



Telecom Regulatory Authority of India

Recommendations

on

Improving Backhaul Telecom Infrastructure in far-flung areas of Himachal Pradesh.

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Chapter-1

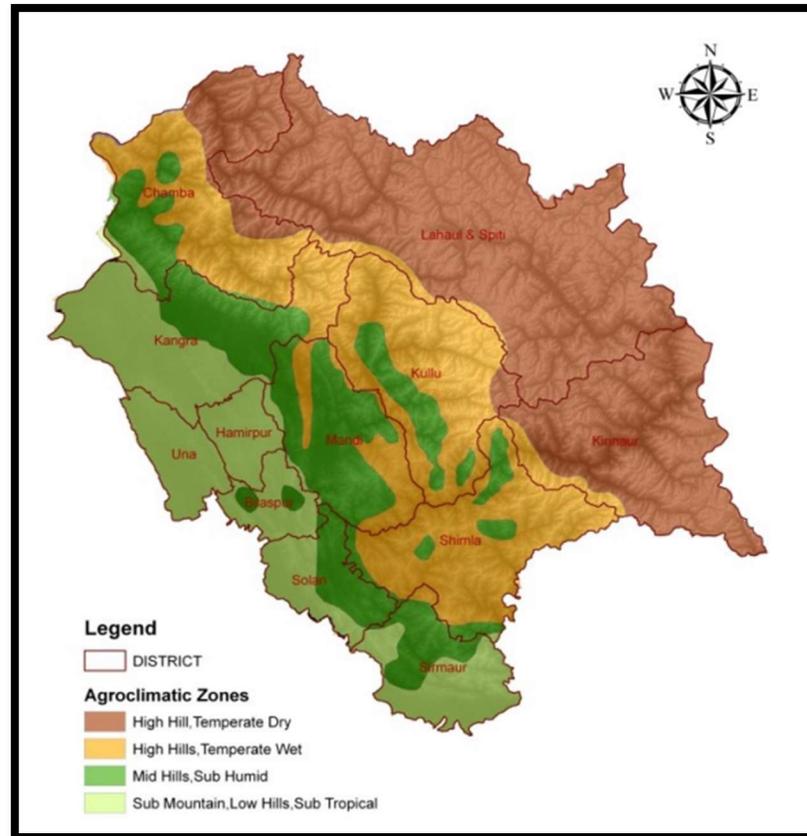
INTRODUCTION

- 1.1 Himachal Pradesh (HP) is a northern state in India that lies within the expanse of the Western Himalayas. The state occupies a region in the western Himalayas, offering a multitextured display of lofty snow-clad mountains, deep gorges, thickly forested valleys, large lakes, terraced fields, and cascading streams. It is predominantly a mountainous state and also shares an international border with China. It is characterized by a striking geographical makeup, boasting numerous peaks and expansive river systems within its diverse landscape. The rugged terrain of Himachal Pradesh reflects the broader Himalayan Mountain system, consisting of parallel physiographic regions that span from northwest to southeast.

- 1.2 Himachal Pradesh is a Licensed Service Area (LSA) comprising of 12 districts as shown in the figure 1.1 below. Upon closer examination, it becomes evident that the terrain profiles of central Himachal Pradesh, encompassing districts like Kullu and Mandi, as well as the northern regions including Chamba and Lahaul & Spiti, are notably more undulated, hilly, challenging and inhospitable compared to the terrain profile of the southern located districts of the state. Especially, Lahaul & Spiti district is a remote and mountainous region situated in the northern part of the state and is surrounded by high mountain ranges and barren landscapes. It is characterized by rugged, challenging inhospitable terrain with limited motorable road networks which are predominantly rocky, with deep gorges, steep slopes, and narrow valleys. It is dominated by the Himalayan Mountain ranges, with several peaks exceeding 6,000 meters in elevation. The district is divided by the Kunzum Pass, which connects Lahaul Valley in the south to Spiti Valley in the north. The terrain here is also known for

its breathtaking landscapes, including snow-covered mountains, high-altitude deserts, and pristine lakes.

Figure 1.1 : Map of Himachal Pradesh¹



1.3 The region has a sparse population due to its challenging terrain and extreme weather conditions. The major settlements in Lahaul Valley include Keylong, the administrative headquarters, and several small villages along the Bhaga River. In Spiti Valley, the main town is Kaza, which serves as the administrative centre and transportation hub. The population is dispersed across these towns and adjoining scattered villages, with a low overall density of population. Lahaul and Spiti district experiences extreme climatic conditions due to which the region remains inaccessible during the winter months when the region experiences heavy snowfall. The region is characterized by long and harsh winters with heavy snowfall, and

¹<https://himcivils.com/425-2/>

temperatures often drop below freezing point. The summer season is relatively short, with cool temperatures during the day and chilly nights. The high altitude and mountainous terrain contribute to the extreme weather. The district is also prone to occasional landslides and avalanches, especially during the monsoon season. These areas experience heightened extremes during the winter months compared to their southern counterparts in districts such as Shimla, Solan, and Sirmaur. This variation in terrain has direct implications for the population density as well as its distribution within the state.

1.4 Due to its remote location and challenging terrain, districts such as Lahual & Spiti and Kinnaur respectively experience significant challenges in terms of cellular mobile coverage and internet access. These two aforementioned districts also share a significant international boundary with neighboring Tibetan Autonomous Region (TAR), resulting in sizeable deployment of security forces in these districts. Owing to terrain and weather conditions being the major hindering factors, this region has limited backhaul as well as access telecommunication infrastructure, with internet connectivity often being slow and unreliable. However, efforts have been underway by the government and various service providers to improve connectivity in this region in recent years. Mobile network coverage is gradually expanding, and initiatives by operating TSPs such as the installation of VSAT-based cellular mobile cum internet services are being implemented to bridge the extant digital divide in the region.

1.5 As brought out in table 1.1 below, in comparison to the All-India average tele-density of 84.51%, Himachal Pradesh enjoys an impressive tele-density of **119.69%** (as of March 2023). However, due to the inherent disparity in the terrain profile of the state, there has been a non-uniform proliferation of telecom services in the state. TSPs have not focused much on the rollout and consolidation of digital infrastructure in the northern part of the state,

especially in Lahaul & Spiti district due to sparse population, high OPEX and poor RoI prospects.

Table 1.1: Overall telecom scenario of Himachal Pradesh as on 31.03.2023

Parameters	Himachal Pradesh			All India		
	Total	Rural	Urban	Total	Rural	Urban
Subscriber base (wireline + wireless) (In million)	8.94	5.78	3.16	1172.34	518.63	653.71
Tele-density (wireline + wireless) (In %)	119.69	86.31	410.01	84.51	57.71	133.81
Wireless Subscribers (In million)	8.8	5.74	3.06	1143.92	516.38	627.54
Wireless Tele-density (In %)	117.77	85.62	397.33	82.46	57.46	128.45
Wireline Subscribers (In million)	0.14	0.05	0.1	28.41	2.25	26.16
Wireline Tele-density (In %)	1.92	0.69	12.67	2.05	0.25	5.36

1.6 The recent introduction of 5G services in India in October 2022 marks a significant milestone that promises to revolutionize the way both businesses and consumers engage with technology. As this advanced network infrastructure takes root, it is anticipated to bring about a transformative shift in the implementation of various 5G use cases, benefiting the target population, which is primarily concentrated in both rural hinterlands and bustling metropolitan areas. However, despite the nationwide progress, certain parts of the state of HP face a persistent digital divide, particularly in its remote and far-flung regions located in the northern part of the state. This disparity is evident in the contrasting levels of access to cutting-edge

information and communication technology services, experienced by different demographic groups. While certain areas enjoy easy access to the latest telecom and internet technology-based services, many unserved and underserved regions are still devoid of rolling out most basic telecom services.

1.7 A strong, sustainable and resilient backhaul telecom backbone network is an inescapable requirement to roll out high-capacity converged voice and data services having low latency, reliability, scalability, supporting current and future communication technologies like 4G, 5G and High-speed broadband services and beyond. Its resilience to interference and long reach makes it ideal for connecting remote areas, while its convergence capabilities and competitive advantage attract more customers and enable transformative services, driving socio-economic development in this digital age. In this regard, the Authority, accompanied by a team of TRAI officials, had visited Himachal Pradesh in October 2021 to assess the current situation of the telecom infrastructure in the state and identify the prevailing gaps due to poor telecom coverage in remote and far-flung northern regions. The Authority undertook a comprehensive review of the telecom infrastructure with all concerned Telecom Service Providers (TSPs), senior State Government Machinery and the locals to have a holistic review of the extant state telecom infrastructure in these remote areas. During the visit, the Authority also deliberated upon the views of consumers from Himachal Pradesh, Panchayat representatives from some villages in the Lahaul & Spiti district, and representatives of Consumer Groups.

1.8 As a fall out of the aforementioned visit, the Authority had initiated a suo-moto consultation process and subsequently came out with its crucial recommendations on *“Improving Telecom Connectivity and Infrastructure in Far-Flung areas of Himachal Pradesh”* i.e. Chamba, Kullu, Lahaul & Spiti, and Mandi respectively, on *12th December 2022*. The aforementioned

recommendations also highlighted upon the requirement of a comprehensive investment plan for the core transmission backhaul network, encompassing all tehsils/talukas in the identified four districts: Chamba, Kullu, Lahaul & Spiti, and Mandi. These four districts are relatively remote and underdeveloped compared to other parts of the state, leading to lack of proper telecom and backhaul infrastructure. TRAI has always remained unwavering in its efforts to enhance telecom infrastructure in remote and far-flung areas of the country. These proactive endeavors are aimed at bridging the digital divide, ensuring that even in geographically challenging regions, access to reliable and advanced telecom services is available. This, in turn, promotes overall development and connectivity throughout the nation. To assess the status of telecom infrastructure gap and to also bridge the extant digital divide in the state, TRAI had identified four worst affected revenue districts in the state namely Lahaul & Spiti, Chamba, Kullu and Mandi respectively. TRAI went on to obtain the current status of available telecom network infrastructure in these four worst affected districts of Himachal Pradesh from operating TSPs, BBNL, USOF, Power generation/ transmission companies operating the state, for gap analysis. Based on the gap analysis, the Authority on 12 December 2022 had made certain important recommendations recommending USO funded initiatives to provide telecom infrastructure in 25 uncovered villages in identified four districts, inclusion of 38 non-4G based villages under USOF sponsored '4G Saturation Scheme' and many other such recommendations, for improvement in telecom connectivity in above mentioned districts of Himachal Pradesh. TRAI vide paragraph 2.35 of Chapter 2 of its aforesaid recommendation of 12 December 2022, had stated that *'for the identified districts of Himachal Pradesh, apart from providing mobile coverage to uncovered villages, a core transmission backhaul network in a ring structure covering all tehsils/talukas should also be funded through USOF. TRAI will work on a detailed investment plan for the same and will recommend it*

separately'. In line with the aforesaid recommendation, in June 2023, a team of senior TRAI officials visited Lahaul & Spiti district of Himachal Pradesh and conducted a comprehensive assessment of the state's telecom infrastructure with special emphasis on extant state of core transmission backhaul network upto Block Headquarters in all four districts under consideration. The primary objective was to analyze the existing backhaul network setup in these remote and northern districts of the state and then assimilate upon the projected requirement considering all major strata of end users residing in these districts. The Authority engaged in extensive interactions with relevant stakeholders in this regard. These stakeholders included various operating TSPs operating in the state, State Government officials, Senior officials from the security forces, Common Service Centre (CSC) representatives and locals, to gain insights into the ground-level situation.

- 1.9 Based on the outcome of interactions with all the above-mentioned entities along with a detailed analysis of the inputs obtained from various operating TSPs and security forces operating in Himachal Pradesh, TRAI has prepared these recommendations. The approach and methodology adopted to analyze the backhaul network in far-flung districts of the state, i.e. Mandi, Kullu, Chamba, Lahaul & Spiti districts, to recommend the necessary initiatives for strengthening the optical fibre-based backhaul in the region are covered in **Chapter 2** of this recommendation. All the stated recommendations have been compiled in **Chapter 3**.

Chapter-2

Approach, Methodology and Recommendations On Improving Backhaul Infrastructure In Remote and Far-Flung Areas Of Himachal Pradesh

A. Approach Methodology

2.1 TRAI obtained the details of existing setup of Optical Fibre Cable (OFC) based backhaul transmission backbone network upto block headquarters level from all operating TSPs in the identified four districts of Himachal Pradesh, namely Chamba, Kullu, Lahaul & Spiti and Mandi respectively. The aim was to analyze whether adequate and redundant backhaul transmission resources are available to cater to the present and future needs up to the 'Block level' in the administrative setup of these four districts. The details of the administrative setup up to the block level for Chamba, Kullu, Lahaul & Spiti, and Mandi are tabulated below in Table 2.1

Table 2.1: Administrative set-up upto block level in respect of Chamba, Kullu, Lahaul& Spiti and Mandi districts of HP

#	Sub-Division	Tehsil		Block
•		• For Chamba District		
1	Bharmour	Bharmour		Bharmour
2	Bhattiyat	Bhattiyat		Bhattiyat
3	Chamba	Chamba		Chamba
4	Chamba	Chamba		Mehla
5	Pangi	Pangi		Pangi
6	Salooni	Salooni		Salooni
7	Tissa	Churah		Tissa
•		• For Kullu District		
1	Anni	Anni		Anni

2	Banjar	Banjar		Banjar
3	Kullu	Bhuntar		Bhuntar
4	Kullu	Kullu		Kullu
5	Naggarr	Manali		Naggarr
6	Nirmand	Nirmand		Nirmand
•		• For Lahaul & Spiti District		
1	Keylong	Lahaul		Lahaul
2	Kaza	Spiti		Spiti
•		• For Mandi District		
1	Balh	Balh		Balh
2	Balichowki	Balichowki		Balichowki
3	Joginder Nagar	Joginder Nagar		Chauntra
4	Karsog	Karsog		Churag
5	Sunder Nagar	Sunder Nagar		Dhanotu
6	Dharampur	Dharampur		Dharampur
7	Padhar	Padhar		Drang
8	Gohar	Gohar		Gohar
9	Sarkaghat	Sarkaghat		Gopalpur
10	Karsog	Karsog		Karsog
11	Mandi Sadar	Mandi Sadar		Mandi Sadar
12	Sunder Nagar	Nihri		Nihri
13	Thunag	Thunag		Seraj
14	Sunder Nagar	Sunder Nagar		Sunder Nagar

2.2 The layout details of the transmission backhaul network for the four operating TSPs—namely, M/s RJIL, M/s Bharti Airtel, M/s BSNL, and M/s

VI have been summarized in tables 2.2, 2.3, 2.4, and 2.5, respectively. These layout details have been plotted on a GIS template and are depicted in figures 2.1, 2.2, 2.3, and 2.4, respectively.

