भारतीय दूरसंचार विनियामक प्राधिकरण

Telecom Regulatory Authority of India

Recommendations

on

Improving Telecom Coverage and Backhaul Infrastructure in far-flung areas of Ladakh

24th April 2023

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INTRODUCTION

A. Brief Information on Ladakh

1.1 Ladakh is an Indian Union Territory (UT) that is situated in the north of the Indian subcontinent, in the vicinity of the Karakoram and western most Himalayan Mountain ranges. Sharing its east border with Tibet, Ladakh has Lahaul and Spiti district of Himachal Pradesh to its south and the Kashmir valley to the west. Strategically placed, Ladakh lies between the Kunlun Mountains in the north and the Himalayas in the south. The region originally comprised the Baltistan valley, the Indus Valley, Zanskar, Lahaul, Spiti, Aksai Chin and Ngari. The map of the UT of Ladakh is shown below: -

Figure 2.1: Map of UT of Ladakh[1]

[1] https://www.mha.gov.in/whatsnew/maps-of-newly-formed-union-territories-of-jammu-kashmir-and-ladakh-map-of-india-0

1.2 Ladakh's natural features consist mainly of high plains and deep valleys. The high plain predominates in the east, diminishing gradually toward the west. In southeastern Ladakh lies Rupshu, an area of large, brackish lakes with a uniform elevation of about 13,500 feet (4,100 meters). To the northwest of Rupshu lies the Zanskar Range, an inaccessible region where the people and the cattle remain indoors for much of the year because of the cold. Zanskar is drained by the Zanskar River, which, flowing northward, joins the Indus River below Leh. In the heart of Ladakh, farther to the north, cultivation by means of manuring and irrigation is practiced by farmers living in valley villages at elevations between about 9,000 and 15,000 feet (2,750 and 4,550 meters respectively). The climate of Ladakh is cold and dry. Average annual precipitation is roughly 3 inches fine, dry, flaked snow is frequent and sometimes falls heavily.

1.3 Ladakh was administered as part of Jammu and Kashmir state from 1947 until 2019, when it became a separate administrative unit. The UT of Ladakh consists of two districts, Leh and Kargil, with Leh serving as the capital. Leh spans over an area of 45,110 km^2 and Kargil is spread over 14,086 km^2. The mountains dominate the landscape around Leh as it is at an altitude of 3,500m and has a cold desert climate with long, cold winters from late November to early March. Kargil is situated in deep south-western part of the Himalayas, giving it a cool, temperate climate. The average annual temperature in here is 8.6 °C.

Table 1.1: Districts of UT of Ladakh at a glance

Parameters	Leh District (a)	Kargil District (b)	UT of Ladakh (a+b)
Geographical area (in sq. km)	45,110	14,036	59,146
Population as per 2011 Censes	133,487	140,802	2,74,289
Gram Panchayats	95	98	193
Villages (inhabited)	111	125	236
Population density	3	10	13

1.4 Each district of Ladakh is administered by an autonomous district council, which are, Ladakh Autonomous Hill Development Council of Kargil and Ladakh Autonomous Hill Development Council of Leh. Both the autonomous district councils work with village panchayats to take decisions on economic development, healthcare, education, land use, taxation, and local governance which are further reviewed at the block headquarters in the presence of the chief executive councillor and executive councillors. The details of administrative setup upto block level in respect of Leh and Kargil districts are as tabulated below in table 1.2:

Table 1.2: List of Sub-divisions, Tehsils and Blocks in the two districts of Ladakh

Sl No	Sub-Division	Tehsil	Block
• **For Leh District**			
(a)	Khaltsi	Khaltsi	• Khaltsi • Skurbuchan • Singay-Lalok
(b)	Nubra	Diskit Nubra	• Diskit • Turtuk • Panamik
		Sumoor	• Sumoor
(c)	Kharu	Kharu	
(d)	Nyoma	Nyoma	• Nyoma • Rong • Rupshu
(e)	Durbuk	Durbuk	• Durbuk • Tangtse
(f)	Likir	Saspol	• Saspol • Nimoo
(g)	District Headquarters- Leh	Chuchot	• Thiksay • Chuchot
• **For Kargil District**			
(h)	District Headquarters- Kargil	Drass	• Bhimbat • Drass
		Kargil	• Kargil

Sl No	Sub-Division	Tehsil	Block
			• Pashkum • Sodh
(i)	Sankoo	Sankoo	• Barsoo • G.M. Pore • Sankoo
		Taisuru	• Taisuru
(j)	Shakar-Chiktan	Shakar-Chiktan	• Shakar-Chiktan
		Shargole	• Shargole • Lotsum
(k)	Zanskar	Zanskar	• Zanskar • Karshah • Lungnak

1.5 In today's digital ecosystem, telecommunication has become the foundation for businesses, governments, communities, and families to seamlessly connect and share information. The details of overall tele-density of the UT of Ladakh is as shown below in table 1.3 :-

Table 1.3 : Overall telecom scenario of Ladakh as on 30.09.2022

Parameters	Ladakh			All India		
	Total	Rural	Urban	Total	Rural	Urban
Subscriber base (wireline + wireless) (In million)	0.54	0.29	0.25	1171.92	520.30	651.61
Tele-density (wireline + wireless) (In %)	179.00	139.66	268.37	84.86	58.01	134.62
Wireless Subscribers (In million)	0.53	0.29	0.24	1145.45	518.31	627.14
Wireless Tele-density (In %)	177.76	139.12	265.56	82.94	57.79	129.56
Wireline Subscribers (In million)	0.004	0.001	0.003	26.47	1.99	24.48
Wireline Tele-density (In %)	1.23	0.54	2.81	1.92	0.22	5.06

1.6 According to TRAI report, the average tele-density of India as on 30 Sep 2022 stood at 84.86% with Ladakh enjoying an average tele-density of 179.00 %. Despite its high tele density of 179.00% in Ladakh, there are many sparsely populated remote pockets and inaccessible regions in this UT that have limited or no telecom coverage due to the challenging and mountainous terrain of the region, which makes it difficult to build and maintain telecommunications infrastructure. A substantial digital divide still continues to exist in the UT. This digital divide is particularly pronounced in the remote and far-flung regions of the Ladakh UT.

1.7 The recent outbreak of COVID-19 pandemic jolted the lives of people living in the remote areas of Ladakh, literally cutting them off from the world in many ways. Some of the media reports highlighted that the school children were affected the most. Besides, the all-important COVID vaccination drive also impacted as villagers were unable to book slots in these remote areas in the absence of proper internet connectivity. Students were expected to be part of online classes, but poor internet connectivity hampered their school activities. Some students had to walk for kilometers for a 4G Wi-Fi facility at a panchayat ghar or community hall that could only cater to a few.

1.8 TRAI has been relentlessly working towards improving telecom infrastructure in remote areas of the country from time to time. Earlier, TRAI had made the following key recommendations for improving telecom connectivity:

(a) *The Recommendations on "Improving Telecom Services in the Northeastern States: An Investment Plan" dated 26.09.2013.*

(b) *Recommendations on Improving Telecom Services in Andaman and Nicobar Islands and Lakshadweep dated 22.07.2014.*

(c) *Recommendations on Improving Telecom Connectivity/ Infrastructure in far-flung areas of Himachal Pradesh dated 12.12.2022.*

Background to the Recommendation:

1.9 Some media reports highlighted the demand of people of Ladakh residing near the Line of Actual Control (LAC) for high-speed internet. The people, especially those inhabiting along the LAC, face hardship in pursuing online education

and accessing digital banking. Many remote areas in the UT are without mobile towers. People living close to the LAC and the Line of Control (LoC) constantly face network issues. Mobile connectivity is strategically important for the locals as they are the first line of vigil who immediately inform the Indo Tibetan Border Police (ITBP) and the Army about any incursion by foreign troops along LAC in the region. As an outcome of the above, the Authority has suo-moto decide to initiate consultation with various stakeholders to enhance the telecom connectivity in the remote and far-flung areas of the UT which will help in resolving the issues raised by the people.

Key challenges being encountered in rolling out telecom network in remote and far-flung regions of Ladakh

1.10 During the interactions with the TSPs and associated stakeholders who are operating telecom and internet services in Ladakh, some key challenges being encountered by them were highlighted. Following are some of the major connectivity and digital infrastructure issues raised by various stakeholders that are typically associated with remote and far-flung regions in Ladakh:

a) **Inhospitable Terrain Conditions:** Kargil has mountainous, rugged, and high landscape and Leh predominantly consists of high plains and deep valleys. Cold frost bites and snowfall are common occurrence in Ladakh from late November to early March, making some of the regions inaccessible in winter months. This impedes the prospects of new cellular mobile tower rollout in such regions.

b) **Poor Availability of Power Supply:** The extant power supply arrangements and duration of availability of commercial power supply is not very encouraging for TSPs in these regions. This leads to existing BTSs being run on Diesel Generator sets (DG sets). M/s Bharti Airtel has submitted to TRAI that 27% of its BTS sites in Ladakh are being run on DG sets (attached in **Annexure I**). M/s BSNL has reported that one-third of its BTS sites in Leh are fully dependent on Army DG power and Army OFC (attached in **Annexure-II**) . The poor road network and extreme

weather conditions are greatly hindering the regular supply of diesel to these remote areas, resulting in long disruptions in operations of most of the towers in these areas.

c) **Poor Return of Investment (RoI) prospects:** The villages in Ladakh are sparsely populated, and in some of these villages, the inhabitants have two distinct settlements that they occupy during different seasons. Factors like low population density further augmented with element of transient settlements pose discouraging prospects towards RoI for operating TSPs and hence they channelize their efforts more on consolidation and further improvement of telecom infrastructure in revenue generating regions within Ladakh. Many of the previous and ongoing efforts, being undertaken to extend telecom coverage to these remote and far-flung areas, are being rolled out and operated through USOF schemes of DoT.

d) **Transmission Media Related:** The rugged terrain of the region makes it challenging to install optical fiber cable, resulting in a lack of reliable transmission medium in the area.

e) **Right of Way (RoW) related issues** – Interaction with a leading TSP operating in UT of Ladakh revealed that most of the prospective routes are either too narrow for underground cable laying or are under Defect Liability Period (DLP) during which digging is not permitted. Further, this DLP period has been increased from erstwhile period of 3 years to 5 years at present, by the local administration. Typically, the administrative charges are to the tune of ₹ 1000/km & RoW charges are in the range of ₹ 500/m to ₹ 3000/m depending upon the type of surface, whereas the charges for installation of aerial OFC is generally ₹150/m. Apart from the aforementioned charges, there are Municipal Charges of ₹100/m.

1.11 Based on the detailed analysis of the data obtained from multiple stakeholders i.e., TSPs, BBNL, USOF and Power Distribution Companies (DISCOMs) operating in Ladakh, these recommendations have been prepared by TRAI. The rationale and approach methodology used to analyze the gaps in UT of

Ladakh (i.e., the districts of Leh and Kargil) for recommending the initiatives needed to address the telecom voids in the region is covered in Chapter II of this recommendation. All the recommendations made have been compiled in Chapter III.

Chapter-II

Approach Methodology and Recommendations on Improving Telecom Coverage and Backhaul Infrastructure in Remote and Far-Flung Areas of Ladakh

A. Approach Methodology

2.1 TRAI obtained information about the current state of telecom network infrastructure in Ladakh and analyzed it to identify the possible gaps in telecom coverage in both the districts of Leh and Kargil respectively.

2.2 To determine the current status and identify gaps if any, coverage and backhaul infrastructure layout data was collected from all Telecommunications Service Providers (TSPs) operating in the UT. A detailed analysis of the coverage information provided by the operating TSPs was undertaken to identify areas that are experiencing inadequate telecom connectivity.

2.3 The village wise coverage information, provided by the operating TSPs was compared with the list of inhabited rural villages in both the districts of Ladakh (obtained from the 2011 census data) to determine the number of villages that have cellular coverage and the type of service available. This analysis led to the conclusion that there are **27** villages in these two districts that have no cellular coverage.

2.4 For planning cellular coverage in these 27 uncovered villages in both the districts, following additional information was also obtained by TRAI:

(a) Latest details of prospective coverage plan from all operating TSPs (excluding USOF schemes).

(b) Details of villages being covered under ongoing and/or recently concluded USOF projects for far-flung regions of Ladakh.

(c) Details of the BBNL OFC coverage rollout in villages.

(d) Details of Point of Presence (PoP) of Optical Ground Wire (OPGW) based power transmission layout of PGCIL (Powergrid Corporation of India

Limited), LADAKH Power Distribution and REC Power Development and Consultancy Limited (RECPDCL).

(e) Details of OFC based backhaul network, rolled out by operating TSPs in the UT.

2.5 The data obtained from USOF with regard to ongoing schemes covering the remote/ far-flung regions of Ladakh was analyzed to further narrow down to **3** villages that are not being covered in any other scheme.

2.6 These remaining 3 uncovered villages have thereafter been further analyzed for presence of OFC of BharatNet, OFC of TSPs and OPGW network in vicinity, to cater for optical fiber based high-bandwidth transmission backhaul.

2.7 For the transmission network, the data on Optical Fiber Cale (OFC) laid by various service providers was obtained and plotted on a map. It has been envisaged that a sound transmission core network connectivity up till all block headquarters is required for offering the state-of-the-art digital services in the region. Thus, transmission plan for the region of Ladakh has been prepared based on existing gaps in OFC connectivity up till block level. Also wherever possible, an effort has been made to plan the block connectivity on transmission network rings. Some segments have thus been suggested for connecting them either on OFC or digital microwave so that the service providers can use these segments to complete their rings.

2.8 Thus, based on the gap analysis, a detailed recommendation is being suggested to address the coverage voids in the districts of Ladakh especially in the remote/ far-flung regions.

B. Present Status of Telecom connectivity in Ladakh

2.9 Ladakh has a commendable tele-density of 179.00% (as of September 2022 TRAI report) in comparison to All-India average tele-density of 84.86%. This is despite the fact that Ladakh encompasses tough geographical conditions. However, a high tele-density could be due to high floating population especially the defense personnel.

2.10 Amongst TSPs, M/s RJIL and M/s Bharti Airtel are offering 4G based coverage throughout all their operational sites in Ladakh. M/s BSNL is offering 2G or 3G based services at all the operational sites in the UT. M/s VI does not offer its services in this area.

2.11 The details of the total number of villages in Leh and Kargil i.e. the two districts of Ladakh are as tabulated at table 2.1 below:

Table 2.1: Rural village details in Leh and Kargil

S No	District	Total Villages in District
(a)	Leh	111
(b)	Kargil	125
Total		**236**

2.12 There are some sites in both the districts where BTS/ eNode B are being operated on VSAT as backhaul transmission media [in point-to-point/ Multi-Frequency Time Division Multiple Access (MF-TDMA) mode]. However, hefty recurring Operating Expenditures (OPEX) components majorly involving annual recurring bandwidth charges for VSAT and fuel cost for DG set, compounded with low RoI prospects, force TSPs to intermittently cease operation of such sites in due course.

2.13 TRAI approached all the major operating TSPs in Ladakh to furnish their respective details of existing telecom coverage for analysis. A total of 236 rural villages were considered by TRAI from the census data of 2011 (based on the above-tabulated data) in two districts. The data obtained from TSPs have been analyzed for both the districts i.e. Leh and Kargil, under two main criteria as mentioned below:

(a) Villages that have cellular mobile coverage due to presence of cellular tower(s) in those villages.

(b) Villages that have incidental coverage due to spillover of cellular signals from the adjoining villages as referred at paragraph 2.13(a) above.

2.14 Based on the data submitted by various TSPs, the details of villages which are having cellular coverage (including 4G and non-4G) due to presence of cellular tower(s) in those villages, is as tabulated below at Table 2.2 :-

Table 2.2 : Details of villages having 4G & non-4G coverage due to presence of cellular tower(s) in those villages

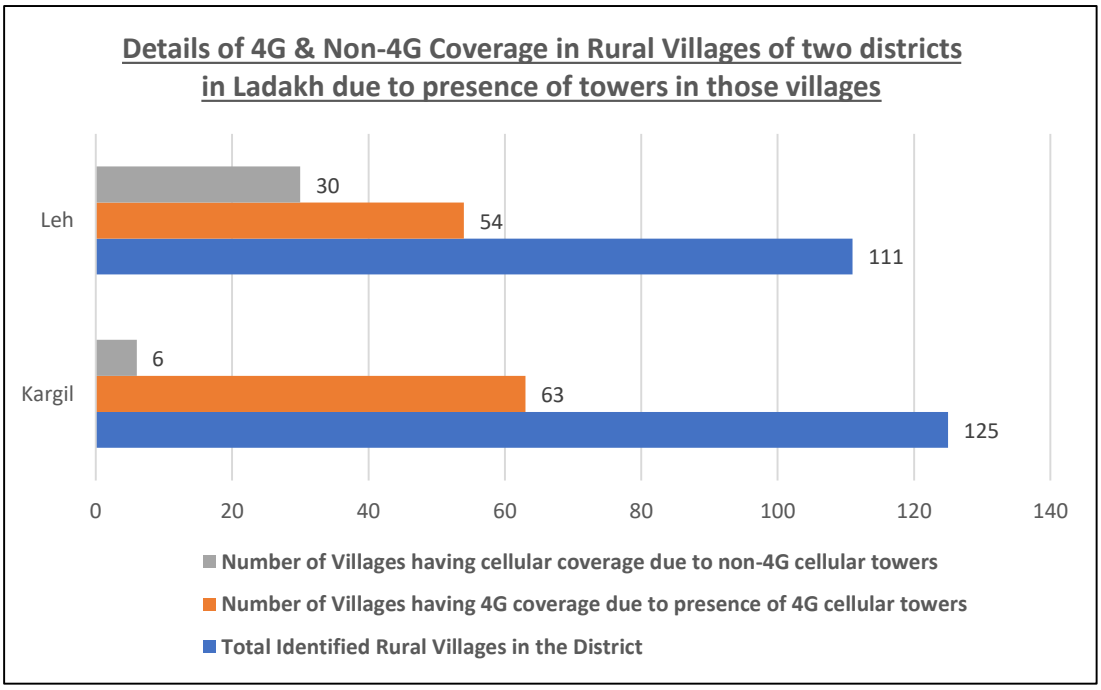
Name of District	Total Identified Rural Villages in the District	No of Villages having 4G coverage due to presence of 4G cellular towers (a)	No of villages having cellular coverage due to non-4G cellular tower (b)	Total Number of villages having cellular mobile coverage due to presence of cellular tower(s) in those villages (a) + (b)
Kargil	125	63	6	69
Leh	111	54	30	84
Total	**236**	**117**	**36**	**153**

2.15 The Authority had sought information as per census data of villages for availability and type of coverage from all TSPs that are providing mobile services in Ladakh falling in the J&K Licensed Service Area (LSA). The Authority has relied on the data submitted by various TSPs to arrive at the above figure of **36** villages that presently have *non-4G coverage*.

