

Bhutan For Life

**Environmental and Social
Management Plan for Wangchuck
Centennial National Park**

January 2023 - June 2024

Wangchuck Centennial National Park / Chhokhortoe

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Bhutan for Life
Environmental and Social Management Plan for Wangchuck Centennial National Park
(WCNP) for January 2023 - June 2024

1. Introduction

1.1 Project Background

The Bhutan for Life (BFL) project aims to ensure a robust network of Protected Areas (PAs) and Biological Corridors (BCs) that secure human well-being, biodiversity conservation and increase climate resilience in Bhutan. The project shall sustain for 14-years, in this duration an immediate improvement to the management of Bhutan's protected areas for climate resilience and biodiversity gains are sought. Meanwhile the country would gradually ratchet 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 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; and
- Strengthen organizational, institutional, and financial capacity for effective management of PAS. BFL includes five components that reflect these goals, divided into 16 milestones (or outputs) and over 80 detailed activities.

1.2 Scope of ESMP

The preparation of this Environmental and Social Management Plan (ESMP) was deemed necessary in order to manage the environmental and social impacts. The mitigation actions required to implement the project was 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 the applicable national legislation and regulations.

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

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

1.3 Purpose of ESMP

This site-specific ESMP is a project-specific source document detailing the environmental and social protection requirements to mitigate and minimize the adverse impacts. The ESMP's primary purpose is to ensure that the environmental requirements and social commitments associated with the project are carried forward into implementation and operational phases of the project and are effectively managed. The specific objectives of this ESMP are as hereunder:

- Minimizing any adverse environmental, social and health impacts resulting from the project activities;

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

1.4 Applicable law, policies, and regulation

This ESMP is developed in strict adherence and compliance to the guidelines set forth in 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;
- General standards on both occupational and community health and safety and 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. Regarding environmental impacts, there are no direct contradictions between the RGoB laws and regulations and the WWF's SIPP, but the requirement of the latter is more extensive. All project activities should fully comply both with the RGoBs Regulations on the Environmental Clearance of Projects, and with the procedures and mitigation measures prescribed in this ESMF. In case the WWF's SIPP requirements turn out to be extensive, strict, or detailed compared to RGoB legislation and policies, the former will apply to all project activities.

Regarding social impacts, the status of non-title holders and informal land use, and the commitment to participatory decision-making processes conclude the primary discrepancies between the RGoB laws and regulations and the WWF's SIPP. 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 during the project in order to develop various safeguards documents. RGoB legislation does not include three requirements reflected in SIPP. For the purpose 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

2.1 Geological and topographical conditions

Located in northern central region of the country spread over 4914 sq.km, it is the largest protected area of the country. It covers the northern frontiers and the central part of the country. There are nine gewogs of five different Dzongkhags (Gasa, Wangduephodrang, Trongsa, Bumthang and Lhuentse), which falls wholly or partly under the park's jurisdiction. It has around 860 households with more than 7300 residents inside the park. Majority of the Park residents depend on farming for their livelihoods and there are some communities (communities in highland areas), whose livelihood is solely depended on the Cordyceps and livestock rearing. With low-lying valleys to the snowcapped peaks, altitude of the park ranges from 1390m to over 7500 meters above sea level. The Park has rich biodiversity and it is home to 693 species of vascular plants, 43 mammal species, 250 birds and 246 species of butterflies. The fauna list includes some of iconic species such as Tiger (*Panthera tigris tigris*), Snow leopard (*Panthera uncia*), Tibetan wolf (*Canis lupus*), Bhutan takin (*Budorcus taxicolor whitei*), Himalayan black bear (*Ursus thibetanus*), Himalayan musk deer (*Moschus chrysogaster*) and Red panda (*Ailurus fulgens*) as captured in Figure 1.



Figure 1: Some of the endangered and vulnerable mammals of the park

2.2 Climatic conditions

There is considerable seasonal and local variation in climatic conditions in the park, largely attributable to the latitudinal and altitudinal range, and the mountainous terrain. At more than 27° N of the equator, the park is north of the Tropic of Cancer, and thus in temperate realm. It is therefore influenced by seasonal changes. The complex mountainous terrain also contributes to local variation in climate, such as warmer and moister conditions in the southern river valleys and colder, drier conditions in the high elevations. Thus, the variation in altitude and rainfall also creates extreme variability in climate. The southwest monsoon rains from June to September contributes most of the annual rainfall in the park.

