

Bhutan for Life
Environmental and Social Management Plan for
Phrumsengla National Park (2021)

1. Introduction

(A) Project Background

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

BFL seeks to achieve the following objectives:

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

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

(B) Scope of ESMP

The preparation of this Environmental and Social Management Plan (ESMP) was required in order to manage the environmental and social impacts through and specific mitigation actions required to implement the project in accordance with the requirements of WWF's Social Safeguards Integrated Policies and Procedures (SIPP), the project's Environmental and Social Management Framework (ESMF), and applicable national legislation and regulations.

The ESMP provides an overview of the environmental and social baseline conditions on the routes of the proposed second segment of the project, summarizes the potential impacts associated with the proposed activities and sets out the management measures required to mitigate any potential negative impacts.

This ESMP will be implemented by BFL focal person in each park authority (PA) and biological corridor (BC), and by the contractor to be commissioned by each PA/BC for the project.

(C) Purpose of ESMP

This Site-Specific ESMP is a project-specific source document detailing the environmental and social protection requirements to mitigate and minimize the adverse impacts. The ESMP's primary purpose is to ensure that the environmental requirements and social commitments

associated with the project are carried forward into implementation and operational phases of the project and are effectively managed. The specific objectives of this ESMP are as hereunder:

- Minimizing any adverse environmental, social and health impacts resulting from the project activities;
- Conducting all project activities in accordance with the relevant RGoB Laws and WWF's safeguard operational policies and guidelines;
- Preventing environmental degradation as a result of either individual subprojects or their cumulative effects;
- Enhancing the positive environmental and social outcomes of project activities;
- Ensuring that the proposed mitigation measures are feasible and cost-efficient;
- Providing an Action Plan to ensure that the project impact mitigation measures are properly implemented and monitored;
- Ensuring that all stakeholders are engaged in the project activities' preparation and implementation, and their concerns are fully addressed.

(D)Applicable law, policies, and regulation

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

Applicable RGoB laws and policies include the Constitution of the Kingdom of Bhutan, 2008; legislation on land and moveable property (Land Act of Bhutan 2007; Land Rules, 2007; The Moveable Cultural Property act of Bhutan, 2005); legislation and regulations on forests and protected areas (National Environment Protection Act, 2007; Forest and Nature Conservation Act of Bhutan, 1995; Forest and Nature Conservation Rules and Regulations of Bhutan, 2017; National Forest Policy, 2011); legislation on water and waste prevention (Water Act of Bhutan, 2011; Waste Prevention and Management Act, 2009); legislative requirements on environmental assessment (Environmental Assessment Act, 2000 and Regulations on the Environmental Clearance of Projects, 2001); and other relevant laws (The Local Government Act of Bhutan, 2009; Livestock Act of Bhutan, 2001; The Biodiversity Act of Bhutan, 2003; The Pesticides Act of Bhutan, 2000; The Penal Code of Bhutan, 2004; National Access and Benefit Sharing (ABS) Policy (Draft), 2014).

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

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

RGoB legislation and policies, the former will apply to all project activities. With regard to social impacts, the primary discrepancies between the RGoB laws and regulations and the WWF's SIPP refer to the status of non-title holders and informal land use, and the commitment to participatory decision-making processes. First, according to the WWF's SIPP, all users of land and natural resources (including people that lack any formal legal ownership title or usage rights) are eligible to some form of assistance or compensation if the project adversely affects their livelihoods. The RGoB laws only recognize the eligibility of land owners or formal users to receive compensation in such cases. Second, the WWF's SIPP require extensive community consultations as part of the development of various safeguards documents and during project activities. RGoB legislation does not include similar requirements. For the purposes of the BFL project, the provisions of the WWF's SIPP shall prevail over the RGoB legislation in all cases of discrepancy.

2. Environmental and Socio-Economic Conditions:

(a) Geological and topographical conditions

Phrumsengla National Park (PNP) was known as Thrumshingla National Park (TNP) ever since it was notified in 1993 with an area of 768 km². In 2000, the area of was extended towards north with inclusion of large track of suitable tiger habitats. The park was renamed as PNP in 2014 and the total area was revised to 906 km² with the development of new zonation guide line, 2020. However, the physical features were not altered for a prime reason to signify and interlink the conservation paradigm with inherited local communities' culture. PNP has been implementing conservation activities for last one and a half decades. The conservation is based on the ten-year periodic conservation management plan (2019-2029).

The purpose of establishment of the park was to conserve the temperate ecosystem of central region in Bhutan's Protected Area (PA) landscape. The park was fully operationalized in 2000 with joint funding support from Royal Government of Bhutan (RGoB) and World Wildlife

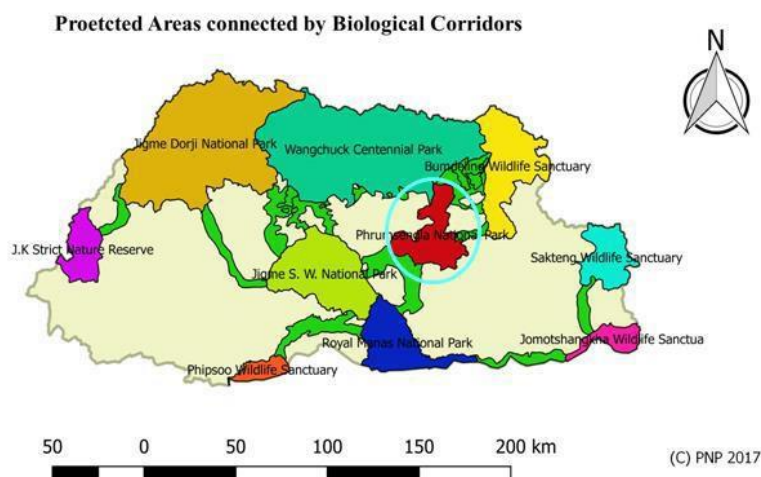


Figure 1 Location of Phrumsengla National Park

Bhutan Program. PNP is a 'linchpin' of Bhutan's Biological Corridor Complex (B2C2) landscape. The park is connected to Jigme Singye Wangchuck National Park (JSWNP), Royal Manas National Park (RMNP), Bumdeling Wildlife Sanctuary (BWS) and Wangchuck Centennial National Park (WCNP) through a string of Biological Corridors (Figure 1). Heterogeneous geomorphology and wide range of elevation

attribute to formation of special habitats for wildlife in PNP. The elevation ranges from 900 masl (sub-tropical broad-leaved forest) to about 4500 masl (Alpine meadows) (Figure 2 a). Of this, the major portion, >78% of the total area is above 2500 masl. Slope classes are evenly distributed in terms of area coverage (Figure 2 b).

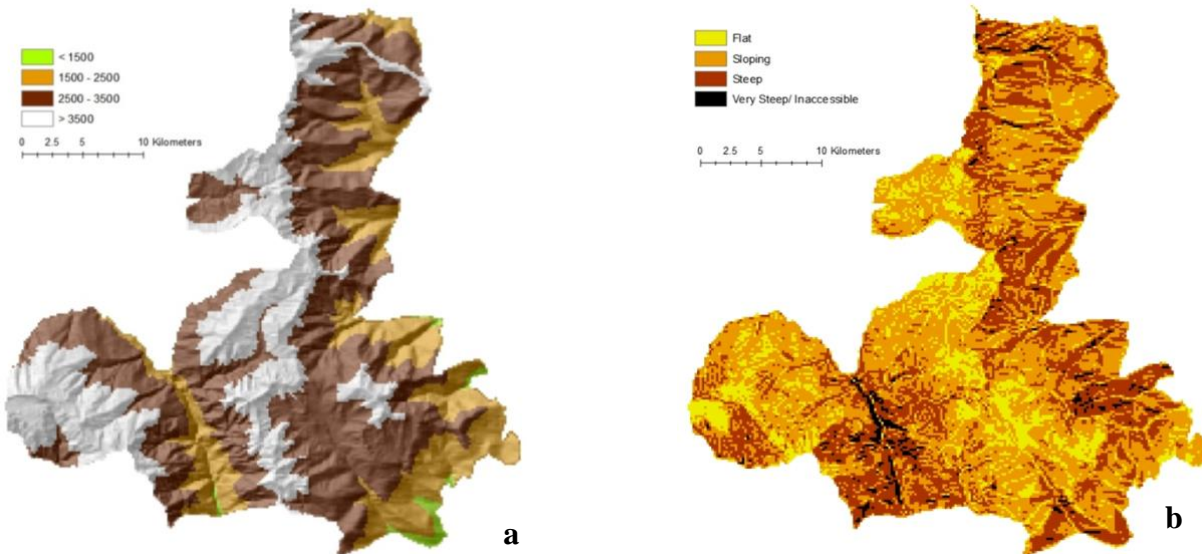


Figure 1: a. Elevation class and b. Slope class

(b) Climatic conditions

With wide variation of altitudinal ranges, Phrumsengla National Park experiences wide range of temperatures as well. The northern part of the park has -21°C minimum and 13 °C maximum temperatures and in the south-eastern has low of 8 °C and high of 28 °C. The annual average rainfall in the northern part is 700 mm and the lower elevation receives up to 1500 mm.