Table 2.2: Transmission Backhaul Layout details of M/s RJIL in the identified four districts of HP

Sr. No.	Block	Add/ Drop Provision Exists (Yes/ No)	If yes then what capacity	Whether on ring or linear OFC network?	Layout of the Core/ Access Ring or Linear network ensuring that the block headquarters are connected on OFC network
Chamba District					
1	Bharmour	Yes	10G	Ring	Chamba - Bharmour- Chamba
2	Bhattiyat	Yes	10G	Ring	Chamba - Nurpur- Bhattiyat (Chowari)-Chamba
3	Chamba	Yes	10G	Ring	Chamba DHQ
4	Mehla	Yes	10G	Ring	Chamba - Mehla- Bharmour- Chamba
5	Tissa	Yes	10G	Linear	Chamba - Tissa-Pangi
6	Pangi	Yes	10G	Linear	Chamba - Tissa-Pangi
7	Salooni	Yes	10G	Ring	Chamba -Koti - Salooni-Doda - Jammu-Pathankot-Nurpur- Chamba
Kullu District					
1	Anni	Yes	10G	Ring	Kullu - Banjar- Anni-Shimla- Bilaspur-Mandi-Kullu
2	Banjar	No			
3	Bhuntar	Yes	10G	Ring	Bhuntar-Kataula-Mandi-Autt- Bhuntar
4	Kullu	Yes	10G	Ring	Kullu DHQ
5	Naggur	Yes	10G	Ring	Kullu-Naggur-Manali-Koksar- Kaza-Pooh-Shimla-Bilaspur- Mandi-Kullu
6	Nirmand	Yes	10G	Linear	Shimla -Rampur - Nirmand
Lahaul & Spiti District					
1	Spiti	Yes	10G	Ring	Kaza-Pooh-Shimla-Mandi- Manali-Koksar-Kaza
2	Lahaul	Yes	10G	Ring	Keylong-Kullu-Mandi- Pathankot-Jammu-Srinagar- Leh-Keylong

Mandi District					
1	Balh	Yes	10G	Ring	Mandi - NerChowk(Balah)-Sundernagar-Bilaspur-Hamirpur-Mandi
2	Seraj	Yes	10G	Ring	Mandi-Sundarnagar-Thunag-Shimla-Bilaspur-Hamirpur-Mandi
3	Balichowki	Yes	10G	Ring	Mandi - Autt - Balichowki - Anni - Shimla - Bilaspur - Mandi
4	Dharampur	Yes	10G	Ring	Mandi - Dharampur - Hamirpur - Palampur - Jogindernagar - Mandi
5	Gohar	No			
6	Drang	Yes	10G	Ring	Mandi - Hamirpur - Palampur - Jogindernagar - Drang - Mandi
7	Chauntra	Yes	10G	Ring	Mandi - Chauntra - Jogindernagar - Palampur - Hamirpur - Mandi
8	Churag	Yes	10G	Ring	Sundernagar - Mandi - Thunag - Churag - Shimla - Bilaspur - Hamirpur-Mandi - Sundernagar
9	Karsog	No			
10	Mandi Sadar	Yes	10G	Ring	Mandi - Sadar - Mandi
11	Gopalpur	Yes	10G	Ring	Mandi - Sarkaghat - Hamirpur - Bilaspur - Sundernagar - Mandi
12	Sunder Nagar	Yes	10G	Ring	Mandi - Sundernagar - Bilaspur - Hamirpur - Mandi
13	Nihri	Yes	10G	Linear	Mandi - Sundernagar - Nihri
14	Dhanotu	Yes	10G	Ring	Mandi-Dhanotu - Sundernagar - Bilaspur - Hamirpur - Mandi

Fig 2.1: OFC Backhaul of M/s RJIL in the identified four districts of HP

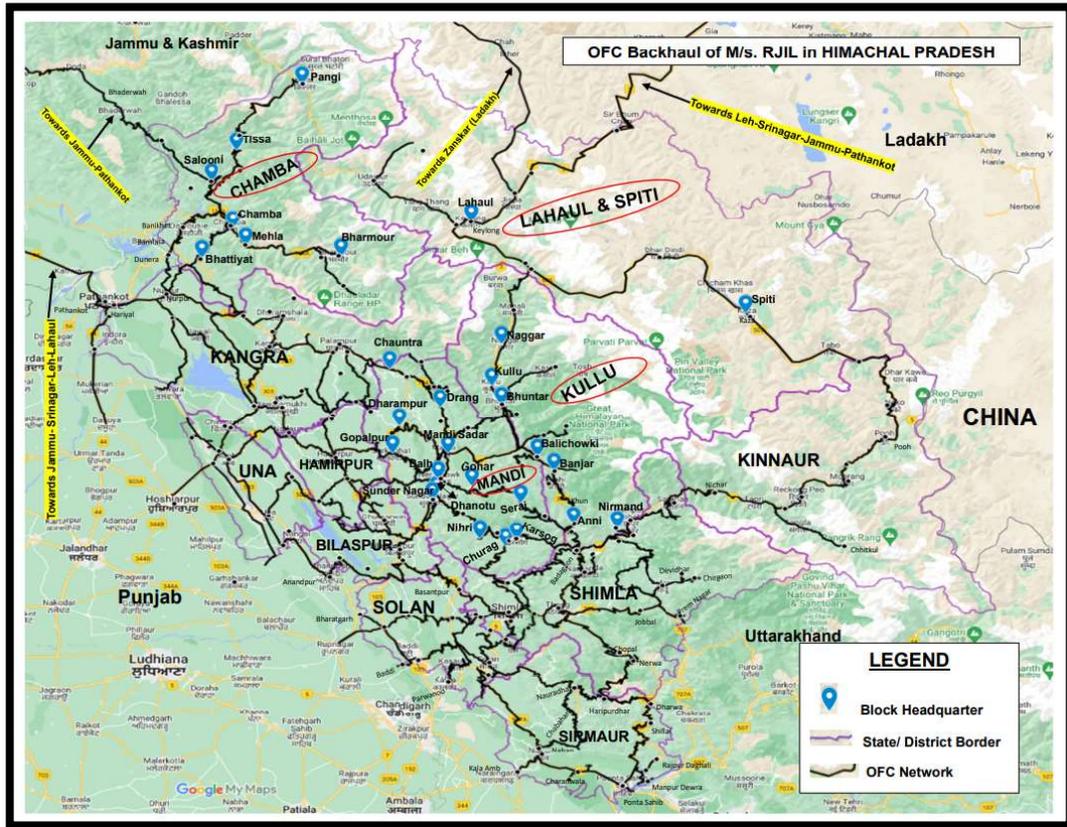


Table 2.3: Transmission Backhaul Layout details of M/s Bharti Airtel in the identified four districts of HP

Sr. No.	Block	Add/Drop Provision Exists (Yes/ No)	If yes then what capacity	Whether on ring or linear OFC network?	Layout of the Core/ Access Ring or Linear network ensuring that the block headquarters are connected on OFC network
Chamba District					
1	Bharmour	Yes	10G	Linear	Bharmour-Chamba-Nurpur-Pathankot(Punjab)-Hariyal(Punjab)-Bamlasa(Punjab)-Banikhet-Chamba
2	Bhattiyat	Yes	10G	Ring	Bhattiyat-Nurpur-Pathankot(Punjab)-Hariyal(Punjab)-Bamlasa(Punjab)-

					Banikhet-Chamba-Bhattiyat
3	Chamba	Yes	10G	Ring	Chamba-Nurpur-Pathankot(Punjab)-Hariyal(Punjab)-Bamlasa(Punjab)-Banikhet-Chamba
4	Mehla	Yes	10G	Ring	Mehla-Chamba-Nurpur-Pathankot(Punjab)-Hariyal(Punjab)-Bamlasa(Punjab)-Banikhet-Chamba-Mehla
5	Tissa	Yes	10G	Linear	Tissa-Chamba-Nurpur-Pathankot(Punjab)-Hariyal(Punjab)-Bamlasa(Punjab)-Banikhet-Chamba
6	Pangi	No			
7	Salooni	Yes	10G	Ring	Salooni-Bhaderwah(J&K)-Dunera(Punjab)-Nurpur-Chamba-Salooni
Kullu District					
1	Anni	Yes	10G	Ring	Anni--Badagaon-Basantpur-Shimla-Amblagalu-Mandi-Autt-Banjar-Khun- Anni
2	Banjar	Yes	10G	Ring	Banjar--Khun-Anni-Badagaon-Basantpur-Shimla-Amblagalu-Mandi-Autt-Banjar
3	Bhuntar	Yes	100G & 10G	Ring	Bhuntar-Bijoura -Mandi-Amblagalu-Pathankot-J&K-Leh-Keylong-Manali-Kullu-Bhuntar
4	Kullu	Yes	100G & 10G	Ring	Kullu-Bijoura-Mandi-Amblagalu-Shimla-Rampur-Kaza-Manali-Kullu
5	Naggar	Yes	10G	Ring	Naggar-Bijoura-Mandi-Amblagalu-Shimla-Rampur-Kaza-Manali-Naggar

6	Nirmand	Yes	10G	Ring	Nirmand -Rampur-Manali-Kullu-Mandi-Amblagalu-Shimla-Rampur-Nirmand
Lahaul & Spiti District					
1	Spiti	Yes	10G	Ring	Kaza-Pooh-Shimla-Chandigarh(Punjab)-Manali-Keylong-Kaza
2	Lahaul	Yes	10G	Ring	Keylong-Karoo-Leh(J&K)-Chandigarh(Punjab)-Shimla-Amblagalu-Mandi-Kullu-Manali-Keylong
Mandi District					
1	Balh	Yes	10G	Ring	Balh-Sunder Nagar-Mandi-Amblagalu-Leda-Balh
2	Seraj	Yes	10G	Linear	Seraj--Khun-Anni-Badagaon-Basantpur-Shimla-Amblagalu-Mandi-Autt-Banjar-Khun
3	Balichowki	Yes	10G	Ring	Balichowki-Banjar-Anni-Khun-Badagaon-Basantpur-Shimla-Amblagalu-Mandi-Autt-Banjar-Balichowki
4	Dharampur	Yes	10G	Ring	Dharampur-Chadiyar-Sujanpur-Palampur-Mandi-Amblagalu-Dharampur
5	Gohar	Yes	10G	Linear	Gohar -Chail Chowk - Ner Chowk - Mandi-Kullu-Kaza-Rampur-Shimla-Amblagalu-Mandi-Nerchowk
6	Drang	Yes	10G	Ring	Drang-Joginder Nagar-Mandi-Palampur-Sujanpur-Hamirpur-Amblagalu-Mandi-Drang
7	Chauntra	Yes	10G	Ring	Chauntra-Palampur-Sujanpur-Hamirpur-Amblagalu-Mandi-Chauntra
8	Churag	Yes	10G	Ring	Churag-Basantpur-Shimla-Amblagalu-Mandi-Churag

9	Karsog	Yes	10G	Ring	Karsog-Basantpur-Shimla-Amblagalu-Mandi-Karsog
10	Mandi Sadar	Yes	100G & 10G	Ring	Mandi-Kullu-Kaza-Rampur-Shimla-Amblagalu-Mandi
11	Gopalpur	No			
12	Sunder Nagar	Yes	10G	Ring	Sunder Nagar-Amblagalu-Darlaghat-Shimla-Basantpur-Karsog-Mandi-Sunder Nagar
13	Nihri	Yes	10G	Linear	Nihri-Sunder Nagar-Amblagalu-Darlaghat-Shimla-Basantpur-Karsog-Mandi-Sunder Nagar
14	Dhanotu	Yes	10G	Ring	Dhanotu -Sunder Nagar-Amblagalu-Darlaghat-Shimla-Basantpur-Karsog-Mandi-Sunder Nagar-Dhanotu

Fig 2.2: OFC Backhaul of M/s Bharti Airtel in the identified four districts of HP