2.16 The list of villages that had non-4G coverage was compared with the data obtained from USOF to ascertain the details of villages that are planned to be covered under 4G saturation scheme. However, subsequent to field level survey by BSNL (the implementing agency for USOF funded 4G saturation scheme), some of the villages may have been dropped out or added into, from the list of villages to be covered under the said project. For the sake of these recommendations, based on the data obtained, the Authority has carried out the analysis based on figure of 36 for such villages. Nevertheless, the Authority is of the opinion that a ground level survey of villages is the key to arrive at the exact number of villages that have non-4G coverage and are not yet planned to be upgraded to 4G. The graphical representation of the rural

villages having cellular mobile coverage due to presence 4G and non-4G towers has been depicted vide Figure 2.1 below:

Figure 2.1: Comparative depiction of total villages vs villages having cellular coverage due to presence of towers

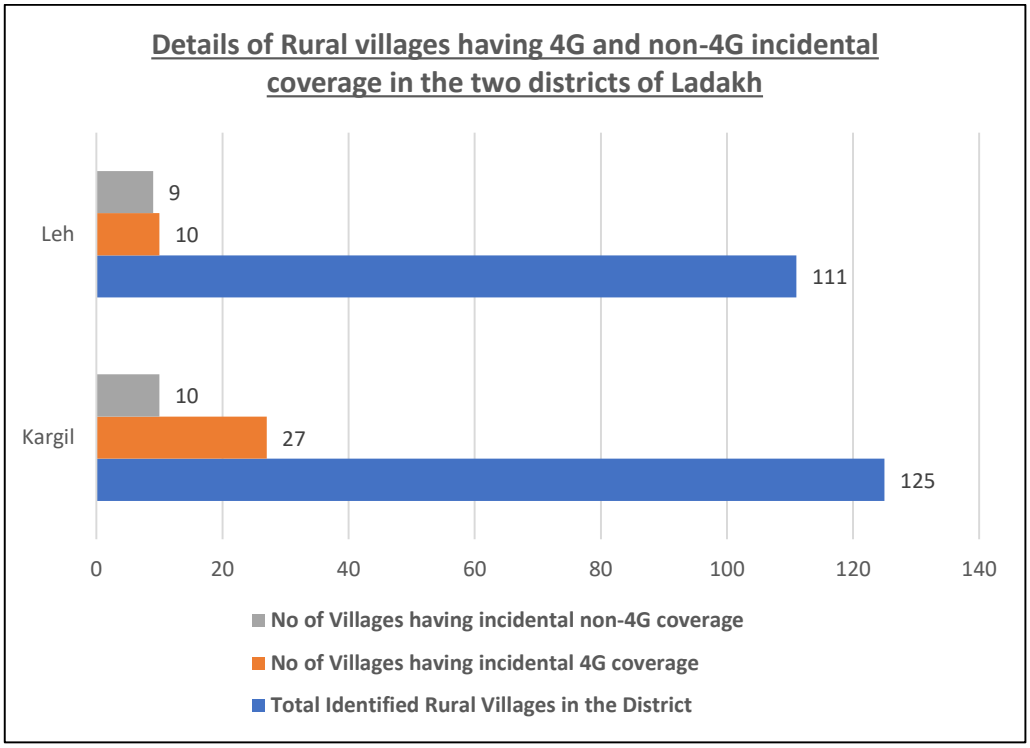


2.17 TRAI also sought details of villages having incidental coverage due to spillover of cellular signals from towers installed in neighboring villages. The details of these villages are tabulated below in Table 2.3:

Table 2.3: Details of villages having cellular footprint due to incidental coverage

Name of District	Total Identified Rural Villages in the District	No of Villages having incidental 4G coverage (due to presence of towers installed in neighboring villages) (a)	No of villages having incidental non-4G coverage (due to presence of towers installed in neighboring villages) (b)	Total Number of villages having *incidental coverage* (due to presence of towers installed in neighboring villages) (a) + (b)
Kargil	125	27	10	37
Leh	111	10	9	19
Total	**236**	**37**	**19**	**56**

Figure 2.2: Details of villages in Ladakh having incidental 4G & non-4G coverage



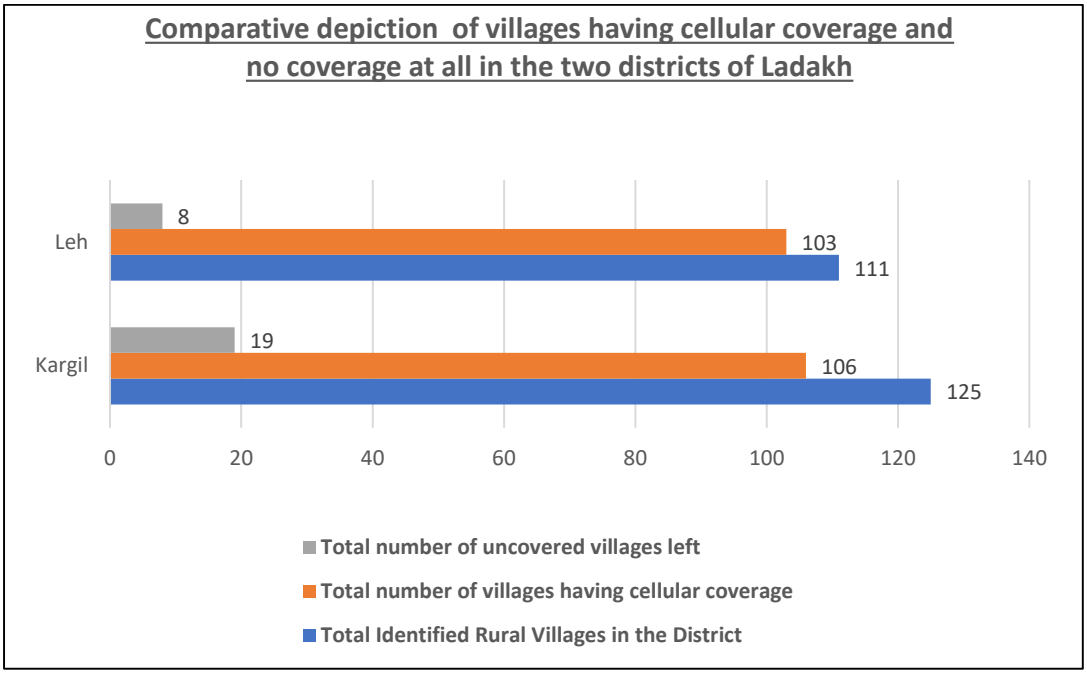
C. Coverage Gap Analysis

2.18 The information about the number of covered villages from Table 2.2 and 2.3 has been used to create a consolidated table (Table 2.4) and graphical representation (Figure 2.3) showing the total number of covered and uncovered villages.

Table 2.4: Details of overall covered and uncovered villages

Name of District	Total Identified Rural Villages in the District (a)	No of Villages having 4G cellular coverage (b)	No of villages having non-4G cellular coverage (c)	Total Number of villages having cellular coverage (d) = (b) + (c)	Total number of uncovered villages left (d) – (a)
Kargil	125	90	16	106	19
Leh	111	64	39	103	8
Total	**236**	**154**	**55**	**209**	**27**

Figure 2.3: Details of overall cellular coverage in two districts of Ladakh



2.19 The district wise detailed list of these **27** uncovered villages has been annexed at **Annexure III**.

D. Proposed plan based on coverage gap analysis

2.20 USOF has already initiated projects to roll out cellular mobile networks to cover the unconnected villages, and it has also launched the OFC-based BharatNet project to roll out telecom and internet services to unconnected distant and far-flung villages. The details of the ongoing USOF efforts for both mobile coverage and internet connectivity based respectively, affecting the two districts of Ladakh are as mentioned below:

USOF Schemes for Mobile Connectivity

a. **Mobile connectivity in 354 villages of uncovered border areas** - The initiative was designed to erect 354 mobile towers in 354 unconnected villages in border regions of Jammu and Kashmir, Ladakh, Himachal Pradesh, Uttar Pradesh, Bihar, Rajasthan, Gujarat, Uttarakhand, and other important areas in order to provide mobile services. On April 28, 2020, a contract was signed by USOF with M/s Reliance Jio Infocomm Limited (the implementing agency). On 09

November 2021 with the amendment of the agreement, additional 55 villages were included in the list of villages for the installation of mobile towers. As a result of existing coverage, certain villages were later excluded from the project, leaving only 302 villages to be covered with Probable Date of Completion (PDC) as 30.09.2022. The project has been accorded extension by USOF and its current PDC is 30.12.2022. Out of the 27 uncovered villages in the two districts of Ladakh, there are 7 villages that are already planned to be covered under this '**354 Villages scheme**' (*refer Table 2.6 below*).

b. **Saturation Of 4G Mobile Services in Uncovered Villages Across the Country** - On 27 July 2022, Central Government approved the USOF sponsored initiative to provide 4G mobile coverage to all unconnected villages in the nation. The project seeks to provide 4G mobile services in 24,680 untapped villages in challenging and isolated places (including the villages in UT of Ladakh). The project also incorporates a clause that allows for the addition of 20% more communities (approximately, additional 5000 villages) due to reasons like rehabilitation, new settlements, withdrawal of services by existing providers, etc. Additionally, 6,279 villages with only 2G or 3G access will also be upgraded to 4G. M/s Bharat Sanchar Nigam Limited (BSNL), utilizing the indigenously developed 4G technology stack, is carrying out the project execution. The project is being supported by the Universal Service Obligation Fund with current PDC as December 2023. Out of the 27 uncovered villages of Ladakh, 17 villages are being covered under this scheme (*refer Table 2.6 below*).

USOF Scheme for connecting villages on Optical Fiber

BharatNet - To deliver high speed broadband access to all Gram Panchayats (about 2.5 lakh) in the nation, BharatNet, one of the largest USOF sponsored rural telecom project in the world, is being deployed in stages. With the installation of BharatNet Phase-I in over

1 lakh GPs, it was finished in December 2017. With the Cabinet's permission in July 2017, the scope of Phase-I was subsequently expanded to include 1.25 lakh GPs. The revised BharatNet plan, which incorporates the Phase-I project execution experience and aligns it with the vision of Digital India, was approved by the Cabinet in July 2017. The revised approach offers the best possible media mix (OFC, Radio, and Satellite) to link Gram Panchayats (GPs). Phase II calls for the connection of GPs using a variety of implementation options, including the State-led Model, the Private Sector Model, and the CPSU Model, as well as Last Mile connectivity in GPs using Wi-Fi or any other compatible broadband technology. The overall status as on date for satellite-based connectivity extended by M/s BBNL to *Gram Panchayats* in UT Ladakh are as tabulated below:

Table 2.5: Overall status of M/s BBNL satellite-based connectivity in the UT of Ladakh

Gram Panchayats on Satellite in Ladakh		
Planned	**Completed**	**Operational**
193	**192**	**43**

Table 2.6: Summarized details of villages in effect remaining uncovered.

Name of The District	Number of Uncovered villages (a)	USOF Scheme Name		Remaining uncovered Villages (d) = (a) –[(b)+(c)]
		Uncovered villages being covered under '354 Villages scheme, (b)	Uncovered villages being covered under 'Saturation of 4G Mobile' scheme (c)	
Kargil	19	4	12	3
Leh	8	3	5	0
Total	**27**	**7**	**17**	**3**

2.21 Out of the 27 uncovered villages in the two districts (refer table 2.6 above), there are **7** villages that are planned to be covered under the ***'354 Villages***

scheme' and **17** villages that are planned to be covered under ***'Saturation of 4G Mobile' scheme of USOF.*** This leaves only ***3 villages*** in effect that neither have any mobile coverage, nor are being planned to be covered in any of the two USOF schemes. The district-wise summarized details of the remaining uncovered villages (3 villages) post exclusion of the villages being covered under planned/ ongoing USOF schemes, has also been given in Table 2.6 above. The district-wise detailed list of rural villages being covered under both the USOF schemes is annexed at **Annexure IV** and the list of 3 villages remaining uncovered is annexed at **Annexure V**.

2.22 TRAI has also obtained details from BBNL to ascertain whether the 3 uncovered villages are covered by BBNL media and/or to find out the nearest PoP of BharatNet OFC with respect to the villages if they are not yet covered under BharatNet scheme. Details of OPGW layout were obtained from Power Grid Corporation of India Limited (PGCIL), LADAKH Power Division (PD) and Rural Electrification Corporation Power Development and Consultancy Limited (RECPDCL) to find out whether Overground Power Ground Wire (OPGW) based backhaul can be proposed for these 3 villages. The district-wise details as obtained from BBNL has been enclosed as **Annexure VI** to these recommendations. The list of district-wise details obtained from PGCIL and LADAKH PD has been enclosed as **Annexure VII & VIII,** respectively. RECPDCL is not having its own transmission Lines in the UT of Ladakh, however it is implementing two projects viz 220 KV Phyang-Diskit Transmission Line (T/L) in Leh district and 220 KV Drass-Padum T/L in Kargil district on behalf of Ladakh Power Development Department. The project is targeted to be commissioned by October 2023.

2.23 TRAI brought it to the notice of implementing agency (M/s BSNL in this case) that 3 villages in UT of Ladakh are remaining devoid of any cellular mobile connectivity and to confirm whether these aforesaid three villages are being included under the ongoing initiatives of USOF in the UT of Ladakh. M/s BSNL in its response thereafter confirmed vide its email (copy of email

attached at **Annexure IX**) dated 03 January 2023 that they will include these three villages under *'Saturation of 4G mobile services'* project.

2.24 In addition to the above, TRAI also went on to analyze the details of 36 villages having non-4G coverage in conjunction with the USOF data of initiatives being undertaken in the UT of Ladakh. It is inferred from the aforementioned analysis that only 17 out of these 36 villages having non-4G coverage are getting upgraded to 4G under USOF initiatives, thus leaving *19 villages* that will still remain with non-4G coverage (details mentioned at **Annexure X**).

2.25 TRAI had also obtained the details of existing OFC presence of TSPs to analyze whether adequate backhaul transmission resources are available for to cater to present and future needs in upto 'Block level' in administrative setup of Ladakh. The layout details of all three operating TSPs duly labeled, has been plotted on a GIS template and is placed at **Annexure XI, XII, XIII**. It can be seen from these plots that M/s RJIL, M/s BSNL and M/s Bharti Airtel have laid OFC in Ladakh, however, none of the TSPs has covered all block headquarters. Also, only part of the OFC network of each TSP is in ring architecture.

2.26 Based on the information of backhaul transmission furnished by the TSPs the details of Sub-divisions, Tehsils and Blocks which stand covered on OFC are as tabulated below in table 2.7 :

Table 2.7: Sub-divisions, Tehsils and Blocks covered via Transmission Backhaul in Ladakh

Sl No	Sub-Division	Tehsil	Block	TSPs Covering in Linear/ Ring Topology
For Leh District				
(a)	Khaltsi	Khaltsi	Khaltsi	M/s RJIL, M/s BSNL, M/s Airtel
			Skurbuchan	M/s Airtel, M/s BSNL, M/s RJIL
			Singey Lalok	M/s RJIL
(b)	Nubra	Diskit & Nubra	Diskit	M/s RJIL, M/s BSNL, M/s Airtel

Sl No	Sub-Division	Tehsil	Block	TSPs Covering in Linear/ Ring Topology
			Turtuk	M/s RJIL, M/s BSNL, M/s Airtel
			Panamik	M/s RJIL, M/s BSNL, M/s Airtel
		Sumoor	Sumoor	M/s RJIL, M/s BSNL, M/s Airtel
(c)	Kharu	Kharu	-	M/s RJIL, M/s BSNL, M/s Airtel
(d)	Nyoma	Nyoma	Nyoma	M/s RJIL, M/s BSNL, M/s Airtel
			Rong	M/s RJIL
			Rupshu	-
(e)	Durbuk	Durbuk	Durbuk	M/s RJIL, M/s BSNL, M/s Airtel
			Tangtse	M/s RJIL, M/s BSNL, M/s Airtel
(f)	Likir	Saspul	Saspul	M/s RJIL, M/s BSNL, M/s Airtel
			Nimoo	M/s RJIL, M/s BSNL, M/s Airtel
(g)	District Headquarters -Leh	Chuchot	Thiksay	M/s RJIL, M/s BSNL, M/s Airtel
			Chuchot	M/s BSNL, M/s Airtel
For Kargil District				
(h)	District Headquarters-Kargil	Drass	Bhimbat	M/s Airtel, M/s RJIL
			Drass	M/s RJIL, M/s BSNL, M/s Airtel
		Kargil	Kargil	M/s RJIL, M/s BSNL, M/s Airtel
			Pashkum	M/s Airtel, M/s RJIL
			Sodh	M/s RJIL
(i)	Sankoo	Sankoo	Barsoo	M/s RJIL
			G.M. Pore	M/s RJIL
			Sankoo	M/s RJIL, M/s BSNL, M/s Airtel
		Taisuru	Taisuru	M/s RJIL
(j)	Shakar-Chiktan	Shakar-Chiktan	Shakar-Chiktan	M/s RJIL, M/s BSNL, M/s Airtel
		Shargole	Shargole	M/s RJIL, M/s BSNL, M/s Airtel
			Lotsum	M/s RJIL

Sl No	Sub-Division	Tehsil	Block	TSPs Covering in Linear/ Ring Topology
(k)	Zanskar	Zanskar	Zanskar	M/s RJIL
			Karshah	M/s RJIL
			Lungnak	M/s RJIL

2.27 Based on the information reflected in table above, the details of block headquarters location, which are presently remaining beyond the outreach of backhaul transmission OFC, are as tabulated below in table 2.8 :

Table 2.8: Blocks remaining uncovered via Transmission Backhaul in Ladakh

Sl No	District	Sub-Division/ Tehsil Affiliated to	Name of the Block HQ Remaining Uncovered	Existing Resource (If Any)
(a)	**Leh**	Nyoma	**Rupshu**	VSAT in MF-TDMA mode of operation installed by M/s BBNL for extending BharatNet to these locations

E. Recommendations

2.28 The Authority acknowledges that the digital divide in the form of poor network connectivity in remote areas of the UT of Ladakh hinders the ability of the government to provide locals with welfare initiatives such as timely tele-consultations with doctors and has even caused problems with online education of children as well as registration for the COVID vaccine in the recent past. The telecom connectivity issue is a genuine requirement in remote regions of Kargil as well as Leh and it needs to be resolved at the earliest. The major road network crisscrossing the valleys also serves as major axes of communication not only from the administrative and tourism point of view but also holds strategic importance for the nation. The Authority opines that

TSPs and USOF must strive to ensure extension of continued coverage along the major road networks in Ladakh. This will not only help in providing services to traversing tourists but will also ensure timely response to the needy during occurrence of natural calamities (if any).