(c) Hydrological conditions

Despite being smallest national park, PNP serves as vital watershed area for two major river systems, Kuri chu to its left flank and chamkhar chu to its right flank. Apart from that there are numerous springs and tributaries that feeds the major river systems. The rich biodiversity of the park itself is a good indication of intact natural resources like water resources.

(d) Flora and fauna

PNP with wide range of elevation range from sub-tropical broadleaved to the alpine ecosystem holds high conservation value and significance for about 1000 species of plants with over 161 species of trees, 274 shrubs and 316 herbs. The park is a significant repository of floral diversity (TNP, 2008) more than 154 species have been identified for having medicinal values, 21 species as endemic to Bhutan, and two species endemic to PNP (*Rubus sengorensis* and *Lobelia nubigena*). The park is home to one globally threatened species (Vulnerable) *Rhododendron dalhousiae* var. *rhabdotun* and critically endangered species at local context or in Bhutan; *Podocarpus neriifolius* (Dorji, Y.; 2010). The park is fundamentally significant for conservation of its large tracts of old East Himalayan Silver Fir forest and extensive cover of pristine cool broadleaved forests in the

central region of the country. Maximum area of PNP is comprised of fir forest with 267.16 km² followed by mixed conifer and broadleaf forests with 256.47 km² and 238.25km² respectively. Meadows and scrub with 27.43 km² and 48.33 km² also significantly contribute for several forms of life in the park. Therefore, PNP is a prime refuge for many threatened flora and fauna thriving across varied vegetation zones in central region of the country's protected area landscape.

More than 70 species of mammals, about 364 species of birds, and some 55 species of butterflies are recorded in the park. Most recently (August, 2020) the park has recorded National butterfly (Ludlow's Bhutan Swallowtail, *Bhutanitis ludlow*) for the first time. Camera trap picture of a male tiger was captured for the first time in Bhutan on 22nd May 2000 from the PNP in Peeme'. Other than tiger, there are several globally significant species as per IUCN Red List of Threatened Species, 2019.

1. Tiger *Panthera tigris* (Endangered)
2. Red Panda *Ailurus fulgens* (Endangered)
3. Musk Deer *Moschus chrysogaster* (Endangered)
4. Wild Dog *Cuon alpinus* (Endangered)
5. Takin *Budorcas taxicolor* (Vulnerable)
6. Himalayan Black Bear *Ursus thibetanus laniger* (Vulnerable)
7. Asian Small-clawed Otter *Aonyx cinereus* (Vulnerable)
8. Clouded Leopard *Neofelis nebulosa* (Vulnerable)
9. Asiatic Golden Cat *Catapuma temminckii* (Near Threatened)

Attributed by wide range of elevation and diverse vegetation, the park has rich diversity of birds. Of more than 364 avian species recorded, three are vulnerable, six near-threatened and eight are restricted range species. Significant avifauna species of conservation interest for Phrumsengla National Park are Chestnut-breasted partridge (*Arborophila mandellii*), Rufous-necked hornbill (*Aceros nipalensis*) and Beautiful nuthatch (*Sitta formosa*) listed vulnerable under IUCN list. PNP also records herpetofauna, fish and butterfly species. There are 3 species of amphibians, 12 species of reptiles, 4 species of lizards, and 7 species of fish.

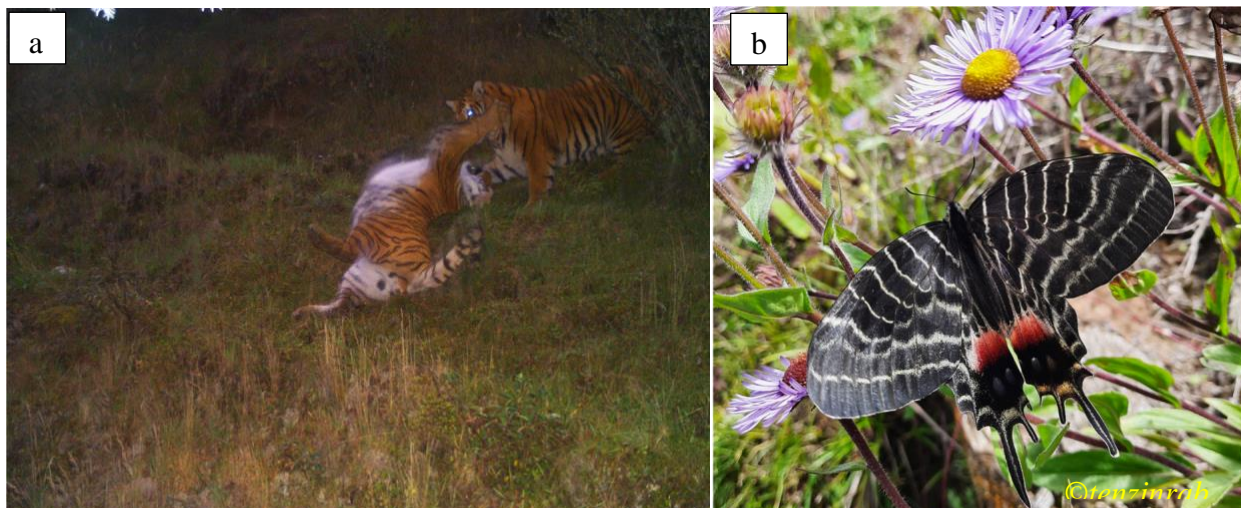


Figure 3: Two tigers of PNP, **a.** *Panthera tigris* and **b.** *Bhutanitis ludlow* (National butterfly)

(e) Socio-economic conditions

The park has about 6,000 inhabitants from 1,165 households living in 32 villages. Administratively, PNP spread across ten Gewogs viz Chumey, Ura and Tang Gewogs of Bumthang Dzongkhag, Saleng and Tsamang Gewogs under Mongar Dzongkhag, Jarey, Metsho and Gangzur gewogs under Lhuentse Dzongkhag, and Shingkhar and Nangkhon gewogs under Zhemgang Dzongkhag. Two villages enclaved inside the park are Sengor village (29 households), Saleng gewog and Bhim-Tharpaling (4 households), Chumey gewog under Mongar and Bumthang Dzongkhag respectively. These people are agro-pastoralist and mainly depend on forest for grazing their cattle. Over 75 percent of the park area is under registered grazing grounds and most of the park residence relies mainly on livestock produces for their livelihood.

3. Planned activities in Year 2021

Activities that are planned in PNP in 2021 includes the following:

1. Maintenance of in-situ Rhododendron Garden at Thrumshingla top.

Rhododendron garden at Thrumshingla in PNP was setup for in-situ conservation of more than 15 Rhododendron species and there is short trail passing through the garden leading to Thrumshingla top. The 22 hectares garden serves as conservation of Rhododendron species and recreational sites for traveler and visitors. The garden has the potential to attract local and international tourist therefore, providing adequate facilities is very important. The amenities and infrastructure placed initially has been deteriorated/damaged over time and its maintenance is critically necessary. The planned activity is budgeted with **USD 8694.97 = Nu. 630000/- (Six Hundred and Thirty Thousand)** will be carried out from January to June 2021 with community contractor.

