Guidelines on third party damage compensation and re-alignment cost recovery for fibre optic asset	**June 30 2021**

This applies to all the fibre assets & ICT facilities maintained by Bhutan Power Corporation Ltd both RGoB and BPC owned assets

Version 1.0

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Dept. of Information Technology & Telecom
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Thimphu:Bhutan

BHUTAN POWER CORPORATION LTD. THIMPHU BPC

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Preface

In the absence of the proper guidelines and procedures set for the lawful investigation and to act way forward against the third party damages and realignment or shifting of the state's (definition of state) fiber infrastructures or properties, the BPC found it troublesome in dealing with the aftermath. Since then, the rationalization for proper implementation and total reliability is defeated and found to be null and void. This has further drive to unenforceable and admitting to the attention of auditing and observations from the competent authority and stakeholders.

To this concern, BPC has adopted this guidelines which will enormously benefit our Fiber Network Division (FND) who looks after the fiber infrastructures for proper ascertainment and aftermath enforcement. And furthermore, the guidelines will remain as a basis of references for both BPC and other stakeholders.

1. Purpose

The adoption of this guideline is to ensure a proper procedures for investigating the third party damages and realignment/shifting of the National or BPC owned Optical Fiber Infrastructure to claim compensation to meet the expenses incurred.

The major fiber optic asset is owned by MoIC, RGoB and BPC (abbreviation) owned in some regions, but O&M works of both the assets (RGoB and BPC owned) are being carried out by the Fiber Network Division (FND), BPC. The fund recoveries made from the third party, against damage and realignment will be used to meet the cost of materials replacement, installation & transportation charges

So, over the years, Fiber Network Division, BPC referred the ADSS project phase I & II financial completion report format for cost estimation, due to which some of the cost component such as transportation was not covered and the uniform installation cost was applied irrespective of the locations and travel distances. Therefore, this document will be useful in maintaining a uniform cost that will have all the cost components captured.

2. Scope

This guideline will remain as a legal document and a standard operating procedure for the said purposes and authorize Fiber Network Division to claim compensation from the defaulter who causes damages to the Government and BPC owned fiber optic infrastructure.

3. Definitions

3.1 OPGW

An optical ground wire (OPGW) is a type of optical fiber cable that is used in overhead power transmission lines. The cable serves both grounding and communication purposes. DIT (Govt.) and

BPC have OPGW which runs over BPC's 66 KV and above transmission lines connecting HV substations and switch yards & pot heads in power generation plants.

3.2 ADSS (All Dielectric Self Supporting)

An ADSS is a type of optical fiber cable strong enough to support itself between power distribution structures without containing any metallic component. The cable is used for communication purpose. DITT (Govt.) and BPC has ADSS cables which runs over BPC's distribution poles (33KV and below) connecting Gewog Centers (GCs), Community Centers (CCs), Government offices, Hospitals, colleges, schools, HV substations, BPC regional offices, hydropower Plants and project offices.

3.3 ICT (Information & Communication Technology) co-location shelter

BPC has built ICT co-location shelters within its HV substation premises which have fiber terminations and communication equipment of the Government, Telco and ISPs. It serves as a node for termination of optical fiber links and distribution to last mile connection.

3.4 Fiber monitoring system (FMS)

FMS is a system which is used for monitoring and detecting faults on fiber links. FMS equipment are installed inside the substations, CCs and co-location shelters.

3.5 Damage

Damage caused accidentally or intentionally to the above ***Critical Infrastructure*** by any individual or an organization, which hinders the services provided by the Fiber Network Division, BPC is considered "DAMAGE". Damage can be intentional or accidentally disrupting the services without the knowledge of Fiber Network Division, BPC.

3.6 Re-alignment or shifting

If the existing infrastructure needs to be re-aligned or shifted to a new route/locations which may/may not interrupt the services provided by FND, BPC, can be considered as a Re-alignment or shifting. Any individual or entity wishing to avail re-alignment service from FND, BPC shall formally write to FND at least two weeks in advance, for preparation and arranging traffic diversion to minimize the services outage time.

3.6.1 Applicability of compensation for realignment

The Fiber Network Division office shall assess the sites for clients requesting for realignment and applicability of realignment cost recovery. Followings are the conditions for applicability of cost recovery on the expenses incurred for the realignment work:

i. The existing fiber route passes through the private property and if the proprietor requests for realignment, then he/she is required to provide new RoW and deposit the recovery amount in advance before the commencement of the realignment works.

ii. An entity or individual requesting for realignment of fiber link passing through the government property is required to provide new RoW and deposit the recovery amount in advance before the commencement of the realignment works.

