity.

**Installation of Hybrid Solar System in Outpost:** The site of the activity is located in Phibsoo Outpost where public is restricted to travel. Since it is located far away, social issues are being avoided. However, information on the activity was being provided to local leaders especially Gups and Tshopas of Singye Gewog.

**Maintenance of Phibsoo Head Quarter:** Since it's a continuous activity conducted in year 3, separate meeting weren't held as there isn't any issues in earlier maintenance program.

However, notification of the activity has been passed to local leaders and gewog administration.

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.

### 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 Management
- ❖ **Location:** Nichula and Singye Gewog
- ❖ Notification on similar kind of activities issued as per **PWS/FPES-01/2021-2022/346**

### Installation of Hybrid Solar System

- ❖ **Dates of Consultation:** 6/12/2019 for Nichula and 27/01/2020 for Singye gewog and September 2021 in Yarpelling
- ❖ **Agenda:** Installation of Hybrid Solar System in Phibsoo
- ❖ **Location:** Nichula and Singye Gewog
- ❖ Notification on similar kind of activities issued as per **PWS/FPES-01/2021-2022/346**

### Maintenance of PWS HQ

- ❖ **Dates of Consultation:** 6/12/2019 for Nichula and 27/01/2020 for Singye gewog
- ❖ **Agenda:** Maintenance of PWS HQ
- ❖ **Location:** Nichula and Singye Gewog
- ❖ Notification on similar kind of activities issued as per **PWS/FPES-01/2021-2022/346**

PWS has completed year three activity without a single issues 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. People shared the stories in past when forest is filled

with fodder trees and waterholes, the correlation of HWC was very minimum. With the implementation of BFL activities, they hope it will minimize the HWC. Besides that, conservation awareness brings much of awareness to importance of wildlife and environment to the society. People shared their support for work implementation.

**Annexure I- information on BFL activities to the gewog**

  
འབྲུག་རྒྱལ་ཁབ་རྒྱུ་རྩལ་ལྷན་ཁག་  
འབྲུག་རྒྱལ་ཁབ་རྒྱུ་རྩལ་ལྷན་ཁག་  
Royal Government of Bhutan  
Ministry of Agriculture and Forests  
Department of Forests and Park Services  
Phibsoo Wildlife Sanctuary, Sarpang  


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PWS/FPES-01/2021-2022/346 10/12/2021

The gewog Administration  
Nichula and Singye gewog  
Sarpang and Dagana

**Subject: Information on BFL Activities (Year 4)**

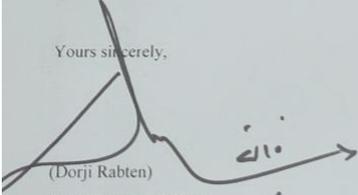
Sir/Madam,

Under your kind consideration, PWS would like to bring to your kind notice that following activities will be conducted in year 4 of the BFL project (January 2022-December 2022).

1. Restoration of Grassland in Outpost
2. Fixing of Hybrid Solar System
3. Maintenance of Phibsoo Outpost

This is submitted for your kind information and notice please

Yours sincerely,

  
(Dorji Rabten)  
Chief Forestry Officer

Cc.

1. PCU, for kind information and necessary action
2. Office Copy

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Park Manager: 975-17151667 (0) [drabten@moaf.gov.bt](mailto:drabten@moaf.gov.bt) / [phibsoowildlifesanctuary@gmail.com](mailto:phibsoowildlifesanctuary@gmail.com)  
Administration: +975-17151663; RO, Phibsoo: +975-17685292; RO, Nichula: +975-17829840

## ***Annexure II: Occupational Health and Safety Standards***

### **BFL: OCCUPATIONAL HEALTH AND SAFETY STANDARDS**

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

This section provides guidance and examples of reasonable precautions to implement in managing principal risks to occupational health and safety. It is based on the IFC's Environmental, Health, and Safety Guidelines (April 30, 2007)<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 climatic conditions, and have acceptable light and noise conditions.
- Fire resistant, noise-absorbing materials should, to the extent feasible, be used for cladding on ceilings and walls.
- Floors should be level, even, and non-skid.
- Heavy oscillating, rotating or alternating equipment should be located in dedicated buildings or structurally isolated sections.

