

Bhutan for Life

Environmental and Social Management Plan for

Trashigang Dzongkhag (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 efficient delivery of mitigation, adaptation and biodiversity gains, while the country gradually reaches stage to manage its own financing resources.

BFL seeks to achieve the following objectives:

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

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

(B) Scope of ESMP

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

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

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

(C) Purpose of ESMP

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

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

(D) Applicable law, policies, and regulations

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 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. With regard to environmental impacts, there are no direct contradictions between the RGoB laws and regulations and the WWF's SIPP, but the requirements of the latter are more extensive. All project activities should fully comply both with the RGoB's Regulations on the Environmental Clearance of Projects and with the procedures and mitigation measures prescribed in this ESMF. In case that the WWF's SIPP requirements are more extensive, strict, or detailed than the RGoB legislation and policies, the former will apply to all project activities. With regard to social impacts, the primary discrepancies between the RGoB laws and regulations and the WWF's SIPP refer to the status of non-title holders and informal land use, and the commitment to participatory decision-making processes. First, according to the WWF's SIPP, all users of land and natural resources (including people that lack any formal legal ownership title or usage rights) are eligible to some form of assistance or compensation if the project adversely affects their livelihoods. The RGoB laws only recognize the eligibility of landowners or formal users to receive compensation in such cases. Second, the WWF's SIPP require extensive community consultations as part of the development of various safeguards documents and during project activities. RGoB legislation does not include similar requirements. For the purposes of the BFL project, the provisions of the WWF's SIPP shall prevail over the RGoB legislation in all cases of discrepancy.

2. Environmental and Socio-Economic Conditions:

Trashigang Dzongkhag shares its border with Mongar Dzongkhag in the west, Samdrup Jongkhar and Pemagatshel Dzongkhag in the South, Trashigang Dzongkhag in the north and Indian state of Arunachal Pradesh in the east. It is one of the largest Dzongkhags with a total area of 2204.5 square kilometers. There is a total of 8,610 households with a population of 71,768. The forest cover accounts for 77.87 percent and has an arable land of 3.64 percent of its total area.

Trashigang Dzongkhag is administratively divided into three Dungkhags and 15 Gewogs (Bartsham, Bidung, Kanglung, Kangpara, Khaling, Lumang, Merak, Phongmey, Radhi, Sakteng, Samkhar, Shongphu, Thrimshing, Udorong and Yangneer). All the gewogs, except Sakteng are connected with motorable roads. The altitude elevation ranges from 600 m to over 4500 m above sea level. The climate is mainly temperate with an annual rainfall between 1000 mm and 2000 mm. The lowest human settlement is found at an altitude of 550 m above sea level at Deno of Lumang Gewog and the highest at Merak at an altitude of 4600 m above sea level.

More than 69% of the total population in Trashigang engage in farming and crop cultivation. Maize, soya beans and beans are major crops while important cash crops include potato, vegetables and citrus. These crops have the potential to be cultivated on a commercial scale through the introduction of good agronomic practices and high yielding varieties. Maize is

grown in all the gewogs in huge quantities about 9, 974 metric tons (RNR Statistics, 2012) and potential exists for establishing collection centers for maize and setting up of maize product processing units.

Despite the huge farming potential, most of the agricultural lands are being kept fallow due to farm labour shortages, crop damages by wildlife, frequent droughts, pests and diseases outbreaks. The government is identifying interventions to motivate the people in taking up commercial agriculture to enhance food security as well as increase income of the farmers. The Research and Development Center (RDC) based in Wengkhar, Mongar and Sub Center at Khangma, Trashigang takes up research and technical responsibilities of the Agriculture Development Program in the gewogs including extension needs.

Trashigang is approximately 555 km away from the Capital City and it is one of the least developed with underexplored and intact forest coverage and natural wildlife. Additionally, being in the vicinity of the park and biological corridor, it is a route for wildlife movement. Thus, the wild animals usually end up encroaching the private agricultural lands, especially during fruiting season and damage the crops and cereals before cultivation. Sometimes, the wild animals destroy the structure and properties and injure the livestock and people. Such incidences can easily discourage farmers and may likely cause retaliatory killing.