4. Penalties & Legalities

4.1 Penalties/Compensations

Third party damage caused to ***Critical Infrastructure*** and realignment requirement by any individual or an organization shall be charged a compensation and cost recovery respectively. Damage or realignment will result in network disruptions and services of TSP/ISP resulting into high revenue losses. The compensation and cost recovery in this document covers the cost of the materials damaged, new materials used in repairing damage materials or realignment, labor costs for de-installation and installation, splicing of joints and material transportation cost. The Electrical Schedule of Rates (ESR) 2016 shall be referred for estimation of damage compensation and realignment cost. The details of the estimates and the template is in the **annexure-1**, which is same for both damage compensation and realignment cost estimations.

4.1.1 Materials cost

The total cost of new materials including cable and its fittings & accessories used at site to replace the damaged components or to carry out realignment works. For the cost of the materials which are generally procured and used by the BPC, the latest prices available with BPC shall be considered. For other materials which are not available or rarely procured by BPC, market rate shall be applied. Material costs in **annexure-2**.

4.1.2 Labor costs

Unlike power cable, fiber optic cable restoration from damage or realignment requires rigorous labor works. It requires installation of new cable or releasing of cable from existing cable loop till the damaged site. This is required to reduce number of joints to minimize the fiber link losses: the most important factor in fiber optic communication in ensuring proper optic transmission. Otherwise, it shall degrade the performance of the network, or worse, the degradation can lead to network failure. Most of the time, the installation and de-installation works are carried out live line (the power conductors being charged) on the distribution poles.

For the restoration of the damage or realignment, following labor works are required.

1. Survey of the route: The site shall be surveyed by FND officials prior to the work execution. The works and materials requirement at the site shall be assessed. The official visiting the site will come up with site report. The survey report format in **annexure-3a** and **annexure-3b** (for damage restoration and realignment works respectively) shall be used for uniformity.
2. Installation: Installation of Fiber cable and its fittings & accessories on distribution poles and undergrounding works, if required.

3. De-installation: De-installation of fiber cable from the damaged site till the existing cable loop or joint enclosure and re-install by releasing cable from the loop.

For execution of above works, the rate of labor is derived from the BPC ESR-2016. The rate are as tabulated below.

SI#	Particulars	UoM	Man-days	Rate	Per unit rate	Remarks
1	Survey of route	km	3.24	471.27	1,526.92	vehicle mileage & DSA of two official (driver & Technician or Section Officer)
Ariel installation						
2	Installation/de-installation of fiber optic cable	km	16.52	385.64	6,370.83	Rate same as stringing/laying of LV ABC in ESR-2016.
3	Installation of associated Hardware and accessories for ADSS including all cable fittings and accessories like suspension clamps, tension clamps, vibration dampers, reinforcing rod, down lead clamps on 33kV, 11kV and 415V power distribution poles	No.	0.16	494.79	79.17	Rate same as erection of LV line suspension clamp in ESR-2016
Underground installation						
4	Digging of trench, laying of duct and cable installation.	Km	126.42	385.66	48,755.25	Rate same as digging of trench in ESR-2016.

*** Man-day is defined as a unit of one day's work by one person and labor rates as the daily wage of the one man; also called rate per man-day.

*** The rate shall be revised as and when ESR get revised and also need to be updated based on current market rates.

4.1.3 Splicing charges

Jointing of the hair-thin sized fibers have to be carried out by special tool called Fusion Splicing Machine. The controlled electric arc from the electrodes fuse the fibers to form a joint. This has to be cautiously carried out to have splice/joint loss within the threshold loss value (0 – 0.05 dB). The rate for fiber splicing is as tabulated below.

SI#	Particulars	UoM	Number of fiber core	Rate	Unit rate	Remarks
1	Fiber splicing	No	1	100	100	Rate as per ADSS project phase II (splicing 24F ADSS fiber =Nu. 2,400)

4.1.4 Materials transportation cost

The materials transportation cost has been calculated based on the RSTA's revised transportation rates for Goods dated **November 2014,** as follows:

Type of vehicle	Route	Proposed New rate(Nu/KM/MT)
All trucks (heavy and Medium)	All hills	8.8
All trucks (heavy and Medium)	All plains	6.9

The rate is subjected to change as and when RSTA revises the rate.