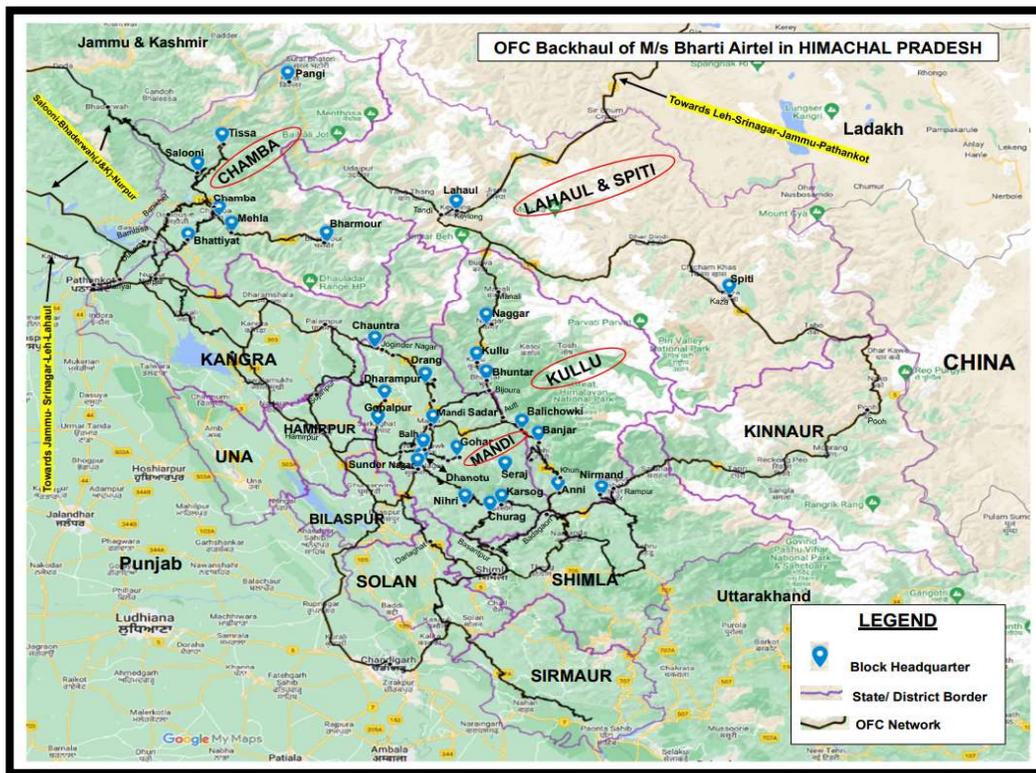


Table 2.4: Transmission Backhaul Layout details of M/s BSNL in the identified four districts of HP

Sr. No.	Block	Add / Drop Provision on Exis ts (Yes / No)	If yes then what capacity	Whether on ring or linear OFC network?	Layout of the Core/ Access Ring or Linear network ensuring that the block headquarters are connected on OFC network
Chamba District					
1	Bharmour	No	Radio Link(150 Mbps*2) = 300 Mbps	NO OFC Connectivity	
2	<i>Bhattiyat</i>	Yes	B2(10Gbps)+STM-16 (2.5Gbps) = 12.5Gbps	Ring	Chamba-Khajiar-Bhattiyat-Jassur-Pathankot-Dhar-Dunera-bainkhet-Drada-Chamba
3	Chamba	Yes	B2(10Gbps)+STM-16(2.5Gbps) = 12.5Gbps	Ring	Chamba-Khajiar-Bhattiyat-Jassur-Pathankot-Dhar-Dunera-bainkhet-Drada-Chamba
4	Mehla	No	Radio Link (150 Mbps)	NO OFC Connectivity	
5	Tissa	No	Radio Link (150 Mbps)	NO OFC Connectivity	
6	Pangi	No	VSAT (8 Mbps)	NO OFC Connectivity	
7	Salooni	No	Radio Link (150 Mbps)	NO OFC Connectivity	
Kullu District					
1	Anni	Yes	CPAN B1 (10Gbps)	Ring	Anni-Chaunai-Luhri-Rampur-Shimla-Bilaspur-Mandi-Autt-Banjar-Anni

2	Banjar	Yes	CPAN B1 (10Gbps)	Ring	Banjar-Aani-Chaunai-Luhri-Rampur-Shimla-Bilaspur-Mandi-Aut-Banjar
3	<i>Bhuntar</i>	Yes	CPAN B1 (10Gbps) + STM-16(2.5 Gbps) = 12.5 Gbps	Ring	Mandi-Kataula-Bhunter-Autt-Pandoh-Mandi
4	Kullu	Yes	CPAN B1 (10Gbps)	Ring	Kullu-Aut-Pandoh-Mandi-Kataula--Kullu
5	Naggar	Yes	CPAN B1 (10Gbps)	Ring	Kullu-Naggar-Manali-Katrain-Raison-Kullu
6	Nirmand	Yes	CPAN B1 (10 Gbps) + STM-16(2.5 Gbps) = 12.5 Gbps	Linear	Rampur-Nirmand
Lahaul & Spiti District					
1	Spiti	No	IDR (8 Mbps)	NO OFC Connectivity	
2	Lahaul	Yes	STM16 (2.5 Gbps)	Linear	Manali-Sissu-Keylong
Mandi District					
1	Balh	Yes	CPAN B1 (10 Gbps)	Ring	Balh-Gutkar-Mandi-Chandyal-Baggi-Balh
2	Seraj	Yes	STM 16 (2.5 G)	Linear	Thunag-Gohar-Baggi-Sundernagar
3	Balichowki	Yes	STM-16 (2.5 Gbps)	Ring	Balichowki-Aut-Pandoh-Mandi-Bilaspur-Shimla-Balichowki
4	Dharampur	Yes	STM-16 (2.5 Gbps)	Linear	Dharmapur-Cholthara-Sarkaghat-Bhambala-Rewalsar-Mandi
5	Gohar	Yes	CPAN B1 (10 Gbps)	Ring	Gohar-Sukibain-Badhu-Jaidevi-Sundernagar-Baggi-Gohar
6	Drang	Yes	CPAN B1 (10 Gbps)	Ring	Mandi-Drand-Padhar-Jogindernagar-Palampur-Dharamshala-Hamirpur-Mandi
7	Chauntra	Yes	STM-16 (2.5 Gbps)	Ring	Dharamshala-Palampur-Chuantra-Jogindernagar-Padhar-Mandi-Dharamshala
8	Churag	Yes	STM-16 (2.5 Gbps)	Ring	Churag-basantpur-Shimla-Sundernagar-Nihri-Churag

9	Karsog	Yes	STM-16 (2.5 Gbps)	Linear	Karsog-Churag-Nihri-Sundernagar
10	Mandi Sadar	Yes	CPAN B1 (10 Gbps)+STM-16 (2.5 Gbps)= 12.5 Gbps	Ring	Mandi-Hamirpur-Shimla-Mandi
11	Gopalpur	Yes	STM-16 (2.5 Gbps)	Ring	Hamirpur-Sarkaghat-Bahambla-Ghumarwin-Hamirpur
12	Sunder Nagar	Yes	STM-16 (2.5 Gbps)+CPAN B2(10Gbps) = 12.5 Gbps	Ring	Sundernagar-Rewalsar-Mandi-Sundernagar
13	Nihri	Yes	STM-16 (2.5 Gbps)	Ring	Sundernagar-Nihri-Churag-basantpur-Shimla-Bilaspur-Sundernagar
14	Dhanotu	Yes	CPAN B1 (10 Gbps)	Ring	Mandi-Dhanotu-Sundernagar-Bilaspur-Shimla-Churag-Nihri-Dhanotu

Fig 2.3: OFC Backhaul of M/s BSNL in the identified four districts of HP

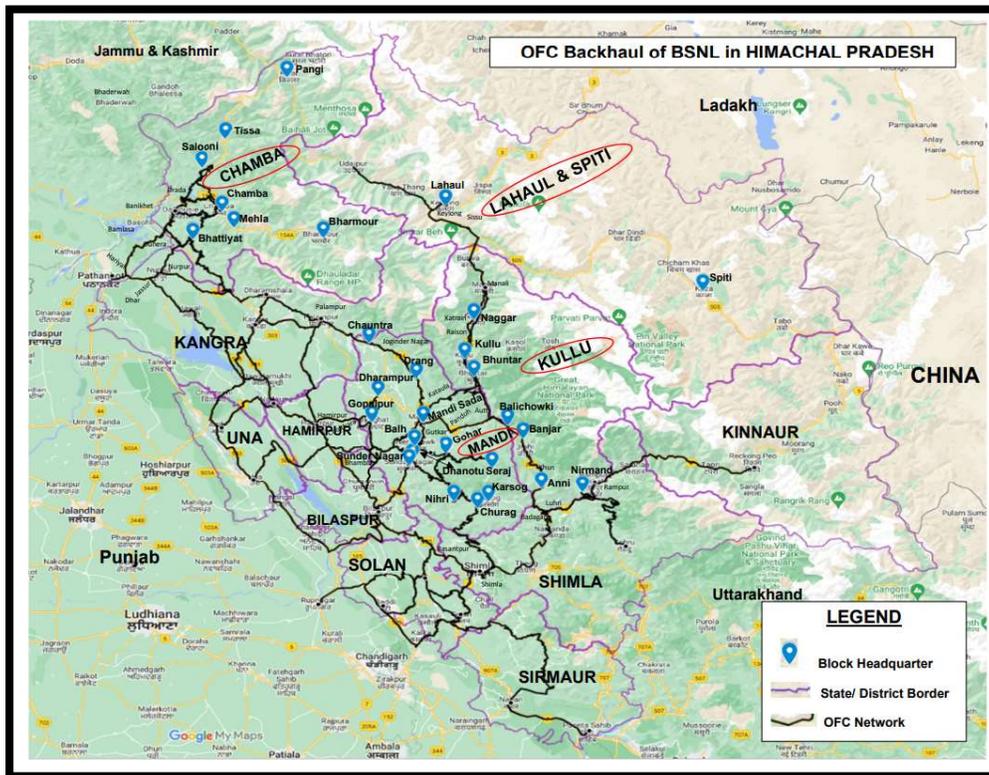
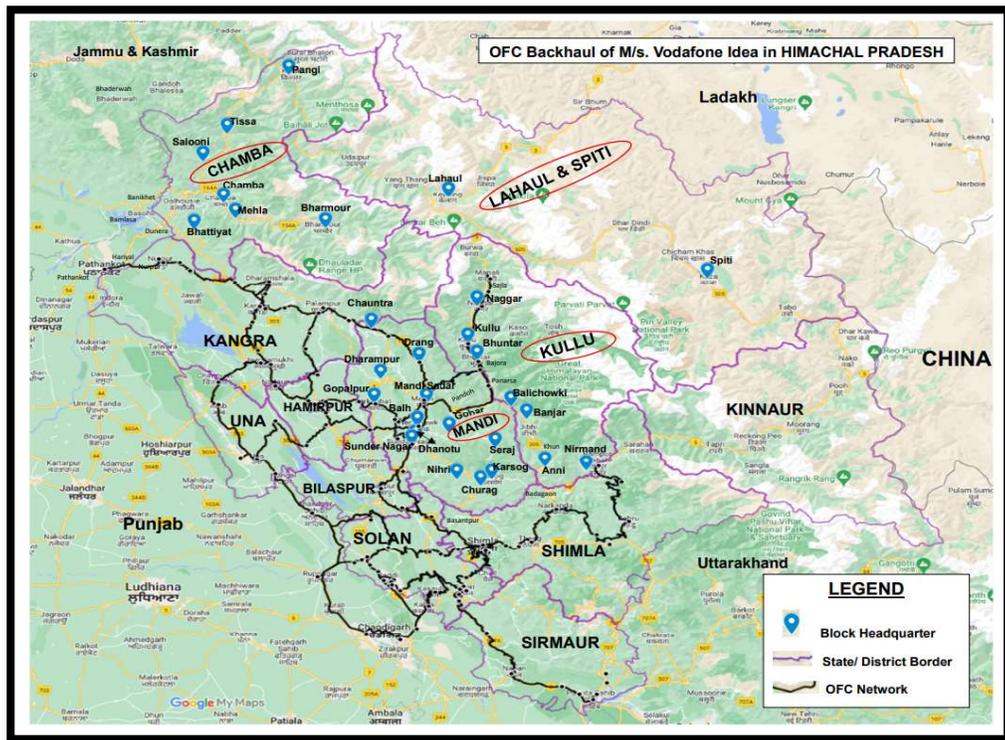


Table 2.5: Transmission Backhaul Layout details of M/s VI in the identified four districts of HP

Sr. No.	Block	Add/ Drop Provision Exists (Yes/ No)	If yes then what capacity	Whether on ring or linear OFC network?	Layout of the Core/ Access Ring or Linear network ensuring that the block headquarters are conneced on OFC network
Chamba District					
1	Bharmour	No			
2	Bhattiyat	No			
3	Chamba	No			
4	Mehla	No			
5	Tissa	No			
6	Pangi	No			
7	Salooni	No			
Kullu District					
1	Anni	No			
2	Banjar	No			
3	Bhuntar	Yes	SDH (STM-64)+ Packet (10G)	Ring	Mandi-Pandoh-Panarsa-Bajora-Bhuntar-Kullu-Mandi(Via Katola)
4	Kullu	Yes	SDH (STM-64)+ Packet (10G)	Ring	Mandi-Pandoh-Panarsa-Bajora-Bhuntar-Kullu-Mandi(Via Katola)
5	Naggarr	Yes	SDH (STM-64)+ Packet (10G)	Linear	Kullu-Naggarr-Sajla
6	Nirmand	No			
Lahaul & Spiti District					
1	Spiti	No			
2	Lahaul	No			
Mandi District					
1	Balh	No			
2	Seraj	No			
3	Balichowki	No			
4	Dharampur	No			
5	Gohar	No			
6	Drang	Yes	SDH (STM-64)+ Packet (10G)	Ring	Mandi-Joginder Nagar-Dharamshala-Jwalaji-