In order to conservation of wildlife as well as improve the livelihoods of the communities in the vicinity, the government is exploring mitigation measures to reduce human wildlife conflicts in these areas. One of the measures is to construct chain-link fencing across the agricultural lands to ensure that wild animals especially wild boars, bears, monkeys, porcupines, deer and wild dogs cannot encroach the farming areas.

3. Planned activities in Year 4 (2022)

Activity 1: Construction of chain link fence with concrete foundation at Pengtse Daza, Phongmey Geog, Trashigang Dzongkhag

- a. Budget: Nu. 1,200,000.00
- b. Timeline: December 2022 to June 2023

As a part of HWC management intervention, the construction of chain-link fencing aims to minimize crop damage inside the agriculture lands for the 19 farming households residing at Pengtse Daza, Phongmey. The agriculture lands are remotely located on gentle slopes and the houses are scattered. At present, the farmers are increasingly losing their crops and vegetables to wild animals mainly wild boars, bears, monkeys, porcupines and wild dogs. As a part of HWC mitigation measures following activities will be carried out to establish chain-link fences:

- Procurement of chain-link fencing items like fencing post, energizer, nails
- Erection of posts with concrete foundation

This activity will be implemented on a cost-sharing basis, whereby the Dzongkhag will procure and supply all the accessories related to electric/chain-linked fence and the farmers will carry out the field works based on technical support from the Agriculture Extension Officer from

respective Gewog and Dzongkhag Administration Offices. This activity will reduce crop depredation by wild animals like wild boars, and sambar.

3.1. Potential social and environmental impacts

The main likely environmental impacts for the activities related to construction of chain-link fencing are cutting down of some trees for clearing sites for installing fences, generation of waste from the workers and minor disturbance to the soil through the digging of holes to install fencing poles. On the social impact, it will largely be beneficial to the communities directly benefitting from the proposed activity. The chain-link fencing is likely to help farmers to maintain their food and livelihood through farming activities without the risk of being attacked by the wild animals.

Since all the proposed activities are new and similar, the possible common impacts foreseen during the implementation are given as follows:

- i. Environment Impacts
 - Cutting down of trees
 - Waste generation at activity sites
 - Minor disturbance to the soil – digging of holes
- ii. Social Impacts
 - Occupational health and safety of workers

4. Mitigation Measures for Environmental and Social Impacts

Since all the proposed activities have similar impacts, the common mitigation measures identified are given provided in the Table given below:

Potential impact	Impact scale	Proposed mitigation measures	Responsible Party	Costs (million)
Activity 1: Construction of chain link fence with concrete foundation at Pengtshe Daza, Phongmey Geog, Trashigang Dzongkhag				Nu. 1.200
Cutting down trees ¹	Short term minor	<ul style="list-style-type: none"> • Fell only undesirable shrubs species along the alignment of fence • Use some of the existing trees as the bio-fencing/live fencing • Plant native species of trees that can be used as live fencing 	Gewog Agriculture Extensions and Dzongkhag	
Worker's health and safety ²	Short term minor	<ul style="list-style-type: none"> • Comply with worker's health safety guidelines 	Gewog Agriculture Extensions and	

¹ Refer to Annexure 2.

² Refer to Annexure 1.

		<ul style="list-style-type: none"> • Ensure decent work conditions, including an appropriate salary, working hours, accommodation and other essential amenities as per the Operational Health and Safety Guidelines are available for workers. • Follow Covid safety protocols circulated by Ministry of Health (MoH). • Access to health facilities for the workers pre and during construction activities need to be available • Ensure first aid kit is available at construction site all the time 	Dzongkhag Agriculture Officer	
Generation of waste as result of installation activities	Short term minor	<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 should be prohibited; • Collection, transportation and final disposal of all waste will be undertaken regularly 	Contractor/ Gewog Agriculture Extension and Dzongkhag Agriculture Officers	
Minor disturbance to soil – digging of holes	Short term minor	<ul style="list-style-type: none"> • Holes on the soils should be dug as per the technical guidance provided by the Dzongkhag Agriculture Officer • Distance between poles should be maintained so that only required portion of soil surfaces are dug 	Contractor/ Gewog Agriculture Extension and Dzongkhag Agriculture Officer	

5. ESMP Implementation Arrangements

The Trashigang Dzongkhag Administration will implement the project in collaboration with Phongmey gewog administration. The Trashigang Dzongkhag Administration 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 should be part of the contract that the Dzongkhag Administration will sign with the Contractor(s) for implementation of the planned activities mentioned in this ESMP in 2022 - 2023. 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 EHS plans, etc.). The Contractor should organize an OHS information session for all workers prior to the start of the project activities and prior any specific tasks with high health risks.

