

## PREFACE

This thesis explores the application of GIS in assessing the site suitability of Compressed Natural Gas (CNG) petrol pumps. The growing concerns about environmental sustainability and the need for alternative fuel sources have led to an increased interest in CNG as a cleaner and more efficient energy option for transportation.

In recent years, the world has witnessed a rapid transformation in the transportation sector, driven by technological advancements, changing consumer preferences, and environmental concerns. RBML (Reliance BP Mobility Ltd) has positioned itself as a key contributor to this transformation, aiming to revolutionize the way people commute and access energy for their vehicles.

CNG has emerged as a promising alternative to conventional fossil fuels due to its lower carbon emissions and cost-effectiveness. Establishing CNG petrol pumps strategically across urban areas can significantly contribute to reducing pollution levels and promoting the adoption of environmentally friendly transportation options.

In this study, we employ Geographic Information Systems (GIS) to identify potential hotspots for CNG petrol pump locations. GIS allows us to analyze spatial data, including land use patterns, population density, and other relevant factors that influence the site suitability of CNG petrol pumps.

The research focuses on understanding the correlation between existing CNG infrastructure, population distribution, and crowd patterns. By examining these interconnections, we aim to identify regions with high demand for CNG fuel and limited access to existing petrol pumps. This approach enables us to identify potential hotspots where the establishment of new CNG petrol pumps would provide significant benefits to the community.

The study also delves into the challenges and opportunities associated with CNG infrastructure development, including regulatory frameworks, investment requirements, and operational considerations. By addressing these aspects, we aim to provide valuable insights for policymakers, urban planners, and entrepreneurs interested in promoting sustainable transportation solutions.

The findings of this thesis contribute to the ongoing efforts to transition towards cleaner and more sustainable energy options. By combining GIS techniques and analysis, and an understanding of site suitability factors, we can facilitate informed decision-making in the establishment of CNG petrol pumps. Ultimately, the research aims to support the expansion of CNG infrastructure, promoting a greener future for transportation.