2.29 As brought out in paragraph 2.24 above, **16** out the **36** villages having *non-4G coverage* have already been included in DoT funded USOF scheme (i.e. *"Saturation Of 4G Mobile Services in Uncovered Villages Across the Country") and one village has been included in the USOF scheme ("Mobile connectivity in 354 villages of uncovered border areas").* This means that **19 villages** still remained to be upgraded from non-4G to 4G coverage. M/s BBNL has shared with TRAI its updated data on BharatNet rollout alongwith current implementation status. The data reveals that **12** out of these **19** villages have VSAT installed under BharatNet. Therefore, for these 12 villages, the Authority has not planned any further VSAT backhaul for providing 4G connectivity as the current VSAT connectivity provided under BharatNet can serve the dual role of acting as backhaul for 4G connectivity also. In case the bandwidth on VSAT is required to be enhanced for providing backhaul for 4G coverage, the same can be done based on ground level survey by USOF. For rest of the 7 villages, VSAT connectivity on shared basis (as has been planned for other USOF VSAT connected village sites) should be undertaken till OFC media is rolled out for these villages.

2.30 In view of the aforesaid, **the Authority recommends that USOF must include the 3 uncovered villages (as specified at Annexure V) of Ladakh, under the 20% expansion provision of 'Saturation of 4G mobile services' project. USOF should ensure the same through the implementing agency i.e. BSNL in this case.**

2.31 **The Authority also recommends that the CAPEX and OPEX expenditure to be incurred for upgrading the existing non-4G based cellular mobile infrastructure at 19 villages (detailed list enclosed at Annexure X) should**

be funded by Government through USOF under the provisions of 20% additional scope that exists in USOF sponsored *"Saturation Of 4G Mobile Services in Uncovered Villages Across the Country"* to upgrade this cellular infrastructure to 4G based service. In 12 out of these 19 villages, the Authority recommends that the VSAT connectivity provided under BharatNet can double as backhaul for 4G connectivity also. In case the bandwidth on VSAT is required to be enhanced for providing backhaul for 4G coverage, the same can be done based on ground level survey by USOF. For the remaining 7 uncovered villages, VSAT connectivity on shared basis, as has been planned for other USOF VSAT connected village sites, should be considered till connectivity on OFC media is extended to these villages.

2.32 The Authority has also collected the data pertaining to OPGW presence in the area, which has been provided at **Annexures VII and VIII** respectively. As the USOF sponsored schemes mentioned at paragraph 2.20 (a) to (c) are currently under rollout in the UT of Ladakh, **the Authority recommends that BSNL and USOF should suitably examine the OPGW data collected by TRAI for its gainful utilization towards expediting the rollout of BharatNet Phase-II and USOF sponsored schemes for 4G mobile coverage respectively**.

F. Transmission Core Network in UT of Ladakh

2.33 The Authority analyzed the extant optical fibre based backhaul transmission media layout of TSPs, both in Leh and Kargil districts respectively (**Annexure-XIV**). If the overall existing optical fibre laid out is considered (irrespective of the TSP owning the OFC resource), following optical fibre based self-healing access rings can achieve redundancy :

(a) **Ring 1 :** *Kharu-Upshi-Gaik-Chumathang-Nyoma-Chushul-Tangtse-Kharu.*

(b) **Ring 2 :** *Tangtse-Chushul-Merak-Spangmik-Tangtse.*

(c) **Ring 3 :** *Kharu-Durbuk-Tanyar-Agham-Tsati-Leh-Kharu.*

(d) **Ring 4 :** *Sanjak-Khangral-Lamayuru-Khalsi-Sanjak.*

(e) **Ring 5 :** *Batalik-Kargil-Shargole-Wakha-Sanjak-Batalik.*

(f) **Ring 6 :** *Drass-Haripora-Sankoo-Khumbathang-Yourbaltak-Thasgam-Drass.*

(g) **Ring 7 :** *Sankoo-Padum-Zangla-Nerak-Bodhkharbu-Wakha-Kargil-Khumbathang-Sankoo.*

2.34 Considering the inhospitable terrain conditions and logistic difficulties in laying and maintenance of OFC in the UT of Ladakh, it is discouragingly 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 of Ladakh, it should be obligatory upon all operating TSPs operating in Ladakh to explore pooling and/ or dovetailing of resources. As the self-healing access ring architecture as specified in paragraph 2.33 (a) to (g) above can only be realized through resource pooling of all operating TSPs, **the Authority recommends that:**

(a) **All operating TSPs in UT of Ladakh 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.

(b) **In this regard, as already brought out by the Authority in its recommendations on '*Use of Street Furniture for Small Cell and Aerial Fibre Deployment*' published on 29th November 2022, in order to encourage such initiatives and infrastructure sharing practices amongst operating TSPs, the Authority recommends that the charges paid by lessee (a TSP) to any lessor TSP for use of spare backhaul media transmission resource capacity of the latter, 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". This modification may 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.**

2.35 The Authority has also carried out detailed interaction with other agencies operating in the UT of Ladakh and it is informed that motorable roads (*may or may not be black top road*) have now been constructed in the recent past to connect all block headquarters in Ladakh. Thus, feasibility may now exists to cover the left-out block headquarters of ***Rupshu*** on OFC (as specified at table no 2.8) as it currently does not have OFC connectivity.

2.36 TRAI also carried out terrain elevation analysis at its end using a Geographical information System (GIS) to evaluate the feasibility of Line of Sight (LoS) for a prospective microwave link between Rupshu and Pang/ Sarchoo/ Meroo. The

aforesaid terrain elevation analysis negated the feasibility of microwave link between block headquarters of *Rupshu* and aforementioned places. Further, analysis of the GIS terrain indicates that considerable distance is involved to extend OFC based connectivity to Rupshu from Nyoma/ Chumathang. Even M/s BBNL under its ongoing implementation drive has installed a VSAT to operate under MF-TDMA mode at Rupshu to extend BharatNet.

2.37 TRAI has estimated the amount of optical fibre required to extend high capacity backhaul transmission in linear connectivity to Rupshu in due course, to subsequently replace the VSATs with terrestrial media (optical fibre), details of which are as tabulated below:

Table 2.9 : Optical fibre required for extending backhaul transmission connectivity to uncovered blocks in Ladakh

Sl No	**Name of the uncovered Block**	**Name of the nearest OFC PoP**	**Approximated Quantity of OFC Required (in Km)**	**Remarks**
(a)	Rupshu	Nyoma/ Chumathang	100	At present a **VSAT** exists at Rupshu.
Total Approximated OFC Required			**100**	

2.38 Based on the above tabulated optical fibre estimation, TRAI also carried out a ballpark expenditure analysis of the overall requirements to undertake optical fibre-based extension of high capacity backhaul transmission network to the uncovered block location as specified at table 2.9 above. The detailed list of items with approximated cost as obtained from a major operating TSP is as tabulated below in table 2.10: -

Table 2.10 : Total approximated expenditure to extend backhaul transmission connectivity to uncovered blocks in Ladakh.

Broad estimation of CAPEX and OPEX (per annum) required for providing high-capacity OFC based Transmission Backhaul				
Sl No	**Item Nane**	**Quantity Required**	**Unit Cost (in ₹)**	**Overall Cost (in ₹)**
A) CAPEX (One-Time)				
(i)	6 Core OFC (of 2 km segment)	100 km	35000/km	35,00,000
(ii)	PLB HDPE Duct Cost	100 km	60,000/km	60,00,000
(iii)	Jointing Kits	50 Nos	2,000/Kit	1,00,000
(iv)	Cost of trenching, cable pulling and splicing	100 km	6,50,000/km	6,50,00,000
(v)	Cost of route indicators and joint indicators	300 Nos	1500	4,50,000
(vi)	Cost of joint enclosures	50 Nos	500	25,000
(vii)	Cost of transmission equipment (STM-4 Optimux with E1, FXO-FXS and Ethernet ports)	1 Nos	7,10,000	7,10,000
(viii)	5 KVA portable generator	1 Nos	2,50,000	2,50,000
(ix)	3.2 KVA UPS along with Solar panels (06), retrofit unit and batteries (04)	1 Nos	2,80,000	2,80,000
(x)	Prefabricated shelter of 12 ft x 16 ft x 10 ft	1 Nos	2,88,000	2,88,000
(xi)	Misc charges (transportation, labour and Installation charges etc)	1 location	1,50,000	1,50,000
		Total CAPEX		**7,67,53,000**
b) OPEX (Per Annum)				
(i)	Miscellaneous operating expenditure per **annum**	1 location	2,40,000	2,40,000
	Total Expenditure (Per Annum)			**7,69,93,000**

2.39 *Project Kranti* (also known as *Network For Spectrum (NFS)*) is a Nationwide OFC Network being implemented by BSNL, wherein almost 60,000 km of OFC is being rolled out for exclusive use by defence forces in lieu of surrendered spectrum by the latter (40 Mhz in 2G band and 25 Mhz in 3G band). Owing to enhanced disposition of troops in Ladakh under current circumstances, the NFS OFC and non-NFS Army owned OFC has percolated extensively into

the remote regions Adjoining LAC in Ladakh. In addition, the continued serviceability of NFS OFC network is also being ensured using microwave and satellite-based overlay to cater for disruptions occurring if any.

2.40 Based on aforementioned analysis, **the Authority recommends that DoT should approach Ministry of Defence (MoD) for allocation of one/ two pair of dark fibres in its existing NFS network or a suitable bandwidth in NFS network (if NFS dark fibres not available) from any of its PoP, located in near vicinity of Rupshu and Nyoma/ Chumathang respectively. The OFC connectivity from such a PoP to Rupshu should be funded through USOF. In case of non-availability of any NFS PoP in near vicinity of Rusphu and/ or Nyoma/ Chumathang respectively, the Authority recommends that USOF should undertake a ground survey and fund the roll out of a dedicated linear backhaul connectivity on optical fibre from Rupshu Block Headquarters to Nyoma/ Chumathang for which ballpark figures of expenditure has been proposed at Table 2.10 above.**

2.41 As per clause 30, chapter 5 of unified license, it is incumbent upon licensees to ensure compliance to aspects such as registration of demand of telecom services, maintaining waitlist and publicize provision of services etc. **The Authority vide its recommendations on "*Improving Telecom Connectivity/ Infrastructure in far-flung areas of Himachal Pradesh*" has reiterated upon licensed TSPs to maintain waiting list of service demand raised with them. The aforementioned aspect has also been conveyed to DoT vide TRAI letter No G(17)/3/2023-NSL-I dated 24 January 2023 wherein DoT has also been requested to establish a mechanism by which the *LSA Field Units* are able to obtain, examine and analyze the waitlist data from all TSPs on a monthly basis. The Authority, therefore, re-iterates that DoT should initiate action on points as mentioned in TRAI's DO Letter No G(17)/3/2023-NSL-I dated 24 January 2023 (Copy at Annexure-XV) at the earliest**.

G. Other Miscellaneous Important Aspects

2.42 **The Authority recommends that DoT may take up the case with concerned authorities for not levying any RoW charges to TSPs/IP-Is for connecting the administrative setup in remote and hilly areas along and/ or in near vicinity of LAC in the UT of Ladakh. The RoW rules of the UT should also immediately be aligned to the latest amendments carried out by DoT in ROW Rules 2016**.

2.43 Drawing conclusion from established precedences and experience of other countries in the past, the Authority is of opinion that during the occurrence of natural calamities and/ or critical situations triggered due to *border conflicts*, there is high probability that the terrestrial based optical fibre networks may get disrupted. Especially during border conflicts, it needs to be ensured that the locations of strategic importance do not get cut off altogether if the terrestrial connectivity is damaged. Therefore, in all remote and far-flung ***border regions of strategic importance*** in India, it is imperative that an alternative connectivity overlay using satellite-based communication system is planned in advance. **The Authority therefore recommends that DoT should plan for a VSAT based alternate communication overlay in all border areas of strategic importance in the country, including Ladakh which should co-exist as backup communication medium in all such areas along with terrestrial connectivity. This will ensure continuity of crucial communication services during occurrence of natural calamity and/ or critical situations triggered due to *border conflicts* in such areas**.

2.44 **TRAI has made its recommendations to Government on Improving Telecom Connectivity/ Infrastructure in far-flung areas of Himachal Pradesh on 12.12.2022. Many of these recommendations are also valid for Ladakh. The Authority recommends that all such valid recommendations should be mutatis mutandis implemented for Ladakh. These recommendations, suitably re-worded in terms of their applicability to Ladakh, are as follows**:

a) **DOT should take up with the Ladakh UT Administration to consider providing electricity to telecom sites as a priority (within 15 days of connections request) at Utility/Industrial tariff. DoT should also take up with the Ladakh UT Administration to consider waiving off last mile installation charges for extending electric connection to telecom sites in the two districts of Leh and Kargil as this will facilitate early roll out of telecom services in these areas and will help bridging the digital divide**.

b) **DoT should take up with the MNRE and the Ladakh UT Administration for coming up with a scheme to fund installation of solar panels at important strategic telecom sites in remote and hilly areas.**

c) **DoT should take up with the Ladakh UT Administration, NHAI and BRO, that in all road construction, road widening, or other related works should be undertaken (through prior notice) with prior coordination involving TSPs, and the liability of Contractor for making the damages good to the TSPs should be included ab-initio in the contracts. DoT should also take up with the Ladakh UT Administration to explore the possibility of constructing utility ducts in all future road widening and new road construction projects. This will help in quick rollout of all utility infrastructure, including telecom, in the state**. **DoT should also take up with Ladakh UT Administration that any ban on giving RoW permissions to utility service providers during Defect Liability Period (DLP) of a road should only be imposed if utility ducts are existing ab-initio alongside that road.**

d) **DoT should do a site-wise analysis of all such sites that are being run by BSNL or any other TSP on VSAT in remote and hilly areas in Ladakh. For all such sites that are being run to serve strategic and/ or service delivery needs of the Government, the entire operational cost of running these sites should be borne by the Government**.

Chapter-III

SUMMARY OF RECOMMENDATIONS

3.1 The Authority recommends that USOF must include the 3 uncovered villages (as specified at Annexure V) of Ladakh, under the 20% expansion provision of 'Saturation of 4G mobile services' project. USOF should ensure the same through the implementing agency i.e. BSNL in this case.

[Para 2.30]

3.2 The Authority recommends that the CAPEX and OPEX expenditure to be incurred for upgrading the existing non-4G based cellular mobile infrastructure at 19 villages (detailed list enclosed at Annexure X) should be funded by Government through USOF under the provisions of 20% additional scope that exists in USOF sponsored *"Saturation Of 4G Mobile Services in Uncovered Villages Across the Country"* to upgrade this cellular infrastructure to 4G based service. In 12 out of these 19 villages, the Authority recommends that the VSAT connectivity provided under BharatNet can double as backhaul for 4G connectivity also. In case the bandwidth on VSAT is required to be enhanced for providing backhaul for 4G coverage, the same can be done based on ground level survey by USOF. For the remaining 7 uncovered villages, VSAT connectivity on shared basis, as has been planned for other USOF VSAT connected village sites, should be considered till connectivity on OFC media is extended to these villages.

[Para 2.31]

3.3 The Authority recommends that BSNL and USOF should suitably examine the OPGW data collected by TRAI for its gainful utilization towards expediting the rollout of BharatNet Phase-II and USOF sponsored schemes for 4G mobile coverage respectively.

[Para 2.32]

3.4 The Authority recommend that all operating TSPs in UT of Ladakh 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.

[Para 2.34(a)]

3.5 In this regard, as already brought out by the Authority in its recommendations on '*Use of Street Furniture for Small Cell and Aerial Fibre Deployment*' published on 29th November 2022, in order to encourage such initiatives and infrastructure sharing practices amongst operating TSPs, the Authority recommends that the charges paid by lessee (a TSP) to any lessor TSP for use of spare backhaul media transmission resource capacity of the latter, 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". This modification may 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 2.34(b)]

3.6 The Authority recommends that DoT should approach Ministry of Defence (MoD) for allocation of one/ two pair of dark fibres in its existing NFS network or a suitable bandwidth in NFS network (if NFS dark fibres not available) from any of its PoP, located in near vicinity of Rupshu and Nyoma/ Chumathang respectively. The OFC connectivity from such a PoP to Rupshu should be funded through USOF. In case of non-availability of any NFS PoP in near vicinity of Rusphu and/ or Nyoma/ Chumathang respectively, the Authority recommends that USOF should undertake a ground survey and fund the roll out of a dedicated linear backhaul connectivity on optical fibre from Rupshu Block Headquarters to Nyoma/ Chumathang for which ballpark figures of expenditure has been proposed at Table 2.10 above.