There will be 10 workers for 15 days and there is an existing camp belonging to PNP where the workers will stay during the working period. The area is not used by the community but the garden has various species of rhododendrons and a walking trail of 1 km (30 min) inside the garden. The garden is surrounded by the natural forest with gentle to steep slopes and the natural habitat of barking deer, wild boar, sambar etc. There is no local resident in the area since located near the *Thrumshingla pass* and faces harsh climatic conditions in winter. The only nearby resident are caretaker of Thrumshingla top *chorten* and telecom staff stays along the highway. Since there is no local community residing in the area, the work will be awarded to local contractor from nearby areas after following proper tendering procedures and fair selection of the applicant as per existing rules and regulations. The selected contractor will employ 8-10 workers for the work and since there will be workers working for 15 days, there is risk of minimal disturbance to the habitat of

the animals. The work will be carried out manually but due to the presence of workers, it is expected that migration and breeding of the animals might be disturbed during the activities. There is no local residents in the vicinity of activity site but.

This activity has the following components:

- a) Maintenance of short walking trail which will be clearing and cleaning with no digging;
- b) Development of small wooden bridges (3 numbers of bridge- 5 to 8 meters length) from the locally available materials which will be pre-fabricated outside the park areas;
- c) Canopy (3 numbers of wooden canopy on 1 decimal land each);
- d) Construction of 1 number eco- friendly toilet;
- e) Replace of name tag for rhododendron species (more than 15 species, paper material with glass cover); and
- f) Repair of entry gate with wooden materials and signboards

Selection criteria for the ecotourism site are as follows:

- The site has already established infrastructure which are in need of maintenance. The maintenance and additional work to the garden will have more impact in terms of visitor engagement and service delivery rather than creating a whole new product in new site.
- Rhododendron garden at Thrumshingla in PNP is the only garden with in-situ conservation of more than 15 Rhododendron species. The garden is also used for botanization and field trips by students.

The adverse impacts are the following:

- Wastes from construction activities and from workers.
- Disturbance to wildlife habitat, migration, breeding arising from construction (machines like saw should not be carried out inside the area).
- Occupational health and safety hazards, especially for construction workers and local communities.





Figure 4: Maintenance of amenities in Rhododendron-garden at Thrumshengla top.

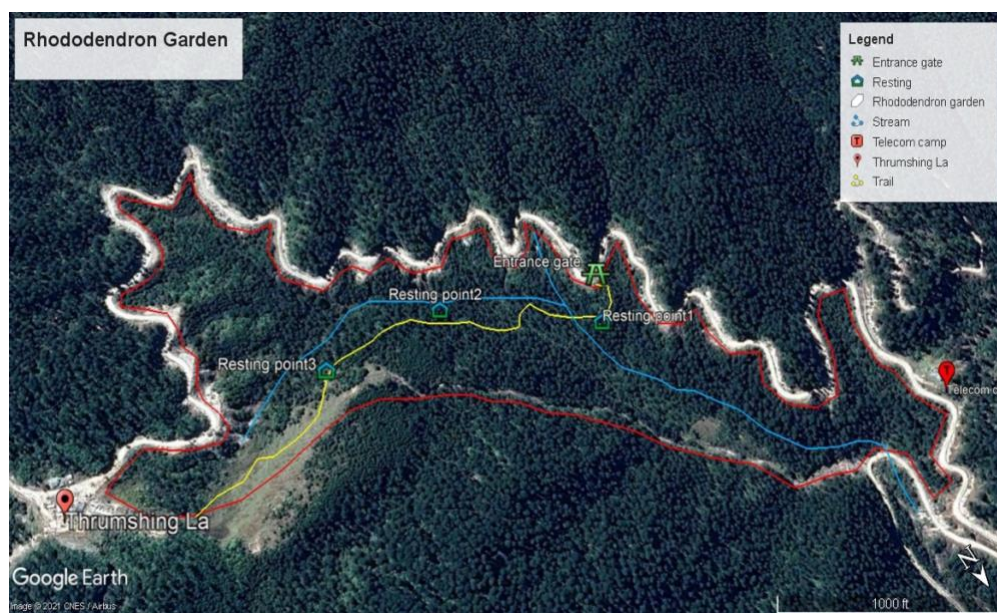


Figure 5: Map of Rhododendron-garden at Thrumshengla top.

2. Maintenance of HQ buildings, range office (Phawan), staff quarters (HQ), guard posts (Sengor, Zankhar and Tsamang), guest houses (HQ), visitor information center (HQ) and drinking water at HQ.

Infrastructures under PNP such as range office in Phawan, staff quarter in HQ , guard post office in Sengor, Zankhar and Tsamang, guest house in HQ and visitor information center in HQ are in need of maintenance since some of them were constructed even before the inception of the park (staff quarter at HQ). The range offices, guard post, guest house and staff quarter require replacement of roof, wooden structures (window and door frames) and floor repairing. The inner walls of visitor center is effected by the seepage of drainage water and the leakages need to be sealed furthermore, re-electrification work needs to be carried out. The drinking water at HQ needs maintenance as the water gets blocked by the ice during whole winter season due to poor water source/plumbing and staff have tough time fetching drinking water from nearby community.

The planned activity is stipulated to be carried out from January to March, 2021 with the budget of **USD 23738.65 = Nu. 1720000/- (Seventeen Lakh Twenty Thousand).**

The activity is broken into many smaller activities scattered over different location of the park offices and it's not worth floating tender. Thus, the activity will be executed through employment of community contractor. Around 30 local employees will be engaged with the planned activity and employees will be using the necessary facilities like accommodation will be adjusted in the parks guest house and the drinking/construction water from same source with the staff. The activity

will require more the 40MT stone, 80MT sand, 40MT aggregates, 3000 cfts timber and 8MT cement that will be purchased from NRDCL and cement agent, through mechanical transportation system. 1000kWh of power will also be utilized from the same source with staff, 100ltrs of petrol is required for the chainsaw to execute wood works.

For the drinking water to HQ, the management has identified a new source which is almost 4 km from the destination. The same activity will also be carried out departmentally since there is very limited budget. The activity will need 2 inches 4500 m of HDPE pipes which will be purchased from authorized supplier within the ministry. The work involves digging and under laying pipeline through few private registered lands, which requires public clearance.

All the proposed activity sites are located on stable, gentle to flat sloped terrain. Since the activity is maintenance of existing structures, no disturbance to surrounding land is required. Neither the surrounding topography foresees any adverse effect on the proposed activities. There is not many local communities dependent on the project site but the most of the park staff and their families resides within the activity sites. There are 5-12 households residing within the vicinity of the activity site but the proposed activity does not pose any conflict neither to the community nor to the wildlife. Nevertheless, while maintaining the staff quarter , it might cause minimal inconveniences to respective staffs residing in the quarter but it is for very short period and will ultimately benefit them.

The adverse impacts from the project are anticipated to be minimal. These are impacts, which are site-specific include:

- Use of machineries (powerchain) and cement works involve health safety of workers.
- Remains of resized timber and plastic wastes from workers.
- Emission from machineries (powerchain and planner).
- Soil digging for laying water pipeline.

Maintenance of guard posts and staff quarters.



➤ *Maintenance of guest house and VIC.*



Figure 6: Maintenance of existing structures at HQ and beat offices.

