

UNIVERSITI TEKNOLOGI MARA

**BUILDING MAINTENANCE AUDIT
WITH THE AID OF GIS**

NORFARAHIAH BINTI AZHAR

Thesis submitted in fulfillment
of the requirements for the degree of
Bachelor of Science Survey and Geomatics

Faculty of Architecture, Planning and Surveying

Jan 2018

AUTHOR'S DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Undergraduate, Universiti Teknologi MARA, regulating the conduct of my study and research.


Name of Student : Norfarahiah binti Azhar

Student I.D. No. : 2014862356

Programme : Bachelor of Surveying Science and Geomatics–
AP220

Faculty : Architecture, Planning and Surveying

Thesis : Building Maintenance Audit with the Aid of GIS

Signature of Student : 

Date : Jan 2018

ABSTRACT

Maintenance is important in maintaining a building condition in order to avoid unnecessary cost and to avoid accident. Nowadays, most of the building does not go through maintenance due to the high cost for maintenance. The aim for this research is to determine the condition of the building whether it can be maintained or not by creating a database for the maintenance data, visualised the data and also mapping the defect of the building. The research started from collecting the inspection data to be used in database creation. Then, it is being processed in ArcMAP software to be visualised and also to map the defect for the building. The final product of this research is the map of the defect in 2D. It is more convenient compare to the conventional method as the information of the defect can be obtained in the map. It can reduce the time constraint and help to reduce the time for the maintenance team to take action according to the condition of the building.

TABLE OF CONTENT

	Page
CONFIRMATION BY PANEL OF EXAMINERS	ii
AUTHOR'S DECLARATION	iii
ABSTRACT	iv
ACKNOWLEDGEMENT	v
TABLE OF CONTENT	vi
LIST OF TABLES	ix
LIST OF FIGURES	x
LIST OF PLATES	xi
LIST OF SYMBOLS	xii
LIST OF ABBREVIATIONS	xiii
CHAPTER ONE INTRODUCTION	1
1.1 Introduction	1
1.2 Research Background	1
1.3 Research Gap	2
1.4 Problem statement	3
1.5 Research Aim	4
1.6 Research Objective	4
1.7 Research Questions	4
1.8 Significance of Study	5
1.9 Structure of Thesis	5
1.9.1 Chapter 1	5
1.9.2 Chapter 2	5
1.9.3 Chapter 3	6
1.9.4 Chapter 4	6
1.9.5 Chapter 5	6
1.10 Summary	7

CHAPTER TWO LITERATURE REVIEW	8
2.1 Introduction	8
2.2 Maintenance	8
2.2.1 Type of Maintenance	9
2.3 Building	10
2.3.1 Type of building	11
2.3.2 Building pathology	13
2.3.3 Building performance	13
2.3.4 Building Defect	13
2.4 Geographical Information System (GIS)	14
2.4.1 ArcGIS software	15
2.5 JKR Guide and Formulation	16
2.5.1 BARIS formulation	16
2.5.2 Matrix Analysis	18
2.5.3 Level of building physical condition and importance of maintenance	19
2.6 Summary	20
CHAPTER THREE RESEARCH METHODOLOGY	21
3.1 Introduction	21
3.2 Methodology	22
3.3 Project Planning	24
3.3.1 Study Area	24
3.3.2 Research Tools and Instrument	25
3.4 Data Collection	25
3.5 Data Processing	26
3.6 Summary	29
CHAPTER FOUR RESULTS AND DISCUSSION	30
4.1 Introduction	30
4.2 Tabulation of Defect Data in Attribute table	30
4.3 Tabulation of Result from Formulation	31
4.4 Visualisation of Building and Defect	32
4.5 Summary	33