[Para 2.40]

3.7 The Authority vide its recommendations on "*Improving Telecom Connectivity/ Infrastructure in far-flung areas of Himachal Pradesh*" has reiterated upon licensed TSPs to maintain waiting list of service demand raised with them. The aforementioned aspect has also been conveyed to DoT vide TRAI letter No G(17)/3/2023-NSL-I dated 24 January 2023 wherein DoT has also been requested to establish a mechanism by which the *LSA Field Units* are able to obtain, examine and analyze the waitlist data from all TSPs on a monthly basis. The Authority, therefore, reiterates that DoT should initiate action on points as mentioned in TRAI's DO Letter No G(17)/3/2023-NSL-I dated 24 January 2023 (Copy at Annexure-XV) at the earliest.

[Para 2.41]

3.8 The Authority recommends that DoT may take up the case with concerned authorities for not levying any RoW charges to TSPs/IP-Is for connecting the administrative setup in remote and hilly areas along and/ or in near vicinity of LAC in the UT of Ladakh. The RoW rules of the UT should also immediately be aligned to the latest amendments carried out by DoT in ROW Rules 2016.

[Para 2.42]

3.9 The Authority therefore recommends that DoT should plan for a VSAT based alternate communication overlay in all border areas of strategic importance in the country, including Ladakh which should co-exist as backup communication medium in all such areas along with terrestrial connectivity. This will ensure continuity of crucial communication services during occurrence of natural calamity and/ or critical situations triggered due to *border conflicts* in such areas.

[Para 2.43]

3.10 TRAI has made its recommendations to Government on Improving Telecom Connectivity/ Infrastructure in far-flung areas of Himachal Pradesh on 12.12.2022. Many of these recommendations are also valid for Ladakh. The Authority recommends that all such valid recommendations should be mutatis mutandis implemented for Ladakh. These recommendations, suitably re-worded in terms of their applicability to Ladakh, are as follows: -

The Authority recommends that the DOT should take up with the Ladakh UT Administration to consider providing electricity to telecom sites as a priority (within 15 days of connections request) at Utility/Industrial tariff. DoT should also take up with the Ladakh UT Administration to consider waiving off last mile installation charges for extending electric connection to telecom sites in the two districts of

Leh and Kargil as this will facilitate early roll out of telecom services in these areas and will help bridging the digital divide.

[Para 2.44(a)]

3.11 The Authority recommends that DoT should take up with the MNRE and the Ladakh UT Administration for coming up with a scheme to fund installation of solar panels at important strategic telecom sites in remote hilly areas.

[Para 2.44(b)]

3.12 The Authority recommends that DoT should take up with the Ladakh UT Administration, NHAI and BRO, that in all road construction, road widening, or other related works should be undertaken (through prior notice) with prior coordination involving TSPs, and the liability of Contractor for making the damages good to the TSPs should be included ab-initio in the contracts. DoT should also take up with the Ladakh UT Administration to explore the possibility of constructing utility ducts in all future road widening and new road construction projects. This will help in quick rollout of all utility infrastructure, including telecom, in the state. DoT should also take up with Ladakh UT Administration that any ban on giving RoW permissions to utility service providers during Defect Liability Period (DLP) of a road should only be imposed if utility duct is provided alongside of that road.

[Para 2.44(c)]

3.13 The Authority recommends that DoT should do a site-wise analysis of all such sites that are being run by BSNL or any other TSP on VSAT in remote and hilly areas in Ladakh. For all such sites that are being run to serve strategic or service delivery needs of the Government, the entire operational costs of running these sites should be borne by the Government.

[Para 2.44(d)]

ANNEXURE – I

(Refer Para 1.10 (b) of Chapter

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UT Ladakh: Current network status & plan

UT Ladakh I Sites and Fibre

KPI	Leh	Kargil	UT Ladakh
Total Sites	99	61	160
Utilization	65%	62%	66%
Fibre-in Kms*	691	931	1622
Network Availability	99.4	99.1	99.1
Sites Running on DG**	**28**	**16**	**44**
Intersite distance (Urban)	900M	1.5 KM	1.5 KM

**Fibre includes all IP vendors*
***Support required for EB connection*

Support required to connect 27% of sites on DG to electricity grid

ANNEXURE – II

(Refer Para 1.10 (b) of Chapter I)

Details submitted by M/s BSNL on Network Coverage/ Connectivity in Ladakh

File No.BSNLCO-RGLN/29/1/2020-REGLN

Regulation Cell,
Room no. 504,
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Janpath, New Delhi – 110001
Tel. : 011 – 23734081-82
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भारत संचार निगम लिमिटेड
(भारत सरकार का उपक्रम)
BHARAT SANCHAR NIGAM LIMITED
(A Govt. of India Enterprise)

To

Jt. Advisor (QoS),
Telecom Regulatory Authority of India,
Mahanagar Doorsanchar Bhawan,
Jawahar Lal Nehru Marg, (Old Minto Road),
New Delhi-110002

No. BSNLCO-RGLN/29/1/2021-REGLN/ dated 31-03-2022
Sub: Network coverage/ connectivity details in respect of Ladakh-reg.

In reference to your office letter no. RP-4/16(4)/2022-QoS dated 17.03.2022 on the captioned subject matter, the para wise comments of BSNL are as under:

Point no. (i): At present in Leh UT, total 163 sites are radiating, out of these, 119 sites are working (having 118 2G and 71 3G BTSs) in Leh district and 44 sites are working (having 44 2G and 30 3G BTSs) in Kargil district.

Point no. (ii): Out of 163 sites, 132 sites are working on OFC media.

Point no. (iii): RF Drive test of 2G and 3G services of all Leh UT is carried out on regular basis which are enumerated below:

1. Leh City (2G& 3G network) - 2 times in a year May 2021 and November 2021.
2. Kargil City (2G& 3G network) - 2 times in a year May 2021 and November 2021.
3. National Highway route NH1D (between Zozila, Drass to Leh)- Two times in a Year July, 2021 and Nov 2021.
4. State Highway (Between Leh to Nubra Base Camp) - One time in a year August 2021.
5. State Highway (Between Leh to Durbuk)- One time in a year, August 2021.
6. RF drive test was conducted in the following towns/villages (Population between 5K to 50K) in month of June 21.

Chuchot, Chuglamsar, Drass, Durbuk, Khalsi, Kharu, Nubra Valley, Nyoma, Padam, Sankoo, Saspol, Shakar, Shargol, Trespone.

RF Drive test is also carried out as per customer complaint.

Deficiencies/ shortcomings/ grey areas or pockets-
Mostly area of Leh UT is scattered, tough and sparsely populated. In Leh

and Kargil cities, both 2G and 3G sites are less as compared to expansion of cites. We have planned more sites in both cites in upcoming Phase IX.2. Mostly town and army area camps not covered with 3G services and the customers are demanding data services. In National and State highways, routes are not adequately covered due to less no. of BTS sites. Also, there are most constraints of media as there is only linear OFC route between Leh and Srinagar. Our 1/3rd sites of Leh SSA are fully dependent on army DG power and army OFC media only. We have planned new sites for covering grey areas and pockets of Leh UT in upcoming 4G project under Phase IX.2.

Point no. (iv): Quality of Service of Leh Business Area
Call drop rate for month – January (2.37) and February (2.11).
HOSR -Hand over success Rate---January (98.74) and February (98.59).
TCH Block Rate -- January (1.32) and February (1.15).
CSSR -- January (97.86) and February (97.95).

Point no. (v): 140 new sites are planned to be installed in Leh UT for enhancement of coverage in upcoming 4G project. The expected time of commissioning of sites cannot be stated at this stage of the project.

Point no. (vi): Nil

Regards

31.03.2022
(Ved Prakash Verma)
DGM (Regulation-II)
Mob no. 9868254555

I/9084/2022

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

TRAI

F. No. **RP-4/16/(4)/2022-QoS**

17-03-2022

Subject: Seeking details from Service Providers w.r.t. the network coverage/ connectivity at Ladakh.

1. Kindly refer to the news article published in The Tribune Delhi on 14.02.2022 (copy enclosed) mentioning that the people of Ladakh are facing hardship to pursue online education, accessing digital banking and many remote areas in the UT are without mobile towers etc.

2. In view of the you are requested to share the following details:

i. Present state of network connectivity/ coverage at District/ Block/ tehsil/ Village level.
ii. Details of the OF network if any, in the UT Ladakh
iii. Details on field measurement i.e. drive tests done in the past and deficiencies/shortcomings/ grey areas or pockets observed in mobility based services and the action on these inadequacies.
iv. Present state of Quality of Service as per PMR defined in these areas.
v. Plan for new deployment and improvement in network connectivity with specific timelines of completion/ commissioning.
vi. Any other relevant details.

3. The above details be submitted within 10-days of receipt of this letter.

Signed by Pawan Kumar Aggarwal
Date: 17-03-2022 17:39:08
(Pawan Kumar Aggarwal)
Jt. Advisor (QoS)

To

M/s Airtel/ M/s BSNL/ M/s RJIO/ M/s Vodafone Idea

महानगर दूरसंचार भवन, जवाहरलाल नेहरू मार्ग, Mahanagar Doorsanchar Bhawan, Jawahar Lal Nehru Marg,
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ANNEXURE-III
(Refer Para 2.19 under Chapter-II)

District wise detailed list of 27 Uncovered Villages having no Cellular coverage

#	State/ UT	District	District Code as per Census 2011 data	Sub District Code as per Census 2011 data	Village Code as per Census 2011 data	POPULATION	Name of Village
1	Ladakh	Kargil	004	00013	964	624	Derchiks
2	Ladakh	Kargil	004	00013	965	1287	Garkon
3	Ladakh	Kargil	004	00013	968	2177	Yourbaltak
4	Ladakh	Kargil	004	00013	977	958	Kaksar
5	Ladakh	Kargil	004	00013	981	349	Kukste
6	Ladakh	Kargil	004	00013	983	520	Lamsusando
7	Ladakh	Kargil	004	00013	992	199	Nunamchey
8	Ladakh	Kargil	004	00013	996	794	Shimsha
9	Ladakh	Kargil	004	00014	1047	1456	Khandi
10	Ladakh	Kargil	004	00014	1059	470	Achambur
11	Ladakh	Kargil	004	00014	1061	316	Kochik
12	Ladakh	Kargil	004	00015	1066	266	Hamiling
13	Ladakh	Kargil	004	00015	1067	588	Remala Skyagam
14	Ladakh	Kargil	004	00015	1069	605	Ating
15	Ladakh	Kargil	004	00015	1070	358	Rantaq Shah
16	Ladakh	Kargil	004	00015	1078	478	Lungmi Rezing
17	Ladakh	Kargil	004	00015	1079	964	Karshah
18	Ladakh	Kargil	004	00015	1080	954	Zangla
19	Ladakh	Kargil	004	00015	1083	244	Shan Shaday
20	Ladakh	Leh	003	00010	850	99	Umla
21	Ladakh	Leh	003	00010	876	977	Man Pangong
22	Ladakh	Leh	003	00010	886	202	Teri
23	Ladakh	Leh	003	00010	888	167	Tarchit
24	Ladakh	Leh	003	00010	898	361	Samad Rakchan
25	Ladakh	Leh	003	00011	911	103	Thanga Chathang
26	Ladakh	Leh	003	00011	937	142	Khemakhungiu
27	Ladakh	Leh	003	00012	958	325	Kanji

ANNEXURE – IV

(Refer Para 2.21 under Chapter-II)

District wise detailed list of 24 Villages where two ongoing USOF Schemes for Cellular Coverage are planned

#	State/ UT	District	District Code as per Census 2011 data	Village Code as per Census 2011 data	POPULATION	Name of Village	Name Ongoing Scheme	Name and Detail of scheme	Type of coverage - (2G/3G/4G)
1	Ladakh	Leh	003	898	361	Samad Rakchan	Ongoing scheme	4G saturation Scheme	Cellular 4G
2	Ladakh	Leh	003	850	99	Umla	Ongoing scheme	4G saturation Scheme	Cellular 4G
3	Ladakh	Leh	003	876	977	Man Pangong	Ongoing scheme	4G saturation Scheme	Cellular 4G
4	Ladakh	Leh	003	886	202	Teri	Ongoing scheme	4G saturation Scheme	Cellular 4G
5	Ladakh	Leh	003	888	167	Tarchit	Ongoing scheme	4G saturation Scheme	Cellular 4G
6	Ladakh	Leh	003	911	103	Thanga Chathang	Ongoing scheme	USOF 354 Village	Cellular 4G
7	Ladakh	Leh	003	937	142	Khemakhungiu	Ongoing scheme	USOF 354 Village	Cellular 4G
8	Ladakh	Leh	003	958	325	Kanji	Ongoing scheme	USOF 354 Village	Cellular 4G
9	Ladakh	Kargil	004	965	1287	Garkon	Ongoing scheme	USOF 354 Village	Cellular 4G
10	Ladakh	Kargil	004	977	958	Kaksar	Ongoing scheme	4G saturation Scheme	Cellular 4G
11	Ladakh	Kargil	004	981	349	Kukste	Ongoing scheme	USOF 354 Village	Cellular 4G
12	Ladakh	Kargil	004	983	520	Lamsusando	Ongoing scheme	4G saturation Scheme	Cellular 4G
13	Ladakh	Kargil	004	992	199	Nunamchey	Ongoing scheme	4G saturation Scheme	Cellular 4G
14	Ladakh	Kargil	004	996	794	Shimsha	Ongoing scheme	4G saturation Scheme	Cellular 4G
15	Ladakh	Kargil	004	1047	1456	Khandi	Ongoing scheme	4G saturation Scheme	Cellular 4G
16	Ladakh	Kargil	004	1059	470	Achambur	Ongoing scheme	4G saturation Scheme	Cellular 4G
17	Ladakh	Kargil	004	1061	316	Kochik	Ongoing scheme	4G saturation Scheme	Cellular 4G
18	Ladakh	Kargil	004	1066	266	Hamiling	Ongoing scheme	4G saturation Scheme	Cellular 4G
19	Ladakh	Kargil	004	1067	588	Remala Skyagam	Ongoing scheme	4G saturation Scheme	Cellular 4G
20	Ladakh	Kargil	004	1069	605	Ating	Ongoing scheme	4G saturation Scheme	Cellular 4G
21	Ladakh	Kargil	004	1070	358	Rantaq Shah	Ongoing scheme	4G saturation Scheme	Cellular 4G
22	Ladakh	Kargil	004	1080	954	Zangla	Ongoing scheme	USOF 354 Village	Cellular 4G
23	Ladakh	Kargil	004	1083	244	Shan Shaday	Ongoing scheme	USOF 354 Village	Cellular 4G
24	Ladakh	Kargil	004	1079	964	Karshah	Ongoing scheme	4G saturation Scheme	Cellular 4G

ANNEXURE- V

(Refer Para 2.21 under Chapter-II)

District wise detailed list of 3 Uncovered Villages where there is no USOF Schemes planned

#	District	District Code as per Census 2011 data	Village Code as per Census 2011 data	Population	Name of Village	Village already covered by BBNL	Whether OPGW cable present/ passing through the Village (Mention the nearest site if <=10km away)	Current Status
1	Kargil	004	964	624	Derchiks	Yes	No	• Village covered by BBNL (VSAT connectivity), Implementing agency- TCIL/DSPT
2	Kargil	004	968	2177	Yourbaltak	Yes	No (PGCIL)	• Village covered by BBNL (VSAT connectivity), 2 WiFi present in the village, implementing agency – BSNL • PGCIL – site 10 Km away from the village • BSNL has plan for coverage in 2023 (Optical fibre connectivity). 5 KMs of OFC laying will be required from nearest POP.
3	Kargil	004	1078	478	Lungmi Rezing	No	No	• No coverage planning as of now by BBNL

ANNEXURE – VI

Refer Para 2.22 under Chapter-II)

District wise detailed list of Villages where BharatNet Infrastructure has been presently plannes / rolled out

#	District	Village Code as per Census 2011 data	Name of Village	Whether Village telecom connectivity/coverage plan	Name of Bharatnet phase / scheme	Connectivity available	Type of Backhaul connectivity available	Backhaul Bandwidth capacity (in Mbps)	Whether WiFi is available/being provided /planned. If Yes, total number of wifi hotspot activated	If WiFi is available/being provided /planned, total number of wifi hotspot activated	Name of the implementing agency
1	Leh	848	Likir	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
2	Leh	849	Ney	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
3	Leh	850	Umla	Village already covered	Satellite	VSAT	VSAT	10 Mbps (Shared)	No	Planned	TCIL/DSPT
4	Leh	851	Bazgoo	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
5	Leh	852	Nimo	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
6	Leh	853	Taroo	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
7	Leh	854	Phey-Leh	Village already covered	Satellite	VSAT	VSAT	10 Mbps (Shared)	No	Planned	TCIL/DSPT
8	Leh	855	Fiang	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
9	Leh	856	Saboo	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
10	Leh	857	Nang	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
11	Leh	858	Shey	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
12	Leh	859	Thiksey	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
13	Leh	860	Rambir Por	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
14	Leh	861	Rumbak	Village already covered	Satellite	VSAT	VSAT	10 Mbps (Shared)	No	Planned	TCIL
15	Leh	862	Stok	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
16	Leh	863	Chuchat Yakma	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
17	Leh	864	Chiling Sumda	Village already covered	Satellite	VSAT	VSAT	10 Mbps (Shared)	No	Planned	TCIL/DSPT
18	Leh	865	Skiumarkha	Village already covered	Satellite	VSAT	VSAT	10 Mbps (Shared)	No	Planned	TCIL/DSPT
19	Leh	866	Chuchot Shama	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
20	Leh	867	Chuchoot Gongma	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
21	Leh	868	Mathoo	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
22	Leh	871	Chemrey	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
23	Leh	872	Sakti	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
24	Leh	873	Durbok	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
25	Leh	874	Tagste	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
26	Leh	875	Shachokol	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
27	Leh	876	Man Pangong	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
28	Leh	878	Shara	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
29	Leh	879	Stakna	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
30	Leh	881	Igoo	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
31	Leh	883	Liktse	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
32	Leh	884	Tukla	Village already covered	Satellite	VSAT	VSAT	10 Mbps (Shared)	No	Planned	TCIL/DSPT
33	Leh	885	Kumgyam	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
34	Leh	886	Teri	Village already covered	Satellite	VSAT	VSAT	10 Mbps (Shared)	No	Planned	TCIL/DSPT
35	Leh	887	Himya	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL