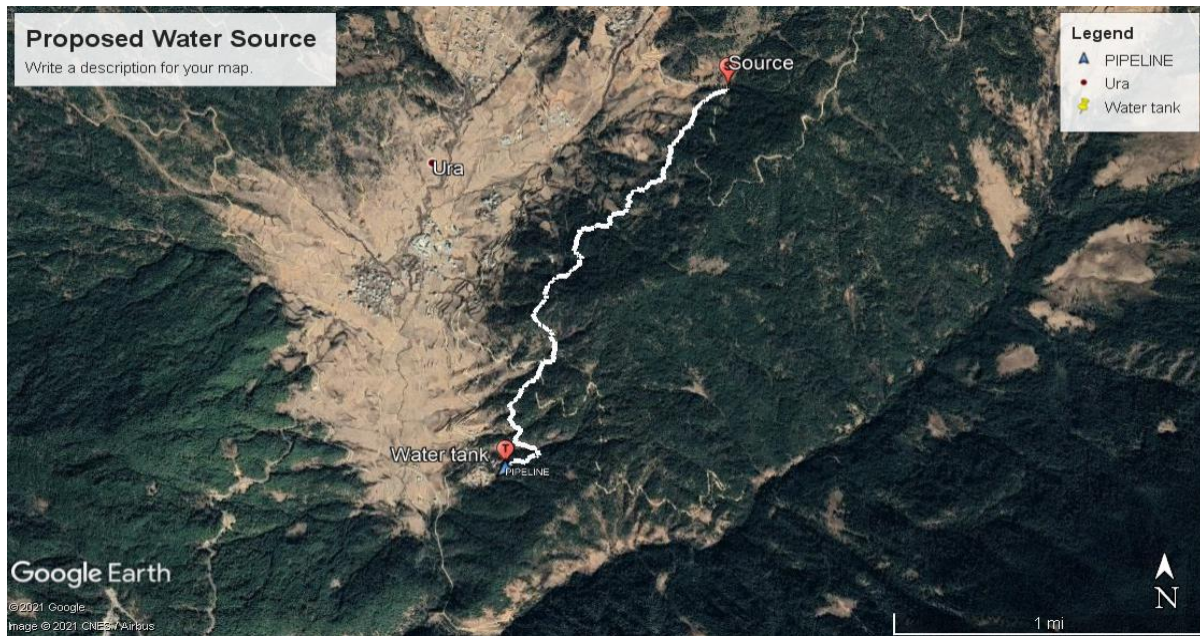


Figure 6: Map of proposed drinking water alignment for Park head office.

3. Maintenance of retaining wall at head office, Ura.

The retaining wall measuring 22M x 4.15M behind two-unit staff quarter was damaged by the monsoon and requires maintenance immediately. The wall is posing risk to human lives as well as to the staff quarter built very close to it. The activity involves demolishing the whole damaged wall and repairing it from the foundation. The activity site is located within the office compound with gentle slope. The wall was constructed to protect the staff quarter and overhead passing motor road.

The activity will involve contract work through tendering process from January to March, 2021 with total budget of **USD 3450.39 = Nu. 250000/- (Two Hundred Fifty Thousand)**. The work needs around 2000liters of water for construction purpose and workers usage, which will be sourced from park residents. Other materials like 8MT stone, 20MT sand will be purchased from NRDCL and transported mechanically, 4MT cement will be purchased from authorized cement agent. The work demands around 10 workers and they will be accommodated in parks transit camp until the construction is completed.

The maintenance of retaining wall includes construction activities of the wall which have the following adverse impacts:

- Waste from the workers and construction remains.
- Use of cement and stone works involve health safety of workers.



Figure 7: Maintenance of retaining wall at head office, Ura.

4. Improvement of alpine meadows.

Alpine meadow forms the integral part of wildlife habitat as well as for the livestock grazing ground. Most of the park's resident are dependent on livestock for their livelihood and those activity sites are used as pasture/grazing land by the local herders. Few sites like Wangthangla and Bribdungla are habitat of Tiger (*Panthera tigris*) and endemic *Lobelia nubigena*. The encroaching vegetation shrinks the grazing land and habitat for those rare wildlife species.

This activity is aimed to manage alpine meadows by felling of the encroaching trees and plants (herbs, scrubs & shrubs) overtaking the meadows, uprooting of unpalatable plants and cleaning of all felled trees and debris. Most of the surrounding areas have gentle slope with stable topography and good alpine vegetation cover. The activity amounting **USD 9799.09= Nu. 710000/- (Seven Hundred and Ten Thousand)** must be executed from January to June, 2021. Wangthangla, Bribdungla, Khandropang, Rodungla and Phurshela are some of critical meadows averaging to 30ha of area requiring improvement. These areas are used by 7-8 herders and is also habitat for endangered endemic species of flora and fauna. Unpalatable vegetation like *Berberis sp.* and *Rumex sp.* Have been seen overtaking the meadows therefore, they need to be cleared to improve the alpine meadow habitats. Five local people will be deployed for a month-long period to carry out the improvement works in those meadows. The workers will use herder's camps while executing the activity and water resource will be harnessed from the campsite itself.

For the improvement of Alpine meadows, some of the potential environmental and social impacts are the following:

- Wastes from workers.

- Sound and emissions from chainsaw.
- The proposed activity involves worker safety while felling trees using chain saw and uprooting plants. Therefore, occupational health and safety mitigation measures need to be in place

Figure 7: Habitat of endemic *Lobelia nubigena* encroached by other vegetation.



encroaching with unhealthy vegetation (Wangthangla).



Figure 9: Alpine meadow

4. Environmental and Social Impacts and Mitigation Measures

Potential impact	Impact scale	Proposed mitigation measures	Responsible party	Cost: 1 USD = Nu.72.43
Activity 1: Maintenance of in-situ Rhododendron Garden at Thrumshingla top.				
Cutting down of trees and other vegetation for construction and trail maintenance	Long term Minor	<p><i>Pre-maintenance:</i> Design the construction and trail maintenance of trail 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)</p> <p><i>During maintenance:</i> Ensure that no accidental damage is caused to local vegetation</p> <p>Major trees that are supposed to be cut shall be clearly marked, and only marked trees will be cut;</p> <p><i>After maintenance:</i> Clear all remains of the felled vegetation along the trail</p>	<p>BFL focal person in PNP</p> <p>BFL focal person in PNP</p> <p>Community contractor</p>	Activity funded by GCF and cost for mitigation measures included in the activity itself.
Wastes: Generated from the activities such as clearing of walking trails, canopy construction and waste from toilet construction activities and old tags.	Short term Minor	<p><i>Pre-maintenance:</i> agreement with workers on waste management during maintenance work.</p> <p><i>During maintenance:</i></p> <ul style="list-style-type: none"> • Identification of the different waste types at the project site (soil, asphalt, food, etc.); • Ensure that camps are located away from existing stream, and that no discharge from camps is made into nearby water bodies; • Proper containers/waste bins should be provided at the project site; • Dumping waste shall be prohibited on fragile slopes, forests, religious or other culturally sensitive areas or areas where livelihood is derived; • Collection of all waste should be undertaken daily 	<p>BFL focal person in PNP</p> <p>BFL focal person in PNP</p> <p>Community contractor</p>	-DO-

		<ul style="list-style-type: none"> • Possible hazardous waste (Chainsaw oils.) should be collected separately and finally dispose safely; • All construction materials should be covered during the transportation to avoid waste dispersion; • Burning of construction waste should be prohibited. <p><i>After maintenance:</i></p> <ul style="list-style-type: none"> • All waste shall be removed from the project site. 		
<p>Noise disturbance: Possible noise disturbance and emission as a result of outdoor equipment (chainsaw) usage around the maintenance site</p>	<p>Short term Minor</p>	<ul style="list-style-type: none"> • Minimize the use of chainsaw on projects site to reduce sound disturbance on wildlife • Usage of new chainsaw to reduce emission effect to the surrounding environment. • The maintenance work should not be permitted during the nights, the operations on site shall be restricted to the hours 7am—7pm; • Earplugs and protecting devices shall be provided to workers on site. 	<p>BFL focal person in PNP Community contractor</p>	-DO-
<p>Water quality: contamination of stream passing through garden due to waste generated from workers and maintenance work</p>	<p>Short term Minor</p>	<ul style="list-style-type: none"> • Ensure that worker camps are located away from existing stream, and that no discharge from camps is made into nearby stream • An environment-friendly toilet (e.g., pit toilet) and washing facilities should be made available, built with locally available materials • Open defecation in the vicinity of project sites should be prohibited • Throwing waste in the stream should be prohibited • Possible hazardous waste (motor oils, machine fuels, lubricants) should be collected separately and disposed properly. • After the maintenance work, pit toilets are dismantled and pits are covered • All waste is removed from the project site 	<p>BFL focal person in PNP Community contractor</p>	-DO-

