

Bhutan for Life

Environmental and Social Management Plan for BC5

(2022)

1. Introduction

(A) Project Background

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

BFL seeks to achieve the following objectives:

- Help Bhutan to remain carbon neutral by increasing forest and vegetative cover within the Protected Area System (PAS).
- Enhance the socio-economic well-being 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.

2. (B) Scope of ESMP

The preparation of this Environmental and Social Management Plan (ESMP) was required to manage the environmental and social impacts. Specific mitigation actions will be 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 here under:

- 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).

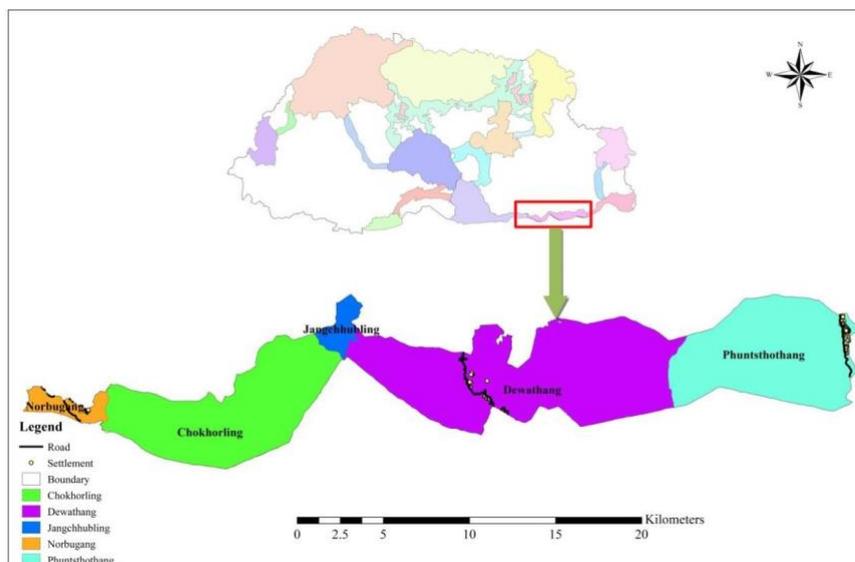
WWF's safeguards policies that are relevant to this project are as follows: Policy on Environment and Social Risk Management; Policy on Protection of Natural Habitats; Policy on Involuntary Resettlement; Policy on Indigenous Peoples; Standard on Pest Management; Policy on Accountability and Grievance 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 impact there are no direct contradiction between the RGoB laws and regulation and the WWF SIPP, but the requirement of the latter are more extensive. All the project activities should fully comply both with the RGoB 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 and regulation of the WWFs SIPP refer the status of non-title holder and informal land use and the commitment to participatory decision-making process. 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.

The occupational health and safety of workers in construction will be in compliance with Labour and Employment Act-2007, Regulation on Occupational Health, Safety and Welfare, 2012 and any other national documents. The list of the OHS requirements shall be attached along the Bill of Quantities (BoQ) along with an appropriate item description to allow the bidder to quote reasonably against the item, and to enable strict compliance and ease the monitoring during the project implementation time

2. Environmental and Socio-Economic Conditions:

The Biological Corridor 5 is located in the South-Eastern part of the country, and it lies within the administrative jurisdiction of Pema Gatshel and Samdrup Jongkhar Dzongkhags as shown in Figure 1. **Figure 1. Location of BC5**



It covers an area of 203.58 km² and approximately 48 km in length and the corridor connects the Royal Manas National Park in the west and Jomotshangkha Wildlife Sanctuary in the east. It has an altitudinal variation from 127 to 1183 meters above mean sea level (masl). The main vegetation composition is tropical broad-leaved forest. It covers Norbugang and Choekhorling Gewogs under Pema Gatshel District; and Dewathang, Orong, Phuntshothang Gewogs under Samdrup Jongkhar District.