36	Leh	888	Tarchit	Village already covered	Satellite	VSAT	VSAT	10 Mbps (Shared)	No	Planned	TCIL/DSPT
37	Leh	893	Matselang	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
38	Leh	894	Gia	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
39	Leh	895	Kharnak	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
40	Leh	897	Skitmang	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
41	Leh	898	Samad Rakchan	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
42	Leh	899	Karzok	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
43	Leh	900	Chumathang	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
44	Leh	901	Nyoma	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
45	Leh	903	Anlay	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
46	Leh	904	Koyul	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
47	Leh	907	Kargyam	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
48	Leh	908	Chushul	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
49	Leh	912	Taksi	Village already covered	Satellite	VSAT	VSAT	10 Mbps (Shared)	No	Planned	TCIL
50	Leh	913	Turtok	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
51	Leh	915	Bogdang	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
52	Leh	916	Warisfistan	Village already covered	Satellite	VSAT	VSAT	10 Mbps (Shared)	No	Planned	TCIL
53	Leh	917	Khemi	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
54	Leh	918	Panamic	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
55	Leh	919	Kubed	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
56	Leh	921	Udmaru	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
57	Leh	922	Terchey	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
58	Leh	924	Largiab	Village already covered	Satellite	VSAT	VSAT	10 Mbps (Shared)	No	Planned	TCIL/DSPT
59	Leh	926	Partap Pore	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
60	Leh	927	Hundar Dok	Village already covered	Satellite	VSAT	VSAT	10 Mbps (Shared)	No	Planned	TCIL/DSPT
61	Leh	928	Hundar	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
62	Leh	929	Diskit	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
63	Leh	930	Chamshan Charasa	Village already covered	Satellite	VSAT	VSAT	10 Mbps (Shared)	No	Planned	TCIL/DSPT
64	Leh	931	Tiggar	Village already covered	Satellite	VSAT	VSAT	10 Mbps (Shared)	No	Planned	TCIL/DSPT
65	Leh	932	Sumoor	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
66	Leh	933	Lakjung	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
67	Leh	935	Khardong	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
68	Leh	936	Digger	Village already covered	Satellite	VSAT	VSAT	10 Mbps (Shared)	No	Planned	TCIL/DSPT
69	Leh	937	Khemakhungiu	Village already covered	Satellite	VSAT	VSAT	10 Mbps (Shared)	No	Planned	TCIL/DSPT
70	Leh	938	Tangyar	Village already covered	Satellite	VSAT	VSAT	10 Mbps (Shared)	No	Planned	TCIL/DSPT
71	Leh	939	Dah	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
72	Leh	940	Hanoo	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
73	Leh	941	Temisgam	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
74	Leh	942	Tia	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
75	Leh	943	Skur Buchan	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL

76	Leh	944	Damkhar	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
77	Leh	945	Leido	Village already covered	Satellite	VSAT	VSAT	10 Mbps (Shared)	No	Planned	TCIL/DSPT
78	Leh	946	Takmachik	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
79	Leh	947	Skinlingyong	Village already covered	Satellite	VSAT	VSAT	10 Mbps (Shared)	No	Planned	TCIL/DSPT
80	Leh	948	Khaltse	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
81	Leh	950	Hemishok Pachan	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
82	Leh	952	Suspol	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
83	Leh	953	Alchi	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
84	Leh	954	Wanla	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
85	Leh	955	Giramangu	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
86	Leh	957	Lamayouro	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
87	Leh	958	Kanji	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
88	Leh	959	Lingshet	Village already covered	Satellite	VSAT	VSAT	10 Mbps (Shared)	No	Planned	TCIL/DSPT
89	Leh	960	Fotoksar	Village already covered	Satellite	VSAT	VSAT	10 Mbps (Shared)	No	Planned	TCIL/DSPT
90	Leh	961	Youl Chung	Village already covered	Satellite	VSAT	VSAT	10 Mbps (Shared)	No	Planned	TCIL/DSPT
91	Kargil	962	Chulichan	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
92	Kargil	963	Silmo	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
93	Kargil	964	Derchiks	Village already covered	Satellite	VSAT	VSAT	10 Mbps (Shared)	No	Planned	TCIL/DSPT
94	Kargil	965	Garkon	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
95	Kargil	966	Lalung	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
96	Kargil	967	Apati	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
97	Kargil	968	Yourbaltak	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
98	Kargil	969	Akchamal	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
99	Kargil	970	Barchey	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
100	Kargil	971	Toumel	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
101	Kargil	973	Shilikchey	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
102	Kargil	974	Hardas	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
103	Kargil	976	Karkit	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
104	Kargil	977	Kaksar	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
105	Kargil	978	Kharbu	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
106	Kargil	979	Chuliskambo	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
107	Kargil	980	Push Kum	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
108	Kargil	983	Lamsusando	Village already covered	Satellite	VSAT	VSAT	10 Mbps (Shared)	No	Planned	TCIL/DSPT
109	Kargil	984	Yogmakharbu	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
110	Kargil	985	Sanjak	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
111	Kargil	986	Chiktan	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
112	Kargil	987	Hagnis	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
113	Kargil	988	Shakar	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
114	Kargil	989	Tacha	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
115	Kargil	990	Lochum	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL

116	Kargil	993	Skambo	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
117	Kargil	994	Choskar	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
118	Kargil	995	Minji	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
119	Kargil	996	Shimsha	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
120	Kargil	997	Thasgam	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
121	Kargil	998	Chokial	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
122	Kargil	1000	Biambiat	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
123	Kargil	1001	Gindial	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
124	Kargil	1003	Goshan	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
125	Kargil	1004	Holiyal	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
126	Kargil	1005	Rambirpur (Drass)	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
127	Kargil	1006	Mushku	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
128	Kargil	1008	Pandras	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
129	Kargil	1009	Matayan	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
130	Kargil	1010	Tronjen (Trankuchan)	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
131	Kargil	1014	Batambis	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
132	Kargil	1016	Tingdo	Village already covered	Satellite	VSAT	VSAT	10 Mbps (Shared)	No	Planned	TCIL/DSPT
133	Kargil	1018	Karamba	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
134	Kargil	1019	Shargol	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
135	Kargil	1020	Malbekh	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
136	Kargil	1021	Wakhade	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
137	Kargil	1022	Kuksho	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
138	Kargil	1023	Samrah	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
139	Kargil	1024	Staktse	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
140	Kargil	1025	Bodhkharbu	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
141	Kargil	1027	Safi	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
142	Kargil	1028	Tres Pone	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
143	Kargil	1029	Saleskot	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
144	Kargil	1030	Kanor	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
145	Kargil	1031	Tambis	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
146	Kargil	1032	Thasgam Thaine	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
147	Kargil	1033	Gund Mangl Pur	Village already covered	Satellite	VSAT	VSAT	10 Mbps (Shared)	No	Planned	TCIL
148	Kargil	1034	Farona	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
149	Kargil	1035	Lankarchey	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
150	Kargil	1036	Umba	Village already covered	Satellite	VSAT	VSAT	10 Mbps (Shared)	No	Planned	TCIL/DSPT
151	Kargil	1037	Nagmakusar	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
152	Kargil	1038	Thang Dumbur	Village already covered	Satellite	VSAT	VSAT	10 Mbps (Shared)	No	Planned	TCIL/DSPT
153	Kargil	1039	Sangra	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
154	Kargil	1040	Stakpa	Village already covered	Satellite	VSAT	VSAT	10 Mbps (Shared)	No	Planned	TCIL/DSPT
155	Kargil	1042	KarcheY Khar	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL

156	Kargil	1043	Barsoo	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
157	Kargil	1044	Barto	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
158	Kargil	1047	Khandi	Village already covered	Satellite	VSAT	VSAT	10 Mbps (Shared)	No	Planned	TCIL/DSPT
159	Kargil	1049	Purtikchy	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
160	Kargil	1050	Khows	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
161	Kargil	1051	Yuljuk	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
162	Kargil	1054	Namsuru	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
163	Kargil	1055	Panikhar	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
164	Kargil	1058	Tai Suru	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
165	Kargil	1060	Tangol	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
166	Kargil	1061	Kochik	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
167	Kargil	1062	Parkachik	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
168	Kargil	1063	Rangdum	Village already covered	Satellite	VSAT	VSAT	10 Mbps (Shared)	No	Planned	TCIL/DSPT
169	Kargil	1065	Abran	Village already covered	Satellite	VSAT	VSAT	10 Mbps (Shared)	No	Planned	TCIL
170	Kargil	1066	Hamiling	Village already covered	Satellite	VSAT	VSAT	10 Mbps (Shared)	No	Planned	TCIL/DSPT
171	Kargil	1067	Remala Skyagam	Village already covered	Satellite	VSAT	VSAT	10 Mbps (Shared)	No	Planned	TCIL/DSPT
172	Kargil	1068	Phey-Kargil	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
173	Kargil	1069	Ating	Village already covered	Satellite	VSAT	VSAT	10 Mbps (Shared)	No	Planned	TCIL/DSPT
174	Kargil	1070	Rantaq Shah	Village already covered	Satellite	VSAT	VSAT	10 Mbps (Shared)	No	Planned	TCIL/DSPT
175	Kargil	1075	Padam	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
176	Kargil	1076	Upti Pipiting	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
177	Kargil	1079	Karshah	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
178	Kargil	1080	Zangla	Village already covered	Satellite	VSAT	VSAT	10 Mbps (Shared)	No	Planned	TCIL/DSPT
179	Kargil	1081	Tangday Kumi	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
180	Kargil	1083	Shan Shaday	Village already covered	Satellite	VSAT	VSAT	10 Mbps (Shared)	No	Planned	TCIL/DSPT
181	Kargil	1084	Ruru Moony	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
182	Kargil	1085	Chah	Village already covered	Satellite	VSAT	VSAT	2 Mbps	Yes	2	BSNL
183	Kargil	1087	Testa	Village already covered	Satellite	VSAT	VSAT	10 Mbps (Shared)	No	Planned	TCIL/DSPT

ANNEXURE – VII

(Refer Para 2.22 under Chapter-II)

District wise detailed list of villages with viability of OPGW of PGCIL

#	District	Village Code as per Census 2011 data	Name of Village	Whether PGCIL OPGW cable present/ passing through the Village	If No, the nearest location/ village from where the OPGW cable present and the approx distance in KMs.	Remarks, if any
1	Leh	848	Likir	No	10 Km from AP 100/0 of Leh-Khaltsi Line	
2	Leh	849	Ney	No	12 Km from AP 116/0 of Leh-Khaltsi Line	Mountain terrain
3	Leh	850	Umla	No	15 Km from AP 133/0 of Leh-Khaltsi Line	Mountain terrain
4	Leh	851	Bazgoo	Yes	AP 122 of Leh-Khaltsi Line	
5	Leh	852	Nimo	Yes	AP 133 of Leh-Khaltsi Line	
6	Leh	853	Taroo	No	12 Km from AP 153/0 of Leh-Khaltsi Line	Behind University of Ladakh
7	Leh	854	Phey-Leh	No	10 Km aerial from Phynag Stn	
8	Leh	855	Fiang	No	10 Km from Phyang Stn	
9	Leh	856	Saboo	No	26 Km from Phyang Stn/7 Km from NIC Leh	
10	Leh	857	Nang	No	50 Km from Phyang Stn	
11	Leh	858	Shey	No	35 Km from Phyang Stn	
12	Leh	859	Thiksey	No	35 Km from Phyang Stn	
13	Leh	860	Rambir Por	No	70 Km from Phyang Stn	
14	Leh	861	Rumbak	No	>100 Km from Phyang Stn	Mountain terrain
15	Leh	862	Stok	No	30 Km from phyang stn	
16	Leh	863	Chuchat Yakma	No	>100 Km from Phyang Stn	Mountain terrain
17	Leh	864	Chiling Sumda	No	>100 Km from Phyang Stn	Mountain terrain
18	Leh	865	Skiumarkha	No	>100 Km from Phyang Stn	Mountain terrain
19	Leh	866	Chuchot Shama	No	30 Km from phyang stn	
20	Leh	867	Chuchoot Gongma	No	70 Km from Phyang Stn	
21	Leh	868	Mathoo	No	70 Km from Phyang Stn	
22	Leh	869	Kharoo	No	>100 Km from Phyang Stn	Mountain terrain
23	Leh	870	Langokor	No	>100 Km from Phyang Stn	Nearest Point Leh
24	Leh	871	Chemrey	No	60 Km from Phyang Stn	
25	Leh	872	Sakti	No	>100 Km from Phyang Stn	Mountain terrain
26	Leh	873	Durbok	No	>100 Km from Phyang Stn	Mountain terrain
27	Leh	874	Tagste	No	>100 Km from Phyang Stn	Nearest Point Leh
28	Leh	875	Shachokol	No	>100 Km from Phyang Stn	Nearest Point Leh
29	Leh	876	Man Pangong	No	>100 Km from Phyang Stn	Nearest Point Leh

30	Leh	877	Phuktse	No	>100 Km from Phyang Stn	Nearest Point Leh
31	Leh	878	Shara	No	>100 Km from Phyang Stn	
32	Leh	879	Stakna	No	40 Km from Phyang Stn	
33	Leh	880	Changa	No	50 Km from Phyang Stn	
34	Leh	881	Igoo	No	>100 Km from Phyang Stn	Nearest Point Leh
35	Leh	882	Sharnose	No	>100 Km from Phyang Stn	Nearest Point Leh
36	Leh	883	Liktse	No	>100 Km from Phyang Stn	Nearest Point Leh
37	Leh	884	Tukla	No	>100 Km from Phyang Stn	Nearest Point Leh
38	Leh	885	Kumgyam	No	>100 Km from Phyang Stn	Nearest Point Leh
39	Leh	886	Teri	No	>100 Km from Phyang Stn	Nearest Point Leh
40	Leh	887	Himya	No	>100 Km from Phyang Stn	Nearest Point Leh
41	Leh	888	Tarchit	No	>100 Km from Phyang Stn	Nearest Point Leh
42	Leh	889	Meroo	No	>100 Km from Phyang Stn	Nearest Point Leh
43	Leh	890	Upshi	No	>100 Km from Phyang Stn	Nearest Point Leh
44	Leh	891	Shang	No	>100 Km from Phyang Stn	Nearest Point Leh
45	Leh	892	Hamis	No	>100 Km from Phyang Stn	Nearest Point Leh
46	Leh	893	Matselang	No	>100 Km from Phyang Stn	Nearest Point Leh
47	Leh	894	Gia	No	>100 Km from Phyang Stn	Nearest Point Leh
48	Leh	895	Kharnak	No	>100 Km from Phyang Stn	Nearest Point Leh
49	Leh	896	Kerey	No	>100 Km from Phyang Stn	Nearest Point Leh
50	Leh	897	Skitmang	No	>100 Km from Phyang Stn	Nearest Point Leh
51	Leh	898	Samad Rakchan	No	>100 Km from Phyang Stn	Nearest Point Leh
52	Leh	899	Karzok	No	>100 Km from Phyang Stn	Nearest Point Leh
53	Leh	900	Chumathang	No	>100 Km from Phyang Stn	Nearest Point Leh
54	Leh	901	Nyoma	No	>100 Km from Phyang Stn	Nearest Point Leh
55	Leh	902	Mood	No	>100 Km from Phyang Stn	Nearest Point Leh
56	Leh	903	Anlay	No	>100 Km from Phyang Stn	Nearest Point Leh
57	Leh	904	Koyul	No	>100 Km from Phyang Stn	Nearest Point Leh
58	Leh	906	Demjok	No	>100 Km from Phyang Stn	Nearest Point Leh
59	Leh	907	Kargyam	No	>100 Km from Phyang Stn	Nearest Point Leh
60	Leh	908	Chushul	No	>100 Km from Phyang Stn	Nearest Point Leh
61	Leh	911	Thanga Chathang	No	>100 Km from Phyang Stn	Nearest Point Leh
62	Leh	912	Taksi	No	>100 Km from Phyang Stn	Nearest Point Leh
63	Leh	913	Turtok	No	>100 Km from Phyang Stn	Nearest Point Leh
64	Leh	914	Chulungkha	No	>100 Km from Phyang Stn	Nearest Point Leh
65	Leh	915	Bogdang	No	>100 Km from Phyang Stn	Nearest Point Leh
66	Leh	916	Warisfistan	No	>100 Km from Phyang Stn	Nearest Point Leh
67	Leh	917	Khemi	No	>100 Km from Phyang Stn	Nearest Point Leh
68	Leh	918	Panamic	No	>100 Km from Phyang Stn	Nearest Point Leh
69	Leh	919	Kubed	No	>100 Km from Phyang Stn	Nearest Point Leh
70	Leh	920	Hundri	No	>100 Km from Phyang Stn	Nearest Point Leh
71	Leh	921	Udmaru	No	>100 Km from Phyang Stn	Nearest Point Leh
72	Leh	922	Terchey	No	>100 Km from Phyang Stn	Nearest Point Leh
73	Leh	923	Skuru	No	>100 Km from Phyang Stn	Nearest Point Leh
74	Leh	924	Largiab	No	>100 Km from Phyang Stn	Nearest Point Leh
75	Leh	925	Skanpuk	No	>100 Km from Phyang Stn	Nearest Point Leh
76	Leh	926	Partap Pore	No	>100 Km from Phyang Stn	Nearest Point Leh
77	Leh	927	Hundar Dok	No	>100 Km from Phyang Stn	Nearest Point Leh
78	Leh	928	Hundar	No	>100 Km from Phyang Stn	Nearest Point Leh

