

## **Preface**

The main aim of the present thesis is the Digital Mapping and asset management of water utility network for Barvi Mumbai Metropolitan region area using Geospatial Technology for the latest year 2023. The dissertation's introductory chapter covers the fundamentals of water utilities, which are an essential component of any metropolitan infrastructure. In a geographic information system (GIS) context, a geographic database of the water distribution network (WDS) for the MMRA region has been built while gathering data inputs from various sources and performing a water supply-demand gap analysis. The second chapter deals with the location over which the study was conducted, its geography, climate, population, and industrialization. The third chapter of data and methods explains the types of data employed, its extraction procedure, and the method used to derive the results using the extracted data. Chapter 4 deals with the results and discussion of the observed outcomes, which includes possible reasons for satisfying the Objective of the thesis that micro-level detailed study of the Barvi grid network (175), with the intelligence of updated attributes giving real-time scenarios of the feature of pipelines with geotagged images with its detail. The complexity of the network is solved with the help of GIS accumulation. Through the study, it proves that the GIS technology like DGPS, unmanned aerial vehicle (UAV) etc., helps and give the result with better accuracy to solve and analysis of the given. Although there is a shortage of water, an analysis of the water supply-demand gap revealed that this is primarily because of the inadequate state of the current WDS, which includes low pressure and unauthorised connections, among other things. Mapping of Schematic infrastructure gives real-time scenario of the assets for others to do the work in advance step for the analysis.