Following three transportation rates have been defined:

1. Regional Transportation Cost
   The transportation cost for transporting foreign and other materials by vehicle from BPC's Central Store in Phuentsholing to FND's regional stores.

   Regional Transportation Cost = Weight of materials in metric ton * RSTA rate * distance from the central store (P/ling) to regional store.

2. Local Transportation Cost
   The transportation cost for transporting materials by vehicle from FND's regional store to the road head near the site.

   Local Transportation Cost = Weight of materials in metric ton * RSTA rate * distance from the regional store to nearest road head from site.

3. Head Loading Cost

The cost for head loading the materials from road head to actual work site. The head loading cost as per the ESR-2016 is Nu.2.23/kg/km.

Head loading Cost = Weight of materials in KG * RSTA rate * distance from the nearest road head to the site location * Nu.2.23

Contingency provision of 5% shall be provisioned to take care of unforeseen cost escalation and discrepancy in quantity of materials during implementation of work. The payment shall be reconcile after completion of the work.

4. Departmental charge

Ten percent (10 %) of total work cost shall be levied as a Departmental charge.

4.2 Enforceability

Any individual or an organization shall be report to Royal Bhutan Police (RBP) and dealt as per the existing applicable laws of the Kingdom of Bhutan, if:

4.2.1 An individual or an organization is found guilty of the damages and is not willing or otherwise failing to compensate for the damages caused.

4.2.2 Failure to deposit the realignment cost, if the realignment work is done prior to deposition of amount due to urgency.

5. Procedures for compensation collection

5.1 Third party damage

i. Upon receiving the information on the fiber damage by third party, the official from FND shall visit the site and study the details of damage, assess the materials damaged and shall report the findings to the Division Manager, using the reporting format reflected in clause 4.1.2 under survey of route. The survey shall be completed not more than three days from the date of complaint on fiber damage.

ii. The FND official will get the compensation payment undertaking form signed by the perpetrator. After form being signed, the team with the materials shall be deputed to site for the restoration works. If the offender refuses to sign the undertaking form, it will be forwarded to Royal Bhutan Police. However, the FND shall restore the fiber link to avoid network downtime. The payment undertaking form is given in **annexure-4a.**

iii. FND shall restore the fiber link temporarily or permanent during survey period. If scale of damage is major and requires replacement of materials in large quantity, temporary restoration shall be done. The permanent restoration shall be done after collecting the materials from regional stores and seeking network outage approval from the fiber stakeholders having network traffics in that link.

iv. A compensation letter along with the compensation details will be sent to the perpetrator after the restoration work.

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5.2 Realignment

i. The client should write an official request letter to ESD or FND BPC requesting for shifting of the infrastructure. FND official will survey the site and submit the site report to the Division Manager using the reporting format given in clause 4.1.2 under survey of route.

ii. The Division office shall send a cost estimation of the works using the reporting formats given in clause 4.1.

iii. Upon depositing the compensation amount, FND shall commence with the re-alignment after fourteen (14) days (two weeks' time is required for network outage approval from the TSP/ISPs having live network traffics in that route). The client opting to pay the compensation after work have to sign the payment undertaking form given in **annexure-4b**.

iv. The FND will send financial completion report to the client after the completion of the work.

v. The client who has constructed the building/any civil structures without informing FND for realignment, shall be liable for the reimbursement.

6. Collection of Compensation

i. The third party responsible for damage shall compensate to BPC within 15 days from the date of issuance of compensation letter.

ii. The realignment compensation payment for those clients who opted to pay after work completion must be done within 15 days from the date of issuance of completion report by FND.

iii. Payment must be made either through Cheque deposit or any other online payment services to the BPC account. In case of online payment transaction details must be noted and sent to FND office.