The Dzongkhag Agriculture Office along with the Gewog Agriculture Extensions should monitor the implementation of proposed measures by the Contractor and site managers with physical checking, reviewing the records of evidence that the measures have been applied and ask the contractor to apply the measures as soon as possible. Non-compliances should be recorded and the Report on any non-compliances should be reported to the ESS officer immediately, and the ESS officer will report it to the PCU (M&E Officer). Each non-compliance to the guidelines should 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 safeguard's requirements.

6. ESMP Monitoring Arrangements

The BFL focal person of the Trashigang Dzongkhag Administration, in this case is the Dzongkhag Agriculture Officer in collaboration with gewog administration will closely monitor the implementation of all planned activity 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. The Trashigang Dzongkhag Administration is also fully responsible for the compliance of all external contractors and service providers working in Phongmey gewog with the safeguard requirements outlined in the OHS.

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

SI #	Activities	Monitoring team	Timeline		Location	Means of Verification
			Start	Complete		
1	Construction of chain link fence with concrete foundation at Pengtshe Daza, Phongmey Geog	Field Focal	December 20, 2022	December 24, 2022	Pengtshe Daza	Field visits
		ESS focal	March 20, 2023	March 24, 2023		Reports and field visits
		BFLFS	May 10, 2023	May 16, 2023		

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 January 2023.
- Bi-annual reports of the Secretariat to WWF US (as part of mid-year and final APRs)

7. Capacity Need and Budget

Activities under this ESMP will be implemented by the BFL focal person, supervising extension staff, and/or 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 chain link fence with concrete foundation at Pengtshe Daza, Phongmey Geog, Trashigang Dzongkhag	1,200,000.00	00
		1,200,000.00	00

The proposed activities are of very small scale and do not involve huge construction and use of heavy machineries and equipment, and there are no adverse social and environmental impacts which require mitigation measures. Therefore, separate funds for mitigation measures are not proposed.

8. Consultation and Disclosure Mechanisms

Addressing HWC is one of the key concerns of Trashigang Dzongkhag. For the community of Pengtse Daza, chain-link fencing was found to be a better alternative in deterring the wild animal encroachment. To ensure people understand their active participation and engagement in the implementation of this activity, all works will be consulted with the people in the community, especially the 19 households, and the concerned local government. Initial consultations have been carried out on 7th September 2022, to understand the public opinions and seek their consensus for the activity³. Accordingly, the beneficiaries expressed that these are welcome interventions, and it would help them to guard their crops from wild animals especially wild boars which are increasingly becoming a nuisance for the farmers. To ensure ownership and sustainability, the beneficiaries willingly agreed to contribute free labor and support the installation of chain-link fencing.

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

³ Refer to Annexure 3 on Consultation Meeting

age). Any grievance during the consultation or implementation will have to be noted and resolved in line with the BFL Grievance Redressal Mechanism and Dzongkhag Grievance Redressal system.

The full English version of this ESMP, as well as an executive summary in Bhutanese, shall be disclosed/uploaded on the website of MoAF, BFL and WWF, Bhutan Program. The hard copies of the ESMP would be made available at the Dzongkhag Administration, Gewog Office, PA Management Office and at the PCU Office.

9. Stakeholder Engagement Plan

The Trashigang Dzongkhag Administration with the support from Gewog Administration and local communities would be the main stakeholders in the proposed activity. The concerned Gewog Administration officials will be engaged in execution of the activity at the site and the regular supervision. The Dzongkhag Administration will explore the financial support for the activity and monitor the activity time to time. Local communities will be engaged throughout the implementation of these activities as workers on community contract basis.

