

A photograph of a construction worker in a blue uniform and white hard hat, holding a tablet and a walkie-talkie, standing inside a large, circular tunnel. The tunnel's interior is lined with metal grating and has various pipes and cables running along the walls.

# Dedicated Wireless Communications Platform For Underground Usage & Tunnelling Operations

## Extended Capabilities For PMR Walkie Talkies In Difficult Terrain

Our customer was **L&T Construction**, one of the largest providers of engineering & construction services in India, with a strong footprint in over 30 countries around the world. L&T engages in core high impact sectors of the economy with integrated capabilities that span the entire spectrum of 'design to deliver'. With over 8 decades of a strong, customer focused approach and a continuous quest for world-class quality, and expertise across Technology, Engineering, Construction, Infrastructure projects and Manufacturing.

The company was engaged in the building of 4 tunnels in the state of Jammu & Kashmir, encompassing links that connect key locations that included Katra, Reasi, Dharamkund and Banihal. The total length of these tunnels is estimated to be over 20 kilometers and would carry both rail and road traffic.

### Customer Challenges

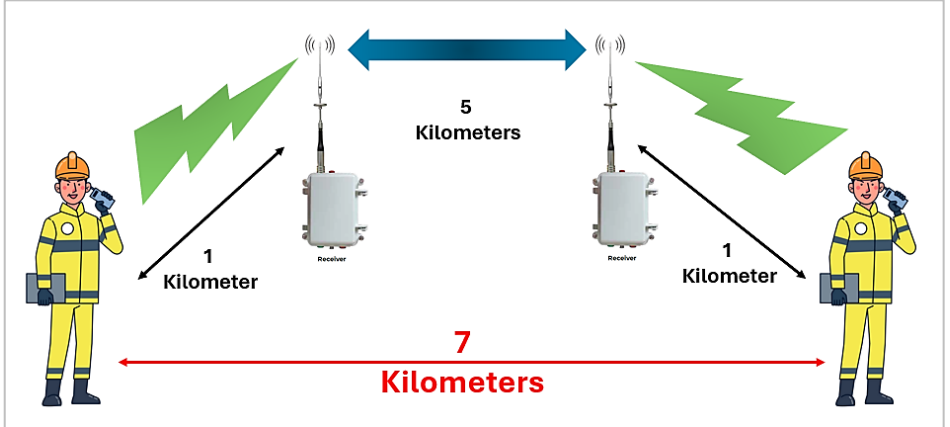
- As the tunnel was underground the radio transmissions were blocked by the mountain terrain and radio communications were hampered, often limiting transmission range to less than 500 meters.
- Tunnelling operators were unable to stay in constant touch with personnel who were sometimes located several kilometers away.
- Lack of communications was leading to a very slow pace of work and constant delays. The workers were operating under extreme risk.
- Messages often had to be carried back & forth in person, leading to constant delays.
- The team was in dire need of a stable communications platform that could connect not only the personnel within the tunnel but also to the outside world and the control room located outside the tunnel.

### Our Solution

Our team from ASIM Navigation conducted an extensive terrain analysis to identify the ‘dead’ zones in the radio network, create a topology of a mesh network, and identify the ideal locations for placing high-power relay nodes. We devised an ingenious & cost-effective solution comprising of a dedicated mesh network of Brutforce PMR walkie talkies and high-power Brutforce relay units that would boost & carry the duplex radio transmissions across areas where normal radio transmissions were blocked by the bends in the tunnel or by mountain terrain.

### Benefits of radio mesh network:

- The Brutforce license-free radio handsets reduced the cost of handsets by 10X
- Effective range of communications was increased from 1 kms, to well over 7 Kms, with scalability to increase it even further if required
- Speed to tunnelling operations was increased dramatically, and lost time was recovered quickly. The LnT team was able to meet all project deadlines within their stipulated SLAs.



### Equipment used:



#### Fixed equipment:

- BFB-005DRR high-power relay devices that are mounted at strategic points

#### Mobile equipment:

- BFR-001ID license free walkie-talkies, capable of mesh communications