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An Analysis of Suitable Location for Establishing Telecommunication Tower at General Sir John Kotelawala Defence University, Southern Campus

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Wireless telecommunication is broadly utilized around the world and Sri Lanka, particularly due to increased use of mobile users, and the conversion of mobile phone into a primary essentiality of a person. High population density of the urban or suburban areas requires the establishment of telecommunication towers because the service providers consider low manufacturing cost and give maximum benefit. The telecommunication tower is the key device for supplying mobile users with a telecommunication network. The requirements of telecommunications towers are growing parallel to the growth of mobile users every year. This project aims to explore the coverage of the existing towers and to propose a new suitable location to establish a telecommunication tower that supplies the best coverage and capacity by optimizing the resources and cost-effectiveness. The study investigated Sooriyawewa area distressed with insufficient coverage from the existing towers for daily necessity, which causes the necessity to establish a new telecommunication tower. Data were collected from open-source platforms and the Survey Department of Sri Lanka, processed with ArcMap 10.5 licensed software. Population, Existing tower locations, Roads, Land use, Reservations, Elevation, Schools, and waterbodies were used as the data layers, and data was analysed using both vector-based and raster-based approaches in Geographical Information Science (GIS) environment. Conclusively, factor maps were prepared and the optimal locations were identified for establishing telecommunication towers, and validated with the existing locations.

Keywords*: coverage, telecommunication towers, service providers, Geographical Information Science (GIS)*