2.3 Hydrological conditions

The park is source to several streams and rivers which are very crucial for downstream areas.

2.4 Flora and fauna

The Park has rich biodiversity and it is home to 693 species of vascular plants, 43 mammal species, 250 birds and 246 species of butterflies. The fauna list includes some of iconic species such as Tiger (*Panthera tigris tigris*), Snow leopard (*P. uncia*), Tibetan wolf (*Canis lupus*), Bhutan takin (*Budorcus taxicolor whitei*), Himalayan black bear (*Ursus thibetanus*), Himalayan musk deer (*Moschus chrysogaster*) and red panda (*Ailurus fulgens*) as captured in Figure 1.

2.5 Socio-economic conditions

There are nine *gewogs* of five different *Dzongkhags* (Gasa, Wangdue Phodrang, Trongsa, Bumthang and Lhuentse), which falls wholly or partly under the park's jurisdiction. It has around 860 households with more than 7300 residents inside the park. Majority of the Park residents depend on farming for their livelihoods and there are some communities (communities in highland areas), whose livelihood is solely depended on the *Cordyceps* and livestock rearing. With low-lying valleys to the snowcapped peaks, altitude of the park ranges from 1390 to over 7500 meters above sea level.

3. Planned activities for January 2023 - June 2024

3.1 Mangdephu to Dhur Tshachhu trail development (top-up)

- a. Budget: Nu. 5,792,000
- b. Timeline: January 2023 - June 2024
- c. Location: From Mangdephu to Dhur Tshachhu (hotspring)

The park also has few trekking routes, hot springs, cultural and religious sites frequented by local people and international tourists. A hot spring popularly known as Dhur *Tshachhu* (Figure 2) is located 3400 meter above sea level in the Fir (*Abies densa*) forest on the bank of Mangdichhu. It is believed to have curative properties for several diseases. Many people within the country visit the hot spring and tourists trekking via snowmen trekking route also spent few days at the hot spring. It is a three-day walk towards the *Tshachhu* via the only route from Bumthang, Menchugang, Dhur. As the route passes through high altitude areas, maximum 4700m at Julilaa, it is inaccessible for more than five months in the winter due to snow. The high-altitude is also known to cause sickness among the visitors.

With the objective to provide an alternative route to the visitors, Trongsa Dzongkhag Administration had constructed the mule track from Mangdephu, Trongsa to Dhur *Tshachu* along Mangdechhu in 2004. The new route was used throughout the year, and it reduced the risk for

visitors getting altitude sickness due to route change. However, the route has become obsolete since almost all the bridges over Mangdechhu and Shachhu were washed away during the monsoon season in 2008 and 2009. Without proper bridges along the trail, the connectivity was lost and reconstruction of bridges could not be initiated due to huge cost implications.



Figure 2: Dhur Tshachhu

Development/revival of old mule track from Mangdephu, Nubi gewog, Trongsa will greatly benefit visitors and nearby communities, as the route could be used throughout the year. The trail would also contribute as alternative source of income to local people through use of pony and other services to tourists and Tshachhu goers.

