

# Bhutan for Life

## Environmental and Social Management Plan for Jigme Dorji National Park (2022)

### 1. Introduction

#### (A) Project Background

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

BFL seeks to achieve the following objectives:

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

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

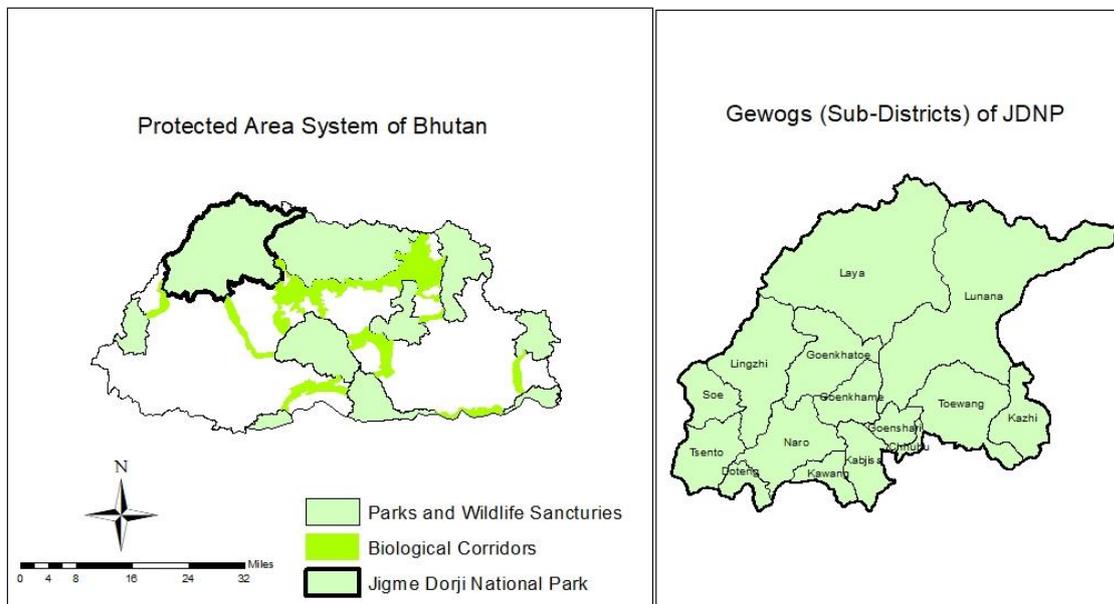


Fig 1: Location of Jigme Dorji National Park

### (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) and Local Government Act of Bhutan, 2009.

WWF's safeguards policies that are relevant to this project are as follows: Policy on Environment and Social Risk Management; Policy on Protection of Natural Habitats; Policy on Involuntary Resettlement; Policy on Indigenous Peoples; Standard on Pest Management; Policy on Accountability and Grievance System; Standard on Physical Cultural Resources; 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:

### (a) Geological and topographical conditions

The topography of landscape features in Jigme Dorji National Park is generally rugged with the hills rising from south to north, and likewise the elevation changes from 1,200 m.a.s.l. (meters above sea level) in the south to 7,314 m.s.a.l. in the north. The areas above 6,000 meters remain permanently covered with snow. Most of Bhutan's popular snow-capped mountain peaks, such as Mt. Jomolhari (7,314 m/23,996 ft), Mt. Jichudrakey (6,794 m/22,290 ft), Mt. Tsherimgang (6,650 m/21,818 ft), Mt. Gangchentang (6,794 m/22,290 ft), Mt. Matsangang (7,194 m/23,602 ft), Mt. Tsendagang (6,994 m/22,946 ft), Mt. Jaikangphugang (7,194 m/23,602 ft), and Mt. Gangchensingye (a.k.a. Table Mountain; 7094 m/23,274 ft), are all found inside JDNP along the international border with China. At the base of almost all these peaks huge glacier lakes are formed.

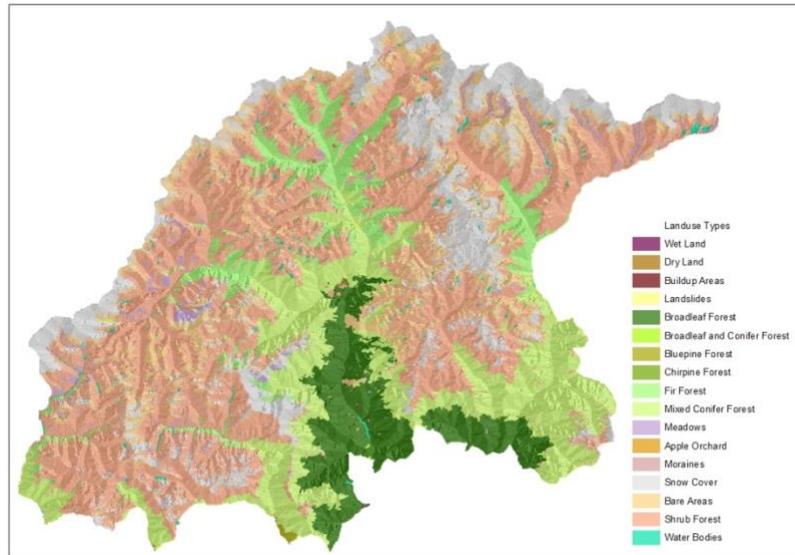


Fig 2: Landuse map of Jigme Dorji National Park

(b) Climatic conditions

All places inside the park experience all four seasons. The climate in the lower areas is generally warm and moist with good amount of rainfall in summer and cold and dry in winter, whereas in the uplands it is cool and moist in summer and extremely cold and snowy in winter. Due to absence of permanent weather stations in the park, area-wise amount of precipitation have not been consistently determined.

