

**An examination of the impact of residential security
measures on the incidence of residential burglary in two
selected northern suburbs of Johannesburg: A security risk
management approach**

By

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RESEARCH REPORT

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TABLE OF CONTENTS

TABLE OF CONTENTS	i
ACKNOWLEDGEMENTS	ix
EXECUTIVE SUMMARY	xi
Chapter 1	1
INTRODUCTION.....	1
RESIDENTIAL SECURITY MEASURES.....	2
RATIONALE/MOTIVATION FOR THE RESEARCH.....	3
Chapter 2	6
LITERATURE REVIEW	6
INTRODUCTION.....	6
PREVIOUS STUDIES.....	6
CURRENT VIEWS ON RESIDENTIAL BURGLARY.....	8
CONCLUSION.....	8
Chapter 3	10
RESEARCH METHODOLOGY	10
INTRODUCTION.....	10
RESEARCH AIMS.....	10
RESEARCH DESIGN AND METHODS.....	12
Units of analysis.....	12
<i>Parkview Police</i>	13
<i>Parkhurst</i>	14
<i>Westcliff</i>	14
DATA COLLECTION SOURCES AND MEASURING INSTRUMENTS.....	14
Docket analysis.....	15
<i>Docket measurement instrument</i>	17
<i>Docket analysis measurement occasion</i>	18
<i>Sampling</i>	19
<i>Design</i>	23
<i>Statistical techniques</i>	24
<i>Integrated measuring instrument and reliability</i>	26
<i>Research problems</i>	26
Interviews with residential burglary victims.....	28
<i>Measurement instrument</i>	31
<i>Measurement occasion</i>	41
<i>Measurement user</i>	41
<i>Sampling</i>	42
<i>Design</i>	43
<i>Statistical techniques</i>	44
<i>Research problems</i>	46
Residential security audit.....	47
<i>Measurement instrument</i>	47
<i>Measurement Occasion</i>	50

<i>Measurement User</i>	51
<i>Sampling</i>	51
<i>Design</i>	51
<i>Research problems</i>	52
Descriptive mapping	52
<i>Measurement occasion</i>	53
<i>Measurement user</i>	53
<i>Sampling</i>	53
<i>Design</i>	54
<i>Statistical techniques</i>	56
<i>Research problems</i>	57
CONCLUSION.....	58
Chapter 4.....	61
DEFINING CONCEPTS, TERMINOLOGY	61
AND TECHNICAL DESCRIPTIONS.....	61
INTRODUCTION.....	61
DEFINITIONS AND TERMINOLOGY USED.....	61
Burglary	62
Community Policing Forums (CPFs).....	62
Immediate house area.....	62
Outer perimeter	62
Inner perimeter	63
Intruder	63
Neighbourhood watch	63
Physical obstructions	63
Robbery	64
Symbolic (Psychological) obstructions	64
SAPS	64
SAPS 612(n) Form.....	64
TECHNICAL DESCRIPTIONS FOR SECURITY HARDWARE.....	64
Close circuit television systems (CCTV)	64
<i>CCTV camera</i>	65
<i>CCTV recorder</i>	65
<i>CCTV monitor</i>	65
Perimeter types.....	65
<i>Steel palisade</i>	66
<i>Wooden balustrades</i>	66
<i>Pre-cast cement slab walling</i>	67
<i>Diamond mesh wire fence</i>	67
<i>Electrified fencing</i>	68
Fence energiser.....	68
The electrified fencing infrastructure.....	69
Arming and disarming the fence	70
Output device	70
Fence earthing method.....	70
Motorised vehicle perimeter gates	72
Electronic keypads	73
<i>Compatibility with other devices</i>	74

<i>User code capacity</i>	74
<i>Utilities</i>	74
Pedestrian gates and locking mechanisms	75
Power supply units (PSUs)	77
Infrared beams.....	78
Security floodlights	79
<i>Manual switch</i>	80
<i>Day/night photo sensor</i>	80
<i>Relay switch supplied by another electronic device</i>	80
<i>Passive infrared motion detector</i>	80
Door keys and locks	81
Windows.....	81
<i>Burglar proofing</i>	81
<i>Window latch lever</i>	83
<i>Type of glass</i>	83
Intruder alarm system and monitoring devices	83
<i>Intruder alarm systems</i>	84
<i>Monitoring devices</i>	84
CONCLUSION.....	85
Chapter 5.....	87
TECHNOLOGICAL, PHYSICAL AND PROCEDURAL RESIDENTIAL SECURITY MEASURES AND THE SECURITY RISK MANAGEMENT MODEL.....	87
INTRODUCTION.....	87
AN OVERVIEW OF RESIDENTIAL SECURITY MEASURES.....	87
TECHNOLOGICAL SECURITY MEASURES.....	88
PHYSICAL SECURITY MEASURES.....	91
PROCEDURAL SECURITY MEASURES.....	93
SECURITY RISK MANAGEMENT MODEL INTEGRATED INTO THE RESIDENTIAL SECURITY ENVIRONMENT.....	95
Background to the security risk management model	95
Application of the security risk management model in the residential security environment	96
Factors causing crime	98
Security policy	99
Risk analysis	99
Security survey.....	100
Security risk control measures	100
Return on investment.....	100
Security risk management report	101
Implementation and evaluation of the security measures.....	102
Maintenance and upgrade	102
CONCLUSION.....	104
Chapter 6.....	105
RESIDENTIAL BURGLARY AND RESIDENTIAL SECURITY MEASURES IN PARKHURST AND WESTCLIFF: CONTEXTUALISATION	105

INTRODUCTION.....	105
THE POLICE AND CRIME DETECTION.....	106
BURGLARY AND CRIME STATISTICS IN SOUTH AFRICA.....	106
PARKVIEW POLICING AREA CRIME STATISTICS.....	107
JOHANNESBURG POLICING AREA CRIME STATISTICS.....	110
GAUTENG PROVINCIAL CRIME STATISTICS.....	112
SOUTH AFRICA NATIONAL CRIME STATISTICS.....	117
EXPLORING RESIDENTIAL SECURITY MEASURES.....	122
Neighbourhood watch	122
Close circuit television systems	123
Perimeter types.....	124
Electrified fencing	124
Motorised vehicle gates.....	125
Pedestrian gates.....	125
Infrared beams.....	125
Flood lights	125
Door keys and locks	126
Windows.....	126
Intruder detection alarm systems	126
TARGET AREAS.....	127
RESIDENTIAL BURGLARY AND SECURITY SYSTEMS.....	127
CONCLUSION.....	130
Chapter 7.....	131
A SECURITY RISK ANALYSIS MANAGEMENT APPROACH TO THE IMPROVEMENT OF RESIDENTIAL SECURITY PLANS USING CASE STUDIES OF RESIDENTIAL BURGLARIES.....	131
INTRODUCTION.....	131
DESCRIPTIVE MAPPING.....	131
Quantifying the incidence of burglaries committed at the residences of victims within a grid	132
The total number of burglaries committed within a grid reference	133
Grid location in relation to community entertainment places, business property and unoccupied and open properties	137
Quantifying victim location in relation to other victims within a grid.....	138
Victim location in relation to main access roads or streets	138
Victim location in relation to dead-end roads.....	139
Quantification of dead-end road descriptions in the same grid reference where victims were located.....	140
Quantifying victim location in relation to location on a street within a grid.....	141
DOCKET ANALYSIS.....	142
Quantifying the day of the week of occurrence for burglary incidents.....	143
Quantifying the day of the week on which burglary occurred	143
Quantifying the method of access into the immediate house area.....	144

Quantifying the victims with intruder alarm systems	145
VICTIM INTERVIEWS.....	145
General information on the victims.....	146
<i>Types of dwelling</i>	146
<i>Employment status</i>	146
<i>Employment status by type</i>	147
<i>Victims working from home</i>	148
<i>Persons other than owner or responsible tenant authorised to be at the burgled residence site</i>	148
<i>Possible impact of the presence of neighbourhood watches</i>	149
<i>Contractor works in relation to victim location</i>	150
CCTV	152
<i>Perimeters enclosed</i>	153
<i>Penetrable areas on the perimeter</i>	154
<i>Electrified fencing</i>	155
<i>Methods used to switch the electrified fencing energisers on and off</i>	156
<i>Monitoring methods used with electrified fencing energisers</i>	156
<i>Time frame before the incident when the electrified fencing was installed</i>	157
<i>Calls received from armed reaction team/company monitoring alarm signals from the electrified fencing</i>	158
<i>Vehicle gate motors</i>	158
<i>Manual locking devices on vehicle gates</i>	161
<i>Backup battery supply units</i>	164
<i>Additional security features fitted to vehicle gate automation systems</i>	165
<i>Perimeter pedestrian gates</i>	168
<i>Number of perimeter pedestrian gates</i>	168
<i>Perimeter pedestrian gate locking mechanisms</i>	169
<i>Electrical striker locks</i>	170
<i>Automatic gate closure devices</i>	171
<i>Infra-red detection beams</i>	172
<i>Security floodlights</i>	174
Doors	176
<i>Safety/security gates</i>	179
<i>Windows and burglar proofing</i>	180
<i>Intruder alarm systems</i>	186
<i>Panic buttons</i>	193
ADDITIONAL NOTES ON RESIDENTIAL SECURITY AUDITS AND VICTIM INTERVIEWS.....	207
Community	216
Perimeter	217
Inner perimeter	219
Immediate house.....	219
Chapter 8.....	223
A SECURITY RISK ANALYSIS MANAGEMENT APPROACH TO THE IMPROVEMENT OF RESIDENTIAL SECURITY PLANS USING CASE STUDIES OF RESIDENTIAL BURGLARIES: RECOMMENDATIONS AND CONTEXTUALISATION OF RESEARCH FINDINGS	223
INTRODUCTION.....	223

JUSTIFYING RESULTS AND CONTEXTUALISING THE RESULTS IN PRACTICAL TERMS.....	224
SUBURB INITIATIVES.....	225
Involvement of local law enforcement.....	225
Involvement of the community.....	225
Focus on violent crimes reducing other crimes.....	226
Accept the advice of security industry qualified professionals.....	226
Independent management of private security companies.....	227
Motivating guards by means of incentives.....	227
Implementing tamper proof monitoring devices.....	228
Providing regular and accurate crime prevention information.....	229
Implementing an effective communications network.....	229
PERIMETER SECURITY.....	229
Perimeter height.....	230
Razor wire and wall spikes.....	230
Electrified fencing.....	230
<i>Proper earthing</i>	231
<i>Effective monitoring techniques</i>	231
<i>Regular maintenance</i>	232
Double layer perimeter fence system.....	233
Closed circuit television system.....	234
<i>Poor lighting</i>	235
<i>Poor picture quality</i>	235
<i>Non functional systems resulting from power failures</i>	235
<i>No CCTV footage</i>	236
Security signage.....	236
Security lights.....	236
Gate automation.....	237
Perimeter types.....	238
Infra-red beams.....	238
INNER PERIMETER SECURITY.....	239
Security lights.....	239
Infra-red beams.....	239
<i>Minimal false alarms</i>	239
<i>User friendly</i>	239
<i>Reporting as a dedicated partition</i>	240
IMMEDIATE HOUSE SECURITY.....	240
Doors.....	240
<i>Key control and management</i>	240
<i>Lock types</i>	240
Safety gates.....	241
<i>Vital areas</i>	241
<i>Lock types</i>	241
Windows.....	241
<i>Burglar proofing</i>	241
<i>Concealment of movement</i>	242
<i>Closing window latches</i>	242

Intruder alarms	243
<i>Need for friendliness</i>	243
<i>Monitoring</i>	243
<i>Zone description and identification</i>	244
Panic buttons	245
<i>Effective monitoring</i>	245
<i>Remote panic button and receiver</i>	245
<i>Fixed panic button</i>	245
<i>Keypad panic facility</i>	246
<i>Duress user code</i>	246
<i>Location</i>	246
CONCLUDING REMARKS.....	246
PUBLICATIONS.....	250
INTERNET.....	251
INTERVIEWS.....	253
ANNEXURE.....	255

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EXECUTIVE SUMMARY

The impact of residential security measures is the main focus of this report.

The incidence of residential burglary also focuses on business burglary, house robbery and armed robbery due to the findings that emanated from the victim interview phase. In addition, a security risk management approach was applied to the findings in order to assess the risk (impact of crime) on either the absence or non-compliance to installed security measures so that recommendations (advice) could be formulated for the implementation of supplementary or additional security measures at the residences that had been victims of burglary.

The research project was conducted with the primary purpose of determining the possible impact that an array of security measures, active/in place or non-existent at the time when the burglary was committed would have in terms of deterrence, prevention or even amelioration of the severity (extent, loss, injury etc.). Furthermore, to make recommendations of what security measures could be implemented to prevent future burglaries and to improve the security and safety of the occupants of the burgled residence.

Two northern suburbs of Johannesburg, namely Westcliff and Parkhurst, were chosen as the target areas, with Westcliff being a more upper income area with valuable heritage foundations and large properties, while Parkhurst is an area having high density (cluster dwellings) with smaller properties, but also very upmarket, cluster houses and a very popular area for development.

Dockets on residential burglaries were drawn from the dockets stored at the Parkview Police Station for the period 1 January 2001 till 31 December 2002 with a sample of 70 being drawn from the total of 256 residential burglary cases recorded for the period under review.

Two samples from each street were selected and in cases where residents were burgled more than once had higher priority for being chosen.

As further validation and collection of supporting information for the docket analysis a total of twenty (20) interviews were undertaken with victims of burglary (as identified from the sample of dockets). These interviews varied from one-on-one interviews to telephone interviews.

Some of the interviews were conducted at the victim's workplace during working hours so as not to inconvenience them and to accommodate their time preferences.

The specific cases were then further analysed by means of the application of physical residential security audits, using a performativa audit checklist/sheet, which followed immediately after the interview with the victim owner/resident of the identified property where the burglary had occurred.

