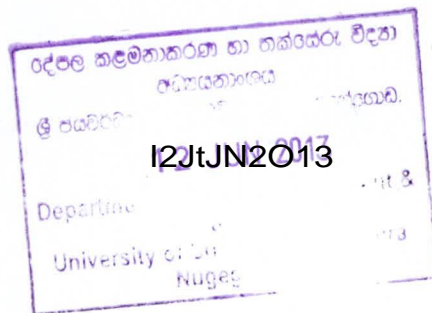


# **Impact of Cellular Phone Towers on Neighboring Residents' and Their Properties**

**With Special Reference to Kandy Municipal Council Area**

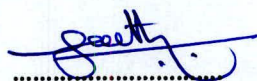
**Dissertation Submitted to the University of Sri Jayewardenepura as a Partial Fulfillment for the Requirements of the Final Examination of the M. Sc. in Real Estate Management and Valuation Degree**



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**Date of Submission : 23/05/2013**


“The work described in this dissertation was carried out under the supervision of Professor R. G. Ariyawansa and any report on this has not been submitted in whole or as a part to any university or any other institute for another degree/examination or any other purpose”


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Hereby, I certify that Mr. P. G. S. Bandara of GS/M.Sc./REMV/3384/08 duly completed the research titled “Impact of Cellular Phone Towers on Neighboring Residents’ and Their Properties: with Special Reference to Kandy Municipal Council Area” under my supervision and recommended for final submission.

  
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Signature of the supervisor

  
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Signature of the 2<sup>nd</sup> examiner

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Signature and the official stamp of the Head

## **Abstract**

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In contrast with the communication sector of Sri Lanka, cellular phone system has achieved significant growth since 1989 recording five (05) cellular phone service providers and more than nineteen (19) million of mobile subscribers, (<http://www.trc.gov.lk>). However, service providers are making effort to upgrade and extend their network coverage to cater the high level of demand. Consequently, cellular phone base structures/towers are being erected in inhabitant areas where people live and work without having considering the degree of exposure of people to Electromagnetic radiation fields. Hence, resistant against erection of cellular phone towers in inhabitant areas exists due to public fear about potential health hazards while lack of available scientific evidences of the impacts that those towers have on neighbor's health, view, aesthetic and property values. General objective of this study is to examine how residents perceive on living near cellular phone towers. The methodology of the study was concentrated both primary and secondary data. The primary data was collected using structured questionnaires from a sample of householders who living 300 meters radius to each five (05) cellular phone towers located within the limits of Kandy Municipal Council. In analyzing phase, data was coded and entered into the computer using standard statistical program called SPSS. Finally, Correlation coefficient was run between variables to identify the relationships. In considering major findings of the study, householders are not happy with the existence of those towers in their neighborhood due to perceived adverse effects that those towers have on their health. However, the distance further away from the cellular phone tower, the householders' satisfaction with the existence of those towers increased. In concentrating property values, householders perceived that reduced property values exhibit for their properties due to the proximity to cellular phone towers. Finally, this research focused on the perceptions of people living closer to cellular phone towers and how they evaluate these perceived impacts on their properties. Hence it is needed further research on that econometric analysis based on the sales transaction price to quantifier these effects.

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## Table of Contents

Abstract.....	iv
Acknowledgement.....	v
Table of content.....	vi
<b>Content</b>	<b>Page</b>
<b>Chapter one - Introduction</b>	
1.1 Introduction to study	01
1.2 Problem statement	03
1.3 Significance of the study	04
1.4 General objectives	05
1.4.1 Specific objectives	05
1.5 Research questions	05
1.6 Methodology	06
1.7 Limitations	06
1.8 Chapters in the report	07
<b>Chapter two - Literature review</b>	
2.1 Introduction	09
2.2 Cellular phone technology	10
2.3 Locating cellular phone sites	13
2.4 Assessment of environmental effects	19
2.4.1 The international legislation	19
2.4.2 The local legislation	20
2.5 Electromagnetic emissions from cellular phone tower	27
2.5.1 Exclusion zones	29

2.6 Radiofrequency radiation exposure standards	30
2.6.1 International standards	30
2.6.2 Local standards	33
2.7 Legal cases against the effects of cell sites	33
2.8 Health effects from cell phone tower	35
2.9 Property values affected by cellular phone tower	41
2.10 Property value effects from other structures	46
2.11 The effects of media attention on price	47
2.12 Methodologies advocated studying property value effects	48
<b>Chapter three - Research design</b>	
3.1 Introduction	50
3.2 Research design	50
3.3 Conceptual framework	51
3.4 Research process	54
3.4.1 Identification of variables	55
3.4.2 Selection of study area	57
3.4.3 Population and sample	57
3.4.4 Data collection method	58
3.4.5 Method of analysis	59
<b>Chapter four - Background of the study area</b>	
4.1 Introduction	61
4.2 Selection of the study area	61
4.3 Demographic profile of the area	63
4.4 Distribution of building units	64
4.5 Locations of cellular phone towers	65