The huge variations in topography, elevations, and climate conditions have direct influence on vegetation types and livelihood of the people, and these factors explain the existence of types of vegetative covers and livelihood patterns of people living in different vegetation zones. These geophysical features also pose serious challenges in terms of difficult working conditions for the park staff.

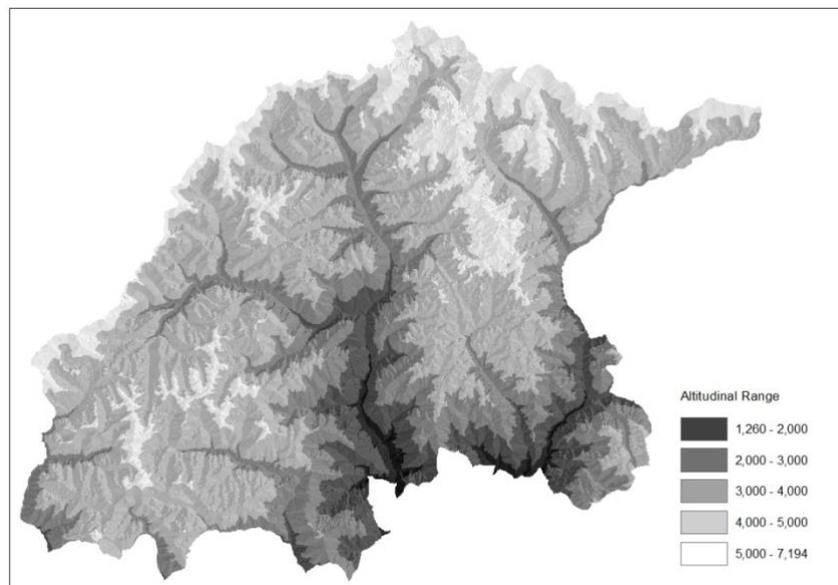


Fig 3: Elevation range under Jigme Dorji National Park



coniferous forests are hard to find, but in some areas where humans traditionally managed forests for leaf litter collection there are pure stands of oak.

In areas between 3,500 – 4,000 meters, the vegetation gradually transitions into mixed conifer forest interspersed by hemlock (*Tsuga dumosa*), fir (*Abies densa*), spruce (*Picea spinulosa*), and juniper (*Juniperus indica*). In most areas, the vegetative cover transitions from dominant stands of hemlock to fir to juniper. Also found interspersed in these forest types are Campbell’s maple (*Acer campellii*), Himalayan birch (*Betula utilis*), larch (*Larix griffithii*), different species of bamboos and rhododendrons. Collectively, this ecoflouristic zone is known as sub-alpine forest.

Ascending above 4,000 meters until 5,000 meters, one encounters thickets of stunted junipers, small-leaved rhododendrons (such as *Rhododendron ciliatum* and *R. setosum*) and riverine willow (*Salix sikkimensis*), and *Lyonia ovalifolia*. In areas cleared for grazing, the alpine pastures and meadows are dominated by species of *Potentilla*, *Geranium*, *Primula*, *Juncus*, and *Pedicularis*.

Areas immediately below the snow line are commonly known as alpine screes where dominant herb species of *Draba*, *Corydalis*, *Saxifraga*, *Androsace*, and *Geocarpus* abound.

Due to presence of generally lush undergrowths and grasses, grazing by domestic cattle is prevalent in almost all vegetation zones of the park.

Around 300 species of medicinal plants are expected to be found inside the park, mostly in the alpine region. Most valuable and widely collected are Chinese caterpillar (*Ophiocordyceps sinensis*), *Picrorhiza kurroa*, and *Aconitum laciniatum* and *A. patulum*. In the lower areas, Himalayan yew (*Taxus baccata*) and several species of *Artemisa* (e.g., *A. dubia*, and *A. myriantha*) are believed to have chemical contents that can cure many diseases.



Fig 5: Floral diversity of Jigme Dorji National Park

Much as the floristic diversity, the faunal diversity of JDNP is astounding with species from both the Palearctic and Indo-Malayan biogeographic realms (Wangchuk et al. 2004). So far, the park management has uncovered the presence of mostly the vertebrates. Except for a few butterflies and a few insects, the park has yet to dive into the world of invertebrates.

As of now, 52 species of mammals belonging to 19 families and 43 genera are confirmed to be present inside JDNP. Of these, five are endangered, six are vulnerable, and nine are near threatened as per the International Union for Conservation of Nature's (IUCN) Red List of Threatened Species (IUCN 2014). In addition, 10 of these species are listed in the Schedule I of the Forest and Nature Conservation Act (FNCA) of 1995.

A total of 373 species of birds have been documented, and of which eight species are listed in the Schedule I of FNCA, 1995. The endangered Black-necked Crane (*Grus nigricolis*) makes an occasional visit to the national park during its migration to and from China. The critically endangered White-bellied Heron has feeding and nesting sites along the Phochhu and Mochhu rivers, especially in the three Gewogs of Toewang Chubu and Goenshari under Punakha Dzongkhag.