##### ***Severe Weather and Facility Shutdown***

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

##### ***Workspace and Exit***

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

##### ***Fire Precautions***

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

- The workplace shall be provided with adequate means of protection and escape in case of fire.
- The workplace shall be provided with adequate number of relevant fire extinguishers.
- Workers shall wear shoes without iron or steel nails or any other exposed ferrous materials which is likely to cause sparks by friction.
- Smoking, lightening, or carrying of matches, lighters or smoking materials shall be prohibited within and around the construction sites.
- All other precautions, as are reasonably practicable, shall be taken to prevent initiation of ignition from all other possible sources such as open flames, frictional sparks, overheated surfaces of machinery or plant, chemical or physical, chemical reaction and radiant heat.

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<sup>1</sup>

<https://www.ifc.org/wps/wcm/connect/1d19c1ab-3ef8-42d4-bd6b-cb79648af3fe/2%2BOccupational%2BHealth%2Band%2BSafety.pdf?MOD=AJPERES&CVID=ls62x8l>.

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

#### ***Lavatories and Showers***

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

#### ***Potable Water Supply***

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

#### ***Clean Eating Area***

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

#### ***Lighting***

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

#### ***Safe Access***

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

#### ***First Aid***

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

#### ***Air Supply***

- Workplace should have adequate ventilation for fresh air

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

2. The Contractor is responsible to hold an information session to familiarize all workers with the OHS procedures specified in these guidelines, in order to ensure they are apprised of the basic site rules of work at / on the site and of personal protection and preventing injury to fellow workers.

3. The information session should consist of basic hazard awareness, site-specific hazards, safe work practices, and emergency procedures for fire, evacuation, and natural disaster, as appropriate. Any site-specific hazard or color coding in use should be thoroughly reviewed as part of orientation training.

### **3. Physical Hazards**

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

#### ***Rotating and Moving Equipment***

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

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

#### ***Noise***

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

#### ***Vibration***

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

#### ***Electrical***

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

- Marking all energized electrical devices and lines with warning signs
- Locking out (de-charging and leaving open with a controlled locking device) and tagging-out (warning sign placed on the lock) devices during service or maintenance
- Checking all electrical cords, cables, and hand power tools for frayed or exposed cords and following manufacturer recommendations for maximum permitted operating voltage of the portable hand tools
- Double insulating / grounding all electrical equipment used in environments that are, or may become, wet; using equipment with ground fault interrupter (GFI) protected circuits

- Protecting power cords and extension cords against damage from traffic by shielding or suspending above traffic areas
- Appropriate labeling of service rooms housing high voltage equipment ('electrical hazard') and where entry is controlled or prohibited
- Establishing "No Approach" zones around or under high voltage power lines
- Conducting detailed identification and marking of all buried electrical wiring prior to any excavation work
- Every person who is working on an electric supply line or apparatus or both shall be provided with tools and devices such as gloves, rubber shoes, and safety belts, ladders, earthing devices, helmets, line testers, hand lines whichever is relevant for protecting him/her from mechanical and electrical injury.

### ***Eye Hazards***

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

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

### ***Welding / Hot Work***

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

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

### ***Working Environment Temperature***

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

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

### ***Ergonomics, Repetitive Motion, Manual Handling***

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

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

### ***Working at Heights***

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

- Installation of guardrails with mid-rails and toe boards at the edge of any fall hazard area
- Proper use of ladders and scaffolds by trained workers
- Use of fall prevention devices, including safety belt and lanyard travel limiting devices to prevent access to fall hazard area, or fall protection devices such as full body harnesses used in conjunction with shock absorbing lanyards or self-retracting inertial fall arrest devices attached to fixed anchor point or horizontal life-lines
- Appropriate training in use, serviceability, and integrity of the necessary PPE
- Inclusion of rescue and/or recovery plans, and equipment to respond to workers after an arrested fall

### ***Illumination***

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

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

## **4. Personal safety equipment for workers**

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

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

Workers are instructed regarding safety equipment as follows:

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

## **5. Standards for workers' 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 if the accommodation is reasonably far from the worksite.
- The living facilities are built using adequate materials, kept in good repair and kept clean and free from waste and refuse.

### ***2. Drainage***

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

- The site is adequately drained.

### ***3. Heating, air conditioning, ventilation and light***

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

### ***4. Water***

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

### ***5. Wastewater and solid waste***

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

### ***6. Rooms/dormitories facilities***

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

### ***8. Sanitary and toilet facilities***

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

### ***9. Cooking and laundry facilities***

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

### **Annex 1. Contents of first aid box or cup-boards**

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

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