TABLE OF CONTENTS

ABSTRAK		**ix**
ABSTRACT		**xi**
ACKNOWLEDGEMENT		**xiii**
ABBREVATION		**xv**

CHAPTER			**PAGE**
1.	**INTRODUCTION**		**1**
	1.1	Preamble	1
	1.2	Aim and Objectives of Study	2
	1.3	General Approach of the Study	3
	1.4	Study Area	7
	1.5	Assumptions and Limitations	9
	1.6	The Importance of this Topic	10
	1.7	Organisation of Thesis	10
2.	**LITERATURE REVIEW**		**13**
	2.1	Introduction	13
	2.2	Air Quality Modelling	13
		2.2.1 Principal of Air Pollution Model	15
		2.2.2 ISCST3 Model	17
		2.2.2.1 Description of Keyword/ Parameter	19

CHAPTER		PAGE
	2.2.2.2 Advantages of the Keyword Approach	22
	2.2.2.3 ISCST3 Modelling Capabilities	23
2.3	Environmental Monitoring Report	24
2.4	Geographical Information System	30
	2.4.1 Components of GIS	33
2.5	GIS & Modelling	36
	2.5.1 Full Integration	36
	2.5.2 Loose Coupling	38
	2.5.3 Tight Coupling	39
2.6	Environmental Monitoring and GIS	41
3.	**METHODOLOGY**	**44**
3.1	Introduction	44
3.2	Overview of Methodology	44
3.3	ArcView 3.1	46
	3.3.1 Avenue	47
	3.3.2 Dialog Designer	47
3.4	Prediction of Air Pollution Concentration	48
	3.4.1 Interpolation of Ground Level Concentration using ArcView	50
3.5	Input of Air Quality Monitoring Results into ArcView	51
3.6	Analysis and Synthesis of Results	51

CHAPTER		PAGE
3.7	Customisation of GIS as Monitoring Tool	53
3.8	Hardware and Software Requirement	54
4	**RESULTS AND DATA ANALYSIS**	**55**
4.1	Introduction	55
4.2	Overview of AMAQUM	55
4.3	ISCST3 Air Quality Modelling Interface	57
4.3.1	Model Input Parameter	60
4.3.2	Model Run	63
4.3.3	Model Output	65
4.3.4	Model Output Pre-processing	67
4.3.5	Data Interpolation	70
4.4	Ground Level Concentration Interface	85
4.5	Ambient Air Quality Result Interface	92
4.6	Monitored Stack	98
4.7	AMAQUM as a Customised GIS Application	101
5.	**DISCUSSION**	**103**
5.1	Introduction	103
5.2	Advantages of An Automated Monitoring	103
5.3	Role in Decision-Making System	104
5.4	Application to the Study Area	105

CHAPTER			PAGE
	5.4.1	Result	105
	5.4.2	Discussion of Result	105
	5.4.3	Benefits of AMAQUM in Analysis	115
	5.4.4	Difficulty	116
	5.4.5	Improvement and Future Development	116
5.5		Assessment of Research Goal and Objectives	119
6.	**SUMMARY AND CONCLUSION**		**121**
7.	**BIBLIOGRAPHY**		**123**
APPENDIX 3.1	**Example of ISCST3 Meteorological Data**		**133**
APPENDIX 4.1	**Example of ISCST3 Output File**		**134**
APPENDIX 4.2	**Results of ArcView Built-in Interpolators**		**155**
APPENDIX 4.3	**Compilations of MAIC for Pollutants Modelled**		**175**
APPENDIX 4.4	**List of Avenue Script Written for AMAQUM**		**193**