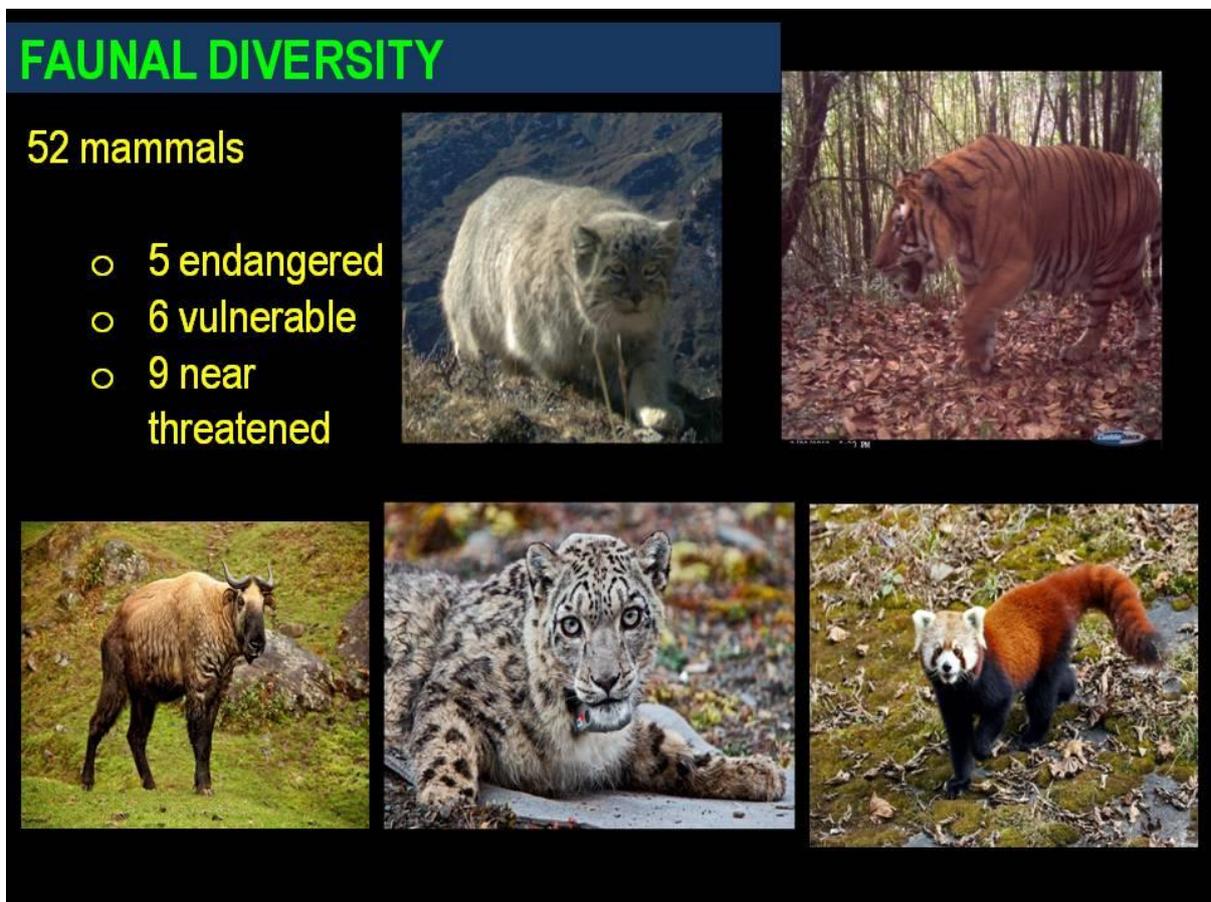


Fig 6: Faunal diversity of Jigme Dorji National Park

#### (e) Socio-economic conditions

Through support from Bhutan for Life Project, we carried out socio-economic survey in Year 2 where we obtained a population estimate of 5026 people in 975 households living in 138

villages in 43 chiwogs under 10 gewogs administered by Park Management. There is a total of 2542 male and 2485 female population. The mean for both the household and population size are highest in Laya and Lunana. The population density is highest in Goenshari and Khamaed gewogs.

People residing in the park above 4,000 meters practice somewhat semi-nomadic pastoralist livelihood, primarily subsisting on raising yaks. It is typical of a yak herder to own more than 100 yaks which are considered as the stable source of livelihood. Number of yaks owned is considered a status symbol among the yak herding communities.

As opposed to the popular trademark of yak herding, some upland communities grow wheat and vegetables during the short growing period in summer to supplement their diet and to grow fodder for their yaks.

Lowland people are those residing below 4,000 meters in the park. They subsist on agro-pastoralist or mixed farming lifestyle wherein agriculture is the mainstay of livelihood and domestic cattle are raised for dairy products and farmyard manure.

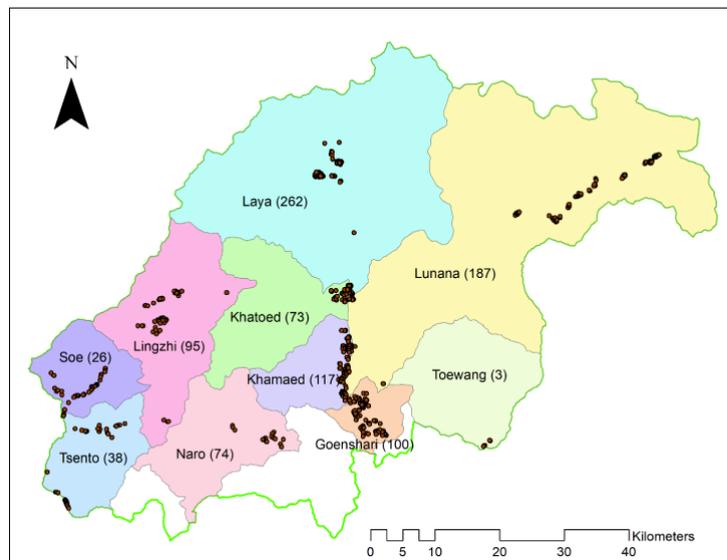


Fig 7: JDNP boundary (green lines) and settlements (brown dots). Figures in the bracket are the number of households in each gewog. The hollow polygons (white) within the park boundary are the gewogs falling inside the park with no resource allocation and monitoring activities (the gewogs are Chubu, Doteng, Kawang and Kabjisa)