Finally, in order to contextualise (spatially) the occurrence of the burglaries and to try and see if certain environmental factors impacted on the incidence (frequency) of burglaries in the area (specific linkages with certain physical attributes or characteristics of the area) a simplified form of descriptive mapping was applied to the collected information. The descriptive mapping was done on both the areas where all 256 cases were plotted on a map. Street names were removed from both maps to ensure that 'client' (victim) confidentiality would be protected. The Parkhurst area was subdivided into 55 map grids and the Westcliff area into 17 grids.

The location of victim residences, in terms of geographical information, was compiled and sampled according to the grid volume.

From this analysis it was found that the majority of the victims experienced one burglary over the two-year time frame. Additionally, that the average burglary rate for each grid was three (3). The majority of the victims were located within the same grid area having a main access road. The majority of the victims were also located about three to four properties away from corner properties.

In brief some of the main findings emanating from the docket analysis of the selected dockets, the interviews and the residential security audit were the following:

- There was no significant proof that victims were burgled where the house was left alone for more than one day at a stretch.
- Furthermore, the majority of the victims (in the sample) were burgled during the week, i.e. not over weekends and largely on weekdays (the working days of Monday to Friday). The popular days for the occurrence of the burglaries (as revealed in the

sample) were either a Friday followed by Mondays as the second most popular day of the week.

- The main entry points to a residential property or residence were either by means of forcing doors open or forcing window burglar proofing open.
- Of most interest, from a prevention and security measures perspective, was the fact that the docket analysis also indicated that about half (almost 50%) of the victims did not have intruder alarms installed in their homes at the time of the first burglary.
- Moreover, in a majority of the cases, neighbourhood watch initiatives were also not present in the immediate area.
- The majority of the victims did not work from home (i.e. were not self-employed) and were therefore fulltime employees absent during working days.
- Building contractors were also present in the majority of the victim's immediate residential property blocks.
- Closed circuit television (CCTV) was not used at any of the victim houses.
- All the victims (in the sample) had a brick wall enclosing their entire property.
- But the majority did not have any electrified fencing (on top of walls/barricades).
- The minority with electrified fencing did not receive any calls from the armed response companies (for an activation of electrified fencing alarms in the particular cases where the fence was bridged).
- Motorised vehicle gates appeared to be present in a majority of the cases and were also not connected to the intruder alarm systems of the house on the property.
- None of the victims had electronic keypad access for the armed response companies and this is also applicable with regards to the electrical locks on the pedestrian gates.
- Security floodlights were present in the majority of the cases, but the way in which they were switched on was, in the majority of the cases, done manually.

- In the majority of the cases infra-red detection beams were not present either within the garden or inner perimeter areas.
- In addition, also in a majority of the cases, windows were left open with either curtains not being closed, especially during daytime, no curtains at all or only net curtains covering the open windows (i.e. visibility not prohibited and persons can see easily into rooms).

- The majority of the victims had intruder alarms but half of them did not bother to arm their alarms at night or when they went out.

In terms of enhancing existing security measures or implementing new ones (post-incident enhancement) at the burgled residence the majority of the victims did the following:

- Implemented or hired foot patrols and became involved in (or became part of) establishing of other types of neighbourhood security initiatives.
- Changed door locks.
- Installed burglar proofing.

The focus of these additional or new security measures was, in the main, on enhancing existing physical and procedural security measures.

From the victim interviews the following main points were noted:

- Access to the victim's property was sometimes gained via a neighbour's property.
- Victims suspected their own children of being involved in the burglary due to their children/s' drug-related problems.
- Windows were most often used as entry points.
- In a significant number of cases victims suspected their armed response company of being involved in the actual burglary. They ascribed this suspicion to the fact that even while the panic button had been activated an extremely poor and slow response by the company had occurred.
- Electrified fencing not in use (properly activated) since it was at the time of the burglary either faulty or malfunctioning.
- Electrified fencing not set up properly and accordingly when activated did not make proper activation, i.e. alarm signal was not received in the armed response company control room.
- Intruder alarm was not activated because the operating procedures (instructions) for it were too complicated.
- Path of infra-red beams not cleared of vegetation and shrubs; activation often bypassed due to the irregular routines of children and domestic help (in the burgled house).

- Dogs get locked up, i.e. not allowed to roam freely throughout the property when owners leave to go to work or go on vacation.
- Homeowners or occupiers (victims interviewed) sometimes suspect that employees (domestic workers or gardeners) at the home might be involved. This suspicion is often aroused by modus operandi used to remove the stolen articles or goods, namely taken out through windows out of reach of passives while doors not used because of door monitors – accordingly suspect this was an employee or done on employee-supplied information.
- Victims also tended to suspect the presence of building contractors in their immediate vicinity (neighbourhood) and based this suspicion on the fact that there had been no burglary incidents for at least six years prior to contractors starting to make an appearance in their immediate neighbourhood.
- Many victims opted rather for having a neighbourhood security initiative in place instead of installing additional measures at the residence, such as an intruder alarm with perimeter security. An example here would be supporting the implementation of public space patrols.
- Robbers (as opposed to burglars) appeared (to the victims) to come from all over – through various windows simultaneously i.e. multiple entry points – before tying up the victims.

All of the above indicated poor outer perimeter security or alternatively inner perimeter security not complying with the basic accepted security principles, namely:

- Deter
- Detect
- Delay

The outcomes (research findings) focussed on providing security solutions in order to manage security crime risks such as residential burglary and that adhere to the principles of:

- Determining the best and most cost effective way of implementing and choosing a security system
- Enhancing the security system's deterrence factor
- Improving the security system's detection capabilities
- Enhancing the ability of the security system to delay a threat

- Developing efficiency by regular use, continual upgrading, provision of effective training, and having constant maintenance in place.

Overall these security solutions need to incorporate some of the following basic principles (of security):

- Firstly, the most cost effective way of implementing a security system is for it to be properly designed by a security professional, integrating a cost effective system in relation with the latest crime trends and modus operandi but all designed to fit the needs and wants of a client;
- Secondly, the system should have deterrent value to minimise the risk factor of being exposed to possible unauthorised intrusion of one's privacy; and
- Thirdly, the system needs to have detection value by warning the user or homeowner well in advance so as to ensure (or enhance the probability of detection i.e. the risk factor to the perpetrator) that the perpetrator will be apprehended within the average response time frame by armed reaction companies. The latter can also be achieved by increasing (hardening) barriers so as to further delay perpetrators (in the commission of their crime).

However, any system is only as good as its implementation, its regular use, constant or frequent maintenance and its periodic upgrading.

Finally, the provision of operating training to the homeowner or security system users is vital in order to ensure that these complex security devices will be properly and fully utilised and thereby function at optimal effective levels.

All of this is drawn together in the concluding section of the research report accompanied by practical solutions for the implementation of additional security measures available to homeowners who have been the victims of burglaries or house robberies.

Chapter 1

PROBLEM STATEMENT, AIMS AND RATIONALE FOR THE RESEARCH

INTRODUCTION

Often, by the very nature of crime in South Africa, and public pressure to do something about violent crime, police stations across South Africa tend to prioritise the crime that occurs in their precinct in terms of national priorities, levels of violence and public and media attention on these specific crimes, namely murder, vehicle hijacking, cash-in-transit heists, rape etc. A reasonably innocuous (in terms of profile and no violence generally associated with it) crime such as burglary, even if high incidence occurs in a particular precinct or policing district, hardly ever becomes listed as a particular police station's high priority crime. This situation has arisen even though burglary, in terms of numbers and economic loss associated with it, is often statistically within the top three reported crimes in South Africa (see later section on reported crime statistics).

By not being listed as a priority crime, burglary therefore gets 'sidelined' or 'marginalised' in terms of the allocation of police time, resources, investigations, manpower etc. Accordingly, most residents have come to the conclusion (which may not necessarily be absolutely accurate) that when they experience a burglary or house robbery, the chances of it getting solved and their stolen possessions recovered are slim since the crime they have just experienced is not given any priority attention and has to wait in line for attention behind higher prioritised violent crimes. As a result residents have also come to realise that it is often up to their own devices in terms of domestic security measures or the services of a private security practitioner/company to firstly, possibly prevent such a crime from happening; secondly, to minimise the extent/impact when such a crime occurs (i.e. armed response disturbing the burglary in progress); and thirdly, to get it solved (i.e. making an arrest at a later stage and the solving of the crime for the police by handing over a docket of evidence for their further actions, e.g. prosecution in a court of law). Within all these perceptions central and crucial to the whole situation is often the level and sophistication of existing security measures installed at a residence or the lack (absence) thereof. Allied to this would be the security measures

implemented and installed after the fact. The impact of this aspect of any burglary in the Parkview and Westcliff neighbourhoods forms the core focus of this study.

RESIDENTIAL SECURITY MEASURES

The homeowner faces various challenges in that he or she needs to have residential security measures in place in order to fortify ones property through various layers of defence.

Each layer can be covered with one or more security measures. In this research report residential security measures have been categorised into:

- Physical measures;
- Technological measures; and
- Procedural measures.

Each of the above-mentioned categories can be implemented individually or as a combination in order to protect the various layers of the fortified property. An example of physical measures on the perimeter of a property can be electrified fencing.

In this study the researcher explored the protective and preventative ability of these security measures by establishing whether the various security measures were present – or not – at the selected burglary scenes and the method of implementation and usage. As an ancillary issue whether procedures were not applied or neglected i.e. not implemented at the time of the burglary, were also looked at.

Generally from the researcher's personal experience and as a consultant providing advice on security measures to homeowners, the researcher found that homeowners with security systems experienced the following problems:

- Will the installer connect the hardware correctly and with minimal exposure to possible tampering and that might affect other security devices connected to the same network;
- Will external factors, such as routine, be considered with regard to the homeowner having tenants on the property who also have access to arming and disarming the external beams on entry and exit?
- Will the armed response company respond to an alarm violation signal, i.e. within a short space of time?

- Will the suggested armed response company be proactive and regularly implement security awareness programs?
- Will the user be able to and know how to use (operate) the security system effectively?
- Will the user maintain (get it serviced, regular maintenance and replace, e.g. back up battery) the security system on a regular basis?
- Will the armed response monitoring service monitor the security systems effectively and advise the client immediately on any deficiencies and react immediately to any irregularities?

The following is a summary of the principles regarded by the researcher as being vital in order to ensure an effective security system:

- The cost effective design thereof;
- Accurate implementation thereof;
- Effective and correct use thereof;
- Regular maintenance of the security system; and
- Regular upgrade and enhancements of the security system.

RATIONALE/MOTIVATION FOR THE RESEARCH

The research motivation for this research project was to determine whether the above-mentioned summary will be applicable with a focus on residential burglaries in two selected neighbourhoods with reference to security measures at the burgled residence.

The research motivation is also to determine whether any of the above-mentioned had any impact after the occurrence of the residential burglary (here in after referred to as the 'incident').

An example would be to establish whether the way the electronic keypads on the vehicle gate automation and pedestrian gate striker lock had any deterrence, delay or detection on the incidence of residential burglary.

The researcher was also interested in establishing to what extent each security discipline should be integral and dependent on each other in order to form a complete and effective residential security system as a holistic approach.

An example of such integration exploration would be the intruder alarm monitoring device and how it is connected with the intruder alarm to report on a dedicated intruder alarm violation condition or a panic condition.

Another focus of the research was to establish what residential security measures were in place at the time of the residential burglaries.

This approach enabled the researcher to compile a security checklist that not only reported on how security measures can be implemented, but also which security measures should be in place in order to avoid or minimise the incidence of residential burglary.

Furthermore, the researcher was also interested in establishing, by means of conducting residential security audits, of how these residential security measures were being implemented.

Overall this approach enabled the researcher to advise, for example, on how the electronic keypad at the vehicle gate automation system should be installed to minimise any attempts to tamper with it.

As a final intention and outcome of the study the researcher aimed to provide accurate and practical advice based on the research results that would assist private security companies and the Private Security Industry Regulating Authority (PSIRA) to enhance existing security working procedures and methods and approaches in the sphere of domestic/residential security. Hopefully this will contribute towards minimising the number, extent and impact of residential burglaries.

The report starts by introducing the research problem and question followed by the researcher's motivation for undertaking and completing this project.

Chapter Two (2) focuses on the current views regarding residential security and residential burglary.

Chapter Three (3) focuses on the research methodology describing the research approach (design), methods and data/information collection tools used. In addition, it outlines and

discusses the practical applications with regard to research problems experienced and encountered.

Chapter Four (4) focuses on technical descriptions and the concepts used throughout the research report. This chapter provides the reader with a broad understanding of the concepts and terms without having to have any specific technical experience, knowledge or expertise.

Chapter Five (5) defining technology and how it integrates within the residential security environment.

Chapter Six (6) contextualises residential burglary in the Parkhurst and Westcliff, northern residential suburbs, in Johannesburg.

Chapter Seven (7) examines and details the research findings resulting from the following data/information collection processes:

- Docket analysis;
- Victim of burglary interviews ;
- Residential security audits; and
- Descriptive mapping.

Chapter Eight (8) provides the reader with possible security-related solutions to the problem of burglary based on the research findings and the researcher's own personal and professional experience.

Chapter 2

LITERATURE REVIEW

INTRODUCTION

The researcher made use of several sources in order to determine what studies on residential security and residential burglary have been completed locally in South Africa. From this starting point the literature search extended to include any relevant international studies. The focus at the time was to get any studies broadly dealing with residential burglaries from 1995 onwards.

PREVIOUS STUDIES

In a research study by Tilley *et al*, (1999: 7) the following reference system was used to list the elements of a burglary in the making (chemistry of):

- The dwelling should have a possibility of high value valuables;
- There should be nobody present to prevent the burglary from taking place;
- The burglar should have access to a market where the stolen goods can be disposed of and in return receive a monetary incentive for the stolen goods; and
- The dwelling should have insufficient security hardware to provide it with any reasonable level of perceived guardianship (protection).

In the research study for this research report the researcher focused specifically on the last point in order to provide practical answers and recommendations dealing with what security hardware would be perceived to provide an acceptable level of guardianship (protection) to residences and victims.