The general topography for this corridor is moderate to steep slope ranging from zero degrees to more than 35 degrees in which the slope classification was based on the standard adopted for developing Local Forest Management Plans (LFMP) in Bhutan. The slope was classified at an interval of 0 – 25 degrees, 25-35 degrees and more than 35 degrees corresponding to gentle slope, moderately steep slope and steep slope respectively.

Gentle sloped areas were found distributed mostly towards the southern belts and areas adjoining the Indian international border and steep-sloped areas mostly occur along the ridges and at many parts were found inaccessible to people. There are also many wetlands and seasonal ponds making it a very potential habitat for wildlife populations and forms small catchment areas for the downstream communities. The biodiversity survey for BC 05 has recorded around 24 species of mammals, 139 species of avifauna, 226 species of plant diversity under entire BC 05 corridor (BC 05 management plan). Further, Pema Gatshel Division Office has recorded around 251 species of birds, 29 species of fish, 18 species of bamboos, 80 species of butterflies and 117 species of orchid under Pema Gatshel Dzongkhag.

This biological corridor has over 95% of the land covered under broad-leaved forests comprising of different layers of shrubs (3.07%) and meadows (0.03%). The disturbances due to natural landslides are minimal and only 0.28% of the total corridor area is affected by landslide. The small portion of the land also falls under agriculture (0.81%) and built-up areas (0.02%). The rivers, streams and water bodies contribute to about 0.63% of the total corridor area.

The main source of income for the communities in the area is agricultural farming followed by livestock farming and the number of households in the area are 101.

3. Planned activities in Year 2021

Activity 1: Construction of retaining wall near Division Office approach road

Budget: Nu. 1,18,6997.26

Timeline: January 2022 to December 2022

Location: Gamazore, Khar gewog under Pema Gatshel Dzongkhag

The proposed area falls nearby by approach road of our Division Office, which is experiencing continuous soil erosion over the last few years after its construction. This area being located on a terrain is being destabilized during the monsoon season and if the retaining wall is not

constructed the approach road will be washed away in coming years leaving the division office disconnected without any approach road. This will ultimately hamper the staffs and public service delivery. As a part of this activity, a wall of length 45 m and height 3.5 m will be constructed using sands, boulders, cement, and aggregates as per the engineering estimate. The activity will be implemented by local workers based on the work order/ from dzongkhag tender committee/community contract. The workers will be from nearby village where they will come during daytime to work and return to their home in the evening. They will be using the water and toilets of our division office since our office is located nearby the proposed area. There are no households located within or vicinity of the project site however they are located at the other site of slope where they don't have any link towards our proposed area. There are no iconic wildlife species depending directly on project site.

Potential social and environmental impacts of the activity are:

- Noise: From the workers and construction activities
- Covid 19 related risk
- Waste: Waste generated from workers and construction activities.
- Worker's health and Safety: Involvement of publics in works is likely to create impact in their health as the works deals mixing of sand and cement as well as workers will deal with boulders.



Activity 2 Construction of Electric fence at Choegar Dhuedhuel Phodrang Monastery agriculture land under Norbugang gewog

Budget: Nu. 500,000/-

Timeline: January 2022 to December 2022

Location: Choegar Dhuedhuel Phodrang Monastery under Norbugang gewog

As a part of HWC management intervention, the construction of electric fence aims to minimise crop damage inside the agriculture land of Choegar Dhuedhuel Phodrang, Monastery under Norbugang gewog. In the present, their crops are being depredated by wild animals which is hampering their crop production. Their agriculture land is located on a gentle slope in patch wise nearby the monastery. As a part of HWC mitigation measures following activities will be carried out to establish electric fence:

- Consultation and boundary survey
- Procurement of electric fence items like plastic fencing post, energizer, GI-wire, nails
- Erection of GI-wire and fencing post after digging hole and clearing unwanted plants from proposed area.
- Preparation of EF bylaws and payment for technical person

As discussed with the head of monastery, this activity will be implemented on a cost sharing basis where this office will procure and supply all the accessories related to electric fence and the monks in the monastery will carry out the field work based on technical backstopping from agriculture extension officer from gewog administration and this office. This activity will reduce crop depredation by wild animals like wild pig, sambar, and elephants. There are no communities nearby the proposed area who are depending over the proposed area.