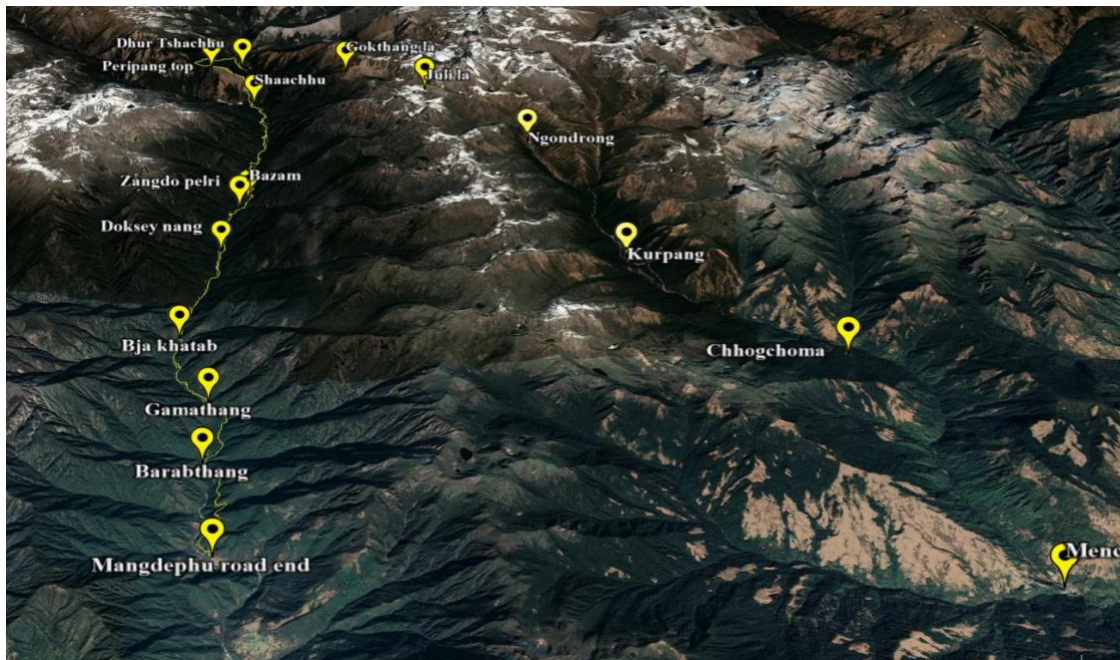


Figure 3: Mapped trail route development along Dhur Tshachhu

The Park management along with officials from the Engineering section Trongsa Dzongkhag, Nubi Gewog Administration and Tourism Council of Bhutan conducted the feasibility assessment in November 2021 for revival of Mangdephu to Dhur Tshachhu trail. The trail was found to be feasible as shown and revival of this trail would be mutually beneficial for community economic development as well as conservation. The development of the trail must be well monitored and

strictly comply with prevailing rules and regulations to minimize adverse impact on forest, wildlife, and catchment areas as the whole stretch of the trail passes through habitat of endangered wild animals like Bhutan Takin, Tiger and Musk deer and many other wild animals.

The main activities include bush clearing along the old trail, construction, and renovation of mule trail (approximately 37 km) and construction of bazams and wooden bridges as shown in Figure 3.

3.2 Construction of Bio gas plant at Ney

a. Budget: Nu. 300,000

b. Timeline: July - December, 2023

c. Location: Ney Chiwog, Gangzur Gewog, Lhuentse

Ney chiwog is the one of the far-flung chiwogs under Gangzur gewog of Lhuentse dzongkhag, it has 95 households making their livelihood from subsistence farming. Communities keep cattle for dairy products for household consumption and income generation through sale of surplus produce in the local market. Communities depend on forest for timber for construction of houses, firewood for cooking and NWFPs for the domestic consumption. People also use electricity and Liquefied Petroleum Gas (LPG) for cooking purpose. In the previous years the park management through financial support from projects has provided support in construction of bio gas plants for some households in the chiwog with objective to reduce the use of firewood and LPG. The communities found bio gas plants helpful and some households are interested to construct it. Bio-gas is a renewable energy source produced through anaerobic decomposition of organic materials by microorganism resulting in methane, carbon dioxide and water vapour production, which can be used for heating, lighting and cooking purposes.

Use of bio gas will benefit households through reduction time in collection of firewood and reduce expenditure for procurement and refilling of LPG cylinders. In general use of bio gas will promote use of clean and renewable energy, use of organic fertilizer as the slurry is rich in nutrients and reduce dependency on the forest.

As part of this project bio gas plant construction for five households will be carried out and construction and procurement of equipment will be done in collaboration with gewog administration and livestock office.

The main activities of the proposed project include following:

- Procurement of bio gas plant equipment
- Construction of inlet chamber, mixing tank, digester, outlet chamber and overflow tanks.