Gewog	Total Household	Mean Household	Estimated Population			Mean population	Population density (per sq. km)
			Male	Female	Total		
Goenshari	100	3.4	351	377	728	25.1	8.42
Khamaed	117	4.5	382	413	795	30.6	5.33
Khatoed	73	5.2	222	189	411	29.4	1.43
Laya	262	32.8	554	540	1094	136.8	1.13
Lingzhi	95	9.5	240	200	440	44.0	1.14
Lunana	187	14.4	392	420	812	62.5	0.65
Naro	74	5.3	166	126	292	20.9	1.06
Soe	26	3.7	103	116	219	31.3	1.33
Toewang	3	1.5	4	2	6	3.0	0.02
Tsento	38	3.5	128	101	229	20.8	1.17
<b>TOTAL</b>	<b>975</b>	<b>83.75</b>	<b>2542</b>	<b>2484</b>	<b>5026</b>	<b>404.21</b>	<b>21.68</b>

Table 1: Population estimates for resident communities of park administered gewogs 2020

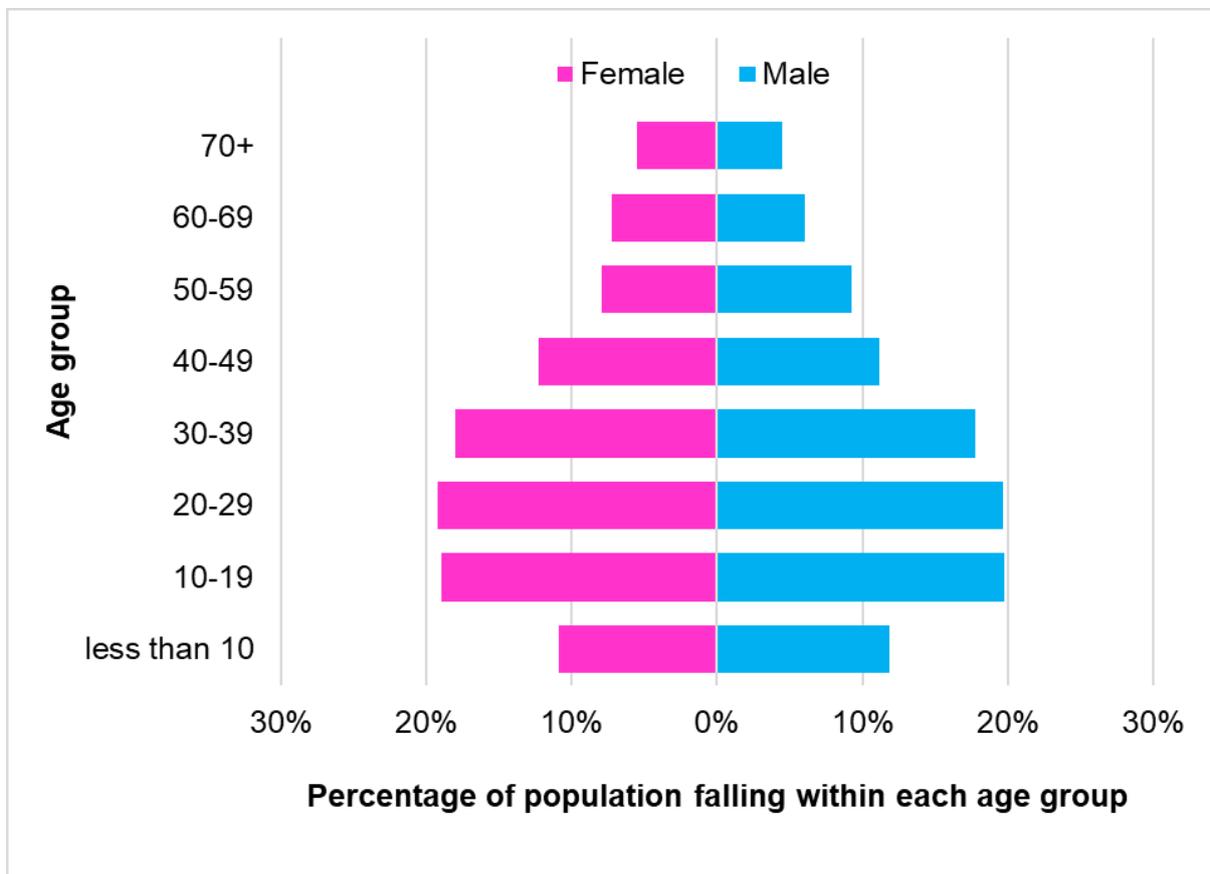


Fig 8: Distribution of population according to age group and gender in JDNP 2020.

### 3. Planned activities in Y2022

The planned activities in JDNP that require an ESMP are the following:

#### **Activity 3.1: Maintenance of Lunana Park Range Office**

Budget: Nu. 1,153,624.24

Timeline: July 2022-December 2022

Location: Lhadi, Lunana, Gasa

Lunana Park Range Office (LUPRO) is located at 8 official walking days away from Gasa Dzongkhag Centre. The office is located under Lhadi chiwog under Lunana Gewog. Constructed in an area of 1.208 acres, it is considered as the remotest forest office in Bhutan. The office is deprived of basic facilities including toilet, electricity connection etc. The office was constructed 21 years ago and due to excessive use, it has now become desperately worn and is in need of major maintenances. No major maintenances were done since the construction of the office. Thus, through this project, we will carry out following activities:

- I. Construction of toilet
- II. Maintenance of floor
- III. Plumbing works
- IV. Construction of Septic tank and soak pit
- V. Maintenance of drains

Since we are carrying out the maintenance of the existing structure, the same site will be used. The terrain of the site is plain characterized by sparse Juniper and Rhododendron vegetation cover.