In 2004 Wim Bernasco and Paul Nieuwbeerta, of the Netherlands Institute for the Study of Crime and Law Enforcement (NSCR), in conjunction with the Haaglanden Police Force in the Netherlands, published a study, which analysed how burglars select target areas and what their motivation/s were for actually targeting those areas (Bernasco & Nieuwbeerta, 2004: 297-298). According to Bernasco and Nieuwbeerta (2004: 297), it may be that burglars target specific areas with the aim of maximizing their revenue by selecting such targets for the following reasons:

- Minimal effort is required when the premises or property is entered;
- The premises/property appear to have valuable items; and
- The burglars feel (perceive) that they will not be apprehended or disturbed while conducting the burglary (low risk of being detected and apprehended).

The following criteria, resulting from the above-mentioned reasons, were formulated by Bernasco and Nieuwbeerta (2004: 297-298):

- The burglar would look at the affluence level of the property; and
- The possibility (likelihood) of the successful completion of the burglary.

Bernasco and Nieuwbeerta also posed the question of whether a burglary attempt is profitable if successful and whether the absence of a guardian like a neighbourhood watch will also ensure a successful burglary (Bernasco & Nieuwbeerta, 2004:297-298).

In summary the Bernasco and Nieuwbeerta report indicated, through hypothesis testing, that:

- “Affluence of the neighbourhood increases the odds of the neighbourhood being selected for burglary”; and
- “When the neighbourhood attributes are controlled, burglars do not show a specific preference for wealthy neighbourhoods” (Bernasco & Nieuwbeerta, 2004: 208).

In this researcher’s own study the presence of a neighbourhood watch is a variable that was tested in the victim interviews.

A distance matrix was also used by Bernasco and Nieuwbeerta (2004: 307) whereby the distance between the burglar’s resident neighbourhood and his/her target neighbourhood was measured and coded accordingly.

The researcher made use of a similar concept using descriptive mapping to focus on the two suburbs selected for the study and their geography (environment) in relation to the victim’s property. Both the selected residential areas were divided into a grid system, with a grid representing two (2) residential blocks. (These results are discussed in Chapter Seven.)

In their study Bernasco & Nieuwbeerta (2004: 311) refer to the 'spatial choice approach' and more specifically to the 'choice of target' and possible relationship to area affluence, escape routes and presence of security measures at target residence and in neighbourhood.

The current study similarly tried to evaluate whether there was any impact i.e. presence or otherwise, of residential security measures by means of victim conducting interviews and residential security audits.

CURRENT VIEWS ON RESIDENTIAL BURGLARY

The previous police station commander at the Parkview Police Station, Snr. Supt Ian Loubser, in discussions with the researcher about the impact of residential burglary on the victim, stated that this specific crime considerably traumatises the victim due to the fact that the victim does not usually come face-to-face with the perpetrator (except when it is a house robbery), but that the perpetrator nevertheless intruded the personal space of the victim and the victim usually fears (expects) a repeat in the near future of such an incident. According to Snr Supt Loubser burglary is the invasion of one's privacy like any other crime, directed at one's person. It is, therefore as traumatic as any other crime (Loubser, 2003). In essence then a burglar has the opportunity to go through one's personal belongings and also to take possession of one's personal belongings, without one's permission.

CONCLUSION

With regard to the literature review, the research project was adapted to previous studies on the topic with specific reference to research problems and results achieved.

Accordingly this project is a first of its kind in South Africa that focuses on the impact of residential security measures and not just on residential burglary per se as the core crime problem.

Residential burglary stills remain problematic in terms of frequency and although there has been a reduction in the latest (2006/7) SAPS police statistics, it remains on average still within the three highest reported crimes both nationally and at the provincial level. (See comparisons done by the researcher in the chapters to follow.)

The research methodology aims to provide as much as possible information via the findings in order to provide recommendations, which can be integrated into the security risk management model, and thereby adding value to residential security risk audits.

Chapter 3

RESEARCH METHODOLOGY

INTRODUCTION

The researcher made use of a combination of a qualitative and a quantitative research approach throughout this study.

The researcher aimed at gaining a full understanding – in the course of the research - of the ‘objective’ of the study¹ and to interpret it in practical terms for future use in his profession² (Welman & Kruger, 1999: 189).

The researcher tried to maintain a professional and objective approach to the collection of the research information by adhering to the following approach:

- Avoiding, as far as possible, being unduly influenced or becoming biased by being drawn in too close to what interviewed victims were saying;
- Making use of one-on-one interviews, security audits (checklist and survey sheet), descriptive mapping and docket analyses as opposed to using (and relying solely on) participant observation as a method of collecting information; and
- Examining, interpreting and gaining an insight into the relationships, impact and effect between residential security measures and the incidence of residential burglary (see Welman & Kruger, 1999: 189, for a more detailed exposition of this research approach).

RESEARCH AIMS

The objectives of this research project are to:

- Establish what security measures were in place at the time the residential burglaries (selected cases from the two target areas³) occurred;
- Determine if the incidence of burglary had any contributing impact on implementing or upgrading existing or non-existent residential security measures post-burglary;

¹ The impact of residential security measures on the incidence of burglary.

² The researcher designs and project manages security systems integrations.

³ Westcliff and Parkhurst residential areas in Johannesburg.

- To develop a residential security audit form that can possibly be used by local law enforcement agencies, the private security industry and a resident owner or lessee in order to minimise any potential security vulnerabilities (in security systems on or at a residential property) that could be exploited by burglars;
- Furthermore to determine what impact existing security measures might have had on residential burglary in terms of what security measures were absent, what security measures were a deterrent (barrier) and what security measures were circumvented or breached during the actual burglary incidents;
- Establish by means of descriptive mapping (matrix plotting) what other variables were present at the time of the burglary and add value to existing SAPS crime prevention strategies and crime trend analyses; and
- Ancillary to all these aims would be the formulation of recommendations for homeowners dealing with suggested improvements to existing security measures.

Overall then, the researcher aimed at identifying practical solutions to the identified research problems by means of the research project (Welman & Kruger, 1999: 12). Accordingly, as a practical research outcome, the researcher would therefore aim to establish what security measures should be in place in order to minimise the incidence of residential burglary.

To meet this aim the researcher aimed at identifying the residential security measures which were in place at the time of the residential burglary and how these security measures were implemented, i.e. operationalised.

It is therefore hoped that the research findings will assist and be of value to the following organisations and individuals:

- The Department of Security Risk Management of the School of Criminal Justice in the College of Law at the new (merged) University of South Africa (UNISA), who, hopefully, will be able to use (and input into course material) the results obtained (specifically the integrated approach to the security risk management module with its focus on residential security measures);
- The South African Police Service (SAPS) for use in strategic and tactical operations planning for the combating of residential burglary;

- The South African private security industry for advising homeowners on recommended security measures to be implemented (inclusive of a situational analysis) and not specifically certain makes of security equipment or products; and
- Neighbourhood security forums, neighbourhood watches and community security initiatives for the planning of safer neighbourhoods and the implementation of more proactive policing.

RESEARCH DESIGN AND METHODS

Units of analysis

The units of analysis were victims of residential burglary cases for the period 1 January 2001 till 31 December 2002, drawn from *two groups* within the *population area* (Parkview Policing area). The Parkhurst and Westcliff residential areas were the two chosen target areas.

Tilley *et al* (1999: 15) explains the problem faced by researchers in finding the right approach in choosing the correct area with reference to residential burglary.

The approach of this research was to make use in the research of members of the community security initiatives, who were familiar with the research target areas and to agree to their view of whether or not a specific area had a higher incidence of burglary than another (Tilley *et al*, 1999: 15).

The police were approached for their views on both the areas selected and their views on the incidence levels of residential burglary.

At the time this turned out to be the best approach, because of time constraints and limited resources in automated analytical tools (Tilley *et al*, 1999: 15).

The researcher has experience in doing residential audits in the mentioned residential areas.

The researcher also had access to the internet and the local police in order to establish which areas in the Parkview policing area had the highest incidence of residential burglary.

Additionally, the researcher had work responsibilities, within the organisation he worked for, at the time the field research was undertaken, to look after the safety and security of this

organisation's expatriate and staff members at their homes (many of whom live in the research target residential areas of Parkhurst and Westcliff).

The selected research areas were also close to the researcher's place of work thereby contributing to reduced research expenses in terms of travelling for the audits and interviews.

Other research selection factors included the fact that the Parkview SAPS has jurisdiction over the two mentioned target areas. This contributed to the centralising of residential burglary cases, which in turn assisted in the retrieval of case numbers and dockets with minimal disruption and complications.

Finally, the researcher was, and is still currently, involved in the management and operational planning for the Westcliff Community Security Forum⁴ – which was initiated in June 2003 – and was also centrally involved in its planning and operations.⁵

The establishment of this security forum contributed to the enhancement and reinstating the heritage value of Westcliff. Furthermore, the researcher's close involvement in its activities also ensured that the researcher had a point of reference to work from during his physical security audits and interviews with the selected residential burglary victims.

Parkview Police

Parkview Police Station, hereafter referred to as Parkview SAPS, is situated within the Northern suburbs of Johannesburg, Gauteng.

The following areas are within the Parkview Policing area:

- Craighall;
- Craighall Park;
- Emmarentia;
- Greenside;
- Greenside East;

⁴ This concept has been adapted by major private security companies and is being used in other suburbs of Johannesburg.

⁵ Currently is still involved with this security forum and managing the security concept in order to decrease and minimise the level of various crimes which occurred in the area prior to June 2003.

- **Parkhurst;**
- Parktown;
- Parktown North;
- Parktown West;
- Parkview;
- Roosevelt Park; and
- **Westcliff.**

The total area the Parkview SAPS covering, is 45 square kilometres

The Parkview SAPS area also has a population of 50 000 and 8 766 stands (Parkview Police Information: 1)

Parkhurst

Parkhurst has a population of 9 900 and 2 232 stands and is the most densely populated (mostly residential) area within the Parkview SAPS service area (Parkview Police Information: 1).

Business premises are situated along 4th Avenue. There are public recreation facilities, i.e. swimming pool and tennis courts, along 5th Avenue at the Verity Park Centre, while 4th Avenue, 6th Street and 1st Avenue east are the main routes into Parkhurst. (Parkview Police Information: 1).

Westcliff

Westcliff has a population of 1 900 and 285 stands (Parkview Police Information: 1). Westcliff is mainly residential with two business premises situated on the corner of Jan Smuts Avenue and The Valley roads.

Recreational facilities, i.e. The Dale Lace Bowling Club, tennis courts, soccer field and a park, are situated in Lawrence and Carlow Roads (Refer to Annexure 1: Westcliff Area).

DATA COLLECTION SOURCES AND MEASURING INSTRUMENTS

The researcher's main research focus was to assess the impact of residential security measures on the incidence of residential burglary (*the construct*), which in turn would encapsulate all the

various residential security measures, e.g. infra-red beams etc., (*the indicators*) (Welman & Kruger 1999: 133).

The researcher further used the following measurement tools on the one construct (impact of residential security measures on incidence of burglary):

- Docket analysis;
- Victim interviews;
- Residential security audits; and
- Descriptive mapping.

The field observation notes made when doing the residential security audits were compared with the victim interviews. For example the researcher would compare the interview notes with the field notes to verify if some of the hardware was in place at the time of the burglary. Another example using this comparative method of substantiating of facts from different information sources would be to establish (in the physical check done in the security audit) if there was an anti-theft bracket on the vehicle gate motor and then crosscheck this information with the interview where the victim might have reported that there was no additional security hardware on the vehicle gate motor.

Docket analysis

Dockets combine all the complainant details, case information relating to the victim(s), crime scene and investigative notes.

The researcher had to first draw all the residential burglary cases, which occurred within the time frame of 1 January 2001 till 31 December 2002 and also within the Westcliff and Parkhurst areas respectively.

This was done with the help of the Parkview Police Crime Intelligence Department.

Each case then had to be opened, inputted separately in the database to find the case number, physical address of where the crime occurred and to determine if the case was in fact one of residential burglary and occurred within the mentioned residential areas (Parkhurst or Westcliff).

The case numbers with physical addresses were then listed according to streets and suburbs, which then constituted a sample of 70 cases drawn.

The police docket per se were the primary source of information and where the information collection for this research project started. The *nature of the measurement* in this regard was the actual docket and the contents of the statement and cover letters that were used to compile the digital information form.

The apparatus that was used to gather information from the dockets, was a form designed by the researcher in digital format to be used in this regard to capture all the data (standardised information retrieved from each docket) without overlooking any important details (Welman & Kruger, 1999: 191). The process also ensured that the information collected from the docket was immediately saved to a database – this was done automatically with every single entry. From this electronic database data can be selected and used for various purposes, i.e. compiling interview and audit schedules, compiling a victim response schedule of questions after an interviews has been scheduled etc.

This contributed to the *construct validity* of the measuring instrument (please refer to annexure 5: Docket Digital Survey Form) because provision was made for all possible data and/or information that could be found in a docket.

Nominal measurement was implemented with the dockets to note units of analysis in terms of burglary frequencies experienced (the attribute) within the selected time frame⁶ (Refer to annexure 10).

In undertaking the docket analysis the first step was to obtain the approval from the South African Police Services who duly approved the collecting of information from dockets⁷. The second step was to sort the streets alphabetically and in descending street numbers.

⁶ 1 January 2001 till 31 December 2002.

⁷ Approval received from the Head of Strategic Research, SAPS – Reference 3/34/2, dated 29 May 2003 and an approval in writing from the Parkview Police Station Commander, Supt Ian Loubser.

The next step was then to note units of analysis in terms of burglary frequencies (one, two, three and more). In the collected data there were no cases where units of analyses experienced more than three cases within the mentioned time frame.

The *reliability* of the measuring instrument (docket digital survey form), the measurement occasion (during the December time frame of 2003) and measurement user (the researcher himself) ensured a reliable measurement instrument to adhere to the measurement instrument characteristics as outlined in Welman and Kruger (1999: 143).

Docket analysis is a typical unobtrusive measuring instrument where the victim (of a burglary) is unaware at the time of the docket analysis (extracting information from the cases the victims reported and dockets as a result opened) that they have become objects of research (Welman & Kruger, 1999: 147-149). It is only at the time of an interview with a victim identified in the docket analysis where it becomes necessary (research ethics) to ask their permission for a voluntary interview and where they then become part of the research study per se.

