



Location
Bengaluru,
India



Scanned
Informal
Settlements



Scan size
40 Acres



Scan time
25-27
minutes
per scan



Industry
Surveying

Accurately Mapping Informal Settlements in Bengaluru, India

The informal settlements in Bengaluru, India, house roughly 16% of the city's population and there are around 500 recognised in this area.

Currently, Bengaluru is going through a period of modernisation and urbanisation which has caused the city limits to expand. As a result, the local government are required to provide documents of every house, to the respective owners, detailing accurate measurements of its structure, such as boundary lines and roof heights.

The government has plans to formally declare ownership of the settlements to the people living in them, which means a map of the whole area was needed.

Nakshatech, a geospatial mapping service company, were hired to survey the area and collect this data. This involved mapping the complex informal settlements. The task was challenging as they include many narrow lanes that are difficult to access. Additionally, people are going about their daily activities.

Furthermore, some parts of the settlements are in dark and cramped areas whereas others are in direct sunlight. This required the team to find adaptable solutions and technology that could handle these difficult environments, as well as deliver on the task in hand.

The area in question is a no-fly zone, which meant that drones were not an option. Other methods for capturing data such as static scanning wouldn't be feasible because of the busyness of the area. The cramped streets also meant the team would struggle to use a backpack solution either.





“The ZEB Horizon provided good quality data and allowed us to scan difficult to access areas accurately and efficiently”

Dev Biswas | Business Development Manager

Scanning Difficult to Access Areas with ZEB Horizon

A fast and effective way to map the informal settlements was to walk through the complex passages, and a handheld laser scanner was the most suitable option. Nakshatech chose GeoSLAM's ZEB Horizon scanner, due to its quick method of capturing accurate data and ease of use. The lightweight solution means that only one person is required to scan an area at any one time. This is less disruptive to the surveying team, which in turn is cost effective for Nakshatech and their client.

The extensive maze of restricted passages and dead ends did not affect the versatile SLAM technology. By using the ZEB Horizon, the team were able to scan 40-45 areas of the settlements. Scan times ranged from 25-27 minutes, so smaller areas of the settlements could be captured in a single scan. For larger areas, the team carried out multiple scans which were sent off individually to the client.

The final scans were imported into GeoSLAM Draw where orthophotos were automatically created. As a result, the engineers could make accurate measurements in a timely manner. Additionally, the point clouds were exported to Terra Solid, where further information was extracted for the final report.

The final data delivered on their client's accuracy goals. They were able to smoothly extract the boundaries and roofs of every single house in the settlements.

This is not the first time that GeoSLAM technology has been used to map informal settlements in India. The ZEB Revo was used to accurately scan the settlements of Mumbai in 2017. The resulting 3D point cloud helped to extract information about the elevations and sections of each house frontage.