79	Leh	929	Diskit	No	>100 Km from Phyang Stn	Nearest Point Leh
80	Leh	930	Chamshan Charasa	No	>100 Km from Phyang Stn	Nearest Point Leh
81	Leh	931	Tiggar	No	>100 Km from Phyang Stn	Nearest Point Leh
82	Leh	932	Sumoor	No	>100 Km from Phyang Stn	Nearest Point Leh
83	Leh	933	Lakjung	No	>100 Km from Phyang Stn	Nearest Point Leh
84	Leh	934	Khalsar	No	>100 Km from Phyang Stn	Nearest Point Leh
85	Leh	935	Khardong	No	>100 Km from Phyang Stn	Nearest Point Leh
86	Leh	936	Digger	No	>100 Km from Phyang Stn	Nearest Point Leh
87	Leh	937	Khemakhungiu	No	>100 Km from Phyang Stn	Nearest Point Leh
88	Leh	938	Tangyar	No	>100 Km from Phyang Stn	Nearest Point Leh
89	Leh	939	Dah	No	>100 Km from Phyang Stn	Nearest Point Leh
90	Leh	940	Hanoo	No	>100 Km from Phyang Stn	Nearest Point Leh
91	Leh	941	Temisgam	No	13 Km from AP 17/0 of Leh-Khaltsi Line	AP 17/0
92	Leh	942	Tia	No	10 Km from AP 17/0 of Leh Khaltsi Line	AP 17/0
93	Leh	943	Skur Buchan	No	>100 Km from Phyang Stn	Nearest Point Leh
94	Leh	944	Damkhar	No	>100 Km from Phyang Stn	Nearest Point Leh
95	Leh	945	Leido	No	>100 Km from Phyang Stn	Nearest Point Leh
96	Leh	946	Takmachik	No	10 Km from AP 669 of Kargl-Khaltsi Line	Mountain terrain
97	Leh	947	Skinlingyong	No	>100 Km from Phyang Stn	Nearest Point Leh
98	Leh	948	Khaltse	No	Nearest location is Khaltsi PoP 5 Km	
99	Leh	949	Saspochey	No	>100 Km from Phyang Stn	Nearest Point Leh
100	Leh	950	Hemishok Pachan	No	10 Km from AP 39/0 of Leh-Khaltsi Line	AP 39/0
101	Leh	951	Nurla	No	12 Km from AP 17/0 of Leh-Khaltsi Line	Mountain terrain
102	Leh	952	Suspol	No	15 Km from AP 84/0 of Leh-Khaltsi Line, no JB on AP 84/0	Mountain terrain
103	Leh	953	Alchi	No	10 Km from AP 81/0 of Leh-Khaltsi Line	AP 81/0
104	Leh	954	Wanla	No	>100 Km from Phyang Stn	Nearest Point Leh
105	Leh	955	Giramangu	No	>100 Km from Phyang Stn	Nearest Point Leh
106	Leh	956	Tarhipti	No	>100 Km from Phyang Stn	Nearest Point Leh
107	Leh	957	Lamayouro	Yes	moutain terrain	AP669 KARGIL-KHALTSI LINE
108	Leh	958	Kanji	No	>100 Km from Phyang Stn	Nearest Point Leh
109	Leh	959	Lingshet	No	>100 Km from Phyang Stn	Nearest Point Leh
110	Leh	960	Fotoksar	No	>100 Km from Phyang Stn	Nearest Point Leh
111	Leh	961	Youl Chung	No	>100 Km from Phyang Stn	Nearest Point Leh
112	Kargil	962	Chulichan	No	50 Km from Kargil Stn	Mountain terrain
113	Kargil	963	Silmo	No	50 Km from Kargil Stn	Mountain terrain
114	Kargil	964	Derchiks	No	>100 Km from Kargil Stn	Mountain terrain
115	Kargil	965	Garkon	No	>100 Km from Kargil Stn	NEAREST POINT KARGIL
116	Kargil	966	Lalung	No	>100 Km from Kargil Stn	NEAREST POINT KARGIL
117	Kargil	967	Apati	No	>100 Km from Kargil Stn	NEAREST POINT KARGIL

118	Kargil	968	Yourbaltak	No	10 Km from AP 431 of Kargil-Khaltsi Line	AP 431
119	Kargil	969	Akchamal	No	12 Km from AP 431 of Kargil-Khaltsi Line	AP 431
120	Kargil	970	Barchey	No	13 Km from AP 431 of Kargil-Khaltsi Line	AP 431
121	Kargil	971	Toumel	No	10 Km from AP 490 of Kargil-Khaltsi Line	AP 490
122	Kargil	972	Poyan	No	>100 Km from Kargil Stn	
123	Kargil	973	Shilikchey	No	>100 Km from Kargil Stn	Mountain terrain
124	Kargil	974	Hardas	No	12 Km from AP 167 of Drass-Kargil Line	River Crossing
125	Kargil	975	Phultuks	No	>100 Km from Kargil Stn	NEAREST POINT KARGIL
126	Kargil	976	Karkit	No	12 Km from AP 150 of drass-Kargil Line	River Crossinf
127	Kargil	977	Kaksar	No	12 Km from AP 107 of Kargil-drass Line	Mountain terrain
128	Kargil	978	Kharbu	Yes	AP 119 Drass-Kargil Line	
129	Kargil	979	Chuliskambo	No	> 50 Km from Kargil Stn	Mountain terrain
130	Kargil	980	Push Kum	No	10 Km from AP 510 of Kargil-Khaltsi Line	Mountain terrain
131	Kargil	981	Kukste	No	> 100 Km from Kargil Stn	Kargil Stn
132	Kargil	982	Karit	No	> 100 Km from Kargil Stn	Kargil Stn
133	Kargil	983	Lamsusando	No	> 100 Km from Kargil Stn	Kargil Stn
134	Kargil	984	Yogmakharbu	No	> 100 Km from Kargil Stn	Kargil Stn
135	Kargil	985	Sanjak	No	> 100 Km from Kargil Stn	Kargil Stn
136	Kargil	986	Chiktan	No	> 100 Km from Kargil Stn	Kargil Stn
137	Kargil	987	Hagnis	No	> 100 Km from Kargil Stn	Kargil Stn
138	Kargil	988	Shakar	No	> 100 Km from Kargil Stn	Kargil Stn
139	Kargil	989	Tacha	No	> 100 Km from Kargil Stn	Kargil Stn
140	Kargil	990	Lochum	No	12 Km from AP 532 of Kargil-Khaltsi Line	Mountain terrain
141	Kargil	991	Darkiat	No	>100 Km from Kargil Stn	Not available om MAP
142	Kargil	992	Nunamchey	No	>100 Km from Kargil Stn	Not available om MAP
143	Kargil	993	Skambo	No	12 Km from AP 483 of Kargil-Khaltsi Line	AP 483 Kargil-Khlatsi
144	Kargil	994	Choskar	No	>100 Km from Kargil Stn	Kargil Stn
145	Kargil	995	Minji	No	>100 Km from Kargil Stn	Kargil Stn
146	Kargil	996	Shimsha	No	>100 Km from Kargil Stn	Not available om MAP
147	Kargil	997	Thasgam	No	AP 85 of Drass-Kargil Line	Mountain terrain
148	Kargil	998	Chokial	No	AP 62 drass-Kargil	Mountain terrain
149	Kargil	999	Thrangos	No	>100 Km from Kargil Stn	Not available om MAP
150	Kargil	1000	Biambiat	No	>100 Km from Kargil Stn	Not available om MAP
151	Kargil	1001	Gindial	Yes	moutain terrain	AP 48 drass-Kargil
152	Kargil	1002	Murad Bagh	No	>50 Km from drass Stn	drass stn
153	Kargil	1003	Goshan	No	>50 Km from drass Stn	drass stn
154	Kargil	1004	Holiyal	No	>50 Km from drass Stn	drass stn

155	Kargil	1005	Rambirpur (Drass)	No	>50 Km from drass Stn	drass stn
156	Kargil	1006	Mushku	No	>50 Km from drass Stn	drass stn
157	Kargil	1008	Pandras	No	>50 Km from drass Stn	drass stn
158	Kargil	1009	Matayan	No	>50 Km from drass Stn	Not available om MAP
159	Kargil	1010	Tronjen (Trankuchan)	No	>50 Km from drass Stn	Not available om MAP
160	Kargil	1011	Yalboo	No	>50 Km from drass Stn	Not available om MAP
161	Kargil	1013	Jusgund	No	>50 Km from drass Stn	Not available om MAP
162	Kargil	1014	Batambis	No	>50 Km from drass Stn	Not available om MAP
163	Kargil	1015	Phoo	No	>50 Km from drass Stn	Not available om MAP
164	Kargil	1016	Tingdo	No	10 Km from AP 520 Kargil-Khaltsi Line	Mountain terrain
165	Kargil	1017	Khachey	No	>100 Km from Kargil Stn	Not available om MAP
166	Kargil	1018	Karamba	No	>100 Km from Kargil Stn	Kargil Stn
167	Kargil	1019	Shargol	No	15 Km from AP 530 of Kargil-Khaltsi Line	Mountain terrain
168	Kargil	1020	Malbekh	No	>100 Km from Kargil Stn	Kargil Stn
169	Kargil	1021	Wakhade	No	>100 Km from Kargil Stn	Not available om MAP
170	Kargil	1022	Kuksho	No	>100 Km from Kargil Stn	Not available om MAP
171	Kargil	1023	Samrah	No	10 Km from AP 589 Kargil-Khaltsi Line	AP 598 Kargil-Khaltsi
172	Kargil	1024	Staktse	No	>100 Km from Kargil Stn	Not available om MAP
173	Kargil	1025	Bodhkharbu	No	>100 Km from Kargil Stn	Not available om MAP
174	Kargil	1026	Heniskot	No	>100 Km from Kargil Stn	
175	Kargil	1027	Safi	No	>100 Km from Kargil Stn	Not available om MAP
176	Kargil	1028	Tres Pone	No	>100 Km from Kargil Stn	Kargil Stn
177	Kargil	1029	Saleskot	No	>100 Km from Kargil Stn	Kargil Stn
178	Kargil	1030	Kanor	No	>100 Km from Kargil Stn	Kargil Stn
179	Kargil	1031	Tambis	No	>100 Km from Kargil Stn	Kargil Stn
180	Kargil	1032	Thasgam Thaine	No	>100 Km from Kargil Stn	Not available om MAP
181	Kargil	1033	Gund Mangl Pur	No	>100 Km from Kargil Stn	Not available om MAP
182	Kargil	1034	Farona	No	>100 Km from Kargil Stn	Kargil Stn
183	Kargil	1035	Lankarchey	No	>100 Km from Kargil Stn	Kargil Stn
184	Kargil	1036	Umba	No	>100 Km from Kargil Stn	Kargil Stn
185	Kargil	1037	Nagmakusar	No	>100 Km from Kargil Stn	Kargil Stn
186	Kargil	1038	Thang Dumbur	No	>100 Km from Kargil Stn	Kargil Stn
187	Kargil	1039	Sangra	No	>100 Km from Kargil Stn	Kargil Stn
188	Kargil	1040	Stakpa	No	>100 Km from Kargil Stn	Kargil Stn
189	Kargil	1041	Karpo Khar	No	>100 Km from Kargil Stn	Kargil Stn

190	Kargil	1042	KarcheY Khar	No	>100 Km from Kargil Stn	Kargil Stn
191	Kargil	1043	Barsoo	No	>100 Km from Kargil Stn	Not available om MAP
192	Kargil	1044	Barto	No	>100 Km from Kargil Stn	Not available om MAP
193	Kargil	1045	Shergandi	No	>100 Km from Kargil Stn	Not available om MAP
194	Kargil	1046	Itchoo	No	>100 Km from Kargil Stn	Not available om MAP
195	Kargil	1047	Khandi	No	>100 Km from Kargil Stn	Not available om MAP
196	Kargil	1048	Gyaling	No	> 100 Km from drass Stn	drass stn
197	Kargil	1049	Purtikchy	No	> 100 Km from drass Stn	drass stn
198	Kargil	1050	Khows	No	> 100 Km from drass Stn	drass stn
188	Kargil	1051	Yuljuk	No	> 100 Km from drass Stn	drass stn
200	Kargil	1052	Kargi	No	> 100 Km from drass Stn	drass stn
201	Kargil	1053	Pranti	No	> 100 Km from drass Stn	drass stn
202	Kargil	1054	Namsuru	No	> 100 Km from drass Stn	drass stn
203	Kargil	1055	Panikhar	No	> 100 Km from drass Stn	drass stn
204	Kargil	1056	Chosker Suru	No	> 100 Km from drass Stn	drass stn
205	Kargil	1057	Thuls Pursa	No	> 100 Km from drass Stn	drass stn
206	Kargil	1058	Tai Suru	No	> 100 Km from drass Stn	drass stn
207	Kargil	1059	Achambur	No	> 100 Km from drass Stn	drass stn
208	Kargil	1060	Tangol	No	> 100 Km from drass Stn	drass stn
209	Kargil	1061	Kochik	No	> 100 Km from drass Stn	drass
210	Kargil	1062	Parkachik	No	> 100 Km from drass Stn	drass stn
211	Kargil	1063	Rangdum	No	> 100 Km from drass Stn	drass stn
212	Kargil	1064	Akshow	No	> 100 Km from drass Stn	drass stn
213	Kargil	1065	Abran	No	> 100 Km from drass Stn	drass stn
214	Kargil	1066	Hamiling	No	> 100 Km from drass Stn	drass stn
215	Kargil	1067	Remala Skyagam	No	> 100 Km from drass Stn	Not available om MAP
216	Kargil	1068	Phey-Kargil	No	> 100 Km from drass Stn	
217	Kargil	1069	Ating	No	> 100 Km from drass Stn	drass stn
218	Kargil	1070	Rantaq Shah	No	> 100 Km from drass Stn	drass stn
219	Kargil	1071	Tonrian Thagan	No	> 100 Km from drass Stn	Not available om MAP
220	Kargil	1072	Techa Khasar	No	> 100 Km from drass Stn	drass stn
221	Kargil	1073	Seni	No	> 100 Km from drass Stn	drass stn
222	Kargil	1074	Selapigai Pak	No	> 100 Km from drass Stn	drass stn
223	Kargil	1075	Padam	No	> 100 Km from drass Stn	drass stn
234	Kargil	1076	Upti Pipiting	No	> 100 Km from drass Stn	drass stn
225	Kargil	1077	Salapi Ruruk	No	> 100 Km from drass Stn	Not available om MAP
226	Kargil	1078	Lungmi Rezing	No	> 100 Km from drass Stn	drass stn
227	Kargil	1079	Karshah	No	> 100 Km from drass Stn	drass stn
228	Kargil	1080	Zangla	No	> 100 Km from drass Stn	drass stn
229	Kargil	1081	Tangday Kumi	No	> 100 Km from drass Stn	Not available om MAP
230	Kargil	1082	Pipcha	No	> 100 Km from drass Stn	drass stn
231	Kargil	1083	Shan Shaday	No	> 100 Km from drass Stn	Not available om MAP
232	Kargil	1084	Ruru Moony	No	> 100 Km from drass Stn	drass stn

233	Kargil	1085	Chah	No	> 100 Km from drass Stn	Not available om MAP
234	Kargil	1086	Icher	No	> 100 Km from drass Stn	drass stn
235	Kargil	1087	Testa	No	> 100 Km from drass Stn	Not available om MAP
236	Kargil	1088	Kargyak	No	> 100 Km from drass Stn	Not available om MAP

ANNEXURE – VIII

(Refer Para 2.22 under Chapter-II)

District wise detailed list of villages with viability of OPGW of Ladakh Power Distribution

#	District	Village Code as per Census 2011 data	Name of Village	Whether PGCIL OPGW cable present/ passing through the Village	If No, the nearest location/ village from where the OPGW cable present and the approx distance in KMs.	Remarks, if any
1	Leh	848	Likir	Yes		
2	Leh	849	Ney	No	Bazgo 5	
3	Leh	850	Umla	No	Phyang 20	
4	Leh	851	Bazgoo	Yes		
5	Leh	852	Nimo	Yes		
6	Leh	853	Taroo	No	Phyang 10	
7	Leh	854	Phey-Leh	No	Phyang 5	
8	Leh	855	Fiang	Yes		
9	Leh	856	Saboo	No	Leh,5	
10	Leh	857	Nang	No	Kharu, 10	
11	Leh	858	Shey	No	Kharu, 15	
12	Leh	859	Thiksey	No	Kharu, 10	
13	Leh	860	Rambir Por	No	Kharu, 10	
14	Leh	861	Rumbak	No	Phyang, 30	
15	Leh	862	Stok	No	Chuchot, 20	
16	Leh	863	Chuchat Yakma	No	Chuchot, 20	
17	Leh	864	Chiling Sumda	No	Bazgo, 30	
18	Leh	865	Skiumarkha	No	Bazgo, 40	
19	Leh	866	Chuchot Shama	No	Chuchot, 5	
20	Leh	867	Chuchoot Gongma	No	Chucht, 10	
21	Leh	868	Mathoo	No	Kharu, 10	
22	Leh	869	Kharoo	No	Kharu	
23	Leh	870	Langokor	No		
24	Leh	871	Chemrey	No	Kharu, 10	
25	Leh	872	Sakti	No	Kharu, 20	
26	Leh	873	Durbok	No	Kharu, 60	
27	Leh	874	Tagste	No	Kharu 60	
28	Leh	875	Shachokol	No	Kharu 60	
29	Leh	876	Man Pangong	No	Kharu 60	
30	Leh	877	Phuktse	No	Himya, 30	
31	Leh	878	Shara	No	Himya 30	
32	Leh	879	Stakna	No	Kharu 20	
33	Leh	880	Changa	No	Kharu 10	
34	Leh	881	Igoo	No	Kharu 30	
35	Leh	882	Sharnose	No	Himya 30	
36	Leh	883	Liktse	No	Himya 20	