Docket measurement instrument

The researcher completed a course in Introduction to Programming and also did self study into Microsoft Access 2000 so as to design the digital forms and databases for the analysis of the dockets. The researcher was therefore competent to identify any new information and the integration thereof into the existing form.

The form was designed according to the docket format, cover letters and questionnaires and took into account any possible contents of a typical residential burglary statement and investigative officer diary notes to be found in a police docket.

The form was designed for use in Microsoft Access, which ensures a stable environment for a database where there is the facility for the designing of various reports with queries. This database also stores all captured information and makes it available for any kind of query. The form also ensured that the researcher collected all possible information for the dockets. Enhancements were made to the form with any new and important information collected from the dockets, i.e. what was the purpose of reporting the incident to the police, being inputted directly and immediately.

The digital form was loaded on to a notebook in order for the researcher to capture data more easily and quicker at the police station research site. A report was then designed to compile the information gathered into a hard copy for further analyses. The report was also used to print hard copies of information to store in case the softcopy was destroyed or lost. The following information was used from the dockets to identify the victims and to arrange interviews and security audits with them:

- i) Case number;
- ii) Complainant title;
- iii) Complainant name;
- iv) Complainant identification number;
- v) Complainant occupation;
- vi) Complainant street number;
- vii) Complainant street name;
- viii) Complainant suburb;
- ix) Complainant work telephone number; and
- x) Complainant home telephone number.

The researcher also reported on other variables, namely:

- i) reason for lodging report with police;
- ii) possible time of occurrence that might be used by the police;
- iii) any presence private security companies, and
- iv) other interest groups.

The data collected from the dockets were primary data. No statistical analysis undertaken by the Police on the same cases was used by the researcher.

Docket analysis measurement occasion

The docket analyses occurred during December 2003 when the dockets were drawn and data capturing was done at the Crime Intelligence Centre of the Parkview Police Station.⁸

There was minimal disruption and personnel at the police station were able to assist the researcher by issuing the dockets and taking them back for safe keeping during normal working hours.

⁸ Parkview SAPS

The time frame was also accurate in that most of the week day staff took leave (in that December) and a time schedule was drawn up for the use of the office which had minimal impact on the daily routine of the remaining office staff on duty during that period.

Sampling

Probability sampling techniques were used for selecting the docket drawn for analysis. The Crime Intelligence Centre at Parkview SAPS assisted the researcher in this regard.⁹

The sampling frame consisted of 255 residential burglary cases within the Westcliff and Parkhurst areas combined. This made it impractical for the researcher to investigate all the dockets and also to do residential audits and victim interviews at each of the residences. Therefore the researcher decided to draw a simple purposive random sample whereby each member of the sample (residential burglary cases) would have the same probability to be drawn from the sample frame (Welman & Kruger, 1999: 48).

The following schedule will illustrate the amount of residential burglary cases reported within each street in Parkhurst and Westcliff respectively between 1 January 2001 and 31 December 2002.

⁹ Prior approval to access the dockets at the police station was obtained from the station commander at Parkview SAPS via form SAPS 612(n).

Table 1: All residential burglary cases reported within the Parkhurst and Westcliff residential areas between 1 January 2001 and 31 December 2002

Street Name	Suburb	Number of cases reported
1st Street	Parkhurst	5
2nd Street	Parkhurst	2
3rd Avenue	Parkhurst	1
3rd Street	Parkhurst	8
4th Avenue	Parkhurst	1
4th Street	Parkhurst	11
5th Street	Parkhurst	9
6th Street	Parkhurst	6
7th Street	Parkhurst	6
8th Street	Parkhurst	4
9th Street	Parkhurst	6
10th Street	Parkhurst	9
11th Street	Parkhurst	14
12th Street	Parkhurst	10
13th Street	Parkhurst	6
14th Street	Parkhurst	8
15th Street	Parkhurst	9
16th Street	Parkhurst	10
17th Street	Parkhurst	12
18th Street	Parkhurst	16
19th Street	Parkhurst	11
1st Avenue	Parkhurst	2
1st Avenue West	Parkhurst	1
20th Street	Parkhurst	5
21st Street	Parkhurst	6
22nd Street	Parkhurst	11
c/o 11th and 4th Streets, 11th Street	Parkhurst	2
C/O 6th and 17th Street	Parkhurst	1
c/o 8th and 13th Streets	Parkhurst	1
Holt Street	Parkhurst	1
Parkhurst Street	Parkhurst	1
c/o The Valley and Jan Smuts	Westcliff	2
Carlow Road	Westcliff	1
Crescent Drive	Westcliff	6

Street Name (Cont.)	Suburb (Cont.)	Number of cases reported (Cont.)
Escombe Road	Westcliff	1
Hillcrest Road	Westcliff	1
Jan Smuts Drive	Westcliff	6
Lawrence Street	Westcliff	12
Palala Road	Westcliff	1
Pallinghurst Road	Westcliff	3
The Valley West Road	Westcliff	5
Tyson Road	Westcliff	1
Waterfall Road	Westcliff	2
Westcliff Drive	Westcliff	11
Wexford Road	Westcliff	4
Woodview Road	Westcliff	2
Woolston Road	Westcliff	2
Total		255

A simple purposive random sample was drawn from the sample frame of all residential burglaries which occurred within the Parkhurst and Westcliff areas between 01 January 2001 and 31 December 2002.

To ensure that the sample drawn from the sample frame was representative, the researcher followed the following procedure:

- Drew one case from each street; and
- Drew one case from each address where burglaries occurred more than once in respect of two or three cases.

The following schedule shows the final sample drawn from all the residential burglary cases reported to the Parkview Police Station between 1 January 2001 till 31 December 2002:

Table 2: Final sample residential burglary cases

Street Name	Suburb	Number of cases drawn for sample
1st Avenue	Parkhurst	1
1st Street	Parkhurst	2
2nd Street	Parkhurst	1
3rd Avenue	Parkhurst	1
3rd Street	Parkhurst	3
4th Avenue	Parkhurst	1
4TH Street	Parkhurst	3
5th Street	Parkhurst	2
6th Street	Parkhurst	1
7th Street	Parkhurst	1
8th Street	Parkhurst	1
9th Street	Parkhurst	1
10th Street	Parkhurst	4
11th Street	Parkhurst	3
12th Street	Parkhurst	2
13th Street	Parkhurst	1
14th Street	Parkhurst	1
15th Street	Parkhurst	1
16th Street	Parkhurst	2
17th Street	Parkhurst	1
18th Street	Parkhurst	5
19th Street	Parkhurst	2
20th Street	Parkhurst	1
21st Street	Parkhurst	1
22nd Street	Parkhurst	3
c/o 11th and 4th Streets, 11th Street	Parkhurst	1
C/O 6th and 17th Street	Parkhurst	1
c/o 8th and 13th Streets	Parkhurst	1
Parkhurst Street	Parkhurst	1
Holt Street	Parkhurst	1
c/o The Valley and Jan Smuts	Westcliff	1
Carlow Road	Westcliff	1
Crescent Drive	Westcliff	2
Escombe Road	Westcliff	1

Street Name (Cont.)	Suburb (Cont.)	Number of cases drawn for sample (Cont.)
Hillcrest Road	Westcliff	1
Jan Smuts Drive	Westcliff	2
Lawrence Street	Westcliff	4
Palala Road	Westcliff	1
Pallinghurst Road	Westcliff	1
The Valley Road	Westcliff	2
Waterfall Road	Westcliff	1
Westcliff Drive	Westcliff	2
Wexford Drive	Westcliff	1
Woodview Road	Westcliff	1
Woolston Road	Westcliff	1
Total		72

The final sample was as follows:

$$N = 255$$

$$n = 72.$$

The *units of analysis* in this regard refers to the events (dockets on residential burglaries) and this was used as the same sample throughout the interviews with victims, residential security audits and descriptive mapping processes (Welman & Kruger, 1999: 50)

Design

A quantitative research design was used in this regard. Accordingly, the non-experimental research approach and design was used due to the non-assignment of subjects (residential burglary dockets) to the levels of the independent variable (incidence of burglary) (Welman & Kruger, 1999: 84).

The researcher *defined the phenomenon under investigation* as the impact of residential security measures on the incidence of burglary committed in two Northern suburbs of Johannesburg over the period 1 January 2001 till 31 December 2002.

The researcher *defined the sampling technique* as units of analysis on all residential burglary incidents within the Parkhurst and Westcliff areas over the period 1 January 2001 till 31

December 2002 to ensure that every case will have the same opportunity to be selected into the sample.

In order to familiarise himself with the variables (various residential security measures) the researcher did the following:

- Completed the basic and advanced levels of the DSC intruder alarm system installer course;
- Completed a course in Basic Electronics;
- Completed the installers course in Controlsoft Access Control System;
- Developed a high level of expertise in project management for security installation, domestic as well as commercial, through his assignment as a security consultant to an international company having a branch in Johannesburg, later being appointed as a permanent staff member;¹⁰
- Attended a briefing session where the compilation and contents of a docket was illustrated to him by SAPS personnel;
- Completed the advanced project management programme at Unisa Business School of Leadership; and
- Completed the Quantitative Methods and Statistics for Decision Makers at UNISA.

The *design suitability* is important in that it should be able to have an answer or answers to the research problem (Welman & Kruger, 1999: 98). In this regard it was important that the researcher have contact information whereby he would be able to schedule interviews with the victims and undertake security audits at the homes of those victims who agreed to be interviewed.

The *number of groups* (in this study residential areas) used was two (2). The Parkhurst and the Westcliff residential areas were used as the two population groups in this regard.

Statistical techniques

According to Welman & Kruger (1999: 201) the decision on which statistical techniques to be used should be based on the research design and measurement instruments. Furthermore,

¹⁰ Since August 2000 the researcher was assigned to JPMorgan as a security consultant, and was appointed by JPMorgan as a permanent staff member in April 2003.

statistical techniques are important in order to make justifiable decisions (and conclusions from the results) on the research question/s (Welman & Kruger, 1999: 212).

The researcher quantified the following variables through the docket analysis:

- Time frame for burglaries measured in days;
- Week days and weekends on burglary occurrences;
- Day of week for burglary occurrence;
- Method of access into immediate house area; and
- Victims with intruder alarm systems.

The researcher then coded the variables and quantified them in terms of frequency. The *coding process* was formulated in terms of themes and frequencies (Welman & Kruger, 1999: 203). The data from the docket digital analysis form was categorised into themes and then coded to achieve the process of quantification of data in the form of frequencies. (The coding schedule on docket analysis is provided in Annexure 10: Coding schedule: Docket analysis.)

The rater reliability increased due to the fact that the researcher himself captured and rated this information. The reliability of the statistical techniques were analysed by a qualified statistician employed by UNISA.¹¹

The following categories were used as indicators to the construct, incidence of burglary:

- Time frame for burglaries measured in days;
- Week days and weekends on burglary occurrences;
- Day of week for burglary occurrence;
- Method of access into immediate house area; and
- Victims with intruder alarm systems.

Nominal measurement to the data obtained in the dockets with the aim to establish whether there might be any other indicators or independent variables, i.e. day of week of incident detection, that might have a relationship with the construct or dependant variable, incidence of burglary.

¹¹ Daniel Mokalapa at the Department of Mining & Engineering at UNISA.

This also applies to *multivariate analysis* to establish if there is any independent variable from the docket that has a direct relationship to the dependant variable, incidence of residential burglary.

Overall, with the docket analysis, the researcher's main objective was to get contact details of residential burglary victims within the Parkhurst and Westcliff areas. However, descriptive statistics were used to summarise the themes and their frequencies obtained through the docket digital survey form on residential burglary cases within the Parkhurst and Westcliff areas from 1 January 2001 till 31 December 2002. (See Annexure 3: Picture 1: Docket Digital Survey). A hard copy of this docket digital survey form was used as a backup to the digital format to capture data in cases where the digital format was operational.

Integrated measuring instrument and reliability

In order to make the application of triangulation (comparing different data sets and collected information using different research methods and measuring instruments, interchangeable versions of the measuring instrument (*parallel-forms reliability*) were implemented (integrating information from the docket analyses, interviews with victims, residential security audits and descriptive mapping) in order to more comprehensively to describe the construct (impact on residential security measures on incidence of residential burglary) (Welman & Kruger, 1999: 144).

Furthermore, the same *representative sample* was used with each of the various measuring instruments.

Research problems

The following problems were experienced by Tilley (1999: 6) in his research and in some of these problems also experienced by the researcher himself:

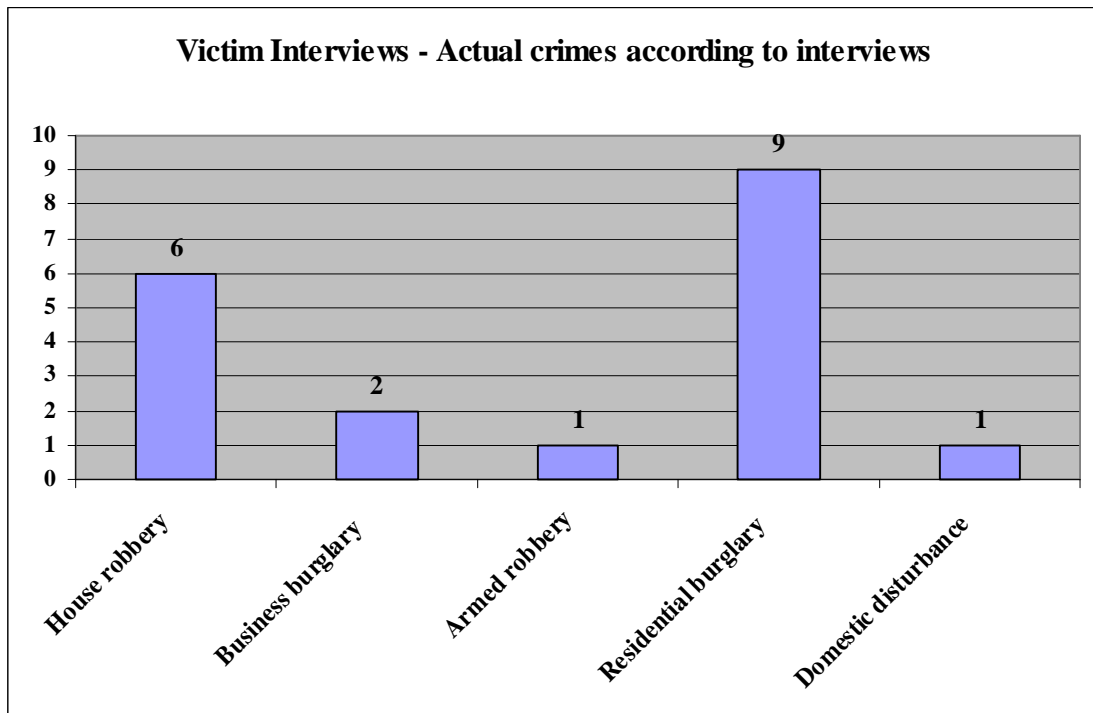
- The computer system, they used to was limited in terms of database capacity and applications in obtaining all information over a period of three years;

- The changes in policing boundaries also made it hard to obtain information for a particular area over the three-year period of the research. This would be applicable to the researcher's experience where residential burglary wasn't the case in all the interviews and where some were house robberies and some were business burglaries. This had an influence on the sampling in that the sample drawn for the interviews was not only residential burglary victims, but included business burglaries and robberies; and
- The inclusion of business burglaries into the residential burglary statistics, contributed to not obtaining the correct information for a particular area over the mentioned period. This was also the case with the research conducted in that there were robbery and business burglary cases included within the same sample drawn by the researcher.