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 stall be not more than 200m from any working place.

- First aid kits include all equipment outlined in Annex 1 to these Guidelines.
- Remote sites should have written emergency procedures in place for dealing with cases of trauma or serious illness up to the point at which patient care can be transferred to an appropriate medical facility.

Work Uniform

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

Air Supply

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

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

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

3. Physical Hazards

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

Rotating and Moving Equipment

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

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

Noise

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

Vibration

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

Electrical

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

- Marking all energized electrical devices and lines with warning signs
- Locking out (de-charging and leaving open with a controlled locking device) and tagging-out (warning sign placed on the lock) devices during service or maintenance
- Checking all electrical cords, cables, and hand power tools for frayed or exposed cords and following manufacturer recommendations for maximum permitted operating voltage of the portable hand tools
- Double insulating / grounding all electrical equipment used in environments that are, or may become, wet; using equipment with ground fault interrupter (GFI) protected circuits
- Protecting power cords and extension cords against damage from traffic by shielding or suspending above traffic areas
- Appropriate labeling of service rooms housing high voltage equipment ('electrical hazard') and where entry is controlled or prohibited
- Establishing "No Approach" zones around or under high voltage power lines
- Rubber tired construction or other vehicles that come into direct contact with, or arcing between, high voltage wires may need to be taken out of service for periods of 48 hours and have the tires replaced to prevent catastrophic tire and wheel assembly failure, potentially causing serious injury or death

- Conducting detailed identification and marking of all buried electrical wiring prior to any excavation work

Eye Hazards

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

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

Welding / Hot Work

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

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

Working Environment Temperature

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

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

Ergonomics, Repetitive Motion, Manual Handling

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

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

Working at Heights

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

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

Illumination

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

Controls should include:

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

4. Personal safety equipment for workers

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

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

Workers are instructed regarding safety equipment as follows:

- Always wear complete set of protective wear.
- Do not wear loose clothing, such as overhang shirt, jackets, mufflers etc.
- Tuck shirt and jacket well.

- Secure helmet with belt under the chin.
- Tuck the bottom sleeves of trouser inside safety boot.
- Dress with reflector

5. Standards for workers' accommodation⁴

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

Annexure 2: Details of trees along the proposed fencing sites



མོ་ནམ་དང་ནགས་ཚལ་ལྷན་ཁག་། རྒྱུ་ཚལ་གྲོང་ཁྱེད་ལྷན་ཁག་།
ནགས་ཚལ་ལྷན་ཁག་ལྷན་ཁག་། མོ་ནམ་མེད་། མར་ཕྱོགས་བཞི་བསྐྱེད་།

Ministry of Agriculture and Forests
Department of Forest and Park Services
Phongmey Forest Beat Office
Radhi Range: Trashigang Forest Division



No:PBO/20/22-23/101

Date:16th September 2022

Details of trees that lies on the boundary line of fencing to be constructed for Pengtse Daza community

	Species	Trees (3' girth and above)		Poles (above 6' height and less 3' girth)		Other forest produces and wildlife presence	Remarks
		No	Vol (m3)	No	Vol (m3)		
1	<i>Ficus roxburghii</i>	1	0.5	3	0.14	Barking Deer	<i>Some of the fauna species reflected here are recorded earlier in the region and encountered the signs and remains of some animals during the boundary survey.</i>
2	<i>Grewia sapida</i>	3	8.23	7	0.95	Sambar	
3	<i>Quercus glauca</i>	5	17.1	0	0	Porcupine	
4	<i>Quercus griffithii</i>	7	25.7	2	0.08	Mountain Pit Viper	
5	<i>Quercus lanata</i>	3	11.9	0	0	Worm Eating Snake	
6	<i>Pinus roxburghii</i>	7	27.9	11	0.43	Eastern Trinket	
7	<i>Schima wallichii</i>	11	28.3	21	1.42	McClellands Coral Snake	
8	<i>Rhodo sp.</i>	4	7.84	12	0.69		
9	<i>Castanopsis hystix</i>	5	13.2	9	0.51		
Grand total		46	166.37	65	4.22		