While executing the aforementioned activities, the locally available materials will be used and it includes stone/aggregates, soil, sand, timbers, etc. The activity will involve the engagement of 20 temporary workers for 2 months. They will be accommodated in the same office. They will be using water from existing pipeline connected to office and will not be using resources that local community depend on.

Lunana Gewog has total of 187 households with total population of 812 people (male 392. female 420). There are total of 5 chiwogs. Except Lhadi, all other chiwogs are located more than 1 walking day away from the office. Lhadi Chiwog is located within 500 meters radius from the office. For living, all households depend on livestock husbandry and NFWP collection. All households depend on activity site for availing permit and services concerning forest resources.

The potential environmental impact includes air pollution particularly with the production of dust as a result of construction and generation of waste. The social impact includes noise disturbance as a result of equipment usage at construction site, conflict between temporary workers and local communities and possible risk on workers and community health and safety.



Fig 9: Lunana Park Range Office

### **Activity 3.2: Support high altitude *Komatsachu* restoration in Goenshari Gewog**

- Budget: Nu. 1300000
- Timeline: July 2022-December 2022
- Location: Komatsachu, Yorbu Chiwog, Goenshari Gewog, Punakha

Due to high therapeutic value, the Komatsachu located under Goenshari Gewog Punakha Dzongkhag is one of the most visited hot spring by people of Bhutan. However, due to remoteness in location, the *Tsachu* (hot spring) is still deprived of basic facilities such as toilets causing inconveniences to all visitors. The cantilever bridge towards *Tsachu* also need a major maintenance as there is high risk of collapsing posing threats to all visitors.

As part of this activity new bridge and toilets at *Tsachu* area will be constructed and also lighting of *Tsachu* area will be supported. *Tsachu* ponds being located on either side of the river, bridge helps them to provide access to all ponds at the *Tsachu* area. The existing bridge was also constructed by Park Management and thus all visitors have high regards to park management and conservation of environment at large. The current toilets at *Tsachu* area are pit toilets and are almost full; hence the need of new toilets has become urgent. Without proper toilets, inconveniences are caused to all visitors and sanitation in the area has also been compromised to large extend.

Currently the *Tsachu* area doesn't have electricity line; however, Bhutan Power Corporation is helping the Gewog Management to connect the *Tsachu* area with grid connection within financial year 2021-2022. Hence the Gewog Management is has requested Bhutan for Life project to support them with street light connection at *Tsachu* area. The *Tsachu* ponds are located far apart and one has to cross the bridge and climb over the rocks to reach the ponds which is challenging especially at night to all visitors particularly the elderly people. Having a street light will help visitors use the *Tsachu* facilities even at night time; this will also help in solving the problem of overcrowding at ponds during day time.

The area is located under multiple use zone of the Park. The terrain of the site is gentle slope characterized by sparse broadleaf species. While executing the aforementioned activities, the locally available materials will be used and it includes stone/aggregates, soil, sand, timbers, etc. The activity will involve the engagement of 20 temporary workers for 4 months. The labour camp will be constructed within the *Tsachu* area. The laborers will use water from existing pipeline connected to *Tsachu* area and will not be using resources that local community depend on.

No households are located at project site. The nearest village is located about 3kms away from project site. Those farmers depend on agriculture and animal husbandry practices for living. The hot spring is managed by Goenshari Gewog administration. Annually, they allow each household to run and manage the hot spring on turn wise basis by charging minimal fees (guest house) to the visitors. The hot spring manager also deposits/contributes a small amount (Nu. 140,000) to Goenshari Gewog Administration from the revenue generated from the hot spring.

The potential environmental impact includes air pollution particularly with the production of dust as a result of construction and generation of waste. The social impact includes noise disturbance to *Tsachu* visitors as a result of equipment usage at construction site, conflict between temporary workers and *Tsachu* visitors, Community conflicts over access rights and possible risk on workers and community health and safety.



Fig 10. Overview of Komatsachu showing pond and guest house. The remaining ponds and toilets are located on the other side of the river.



Fig 11: The existing bridge at *Tsachu* area. The bridge has become old posing threat to all visitors.



Fig 12: The *Tsachu* pond located on other side of the river. Without the bridge, visitors will not be able to cross the river to use the pond.

### **Activity 3.2: Maintenance of Laya to Lunana trek**

- Budget: Nu. 863187.35
- Timeline: July 2023-December 2023
- Location: Wachey-ShangsaChiwog/ Wachey Village, Lunana, Gasa

As part of this activity, the maintenance of Ganglakrachung-Tarana Mule Track will be carried out. The Ganglakrachung-Tarana Mule Track is part of popular snow-men trek. The trail attracts hundreds of international and local tourists annually. The trail is also being used by locals of Laya and Lunana. The project site is a gentle slope characterized by sparse rhododendron vegetation. The activity involves excavation (depth >300 mm, width > 1.5m) including disposal and dressing of excavated soil. The activity also involves providing and laying hard packed stones filling. Around 1200m of trail will be maintained.

While executing the works, the locally available materials will be used and it includes stone/aggregates, soil, and sand. The activity will involve the engagement of 10 temporary workers for 1 month. The workers will camp at project site and they will be using the resources that the members of local community depend upon. The project site is located about 3 days away from Laya and 2 days away from Wachey village under Lunana Gewog. All 187 households from Lunana Gewog and 262 households from Laya Gewog depend on trail for transportation of their goods and services. For living, all households depend on livestock husbandry and NWFP collection.