<p><i>Human-wildlife conflict:</i> Disturbance to wildlife habitat, migration and breeding</p>	<p>Short term Minor</p>	<ul style="list-style-type: none"> • Ensure careful siting, alignment, design of rig sites, and/or timing of works (seasonal) • Avoid using heavy machinery • Avoid soil excavation and noise disturbance to minimize impact on natural habitats • Project site area shall be clearly demarcated and workers shall not be allowed to enter any wildlife areas • Feeding animals shall be prohibited 	<p>BFL focal person in PNP Community contractor</p>	<p>-DO-</p>
<p><i>Workers' health and safety including COVID</i> (Refer to the full OHS guidelines attached where ever relevant)</p>	<p>Short term Minor</p>	<ul style="list-style-type: none"> • Comply with the workers' health and safety guidelines • Ensure regular health screening for the workers pre and during construction activities • Ensure that no underage workers, or children are engaged • Ensure decent work conditions, including an appropriate salary, working hours, accommodation and food for workers shall be provided to all workers • Ensure that workers are employed on the principle of equal opportunity and fair treatment, and there is no discrimination with respect to any aspects of the employment relationship, such as 	<p>BFL focal person in PNP Community contractor</p>	<p>-DO-</p>

		<ul style="list-style-type: none"> • Construction materials should be stored in appropriate and covered places to minimize dust; • Before allowing vehicles on site, fitness and emission test of the vehicle shall be performed; • Vehicle loads likely to emit dust need to be covered; • Workers should wear protective masks if dust appears; • Vehicle speed should be restricted within the construction site; • Regular maintenance of the vehicles and construction machinery should be performed in order to reduce any leakages of motor oils, emissions and dispersion of pollution; • Burning of debris from ground clearance shall be prohibited. 	<p>BFL focal person in PNP</p> <p>Community contractor</p>	
Waste: generation of waste as a result of construction activities	Short term Minor	<p><i>Pre-construction:</i> agreement drawn on appropriate waste management with the contractor</p> <p><i>During construction:</i></p> <ul style="list-style-type: none"> • Identification of the different waste types at the project site (soil, asphalt, food, etc.); • Ensure that camps are located away from existing stream, river, or water sources, and that no discharge from camps is made into nearby water bodies; • Proper containers/waste bins should be provided at the project site; • Dumping of waste on the sides of the road, on private land, or in other non-designated places should be prohibited; • Dumping waste shall be prohibited on fragile slopes, forests, religious or other culturally sensitive areas or areas where livelihood is derived; • Collection, transportation and final disposal of all waste should be undertaken weekly 	<p>BFL focal person in PNP</p> <p>Community contractor</p>	-DO-

		<ul style="list-style-type: none"> • Possible hazardous waste (motor oils, vehicle fuels, etc.) should be collected separately and authorized collector and transporter should be sub-contracted to transport and finally dispose; • All construction materials should be covered during the transportation to avoid waste dispersion; • The options for reuse/recycling of the generated waste streams should be taking into consideration (e.g. excavated soil, etc.). • Burning of construction waste should be prohibited. <p><i>After construction:</i></p> <ul style="list-style-type: none"> • All waste shall be removed from the project site. 		
<i>Access to and usage of water sources</i>	Short term (only for the duration of the construction) Minor	Prepare water usage and management agreement in consultation with local community to ensure that community's access to water sources is not disturbed, and usage of water sources is fairly allocated between local communities and construction workers (e.g., by specifying water usage times for workers).	BFL focal person in PNP Community contractor Local community	-DO-
<i>Local community's health and safety</i>	Short term Minor	<ul style="list-style-type: none"> • Ensure the safety of all project-related equipment, in line with the requirements above • Minimize the use of hazardous materials, and ensure that community members are not exposed to them. In case that the use of such materials is necessary, provide sufficient notice to local community members and inform them on safety and protection measures. • Avoid dumping any waste or otherwise contaminating community sources of water supply and water quality. • Provide information to local communities on construction activities and plans 	BFL focal person in PNP Community contractor	-DO-

<i>Conflict between temporary workers and local communities</i>	Short term Minor	<ul style="list-style-type: none"> • 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. • Local communities shall be made aware of the engagement of temporary workers in project sites. • Strict monitoring shall be carried out to ensure conflicts are minimized 	BFL focal person in PNP Community contractor	-DO-
<i>Workers' health and safety including COVID</i> (Refer to the full OHS guidelines attached where ever relevant)	Short term Minor	<ul style="list-style-type: none"> • Comply with the workers' health and safety guidelines • Ensure regular health screening for the workers pre and during construction activities • Ensure that no underage workers, or children are engaged • Ensure decent work conditions, including an appropriate salary, working hours, accommodation and food for workers shall be provided to all workers • Ensure that workers are employed on the principle of equal opportunity and fair treatment, and there is no discrimination with respect to any aspects of the employment relationship, such as recruitment and hiring, compensation (including wages and benefits), working conditions and terms of employment, access to training, job assignment, and promotion, termination of employment or retirement, and disciplinary practices. • Implement a grievance mechanism for workers (and their organizations, where they exist) to raise workplace concerns • Strictly abide by COVID prevention protocols (use masks, maintain distance, wash hands regularly etc.) 	BFL focal person in PNP Community contractor	Cost will be met from the activity cost
<i>Activity 3: Maintenance of retaining wall at head office, Ura.</i>				

		<p><i>After construction:</i></p> <ul style="list-style-type: none"> • All waste shall be removed from the project site. 		
<i>Access to and usage of water sources</i>	<p>Short term (only for the duration of the construction)</p> <p>Minor</p>	<p>Prepare water usage and management agreement in consultation with local community to ensure that community's access to water sources is not disturbed, and usage of water sources is fairly allocated between local communities and construction workers (e.g., by specifying water usage times for workers).</p>	<p>BFL focal person in PNP</p> <p>Community contractor</p> <p>Local community</p>	-DO-
<i>Local community's health and safety</i>	<p>Short term</p> <p>Minor</p>	<ul style="list-style-type: none"> • Ensure the safety of all project-related equipment, in line with the requirements above • Minimize the use of hazardous materials, and ensure that community members are not exposed to them. In case that the use of such materials is necessary, provide sufficient notice to local community members and inform them on safety and protection measures. • Avoid dumping any waste or otherwise contaminating community sources of water supply and water quality. • Provide information to local communities on construction activities and plans 	<p>BFL focal person in PNP</p> <p>Community contractor</p>	-DO-
<i>Conflict between temporary workers and local communities</i>	<p>Short term</p> <p>Minor</p>	<ul style="list-style-type: none"> • 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. • Local communities shall be made aware of the engagement of temporary workers in project sites. • Strict monitoring shall be carried out to ensure conflicts are minimized 	<p>BFL focal person in PNP</p> <p>Community contractor</p>	-DO-

<p><i>Workers' health and safety including COVID</i></p> <p>(Refer to the full OHS guidelines attached where ever relevant)</p>	<p>Short term Minor</p>	<ul style="list-style-type: none"> • Comply with the workers' health and safety guidelines • Ensure regular health screening for the workers pre and during construction activities • Ensure that no underage workers, or children are engaged • Ensure decent work conditions, including an appropriate salary, working hours, accommodation and food for workers shall be provided to all workers • Ensure that workers are employed on the principle of equal opportunity and fair treatment, and there is no discrimination with respect to any aspects of the employment relationship, such as recruitment and hiring, compensation (including wages and benefits), working conditions and terms of employment, access to training, job assignment, and promotion, termination of employment or retirement, and disciplinary practices. • Implement a grievance mechanism for workers (and their organizations, where they exist) to raise workplace concerns • Strictly abide by COVID prevention protocols (use masks, maintain distance, wash hands regularly etc.) 	<p>BFL focal person in PNP Community contractor</p>	<p>-DO-</p>
<p><i>Activity 4: Improvement of alpine meadows.</i></p>				
<p>Cutting down of trees and plants that are encroaching on the Alpine meadows negatively affects the ecosystem of the Alpine meadows (e.g., grazing areas are diminished)</p>	<p>Long term Minor</p>	<ul style="list-style-type: none"> • Assess the impacts of climate change on Alpine meadows and lowland grasslands to identify alternative approaches to the sustainable management of the meadows or grasslands [as part of the BFL climate change component] • 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; • Removal of trees needs to be done in an environmentally sustainable way (e.g., removal of branches); • Alternative grazing areas shall be identified 	<p>BFL focal person in PNP (in collaboration with UWICER) BFL focal person in PNP Temporary workers</p>	<p>Activity funded by GCF and cost for mitigation measures included in the activity itself.</p>