Note: All the trees reflected in the table falls on the boundary and there has been seen no other endangered species and special class trees. The boundaries were demarcated in consultation Dzongkhag Land Commission (segregated the disputed land between SRF and private land for the fencing)

Pictorial representation of the day



Fig:1& 2. Survey team of Dzongkhag Land Commission during the boundary survey

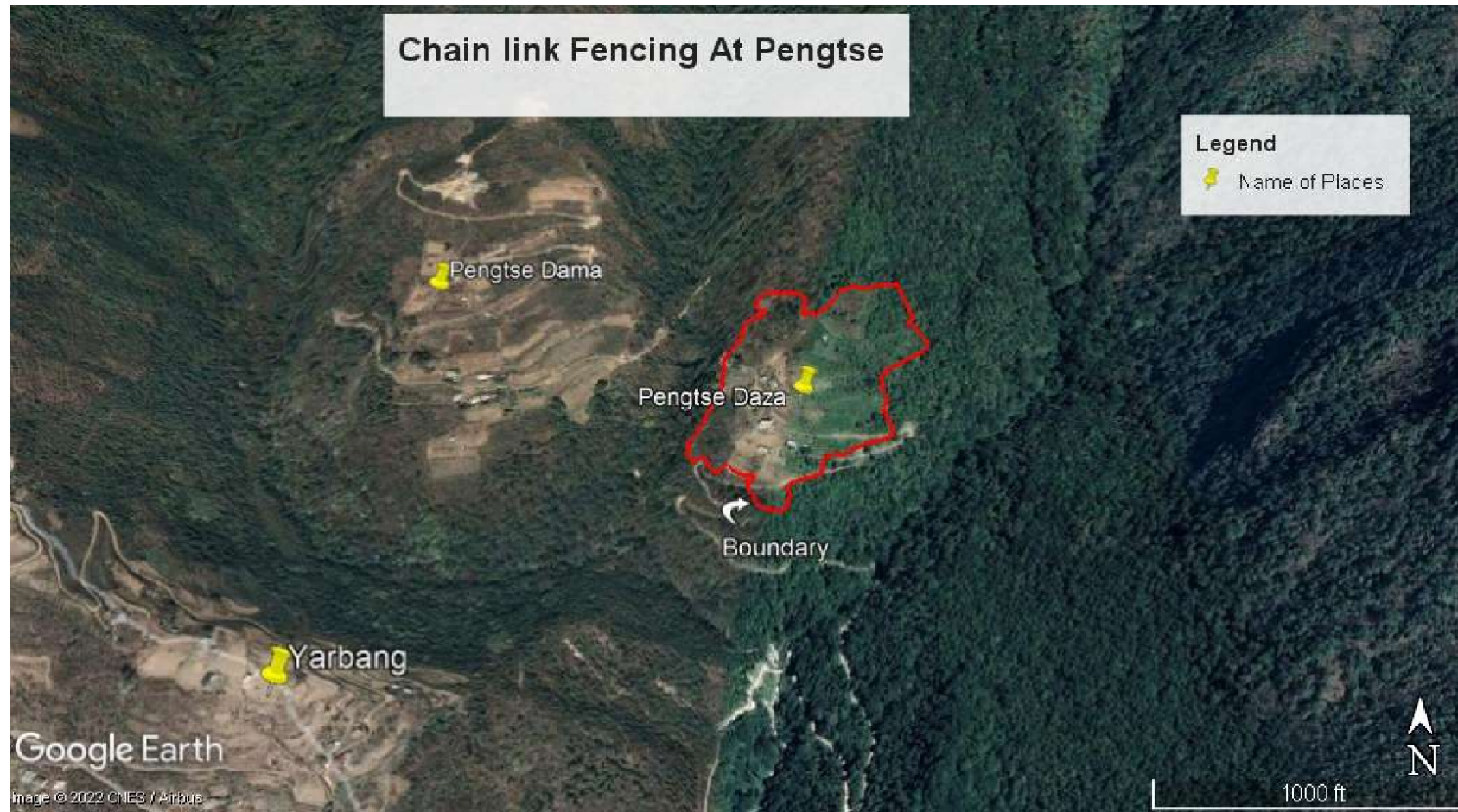




Fig:3 & 4 Depiction of trees to be removed on the boundary line



Map showing the boundary of Chain linked Fencing at Pengtse Daza



Although Pengtse Daza is a small far-flung community in Phongmey geog but they are connected with modern amenities such as feeder road, electricity and proper drinking water. Moreover, people are industrious and their livelihood solely depends on the agriculture. More importantly with the advancement of time, now farmers are producing the crops in the commercial scale, which furthered the quality of their livelihood.