37	Leh	884	Tukla	No	Himya 30	
38	Leh	885	Kumgyam	No	Himya 15	
39	Leh	886	Teri	No	Himya 25	
40	Leh	887	Himya	No	Himya	
41	Leh	888	Tarchit	No	Himya 10	
42	Leh	889	Meroo	No	Himya 55	
43	Leh	890	Upshi	No	Himya 40	
44	Leh	891	Shang	No	Kharu 30	
45	Leh	892	Hamis	No	Kharu 7	
46	Leh	893	Matselang	No	Kharu 10	
47	Leh	894	Gia	No	Himya 60	
48	Leh	895	Kharnak	No	Himya 140	
49	Leh	896	Kerey	No	Himya 40	
50	Leh	897	Skitmang	No	Himya 55	
51	Leh	898	Samad Rakchan	No	Himya 80	
52	Leh	899	Karzok	No	Himya 120	
53	Leh	900	Chumathang	No	Himya 60	
54	Leh	901	Nyoma	No	Himya 110	
55	Leh	902	Mood	No	Himya 115	
56	Leh	903	Anlay	No	Himya 160	
57	Leh	904	Koyul	No	Himya 165	
58	Leh	906	Demjok	No	Himya 200	
59	Leh	907	Kargyam	No	Kharu 80	
60	Leh	908	Chushul	No	Kharu 145	
61	Leh	911	Thanga Chathang	No	Disket 90	220 KV Phyang to Disket Transmission With OPGW Provision under Construction. Completion expected by Oct 2023.
62	Leh	912	Taksi	No	Disket 83	220 KV Phyang to Disket Transmission With OPGW Provision under Construction. Completion expected by Oct 2023.
63	Leh	913	Turtok	No	Disket 78	220 KV Phyang to Disket Transmission With OPGW Provision under Construction. Completion expected by Oct 2023.
64	Leh	914	Chulungkha	No	Disket 66	220 KV Phyang to Disket Transmission With OPGW Provision under Construction. Completion expected by Oct 2023.
65	Leh	915	Bogdang	No	Disket 56	220 KV Phyang to Disket Transmission With OPGW Provision under Construction. Completion expected by Oct 2023.
66	Leh	916	Warisfistan	No	Disket 56	220 KV Phyang to Disket Transmission With OPGW Provision under Construction. Completion expected by Oct 2023.
67	Leh	917	Khemi	No	Disket 90	220 KV Phyang to Disket Transmission With OPGW Provision under Construction. Completion expected by Oct 2023.
68	Leh	918	Panamic	No	Disket 60	220 KV Phyang to Disket Transmission With OPGW Provision under Construction. Completion expected by Oct 2023.
69	Leh	919	Kubed	No	Disket 70	220 KV Phyang to Disket Transmission With OPGW Provision under Construction. Completion expected by Oct 2023.
70	Leh	920	Hundri	No	Disket 40	220 KV Phyang to Disket Transmission With OPGW Provision under Construction. Completion expected by Oct 2023.
71	Leh	921	Udmaru	No	Disket 40	220 KV Phyang to Disket Transmission With OPGW Provision under Construction. Completion expected by Oct 2023.
72	Leh	922	Terchey	No	Disket 35	220 KV Phyang to Disket Transmission With OPGW Provision under Construction. Completion expected by Oct 2023.
73	Leh	923	Skuru	No	Disket 40	220 KV Phyang to Disket Transmission With OPGW Provision under Construction. Completion expected by Oct 2023.

74	Leh	924	Largiab	No	Disket 65	220 KV Phyang to Disket Transmission With OPGW Provision under Construction. Completion expected by Oct 2023.
75	Leh	925	Skanpuk	No	Disket 20	220 KV Phyang to Disket Transmission With OPGW Provision under Construction. Completion expected by Oct 2023.
76	Leh	926	Partap Pore	No	Disket 15	220 KV Phyang to Disket Transmission With OPGW Provision under Construction. Completion expected by Oct 2023.
77	Leh	927	Hundar Dok	No	Disket 20	220 KV Phyang to Disket Transmission With OPGW Provision under Construction. Completion expected by Oct 2023.
78	Leh	928	Hundar	No	Disket 10	220 KV Phyang to Disket Transmission With OPGW Provision under Construction. Completion expected by Oct 2023.
79	Leh	929	Diskit	No	Disket	220 KV Phyang to Disket Transmission With OPGW Provision under Construction. Completion expected by Oct 2023.
80	Leh	930	Chamshan Charasa	No	Disket 50	220 KV Phyang to Disket Transmission With OPGW Provision under Construction. Completion expected by Oct 2023.
81	Leh	931	Tiggar	No	Disket 35	220 KV Phyang to Disket Transmission With OPGW Provision under Construction. Completion expected by Oct 2023.
82	Leh	932	Sumoor	No	Disket 30	220 KV Phyang to Disket Transmission With OPGW Provision under Construction. Completion expected by Oct 2023.
83	Leh	933	Lakjung	No	Disket 25	220 KV Phyang to Disket Transmission With OPGW Provision under Construction. Completion expected by Oct 2023.
84	Leh	934	Khalsar	No	Disket 20	220 KV Phyang to Disket Transmission With OPGW Provision under Construction. Completion expected by Oct 2023.
85	Leh	935	Khardong	No	Disket 50	220 KV Phyang to Disket Transmission With OPGW Provision under Construction. Completion expected by Oct 2023.
86	Leh	936	Digger	No	Disket 65	220 KV Phyang to Disket Transmission With OPGW Provision under Construction. Completion expected by Oct 2023.
87	Leh	937	Khemakhungiu	No	Disket 50	220 KV Phyang to Disket Transmission With OPGW Provision under Construction. Completion expected by Oct 2023.
88	Leh	938	Tangyar	No	Disket 60	220 KV Phyang to Disket Transmission With OPGW Provision under Construction. Completion expected by Oct 2023.
89	Leh	939	Dah	No	Khaltsi 60	
90	Leh	940	Hanoo	No	Khaltsi 50	
91	Leh	941	Temisgam	No	Nurla 15	
92	Leh	942	Tia	No	Nurla 10	
93	Leh	943	Skur Buchan	No	Khaltsi 25	
94	Leh	944	Damkhar	No	Khaltsi 15	
95	Leh	945	Leido	No	Khaltsi 35	
96	Leh	946	Takmachik	No	Khaltsi 10	
97	Leh	947	Skinlingyong	No	Khaltsi 10	
98	Leh	948	Khaltse	Yes		
99	Leh	949	Saspochey	No	Alchi 15	
100	Leh	950	Hemishok Pachan	No	Alchi 45	
101	Leh	951	Nurla	Yes		
102	Leh	952	Suspol	Yes		
103	Leh	953	Alchi	Yes		
104	Leh	954	Wanla	No	Khaltsi 20	
105	Leh	955	Giramangu	Yes		
106	Leh	956	Tarhipti	No	Khaltsi 5	
107	Leh	957	Lamayouro	Yes		
108	Leh	958	Kanji	No	lamayuru 35	

109	Leh	959	Lingshet	No	lamayuru 90	
110	Leh	960	Fotoksar	No	lamayuru 45	
111	Leh	961	Youl Chung	No	lamayuru 70	
112	Kargil	962	Chulichan	No	kargil 70	
113	Kargil	963	Silmo	No	kargil 49	
114	Kargil	964	Derchiks	No	kargil 70	
115	Kargil	965	Garkon	No	kargil 80	
116	Kargil	966	Lalung	No	kargil 42	
117	Kargil	967	Apati	No	kargil 25	
118	Kargil	968	Yourbaltak	No	kargil 22	
119	Kargil	969	Akchamal	No	kargil 20	
120	Kargil	970	Barchey	No	kargil 28	
121	Kargil	971	Toumel	No	kargil 25	
122	Kargil	972	Poyan	Yes		
123	Kargil	973	Shilikchey	Yes		
124	Kargil	974	Hardas	Yes		
125	Kargil	976	Karkit	Yes		
126	Kargil	977	Kaksar	Yes		
127	Kargil	978	Kharbu	Yes		
128	Kargil	979	Chuliskambo	Yes		
129	Kargil	980	Push Kum	Yes		
130	Kargil	981	Kukste	No	8 lotsom	
131	Kargil	982	Karit	No	14 lotsom	
132	Kargil	983	Lamsusando	No	47 khangral	
133	Kargil	984	Yogmakharbu	No	40 khangral	
134	Kargil	985	Sanjak	No	35 khangral	
135	Kargil	986	Chiktan	No	15 khangral	
136	Kargil	987	Hagnis	No	20 Khangral	
137	Kargil	988	Shakar	No	27 Khangral	
138	Kargil	989	Tacha	No	8 lotsom	
139	Kargil	990	Lochum	Yes	8 lotsom	
140	Kargil	991	Darkiat	Yes		
141	Kargil	992	Nunamchey	Yes		
142	Kargil	993	Skambo	No	8 darket	
143	Kargil	994	Choskar	No	25 Kargil	
144	Kargil	995	Minji	No	15 Kargil	
145	Kargil	996	Shimsha	Yes		
146	Kargil	997	Thasgam	Yes		
147	Kargil	998	Chokial	Yes		
148	Kargil	999	Thrangos	Yes		
149	Kargil	1000	Biambiat	Yes		
150	Kargil	1001	Gindial	Yes		
151	Kargil	1002	Murad Bagh	Yes		
152	Kargil	1003	Goshan	Yes		
153	Kargil	1004	Holiyal	Yes		
154	Kargil	1005	Rambirpur (Drass)	Yes		
155	Kargil	1006	Mushku	Yes		
156	Kargil	1008	Pandras	Yes		

157	Kargil	1009	Matayan	Yes		
158	Kargil	1010	Tronjen (Trankuchan)	No	1 drass	
159	Kargil	1011	Yalboo	No	1 drass	
160	Kargil	1013	Jusgund	Yes		
161	Kargil	1014	Batambis	No		
162	Kargil	1015	Phoo	No	16 shargole	
163	Kargil	1016	Tingdo	No		
164	Kargil	1017	Khachey	No	7 shargole	
165	Kargil	1018	Karamba	No	9 shargole	
166	Kargil	1019	Shargol	Yes		
167	Kargil	1020	Malbekh	Yes		
168	Kargil	1021	Wakhade	Yes		
169	Kargil	1022	Kuksho	No	35 Khangral	
170	Kargil	1023	Samrah	No	7 khangral	
171	Kargil	1024	Staktse	Yes		
172	Kargil	1025	Bodhkharbu	Yes		
173	Kargil	1026	Heniskot	Yes		
174	Kargil	1027	Safi	No	50 shargole	
175	Kargil	1028	Tres Pone	No	25 kargil	
176	Kargil	1029	Saleskot	No	27 kargil	
177	Kargil	1030	Kanor	No	28 Kargil	
178	Kargil	1031	Tambis	No	26 Kargil	
179	Kargil	1032	Thasgam Thaine	No	42 kargil	
180	Kargil	1033	Gund Mangl Pur	No	25 kargil	
181	Kargil	1034	Farona	No	30 Kargil	
182	Kargil	1035	Lankarchey	No	35 kargil	
183	Kargil	1036	Umba	No	51 kargil	
184	Kargil	1037	Nagmakusar	No	40 kargil	
185	Kargil	1038	Thang Dumbur	No	40 kargil	
186	Kargil	1039	Sangra	No	47 kargil	
187	Kargil	1040	Stakpa	No	45 kargil	
188	Kargil	1041	Karpo Khar	No	42 largil	
189	Kargil	1042	KarcheY Khar	No	43 kargi	
190	Kargil	1043	Barsoo	No	46 kargil	
191	Kargil	1044	Barto	No	55 kargil	
192	Kargil	1045	Shergandi	No	63 kargil	
193	Kargil	1046	Itchoo	No	70 kargil	
194	Kargil	1047	Khandi	No	53 kargil	
195	Kargil	1048	Gyaling	No	48 kargil	
196	Kargil	1049	Purtikchy	No	53 kargil	
197	Kargil	1050	Khows	No	66 kargil	
198	Kargil	1051	Yuljuk	No	60 kargil	
188	Kargil	1052	Kargi	No	63 kargil	
200	Kargil	1053	Pranti	No	64 kargil	
201	Kargil	1054	Namsuru	No	61 kargil	
202	Kargil	1055	Panikhar	No	64 kargil	
203	Kargil	1056	Chosker Suru	No	64 kargil	
204	Kargil	1057	Thuls Pursa	No	65 kargil	
205	Kargil	1058	Tai Suru	No	61 kargil	
206	Kargil	1059	Achambur	No	66 kargil	

207	Kargil	1060	Tangol	No	72 kargil	
208	Kargil	1061	Kochik	No	66 kargil	
209	Kargil	1062	Parkachik	No	80 kargil	
210	Kargil	1063	Rangdum	No	120 kargil	
211	Kargil	1064	Akshow	No	270 Kargil	
212	Kargil	1065	Abran	No	270 Kargil	
213	Kargil	1066	Hamiling	No	270 Kargil	
214	Kargil	1067	Remala Skyagam	No	270 Kargil	
215	Kargil	1068	Phey-Kargil	No	270 Kargil	
216	Kargil	1069	Ating	No	270 Kargil	
217	Kargil	1070	Rantaq Shah	No	270 Kargil	
218	Kargil	1071	Tonrian Thagan	No	270 Kargil	
219	Kargil	1072	Techa Khasar	No	17 padum	220 KV Drass to Padum Transmission With OPGW Provision under Construction. Completion expected by Oct 2023.
220	Kargil	1073	Seni	No	10 padum	220 KV Drass to Padum Transmission With OPGW Provision under Construction. Completion expected by Oct 2023.
221	Kargil	1074	Selapigai Pak	No	5 padum	220 KV Drass to Padum Transmission With OPGW Provision under Construction. Completion expected by Oct 2023.
222	Kargil	1075	Padam	Yes	Padum	220 KV Drass to Padum Transmission With OPGW Provision under Construction. Completion expected by Oct 2023.
223	Kargil	1076	Upti Pipiting	No	8 Padum	220 KV Drass to Padum Transmission With OPGW Provision under Construction. Completion expected by Oct 2023.
234	Kargil	1077	Salapi Ruruk	No	8 Padum	220 KV Drass to Padum Transmission With OPGW Provision under Construction. Completion expected by Oct 2023.
225	Kargil	1078	Lungmi Rezing	No	18 Padum	220 KV Drass to Padum Transmission With OPGW Provision under Construction. Completion expected by Oct 2023.
226	Kargil	1079	Karshah	No	15 Padum	220 KV Drass to Padum Transmission With OPGW Provision under Construction. Completion expected by Oct 2023.
227	Kargil	1080	Zangla	No	35 Padum	220 KV Drass to Padum Transmission With OPGW Provision under Construction. Completion expected by Oct 2023.
228	Kargil	1081	Tangday Kumi	No	20 Padum	220 KV Drass to Padum Transmission With OPGW Provision under Construction. Completion expected by Oct 2023.
229	Kargil	1082	Pipcha	No	19 Padum	220 KV Drass to Padum Transmission With OPGW Provision under Construction. Completion expected by Oct 2023.
230	Kargil	1083	Shan Shaday	No	100 Padum	220 KV Drass to Padum Transmission With OPGW Provision under Construction. Completion expected by Oct 2023.
231	Kargil	1084	Ruru Moony	No	25 Padum	220 KV Drass to Padum Transmission With OPGW Provision under Construction. Completion expected by Oct 2023.
232	Kargil	1085	Chah	No	40 Padum	220 KV Drass to Padum Transmission With OPGW Provision under Construction. Completion expected by Oct 2023.
233	Kargil	1086	Icher	No	35 Padum	220 KV Drass to Padum Transmission With OPGW Provision under Construction. Completion expected by Oct 2023.
234	Kargil	1087	Testa	No	70 padum	220 KV Drass to Padum Transmission With OPGW Provision under Construction. Completion expected by Oct 2023.
235	Kargil	1088	Kargyak	No	90 padum	220 KV Drass to Padum Transmission With OPGW Provision under Construction. Completion expected by Oct 2023.

ANNEXURE- IX

(Refer Para 2.23 of Chapter-II)

Reply from M/s BSNL vide its email dated 03 January 2023

From: neprojectbsnl@gmail.com
To: "Bhagwat Prasad Vishwakarma" <bp.vishwakarma@gov.in>
Cc: "Reena Malhotra" <reena.malhotra@bsnl.co.in>, "Rajesh Narayan" <div.nsl1@trai.gov.in>, "Sanjeev Kumar Sharma" <advbbpa@trai.gov.in>, "Deepak Chanduka" <deepak.chanduka@gov.in>, "Administrator USOF DoT" <usadmn.dot@gov.in>
Sent: Tuesday, January 3, 2023 3:43:27 PM
Subject: Fwd: Improvement of telecom services in Union Territory of Ladakh - Seeking information thereof.

Sir,
With reference to the information sought regarding three villages as in the trailing mail, it may kindly be noted that all the following three villages are included in 4G Saturation Project for the provisioning of 4G mobile services.

#	District	Village Code as per Census 2011 data	Name of Village
1	Kargil	964	Derchiks
2	Kargil	968	Yourbaltak
3	Kargil	1078	Lungmi Rezing

Regards

(Hitender Singh)
DM (Spl Projects)
BSNL CO, New Delhi.