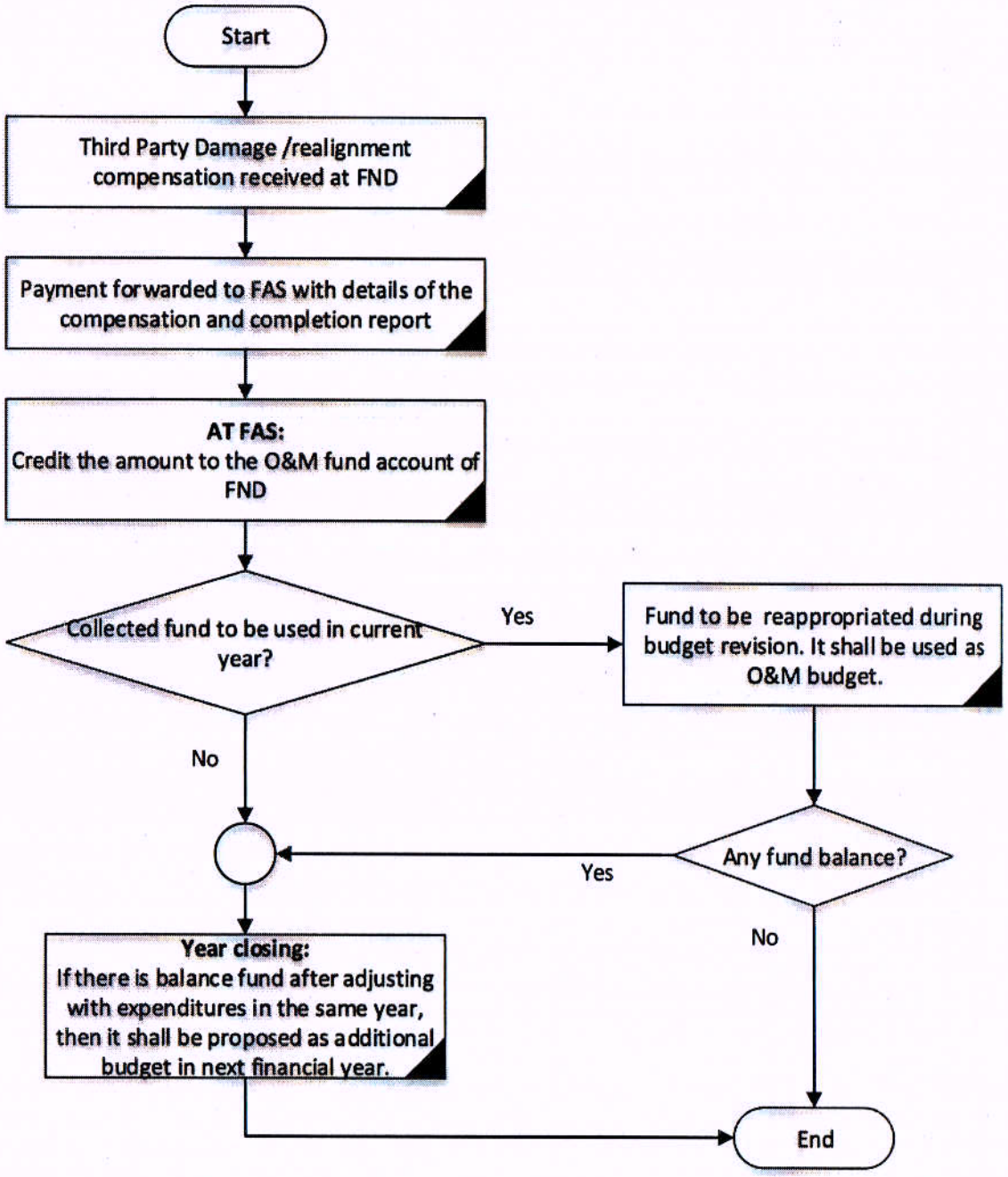
iv. In the event of late payment by the third party within the stipulated time, the said third party shall be charged a Late Payment Penalty equal to two percent (2%) of the outstanding amount shall be levied. Subsequent failure to compensate crossing three (3) months shall be reported to RBP for enforcement as per the existing rules of laws of the Kingdom of Bhutan.

6.1 Handling of the Compensated amount

i. The details of the payment made against the damage shall be recorded/maintained by the FND office.

ii. The compensation or cost recovery received from third parties shall be accounted to O&M fund of FND.

iii. The flow chart for handling the compensation is as depicted below.



7. Amendment/Revision of guideline

The SOP shall be revised periodically whenever necessary to incorporate cost escalations/fluctuations in materials, labor and transportation rates.