3.3 Implementation of Bioengineering measures at Jasabi and Taabi under Kurtoed gewog

a. Budget: Nu. 1000,000

b. Timeline: January 2023 - June 2024

c. Location: Tadang and Wadang at Taabi, Kurtoed Gewog, Lhuentse

WCNP is located in the region of the eastern Himalayas, making it very susceptible to natural calamities brought on by heavy rains during the peak monsoon season. Each year, high intensity rainfall-induced flash floods and landslides poses great threat to human lives, sweep away arable agricultural land, properties, and other infrastructure. On 29th September 2022, incessant rainfall

has caused flash floods at Jasabi which damaged farm lands, properties and resulted in human casualty. The same incident has damaged farm lands in nearby areas too. Bioengineering measures was proposed as an activity under Climate Change Adaptation plan by the local government during the consultation to reduce risk from climate induced disasters. The proposed site for construction of gabion wall along the stream at Tadang and Wadang is selected jointly with gewog administration and gewog agriculture supervisor to protect the paddy field on either side of the stream. Along the bank of stream deep gully are formed posing risk of landslides which would damage land and make them unsuitable for cultivation. Some land owners have applied for land exchange and the applicants for land exchange may increase if mitigation measures are not taken. The loss of land to natural hazards may lead to decrease in crop production.

The community of Tabi and even Dungkar chiwog own more than acres of paddy land at Tadang, Wadang and Pratsula. More than 90% of growing farmlands are located in the lower valley of these communities and consider suitable place for paddy cultivation. The Gewog administration and Zimpon from Gyaltsab office, Gyalposhing had paid visit to the site and recommended to take appropriate measures to safe farmlands. Paddy is the main crop grown by the communities and fields around the proposed site are said to be favourable as located in low altitude (1590 meter). It will protect 10 acres of paddy field on either side of the stream bank and benefit 8 households, further it will help to stabilize the area and reduce loss of tree to flash floods and landslides.

Therefore, this project is expected to deliver the positive impacts to increase crop production by increasing or maintaining same farmland and to avoid households from keeping land fallow. The ultimate objectives of the project are to increase crop production to ensure food security and prevent degradation of environment. The major activities of the project are;

- Procurement of wire mesh
- Construction of gabion wall
- Collection and transportation boulders

4. Potential social and environmental impacts

4.1 Mangdephu to Dhur Tshachhu trail development (top-up)

On the social front the proposed activity is expected to impact positively to local communities as it would provide an alternative source of income during the construction phase from daily wages and post-activity through services like porter and pony, local guides, etc., after the completion of project. For *Tshachhu* visitors, the trail will provide improved accessibility mainly in the winter as the route from Bumthang becomes inaccessible.

The route passes through the Transition zone from the beginning till the end of the trail. It runs through cool broadleaf forest, bamboo patches, mixed conifer forest and fir forests. The presence of wild animals including Bhutan takin, tiger, Asiatic black bear, musk deer and other ungulates are recorded along this trail. The activity would involve clearing of bushes and felling of trees for improvement or creation of new routes in few sites. Therefore, temporary disturbance to the wild animals and vegetation will happen, however, regular monitoring and vigilance would be placed to minimize the adverse impact on the environment. Followings are some of the possible impacts foreseen during the implementation of the proposed activity:

i. Environment Impacts:

- Generation of solid waste at camp sites
- Felling of few trees near the rivers (clearing for bridge construction)
- Disturbance to wildlife - Possible encroachment into natural habitats for wildlife species

ii. Social Impacts

- Worker’s health and safety
- Human Wildlife conflict along the trail

4.2 Construction of Bio gas plant at Ney

As the proposed activity will be executed at a household level on very small scale it will have very minimum impact on environment as there would be some waste generation during plants installations. The project is expected to benefit the individual beneficiaries and community at large through reduced dependency on firewood and use of eco-friendly energy. Following are the likely impacts from the project activity and mitigation measures to reduce them will be taken during the implementation:

i. Environment Impacts:

- Waste generation

ii. Social Impacts

- Worker’s health and safety

4.3 Implementation of Bioengineering measures at Jasabi and Taabi under Kurtoed gewog

The proposed activity site is located at safer distance from the human settlement; therefore, it won’t have much impact on the society except for the laborers working at the site. Environmentally, project will have very low impact as it does not involve heavy machineries and soil excavation. Following are some the possible common environmental and social impacts foreseen during the implementation of the proposed activities:

i. Environment Impacts:

- Generation of construction wastes
- Dust generation
- Noise pollution

ii. Social Impacts

- Worker’s health and safety

5. Mitigation Measures for Environmental and Social Impacts

Potential impacts to the environment and society along with the mitigating measures are listed below in the table:

Potential impact	Impact scale	Proposed mitigation measures	Responsible Party	Costs (million)
Activity 1: Mangdephu to Dhur Tshachhu trail development				Nu. 5,792,000
1. Generation of waste as result of construction activities	Minor (Short term)	<ul style="list-style-type: none"> • Identification and segregation of the different waste types at the project site. • 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 is prohibited; and 	Contractor Project focal Gewog administration	To be incorporated in the bidding document

		<ul style="list-style-type: none"> Collection, transportation, and final disposal of all waste will be undertaken regularly 		
2. Felling of few trees near the rivers (clearing for bridge construction)	Minor (Short term)	<ul style="list-style-type: none"> Major trees that are supposed to be cut shall be clearly marked, and only marked trees will be cut; and Ensure that no accidental damage is caused to local vegetation 	Site supervisor Site engineer Project focal	To be incorporated in the contract agreement
3. Disturbance to wildlife - Possible encroachment into natural habitats for wildlife species		<ul style="list-style-type: none"> Restrict trail alignment along the natural habitats of the wildlife; and Timely monitoring by the Park 	Project focal	To be incorporated in the contract agreement
4. Human wildlife conflict	Long term/short term minor	<ul style="list-style-type: none"> Construct trails in a way that minimizes any disturbance to wildlife; and Provide proper signs along the trails to warn tourists regarding wildlife 	Site supervisor Site engineer Project focal	To be incorporated in the contract agreement
5. Worker's health and safety	Minor (Short term)	<ul style="list-style-type: none"> Comply with the BFL's occupational health and safety guidelines; Ensure regular health screening for the workers pre and during 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, promotion, termination of employment or retirement, and disciplinary practices; and Implement a grievance mechanism for workers (and their organizations, where they exist) to raise workplace concerns. 	Local government CCG Coordinator Site Engineer Project focal	To be incorporated in the bidding document
Activity 2: Construction of Bio gas plant at Ney				Nu. 300,000

1. Generation of construction waste	Minor (Short term)	<ul style="list-style-type: none"> • Dumping of waste on the sides of the road, on private land, or in other non-designated places is prohibited; • Proper containers/waste bins should be provided at the project site; • Collection, transportation, and final disposal of all waste will be undertaken regularly 	Beneficiary household Site supervisor	To be incorporated in the bidding document/contract agreement
2. Worker's health and safety	Minor (Short term)	<ul style="list-style-type: none"> • Comply with the BFL's occupational health and safety guidelines; • Ensure regular health screening for the workers pre and during 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, promotion, termination of employment or retirement, and disciplinary practices; and • Implement a grievance mechanism for workers (and their organizations, where they exist) to raise workplace concerns. 	Beneficiary household Site supervisor	To be incorporated in the bidding document/contract agreement
Activity 3: Implementation of Bioengineering measures at Jasabi and Taabi under Kurtoed Gewog				Nu. 1000,000
1.Generation of solid waste at site	Minor (Short term)	<ul style="list-style-type: none"> • Dumping of waste on the sides of the road, on private land, or in other non-designated places is prohibited; • Proper containers/waste bins should be provided at the project site; • Collection, transportation, and final disposal of all waste will be undertaken regularly 	Laborers Site supervisor Contractor	To be incorporated in the bidding document
2. Produce dust during construction	Minor (Short term)	<ul style="list-style-type: none"> • Workers should wear protective masks if dust appears; and • Water to be sprayed at appropriate intervals 	Laborers Site supervisor Contractor	To be incorporated in the bidding document