The researcher experienced the following in the docket analysis:

- The Parkview police crime intelligence computer system had days where it could not access the central database due to unknown reasons and possible networking problems or PC system inadequacies such as outdated PC hardware, and therefore meetings had to be rescheduled with the PC operator; and
- The burglaries reported on the database as residential burglaries and found during victim interviews to be either business burglaries or robberies, contributed to the victim interview sample focussing not only on residential burglary victims, but also victims of other types of burglaries. (Please refer to Bar chart 1: actual crimes recorded based on victim interviews.)

Bar Chart 1: Actual crimes recorded based on victim interviews



Interviews with residential burglary victims

The second component in the collection of information for this research study were the interviews with the victims identified in the selected dockets. The focus of the victim interviews was to determine what security measures were or were not in place at the time of the incident.

The information collection instrument used was a structured interview schedule consisting of 95 questions. Eighty-nine of the questions were based around the time of the incident, i.e. about factors and security measures at the time the burglary occurred. Six questions were open ended and based on possible improvements done as a result of the burglary incident.

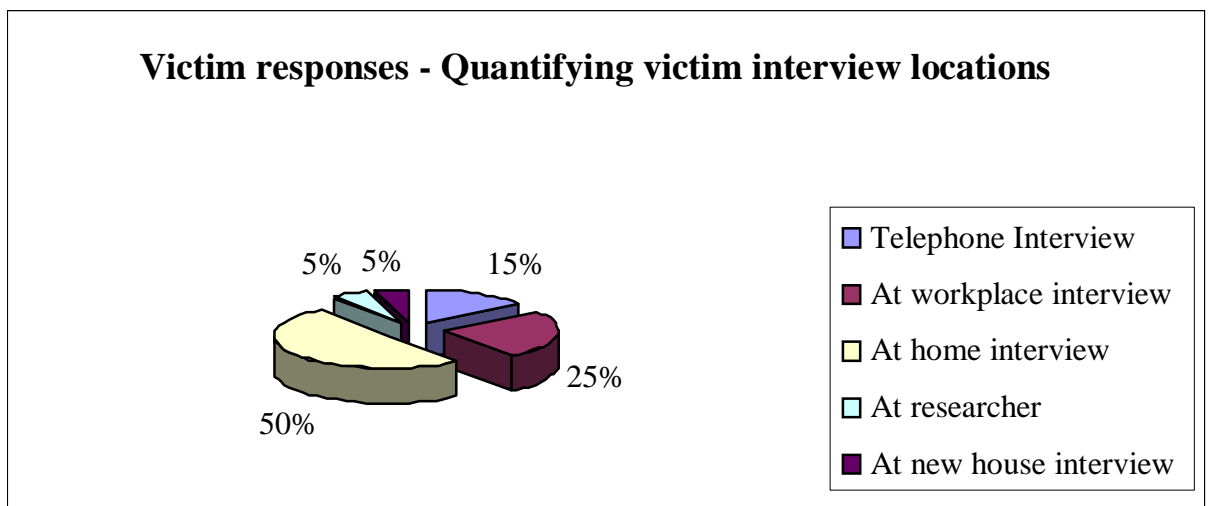
The researcher explained to the respondents (identified victims) the purpose of the interview in order to obtain their permission to conduct the interview, to seek their co-operation and voluntary participation.

The respondent was also asked to complete and sign the interview agreement¹² which basically assured the respondent that their anonymity would be protected in the research report in terms of their personal details and exact location of the burglary.

The estimated length of the interview (time taken to complete) was also mentioned to the respondent. On average most interviews took between forty-five and sixty minutes. This was followed by the residential security audit which on average took another twenty-five minutes.

There were a number of instances where the interviews were conducted at the victim's workplace, at their new houses (i.e. moved residences in the interim) or a telephonic interview was conducted. Please refer to pie chart 1: Interview locations

Pie Chart 1: Interview locations



The respondents were also advised that they may feel free not to answer any questions if they want to, but if they chose not to answer a particular question to provide the researcher with a reason in each instance. This did not occur in any of the interviews and all the questions were answered by all respondents. Furthermore, the respondents were also advised that they may feel free to share any additional answers or questions if they needed to add to the interview information. If this happened the researcher then made foot notes next to the questions. An example of this was where only a 'yes' response was required to a question. For instance for a question like: "Was the intruder alarm armed?" The response to such a question could then be 'yes' but a respondent would report further that the alarm code had not been changed after taking ownership of the house, although the alarm was armed. This is crucial to ensure that a

¹² See Annexure 6: Victim interview schedule.

proper audit trail will exist when the owner wants to investigate alarm activities, i.e. when was the alarm armed or disarmed and by which user.

In such a case one can note that alarm code changing can also be a possible variable.

In the interviews the researcher allowed all respondents to feel free to express their feelings, but also respected their wishes if for any reason or circumstance a respondent might reject any question or refuse to answer due to the crime experienced and associated trauma.

The researcher therefore tried to ensure that the revealing and passing on of information by respondents were facilitated (creating a relaxed atmosphere of sharing and being sensitive to the feelings of the respondent) without intervening, prompting, badgering or forcing any issue. This form of interviewing was an effort to fulfil the strictures for therapeutic research as outlined by Welman & Kruger (1996: 197).

The researcher also allowed for the respondents to voluntarily expand on their answers and provide more information to questions, which and in some instances covered the next question without interfering with their response.

Construct validity of the measuring instrument (the interview schedule) was taken into consideration in that provision was made for all possible external variables whereby all the various security measures were listed and the researcher made notes on any possible external influences that normally influence the effectiveness and reliability of these security measures. The researcher therefore made allowances for any extra information which was also used to enhance, refine or expand the existing questionnaire and to add any issues not covered in the first interview schedule.

The essence of capturing the re-occurring themes was always the main aim during the interviews in order to contribute to effective and accurate report writing.

The interview schedule will now be discussed in more detail in terms of its use as the measurement instrument.

Measurement instrument

The researcher completed a course in Quantitative Methods and Statistics for Decision Makers in 2004 at the New Unisa to form a better understanding of what is needed to provide useful information (data input) to a statistician allowing for the best possible results and interpretation on the given data.

The measurement instrument during the victim interviews was a questionnaire with a combination of short and open-ended questions.

The short questions were designed in a manner to provide for ease of coding and still left opportunity for any new variables to be noted.

The design of the questionnaire was very time consuming, but ensured the ease of effective interviewing in covering vital aspects and not to leave any questions or responses unattended. The draft interview schedule of questions was tested and piloted with colleagues in the workplace before finalisation.

The open-ended questions were placed at the beginning and end of the interview schedule, in an attempt to give the respondent, where possible, the opportunity to provide more information about the various variables. In addition, the responses were categorized and grouped into themes and frequencies. The themes were also coded accordingly. Furthermore, the questionnaire was designed not only as a hardcopy but also as an electronic version (for laptop/notebook use) on a database package. This was more reliable due to data that could be immediately stored in a database, and ensured a more speedy process with the analysis of the interviews.

While the researcher felt the electronic version to be very “impersonal” it also tended to have the following disadvantages:

- The researcher experienced the possibility of overlooking detail and responses from the respondents, which normally get noted if one focuses one’s full attention on the response, reaction and body language of the respondent;
- The researcher felt that the respondent tended to lose interest if the researcher had to focus on the laptop screen and type in the responses; and

- The laptop was a risk in either failing due to highly possible errors, i.e. sudden battery failure or hard disk error.

As a result of the above the researcher used the digital version only to capture data after the interviews had been done which then had the benefit that the data was captured onto an electronic database, was secure and readily available to be analysed through coding and calculations to formulate statistical information.

The questionnaire covered the following aspects:

- Summary of the project;
- Confidentiality;
- Definitions; and
- Additional information.

- Section A:
 - Residence description; and
 - Respondent description.

- Section B (Focused on what was in place during the residential burglary):
 - Neighbourhood watches or community security initiatives;
 - Perimeter security;
 - Inner perimeter;
 - Immediate house area; and
 - Incident details.

- Section C (Focused on whether any enhancements were made after the residential burglary had occurred)
 - Neighbourhood watch or community security initiatives;
 - Perimeter;
 - Inner perimeter; and
 - Immediate house area.

The summary of the project

The summary of the project aimed to give the respondent more background information to the actual study.

Confidentiality

This clause was designed to give the assurance that the respondent's identity, any personal details and exact address of the burglary would be protected, be treated as confidential and remain anonymous to anyone else besides the researcher.

Definition

The definitions were only used where the respondents were not sure of the meaning of a specific security measure.

An example would be where the researcher had to explain to the victim that a keypad is not only applicable in arming or disarming an intruder alarm system, but can also be used to activate the automation system on a gate for the specific gate to be opened remotely.

Additional Information

The researcher's aim was to guide the respondent to basic rules when responding to questions and that the respondent would be allowed to provide additional information, but this should be restricted to the topic only.

In many instances this was not the case and the researcher also did not stop the respondent from adding information not related to the question, but then mentioned the response in questions where the information provider was applicable to allow for the respondent to either decline or confirm the response.

An example would be where the respondent explained to the researcher that the alarm was not working due to lack of knowledge in using it and where the question only required either a 'yes' or 'no' answer or if there was an intruder alarm installed at the time of the incident.

The researcher then reminded the respondent of the fact that the alarm was not in used in the question about whether the alarm was used or not.

The respondent was also informed that a written approval had been obtained by the South African Police Services to access docket information prior to the interview.

Section A

Section A covered the following:

- Resident description;
- Respondent description;
- Type of dwelling; and
- Employment history of the respondent at the time of the incident.

Section B

This section focused on possible residential measures with:

- The suburb;
- Perimeter;
- Inner perimeter (garden area); and
- Immediate house area.

Section C

This section focused on what equipment or security measure had been improved in terms of the previous section:

- The suburb;
- Perimeter;
- Vehicle gate;
- Pedestrian gate;
- Inner perimeter; and
- Immediate home security.

Section A

The main aim in this section was to determine what part of the premises had been burgled.

The cottage was interesting area of note in that some of the incidents the cottage was burgled and not the main residents building.

The areas investigated did not have much in terms of security villages and flats and mostly stand-alone houses and properties.

The section also covered background on the victim in terms of employment and to establish the victim's working status at the time of the incident.

Section B

The suburb

The main aim of this section was to determine what was in place at the time of the incident in terms of suburb or community security initiatives.

The researcher has experience in initiating and managing community security initiatives in the Illovo Boulevard business community and Westcliff residential area.

Another aim was to determine if there was any building or civil contracting works present in the suburb at the time of the incident in order to determine if there is any correlation between residential burglary and the presence of civil or building contract projects.

The perimeter

In the perimeter section, the researcher covered the following:

- Electrified fencing;
- Motorised vehicle perimeter gates;
- Perimeter fence/boundary and
- Pedestrian gates.

Electrified fencing

In terms of this question the researcher tried to determine whether any electrified fencing was present at the time of the residential burglary.

The researcher also aimed, in determining whether electrified fencing was present, how it was used, monitored and managed and if the responses might have had a correlation with the incidence of residential burglary.

During the course of the research, the researcher had also responded in his capacity as security consultant to various residential burglary scenes and wanted to determine whether his observations and focus on possible variables were accurate in this regard.

Examples would be to determine whether the fence heights were similar to other burglary scenes or for instance whether the pedestrian door was used as in other residential burglaries in neighbouring areas.

Motorised perimeter vehicle gates

Here the researcher was trying to determine whether a vehicle gate motor/gate automation system was in use and/or present at the time of the residential burglary.

An ancillary aim was to determine how the gate motor was opened and closed and who had access to the devices activating the vehicle gate motor/gate automation system.

Perimeter fence/boundary

The perimeter fence/boundary was another area where the researcher's aim was to determine what fence or boundary was in place at the time of the residential burglary.

There were additional areas where the researcher would then confirm the response of the respondent, for example the height of the fence or boundary would be compared with the notes from the victim's interview.

Pedestrian gates

The pedestrian gates were another area where the researcher's aim was to determine how many pedestrian gates were present at the time of the incident, how they were locked and who had access in locking and unlocking these devices.

The inner perimeter

This is also known as the garden area and is mainly the area between the immediate house and perimeter boundary.

The researcher's aim here was to gather information on the following security measures:

- Infra-red external beams; and
- Floodlights.

Infrared external beams

The researcher's aim was to determine whether the respondent had any infrared external beams installed at the time of the residential burglary.

The researcher would then also make any additional notes with the residential security audit regarding the positioning of the above equipment and how it functioned¹³.