However, human wildlife conflict has become rampant off late. With change in time people of Pengtse Daza are dying to curb the impact of growing numbers of wildlife impact on their crops. But their effort goes in vain and the only way to protect their crops is by the timely intervention of the state. In order to alleviate the farmers from damages caused by the wildlife, the project called BFL has initiated to provide fencing (Chain linked fencing). This project (BFL) has not only bought a smile of every land holder in the Pengtse Daza but also, they are optimistic that their livelihood for self-sustenance would be improved at large.

As it is illegal to construct any structures in SRF land. So, in consultation with land commission, the team comprising goeg officials, Phongmey Beat office and LRO's officials commenced the boundary survey in the periphery of the Pengtse daza to avoid future encroachment into SRF. Subsequently, the boundaries were demarcated according to the cadastral requirements of the map. With this Phongmey beat office has enumerated the numbers of trees on the boundary line which are to be cleared to construct the fence. To this note, we have noticed that there is no special class of tree and habitat of endangered species of fauna.

Submitted by



Natshok Rangdrel(FR-I)
Phongmey Beat Office

Cc:

1. Radhi Range Office
2. Gup, Phongmey
3. Phongmey Agriculture Extension Office
4. NSC, Tashigang Division

Annexure 3: Community Consultation Report



མོ་ནམ་དང་ནགས་ཚལ་ལྷན་ཁག་། རྒྱལ་ཚལ་སྤྱི་ཁྲིམ་པ་དང་ནགས་རྟོག་ལས་ཁུངས་།
ནགས་ཚལ་ལྷན་ཁག་ཡིག་ཚང་། རོངས་མེད་། ཤར་ཕྱོགས་བགྱིས་བསྐྱེད་།

Ministry of Agriculture and Forests
Department of Forest and Park Services
**FOREST BEAT OFFICE
PHONGMEY**



Ref No. PBO/20/2022-2023/ 93

07th September, 2022

Chain Link Fencing Report

1. Introduction

As per verbal order from NCS head, Trashigang Forest Division I was asked to undergo survey for chain link fencing and submit tree details which falls along boundary.

On dated 7th September 2022 team comprising of Gup, Gewog Agriculture Officer, Phongmey Beat Incharge and Yadrang Chiwog Tshogpa proceeded to Pengtse daza for aforementioned activity.

Gup, Phongmey Gewog Administration welcomed all beneficiaries and highlighted importance of BFL Project, reminded them that they should be grateful to King, Royal Government of Bhutan for giving the project which will enhance your living style, reduce human wildlife conflict and revive their land for farming.

After that Gewog Agriculture Officer briefly explain objective of meeting, shares benefits with citing few example where chain link fencing is constructed like Korphu Gewog under Trsongsa Gewog. He also emphasis them to work hard while constructing as chain link fencing will enclose their field and no need to guard their field from wild animals like present.



Picture 1: Conducted meeting with beneficiaries



སྔ་ནམ་དང་ནགས་ཚལ་ལྟན་ལག་། རྒྱུ་ཚལ་གྲིང་ཀ་དང་ཞབས་ཏྲོག་ལས་ཁུངས་།
ནགས་ཚལ་ཡན་ལག་ཡིག་ཚང་། རོངས་མེད་། ཤར་བྱུགས་བགྲིས་བསྐྱེད་།

Ministry of Agriculture and Forests
Department of Forest and Park Services
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2. Observations

Team members found that only 6 to 7 Households of pengtse daza hold land in Pengtse daza and rest of the land owners are from Janganma and Yabrang village. They have been cultivating land for many years but for few years they left fallow due to rampant damage to crops by wild animals.