ANNEXURE - X
(Refer Para 2.24 under Chapter-II)

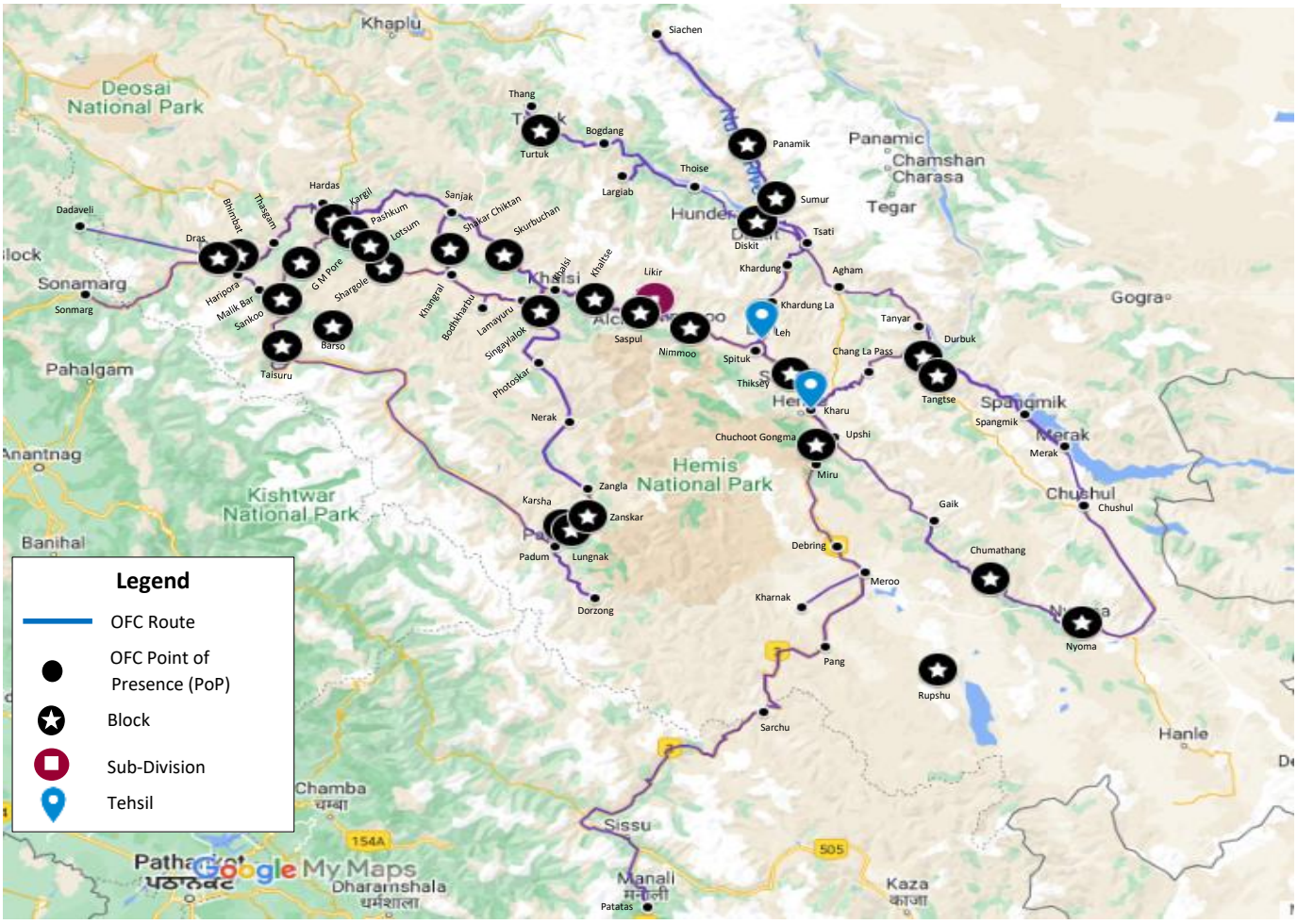
District wise detailed list of Villages having Non-4G coverage

#	District	District Code as per Census 2011 data	Sub District Code as per Census 2011 data	Village Code as per Census 2011 data	POPULATION	Name of Village	Available VSAT Connectivity under BharatNet Phase-III
1	Kargil	004	00013	994	3430	Choskar	No
2	Kargil	004	00013	963	1627	Silmo	Yes
3	Leh	003	00012	953	932	Alchi	Yes
4	Leh	003	00010	903	1879	Anlay	Yes
5	Leh	003	00011	915	1988	Bogdang	Yes
6	Leh	003	00010	863	2162	Chuchat Yakma	Yes
7	Leh	003	00012	944	1202	Damkhar	No
8	Leh	003	00012	950	739	Hemishok Pachan	Yes
9	Leh	003	00010	899	1291	Karzok	Yes
10	Leh	003	00010	869	167	Kharoo	No
11	Leh	003	00010	854	331	Phey-Leh	No
12	Leh	003	00010	872	1718	Sakti	Yes
13	Leh	003	00010	891	230	Shang	No
14	Leh	003	00011	925	416	Skanpuk	No
15	Leh	003	00012	947	237	Skinlingyong	No
16	Leh	003	00012	943	1932	Skur Buchan	Yes
17	Leh	003	00010	853	442	Taroo	Yes
18	Leh	003	00011	913	3371	Turtok	Yes
19	Leh	003	00012	954	1015	Wanla	Yes

ANNEXURE – XI

(Refer Para 2.25 of Chapter II)

OFC Backhaul of M/s RJIL in Ladakh

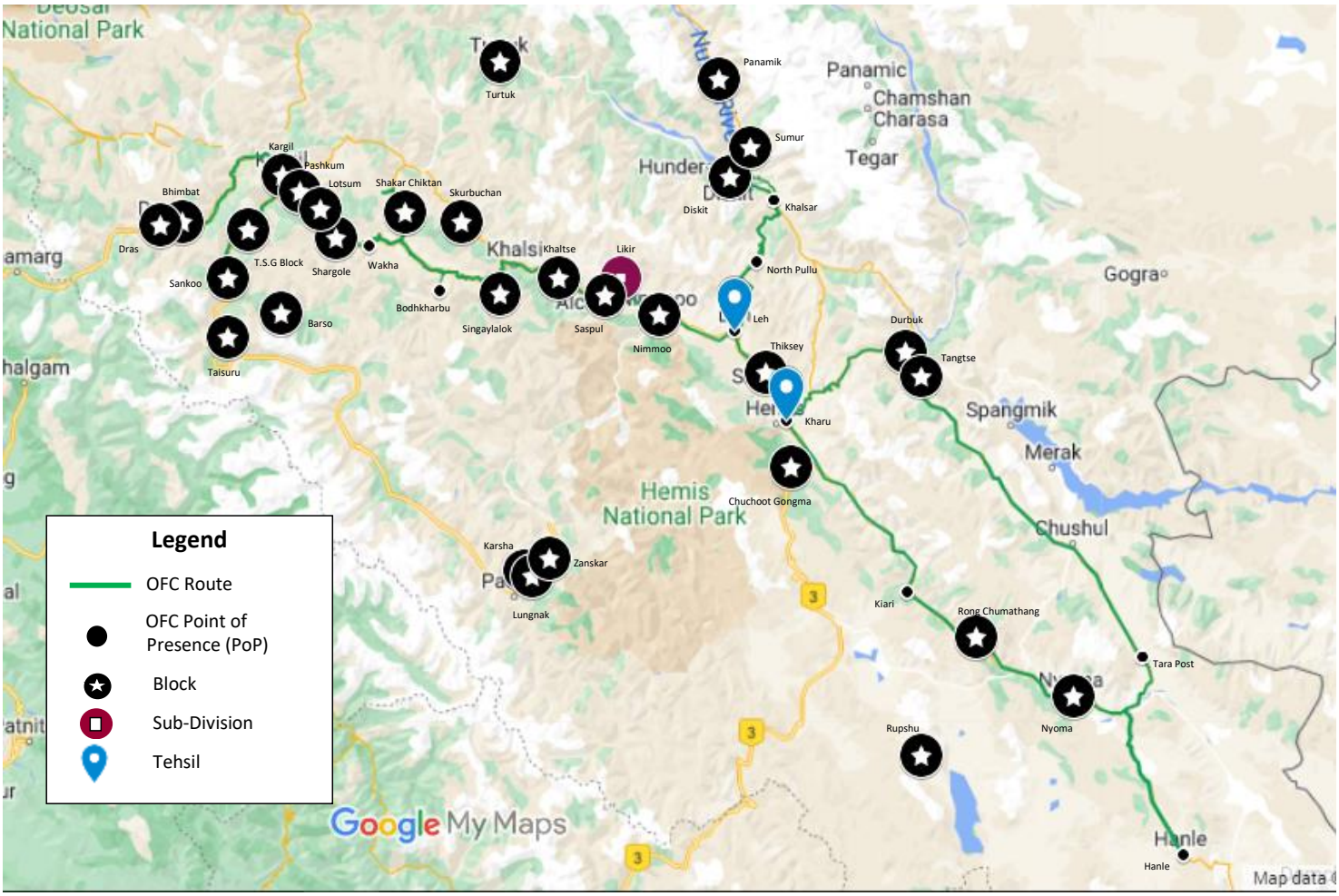


Note: There are instances where Block, Tehsil and the Sub-division have the same name. For such cases only the Block is indicated. Similar trend is followed for Tehsils and the Sub-divisions

ANNEXURE – XII

(Refer Para 2.25 of Chapter II)

OFC Backhaul of M/s BSNL in Ladakh



Note: There are instances where Block, Tehsil and the Sub-division have the same name. For such cases only the Block is indicated. Similar trend is followed for Tehsils and the Sub-divisions

ANNEXURE – XIII

(Refer Para 2.25 of Chapter II)

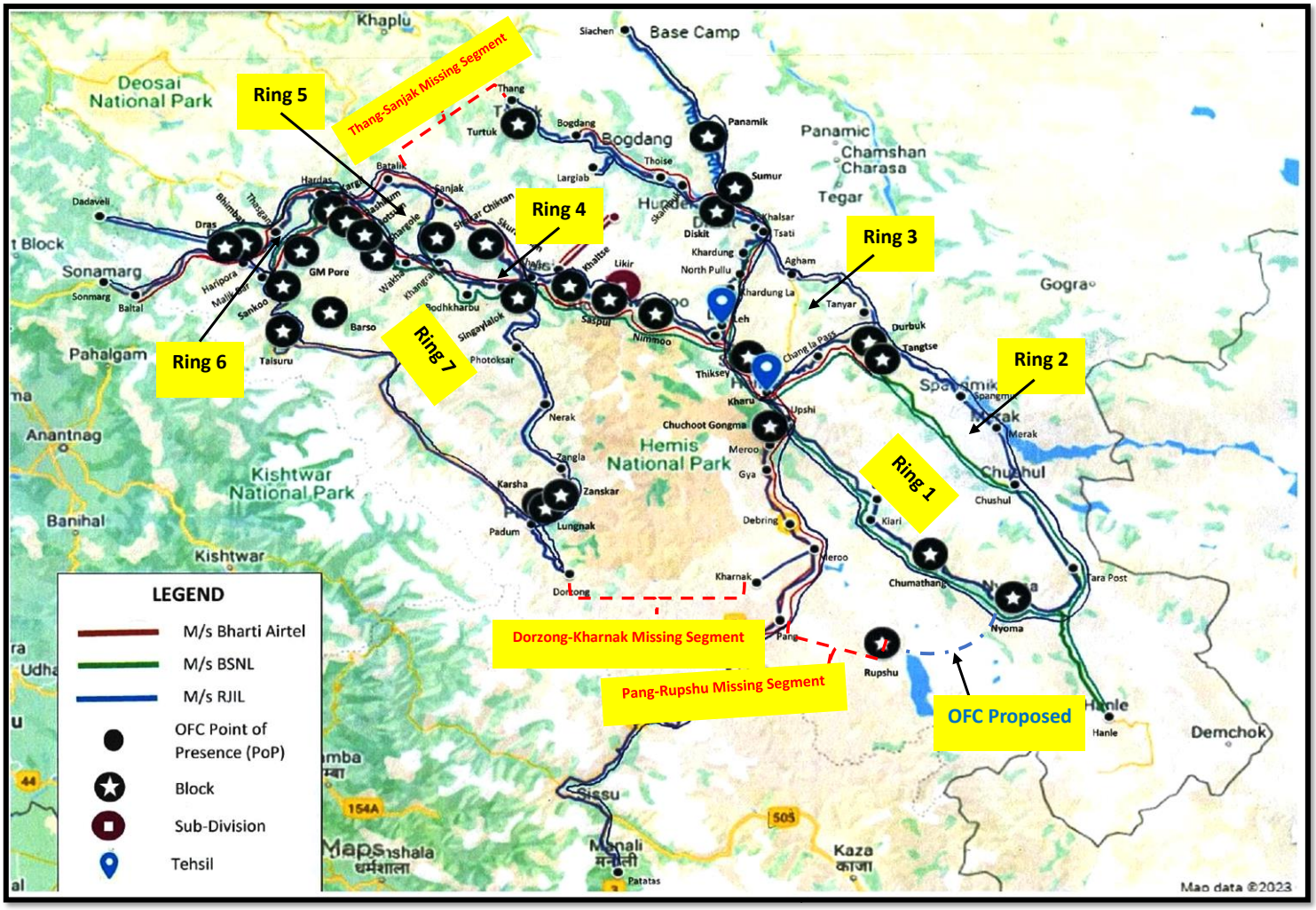
OFC Backhaul of M/s Bharti Airtel in Ladakh

Note: There are instances where Block, Tehsil and the Sub-division have the same name. For such cases only the Block is indicated. Similar trend is followed for Tehsils and the Sub-divisions.

ANNEXURE – XIV

(Refer Para 2.33 of Chapter II)

OFC Based Backhaul Transmission Media Layout of TSPs up to Block Level in Ladakh



ANNEXURE-XV
Refer Para 2.41 of Chapter -II

वी. रघुनन्दन, आईटीएस
सचिव
V. Raghunandan, ITS
Secretary

सत्यमेव जयते

भारतीय दूरसंचार विनियामक प्राधिकरण
महानगर दूरसंचार भवन, जवाहर लाल नेहरू मार्ग,
(पुराना मिन्टो रोड), नई दिल्ली-110002
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Tel. : 91-11-23237448 Fax : 91-11-23222816
E-mail : secretary@trai.gov.in

D.O. No. G-17/(3)/2023-NSL-I
Dated: 24th January 2023

Dear Sir,

This is in reference to following earlier communication of TRAI to your good office on registering of demand and maintenance to waiting list by service providers:

(i) Recommendations on '*Roadmap to Promote Broadband Connectivity and Enhanced Broadband Speed*' dated 31st August 2021.
(ii) TRAI DO letter No. M-5/9/(4)/2021-QoS dated 07.10.2022 to Secretary, DoT (copy attached).
(iii) Recommendations on '*Improving Telecom Connectivity/ Infrastructure in far-flung areas of Himachal Pradesh*' dated 12th December 2022.

2. In its above referred recommendations dated 31.08.2021, TRAI has mentioned that it is of the firm opinion that a proper assessment of demand for broadband services cannot be undertaken by the licensee TSPs unless the demand has been registered formally at some level. As per clause 30, chapter V in Unified license, the licensees must ensure compliance to aspects such as registration of demand of telecom services, maintain waiting list, and publicize provision of services, etc. TRAI had therefore recommended that licensees should declare the availability of fixed line broadband services in respective service areas of operation, on GIS map, accessible to public through its website. The licensees should also use all verifiable means of communication like the website, App, Interactive Voice Response (IVR) system, text message etc. to register demand for fixed-line connectivity and maintain a transparent, open to inspection, waiting list.

3. In *TRAI DO letter referenced at para 1 sub para (ii) above,* it has been emphasized upon DoT may explore to put in place a mechanism by which DoT's LSA field units get the data of waiting list from all TSPs/ISPs and analyze that on monthly basis. The Authority has again reiterated in its recommendations on '*Improving Telecom Connectivity/ Infrastructure in far-flung areas of Himachal Pradesh*' dated 12th December 2022 for enforcing license condition on TSPs to maintain waiting list of each and every wired-line service demand raised with them.

Contd.2

4. In view of the above-mentioned context, it is imperative to mention that registration of demand for telecom services (especially in far-flung areas), maintaining waiting list and publicizing provision of services is the way forward towards adopting a structured approach towards monitoring the pentation of wired-line broadband and meeting out the NDCP-2018 objectives. It is thus requested to expedite necessary action on recommendations of TRAI and implement compliance of license conditions (as specified at para 3 above) by all licensee Access TSPs and ISPs to register demand for fixed-line connectivity and maintain a transparent, open to inspection, waiting list. DoT should also put in place a mechanism by which DoT's LSA field units get the data of waiting list from all TSPs/ISPs and analyze that on monthly basis.

V. Raghunandan

(V. Raghunandan)
Secretary, TRAI

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

LIST OF ACRONYMS

S. No.	Acronym	Description
1.	2G	Second Generation Technology
2.	3G	Third Generation Technology
3.	4G	Fourth Generation Technology
4.	ApGR	Applicable Gross Revenue
5.	BBNL	Bharat Broadband Network Limited
6.	BRO	Border Road Organization
7.	BSNL	Bharat Sanchar Nigam Limited
8.	BTS	Base Trans-Receiver Station
9.	CAPEX	Capital Expenditure
10.	CPSU	Central Public Sector Undertaking
11.	DG	Diesel Generator
12.	DISCOM	Distribution Company
13.	DLP	Defect Liability Period
14.	DoT	Department of Telecommunication
15.	FXO-FXS	Foreign Exchange Subscriber and Foreign Exchange Office ports
16.	GIS	Geographical information System
17.	GPs	Gram Panchayats
18.	GSAT	Geosynchronous Satellite System
19.	IP-I	Infrastructure Provider Category I
20.	ISP	Internet Service Provider

S. No.	Acronym	Description
21.	ITBP	Indo Tibetan Border Police
22.	KVA	Kilovolt-ampere
23.	LAC	Line of Actual Control
24.	LoC	Line of Control
25.	LoS	Line of Sight
26.	LSA	Licensed Service Areas
27.	MF-TDMA	Multi-Frequency Time Division Multiple Access
28.	MNRE	Ministry of New and Renewable Energy
29.	MoD	Ministry of Defense
30.	NFS	Network for Spectrum
31.	NHAI	National Highways Authority of India
32.	NLD	National Long Distance
33.	O&M	Operation And Maintenance
34.	OFC	Optical Fiber Cable
35.	OPEX	Operational Expenditure
36.	OPGW	Optical Ground Wire
37.	PDC	Probable Date of Completion
38.	PGCIL	Power Grid Corporation of India Limited
39.	POP	Points of Presence
40.	RECPDCL	Rural Electrification Corporation Power Development and Consultancy Limited

S. No.	Acronym	Description
41.	RJIL	Reliance Jio Infocomm Limited
42.	RLOS	Radio Line of Sight
43.	ROI	Return of Investment
44.	ROW	Right of Way
45.	STM	Synchronous Transport Module
46.	T/L	Transmission Line
47.	TERM	Telecom Enforcement and Resource Monitoring Cell
48.	TSP	Telecom Service Provider
49.	UL	Unified License
50.	UPS	Uninterruptible Power Supply
51.	USOF	Universal Services Obligation Fund
52.	VI	Vodafone Idea Limited
53.	VSAT	Very Small Aperture Terminal
54.	Wi-Fi	Wireless Fidelity