The researcher also aimed in determining how the infra-red beams were monitored and armed.

An example would be to determine if the beams were armed with a remote transmitter and if the beams were connected to a radio frequency device on a dedicated zone on a key pad and labelled as infra-red beams and whether an activation would be transmitted to an armed response control room.

Floodlights

The researcher's aim here was to determine if there were any floodlights present at the time of the residential burglary.

Another aim was to determine whether the operating procedures, i.e. whether the floodlights were regularly activated, had any correlation with the incidence of the burglary. An example would be to determining how many of the reported cases the floodlights were switched on manually.

Immediate house area

The immediate house area includes the external walls, doors and windows adjacent to the immediate house structure.

The following areas and security measures were covered by the researcher:

- Doors;
- Door keys and locks;
- Windows;
- Window burglar bars; and

¹³ The external infra-red beams can either be transmit-receive or infra-red passive.

- Intruder alarm.

Doors

This section was added in addition to the list of areas since the researcher aimed to determine what doors were in place at the time of the residential burglary and whether they were covered with any additional security features such as security gates.

The type of door and security gate would then be noted in the residential audit phase and this information would be added to the analysis.

Door keys and locks

The researcher's aim here was to determine whether the doors leading to external areas had been locked at the time of the burglary and who had access to the keys at the time of the residential burglary.

Windows

The aim was to determine if there was any open view (visibility of inside contents) into the house by any possible bystanders from the external or unsecured side of the immediate house area.

An example would be a clear view from the neighbours or main street area into the house rooms.

The researcher aimed to determine whether routine and internal house movements might have a correlation to the residential burglary in this regard.

Window burglar bars

This section was also added as an addition to the initial questionnaire.

The researcher's aim was to determine if window burglar proofing and what type were present at the time of the residential burglary incident.

Intruder alarm

The researcher has four years experience in various intruder alarm systems in the system design phase of projects and managing the projects.

The type of intruder alarm and setup would also then be noted with the residential security audit and additional information in this regard would then be added to the analysis.

The researcher's aim was to determine if the respondent had an intruder alarm at the time of the residential burglary.

The researcher was also interested in establishing how the intruder alarm was armed and disarmed and who had access to this function.

Section C Security enhancements

The aim of this section was to determine whether any security improvements had been implemented, and in what areas after, the incident.

The researcher focused on covering all the issues mentioned or indicated in Section B, but made provision for additional information which in many cases had victims sharing information of the actual incident.

Neighbourhood

The researcher was interested in determining whether any security initiatives have been implemented in the neighbourhood.

The researcher related this to his experience with the upper Westcliff Security initiative area where residents implemented this initiative due to the crime in the immediate area.¹⁴

¹⁴ The researcher has 7 years experience in various intruder alarm systems, in the system design phase of projects and management of projects.

Perimeter

The researcher was interested in determining whether any improvements were made to the perimeter in terms of implementing a deterrent, i.e. barb wire, or a deterrent and detection combination such as electrified fencing.

Vehicle gate

The vehicle gate is one area of concern to the researcher.

High walls and it's robustness in many cases supercedes the height of the vehicle gate and the level of robustness it can provide.

Often walls are much higher than the gate an in some cases the wall is well covered with electrified fencing, but there is poor or non existent coverage by electrified fencing on to of the vehicle gate.

The researcher was also interested in determining whether any improvements had been made in this regard.

Pedestrian gate

The researcher aimed to determine whether any improvements were implemented with regards to pedestrian gate(s). The researcher noted from personal experience that pedestrian gates and in particular wooden pedestrian gates are often used as entry points by burglars¹⁵.

Inner perimeter

The inner perimeter is the second layer of defence in the researcher's opinion. Early detection is crucial before the burglar breaks a window or forces a safety gate open. The average response from an armed response company varies from 5 to 10 minutes and in many cases takes longer¹⁶.

¹⁵ The researcher has experience the over last seven years in responding to burglary scenes of his colleagues and company employees an attempt to assist them with trauma management.

¹⁶ The researcher found that if one has an armed response vehicle that only needs to cover an area with a radius of three kilometres, the average response time is between three and five minutes.

Immediate house area

The immediate house is vulnerable if the perimeter and inner perimeter (garden) areas did not detect any intrusion through means of intruder detection infra-red beams as an example.

The researcher's objective was to establish whether any enhancements were made in terms of the immediate house area by means of adding security measures in terms of procedures, hardware or maintenance. An example would be the changing the intruder alarm codes.

Another aim was to establish what was regarded as necessary in terms of improvements in relation to the modus operandi experienced by the victims. An example would be where the victim would focus on implementing burglar proofing because the perpetrator gained access through a window, where the first point of entry was actually over the low perimeter wall.

Measurement occasion

The interviews occurred during the daytime and were based on the docketts selected and information extracted from these docketts.

There was minimal disruption due to the letter drafted by the researcher and signed by the SAPS as back-up support to the research.

The researcher's approach was his involvement with the Westcliff Security Initiative Forum which increased his chances of getting interviews and in particular within the Westcliff residential area.

Measurement user

The researcher designed the interview schedule and therefore personally familiar with the contents thereof.

Any improvements could be done instantly and without any hesitance and as previously mentioned, doors and window burglar bars were added as an example.

The interview schedule was designed based on the practical experience the researcher gained through the implementation and utilisation of various residential security projects¹⁷ and their impact on burglary instances.

The implementation of certain infra-red detection beams on the outside of the house gets regarded as more effective than others, because burglars used in one specific residential burglary case laundry from the washing line to cover the beams in order to bridge the beams. This indicated that the burglars knew how the beams worked and how to bridge the beams.

The data collected from the interviews were the researcher's primary data. No statistical analysis from other studies on the same topic was used by the researcher.

The apparatus that was used to gather information was an interview schedule¹⁸, designed and based on the researcher's experience responding to residential burglary scenes, project manages residential security measures implementation and also courses the researcher completed in technological security measures implementation.

The process also ensured that the measuring instrument was reliable and valid in that it covered variables as far as possible and measured those issues that were supposed to be measured in terms of what the researcher perceived as crucial and affordable by the middle and upper class residential owner.

Sampling

Probability sampling techniques were used in this regard and based on the same sample as with the docket analysis.

The units of analysis in this regard refer to the victims of residential burglary and this was used as the same sample throughout the victim interviews, residential security audits and descriptive mapping process.

¹⁷ The researcher has the responsibility for looking after executive protection at the company he worked for at the time of the research and the majority of the focus within the residential domain. The researcher was also involved with assisting normal employees within the same organisation with audits, recommendations and project planning and implementation.

¹⁸ The technical requirements for the interview schedule were completed with the assistance of Prof. Anthony Minnaar.

Design

Both a qualitative and quantitative research design was used in this regard with semi-structured and in-depth interviews and where open-ended questions were categorized and grouped according to visible themes. Short questions with multiple choices were also coded for statistical purposes. (Welman & Kruger 1999: 196)

The research was in essence explorative of nature, where the researcher aimed to identify the impact of residential security measures (the presence and durability of these independent variables) on the dependant variable, i.e. incidence of residential burglary.

To formulate questions on whether the possible residential security measures were present and if so, how were they bridged or penetrated and also to generate hypotheses for further investigation. An example would be how electrified fencing was bridged by the perpetrators and if the height of the electrified fencing strands had a correlation with the bridging of the perimeter.

Although the research approach in this regard is qualitative, the research topic is not totally unfamiliar and therefore the researcher could formulate semi-structured interviews and formulate questions within the semi-structured interviews (Welman & Kruger, 1996: 196)

In the interviews the researcher was cautious not to use any leading questions in the semi-structured interviews.

The researcher's objective was to determine what measures were in place at the time of the burglaries and not to lead the interviewees into giving their interpretation of what measures should have been in place and what measures were effective.

Where the victims gave more or additional information on what they believed was the gap in their security systems that increased the possibility of perpetrators entering their properties, these responses were also recorded.

In this manner one would be able to determine in some instances what other third variables were also present at the time of the incident for example rainy weather might contribute to

false alarms, which in turn could cause a possible backlog with the computer systems in armed response company control rooms. As a result having more than expected alarm activations would contribute towards adding more responses to an armed response vehicle.

Statistical techniques

The statistical techniques were chosen in relation to the measurement instrument and research design.

The phenomenon under investigation is what security measures were in place at the time of the incident.

The *coding process* was based on the semi-structured interview schedule where coding could be done prior to the analysis and additional information and open-ended questions were categorized into themes and frequencies and coded accordingly.

Rossouw defines measurement as "the assignment of numbers or numerals, according to fixed rules, to persons or objects in order to reflect differences between them in the attribute or characteristic of interest" (Rossouw, 2003: 118). It is therefore of importance to describe the various variables and determine their relationship through comparison (Rossouw, 2003: 118)

The researcher used the coding schedules (Refer to Annexure 6: Coding schedule on victim interviews to view the schedule used to code responses from residential burglary victims) in the various measurement instruments to identify the various variables, describing them and explaining the relationship(s) between them.

The rater reliability increased due to the fact that the researcher himself captured and rated his information.

The reliability of the statistical techniques was tested by a qualified statistician.

The researcher compiled the data and manipulated it through various statistical techniques, which were discussed beforehand with a qualified statistician in order to ensure the correct model would be used with the particular data.

The coding schedule for example, had to be changed by removing the zero and the questions had to be shortened to be adapted to the statistical package SPSS.

An example is where the researcher asked:

“Since the incident, what has been enhanced within the immediate house area in terms of security measures at the immediate house area?” which was shortened to:

“Additions to immediate house after incident”

These changes were only made to ensure the questions would be accepted by the statistical package used.

In the majority of the cases the researcher made use of the Excel software package to do his statistical analysis.

In qualitative research, Rossouw (2003: 119) describes measurement as” collecting data and reflecting the quality and nature of the phenomenon in a form of description”.

The researcher collected data to determine whether the independent variable, residential security measures, have a relationship (an impact) on the incidence of residential burglary - the dependant variable.

Nominal measurement is applicable in this study where the various residential security measures are grouped according to their various categories.

The reliability of the measurement instrument is achieved when the same result occurs when the same respondent is approached again and if it is measuring what it is supposed to measure (Rossouw, 2003: 123).

Follow-up research in this regard will indicate the reliability of the victim interview schedule. One should consider the possibility of modus operandi changes to the new technology in residential security measures.

Nominal measurement is applicable to the data obtained in that the incidence of burglary is measured in terms of what type of security measures were in place or absent at the time of the incident.

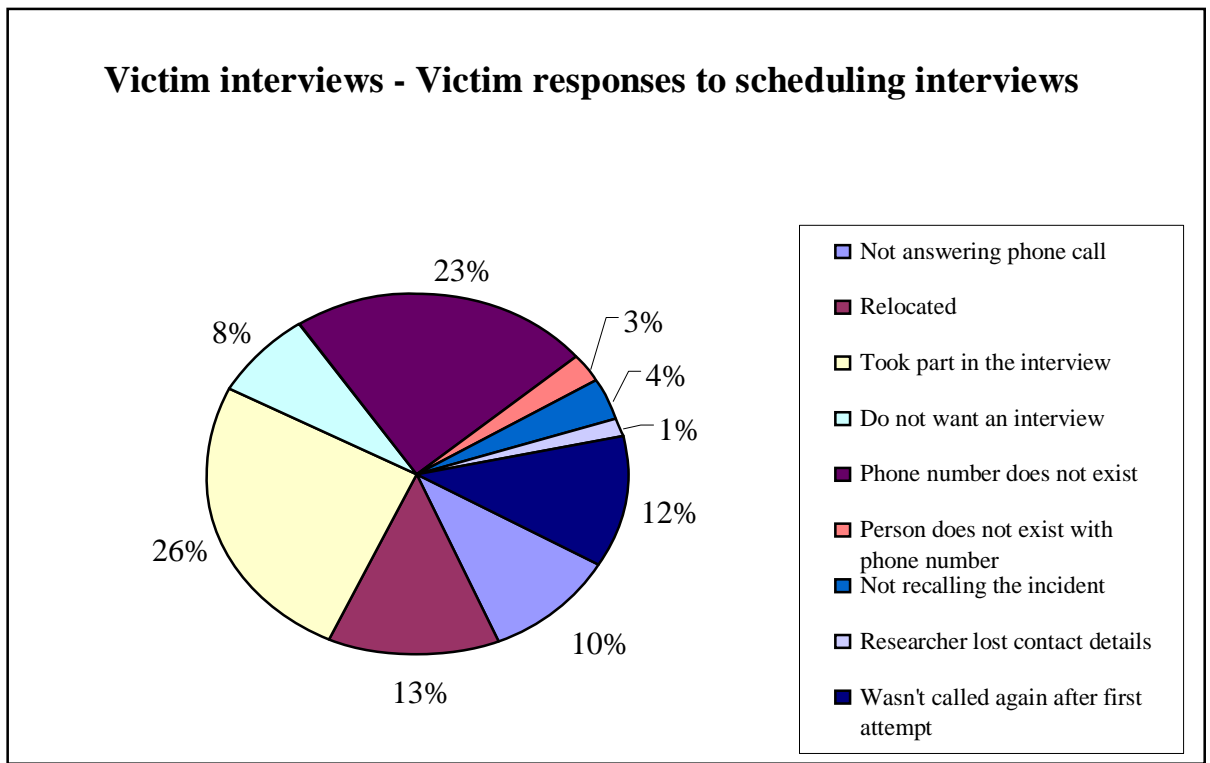
The following questions were not applicable to the coding schedule:

- Questions 24 – 28 (No electronic keypads connected to the vehicle gate automation systems);
- Question 34 (Nobody had electronic keypads connected to their vehicle gate automation systems and therefore the backup battery supply in case of power failures and enabling the keypads still to activate the gate automation system, do not have relevance for this study);
- Question 41 - 43 (The topic has already been discussed in Question 39);
- Question 45 and 46 (Nobody had this facility on their electrical striker lock facilities);
- Question 49 – 53 (Nobody had this facility on their electrical striker lock facilities);
- Question 59 (This have been covered in question 58, because nobody bypassed or isolated their exterior infra-red detection beams); and
- Question 88 (This has been discussed in question 87 where it was indicated that nobody bypassed or isolated any zones on their intruder alarm systems).