<b>Chapter five - Data analysis</b>	
5.1 Introduction	66
5.2 Analysis of existing regulations and standards	66
5.2.1 Local context	67
5.2.2 International context	69
5.3 Descriptive statistics	70
5.3.1 Demographic characteristics of the sample	70
5.3.2 Neighborhood characteristics of the sample	74
5.3.3 Spatial attributes of cellular phone towers	77
5.3.4 Knowledge and information over CP towers	79
5.3.5 Awareness over the cellular phone system	81
5.3.6 Householder's & others' satisfaction with cell tower	83
5.3.7 Householder's concern on health effects	85
5.3.8 Householder's concern on visual effects	86
5.3.9 Householder's concern over other effects	88
5.3.10 Householder's concern on property value	91
5.3.11 Effects of cell tower on property market	93
5.3.12 Future effects of tower on health and value	94
5.4 Correlation matrix	96
5.5 Further research	99
<b>Chapter six - Conclusions and Recommendations</b>	100
<b>References</b>	102
<b>Appendices</b>	106



## List of Tables

<b>Table</b>	<b>Page</b>	
3.1	Determinants to be examined	53
3.2	Independent variables	56
3.3	List of variables	56
3.4	Tower locations for the sample	58
4.1	Demographic characteristics of Kandy Municipal Council	63
4.2	Population density of Kandy Municipal Council	64
4.3	Building units of Kandy Municipal Council area	64
5.1	Male and female distribution of respondents	70
5.2	Age group of respondents	71
5.3	Educational background of the respondents	71
5.4	Income levels of respondents	72
5.5	House ownership of respondents	73
5.6	Period of the occupation of householder	74
5.7	Desirability of neighborhood based on amenity	75
5.8	Desirability of neighborhood based on distance to city center	75
5.9	Desirability of neighborhood based on community	76
5.10	Desirability of neighborhood based on environment	76
5.11	Desirability of neighborhood based on security	76
5.12	Reason for selection of the residence	77
5.13	Location of towers and responses	78
5.14	Distance from a tower and responses	79
5.15	Information and knowledge given by government	80
5.16	Information and knowledge given by LA	80
5.17	Information and knowledge given by phone company	81
5.18	Information and knowledge given by media	81
5.19	Householder's awareness over the matters of CP system	83
5.20	Householder's satisfaction with a tower	84
5.21	Others' satisfaction with a tower	85
5.22	Health concern	86

5.23	View concern	87
5.24	Aesthetic concern	88
5.25	Concern over thundering	88
5.26	Concern over stigma	89
5.27	Concern over falling down risk	90
5.28	Concern over effect on electronic appliances	91
5.29	Cell tower as a risk element	91
5.30	Concern on adverse land value	93
5.31	In case of selling	94
5.32	In case of renting	94
5.33	Effect of cell tower on future health effect	95
5.34	Effect of cell tower on future property value	95
5.35	Correlation matrix of variables	96

## List of Figures

<b>Figure</b>		<b>Page</b>
2.1	Cellular network	11
2.2	Lattice tower	14
2.3	Monopole tower	15
2.4	Guyed tower	16
2.5	Stealth tower	16
2.6	The equipment	17
2.7	The antennas	17
2.8	Externalities of cell tower	19
2.9	Cell phone antenna trees	24
2.10	Different types of antenna trees	25
2.11	Beam shapes and direction	28
2.12	Location of cellular phone tower and land value	43
2.13	The relationship with cell tower and land value	49
3.1	Conceptual framework	52
3.2	Research flowcharts	54
4.1	Location of study area	62
4.2	Arial view of the Kandy City	63
4.3	Population of Kandy MC	64
4.4	Building units of the study area	65
5.1	Educational background	72
5.2	House ownership	73

## **List of Annexure**

<b>Annexure</b>	<b>Page</b>
Telecommunication statistics	106
Cell towers in Kandy MC Area	108
Demographic information of Kandy MC Area	112
Kandy Zoning Plan	113
Questionnaires of opinion survey	114

# CHAPTER ONE

## Introduction

### 1.1 Introduction to study

With the rapid development of the world the global communication system has become vital and has made glob as a global village. In respect of this, Global System for Mobile Phone (GSM) has become a vital and an indispensable tool of transmitting or exchanging of information for a modern man, (Bello, 2010). Further, he revealed that it has become significant infrastructure that promotes the growth and development in any facets of mans' activities such as agriculture, education, industry, banking, transportation etc. In this way, it is an essential tool for man to function well in all his endeavors. With the advent of the GSM, the rates, rigors and risks of traveling have been greatly reduced; the ease and speed of business transactions have been revised to an unprecedented level and lives have been saved at the nick of time in times of emergency or disaster. Meanwhile, an infrastructure facility, communication provides many benefits to the man while occur necessary social costs such as on safety, health hazards, environmental contamination, aesthetics, degraded views cape and adverse property values etc. Some of these social costs are attributable to the usage of cell phone while the majority is link with living or working around a base station. The cellular phone base stations and associated equipments increase the exposure of the population to electromagnetic field (EMFs) and this new technology represents potential hazards to human health and safety, (Bond and Beamish, 2005).