					Hamirpur-Ner Chowk-Mandi
7	Chauntra	No			
8	Churag	No			
9	Karsog	No			
10	Mandi Sadar	Yes	SDH (STM-64)+ Packet (10G)	Ring	Mandi-Joginder Nagar-Dharamshala-Jwalaji-Hamirpur-Ner Chowk-Mandi
11	Gopalpur	No			
12	Sunder Nagar	Yes	DWDM (20 G)	Ring	Sunder Nagar-Ner Chowk-Hamirpur-Jwalaji-Una-Agampur-Mohali-Baddi-Shimla-Bilaspur-Sunder Nagar
13	Nihri	No			
14	Dhanotu	Yes	SDH (STM-64)+ Packet (10G)	Ring	Sunder Nagar-Ner Chowk-Hamirpur-Jwalaji-Una-Agampur-Mohali-Baddi-Shimla-Bilaspur-Sunder Nagar

Fig 2.4 OFC Backhaul of M/s VI in the identified four districts of HP



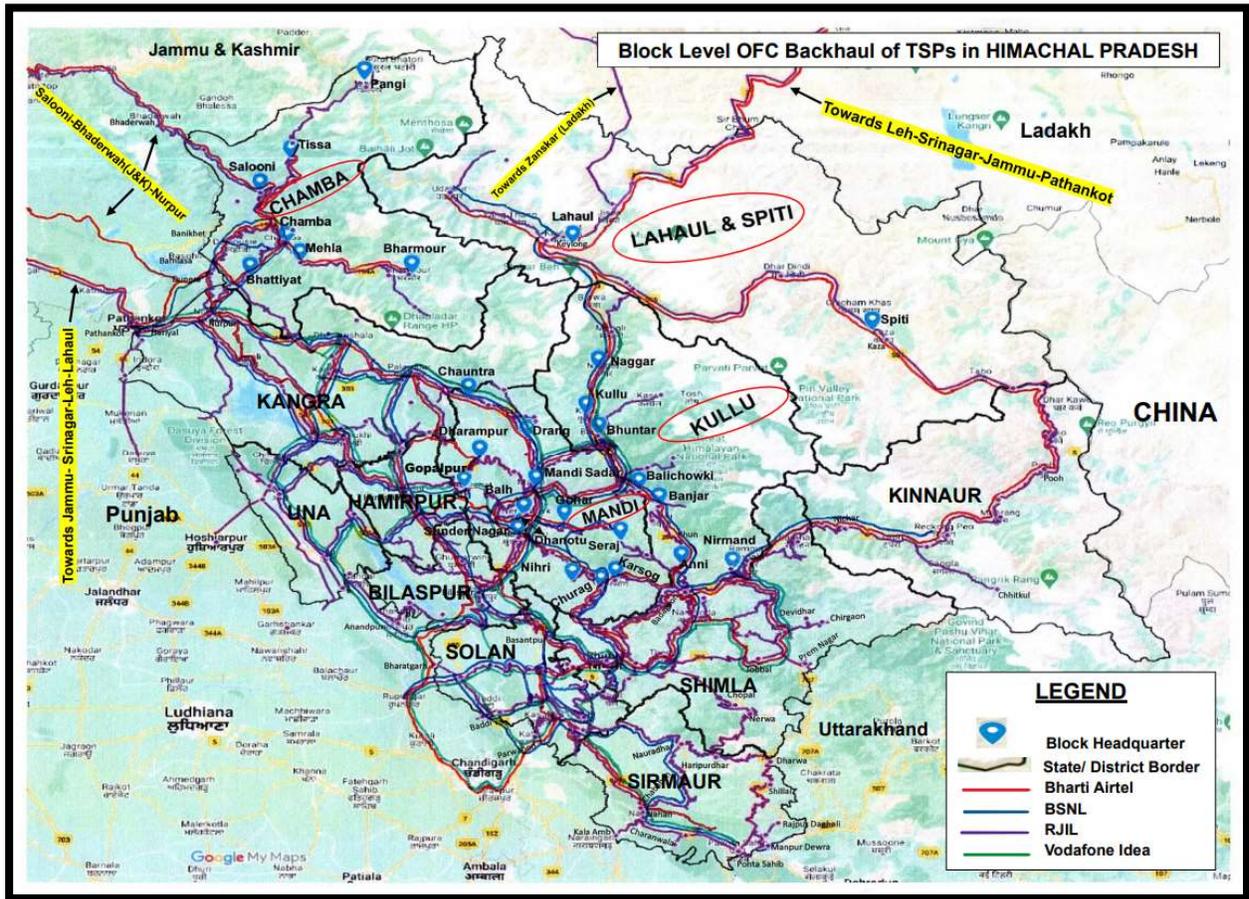
2.3 The OFC backhaul details provided by the TSPs were analysed and have been summarized in Table 2.6 to identify the block headquarters that are still connected on a linear backhaul network. The table consists of the details of the block headquarters location covered by OFC in both ring and linear architectures in Chamba, Kullu, Mandi, and Lahaul & Spiti districts respectively. TSPs with linear connectivity within a block are highlighted in **red**, those that have covered the block within a ring architecture are marked in **green**, and TSPs utilizing radio link/VSAT connectivity for the blocks are denoted in **violet**. From table 2.6 it is evident that there are two blocks, namely Tissa and Pangi in Chamba district, which are on linear OFC backhaul connectivity. Figure 2.5 illustrates the transmission layout details of all four TSPs in the region.

Table 2.6: List of blocks covered via ring or linear transmission backhaul in the identified four districts of HP

Sr. No.	Block	Number of TSP's presence	Block connected to Ring or Linear OFC Network	TSPs in Ring or Linear OFC Network or connected via Radio/VSAT to the block	Add/ Drop Provision Exists
Chamba District					
1	Bharmour	3	Ring	Airtel/ RJIL/ BSNL (Radio)	Yes
2	Bhattiyat	3	Ring	Airtel / BSNL/RJIL	Yes
3	Chamba	3	Ring	Airtel / BSNL/RJIL	Yes
4	Mehla	3	Ring	Airtel / RJIL/ BSNL (Radio)	Yes
5	Pangi	2	Linear	RJIL/BSNL (VSAT)	Yes
6	Salooni	3	Ring	Airtel / RJIL / BSNL (Radio)	Yes
7	Tissa	3	Linear	Airtel/RJIL/BSNL (Radio)	Yes
Kullu District					
1	Anni	3	Ring	Airtel / BSNL / RJIL	Yes
2	Banjar	2	Ring	Airtel / BSNL	Yes
3	Bhuntar	4	Ring	Airtel / BSNL / RJIL / VI	Yes
4	Kullu	4	Ring	Airtel / BSNL / RJIL / VI	Yes

5	Naggar	4	Ring	Airtel / BSNL / RJIL / VI	Yes
6	Nirmand	3	Ring	Airtel/BSNL / RJIL	Yes
Lahaul & Spiti District					
1	Lahaul	3	Ring	Airtel / BSNL / RJIL	Yes
2	Spiti	3	Ring	Airtel / RJIL/ BSNL (Radio)	Yes
Mandi District					
1	Balh	3	Ring	Airtel / BSNL / RJIL	Yes
2	Balichowki	3	Ring	Airtel / BSNL / RJIL	Yes
3	Chauntra	3	Ring	Airtel / BSNL / RJIL	Yes
4	Churag	3	Ring	Airtel / BSNL / RJIL	Yes
5	Dhanotu	4	Ring	Airtel / BSNL/ RJIL / VI	Yes
6	Dharampur	3	Ring	Airtel / BSNL / RJIL	Yes
7	Drang	4	Ring	Airtel / BSNL/ RJIL / VI	Yes
8	Gohar	2	Ring	Airtel / BSNL	Yes
9	Gopalpur	2	Ring	RJIL / BSNL	Yes
10	Karsog	2	Ring	Airtel / BSNL	Yes
11	Mandi Sadar	4	Ring	Airtel / BSNL / RJIL / VI	Yes
12	Nihari	3	Ring	Airtel / BSNL / RJIL	Yes
13	Seraj	3	Ring	Airtel / BSNL / RJIL	Yes
14	Sunder Nagar	4	Ring	Airtel / BSNL/ RJIL / VI	Yes

Fig 2.5 Combined OFC Backhaul of the TSPs operating in the four districts of HP



B. Recommendations

2.4 TRAI analyzed the existing layout of optical fibre-based backhaul transmission media deployed by various TSPs in Chamba, Kullu, Lahaul & Spiti, and Mandi districts. If the overall existing OFC laid out is considered (regardless of its ownership by a specific TSP), it is evident that all the block headquarter locations are mostly covered on backhaul OFC media (either in ring or in a linear architecture) by almost all TSPs except for M/s VI, which has very sparse presence in backhaul OFC media in selected few block headquarters location of Chamba and Mandi districts only.

2.5 As outlined in para 2.3 above, TRAI also collectively analyzed the overall backhaul network in the identified four districts of HP, irrespective of the

operator, it has been observed that two blocks, namely **Tissa** and **Pangi**, are currently operating on a linear OFC-based backhaul and are not integrated in the ring architecture by any of the operating TSPs. Further, no dark fibre by any operating IP-1 is existing on this route to plan a prospective OFC ring architecture. In order to connect these two blocks in a self-healing ring architecture, it is proposed that an optical fibre based backhaul of approximately 175 kilometers should be rolled out along the Tissa – Pangi – Udaipur route. A ballpark analysis of the expenditure requirements for extending the optical fibre-based high-capacity backhaul transmission network to these two blocks, is tabulated in Table 2.8 below. The rollout of new OFC along the above-mentioned route would consequently incorporate the Tissa and Pangi blocks into the fibre ring architecture of M/s BSNL.

2.6 The Authority recommends that USOF through BSNL should undertake a ground survey and fund the roll out of OFC backhaul connectivity from Tissa Block Headquarter to Udaipur via Pangi Block Headquarter.

Table 2.7: Total approximated expenditure involved in covering Pangi and Tissa blocks in a ring architecture.

Broad estimation of CAPEX and OPEX (per annum) required for providing high-capacity OFC based Transmission Backhaul				
Sl No	Item Name	Quantity Required	Unit Cost (in ₹)	Overall Cost (in ₹)
A) CAPEX (One-Time)				
(i)	6 Core OFC (of 1 km segment)	175 km	35000/km	61,25,000
(ii)	PLB HDPE Duct Cost	175 km	60,000/km	1,05,00,000
(iii)	Jointing Kits	175 Nos	2,000	3,50,000
(iv)	Cost of trenching, cable pulling and splicing	175 km	6,50,000/km	11,37,50,000
(v)	Cost of route indicators and joint indicators	525 Nos	1500	7,87,500
(vi)	Cost of joint enclosures	175 Nos	500	87,500
(vii)	Construction of Joint Box Housing of Pre-cast RCC Ring of 1.2m dia and 0.3 m height with base & cover	175 Nos	2,750	4,81,250

(viii)	Cost of transmission equipment (STM-4 Optimux with E1, FXO-FXS and Ethernet ports)*	2 Nos	7,10,000	14,20,000
(ix)	5 KVA portable generator	2 Nos	2,50,000	5,00,000
(x)	3.2 KVA UPS along with Solar panels (06), retrofit unit and batteries (04)	2 Nos	2,80,000	5,60,000
(xi)	Prefabricated shelter of 12 ft x 16 ft x 10 ft	2 Nos	2,88,000	5,76,000
(xii)	Mischarges(transportation, labour and Installation charges etc)	2 locations	1,50,000	3,00,000
			Total estimated CAPEX	13,54,37,250
b) OPEX (Per Annum)				
(i)	Miscellaneous operating expenditure per annum	2 locations	2,40,000	4,80,000
			Total estimated Expenditure (Per Annum)	13,59,17,250

* Transmission equipment and other items listed in CAPEX (viii)-(xii) and OPEX (i) are required for the Pangri and Tissa locations, as Udaipur already has the presence of this infrastructure as part of M/s BSNL's OFC PoP.

2.7 TRAI further conducted a detailed analysis of M/s BSNL's data in order to identify the blocks that are currently devoid of optical fibre based backhaul media. Based on the information furnished by M/s BSNL (table 2.4 above), it has been observed that there are six developmental blocks, as outlined in table 2.7 below, where M/s BSNL is currently operating backhaul network using microwave radio links and VSAT. To enhance the media capacity and to introduce more resilience, such backhaul link segments are immediately required to be upgraded on OFC. To address this issue, TRAI gathered data about the presence of any IP-1 (Infrastructure Provider Category 1) offered dark fibre resource, passing through the affected Block Headquarters in these identified four districts. These six block headquarter locations were also assessed for the presence of BBNL's fibre extended to gram panchayats under the Bharatnet scheme. BBNL's fibre is not present in any of these locations.

Table 2.8: Details of blocks operating on M/s BSNL's Microwave radio & VSAT in the identified four districts of HP

#	District	Block	Capacity of BSNL's Radio link / VSAT	Is dark fibre of any IP-I, passing through the Block Headquarter (Yes/No)	Nearest OFC PoP of BSNL from the block headquarter
1	Chamba	Bharmour	Radio Link(150 Mbps*2) = 300 Mbps	Yes	Chamba
2	Chamba	Mehla	Radio Link (150 Mbps)	Yes	Chamba
3	Chamba	Tissa	Radio Link (150 Mbps)	Yes	Surgani
4	Chamba	Salooni	Radio Link (150 Mbps)	Yes	Surgani
5	Lahaul & Spiti	Spiti (Kaza)	IDR (8 Mbps)	Yes	Keylong
6	Chamba	Pangi	VSAT (8 Mbps)	No	Udaipur

2.8 The Authority's viewpoint is that, until M/s BSNL is capable of deploying its own dedicated optical fibre for backhaul connectivity from the nearest Point of Presence (PoP) to the block headquarter locations, it is advisable to utilize available existing shared infrastructure in the region. The data gathered by TRAI as on 25 August 2023, indicates the availability of dark fibres (being provided by IP-1) from nearest BSNL PoP to all six block headquarter locations as tabulated above, which can be used for transitioning the current radio/VSAT-based backhaul links of M/s BSNL onto optical fiber cables (OFC). In fact, the other two TSPs operating in this region (i.e. M/s Bharti Airtel and M/s RJIL) have extended their respective connectivity to these blocks using the existing infrastructure of IP-1.