Annexure -1: Form for Compensation Estimation

Bhutan Power Corporation Limited

(An ISO 9001:2015, ISO 14001:2015 & OHSAS 18001:2007 Certified Company)

Registered Office, Thimphu

Information & Communication Department

Fiber Network Division

Thimphu: Bhutan

A	**Material cost**						
Sl No	**Particulars**	**UoM**	**Qty.**	**Unit weight (kg)**	**Unit Rate (Nu)**	**Total weight (kg)**	**Total Amount(Nu)**
1	Optical Joint Enclosure	NO					
2	Cost for supply of ADSS Fiber Optic Cable	KM					
	Total (A)						
B	**Installation cost**						
	Survey of route	KM					
1	LIVE LINE installation & commissioning of ADSS Fiber Optic Cable Fiber	KM					
2	LIVE LINE de-installation & commissioning of ADSS Fiber Optic Cable Fiber	KM					
1	Installation of associated Hardware and accessories for ADSS including all cable fittings and accessories like suspension clamps, tension clamps, vibration dampers, reinforcing rod, down lead clamps on 33kV, 11kV and 415V power distribution poles	NO					
4	Fiber splicing (fiber cores)	NO					
	Total (B)						
C	**Transportation cost**						
	Distance 1. From Central store(p/ling) to regional store = 2. Regional store to nearest road head = 3. Nearest road head to site =						
1	Regional transportation cost						
2	Local transportation cost						
3	Head loading cost						
	Total (C)						
D	**Grand Total for the whole work (A+B+C)**						
E	**10% Departmental Charge on D (Nu.)**						
	Total cost including 10% Departmental charge(D+E)						

Manager

Fiber Network Division

Information & Communication Department

Bhutan Power Corporation Limited

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Annexure -2: Material cost

SI. No.	Material Name	UoM	Unit rate (Nu)	Unit Weight (kg)	Purchased year
1	ADSS Cable 24F	Km	96500	165	2019
2	ADSS Cable 48F	Km		165	
3	ADSS Cable 72F	Km	95550	165	ADSS phase I and II project rate
4	ADSS Cable 24F (armoured underground)	Km	56700	175	
8	ADSS Cable 48F (armoured underground)	Km	71,000	188	2019
9	ADSS Tension Clamp	No	4212	3.6	2017
10	ADSS Suspension Clamp	No	3000	3.1	ADSS phase I and II project rate
13	ADSS Reinforcing Tension Rod	No	367.50	0.8	
14	ADSS Reinforcing Suspension Rod	No	110.25	0.6	
15	ADSS Vibration Damper	No	367.50	0.7	
16	ADSS Down Lead clamp with accessories	No	367.50	0.7	
17	ADSS Cross Arm	No	2000	4.7	2017
18	ADSS Corona Coil	No	367.50	0.1	2017
19	ADSS Fiber Optic Distribution Pannel-24F	No	6300	3.5	ADSS phase I and II project rate
20	ADSS Fiber Optic Distribution Pannel-48F	No	12600	5.5	
21	ADSS Fiber Optic Distribution Pannel-72F	No	16800	5.5	
22	ADSS Joint enclosure-24F	No	2600	4	2019
23	ADSS Telescopic Tension Clamp	No	4212	4.1	ADSS phase I and II project rate
24	ADSS Telescopic Suspension Clamp	No	3000	3.9	

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Annexure-3a: Site Survey report (Third Party damage)

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Bhutan Power Corporation Limited

(An ISO 9001:2015, ISO 14001:2015 & OHSAS 18001:2007 Certified Company)

Registered Office, Thimphu

Information & Communication Department

Fiber Network Division

Thimphu: Bhutan

1. **Date** : _____ **Time:**_____

2. **Location :** _____

3. **Fiber Link :** _____

4. **Details of the culprit:**

   Name :_____

   CID No :_____

   Contact Details : _____

5. **Cause of Damage:**

   ➢

Materials damaged:

Sl.no	Particulars	UoM	Qty.	Remarks
1				
2				
3				
4				
5				

Materials required to restore the link:

Sl.no	Particulars	UoM	Qty.	Remarks
1				
2				
3				
4				
5				

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Installation/de-installation works:

Sl.no	Particulars	UoM	Qty.	Remarks
1	LIVE LINE installation & commissioning of ADSS Fiber Optic Cable Fiber	KM		
2	LIVE LINE de-installation & commissioning of ADSS Fiber Optic Cable Fiber	KM		
3	Installation of associated Hardware and accessories for ADSS including all cable fittings and accessories like suspension clamps, tension clamps, vibration dampers, reinforcing rod, down lead clamps on 33kV, 11kV and 415V power distribution poles	No		
4	Underground installation	KM		
5	Splicing of fiber	No		