		<ul style="list-style-type: none"> • Burning of trees and other plants should be avoided 		
Noise pollution: Possible noise disturbance as a result of chainsaw usage in clearing out growing vegetation.	Short term Minor	<ul style="list-style-type: none"> • Use chainsaw only if at all necessary, otherwise clear the overtaking vegetation manually using knife and axe. • Earplugs and protecting devices shall be provided to workers on site. 	BFL focal person in PNP Temporary workers	Activity funded by GCF and cost for mitigation measures included in the activity itself.
Waste: generation of waste as a result of improvement work	Short term Minor	<ul style="list-style-type: none"> • Identification of the different waste types at the project site (soil, asphalt, food, etc.); • 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; • Dumping waste shall be prohibited on fragile slopes, forests, religious or other culturally sensitive areas or areas where livelihood is derived; • Proper waste collection point is made and all waste shall be removed from the project site after completing the improvement works. 	BFL focal person in PNP Temporary workers	-DO-

<p><i>Workers' health and safety including COVID</i></p> <p>(Refer to the full OHS guidelines attached where ever relevant)</p>	<p>Short term Minor</p>	<ul style="list-style-type: none"> • Comply with the workers' health and safety guidelines • Ensure regular health screening for the workers pre and during improvement works • Ensure that no underage workers, or children are engaged • Ensure decent work conditions, including an appropriate salary, working hours, accommodation and food for workers shall be provided to all workers • Implement a grievance mechanism for workers. • Strictly abide by COVID prevention protocols (use masks, maintain distance, wash hands regularly etc.) 	<p>BFL focal person in PNP</p>	<p>cost for mitigation measures will be met from the activity itself.</p>
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5. ESMP Implementation Arrangements

The implementation of project activities will be carried out by the BFL focal person in PNP. 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 PNP in 2021. 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 PNP'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 non-compliances should be reported to the ESS officer immediately, and the ESS officer will report it to the PCU (M&E Officer). Each non-compliance should be closed with appropriate measure/s and the evidence should be kept.

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

6. ESMP Monitoring Arrangements

The BFL focal person in PNP 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.

PNP's PA is also fully responsible for the compliance of all external contractors and service providers working in the PNP 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
1	<i>Maintenance of in-situ Rhododendron Garden at Thrumshingla top.</i>	Field focals	Every month (Jan-Dec 2021)	Thrunshingla top	Monthly progress and final completion report
		ESS officer	3rs week Nov, 2021		Monitoring report
2	<i>Maintenance of HQ buildings, range office (Phawan), staff quarters (HQ), guard posts (Sengor, Zankhar and Tsamang), guest houses (HQ), visitor information center (HQ) and drinking water at HQ.</i>	Field focals	Every month (Jan-Dec 2021)	Ura, Sengor, Tsamang, Zangkhar and Phawan	Monthly progress and final completion report
		ESS officer	3rs week Nov, 2021		Monitoring report
3	<i>Maintenance of retaining wall at head office, Ura.</i>	Field focals	Every month (Jan-Dec 2021)	Ura,	Monthly progress and final completion report
		ESS officer	3rs week Nov, 2021		Monitoring report
4	<i>Improvement of alpine meadows.</i>	Field focals	Every month (Jan-Dec 2021)	Ura,	Monthly progress and final completion report
		ESS officer	3 rd week Nov, 2021		Monitoring report

1. Maintenance of in-situ Rhododendron Garden at Thrumshingla top.

Monitoring by implementing entities:

- a. At least weekly field visits
- b. Monthly reports prepared by implementing entities and submitted to ESS officer

Monitoring by ESS officer:

- c. Field monitoring by ESS officer – monitoring of the work once during the implementation and through field report from IAs after completion of the work.
- d. Reports by ESS officer to BFL Fund Secretariat – Annual report submitted to the BFL Fund Secretariat in January, 2022.

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

2. Maintenance of HQ buildings, range office (Phawan), staff quarters (HQ), guard posts (Sengor, Zankhar and Tsamang), guest houses (HQ), visitor information center (HQ) and drinking water at HQ.

Monitoring by implementing entities:

- a. At least weekly field visits
- b. Monthly reports prepared by implementing entities and submitted to ESS officer

Monitoring by ESS officer:

- c. Field monitoring by ESS officer – monitoring of the work once during the implementation and through field report from IAs after completion of the work. (physical monitoring of maintenance work in PNP HQ ONLY). Other maintenance works will be monitored through photographic evidence).
- d. Reports by ESS officer to BFL Fund Secretariat – Annual report submitted to the BFL Fund Secretariat in January, 2022.

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

3. Maintenance of retaining wall at head office, Ura.

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, 2022.

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

4. Improvement of alpine meadows.

Monitoring by implementing entities:

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

Monitoring by ESS officer at PCU:

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

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

7. Capacity Need and Budget

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

The budget for each of the activities is:

1. Maintenance of Rhodo-garden: **USD 8694.97**
2. Maintenance of Existing structure (HQ building and staff quarters): **USD 23738.65**
3. Maintenance of retaining wall at HQ: **USD 3450.39**
4. Improvement of alpine meadow: **USD 9799.09**

7. Consultation and Disclosure Mechanisms

The consultation meeting on improvement of alpine meadows was already conducted in the past year and the current budget will be used only on improvement works as per the minutes of meeting and recommendation from the consultation. The detailed consultation report will be attached separately.

Regarding the maintenance work, consultation on water source will be carried out soon and no objection/ public clearance will be sought and submitted. The copy of letter sent to the local administration seeking public clearance have been attached in the annexure. There are a few private registered land along the alignment of our new proposed water source and clearance from those land owners will be sought.

The full English version of this ESMP, as well as an executive summary in Bhutanese, 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.