Potential social and environmental impacts of the activity are:

- *E-Waste: Waste generated construction activities.*
- *Possibility of current leakage from energizer and GI - wire*
- *Worker's health and Safety: Involvement of publics in works is likely to create impact in their health as the works deals mixing of sand and cement as well as workers will deal with boulders.*



4. Mitigation Measures for Environmental and Social Impacts

Potential impact	Impact scale	Proposed mitigation measures	Responsible Party	Costs (million)
<i>Activity 1:</i> Construction of retaining wall near Division Office approach road				
Noise disturbance: Possible noise disturbance because of outdoor equipment usage and transportation vehicles driving around the construction site	Short term minor	<ul style="list-style-type: none"> • Pre-maintenance: requirements to limit noise pollution should be included in the bidding documents, as a precondition for the contractor's selection 	CFO, Adm & BFL focal	
		<ul style="list-style-type: none"> • During-maintenance: The construction work should not be permitted during the nights, the operations on site shall be restricted to the hours 7am—7pm 	Adm & BFL focal	
		<ul style="list-style-type: none"> • Vehicles that are excessively noisy shall not be operated until corrective measures have been taken; 		
		<ul style="list-style-type: none"> • Earplugs and protecting devices shall be provided to workers on site if necessary 		
Waste: generation of waste as a result of construction activities	Short term minor	<ul style="list-style-type: none"> • Pre-construction: requirements for appropriate waste management should be included in the bidding documents, as a precondition for the contractor's selection 	CFO, Adm & BFL focal	Nu 10000
		<ul style="list-style-type: none"> • Identification of the different waste types at the project site (soil, construction waste, asphalt, food, etc.) 	Adm & BFL	

		<ul style="list-style-type: none"> • Proper containers/waste bins should be provided at the project site; 	focal	
		<ul style="list-style-type: none"> • Dumping of waste on the sides of the road, on private land, or in other non-designated places should be prohibited; 		
		<ul style="list-style-type: none"> • Burning of construction waste should be prohibited. 		
		<ul style="list-style-type: none"> • The options for reuse/recycling of the generated waste should be taking into consideration (e.g. excavated soil, etc.). 		
COVID-19 related risk	Minor	<ul style="list-style-type: none"> • Follow Covid safety protocols circulated by Ministry of Health (MoH). 	BFL Focal	
Workers' health and safety		<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, promotion, termination of employment or retirement, and disciplinary 	BFL Focal & Contractor	

		<p>practices.</p> <ul style="list-style-type: none"> • Implement a grievance mechanism for workers (and their organizations, where they exist) to raise workplace concerns 		
Activity 2: Construction of Electric fence at Choegar Dhuedhuel Phodrang, Monastery agriculture land under Norbugang gewog				
Workers' health and safety	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, 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 	Gewog Forest In-charge, NCS head, BFL focal	
Disposal issues of non-functional fence materials (e-waste)	Minor	<ul style="list-style-type: none"> • Geog Agriculture extension agents to collect and surrender the obsolete/damaged materials to NPPC/DRE 	Gewog and BFL focal	Nu 10000
Possibility of current leakage	Minor	<ul style="list-style-type: none"> • Ensure use of quality electric fencing (EF) materials approved by technical working group at NPPC during 	Gewog officials	

		the implementation of the work, carry out quality check before implementation of work	and BFL focal	
Risk of obstruction of wildlife movement	Minor	<ul style="list-style-type: none"> • Proper awareness and training for the one installing the electric fence specially near forest areas where wildlife movement are predicted. 		
Community safety	Minor	<ul style="list-style-type: none"> • Develop signages for safety of local commuters to make them aware on existing of electric fencing in the location 		