The potential environmental impact includes air pollution particularly with the production of dust as a result of construction and generation of waste. The social impact includes Community conflicts over access rights, possible risk on workers and community health and safety.

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

Potential impact	Impact scale	Proposed mitigation measures	Responsible Party	Costs (million)
<i>Activity 1: Maintenance of Lunana Park Range Office</i>				<b>Nu.</b>
Noise disturbance: Possible noise disturbance as a result of outdoor equipment usage	Short term minor	<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>Requirements to limit noise pollution should be included in the bidding documents, as a precondition for the contractor's selection</li> </ul> <p>During construction:</p> <ul style="list-style-type: none"> <li>The construction work should not be permitted during the nights, the operations on site shall be restricted to the hours 7am—7pm</li> <li>Earplugs and protecting devices shall be provided to workers on site if necessary</li> </ul>	Lunana Park Range Office & Contractor	NA
Air quality: dust as a result of construction works	Short term minor	<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>Requirements to limit emissions should be included in the bidding documents, as a precondition for the contractor's selection</li> </ul> <p>During Construction:</p> <ul style="list-style-type: none"> <li>Construction site, transportation routes and materials handling sites should be water-sprayed on dry and windy days</li> <li>Construction materials should be stored in appropriate and covered places to minimize dust</li> <li>Regular maintenance of the construction machinery should be performed in order to reduce any leakages of motor oils, emissions and dispersion of pollution</li> </ul>	Lunana Park Range Office, Lunana Gewog Administration Office & Contractor	NA
Waste: generation of waste as a result of construction activities	Short term minor	<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>Requirements for appropriate waste management should be included in the bidding documents, as a precondition for the contractor's selection</li> </ul>	Lunana Park Range Office, Lunana Gewog Administration	NA

		<p>During construction:</p> <ul style="list-style-type: none"> <li>• Identification of the different waste types at the project site (soil, construction waste, asphalt, food, etc.)</li> <li>• 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</li> <li>• Proper containers/waste bins should be provided at the project site</li> <li>• Dumping of waste on the sides of the river, on private land, or in other non-designated places should be prohibited</li> <li>• Dumping waste shall be prohibited on fragile slopes, forests, religious or other culturally sensitive areas or areas where livelihood is derived; Collection, transportation and final disposal of all waste should be undertaken weekly</li> <li>• The options for reuse/recycling of the generated waste should be taking into consideration (e.g. excavated soil, etc.).</li> </ul> <p>After Construction:</p> <ul style="list-style-type: none"> <li>• All waste shall be removed from the project site.</li> </ul>	Office & Contractor	
Conflict between temporary workers and local communities	Short term minor	<ul style="list-style-type: none"> <li>• 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</li> <li>• Local communities shall be made aware of the engagement of temporary workers in project sites.</li> <li>• Strict monitoring shall be carried out to ensure conflicts are minimized</li> </ul>	Lunana Park Range Office, Lunana Gewog Administration Office & Contractor	NA
Workers' health and safety including COVID-19 precautions	Short term minor	<ul style="list-style-type: none"> <li>• Comply with the workers' health and safety guidelines attached in annexure.</li> <li>• Ensure that no underage workers, or children are engaged</li> </ul>	Lunana Park Range Office, Lunana Gewog Administration Office &	NA

		<ul style="list-style-type: none"> <li>• Ensure decent work conditions, including an appropriate salary, working hours, accommodation and other essential amenities as per the Operational Health and Safety Guidelines are available for workers</li> <li>• Ensure that workers are employed on the principle of equal opportunity and fair treatment</li> <li>• Implement a grievance mechanism for workers (and their organizations, where they exist) to raise workplace concerns</li> <li>• Strictly abide by COVID prevention protocols (use masks, maintain distance, wash hands regularly etc.)</li> </ul>	Contractor	
<b>Activity 2: Support high altitude Komatsachu restoration in Goenshari Gewog</b>				<b>Nu.</b>
Noise disturbance: Possible noise disturbance as a result of outdoor equipment usage	Short term minor	<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Requirements to limit noise pollution should be included in the bidding documents, as a precondition for the contractor’s selection</li> </ul> <p>During construction:</p> <ul style="list-style-type: none"> <li>• The construction work should not be permitted during the nights, the operations on site shall be restricted to the hours 7am—7pm</li> <li>• Earplugs and protecting devices shall be provided to workers on site if necessary</li> </ul>	Ruecheyna Park Range Office, Goenshari Gewog Administration and Contractors	NA
Air quality: dust as a result of construction works	Short term minor	<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Requirements to limit emissions should be included in the bidding documents, as a precondition for the contractor’s selection</li> </ul> <p>During Construction:</p> <ul style="list-style-type: none"> <li>• Construction site, transportation routes and materials handling sites should be water-sprayed on dry and windy days</li> <li>• Construction materials should be stored in appropriate and covered places to minimize dust</li> </ul>	Ruecheyna Park Range Office, Goenshari Gewog Administration and Contractors	NA