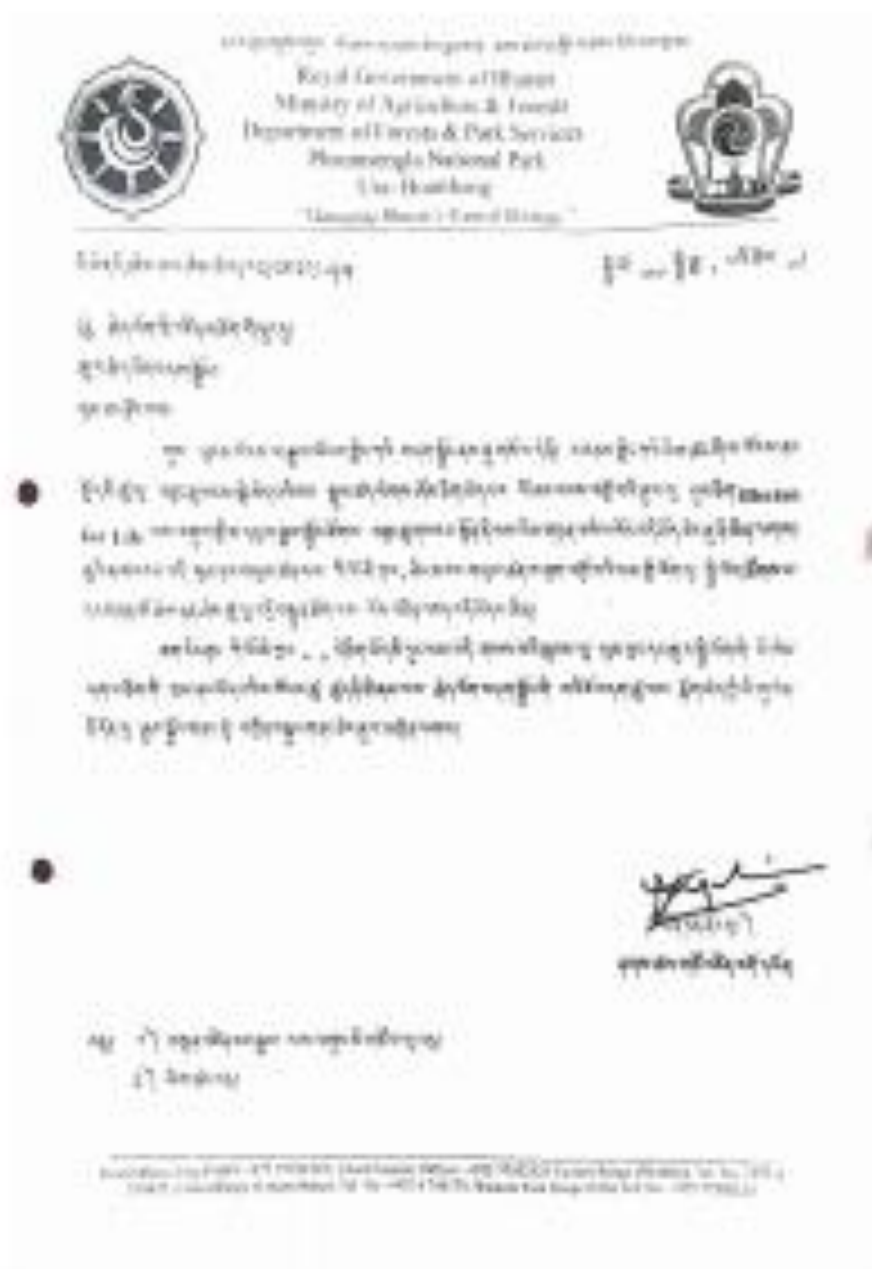
8. Stakeholder Engagement Plan

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

1. Maintenance of Rhododendron garden
 - a. Dates of consultation: March 2021

- b. Agenda: Conservation/business plan and as part of BFL activities
 - c. Location: PNP, HQ
- 2. Maintenance of existing structure (Staff quarters, offices and VIC)
 - a. Dates of consultation: April 2021
 - b. Agenda: Awarding of work to community contractor
 - c. Location: PNP, HQ
- 3. Maintenance of retaining wall at HQ
 - a. Dates of consultation: March 2021
 - b. Agenda: Awarding of work to community contractor
 - c. Location: PNP, HQ
- 4. Improvement of alpine meadows
 - a. Dates of consultation: Consultation was carried out in the previous year (25th to 29th May 2020)
 - b. Agenda: Conservation plans, identification of sites, indigenous knowledge sharing, scientific improvement practices. (Report attached)
 - c. Location: Yak and Cow herds

Annex 1. Copy of letter written to local administration seeking “no objection certificate” for water supply in HQ, PNP



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Annex 2. Copy of public consultation meeting report for Alpine meadow improvement under PNP

Report on Review & Consultation Meeting on Alpine Meadow Improvement Measures
carried out in Phrumsengla National Park
(Report prepared & submitted by Jangchuk Gyeltshen, SCMS to CFO, No.PNP/SCMS/4/2019-20/241.
9/12/2019)

Summary

A total of 20 participants attended the Review & Consultation Meeting on Alpine Meadow Improvement Measures already implemented in the park. The meeting was convened on 6th December 2019 at Bhim village with the objective to present, review, seek opinions and suggestions for the upcoming plan on such activity. Together with this meeting, the importance of wildlife conservation in the park was also conveyed to gain conservation support from the local community.

1. Introduction

Phrumsengla National Park (PNP) had carried out alpine meadow improvement measures in four alpine meadows with the objective to enhance quality of alpine meadows and create more foraging areas for wild flora, fauna and livestock in the higher elevation areas. With the recent implementation of alpine meadow improvement measures, the park has now a total area of 9.809 acres of alpine meadows opened to wildlife & livestock. Similar activity will be carried out in the coming year in other locations. However, the improvement measures carried out as been not presented to local community & livestock herders to seek their views, opinions and suggestions for future execution of such activity. Therefore, in collaboration with the Western Park Range (WPR) & Species Conservation Section (SCMS) had conducted Review & Consultation Meeting on Alpine Meadow Improvement Measures already executed and presented outcomes and future plans.

2. Objectives

The main objective of this meeting was to present, review and seek opinions and suggestions on

the already executed activity on alpine meadow improvement measures to the local communities and livestock herders of two villages (Bhim & Yirangbi). Such meeting would ensure success of alpine meadow improvement measures through gaining local knowledge from the community, livestock herders and embedding it into the scientific practice.

3. Meeting Agenda

3.1. Welcome address

On behalf of Chief Forestry Officer (CFO), the Section Head (SH), SCMS welcomed all participants in the meeting. He informed the floor that this meeting is to be chaired by Chief Forestry Officer, PNP; however, he couldn't attend due to need to attend important official work. He thanked participants for finding time to attend meeting and expressed his hope to gain support and cooperation throughout the meeting session.

3.2. Introduction to detail meeting agenda

SH, SCMS had read detail meeting agenda for the day to the participants. Further, he sought support and cooperation from the participants to make this meeting a grand success.

3.3. Presentation on alpine meadow improvement measures implemented

SH, SCMS had presented and reviewed work done on alpine meadow improvement measures to the participants. Photographs and video clips were presented to have an idea on how we proceeded with the works. After the presentation, views, opinions and suggestions were sought.



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3.4. Seeking views, opinions and suggestions on alpine meadow improvement measures carried out and for future plans

SH, SCMS had delivered talks on implementation of alpine meadow improvement measures and future plans. Accordingly, their views, opinions and suggestions were sought from the participants. The following points (Views, opinions, suggestions) were addressed by the participants in the meeting:

- Excellent way of enabling fresh growth of alpine grasses for the livestock and wildlife in the upcoming season and from thereon.
- Removal of Rhododendron through cutting would lead to sure death of the trees.
- Expected to reduce livestock predation by wild predators due to removal of ambushing covers.
- Among all other birds, Himalayan Monal (*Lophophorus impejanus*) will be benefited most for feeding in the opened ground with exposed fresh soils.
- Similar activity is suggested in the lower elevations (Cool broadleaved forest) where there is abundant wildlife like Sambar (*Rusa cervicolor*) and other wild ungulates and domestic cattle. These places are Geonpa Kabpa, Zhug Guyang, Jag Tsersang, Tsupang, Zimthang, Tsebrak & Barnang.
- Concern on the encroachment of unpalatable plant species were expressed in the meeting. The participants said, “Opening area in the alpine meadows were observed to be shrinking when compared to decades ago”. Ap Pema Wangchuk said, “Such encroachment would continue if prevention or mitigation measures are not taken in time”.
- There is no demand for commercial or rural supply of timber in the alpine meadows, therefore felling of trees impeding the growth of unpalatable plant and grasses species would mean no serious concerns for the community.
- *Lobelia nubigena* is locally called as Mazang Phurba in Bhim’s dialect. It is considered as poison for the human beings.

4. Vote of thanks

Mr. Ugyen Lhendhup, Sr. Forest Ranger, SCMS thanked all participants for attending meeting despite short notice. He expressed his appreciation for taking active part in the meeting and expressed hope to receive similar support and cooperation in the future.

Acknowledgement

We are immensely thankful to our Chief Forestry Officer for his continued support and cooperation. His unwavering support and guidance is always in our heart. We appreciate Mr. Ugyen Penjor, SCMS for his active participation and being proactive during entire meeting. Lastly, I would like to thank Mr. Ugyen Lhendhup, Park Range Officer, WPR for consenting us to conduct meeting and to the host who provided us all necessary logistic arrangement during our stay at Bhim.

Annexure . BFL: SUGGESTED OCCUPATIONAL HEALTH AND SAFETY STANDARDS

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

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

1. General Facility Design and Operation

Integrity of Workplace Structures

Permanent and recurrent places of work should be designed and equipped to protect occupational health and safety:

- Surfaces, structures and installations should be easy to clean and maintain, and not allow for accumulation of hazardous compounds.
- Buildings should be structurally safe, provide appropriate protection against the climate, and have acceptable light and noise conditions.
- Fire resistant, noise-absorbing materials should, to the extent feasible, be used for cladding on ceilings and walls.
- Floors should be level, even, and non-skid.
- Heavy oscillating, rotating or alternating equipment should be located in dedicated buildings or structurally isolated sections.