Research problems

The following chart quantifies the various reactions from the victim's scheduling interviews:

Pie Chart 2: Quantifying victim responses to the interview scheduling process



Residential security audit

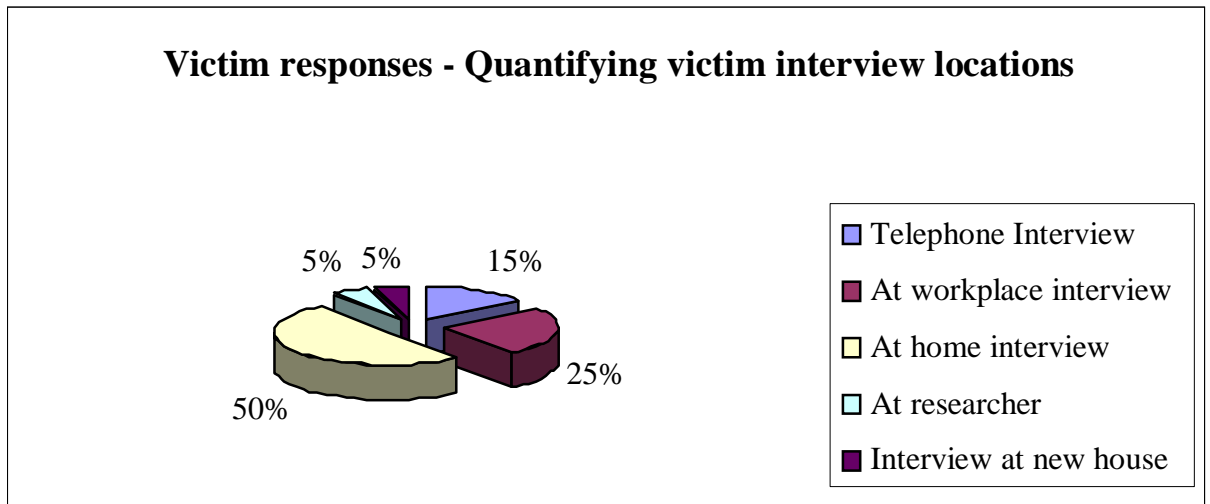
Measurement instrument

The main focus of the residential security audit was to establish how the security measures, which were present at the time of the residential burglary, were implemented.

The *nature of the measurement* was a residential security audit which normally followed immediately after the victim interviews.

There were instances where the researcher could only do the victim interview and not the security audit because the victim already relocated to another house. (Please refer to chart 3: Interview locations)

Pie Chart 3: Interview locations



Only fifty percent (ten out of the twenty interviews) of victim interviews where residential audits were also completed.

The apparatus was a schedule which provided guidance to the researcher in research areas to be covered during the residential audit, but still gave the researcher the ability to make notes on any additional observations and comments made by the victims. (Please refer to Annexure 7: Victim residential security audit schedule)

Here is an example where the researcher did an audit on the perimeter using the residential audit schedule:

PERIMETER

Walls

[I will make notes on the following:]

Height:

Drain areas:

Deterrence:

.....
.....
.....
.....

Electrified fencing

[I will need to make notes on the following:]

- Joule capacity:
- Earth strands earthing method:
- Connection to the RF Radio on dedicated zone:
- Connection to a siren:
- Arming and disarming method:
- Energiser location:

.....
.....
.....
.....

The questionnaire covered the following aspects:

- Summary of the project;
- Confidentiality statement;
- Definitions;
- Additional information; and
- Perimeter:
 - Walls;

- Electrified fencing;
- Vehicle gate;
- Vehicle gate motor;
- CCTV;
- Lights;
- Palisade;
- Pedestrian perimeter gate; and
- Electronic keypad to the vehicle gate motor and/or the pedestrian gate magnetic/striker lock.
- Inner perimeter (garden area):
 - Infrared beams; and
 - Floodlights.
- Immediate house area:
 - Door locks;
 - Safety gates;
 - Windows; and
 - Intruder alarm system.

Measurement Occasion

The residential security audits were completed immediately after the victim interviews.

The researcher normally started inside the house where the victim interview was completed and then moved to the garden and perimeter areas.

Furthermore, the residential security audits with the victim interviews were normally completed after hours when the victims were at home. Alternatively, the audits and interviews were done early mornings or on weekends in cases where the victims already relocated.

The interviews at victim work places constituted to no residential security audit afterwards.

In instances where the victim had already relocated and the residential security audit was not applicable anymore, the researcher still made use of the opportunity to get the victim to go through the process again and to comment on the scheduled areas. Here an example would be where the victim commented on the height of their perimeter.

This was also applicable where victims were interviewed at their work place. (Refer to pie chart 3: Interview locations where twenty-five percent of the victim interviews were completed at the victim's workplace)

Measurement User

The researcher designed the audit schedule personally and was familiar with the contents, as well as with the victim interviews mentioned earlier.

Any additional information observed, and not fitted into any additional provisional categories, was incorporated to the residential security audit schedule.

The example of burglar proofing in front of windows (as discussed previously in the victim interview section of this chapter.)

Sampling

The same sample applied as with the victim interviews.

Design

Qualitative research design was used in this regard with a semi-structured residential security audit schedule where themes were categorized and grouped according to observation notes.

These notes were then used to supplement the victim interview notes and verify whether there were any changes. An example would be where the victim reported that they had a swing gate system and with the audit it became apparent that it was actually a sliding vehicle gate.

Another objective was to determine how security measures were implemented (and only those that were in place at the time of the residential burglary). Observation notes were then summarised according to their categories/themes in the report to provide the reader with an overall view of the various categories.

The summarisation of the audit notes can not be generalised but were used to supplement the findings from the victim interviews.

The researcher also made notes on the areas of intrusion.

This approach is qualitative with an explorative.

Research problems

The researcher was able to undertake ten residential security audits and therefore used this data only as supplementary to the victim interview responses.

Residential audits were not conducted where the victim interview was done:

- At the victim's new house;
- At the victim's work place; and
- Through a telephone interview.

Please refer to pie chart 3 to note the interview locations and methods and to read this in context with the research problems experienced.

The researcher also had to have a copy of his identification document, Technikon SA student card, research approval letter from Parkview police and letter of approval from the South African Police Service with reassure the respondents concerning the validation of the research project and the positive identification of the researcher and his association with the university.

In some instances the researcher also had to mention his involvement with the Westcliff Security Forum in the Upper Westcliff area especially where victims resided within the Westcliff area.

Some of the victims also confirmed the researcher's involvement with the Westcliff security forum in this regard. Westcliff is one of the population areas being investigated.

Descriptive mapping

Descriptive mapping focused on the suburb and geography in relation to the victim's property.

A distance matrix was one of the methods used by the researcher and similar to the methods used by Bernasco and Nieuwbeerta (2004: 307) where the distance from shops, open fields, river etc were measured and coded.

The researcher divided the residential areas into a grid system which will be discussed later in this chapter.

The researcher aimed to determine if there were any other variables, other than the security measures that might have had a relationship with the incidence of residential burglary.

The location of the victim's house in relation to the rest of the neighbourhood was variables under investigation in this phase of the research project.

Measurement occasion

The descriptive mapping exercise was done throughout the process of the victim interviews.

The researcher though had to advise the Parkview Police Commander again that such a mapping exercise was underway to ensure that both the police and the community were aware of it and if the community were to report this to the police directly or through their community policing forums.

Measurement user

The researcher personally did the survey to ensure that there was consistency in taking field notes.

The researcher was also familiar with the areas¹⁹ of the mapping exercise and therefore could include as much as possible field note information on potential variables.

Sampling

The *nature of the measurement* was a physical visit to every victim's property as per the sample drawn²⁰.

The sample drawn was also compared with the sample of victim interviews.

The initial sample drawn was from all the residential burglaries between 1 January 2001 till 31 December 2002 was used.

¹⁹ The researcher is involved with the operational management and initiated the Westcliff Community Security Forum and also has undertaken many security audits in the Parkhurst area and adjacent suburbs.

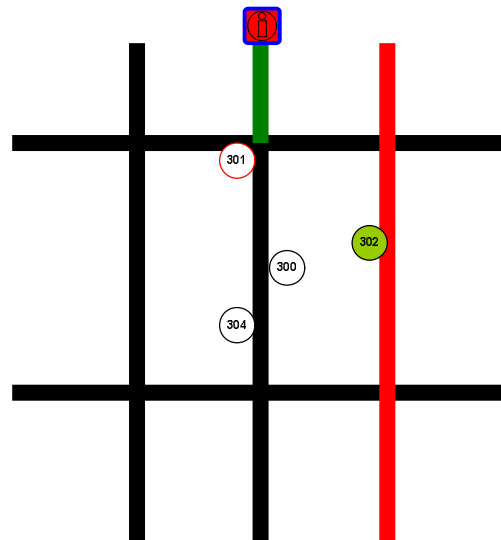
²⁰ Refer to the table on page 20: All burglary cases reported within Parkhurst and Westcliff residential areas between 2 January 2001 and 31 December 2002.

Design

A qualitative research design was used in this regard by taking field notes and where this was noted clustered into themes and categorized and grouped according to these field notes.

The researcher took field notes with each property and also prepared a matrix of the area without indicating any street names or street numbers. This matrix was designed with the intention of minimising the possibility of victim's names or place of residence being revealed exposed. This was done by drawing up a matrix as per the following illustration:

Drawing 1: Matrix example to illustrate the plotting of victim locations in relation to various area variables and victim descriptions



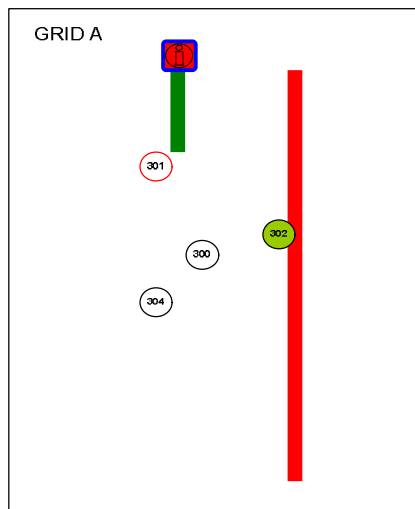
The example of a matrix used above illustrates the victim location with a circle and with a reference number (not the victim's physical address number), the victim's description (in this case a green circle illustrating that the victim was burgled twice), main access roads into the suburb (indicated with a red line), victims location in relation to dead-end roads (indicated with a green line) and the neighbourhood security barriers implemented on the mentioned dead-end roads (in this example a red information sign indicating an occupied property).

The researcher then removed the roads and clustered the victim locations into a grid reference system and started grouping the various grids into:

- Quantifying burglaries committed at victims place of residence within a grid ;

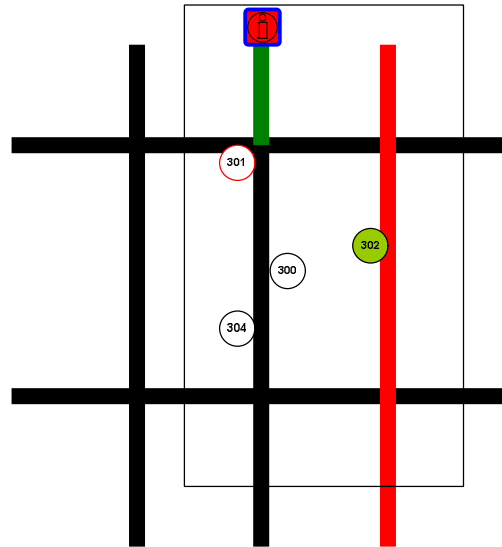
- Total burglaries committed within a grid;
- Grid location in relation to community entertainment places, business property and open unoccupied property;
- Quantifying victim location in relation to other victims within a grid;
- Grid location in relation to main access roads;
- Grid location in terms of dead-end roads;
- Dead-end road descriptions within grids with dead-end roads ; and
- Quantifying victim location in relation with street location within a grid

Drawing 2: Matrix example illustrating grouping the target areas into smaller grids to note variables in relation to victim locations



Each grid focussed in overlapping residential blocks to ensure consistency of victim location in relation to neighbours directly opposite across a residential street.

Drawing 3: Matrix example illustrating grouping the target areas into smaller grids to note variables in relation to victim locations with intention to also include the immediate area across the road from the victim's position



The researcher also formulated statements from his field notes in the findings and recommendations of the report.

The researcher also designed a matrix without naming streets or indicating street numbers to establish whether the location of a property, in relation to the rest of the suburb, has a relationship with the incidence of residential burglary.

The researcher also used a quantitative approach where the field notes clustered in their themes, coded and statistically analysed.

Statistical techniques

As with both the victim interviews and the residential security audits, the researcher had to ensure that the selected statistical techniques should be in line with the measurement instrument, field notes and the matrix. The researcher therefore had to ensure that the field notes were categorized into themes first and only thereafter coded.

Porkess (2004: 48) refers to coding as “data which have been translated from the form in which they were collected to the one that is more convenient for analysis”.

The numbers in a coding schedule are used for analysis and therefore the researcher categorised the data and grouped it according to the various variables/categories.

The researcher collected, captured and coded the data himself to ensure that the rater reliability ensured. This was also detected when victims properties were plotted and found that property numbers not recorded (in some cases where the victim stayed in a corner property) or the property number was recorded wrong (cases where the property number does not exist).

The statistical techniques were validated by a qualified statistician and thereby this also increasing the reliability of the statistical techniques used.

The researcher made use of both areas in terms of quantifying results. The Parkhurst area being divided into fifty-five grids and the Westcliff area into seventeen grids.

The latter could therefore not be compared with the Parkhurst area in terms of quantity of grids and therefore will not be statistically acceptable largely due to the big difference in grid volumes (fifty-five of Parkhurst straight comparison between the two areas versus the seventeen of Westcliff).