2.9 **The Authority recommends that M/s BSNL should enter into Service Level Agreement (SLA) agreement with the operating Infrastructure Provider(s) Category 1 (IP-1) in the region of Chamba and Lahaul & Spiti**

districts respectively to rent/lease readily available dark fibres. These dark fibres will facilitate the transition of BSNL's operations in block headquarters of Bharmour, Mehla, Tissa, Salooni, and Spiti (Kaza) respectively, as listed in Table 2.7 above, from radio/satellite-based medium to a linear optical fiber-based transmission backhaul. This strategic approach will not only enhance BSNL's existing bandwidth capacity for the backhaul infrastructure but can also lead to significant savings in operational expenditure (OPEX) by eliminating the need for bearing high VSAT bandwidth charges.

- 2.10 In order to effectively utilize the existing backhaul infrastructure and ensure the delivery of top-tier telecom services to residents with the least possible disruption, it becomes imperative for all TSPs operating within these four districts of HP to collaboratively explore resource pooling and integration. The realization of diverse self-healing access ring architectures, covering the block headquarters in Chamba, Kullu, Lahaul & Spiti, and Mandi districts, hinges on the collaborative resource pooling of all operational TSPs. This approach not only optimizes resource utilization but also lightens the individual operators' burden of undertaking fresh infrastructure investments in these districts which have very low Return on Investment (RoI) prospects.
- 2.11 TRAI has been continuously endeavoring towards improving backhaul and access telecom infrastructure in remote areas of the country from time to time. In this regard, the Authority vide its recommendations on 'Improving Telecom Coverage and Backhaul Infrastructure in far-flung areas of Ladakh' dated 24th April 2023 had discussed that considering the inhospitable terrain conditions and logistic difficulties in laying and maintenance of OFC, it can be prohibitively CAPEX intensive venture for any single operating licensed TSP to layout and maintain a self-healing core backhaul media

resource all by itself. In order to gainfully exploit the extant layout of backhaul resource and in order to extend high quality of telecom services (having minimum downtime) to inhabitants, it should be obligatory upon all operating TSPs operating in Ladakh to explore pooling and/ or dovetailing of resources. As self-healing access ring architecture can best be realized through resource pooling of all operating TSPs, the Authority had recommended that :

‘All operating TSPs having their backhaul transmission media must provide, on fair and non-discriminatory terms and conditions, access to their spare backhaul transmission media resource capacity via lease/ rent or on mutually agreeable terms and conditions, to any eligible licensed TSP/ ISP including implementing agencies of ongoing and futuristic USOF projects, who seeks access to such resource. In this regard, the Authority recommends that a committee headed by a Senior officer from TERM field unit of J&K at LSA level, and also involving suitable representative(s) of all operating TSPs of the LSA be formed at the earliest to help resource pooling across TSPs for optical fibre-based ring formation and to periodically review and resolve such representations at LSA level. In case of any impediment being experienced by any affected entity, a second level Committee at the DoT headquarter should be formed to periodically review all such cases and provide resolution by intervention at higher levels, if required.’

2.12 Further, in order to encourage initiatives and infrastructure sharing practices amongst operating TSPs, the Authority in its recommendations on ‘Use of Street Furniture for Small Cell and Aerial Fibre Deployment’ dated 29th November 2022 had stated that :

‘Charges paid by lessee TSP to lessor TSP for use of shared infrastructure should be reduced from the Gross Revenues of the lessor TSP to arrive at Applicable Gross Revenue (ApGR) of such Lessor TSP. To implement this, a new item named as “Revenue earned from other licensed TSPs from

sharing/leasing of infrastructure” should be inserted under existing license condition named as “List of other items to be excluded from GR to arrive at ApGR.’

2.13 In view of the aforementioned, **the Authority in line with its earlier recommendation made vide Para 2.34 (a) and (b) of “Improving Telecom Coverage and Backhaul Infrastructure in far-flung areas of Ladakh” dated 24th April 2023, recommends the following for promoting efficient utilization of backhaul transmission resources and facilitating collaboration among TSPs, ISPs, and USOF implementing agencies across the designated districts in Himachal Pradesh:**

- a) **All telecom service providers (TSPs) operating in Lahaul & Spiti, Chamba, Mandi, and Kullu districts of Himachal Pradesh must grant access to their spare backhaul transmission resource capacity to any eligible licensed TSP/ISP, including implementing agencies of ongoing and future Universal Service Obligation Fund (USOF) projects. This access should be provided on fair and non-discriminatory terms and conditions, either through lease/rent or on mutually agreed terms.**

- b) **To facilitate resource pooling and the formation of optical fiber-based self-healing rings, the Authority recommends formation of a committee at the earliest. This committee should be headed by a senior officer from the Telecom Enforcement, Resource and Monitoring (TERM) field unit of Himachal Pradesh at the Licensed Service Area (LSA) level. It should also include suitable representatives from all TSPs operating in the LSA. The committee's role inter-alia will be to periodically review and resolve representations related to resource sharing and pooling at the LSA level.**

- c) **In case any affected entity faces obstacles or issues, a second-level committee should be established at the Department of Telecommunications (DoT) headquarters. This committee will review all such cases periodically and provide resolutions through intervention at higher levels, if necessary.**
- d) **In this regard, as already brought out by the Authority in its recommendations made vide paragraph 2.113 of its recommendations on ‘Use of Street Furniture for Small Cell and Aerial Fibre Deployment’ dated 29th November 2022, in order to encourage such initiatives and infrastructure sharing practices amongst operating TSPs, the Authority recommends that the charges paid by licensed lessee TSP to any licensed lessor TSP for the use of spare backhaul media transmission resource capacity of the latter, should be omitted from the Gross Revenues of the lessor TSP to arrive at Applicable Gross Revenue (ApGR) of such Lessor TSP. To implement this, a new item named as “Revenue earned from other licensed TSPs from sharing/leasing of infrastructure” should be inserted under the existing license condition, named as “List of other items to be excluded from GR to arrive at ApGR”. This modification should be carried out in UL, NLD and ISP licenses. Also, the information collected in “Format of Statement of Revenue and License Fee” that is attached with respective authorization chapter in UL, and also in NLD and ISP licenses needs to be modified to capture information from such revenues under a separate head.**

C. Other Miscellaneous Issues

I. Restoration Charges Being Levied by Various Municipal Corporations And Local Bodies In HP

- 2.14 TRAI delegation during its visit to HP in June 2023 while interacting with various stakeholders including TSPs inferred that the RoW charges (termed as 'Restoration Charges') levied by various Municipal Corporations and Local Bodies in HP are exorbitantly prohibitive for TSPs establishing underground telegraph infrastructure in the state. According to Chapter 2 paragraph 5(c) of the HP RoW policy promulgated on 24 February 2021, the guidelines issued by HP PWD are to be followed for calculating the restoration charges. However, it is learnt that the restoration charges levied by HP PWD upon TSPs establishing underground telegraph resource are significantly higher as compared to the RoW charges being levied upon by similar local bodies in the neighboring states of Punjab, Haryana, Jammu & Kashmir etc.
- 2.15 As a fallout of repeated representations to the Government of HP in this regard by TSPs and its association, an internal letter dated 21 February 2022 (attached as **Annexure-I**) was issued by Director IT Government of HP to all concerned departments in HP levying restoration charges. However, the restoration charges being levied by Municipal Corporations and local bodies of HP continue to remain exorbitantly prohibitive even to this date. India is at the cusp of rolling of the fastest 5G network in the world whereas the overall tower fiberization percentage² in the country stands at barely 36%. If the digital communication infrastructure is to be built in these remote and relatively underdeveloped four districts of HP, it will be for providing Government to citizen services mainly like e-Education, e-Health, digital payment and direct benefit transfer etc. With high RoW charges

²<https://www.newindianexpress.com/business/2023/mar/14/rs-12-lakhtelecom-towers-need-to-be-deployed-by-fy24-2555898.html#:~:text=NEW%20DELHI%3A%20India%20needs%20to,of%205G%20in%20the%20country.>

prevailing in the state, augmented with inclement weather conditions, limited working window and difficult terrain conditions, the extent of tower fiberization rate in the state stands at mere 30 percent³ compared to the rest of India. If the Government of HP does not provide the required support in form subsidizing RoW charges/ exemptions, it will not only impede the fiberized telecom network proliferation but will also affect the quality of telecom services being provided to its inhabitants.

- 2.16 In view of the aforementioned, **the Authority recommends that the Department of Telecommunications (DoT) must engage with the Government of Himachal Pradesh (HP) to harmonize its Right of Way (RoW) policy of 2021 with the Indian Telegraph Right of Way Rules, 2016 Amendment dated 17 August 2022 in which, a provision at paragraph 6 (3) of Part II (Charges for restoration) also mandates telecom licensee(s) to furnish an undertaking supported by a Performance Bank Guarantee (amounting to 20% of the restoration charges for immovable properties) to bear the responsibility for promptly restoring any damages incurred during laying out of any underground telegraph infrastructure.**

II. Mandatory Utilization of Network of BSNL/ MTNL For Internet/ Broadband, Landline/ Leased line By All Ministries/ Departments of Government of India

- 2.17 During the field visits, TRAI officials also met with senior Army officials to understand their telecom infrastructure requirements for enhancing military-civic cohesiveness and for improving telecom coverage in the general area including forward locations adjoining Tibetan Autonomous

³<https://tele.net.in/himachal-pradesh-has-been-successful-in-extending-telecom-services-views-of-mukesh-repaswal-director-government-of-himachal-pradesh/#:~:text=This%20was%20particularly%20evident%20during,network%20services%20provided%20to%20citizens.>

Region (TAR). During the aforementioned interaction, the Army officials brought it to the notice of TRAI delegation that in order to cater to their internal backhaul communication and surveillance feed requirements, the security forces deployed in far-flung forward region are often required to obtain OFC based circuits on lease for their captive use from operating TSPs in the general area. However, the procedure of hiring such leased circuits by the security forces (including Armed Forces under Ministry of Defence (MoD) and para-military forces including CAPFs under Ministry of Home Affairs (MHA)) are governed by DoT OM No F.No.19-1/2019-SU-I dated 12 October 2020 (copy attached at **Annexure -II**) which prioritizes utilization of BSNL/MTNL capacities (if available) over such capacities being offered by any other IP-1/ private TSPs in the general area.

- 2.18 The OFC based infrastructure being offered on lease or for its captive use by BSNL itself has not yet been rolled out in most of the forward locations where troops are deployed and/ or in adjoining rear locations in the hinterland where security forces are headquartered. However, few IP-1s and/ or private TSPs have their resource available in near vicinity, which can serve the purpose. Further, in order to abide by the extant procedures in vogue, the security forces deployed in such regions of HP (and in pan-India regions alike) are required to obtain a 'No Objection Certificate' (NoC) from BSNL certifying unavailability of their network resources, before obtaining such capacity from any other IP-1 or private TSPs having its presence in the region. However, it was brought to the notice of the visiting TRAI delegation that accord of NoC by M/s BSNL is inadvertently getting delayed (more than six months in some cases) on most occasions without furnishing any reason or observation. Such delays in accord of NoC by M/s BSNL on aforementioned pretext is adversely impacting the inescapable security measures that are required to be undertaken by the security forces deployed in such regions.

2.19 In view of the above stated facts, **the Authority recommends that the Department of Telecommunications (DoT) should issue a revised amendment to its Office Memorandum (OM) No. F.No.19-1/2019-SU-I dated 12 October 2020, applicable to all Ministries/Departments of the Government of India, Central Public Sector Undertakings (CPSEs), Autonomous Bodies, etc., under the central government, incorporating the following provision:**

- (a) **In cases where there is non-existence of BSNL/MTNL network coverage or unavailability of capacity/network infrastructure for internet/broadband, landline and leased line requirements at any of the Pan-India location(s), BSNL/MTNL shall grant the No Objection Certificate (NoC) to the concerned ministry/Government Department within 30 days from the date of receipt of the application or from date of receipt of clarification on any observation of BSNL/MTNL, whichever is later, failing which the NOC will be presumed to have been granted.**

III. Utilization Of Funds Allocated to Government Of Himachal Pradesh Under Scheme for Special Assistance To States For Capital Investment

2.20 In a letter dated 6th April 2022, the Department of Expenditure (DoE), Ministry of Finance (MoF), Government of India, provided guidelines to all Indian states regarding the 'Scheme for Special Assistance to States for Capital Investment for 2022-23.' Under Part-V of the scheme, focusing on Optical Fibre Cable (OFC) Network, DoE allocated a budget of Rs 3,000 crore to states for capital projects related to OFC infrastructure. These funds are intended to extend the BharatNet network to village-level institutions such

as schools, health centers, Anganwadi centers, police stations, Krishi Vikas Kendra, post offices, ration shops, and more. This extension will be achieved by utilizing the existing Last Mile Connectivity (LMC) infrastructure on the OFC network and providing interest-free loans to state governments for a period of 50 years. The primary objective of this grant is to facilitate the deployment of last mile lateral OFC connectivity from the BharatNet GP/VC (Gram Panchayat/Village Cluster) to various village-level establishments. By utilizing the grant, OFC infrastructure can be laid to enable high-speed broadband internet connectivity in schools, health centers, police stations, ration shops, Anganwadi centers, and other relevant facilities within the villages."