Transportation:

Sl.no	Particulars	UoM	Distance	Remarks
1	Road point to site (head loading cost)	KM		
2	Regional store to nearest road to site (local transportation).	KM		

Submitted by:

(Name & Signature)

BHUTAN POWER CORPORATION LTD. THIMPHU BPC

MOIC Department of Information Technology & Telecom

Annexure-3b: Site Survey report (Third Party realignment)

6. **Date** : _____ **Time:**_____

7. **Location** : _____

8. **Fiber Link** :_____

9. **Network Outage requirement (YES or NO) :** _____

   - **If YES, specify estimated network outage duration :** _____

10. **Details of the client:**

    Name :_____

    CID No :_____

    Contact Details : _____

11. **Reason for realignment:**

    ➢

Materials required:

Sl.no	Particulars	UoM	Qty.	Remarks
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

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Installation/de-installation works:

Sl.no	Particulars	UoM	Qty.	Remarks
1	LIVE LINE installation & commissioning of ADSS Fiber Optic Cable Fiber	KM		
2	LIVE LINE de-installation & commissioning of ADSS Fiber Optic Cable Fiber	KM		
3	Installation of associated Hardware and accessories for ADSS including all cable fittings and accessories like suspension clamps, tension clamps, vibration dampers, reinforcing rod, down lead clamps on 33kV, 11kV and 415V power distribution poles	No		
4	Splicing of fiber	No		

Transportation:

Sl.no	Particulars	UoM	Distance	Remarks
1	Road point to site (head loading cost)	KM		
2	Regional store to nearest road to site (local transportation).	KM		

Submitted by:

(Name & Signature)

MOIC. Department of Information Technology & Telecom

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Annexure-4a: Payment Undertaking Form (Third Party Damage)

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Bhutan Power Corporation Limited

(An ISO 9001:2015, ISO 14001:2015 & OHSAS 18001:2007 Certified Company)

Registered Office, Thimphu

Information & Communication Department

Fiber Network Division

Thimphu: Bhutan

Date .....

To
Manager,
Fiber Network Division,
ICD, BPC,
Thimphu.

I, Mr./Mrs./Miss.....holding CID No. ..... hereby accepted in paying the compensation against the damage of ADSS fiber optic cable at ....., amounting to Nu.....

The works is executed before the payment to expedite the restoration and reduce the network outage duration of the TSP/ISPs. The total cost derived in line with the "Guideline for third party damage and realignment compensation" against restoration of the damage shall be paid to BPC.

In the event of late payment of the compensation, I shall be charged a Late Payment Penalty equal to two percent (2%) of the amount overdue for each month.

I stand by this undertaking and hold myself fully responsible and accountable for payment of the compensation as per the clause 6, Follow & Payment procedure of Guideline for third party damage and realignment compensation.

Attach legal stamp here

[Signature & Date]

BHUTAN POWER CORPORATION LTD. THIMPHU

M.O.I.C. Department of Information Technology & Telecom

Annexure-4b: Payment Undertaking Form (Realignment)

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Bhutan Power Corporation Limited

(An ISO 9001:2015, ISO 14001:2015 & OHSAS 18001:2007 Certified Company)

Registered Office, Thimphu

Information & Communication Department

Fiber Network Division

Thimphu: Bhutan

Date:.....

To
Manager,
Fiber Network Division,
ICD, BPC
Thimphu

I, Mr./Mrs./Miss.....holding CID No. ..... hereby accepted in paying the compensation against the realignment of ADSS fiber optic cable at ....., amounting to Nu.....

The works is executed before the payment with the understanding that payment will be done after completion of the work and issuance of completion report. The total cost derived in line with the "Guideline for third party damage and realignment compensation" against realignment shall be paid to BPC.

In the event of late payment of the compensation, I shall be charged a Late Payment Penalty equal to two percent (2%) of the amount overdue for each month.

I stand by this undertaking and hold myself fully responsible and accountable for payment of the compensation as per the clause 6, Follow & Payment procedure of Guideline for third party damage and realignment compensation.

Attach legal stamp here

[Signature & Date]

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Annexure -5: Third party Damage and realignment procedures flow chart