		<ul style="list-style-type: none"> <li>Regular maintenance of the construction machinery should be performed in order to reduce any leakages of motor oils, emissions and dispersion of pollution</li> </ul>		
Waste: generation of waste as a result of construction activities	Short term minor	<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>Requirements for appropriate waste management should be included in the bidding documents, as a precondition for the contractor's selection</li> </ul> <p>During construction:</p> <ul style="list-style-type: none"> <li>Identification of the different waste types at the project site (soil, construction waste, asphalt, food, etc.)</li> <li>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</li> <li>Proper containers/waste bins should be provided at the project site</li> <li>Dumping of waste on the sides of the river, on private land, or in other non-designated places should be prohibited</li> <li>Dumping waste shall be prohibited on fragile slopes, forests, religious or other culturally sensitive areas or areas where livelihood is derived; Collection, transportation and final disposal of all waste should be undertaken weekly</li> <li>The options for reuse/recycling of the generated waste should be taking into consideration (e.g. excavated soil, etc.).</li> </ul> <p>After Construction:</p> <ul style="list-style-type: none"> <li>All waste shall be removed from the project site.</li> </ul>	Ruecheyna Park Range Office, Goenshari Gewog Administration and Contractors	NA
Conflict between temporary workers and <i>Tsachu</i> visitors	Short term minor	<ul style="list-style-type: none"> <li>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</li> <li>Local communities shall be made aware of the engagement of temporary</li> </ul>	Ruecheyna Park Range Office, Goenshari Gewog Administration and	NA

		<p>workers in project sites.</p> <ul style="list-style-type: none"> <li>• Strict monitoring shall be carried out to ensure conflicts are minimized</li> </ul>	Contractors	
Workers' health and safety including COVID-19 precautions	Short term minor	<ul style="list-style-type: none"> <li>• Comply with the workers' health and safety guidelines</li> <li>• Ensure that no underage workers, or children are engaged</li> <li>• Ensure decent work conditions, including an appropriate salary, working hours, accommodation and other essential amenities as per the Operational Health and Safety Guidelines are available for workers</li> <li>• Ensure that workers are employed on the principle of equal opportunity and fair treatment</li> <li>• Implement a grievance mechanism for workers (and their organizations, where they exist) to raise workplace concerns</li> <li>• Strictly abide by COVID prevention protocols (use masks, maintain distance, wash hands regularly etc.)</li> </ul>	Ruecheyna Park Range Office, Goenshari Gewog Administration and Contractors	NA
Community conflicts over access rights	Long term major	<ul style="list-style-type: none"> <li>• All project activities will only be undertaken upon consultation with local communities, local authorities and other members of the public who are affected or have a stake in local land use. Community management plans should be developed in a participatory and consultative manner to ensure that access rights are agreed upon among community members.</li> </ul>	Ruecheyna Park Range Office and Goenshari Gewog Administration	Nu. 0.1
<b>Activity 3: Maintenance of Laya to Lunana trek</b>				
Air quality: dust as a result of construction works	Short term minor	<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Requirements to limit emissions should be included in the bidding documents, as a precondition for the contractor's selection</li> </ul> <p>During Construction:</p> <ul style="list-style-type: none"> <li>• Construction site, transportation routes and materials handling sites should be water-sprayed on dry and windy days</li> <li>• Construction materials should be stored in appropriate and covered</li> </ul>	Lunana Park Range Office, Lunana Gewog Administration Office & Contractor	NA

		<p>places to minimize dust</p> <ul style="list-style-type: none"> <li>Regular maintenance of the construction machinery should be performed in order to reduce any leakages of motor oils, emissions and dispersion of pollution</li> </ul>		
Waste: generation of waste as a result of construction activities	Short term minor	<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>Requirements for appropriate waste management should be included in the bidding documents, as a precondition for the contractor's selection</li> </ul> <p>During construction:</p> <ul style="list-style-type: none"> <li>Identification of the different waste types at the project site (soil, construction waste, asphalt, food, etc.)</li> <li>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</li> <li>Proper containers/waste bins should be provided at the project site</li> <li>Dumping of waste on the sides of the river, on private land, or in other non-designated places should be prohibited</li> <li>Dumping waste shall be prohibited on fragile slopes, forests, religious or other culturally sensitive areas or areas where livelihood is derived; Collection, transportation and final disposal of all waste should be undertaken weekly</li> <li>The options for reuse/recycling of the generated waste should be taking into consideration (e.g. excavated soil, etc.).</li> </ul> <p>After Construction:</p> <ul style="list-style-type: none"> <li>All waste shall be removed from the project site.</li> </ul>	Lunana Park Range Office, Lunana Gewog Administration Office & Contractor	NA
Workers' health and safety including COVID-19	Short term minor	<ul style="list-style-type: none"> <li>Comply with the workers' health and safety guidelines</li> <li>Ensure that no underage workers, or children are engaged</li> </ul>	Lunana Park Range Office, Lunana Gewog Administration	NA

precautions		<ul style="list-style-type: none"> <li>• Ensure decent work conditions, including an appropriate salary, working hours, accommodation and other essential amenities as per the Operational Health and Safety Guidelines are available for workers</li> <li>• Ensure that workers are employed on the principle of equal opportunity and fair treatment</li> <li>• Implement a grievance mechanism for workers (and their organizations, where they exist) to raise workplace concerns</li> <li>• Strictly abide by COVID prevention protocols (use masks, maintain distance, wash hands regularly etc.)</li> </ul>	Office & Contractor	
Community conflicts over access rights	Long term major	<ul style="list-style-type: none"> <li>• All project activities will only be undertaken upon consultation with local communities, local authorities and other members of the public who are affected or have a stake in local land use. Community management plans should be developed in a participatory and consultative manner to ensure that access rights are agreed upon among community members.</li> </ul>	Lunana Park Range Office & Lunana Gewog Administration Office	Nu. 0.1

## **5. ESMP Implementation arrangements**

The implementation of project activities will be carried out by the BFL focal person JDNP. 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 JDNP in 2022. The Contractor is obligated to perform all proposed preventive or mitigation environmental and social measures in this plan and to keep the evidence of any documents related to applying these measures (e.g., letter asking the municipality for disposal of inert waste, records on OHS information session performed for all workers before start of activities, all developed EHS plans, etc.). An OHS information session should be organized by the Contractor for all workers prior start the project activities and prior any specific tasks with high health risks.