2.21 Government of HP under the above-mentioned scheme has been allotted Rs 50 Crore (Rupees Fifty Crore) vide DoE letter dated 14 December 2022 (copy attached at **Annexure-III**). The Department of IT, Government of Himachal Pradesh has thereafter executed a memorandum of Understanding (MoU) on 31 March 2023 with BSNL, HP Telecom Circle as the executing agency for extending telecom connectivity to 81 (Eighty One) un-connected villages in HP. BSNL HP Telecom Circle representative during interaction had informed the TRAI delegation that it inter-alia has adopted the approach involving obtaining RoW permission to procure and freshly layout 450 km of 24 core OFC fibre along *Koksar-Losar-Kaza-Hurling-Sumdo-ReckongPeo axis* and further arterial OFCs emanating from the aforementioned main axis, for extending 550 new Fibre to The Home (FTTH) connections to 81 un-connected villages.

2.22 The proposed expansion plan by BSNL to lay fresh optical fibre on the above-mentioned route is not only a time-consuming approach but is extremely CAPEX intensive as well. Further, given the state of poor return on investment vis-à-vis the proposed CAPEX intensive resource roll-out, it is more prudent to make use of common sharable infrastructure (in the form

of dark fibres laid out by an IP-1) already present in the region. For these reasons, almost all other telecom service providers are riding on the OFC already laid by IP-1s in the targeted region. TRAI vide its letters dated 27 August 2023 (copies attached at **Annexure-IV**) had approached Secretary IT, Government of HP, CMD, BSNL and Secretary DoT respectively, strongly recommending to assess the option of hiring/ leasing of readily available OFC resource from IP-1/other TSPs vis-à-vis fresh layout in HP (and other Pan-India locations alike) as the former option is not only time saving but is also cost effective. It is also pertinent to mention here that the time limit for expenditure of the allocated special assistance fund and its associated project implementation is one year and therefore it is imperative to look for utilization of existing resources rather than laying new cables and duplicating infrastructure in remote areas where it is unlikely to be fully utilized.

2.23 The Authority therefore recommends that in view of the number of concurrent projects under ‘Scheme of Special Assistance to States for Capital Investment for 2022-23’ that are currently under planning cum implementation phase in the country where BSNL is likely to be the implementing agency for such projects, BSNL entities in respective circles including HP be instructed by the Government to undertake prior assessment and suitably dovetail the use of readily available common sharable infrastructure in its roll out plan in the targeted region.

IV. Catering to the needs of Security Forces in the Region

2.24 During field visit to HP and interaction with Army officials, it could be inferred that there are several forward locations adjoining TAR which have sizeable deployment of troops (including Armed Forces personnel, paramilitary forces and CAPFs). Most of these forward locations do not have any

cellular mobile coverage with internet, which leads to several issues including the following:

- (a) The TAR has installed their mobile towers at close proximity of its forward areas and their signals healthily spill over across into the Indian side up to a sizeable distance. This poses strategic difficulty including security lapse as any Indian mobile phones automatically getting hooked on to the network signals spilling over from across the border.
- (b) The troops deployed at forward posts including difficult areas where the connectivity itself is cut off for months together also need to talk to their friends and families back home. If the troops remain connected from the physical world including their near and dear ones, it will help in boosting their morale.

2.25 The cellular mobile connectivity acts as a back-up means of communication in case of any border incidents and, therefore, it would be strategically prudent to deploy mobile towers on forward posts. Also, on several occasions there are instances of cross border violations/ skirmishes by the adversary and videos of such conflicts are required to be immediately shared with the Headquarters, which is not possible with the low bandwidth radio communication resource that the defence forces use. Therefore, high bandwidth mobile connectivity at forward posts is a must. The above-mentioned issues have also been highlighted by Sashastra Seema Bal (SSB) during their meeting with Chairman TRAI in July 2023 where they have requested TRAI for facilitating high bandwidth cellular mobile connectivity at their forward locations in remote areas of UP, West Bengal, Assam, Uttarakhand, MP and Uttar Pradesh.

- 2.26 Universal Service Obligation fund is being raised for providing connectivity in remote areas. Ironically, neither much emphasis has been given on providing connectivity to the troops who are deployed at forward locations, nor Ministry of Home Affairs (MHA), Ministry of Defence (MoD)/Chief of Defence Staff (CDS) Secretariat have been able to undertake initiatives focused at facilitating cellular mobile connectivity with high-speed internet to the troops deployed at forward locations. Further, DoT in August 2022 introduced an amendment into its licensing norms by removing restrictions on '*forced fading*' of cellular mobile signals near international border areas, paving way for facilitating better mobile coverage in these locations. However, DoT has not yet come out with any exclusive Pan-India USOF or Central Government budgetary funded scheme to roll out dedicated high speed 4G/ 5G based cellular mobile infrastructure at remote and far-flung border locations of strategic importance. The Authority feels that a separate focus by DoT in consultation with MoD and MHA needs to be given for rolling out high bandwidth cellular mobile connectivity to all forward locations not only for the troops deployed there but also to safeguard the strategic interest of the nation.
- 2.27 The Authority feels that there is a need to create a separate head of funds for providing high bandwidth telecom coverage at all forward and strategically important Pan-India locations. The financial resources can be drawn from USOF as well as from the budgetary allocation from Central Government towards DoT/MHA/MoD/CDS Secretariat.
- 2.28 In view of the aforementioned, **the Authority recommends that a separate dedicated amount be set aside either out of USOF or from separate budgetary support from Central Government to cater for rolling out of high speed 4G/5G based cellular mobile coverage (including backhaul) at forward border area locations of strategic importance having**

significant troops deployment in HP as well as other states. The fund should also cater to the operating expenditure of such sites.

V. Use of Captive OFC Network of Defence Forces for Rolling out Cellular Mobile Network with High Speed Internet in Forward Areas

2.29 Project Kranti and ASCON Phase-IV are two distinct Nationwide OFC Network projects being implemented for defence communication needs in hinterland and forward areas respectively, wherein almost 60,000+ km of OFC is being rolled out for exclusive use by defence forces. Owing to ab-initio deployment of defence forces along the border areas in the state, the aforementioned two OFC resources have percolated extensively into these forward regions. The continued serviceability of this network is also being ensured using microwave and satellite-based overlay to cater for disruptions occurring in terrestrial based fiber network. Further, it is also learnt that these OFC resources laid out especially in the forward regions are sufficiently abundant to comfortably cater for the communication and surveillance requirements of security forces. These spare OFC media networks can not only prove to be significantly instrumental in expediting rolling out of 4G based telecom coverage in such forward areas with concentrated troop disposition. TRAI vide its earlier recommendations on ‘*Improving Telecom Connectivity/Infrastructure in far-flung areas of Himachal Pradesh*’ dated 12 December 2022 had stated that :

“DoT should take up with Ministry of Defence (MoD) for allocation of one/ two pair of OFC on NFS network for extending telecom coverage (including broadband services) to the villages located in far-flung or border areas in the state under BharatNet project. In case the same is not feasible, MoD may be approached to allocate suitable bandwidth on its existing functional OFC to extend the telecom coverage to such villages.”

2.30 Based on the aforementioned recommendation, DoT had approached MoD in this regard however NFS Cell vide its letter dated 31 January 2023 (copy attached at **Annexure-V**) has declined sharing of NFS assets with other agencies on pretext of ‘*security requirements*’ for the Armed Forces. The Authority is already informed about the fact that in order to meet its pan-India backhaul communication requirements, the Armed Forces in addition to its captive OFC network, is also extensively using OFC media / leased circuits on OFC from licensed TSPs like M/s Airtel, M/s PGCIL, M/s RailTel and M/s BSNL etc. These aforementioned OFC media / leased circuits are not exclusive, dedicated and air-gapped communication networks. However, the Armed Forces have been always using terminal end Bulk Encryption Units (BEUs) having robust encryption algorithms, on such OFC media/ leased bandwidth to successfully apply its own layer of security and make these media/ circuits operationally suitable. Further, Armed Forces as a regular security practice also use these terminal end BEUs on its captive backhaul OFCs as well to incorporate its own layer of secrecy. Drawing parallel and inference both from the afore stated facts, it appears to be very much feasible for the Armed Forces to temporarily share one pair of OFC media resources from its captive pan-India OFC media network, with DoT for rolling out 4G/ 5G based cellular mobile services with high-speed internet connectivity for its troops in forward locations adjoining border areas.

2.31 Based on parallel and inferences drawn from facts stated at paragraph 2.24 above, **the Authority recommends the following:**

- a. **DoT/ USOF must re-engage with MoD to obtain one pair of OFC on lease for a period of five years (on mutually agreeable terms and conditions) from any of the captive OFC media network (also a national asset) of the latter, to secure a readily laid out OFC media resource for rolling out 4G/ 5G based cellular mobile services and**

high-speed internet connectivity in pan-India forward locations adjoining border areas using separate dedicated amount set aside either out of USOF or from separate budgetary support from Central Government, as proposed in paragraph 2.28 above.

- b. Further a clause must be introduced in the contract document stating that it should be mandatorily incumbent upon the USOF nominated implementing agency to roll out its own OFC fibre within five years of contract allotment, to completely release the OFC media leased from Armed Forces in a functional state of re-use.**

Chapter-III

SUMMARY OF RECOMMENDATIONS

3.1 The Authority recommends that USOF through BSNL should undertake a ground survey and fund the roll out of OFC backhaul connectivity from Tissa Block Headquarter to Udaipur via Pangi Block Headquarter.

[Para 2.6]

3.2 The Authority recommends that M/s BSNL should enter into Service Level Agreement (SLA) agreement with the operating Infrastructure Provider(s) Category 1 (IP-1) in the region of Chamba and Lahaul & Spiti districts respectively to rent/lease readily available dark fibres. These dark fibres will facilitate the transition of BSNL's operations in block headquarters of Bharmour, Mehla, Tissa, Salooni, and Spiti (Kaza) respectively, as listed in Table 2.7 above, from radio/satellite-based medium to a linear optical fiber-based transmission backhaul. This strategic approach will not only enhance BSNL's existing bandwidth capacity for the backhaul infrastructure but can also lead to significant savings in operational expenditure (OPEX) by eliminating the need for bearing high VSAT bandwidth charges.

[Para 2.9]

3.3 The Authority, in line with its earlier recommendation made vide Para 2.34 (a) and (b) of “Improving Telecom Coverage and Backhaul Infrastructure in far-flung areas of Ladakh” dated 24th April 2023, recommends the following for promoting efficient utilization of backhaul transmission resources and facilitating collaboration among

TSPs, ISPs, and USOF implementing agencies across the designated districts in Himachal Pradesh:

- a) **All telecom service providers (TSPs) operating in Lahaul & Spiti, Chamba, Mandi, and Kullu districts of Himachal Pradesh must grant access to their spare backhaul transmission resource capacity to any eligible licensed TSP/ISP, including implementing agencies of ongoing and future Universal Service Obligation Fund (USOF) projects. This access should be provided on fair and non-discriminatory terms and conditions, either through lease/rent or on mutually agreed terms.**

- b) **To facilitate resource pooling and the formation of optical fiber-based self-healing rings, the Authority recommends formation of a committee at the earliest. This committee should be headed by a senior officer from the Telecom Enforcement, Resource and Monitoring (TERM) field unit of Himachal Pradesh at the Licensed Service Area (LSA) level. It should also include suitable representatives from all TSPs operating in the LSA. The committee's role inter-alia will be to periodically review and resolve representations related to resource sharing and pooling at the LSA level.**

- c) **In case any affected entity faces obstacles or issues, a second-level committee should be established at the Department of Telecommunications (DoT) headquarters. This committee will review all such cases periodically and provide resolutions through intervention at higher levels, if necessary.**

- d) **In this regard, as already brought out by the Authority in its recommendations made vide paragraph 2.113 of its recommendations on 'Use of Street Furniture for Small Cell and**

Aerial Fibre Deployment’ dated 29th November 2022, in order to encourage such initiatives and infrastructure sharing practices amongst operating TSPs, the Authority recommends that the charges paid by licensed lessee TSP to any licensed lessor TSP for the use of spare backhaul media transmission resource capacity of the latter, should be omitted from the Gross Revenues of the lessor TSP to arrive at Applicable Gross Revenue (ApGR) of such Lessor TSP. To implement this, a new item named as “Revenue earned from other licensed TSPs from sharing/leasing of infrastructure” should be inserted under the existing license condition, named as “List of other items to be excluded from GR to arrive at ApGR”. This modification should be carried out in UL, NLD and ISP licenses. Also, the information collected in “Format of Statement of Revenue and License Fee” that is attached with respective authorization chapter in UL, and also in NLD and ISP licenses needs to be modified to capture information from such revenues under a separate head.

[Para 2.13]

3.4 The Authority recommends that the Department of Telecommunications (DoT) must engage with the Government of Himachal Pradesh (HP) to harmonize its Right of Way (RoW) policy of 2021 with the Indian Telegraph Right of Way Rules, 2016 Amendment dated 17 August 2022 in which, a provision at paragraph 6 (3) of Part II (Charges for restoration) also mandates telecom licensee(s) to furnish an undertaking supported by a Performance Bank Guarantee (amounting to 20% of the restoration charges for immovable properties) to bear the responsibility for promptly restoring any damages incurred during laying out of any underground telegraph infrastructure.

