

TABLE OF CONTENTS

APPROVAL PAGE	i
SELF DECLARATION AGAINST PLAGIARISM	ii
ABSTRAK	iii
ABSTRACT	iv
PREFACE	v
ACKNOWLEDGMENTS	vi
TABLE OF CONTENTS	viii
LIST OF FIGURES	x
LIST OF TABLES	xi
CHAPTER 1	12
1.1 Background	12
1.2 Research Problem	13
1.3 Research Objectives	13
1.4 Scope of Problem.....	14
1.5 Research Methodology	14
1.6 Research Roadmap	15
CHAPTER 2	16
2.1 Long Term Evolution (LTE)	16
2.1.1 Network Architecture of Long Term Evolution.....	16
2.1.2 LTE Technology Coverage Analysis	17
2.1.2.1 Link Budget Calculation	17
2.1.2.2 Propagation Model.....	19
2.1.3 LTE Technology Capacity Analysis	20
2.1.3.1 Number of Users.....	20
2.1.3.2 LTE User.....	20
2.1.3.3 Network Throughput.....	21
2.1.3.4 Downlink dan Uplink Cell Capacity.....	23
2.1.3.5 Total Site Capacity Planning	24
2.3 Economic Analysis	26
2.2.1 Capital Expenditure (CAPEX)	26
2.2.2 Operational Expenditure (OPEX)	26
2.2.3 Net Present Value.....	26

2.2.4	Internal Rate of Return	27
2.2.5	Payback Period.....	27
2.4	Sensitivity Analysis	27
CHAPTER 3		30
3.1	System Model	30
3.2	LTE Design Parameters	31
3.3	Geographical and Demographic Conditions of the City of Yogyakarta	31
3.4	Coverage Planning.....	32
3.5	Capacity Planning.....	34
CHAPTER 4		39
4.1	Technical Analysis	39
4.1.1	Coverage Planning Calculation Result.....	39
4.1.2	Capacity Planning Calculation Result	41
4.1.3	Comparison of Capacity Planning and Coverage Planning Results ..	42
4.2	LTE Network Simulation Results.....	42
4.2.1	Signal to Interference Noise Ratio (SINR).....	42
4.2.2	Reference Signal Receiver Power (RSRP).....	45
4.2.3	Throughput.....	48
4.3	Economic Analysis	50
4.4	Sensitivity Analysis	52
CHAPTER 5		64
5.1	Conclusion	64
5.2	Suggestion	65
REFERENCES		66