5. ESMP Implementation Arrangements

The implementation of project activities will be carried out by the BFL focal person in BC 5. 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 BC 5 in 2022. The Contractor is obligated to perform all proposed preventive or mitigation environmental and social measures in this plan and to keep the evidence of any documents related to applying these measures (e.g., letter asking the municipality for disposal of inert waste, records on OHS information session performed for all workers before start of activities, all developed EHS plans, etc.). An OHS information session should be organized by the Contractor for all workers prior start the project activities and prior any specific tasks with high health risks.

The BC 5 Supervising Engineer needs to monitor the implementation of proposed measures by the Contractor and Contractor's subcontractors with visual checking, reviewing the records of evidence that the measures have been applied and ask the Contractor to apply the measures as soon as possible. Non-compliances should be recorded and the Report on any non-compliance should be reported to the ESS officer immediately, and the ESS officer will report it to the PCU (M&E Officer). Non-compliance should be closed with appropriate measure/s and the evidence should be kept.

6. ESMP Monitoring Arrangements

The BFL focal person in Divisional Forrest Office, Pema Gatshel 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.

Divisional Forrest Office, Pema Gatshel is also fully responsible for the compliance of all external contractors and service providers working in the Divisional Forrest Office, Pema Gatshel with the safeguard's requirements outlined in the ESMP.

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

sl #	Activities	Monitoring team	Timeline		Location	Means of Verification
			Start	Complete		
1	Construction of retaining wall near Division Office approach road	BFL Focal	Jan, 2022	Dec, 2022	Division Office, Pema Gatshel	Field monitoring report
		ESS focal	Sept, 2022	Dec, 2022		
2	Construction of Electric fence	BFL focal	January 2022	Dec, 2022	Norbugang gewog,	Field monitoring report and pictures
		ESS focal	Sept, 2022	Dec, 2022		

1. Construction activities (all):

- Monitoring by implementing entities:
 - At least weekly field visits
 - Monthly reports prepared by implementing entities and submitted to ESS consultants
- Monitoring by ESS consultants:
 - monitoring of the work once during the implementation and through field report from IAs after completion of the work.
 - Quarterly reports by ESS consultants to the PCU (M&E officer)
- Quarterly reports by PCU (M&E officer) to Secretariat
- Bi-annual reports of the Secretariat to WWF US (as part of mid-year and final APRs)

7. Capacity Need and Budget

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

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

Sl#	Activity	Amount (Nu.)	Budget for ESS mitigation
1	Construction of retaining wall near Division Office approach road	11,86,997.26/-	10,000/-
2	Construction of Electric fence at Choegar Dhuedhuel Phodrang Monastery agriculture land under Norbugang gewog	500,000/-	10,000/-
Total		1686997.2	20,000/-

8. Consultation and Disclosure Mechanisms

Activity 3.1. Construction of retaining wall near Division Office approach road

Consultation will be carried out among the staffs officed at division office, ESS focal, Khar gewog administration and Dzongkhag engineer. Consultation will be carried out a month before we start this activity. Everything related to the project site and as per the documents of ESMP will be discussed during the consultation. Along with that a soft copy ESMP will be disclosed among the participants. This is to inform them regarding the planned project activity (construction), to solicit their opinions and enable them to question proposed mitigation measures. The detailed minutes of consultation meeting will be attached to this ESMP, along with a full list of participants (disaggregated by gender and age).

Activity 3.2 Construction of Electric fence at Choegar Dhuedhuel Phodrang Monastery agriculture land under Norbugang gewog

Consultation will be carried out among Head of Monastery, Norbugang gewog administration, ESS focal and Concerned Gewog Forest In-charge. Consultation will be carried out a month before we start this activity. Everything related to the project site and as per the documents of

ESMP will be discussed during the consultation. Along with that a soft copy ESMP will be disclosed among the participants. This is to inform them regarding the planned project activity (construction), to solicit their opinions and enable them to question proposed mitigation measures. The detailed minutes of consultation meeting will be attached to this ESMP, along with a full list of participants (disaggregated by gender and age).

