UNIVERSITI TEKNOLOGI MARA

AN ANALYSIS THE UTILITY DATA AT HIGH DENSITY AREA (TAMAN SELAYANG JAYA SELANGOR) FOR UTILITY MAPPING PURPOSE

RIEZARMAN BIN RAMLI

Disertation submitted in partial fulfillment
of the requirements for the degree of
Bachelor of Surveying Science and Geomatics
(Honours)

Faculty of Architecture Planning and Surveying

AUGUST 2022

ACKNOWLEDGEMENT

Alhamdulillah, in the name of Allah S.W.T, the Most Gracious and Merciful, for His bounty that enabled me to overcome all challenges and successfully complete my studies.

I'd want to use this occasion to express my gratitude to my supervisor, Sr. Dr. Ashraf Abdullah, for his direction, invaluable constructive criticism, and friendly suggestions, which have considerably aided me in finishing my project. Their vitality, vision, sincerity, and motivation have left a lasting impression on me. Also, I would like to thanks to my panel for the viva as well that the comment they give to me.

Thank you so much to my parents for their sacrifices in helping to support of my research. It is impossible for me to express my gratitude in words for all of the sacrifices you both have made for me. Your prayers for me have kept me going all these years. I want to express my gratitude to my siblings for their many prayers and fortifications.

Finally, I'd like to express my gratitude to everyone who has helped me complete this study effort, whether directly or indirectly.

ABSTRACT

Due to the pressures of high density area, utility requirements such as water, electricity, and gas, as well as fibre optics, drainage, and sewage, will also increase. In the age of big data, the utility mapping data can be extremely beneficial for comprehending dense areas. The utility mapping of underground utility networks been used for land administration purposes. This study shows about explanation the implementation of high density area and analysis of underground utility at Taman Selayang Jaya, Selangor. The investigation of utility data has been proposed in order to manage the work process from data collection to data usage. Existing test data has been analysed to determine whether the area is suitable for pipes and cable renewal in high density areas. The case study integrates collected data from Pipe Cable Locating (PCL) and Ground Penetrating Radar (GPR) create a utility mapping. PCL and GPR has been found to be a non-destructive method for accurately and efficiently detecting pipes and cable in this study. For pipeline detection, PCL and GPR has proven to be an effective tool. The aim of this study is to explore, collect data, analysis, calculate and produce the output. To accomplish the aim, the objective of this research are to define the utility data using PCL for high density area, to organize the data obtain from utility survey for high density area using the suitable platform and to verify the utility mapping plan for high density area with appropriate analysis. Apart from that, the methodology is divided into four phases; phase 1 is the preliminary study, phase 2 is the data acquisition, phase 3 is the data processing phase, and phase 4 is the result and analysis. All phases has been completed in order to obtain the final result, which is analysis utility mapping.

CHAPTER ONE
INTRODUCTION

1.1 Introduction

This chapter will describe the research details that conclude of research background, problem statements, research question, aim and objectives, study area and significance of study.

1.2 Research Background

Rapid urbanisation has resulted in the growth of this urban infrastructure. Due to limited land area, urban underground space is increasingly being used for transportation, utility, and even public usage. The urban underground is currently congested with a variety of different types of infrastructure, most particularly utility pipelines. It is difficult to map this infrastructure under such congestion circumstance as these infrastructure are mostly invisible to the naked eye. Underground utility mapping is being implemented to detect, scan, and locate buried infrastructure through the use of non-destructive geotechnical instruments (Hashim et al. 2014).

The modern world has a big and growing desire for services that are primarily delivered by underground pipes and cable, sometimes known as utilities. The business sector requires telephones, fax machines, and, increasingly, internet connectivity. Despite the expansion of mobile phone networks, telephone and internet services continue to be required. Pipelines deliver water to households and businesses, while sewage pipes are used to convey greywater. The consequence of all this effort is a developing network of underground pipelines and cables. Obviously, these are not all at the same depth, nor are all travelling in the same direction. However, just as there is a limit to the area available for houses, businesses, and other buildings above ground in cities, there is also a limit to the space below ground in terms of accessibility and utility capacity (Saifuddin et al., 2020)

TABLE OF CONTENT