[Para 2.16]

3.5 The Authority recommends that the Department of Telecommunications (DoT) should issue a revised amendment to its Office Memorandum (OM) No. F.No.19-1/2019-SU-I dated 12 October 2020, applicable to all Ministries/Departments of the Government of India, Central Public Sector Undertakings (CPSEs), Autonomous Bodies, etc., under the central government, incorporating the following provision:

(a) In cases where there is non-existence of BSNL/MTNL network coverage or unavailability of capacity/network infrastructure for internet/broadband, landline and leased line requirements at any of the Pan-India location(s), BSNL/MTNL shall grant the No Objection Certificate (NoC) to the concerned ministry/Government Department within 30 days from the date of receipt of the application or from date of receipt of clarification on any observation of BSNL/MTNL, whichever is later, failing which the NOC will be presumed to have been granted.

[Para 2.19]

3.6 The Authority therefore recommends that in view of the number of concurrent projects under ‘Scheme of Special Assistance to States for Capital Investment for 2022-23’ that are currently under planning cum implementation phase in the country where BSNL is likely to be the implementing agency for such projects, BSNL entities in respective circles including HP be instructed by the Government to undertake prior assessment and suitably dovetail the use of readily available common sharable infrastructure in its roll out plan in the targeted region.

[Para 2.23]

3.7 The Authority recommends that a separate dedicated amount be set aside either out of USOF or from separate budgetary support from Central Government to cater for rolling out of high speed 4G/5G based cellular mobile coverage (including backhaul) at forward border area locations of strategic importance having significant troops deployment in HP as well as other states. The fund should also cater to the operating expenditure of such sites.

[Para 2.28]

3.8 The Authority recommends the following:

- a. DoT/ USOF must re-engage with MoD to obtain one pair of OFC on lease for a period of five years (on mutually agreeable terms and conditions) from any of the captive OFC media network (also a national asset) of the latter, to secure a readily laid out OFC media resource for rolling out 4G/ 5G based cellular mobile services and high-speed internet connectivity in pan-India forward locations adjoining border areas using separate dedicated fund set aside either out of USOF or from separate budgetary support from Central Government, as proposed in paragraph 2.28 above.**

- b. Further, a clause must be introduced in the contract document stating that it should be mandatorily incumbent upon the USOF nominated implementing agency to roll out its own OFC fibre within five years of contract allotment, to completely release the OFC media leased from Armed Forces in a functional state of re-use.**

[Para 2.31]

I/118876/2022

No. SITE-F05(7)/1/2017-3743-IT SECTION-GoHP-
Department of Information Technology
Government of Himachal Pradesh

138

From

Director,
Department of Information Technology,
Himachal Pradesh.

To

The Director,
Urban Development Department,
Palika Bhavan, Talland, Shimla-02.

The Director,
Panchayati Raj / Rural Development Department,
SDA Complex, Kasumpti-09.

The Director,
Town and Country Planning Department,
Yojna Bhawan, Block No. 32A, SDA Complex,
Vikas Nagar, Shimla-09.

The Member Secretary,
Pollution Control Board Department,
Him Parivesh, Phase 3, New Shimla-09.

The CEO,
Baddi-Barotiwala-Nalagarh Authority (BBNDA)
Baddi, PNB-4131, Distt. Solan (H.P).

The Managing Director,
HPSEBL,
Vidyut Bhawan, Kumar House, Shimla-04.

The Engineer-in-Chief,
HP Public Works Department,
Nigam Vihar, Shimla -02.

Dated: Shimla-171013

21/2/22

February, 2022

Subject: **Regarding Right of Way charges clarification.**

Sir,

With reference to the subject cited above, it is informed that IT Department has notified revised Himachal Pradesh Right of Way Policy, 2021 vide Notification No. IT-(F)1-1/2020 dated: 09.02.2021. The notified RoW Policy, 2021 is available at URL <https://himachalnit.gov.in/right-of-way-policy>. In this regard, it is informed that TSPs have

raised concern about charges being levied by MCs/ ULBs/ GPs which are now not part of the revised Right of Way (RoW) Policy, 2021 such as:

1. Some of the MCs are levying following annual recurring charges for laying underground cable/ OFC in addition to RoW Charges mentioned as under:

S. No	Authorities	Charges (Per Meter)
1	Gram Panchayat	1500
2	PWD	1600-1800
3	Shimla MC	2500-2700
4	NHAI	2000

In this regard it is informed that as per clause 7(E) of the revised Right of Way (RoW) Policy, 2021 notified by this Department vide Notification No. IT-(F)1-1/2020 dated 09.02.2021, there is provision of only onetime administrative charges for overground telecom infrastructure @ Rs 1,000 per application and Rs 1000/Km for underground telecom infrastructure. These charges are to be paid by the TSPs/ ISPs at the time of submission of application form while seeking NOC from the Appropriate Authority. The concerned department can charges annual rental only in the case when the proposed tower is to be erected on government land/ building.

2. Apart from above mentioned onetime charges, the departments can levy additional charges towards restoration of damaged road (clause 5(C) of the revised Right of Way (RoW) Policy, 2021 notified by this Department vide Notification No. IT-(F)1-1/2020 dated 09.02.2021) and charges for such expenses to be fixed by State Government from time to time. The guidelines issued by PWD, in this regard, shall be followed. The damages to government property are also covered in the clause 5 of the said policy. Similarly, rates for using existing pole structures of HPSEBL are defined in clause 5 of the revised Right of Way (RoW) Policy, 2021.
3. Mobile Tower matters are still being taken up in the Gram Sabha for approval which is delaying the overall approval process. Whereas, there is no such specific requirement in the revised Right of Way (RoW) Policy, 2021.

In this regard, it is informed that charges to be levied on TSPs/ ISPs are already defined in the revised Right of Way (RoW) Policy, 2021. Further, it is also informed that a RoW Portal has been developed by IT Department under Single Window Clearance System of Industries Department to facilitate TSPs/ ISPs to submit online applications for seeking NOCs from Appropriate Authorities and the same can be accessed at <https://row.hp.gov.in>. It is, therefore proposed that process for granting approval and levying charges may be done online only as per revised Right of Way (RoW) Policy, 2021.

Yours sincerely,

M Repaswal

21-02-22

(Mukesh Repaswal, IAS)

**Director,
Department of Information Technology,
Himachal Pradesh.**

Government of India
F.No. 19-1/2019-SU-I
Ministry of Communications
Department of Telecommunications

Sanchar Bhawan, New Delhi,
The, 12th October, 2020

OFFICE MEMORANDUM

Subject: Mandatory utilization of network of Bharat Sanchar Nigam Limited (BSNL) and Mahanagar Telephone Nigam Limited (MTNL) for internet/broadband, landline/leased line by all Ministries/Departments of Government of India/Central Public Sector Undertakings (CPSEs)/Autonomous Bodies etc. under Central Government- regarding.

The Government of India has, inter-alia, approved the mandatory utilization of capacities of BSNL and MTNL by all Ministries/Departments of Government of India/CPSEs/Central Autonomous Bodies. All Ministries/Departments are accordingly requested to issue necessary instructions including to CPSEs/Central Autonomous Organizations under their control for mandatory utilization of BSNL/MTNL network for internet/ broadband, landline and leased line requirements.

2. This issues in consultation with the Department of Expenditure, Ministry of Finance and with the approval of the Competent Authority. (Copy enclosed)



(Jitin Bansal)
Director (PSU Affairs)

Mob: 70150 66206

To,

Secretaries of all Ministries/Departments of Government of India.

Copy to:

- I. Shri S.G.P. Verghese, Director, Cabinet Secretariat, Government of India, New Delhi.
- II. Secretary to the Government of India, Department of Expenditure (Ministry of Finance), North Block, New Delhi w.r.t. O.M. No. 24(3)/E.Coord/2018 dated 04th September, 2020.
- III. CMD, BSNL/CMD, MTNL

Annexure-I

Most Immediate

F. No. 44(1)/PF-S/(CAPEX)-Part-V/2022-23-SACE-19
 Government of India
 Ministry of Finance
 Department of Expenditure
 Public Finance-States Division

New Delhi, 14/12/2022

To
 The Pay & Accounts Officer,
 Department of Expenditure,
 Ministry of Finance,
 New Delhi

Subject: 'On Account' of payment of loan under Part-V of the "Scheme for Special Assistance as Loan to States for Capital Investment" in 2022-23.

Sir,

The undersigned is directed to convey the sanction of the President of India to the payment of Rs. 5000.00 Lakh (Rupees Fifty Crore only) being the loan under Part-V of the 'Scheme for Special Assistance to States for Capital Investment for 2022-23' under Demand No. 42 of Department of Expenditure for the financial year 2022-23, to the State Government of Himachal Pradesh for the financial year 2022-23 as under:

		(Rs. in lakh)
1.	Himachal Pradesh	5000.00
Total for 1 State = Rs. 5000.00 lakh only.		

2. Payments may kindly be made to the State Government immediately.
3. The amount of above loan is towards capital projects on Optical Fibre Cable (OFC) network of State communicated vide Department of Expenditure's (DoE's) O.M No. 44(1)/PF-S/(CAPEX)-Part-V/2022-23 dated 14.12.2022 to Department of Telecommunications (DoT) and State Government of Himachal Pradesh under Part-V of the 'Scheme for Special Assistance to States for Capital Investment for 2022-23' and is being released based on the recommendations communicated to DoE by DoT vide O.M No. 30-167-4/2022/USOF dated 01.11.2022, the guidelines of the Scheme issued by the DoE vide letters no. 44(1)/PF-S/2022-23(CAPEX) dated 06.04.2022 & 06.07.2022, subject to the following conditions:
- The amount of loan under Part-V of the Scheme is earmarked for the capital projects approved under Part-V of the Scheme and communicated to DoT vide O.M No. 44(1)/PF-S/(CAPEX)-Part-V/2022-23 dated 14.12.2022.
 - Violations in respect of eligibility of capital projects on OFC network as detailed in Para(3)(v) of the Scheme guidelines issued vide letters no. 44 (1)/PF-S/2022-23 (CAPEX) dated 06.04.2022 and 06.07.2022, will result in the deduction of amounts by the Government of India from devolution of taxes to the State.
 - Violations of conditions detailed in Para(3)(v) of the Scheme guidelines issued vide letters no. 44 (1)/PF-S/2022-23 (CAPEX) dated 06.04.2022 and 06.07.2022, will result in the deduction of amounts by the Government of India from devolution of taxes to the State.
 - The amount released by the Union Government shall be released to the Implementing Agencies of the State Government within 10 working days.
 - The amount released shall be utilized by 31.03.2023.
 - The State Government shall ensure that there is no duplication in funding of the capital projects approved under the Scheme either with the funds provided by the Government of India or the State Government.
 - In case of unavoidable changes in the specific project for which funds are being released, the State Government shall seek the approval of the Government of India for the change. Funds will not be provided in case of un-approved changes.

Ag. Secy
 14/12/2022

- viii. Expenditure by the State of the funds provided under the Scheme, for purposes other than for which the funds were sanctioned, will result in the deduction of the amounts by the Government of India from the devolution of the taxes to the State.
- ix. All provisions of the guidelines of the Scheme issued vide letters no. 44(1)/PF-S/2022-23 (CAPEX) dated 06.04.2022 and 06.07.2022 shall be applicable in toto and shall be strictly adhered to by the State Government and its implementing agencies.
- x. Violations of mandatory conditions detailed in Para (4) of the Scheme guidelines issued vide letter no. 44 (1)/PF-S/2022-23 (CAPEX) dated 06.04.2022, will result in the deduction of amounts by the Government of India from devolution of taxes to the State.
4. The payments are adjustable in the account of the Central Government in the books under the sub-head indicated as under:-

LOAN**DEMAND NO. 42****7601-LOANS AND ADVANCES TO STATE GOVERNMENTS (MAJOR HEAD)****09-OTHER LOANS TO STATES (SUB MAJOR HEAD)****101-BLOCK LOANS (MINOR HEAD)****05-SCHEME FOR SPECIAL ASSISTANCE AS LOAN TO STATES FOR****CAPITAL EXPENDITURE****05.00.55- LOANS AND ADVANCES**

5. The progressive total of loan amount released to the State Government under the sub-head at Para (4) during the current financial year 2022-23 so far including amount released in this sanction letter is as follows:

(Rs. in lakh)

Sl. No.	State	Amount released so far (Rs. in lakh)
1.	Himachal Pradesh	20681.00

6. The action taken on this letter may be confirmed and correctness of the progressive totals be indicated.

Yours faithfully,

Anjali Maurya 14/12/2022

(Anjali Maurya)

Assistant Director (PF-S)

Ph.011-2309 5697

Aggarwal
14/12/2022**Copy to:**

1.	Secretary, Department of Telecommunications, Ministry of Communications, Sanchar Bhawan, 20 Ashoka Road, Sansad Marg Area, New Delhi, Delhi- 110001.
2.	Finance Secretary, State Government of Himachal Pradesh
3.	Accountant General (A&E), State of Himachal Pradesh
4.	DEA, Budget Division, (States Branch), New Delhi.
5.	RBI, Central Office, Mumbai.
6.	Manager, RBI, CAS, Nagpur.
7.	Resident Commissioner, State Government of Himachal Pradesh, Himachal Pradesh Bhawan, 27 Sikandra Road, New Delhi - 110001.
8.	Hindi Section for Hindi version.

Anjali Maurya 14/12/2022

(Anjali Maurya)

Assistant Director (PF-S)

Ph.011-2309 5697

Aggarwal
14/12/2022



भारतीय दूरसंचार विनियामक प्राधिकरण
TELECOM REGULATORY AUTHORITY OF INDIA
भारत सरकार / Government of India



No. G-17/(33)/2023-NSL-I

Dated: 27th July 2023

To,

The Secretary (IT)
[Dr. Abhishek Jain, IAS]
Government of Himachal Pradesh
HP Secretariat, Shimla
Himachal Pradesh - 171002.

Subject: Gainful Utilisation of Special Assistance Fund by BSNL HP Circle.