9. Stakeholder Engagement Plan

Activity 3.1 Construction of retaining wall near Division Office approach road

- Date for Consultation: One month prior to implementing project activity
- Agenda: Discussion on project activity and ESMP
- Location: Yajur, Khar, Division Office meeting hall

Activity 3.2 Construction of Electric fence at Choegar Dhuedhuel Phodrang Monastery agriculture land under Norbugang gewog

- Date for Consultation: One month prior to implementing project activity
- Agenda: Discussion on project activity and ESMP
- Location: Norbugang gewog meeting hall

Annexure I: Occupational Health and Safety Standards

BFL: OCCUPATIONAL HEALTH AND SAFETY STANDARDS

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

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

Severe Weather and Facility Shutdown

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

Workspace and Exit

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

Fire Precautions

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

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

Lavatories and Showers

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

Potable Water Supply

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

Clean Eating Area

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

Lighting

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

Safe Access

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

First Aid

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

Air Supply

- Workplace should have adequate ventilation for fresh air

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

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

3. Physical Hazards

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

Rotating and Moving Equipment

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

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

Noise

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

Vibration

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

Electrical

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

- Marking all energized electrical devices and lines with warning signs
- Locking out (de-charging and leaving open with a controlled locking device) and tagging-out (warning sign placed on the lock) devices during service or maintenance

- Checking all electrical cords, cables, and hand power tools for frayed or exposed cords and following manufacturer recommendations for maximum permitted operating voltage of the portable hand tools
- Double insulating / grounding all electrical equipment used in environments that are, or may become, wet; using equipment with ground fault interrupter (GFI) protected circuits
- Protecting power cords and extension cords against damage from traffic by shielding or suspending above traffic areas
- Appropriate labeling of service rooms housing high voltage equipment ('electrical hazard') and where entry is controlled or prohibited
- Establishing "No Approach" zones around or under high voltage power lines
- Conducting detailed identification and marking of all buried electrical wiring prior to any excavation work
- Every person who is working on an electric supply line or apparatus or both shall be provided with tools and devices such as gloves, rubber shoes, and safety belts, ladders, earthing devices, helmets, line testers, hand lines whichever is relevant for protecting him/her from mechanical and electrical injury.

Eye Hazards

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

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

Welding / Hot Work

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

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

Working Environment Temperature

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

- Monitoring weather forecasts for outdoor work to provide advance warning of extreme weather and scheduling work accordingly
- Providing temporary shelters to protect against the elements during working activities or for use as rest areas

- Use of protective clothing
- Providing easy access to adequate hydration such as drinking water or electrolyte drinks.

Ergonomics, Repetitive Motion, Manual Handling

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

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

Working at Heights

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

- Installation of guardrails with mid-rails and toe boards at the edge of any fall hazard area
- Proper use of ladders and scaffolds by trained workers
- Use of fall prevention devices, including safety belt and lanyard travel limiting devices to prevent access to fall hazard area, or fall protection devices such as full body harnesses used in conjunction with shock absorbing lanyards or self-retracting inertial fall arrest devices attached to fixed anchor point or horizontal lifelines
- 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 workstation 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 if the accommodation is reasonably far from the worksite.
- The living facilities are built using adequate materials, kept in good repair and kept clean and free from waste and refuse.

2. Drainage

- The site is adequately drained.

3. Heating, air conditioning, ventilation and light

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

4. Water

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

5. Wastewater and solid waste

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

6. Rooms/dormitories facilities

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

8. Sanitary and toilet facilities

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

9. Cooking and laundry facilities

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

Annex 1. Contents of first aid box or cupboards

The first aid boxes or cupboards 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