In fact, to get communication facility through mobile phone it is necessary to sitting Mobile Phone Base Stations (Towers, Antennas etc.) in inhabitant areas as a technical requirement while persistent controversy remain, (Bello, 2010). According to Bello, the base stations are sited in the close proximity to in inhabitant areas, because, the further, the equipment is located away from the users, the poorer will be the quality of communication. Secondly the equipment is placed too far from the users; this will cause the phones to increase their output power in order to sustain the connection and thus decreasing the battery life and talk time. The basic fact is that there are practical limitations to the geographic area that a base station can effectively serve and a limit

to the number of calls it can accommodate at a point in time, (Mobile Manufacturers Forum and GSM Association, 2006, as in Bello, 2010). This shows the importance of location of sitting base stations in areas where people are living and working to serve technically feasible.

In this regard, there can be seen persistent public concern on regular sitting of Cellular Phone Towers (CPBSs) due to the fears of potential health hazards from the Electromagnetic Fields (EMFs) which emission by these towers. Stewart (2000) states that it is not possible at present to say exposure to Radio Frequency (RF) radiation, even at levels bellow national guidelines, is totally without potential adverse health effects and that the gaps in knowledge are sufficient to justify a precautionary approach. Further in this report, it is mentioned that effect of Radio Frequency emission from these base stations (Antenna towers) on health hazards is still doubtful. And also precautionary approach to the use of mobile phone system was recommended until the robust information in this regard become available.

However, result of some scientific studies challenge above result and have been revealed that there is potential health risk from Radio Frequency radiation. According to Cherry (2000), over 40 studies have shown adverse biological or human health effects specifically from electromagnetic radiation emitted by cell phone or cell phone base tower. And also he observed that there is extremely strong evidence to conclude that Mobil Phone Base Stations are risk factor for, cancer, especially brain tumor and leukemia but all other cancers also, cardiac arrhythmia, heart attack and heart diseases, and other many associated diseases.

In order to the above mentioned arguments, it has revealed that there is persisting public concern against sitting of cellular phone base stations in inhabitant areas caused by fears of health hazards from exposure to electromagnetic fields which emit by these base stations. On the other hand, in the context of property value, it appears that ongoing argument in reduced property values occurred where residential properties located to neighboring the cellular phone base stations comparing to residential properties located away from these base stations. Some studies have done to find effects of cellular phone base stations to property values, Bond et al (2003) found that people who live close to a base station perceive the sites less negatively than those who live further away. However, he is of the opinion that the only reason a

rational investor might continue to avoid property near a cell site would be because it was intrusive on the views received from the property or because of the adverse aesthetic effects of the cell phone base station on the property. In generally, Impacts of the cellular phone base stations appears in three main aspects like health, safety and visual effects. According to the Canadian experience, the assess value of residential properties were reduced due to the close proximity to commercial antenna towers. The justification for the value diminution is due to the impact of the tower upon the aesthetic of the neighboring lands, Picard, 1996, as cited in Bello, (2010). Some consequences in Collinwood and British Columbia revealed the assess value of sixteen residential properties were reduced by an average of 7.2% due to the aesthetic impact of a broadcasting antenna installation, Macdonald, 2001, as cited in Bello, (2010). As per the above studies, it appears that the main cause of the value diminution is unsightly aesthetic impacts from cellular base stations.

Another ongoing concern caused by sitting cellular phone base towers has been identified as risk of falling towers over the close properties. In respect of this, the argument is that proximate properties face the risk of being crush down because of a falling tower. The concern for the fall zone has made most cities and municipalities to insist on a sufficient set back between a tower and the nearest property line, (Primedia, 2004, as cited in Bello, 2010).

## **1.2 Problem Statement**

In Sri Lanka large number of service providers of mobile phone services, television and radio channels are line in their services as fast developing economy of the country. The total numbers of mobile phone service providers are five (05) and their total subscribers are 19,636,896 as at Sep of 2012, (Report of Sri Lanka Telecommunication Regulatory Commission 2012). According to the population census of 2012 the total population of Sri Lanka is 20,263,723, (Report of Department of Census and Statistics 2013). This is an overwhelming evidence to show the intensity of use of mobile phones in Sri Lanka. As a result of this nature, regular sitting of communication base towers in inhabitant areas have significantly increased. The effects of these towers on neighbors' health, safety, view and aesthetic as well as property values have not been yet thoroughly studied. The effort of this research is to