The JDNP Supervising Engineer needs to monitor the implementation of proposed measures by the Contractor and Contractor's subcontractors with visual checking, reviewing the records of evidence that the measures have been applied and ask the Contractor to apply the measures as soon as possible. Non-compliances should be recorded and the Report on any non-compliance 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 JDNP 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. JDNP is also fully responsible for the compliance of all external contractors and service providers working in the JDNP 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	<b>Maintenance of Lunana Park Range Office</b>	Field focal (Weekly monitoring after the start of the activity)	July 2022	December 2022	Lunana	Monthly reports prepared by implementing entities and submitted to PCU/ESS
2		ESS officer	October 2022	Nov, 2022		
4	<b>Support high altitude <i>Komatsachu</i> restoration in Goenshari Gewog</b>	Field focal (Weekly monitoring after the start of the activity)	July 2022	December 2022	Goenshari	Monthly reports prepared by implementing entities and submitted to PCU/ESS
5		ESS officer	October, 2022	Nov, 2022		
7	<b>Maintenance of Laya to Lunana trek</b>	Field focal (Weekly monitoring after the start of the activity)	July 2023	December 2023	Lunana	Monthly reports prepared by implementing entities and submitted to PCU/ESS
8		ESS officer	Sept, 2023	Oct, 2023		

**1. Maintenance of Lunana Park Range Office & 2. Support high altitude Komatsachu restoration in Goenshari Gewog**

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

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

**3. Maintenance of Laya to Lunana trek**

- Monitoring by implementing entities:
  - At least twice a month field visits
  - Monthly reports prepared by implementing entities and submitted to ESS Officer at PCU.
- Monitoring by ESS officer at PCU:
  - Field monitoring by ESS officer – monitoring by field visit during the implementation as per the above schedule and through field report submitted by the IAs after completion of the work.
  - Reports by ESS officer to BFL Fund Secretariat – Annual report submitted to the BFL Fund Secretariat in January, 2023.
- Bi-annual reports of the Secretariat to WWF US (as part of mid-year and final APRs)

**7. Capacity Need and Budget**

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

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

SI#	Activity	Amount (Nu.)	Budget for ESS mitigation
1	Maintenance of Lunana Park Range Office	1,153,624.24	
2	Support high altitude Komatsachu restoration in Goenshari Gewog	1300000	100000
3	Maintenance of Laya to Lunana trek	863187.35	100000
4			
<b>Total</b>		<b>3316811.59</b>	<b>200000</b>

## 8. Consultation and Disclosure Mechanisms

This ESMP has been prepared in a participatory manner involving concern Section Heads and Range Officers. A community consultation will be carried out as described in section 9. This is mainly 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:

- The detailed minutes of the consultation meeting will be kept as a requirement for this ESMP, along with a full list of participants (disaggregated by gender and age).
- The full English version of this ESMP, as well as an executive summary in Dzongkha, shall be disclosed on the website of MoAF, BFL 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 JDNP will be engaged throughout the implementation of these activities.

For following activities—one consultation meeting will be organized during the intervention period:

- Support high altitude *Komatsachu* restoration in Goenshari Gewog- The project activity will only be undertaken upon consultation with Tourism Council of Bhutan, Association of Bhutanese Tour Operators, local communities, local authorities and other members of the public who are affected or have a stake in the activity. Community management plans will be developed in a participatory and consultative manner to ensure that access rights are agreed upon among community members. The consultation meeting will be held in July 2022 at Goenshari Gewog Office, Punakha.
- Maintenance of Laya to Lunana trek: The project activity will only be undertaken upon consultation with local communities, local authorities and other members of the public who are affected or have a stake in the activity. Community management plans will be developed in a participatory and consultative manner to ensure that access rights are agreed upon among community members. Both stake holder and community consultation meeting will be held in July 2022.

The BFL focal person will submit the official minutes of consultation meetings (along with a list of participants, disaggregated by gender and age) to ESS consultants within one week after the completion of the consultation. The ESS consultants will submit the consultation reports to the PCU (M&E officer) one week after their receipt. The PCU (M&E officer) will report to the Secretariat on a semi-annual basis

## ***ANNEXURE I- BFL: 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.
- 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

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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=1s62x8l>.

adequate for the dimensions and use of the premises, equipment installed, physical and chemical properties of substances present, and the maximum number of people present.

- Manual firefighting equipment shall be easily accessible and simple to use.
- Fire extinguishers and emergency alarm systems that are both audible and visible should be in place.
- Fire exits should be identified and marked in Dzongkha and English- all workers should be made aware of the fire exits.

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

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

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

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

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

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

#### ***Lighting***

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

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

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

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

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

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

- Workplace should have adequate ventilation for fresh air

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

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

### 3. **Physical Hazards**

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

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

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

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

#### ***Noise***

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

#### ***Vibration***

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

#### ***Electrical***

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

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

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

### ***Eye Hazards***

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

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

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

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

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

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

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

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

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

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

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

- Implementing quality control and maintenance programs that reduce unnecessary forces and exertions

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

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

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

### ***Illumination***

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

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

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

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

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

Workers are instructed regarding safety equipment as follows:

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

## **5. Standards for workers' accommodation<sup>2</sup>**

### ***1. General living facilities***

- The location of the facilities is designed to avoid flooding or other natural hazards

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

## ***2. Drainage***

- The site is adequately drained.

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

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

## ***4. Water***

- 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