Kind reference is made to the following: -

- MoU dated 31st March 2023, signed between Depart of IT, Government of HP and BSNL, HP Circle Shimla (being the implementing agency) for utilization cum expenditure of Rs 50.00 crores allotted to Government of HP under special assistance to States for Capital Investment fund for 2022-23 under Part V (Optical Fibre Cable).
- Field visit undertaken by TRAI officials to Lahaul & Spiti and interactions with Telecom Service Providers (TSPs) (including meeting with BSNL officials at Kaza on 27th June 2023) and discussions thereon.
- Meeting of TRAI with officers of Government of HP on 01st July 2023 and discussions thereon.

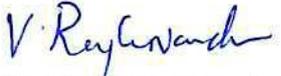
2. A team from TRAI was deputed for studying the existing core transmission network and gaps thereof in some of the districts of Himachal Pradesh having relatively poor telecom networks and connectivity. The team held various meetings with TSPs including Airtel, VI, Jio, BSNL, District administration, State Government officials, CSC operators and Defence establishment. It had emerged during the interactions that, laying of OFC in the region, being a difficult hilly terrain that remains mostly snow covered for significant duration of the year, is time and resource intensive. Few operators have taken more than 2 years to complete routes that were even less than 100 Kms.

3. It has come to notice that BSNL has been given a project by State Government of HP for utilization of Rs 50 Crores of funds [that were dispersed to the State under special assistance to States for Capital Investment fund for 2022-23 under Part V (Optical Fibre Cable)], for extending telecom connectivity to 81 un-connected villages in the State. Under this arrangement, BSNL plans to lay OFC along the route of *Koksar- Losar- Kaza- Hurling- Sumdo- Reckong Peo* (approximately 354 km) and further arterial OFCs emanating from this main OFC to remote villages as envisaged in its scope.

- 2 -

4. The proposed expansion plan by BSNL to lay fresh optical fibre on the aforementioned route is not only a time consuming approach but is extremely CAPEX intensive as well. Further, given the state of poor return on investment vis-à-vis the proposed CAPEX intensive resource roll-out, it is more prudent to make use of common sharable infrastructure (in the form of dark fibres laid out by an IP-I) already present in the region. For these reasons, almost all other telecom service providers are riding on the OFC already laid by one of the IP-Is in the targeted region.

5. In view of the above stated fact, it is strongly recommended to assess along with the implementation agency, as to whether it will be prudent to hire/ lease the required OFC which is already existing and available. This will not only lead to timely roll out of its services given the limited working window prevailing in the region but will also save on cost to the exchequer. Another possibility is to take the infra on lease for immediate use and roll out of service; and lay cables only if it makes sense in long run. The scope of agreement/MoU should be revised accordingly, if required.


(V. Raghunandan)
Secretary, TRAI
Tel: 23237448

Copy to: –

O/o the CGMT
BSNL, HP Circle
Block No.11, SDA Complex,
Kasumpti, Shimla
Himachal Pradesh - 171009.



भारतीय दूरसंचार विनियामक प्राधिकरण
TELECOM REGULATORY AUTHORITY OF INDIA
भारत सरकार / Government of India



No. G-17/(33)/2023-NSL-I

Dated: 27th July 2023

To,

The Chairman & Managing Director
Bharat Sanchar Nigam Limited
Bharat Sanchar Bhawan
Harish Chandra Mathur Lane,
Janpath, New Delhi-110001

Subject: Gainful utilisation of extant common sharable infrastructure for rolling out of telecom services in remote far-flung regions.

A team from TRAI was deputed for studying the existing core transmission network and gaps thereof in some of the districts of Himachal Pradesh having relatively poor telecom networks and connectivity. The team held various meetings with TSPs including Airtel, VI, Jio, BSNL, District administration, State Government officials, CSC operators and Defence establishment. It had emerged during the interactions that, laying of OFC in the region, being a difficult hilly terrain that remains mostly snow covered for significant duration of the year, is time and resource intensive. Few operators have taken more than 2 years to complete routes that were even less than 100 Kms.

2. However, it came to notice of TRAI that BSNL HP Circle has been given a project under 'Scheme for Special Assistance to States for Capital Investment for 2022-23' by State Government of HP with an approval for funds of Rs. 50.00 crores, for extending telecom connectivity to un-connected 81 villages in the State. For the same, BSNL plans to lay OFC (365 km) and further arterial OFCs emanating from this main OFC to remote villages as envisaged in its scope. The proposed expansion approach to lay fresh optical fibre by BSNL is not only time consuming but is also a CAPEX intensive. Further, given the state of poor return on investment vis-à-vis the proposed cost intensive resource roll-out, it makes sense to use of common sharable infrastructure already present in the region. For these reasons, almost all service providers are riding on OFC already laid by one of the IP-Is in this region. Due to the aforementioned reason, TRAI has approached BSNL HP Circle and Department of IT, Government of HP to assess whether resorting to renting/leasing the extant dark fibres on IRU basis can expedite and economise roll out of services.



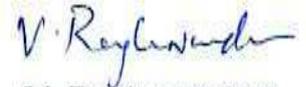
महानगर दूरसंचार भवन, जवाहरलाल नेहरू मार्ग / Mahanagar Doorsanchar Bhawan, Jawahar Lal Nehru Marg
(ओल्ड मिनटो रोड), नई दिल्ली-110002 / (Old Minto Road), New Delhi-110002

फैक्स /Fax : +91-11-23213294, ईपीबीएक्स नं. /EPBX No. : +91-11-23664145 वेबसाइट/website www.trai.gov.in



- 2 -

3. Given the fact that a number of concurrent projects under '*Scheme for Special Assistance to States for Capital Investment for 2022-23*' are currently under planning cum implementation phase in the country where BSNL is likely to be the implementing agency, for all such projects, it is requested that BSNL entities in respective circles be instructed to undertake prior assessment and suitably dovetail the use of readily available common sharable infrastructure in its roll out plan in the targeted region. This approach will not only save on significant time to roll out services but will also save on cost to the exchequer.



(V. Raghunandan)
Secretary, TRAI
Tel: 23237448



भारतीय दूरसंचार विनियामक प्राधिकरण
TELECOM REGULATORY AUTHORITY OF INDIA
भारत सरकार / Government of India



No. G-17/(33)/2023-NSL-I

Dated: 27th July 2023

To,

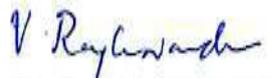
The Secretary
Department of Telecommunications
Ministry of Communications
Sanchar Bhawan, 20 Ashoka Road
New Delhi - 110001

Subject: Gainful utilisation of extant common sharable infrastructure for rolling out of telecom services under USOF.

A team from TRAI was deputed for studying the existing core transmission network and gaps thereof in some of the districts of Himachal Pradesh having relatively poor telecom networks and connectivity. The team held various meetings with TSPs including Airtel, VI, Jio, BSNL, District administration, State Government officials, CSC operators and Defence establishment. It had emerged during the interactions that, laying of OFC in the region, being a difficult hilly terrain that remains mostly snow covered for significant duration of the year, is time and resource intensive. Few operators have taken more than 2 years to complete routes that were even less than 100 Kms.

2. It has come to notice of TRAI that BSNL HP Circle has been given a project under 'Scheme for Special Assistance to States for Capital Investment for 2022-23' by State Government of HP with an approval for funds of Rs. 50.00 crores, for extending telecom connectivity to un-connected 81 villages in the State. For the same, BSNL plans to lay OFC and further arterial OFCs emanating from this main OFC to remote villages as envisaged in its scope. The proposed expansion plan by BSNL to lay fresh optical fibre is not only time consuming but is also a CAPEX intensive approach. Further, given the state of poor return on investment vis-à-vis the proposed cost intensive resource roll-out, it makes sense to make use of common sharable infrastructure already present in the region. For these reasons, almost all service providers are riding on OFC already laid by one of the IP-Is in this region.

3. In view of the above stated fact, for all ongoing and proposed USOF projects in pipeline for remote and far-flung regions, it is requested to instruct all implementing agencies of USOF projects to undertake prior assessment and suitably dovetail the use of already available common sharable infrastructure in the targeted region. This approach will not only save on significant time to roll out services but will also save on cost to the exchequer.


(V. Raghunandan)
Secretary, TRAI
Tel: 23237448



महानगर दूरसंचार भवन, जवाहरलाल नेहरू मार्ग / Mahanagar Doorsanchar Bhawan, Jawahar Lal Nehru Marg
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File No.69-14/2022-SU
Department of Telecommunication
PM Division

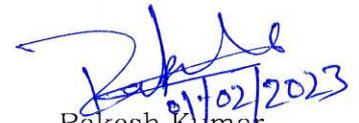
19/JA(T&A)
2/2/23

Sanchar Bhawan
Dated: 1st February, 2023

Subject: Salient point for action in TRAI note dated 12.12.2022 on "Improving Telecom Connectivity/Infrastructure in Far-flung area of Himachal Pradesh".reg

Reference: No. 30-06/2021/USOF/Dat1&A/Misc Data).

With reference to your letter mentioned above, the reply of Army is received by this office. The reply is Army (NFS Cell) is forwarded for kind information and further necessary action at your end please.


Rakesh Kumar
AGM(PM)
O/o of DDG (PM)
DOT, Sanchar Bhawan.

To,
Rajesh Gupta
Jt.Administrator (T&A),USOF.

DDG (SP)

As per recent distribul
g memo, the TRAI related
matter are dealt by
DDG (SP) div' (in spz for Air) A

SKV
2.2.23
Dir (T-27)


2/2

795/DDG(Sp)/2023
02/02

Tele -23019880/34574

Network for Spectrum (NFS) Cell
Directorate General of Signals
Room No 23, B Wing Basement
Sena Bhawan, IHQ of MoD (Army)
DHQ PO, New Delhi-110011

B/46850/DG Sigs/NFS/Imp/213

3/ Jan 2023

Mr Rakesh Kumar
AGM (PM)
Dept of Telecommunication (DoT)
Room No 1206, Sanchar Bhawan,
New Delhi-11, Tele-011-23036198

SALIENT POINT FOR ACTION IN TRAI NOTE DATED 12.12.2022 ON
"IMPROVING TELECOM CONNECTIVITY/INFRASTRUCTURE
IN FAR-FLUNG AREA OF HIMACHAL PRADESH"

1. Please refer your letter No 69-14/2022-su dated 27 January 2023.
2. It is highlighted that NFS is an **exclusive, dedicated and air gapped** operational communication network for the Army, Navy and the Air Force. Keeping in view the security requirements of the network, the NFS assets cannot be shared with other agencies.
3. For your information and further necessary action please.


(Suman Gawani)
Major
GSO-1(Coord)
for Offg ADG T

LIST OF ACRONYMS

Sl. No.	Acronym	Description
1.	4G	Fourth - Generation Cellular Network
2.	5G	Fifth - Generation Cellular Network
3.	ApGR	Applicable Gross Revenue
4.	ASCON	Army Static Switched Communication Network
5.	BBNL	Bharat Broadband Network Limited
6.	BEUs	Bulk Encryption Units
7.	BSNL	Bharat Sanchar Nigam Limited
8.	CAPEX	Capital Expenditure
9.	CAPF	Central Armed Police Forces
10.	CDS	Chief of Defence Staff
11.	CMD	Chairman & Managing Director
12.	CPAN	Converged Packet Access Network
13.	CPSEs	Central Public Sector Undertakings
14.	CSC	Common Service Centre
15.	DHQ	District Headquarter
16.	DoE	Department of Expenditure
17.	DoT	Department of Telecommunication
18.	DWDM	Dense Wavelength Division Multiplexing
19.	FTTH	Fibre to the Home
20.	Gbps	Gigabits per second

Sl. No.	Acronym	Description
21.	GIS	Geographic Information System
22.	GP	Gram Panchayat
23.	GR	Gross Revenue
24.	HP	Himachal Pradesh
25.	IB	International Boundary
26.	IDR	Intermediate Data Rate
27.	IP-I	Infrastructure Provider Category - I
28.	ISP	Internet Service Provider
29.	IT	Information Technology
30.	J&K	Jammu and Kashmir
31.	LAC	Line of Actual Control
32.	LMC	Last Mile Connectivity
33.	LoC	Line of Control
34.	LSA	Licensed Service Area
35.	Mbps	Megabytes per sec
36.	MHA	Ministry of Home Affairs
37.	MoD	Ministry of Defense
38.	MoF	Ministry of Finance
39.	MP	Madhya Pradesh
40.	MTNL	Mahanagar Telephone Nigam Limited
41.	NFS	Network For Spectrum

Sl. No.	Acronym	Description
42.	NLD	National Long Distance
43.	NOC	No Objection Certificate
44.	OFC	Optical Fibre Cable
45.	OM	Office Memorandum
46.	OPEX	Operational Expenditure
47.	PGCIL	Power Grid Corporation of India Limited
48.	PoP	Point of Presence
49.	PWD	Public Works Department
50.	RJIL	Reliance Jio Infocomm Limited
51.	RoI	Return on Investment
52.	RoW	Right of Way
53.	SDH	Synchronous Digital Hierarchy
54.	SLA	Service Level Agreement
55.	SSB	Sashastra Seema Bal
56.	STM	Synchronous Transport Module
57.	TAR	Tibetan Autonomous Region
58.	TERM	Telecom Enforcement Resource and Monitoring
59.	TRAI	Telecom Regulatory Authority of India
60.	TSP	Telecom Service Provider
61.	UL	Unified License
62.	USO	Universal Service Obligation

Sl. No.	Acronym	Description
63.	USOF	Universal Service Obligation Fund
64.	VC	Village Cluster
65.	VI	Vodafone Idea Limited
66.	VSAT	Very Small Aperture Terminal.