3.Generation of noise	Minor (Short term)	<ul style="list-style-type: none"> • The operations on site shall be restricted to the hours 7am-7pm; and • Earplugs and protecting devices shall be provided to workers on site if necessary 	Laborers Site supervisor Contractor	To be incorporated in the bidding document
4. Worker's health and safety	Minor (Short term)	<ul style="list-style-type: none"> • Comply with the BFL's occupational health and safety guidelines; • Ensure regular health screening for the workers pre and during 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, promotion, termination of employment or retirement, and disciplinary practices; and • Implement a grievance mechanism for workers (and their organizations, where they exist) to raise workplace concerns. 	Laborers Site supervisor Local government contractor	To be incorporated in the bidding document

6. ESMP Implementation arrangements

The Park management will implement the project in collaboration with concerned implementing partners. The Park management will be responsible for the compliance of 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 will be part of the contract that the PA will sign with the Contractor(s) for implementation of the planned activities in WCNP in the year 2023–2024. The Contractor/Worker 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 OHS plans, etc.). The Contractor should organize an OHS information session for all workers prior to the start of the project activities and prior to any specific tasks with high health risks.

The WCNP site supervisors and supervising Engineer from concerned gewog will monitor the implementation of proposed measures by the Contractor and site managers 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 will be recorded and the Report on any non-compliances will be reported to the ESS officer immediately, and the ESS officer will report it to the PCU (M&E Officer). Each non-compliance to the guidelines will be resolved with appropriate measures and the evidence should be maintained.

Disbursement of project funds to the Contractors will be contingent upon their full compliance with the safeguards requirements.

7. ESMP monitoring arrangements

The BFL focal person of the Wangchuck Centennial National Park in collaboration with Dzongkhag and gewog administrations, and concerned range officers will closely monitor the implementation of all planned activities and the required mitigation measures and ensure that they fully comply with this ESMP. The terms and conditions included in the environment clearances issued by RGoB's national authorities wherever and whenever required must be strictly followed. WCNP is also fully responsible for the compliance of all external contractors and service providers working in the WCNP with the safeguards requirements outlined in the OHS.

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

Sl. No.	Activities	Monitoring team	Timeline		Location	Means of Verification
			Start	Complete		
1	Development of Trekking route from Mangdephu to Dhur Tshachhu	Field Focal	February 2023	June 2023	Mangdephu to Dhur Tshachhu	Field visits and reports
		ESS focal	June 2023	June 2023		Field visits and reports
		BFLFS	July 2023	July 2023		Reports
2.	Bio gas plant construction at Ney	Field Focal	September 2023	September 2023	Ney	Field visits and reports
		ESS focal	January 2024	January 2024		Reports
		BFLFS	January 2024	January 2024		Reports
3	Implementing bioengineering measures at Jasabi and Tabi (construction of gabion wall)	Field Focal	April 2023	April 2023	Tabi (Tadang and Wadang)	Field visits and reports
		ESS focal	July 2023	July 2023		Reports
		BFLFS	July 2023	July 2023		Reports

Monitoring by ESS officer at PCU:

- Monitoring through photographic/video evidence submitted by the IAs during the implementation as per the given dateline in the table above.
- Reports by ESS officer to BFL Fund Secretariat - Annual report submitted to the BFL Fund Secretariat in July 2023 and January, 2024.
- Bi-annual reports of the Secretariat to WWF US (as part of mid-year and final APRs)

8. 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.

Sl. No.	Activity	Amount (Nu.)	Budget for ESS mitigation
1	Mangdephu to Dhur Tshachhu	57,920,000	To be met from activity cost
2	Construction of Bio gas plant at Ney	300,000	To be met from activity cost
3	Implementation of bioengineering measures at Jasabi and Tabi under Kurtoed gewog (construction of gabion wall at Tadang and Wadang)	1,000,000	To be met from activity cost
Total		59,120,000	

9. Consultation and Disclosure Mechanisms

The development of Mangdephu to Dhur Tshachhu trail is the priority activity from the department and ministry; the trail development work is ongoing with financial support from Bhutan Tiger Centre (BTC) and Tourism Council of Bhutan (TCB). The work is implemented by the Trongsa Dzongkhag Administration. Fund support from BTC and TCB could only meet the cost of trail maintenance till halfway and most of the remaining works along the trail development includes construction of 12 cantilever bridges for the connectivity from one side of the river to the other side.