Some of them shares that annually they earn at around 70000 to 80000 from sale of garlic. They are very acclaimed that this will benefit to prepare land for farming and one of beneficiaries said that before last year her paddy was completely damaged by wildboar, hoping cultivation of paddy will be success hereafter.

While going to field and doing boundary survey team members found that those who kept fallow land are not that much confident about boundary as it shares with state reserved forest land.



Picture 2: Boundary survey



Picture 2: Preparation of cultivation of Garlic



མོ་ནམ་དང་ནགས་ཚལ་ལྷན་ཁག་། ནགས་ཚལ་གླིང་ཀ་དང་ནབས་རྟོག་ལས་ཁུངས་།
ནགས་ཚལ་ཡན་ལག་ཡིག་ཚང་། རོངས་མེད་། ཤར་བྱོགས་བགྲིས་བསྐྱེད་།

Ministry of Agriculture and Forests
Department of Forest and Park Services
FOREST BEAT OFFICE
PHONGMEY



3. Resolution

Agreements were drawn stating that from inception till completion of project beneficiaries will contribute free labor and not only that after successful of project they will cultivate their lands that are kept fallow.

Gup, Phongmey advise inspection team and beneficiaries for betterment and successful completion of project with hindrance that as soon as possible he will inform, arrange Land record team from Trashigang Dzongkhag for demarcation of chain link fencing boundary as private land share with State reserved forest land.

Submitted by:

Ugyen Wangchuk

Beat Officer in-charge
Phongmey

Cc:

- 1) Gup, Phongmey Gewog Administration for kind information and rendered necessary help, please.
- 2) NCS head for kind information and guidance.
- 3) RO, Radhi for kind information and guidance.
- 4) Office copy.

[illegible]

<u>Name</u>	<u>Tham No.</u>	<u>House No.</u>	<u>Area (Acre)</u>
① Tshering Lhamo	501	553	1.95 (1.31)
② Lobzang Choden	533	575	0.109
③ Lobzang Choden	496	527	1.228
④ Namgyal Dema	982	523	1.207
⑤ Tshering Lhamo	67	551	0.954 (0.566)
⑥ Changlo			
⑦ Norbu Chozom	1127	510	0.293
⑧ Nimco Norbu			
⑨ Norbu			0.55
⑩ Tshering Dema	1232	551	0.751 (0.216)
⑪ Neten	1070	407	0.693
⑫ Sonam Phuntsho	950	505	1.59 (0.392)
⑬ Phuntsho Norbu	978	506	$0.45 + 4.55 = 0.905$
⑭ Chodon Wangdi	531		0.913
⑮ Tshering Dorji			
⑯ Tashi Dorji			
⑰ Norbu Gyelphen			
⑱ Tshering Choden	1072	515	2.057
⑲ Sonjay Chozom	1083	512	0.933
⑳ Tigme Choden	1364	Nil	0.392

Beneficiaries for chainlink Fencing, Pengtse

① Tshering Lhamo	11509004738	Yabrang
② Lobzang Choden	11509004342	Yabrang
③ Lobzang Choden	11509004128	Yabrang
④ Wangsi Dema	11509004097	Yabrang
⑤ Tshering Lhamo	11509004512	Yabrang
⑥ Chenzho	11509004158	Yabrang
⑦ Norbu Chozom	11509001943	Pengtse
⑧ Nima Norbu	11509000769	Tangjanma
⑨ Norbu	11509004261	Yabrang
⑩ Tshering Dema	11509004324	Pengtse
⑪ Nuten	11509000814	Pengtse
⑫ Sonam Phuntsho	11509000805	Pengtse
⑬ Phuntsho Norbu	11509004382	Pengtse
⑭ Chaden Wangdi		Yabrang
⑮ Tshering Dorji		Yabrang
⑯ Tashi Dorji	11509004188	Pengtse
⑰ Norbu Gyeltshen		Yabrang
⑱ Tashi Dorji Tshering Choden	11509001651	Pengtse
⑲ Senjay Chozom	11509001957	Pengtse
⑳ Tigme Choden	11509000642	Pengtse