Severe Weather and Facility Shutdown

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

Workspace and Exit

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

Fire Precautions

The workplace should be designed to prevent the start of fires through the implementation of fire codes applicable to industrial settings. Other essential measures include:

- The workplace shall be provided with adequate means of protection and escape in case of fire.
- The workplace shall be provided with adequate number of relevant fire extinguishers.
- Workers shall wear shoes without iron or steel nails or any other exposed ferrous materials which is likely to cause sparks by friction.
- Smoking, lightening, or carrying of matches, lighters or smoking materials shall be prohibited.
- All other precautions, as are reasonably practicable, shall be taken to prevent initiation of ignition from all other possible sources such as open flames, frictional sparks, overheated surfaces of machinery or plant, chemical or physical, chemical reaction and radiant heat.
- At every workplace adequate provision of water supply for firefighting shall be provided and maintained.
- Equipping facilities with firefighting equipment (e.g., fire extinguishing bottle). The equipment should be maintained in good working order and be readily accessible. It should be adequate for the dimensions and use of the premises, equipment installed, physical and chemical properties of substances present, and the maximum number of people present.
- Manual firefighting equipment shall be easily accessible and simple to use.
- Fire extinguishers and emergency alarm systems that are both audible and visible should be in place.

Lavatories and Showers

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

Potable Water Supply

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

Clean Eating Area

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

Lighting

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

Safe Access

- Passageways for pedestrians and vehicles within and outside buildings should be segregated and provide for easy, safe, and appropriate access.
- Equipment and installations requiring servicing, inspection, and/or cleaning should have unobstructed, unrestricted, and ready access.
- Covers should, if feasible, be installed to protect against falling items.
- Measures to prevent unauthorized access to dangerous areas should be in place.

First Aid

- The employer should ensure that qualified first-aid can be provided at all times. A sufficient number of first aid boxes or cupboards shall be provided and maintained so as to be readily available during all working hours, provided that the distance of the nearest first aid box or a cupboard stall be not more than 200m from any working place.
- First aid kits include all equipment outlined in Annex 1 to these Guidelines.
- Remote sites should have written emergency procedures in place for dealing with cases of trauma or serious illness up to the point at which patient care can be transferred to an appropriate medical facility.

Work Uniform

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

Air Supply

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

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

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

3. Physical Hazards

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

Rotating and Moving Equipment

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

protective measures include:

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

Noise

- No worker should be exposed to a noise level greater than 85 dB(A) for a duration of more than 8 hours per day without hearing protection. In addition, no unprotected ear should be exposed to a peak sound pressure level (instantaneous) of more than 140 dB(C).
- The use of hearing protection should be enforced actively when the equivalent sound level over 8 hours reaches 85 dB(A), the peak sound levels reach 140 dB(C), or the average maximum sound level reaches 110dB(A). Hearing protective devices provided should be capable of reducing sound levels at the ear to at least 85 dB(A).
- Although hearing protection is preferred for any period of noise exposure in excess of 85 dB(A), an equivalent level of protection can be obtained, but less easily managed, by limiting the duration of noise exposure. For every 3 dB(A) increase in sound levels, the 'allowed' exposure period or duration should be reduced by 50 percent.
- Prior to the issuance of hearing protective devices as the final control mechanism, use of acoustic insulating materials, isolation of the noise source, and other engineering controls should be investigated and implemented, where feasible.
- Periodic medical hearing checks should be performed on workers exposed to high noise levels.

Vibration

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

Electrical

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

- Marking all energized electrical devices and lines with warning signs
- Locking out (de-charging and leaving open with a controlled locking device) and tagging-out (warning sign placed on the lock) devices during service or maintenance
- Checking all electrical cords, cables, and hand power tools for frayed or exposed cords and following manufacturer recommendations for maximum permitted operating voltage of the portable hand tools

- Double insulating / grounding all electrical equipment used in environments that are, or may become, wet; using equipment with ground fault interrupter (GFI) protected circuits
- Protecting power cords and extension cords against damage from traffic by shielding or suspending above traffic areas
- Appropriate labeling of service rooms housing high voltage equipment ('electrical hazard') and where entry is controlled or prohibited
- Establishing "No Approach" zones around or under high voltage power lines
- Rubber tired construction or other vehicles that come into direct contact with, or arcing between, high voltage wires may need to be taken out of service for periods of 48 hours and have the tires replaced to prevent catastrophic tire and wheel assembly failure, potentially causing serious injury or death
- Conducting detailed identification and marking of all buried electrical wiring prior to any excavation work

Eye Hazards

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

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

Welding / Hot Work

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

- Provision of proper eye protection such as welder goggles and/or a full-face eye shield for all personnel involved in, or assisting, welding operations. Additional methods may include the use of welding barrier screens around the specific work station (a solid piece of light metal, canvas, or plywood designed to block welding light from others). Devices to extract and remove noxious fumes at the source may also be required.

Working Environment Temperature

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

- Monitoring weather forecasts for outdoor work to provide advance warning of extreme weather and scheduling work accordingly

- Providing temporary shelters to protect against the elements during working activities or for use as rest areas
- Use of protective clothing
- Providing easy access to adequate hydration such as drinking water or electrolyte drinks, and avoiding consumption of alcoholic beverages

Ergonomics, Repetitive Motion, Manual Handling

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

- Facility and workstation design with 5th to 95th percentile operational and maintenance workers in mind
- Use of mechanical assists to eliminate or reduce exertions required to lift materials, hold tools and work objects, and requiring multi-person lifts if weights exceed thresholds
- Selecting and designing tools that reduce force requirements and holding times, and improve postures
- Incorporating rest and stretch breaks into work processes, and conducting job rotation
- Implementing quality control and maintenance programs that reduce unnecessary forces and exertions

Working at Heights

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

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

Illumination

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

- Use of energy efficient light sources with minimum heat emission
- Undertaking measures to eliminate glare / reflections and flickering of lights
- Taking precautions to minimize and control optical radiation including direct sunlight.
- Exposure to high intensity UV and IR radiation and high intensity visible light should also be controlled

- Controlling laser hazards in accordance with equipment specifications, certifications, and recognized safety standards. The lowest feasible class Laser should be applied to minimize risks.

4. Personal safety equipment for workers

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

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

Workers are instructed regarding safety equipment as follows:

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

5. Standards for workers' accommodation²

1. General living facilities

- The location of the facilities is designed to avoid flooding or other natural hazards
- The living facilities are located within a reasonable distance from the worksite.
- Transport is provided to worksite safe and free.
- The living facilities are built using adequate materials, kept in good repair and kept clean and free from rubbish and other refuse.

2. Drainage

- The site is adequately drained.

3. Heating, air conditioning, ventilation and light

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

4. Water

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

5. Wastewater and solid waste

- Wastewater, sewage, food and any other waste materials are adequately discharged in compliance with national and/or international standards and without causing any significant impacts on camp residents, the environment or surrounding communities.
- Specific containers for rubbish collection are provided and emptied on a regular basis.
- Pest extermination, vector control and disinfection are undertaken throughout the living facilities at least once.

6. Rooms/dormitories facilities

- Rooms/dormitories are kept in good condition.

- Rooms/dormitories are aired and cleaned at regular intervals.
- Rooms/dormitories are built with easily cleanable flooring material.
- Rooms/dormitories and sanitary facilities are located in the same buildings.
- Residents are provided with enough space.
- The number of workers sharing the same room/dormitory is minimized.
- Doors and windows are lockable and provided with mosquito screens when necessary.
- Mobile partitions or curtains are provided.
- Adequate number of furniture such as table, chair, mirror, and lamps are provided for all workers.
- Separate sleeping areas are provided for men and women.

7. Bed arrangements and storage facilities

- A separate bed is provided for every worker.
- The practice of “hot-bedding” is prohibited.
- There is a minimum space of 1 meter between beds.
- The use of double deck bunks is minimized.
- If double deck bunks are in use, there is enough clear space between the lower and upper bunk of the bed.
- Workers are provided with comfortable mattresses. Workers may be expected to use their own pillows and bed linens.
- Workers wash bed linen frequently and applied with adequate repellents and disinfectants (where conditions warrant).
- Adequate facilities for the storage of personal belongings are provided.
- Separate storages for work clothes and PPE and depending on condition, drying/airing areas are provided.

8. Sanitary and toilet facilities

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

9. Cooking and laundry facilities

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

10. Leisure, social and telecommunications facilities

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

Contents of first aid box or cup-boards

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

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