The proposed activity was initiated as priority activity from the ministry and the department. The dzongkhag administration and the park management has jointly conducted the feasibility assessment and cost estimation. Trongsa dzongkhag administration and the park management will collaboratively execute the work through community contract system and maintain the records of correspondence and developments.

Construction of bio gas plant at Ney and implementation of bioengineering measures (construction of gabion wall) were proposed by the communities as part of annual workplan and also mitigation measures to reduce the impact of climate change. The activities will be implemented in close coordination with concerned gewog administration, therefore, any documents and requirements related to these activities will be shared with the gewog administration, field offices to ensure accountability and transparency.

The detailed minutes of the consultation meetings/official correspondences 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 Bhutanese, shall be disclosed/uploaded on the website of MoENR, BFL and WWF Bhutan Program. The hard copies of the ESMP will be made available at the PA Management Office and at the PCU Office.

10. Stakeholder engagement plan

Trongsa dzongkhag administration, Nubi gewog, WCNP, DoFPS, TCB and TBC besides the local communities are the main stakeholders in the proposed activity. Dzongkhag and gewog

administration will be engaged in execution of the activity at site and the regular supervision. The park management, DoFPS, BTC and TCB will explore the financial support for the activity and monitor the activity from time to time. The park management will also ensure timely status reports are shared with the concerned authorities. Local communities will be engaged throughout the implementation of these activities as workers on community contract basis.

Gangzur gewog administration and gewog livestock office will be engaged in selection of households for bio gas plant and procurement of the equipment. Further, livestock office will provide technical support in installation of the bio gas plant and in monitoring of progress of the activities jointly with Dungkar park range and gewog administration.

Kurtoed gewog administration was consulted during the preparation of Climate Change Adaptation plan and proposal of activities. Site selection of the proposed activity was done jointly with gewog and gewog agriculture supervisor. Kurtoed gewog and Lhuentzi Dzongkhag administration would be consulted for preparation of detail estimates and work award procedures. The ESS focal 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 1

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) and the Occupational Health and Safety Guidelines of Bhutan's Construction Development Corporation Ltd., which relies on the national Regulation on Occupational Health, Safety and Welfare 2012, Regulation on Working Conditions 2012 and Labour Act 2007, and in compliance to Sl. No. 21 of Regulation on Occupational Health, Safety and Welfare 2012.

1. General Facility Design and Operation

Integrity of Workplace Structures

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

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

Severe Weather and Facility Shutdown

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

Workspace and Exit

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

Fire Precautions

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

- The workplace shall be provided with adequate means of protection and escape in case of fire.
- The workplace shall be provided with adequate number of relevant fire extinguishers.

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

Lavatories and Showers

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

Potable Water Supply

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

Clean Eating Area

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

Lighting

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

Safe Access

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

First Aid

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

Work Uniform

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

Air Supply

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

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

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

3. Physical Hazards

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

Rotating and Moving Equipment

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

- Designing machines to eliminate trap hazards and ensuring that extremities are kept out of harm's way under normal operating conditions. Examples of proper design considerations include two-hand operated machines to prevent amputations or the availability of emergency stops dedicated to the machine and placed in strategic locations.

- Where a machine or equipment has an exposed moving part or exposed pinch point that may endanger the safety of any worker, the machine or equipment should be equipped with, and protected by, a guard or other device that prevents access to the moving part or pinch point. Guards should be designed and installed in conformance with appropriate machine safety standards.

Noise

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

Vibration

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

Electrical

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

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

- Appropriate labeling of service rooms housing high voltage equipment ('electrical hazard') and where entry is controlled or prohibited
- Establishing "No Approach" zones around or under high voltage power lines
- Rubber tired construction or other vehicles that come into direct contact with, or arcing between, high voltage wires may need to be taken out of service for periods of 48 hours and have the tires replaced to prevent catastrophic tire and wheel assembly failure, potentially causing serious injury or death
- Conducting detailed identification and marking of all buried electrical wiring prior to any excavation work

Eye Hazards

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

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

Welding / Hot Work

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

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

Working Environment Temperature

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

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

Ergonomics, Repetitive Motion, Manual Handling

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

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

Working at Heights

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

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

Illumination

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

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

4. Personal safety equipment for workers

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

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

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

5. Standards for workers' accommodation

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 splint