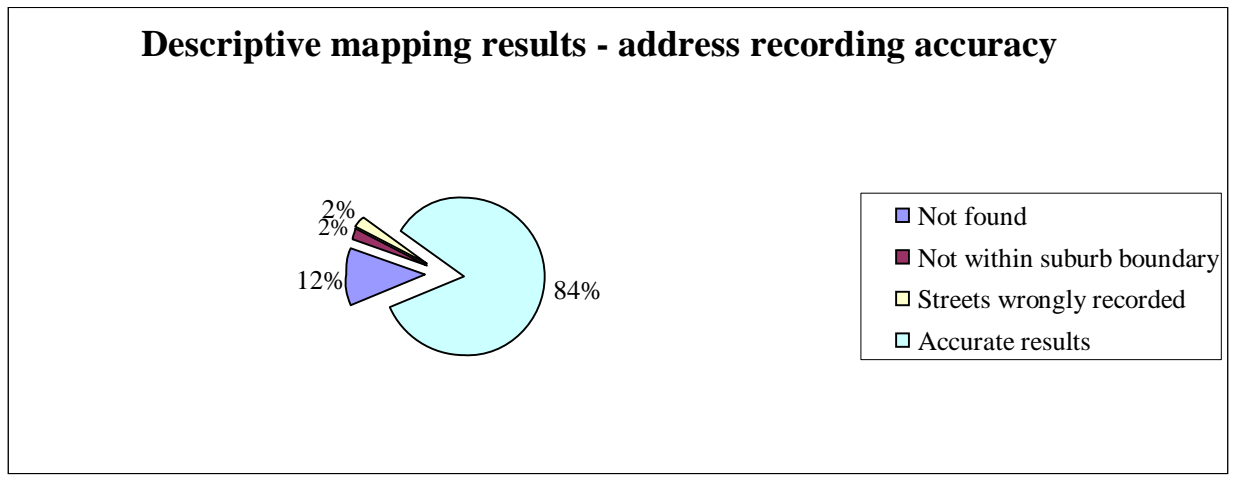
The size of properties in Westcliff is also on average bigger than the properties in Parkhurst.

Research problems

Research problems experienced in the descriptive mapping can be used as a guideline for any future research, the South African Police Service and private security companies.

The chart below quantifies addresses recorded on the descriptive maps.

Pie Chart 4: Addresses recorded on maps



Eighty-four percent of the addresses according to the docket sample drawn, were accurately recorded in terms of street numbers.

The rest of the street numbers (twelve percent) could not be found due to the recorded street number not existing or street names being wrongly recorded (two percent) or addresses being recorded as two streets or a combination of a street and a road where the victims resided on corner properties.

CONCLUSION

The chapter covered all the methods used to collect data. The methods were:

- Docket analysis;
- Victim interviews;
- Residential security audits; and
- Descriptive mapping.

The main objective of docket analysis was collecting contact details of the residential burglary victims. The process allowed also collecting the following information:

- Time frame for burglaries measured in days;
- Week days and weekends on burglary occurrences;
- Day of week for burglary occurrence;
- Method of access into immediate house area; and
- Victims with intruder alarm systems.

There were 255 residential burglary cases reported between January 2001 and December 2002. Seventy (72) dockets were then drawn as a sample.

The main objective of the victim interviews was to determine:

- What residential security measures were in place at the time of the residential burglary incident;
- How was the security measures in place, managed and maintained prior to the residential burglary incident; and
- What improvements were made to the existing residential security measures after the residential burglary incident.

A total of 20 interviews were completed and not all done at the victim's homes where the residential burglary incident occurred. This was due to work pressure and interview could only be conducted at the victim's workplace or where the victim already relocated to a new house. Supplementary information was provided through the residential security audits. This was only applicable where victims were interviewed at their residential environments and the residence was still the same property where the residential burglary has taken place.

A total of 255 Cases were plotted using the descriptive mapping method. This method allowed for the researcher to collect data in order to draw conclusions on victim residential location in relation to:

- Quantifying burglaries committed at victims place of residence within a grid ;
- Total burglaries committed within a grid;
- Grid location in relation to community entertainment places, business property and open unoccupied property;
- Quantifying victim location in relation to other victims within a grid;
- Grid location in relation to main access roads;
- Grid location in terms of dead-end roads;
- Dead-end road descriptions within grids with dead-end roads ; and
- Quantifying victim location in relation with street location within a grid

The process collecting data had some challenges due to house numbers not recorded correctly.

The data collection also had challenges in describing security concepts to the victims in order for the victims to give accurate and true responses in the victim interviews. The various concepts in residential security measures will also allow for recording data correctly, categorise the data properly and provide findings and recommendations accurately benefiting all and not only those with the necessary technical knowledge.

Chapter 4

DEFINING CONCEPTS, TERMINOLOGY AND TECHNICAL DESCRIPTIONS

INTRODUCTION

This chapter aims, firstly to define some of the terminology (specific to the area of research) used in this study; and secondly to describe in detail some technical aspects and features of physical residential security measures. This is done in order to formalise it into content for the provision of a basic understanding to the novice without sacrificing any vital technical description and meaning of any of the mentioned devices. This background information is of importance when it comes to the analysis of the research information provided by the security audits and interviews for each of a variety of security measures (technical equipment, strategies and processes), and therefore provides the conceptual framework for understanding the research context (residential security measures at residences of victims of burglary).

Simplifying the concepts will provide clear and understandable findings and results which can contribute towards accurate interpretation and implementation. Moreover, the terminology used and defined here has been adapted from the researcher's own experience with security installers and of the terminology they use when referring to various hardware and methods/measures.

An example would be earth loops on electrified fencing. This device is discussed later in this chapter by means of drawings and definitions simplifying its purpose and method of operation to the novice reader. Furthermore, in this example non-related terminology is also defined even where there is no specific physical technical motions involved which will require the same principle as mentioned with earth loops.

DEFINITIONS AND TERMINOLOGY USED

In defining the parameters and research framework reference was made to the following broad terms and definitions. These also further conceptualise technical descriptions of processes, measures and equipment used in this specialised industry.

Burglary

Burglary (sometimes (incorrectly) known as housebreaking²¹) is the breaking into and entering of a residential property, where there is no personal threat or physical harm involved to the occupants and the occupants were not present at the time of the breaking and entering or when the perpetrators exit (Myerson, 1995: 17)

The following categories of burglaries are identified:

- Burglary of residential premises; and
- Burglary of business premises²².

Community Policing Forums (CPFs)

At the time of the research, and in the initial stages of 2003, SCF was the known to the researcher. This was then changed and the common term now used is Sector Crime Forum (SCF).

A forum, chosen by the community, will be representing the community in a defined sector. The sector forum members meet with a designated sector commander, at the Station Crime Forum (SCF) and exchange information on:

- Action plans to manage crime;
- Initiating community initiatives to prevent crime;
- Creating cooperation between police and community; and
- Accepting responsibility and issue information how to safe guard one self (Sector Crime Policing: 2007).

Immediate house area

For the purposes of this study, the immediate house area refers to the immediate vicinity of the house building and outside buildings.

Outer perimeter

Outer perimeter in this study refers to the most outer boundary of a property, usually demarcated by means of some sort of barrier, e.g. fence, steel palisade or brick wall etc. This

²¹ Housebreaking is in fact the literal translation from the Afrikaans term 'huisbraak'.

²² Parkhurst and Westcliff do have both properties where the properties are converted from residential use to business use.

area is normally adjacent to neighbours' properties/residences, public walkways, streets/roads or other open properties or metro council areas, e.g. public parks.

The different perimeter types are discussed below in the technical concepts section.

Inner perimeter

The inner perimeter in this study refers to the area between the outer perimeter and the immediate house building, external buildings in the garden and the vehicle garage.

The inner perimeter consists in the majority of the cases of a garden, and/or paved areas and garden features. Garden features can include a swimming pool, tennis court etc.

Intruder

A person who intrudes, breaches the security of a residence, and irregularly (illegally) enters a property. An intruder can also be a burglar, i.e. a person with intent to break and enter and steal household goods (Pollard & Liebeck, 1994: 420).

Neighbourhood watch

A neighbourhood watch is a security concept where members of a community establish a security forum and implement security initiatives such as a SMS alert network, neighbourhood patrols, CCTV in street areas, boomed-off areas, etc.

A neighbourhood watch can be either where the community conduct the patrols themselves in the public spaces within a pre-defined residential boundary or where the community contract a private security provider to do visible patrols in the public spaces either on foot, with a vehicle or on bicycles.

The more defined explanation of neighbourhood is mentioned above within the CPF description.

Physical obstructions

Physical obstructions are defined as installations (e.g. perimeter fencing or other barriers) used clearly and unambiguously to seal off or provide protection for a particular area or structure (Naudè & Stevens, 1988: 188).

Robbery

When property of a person is taken through either force or intimidation, it is regarded as robbery of that person. (Robbery defined: 2007)

Symbolic (Psychological) obstructions

Such obstructions are not necessarily security barriers per se but seal off an area while not actually designed to restrict unauthorised entry, e.g. a flower bed, low wall, etc. (Naudè & Stevens, 1988: 189).

SAPS

South African Police Service

SAPS 612(n) Form

Official application form for requesting access to records and information of the South African Police Service, e.g. contents of dockets.

TECHNICAL DESCRIPTIONS FOR SECURITY HARDWARE

The technical concepts that will be discussed below are the following:

- Closed Circuit Television (CCTV) systems;
- Perimeters;
- Electrified fencing;
- Motorised vehicle gates;
- Electronic keypads;
- Pedestrian gates and locking mechanisms;
- Power supply units;
- Infrared beams;
- Security floodlights;
- Door keys and locks;
- Windows; and
- Intruder alarm systems and monitoring devices.

Close circuit television systems (CCTV)

CCTV is an integrated camera system which can provide each of the following or a combination of them:

- Live view footage;

- History on footage;
- Voice with movement footage;
- Black-and-white footage and view; or
- Colour footage and view.

The following will be discussed to put the reader into perspective of what CCTV can provide and also the benefits in having this security system installed on or at a residential property or house:

- CCTV camera;
- CCTV recorder; and
- CCTV monitor.

CCTV camera

This abbreviation refers to a closed circuit camera and is the device on the one side of the entire CCTV system. This is the device which converts the movement or actions that it views to either analogue or digital format and transmits these images back to the CCTV video recorder via cabling or micro wave signal.

CCTV recorder

This is the abbreviation for a closed circuit television video recorder that records footage in various formats. Digital format is one of the formats currently used.

CCTV monitor

This abbreviation refers to the closed circuit television monitor screen which enables the homeowner to view the real time (at the moment) images sent by the camera to the recorder or to view recorded footage via a television monitor at a later stage (after the fact).

Perimeter types

In this study perimeter fencing refers to the physical barriers which encircle a property boundary. The following definitions for different possible perimeter barriers were used in this study.

Steel palisade

This is a fence made up of lengths of angle iron/steel and comes in various lengths and heights. The lengths of steel can be differentiated from each other on the top end of the fence in different forms, i.e. forked or single spike.

Picture 1: Example of a steel palisade fence partition



Wooden balustrades

These are fences made from lengths of cut wood and not steel. The fence varies in size and was very popular before the 1980s.

Picture 2: Example of a wooden balustrade partition



Pre-cast cement slab walling

This is a perimeter fence or barrier consisting of vertical cement support pillars and guides and made mainly from cement, usually pre-cast. The cement slabs are inserted down the vertical cement guides. The cement slabs fill the vertical cement pillars from top to bottom. Such pre-cast cement walls can vary in size and height.

Picture 3: Example of a pre-cast cement slab walling



Diamond mesh wire fence

This type of fence consists of either wooden, metal or cement uprights supporting a wired mesh fence structure.

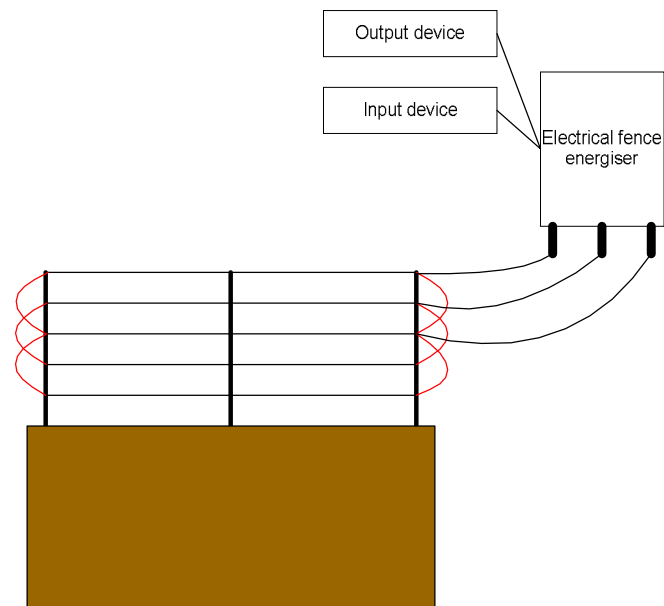
Picture 4: Example of a diamond mesh wire fence partition



Electrified fencing

Electrified fencing was initially used on game farms to prevent wild game from moving from one area to another. This type of barrier fencing was only later (the late 1980s) used for domestic and commercial purposes. Strands of electrified wire are usually erected on top of other types of fencing barriers (i.e. can be on top of a brick wall or cement barricade or as the top extension of a steel palisade of mesh fence). Electrified fencing and the integration thereof can be seen from the following drawing.

Drawing 4: Basic drawing of an electrified fence and primary devices



The components and terminology of an electrified fence system are as follows:

Fence energiser

This is a device which generates electrical current through a fence infrastructure specifically designed to transfer the current from the fence energiser, through the connected wires and back to the fence energiser. Below is a picture example of electrified fencing fence energiser.

Picture 5: Example of an electrified fencing fence energiser



The electrified fencing infrastructure

This usually comprises of vertical support pillars (also referred to as uprights), fixed to the perimeter infrastructure. The uprights can vary from five strands to more and it depends on the height above the perimeter infrastructure that needs to be safeguarded or if it needs to be used as the perimeter barrier itself. This usually comprises of vertical support pillars (also referred to as uprights), fixed to the perimeter infrastructure. The uprights can vary from five strands to more and it depends on the height above the perimeter infrastructure that needs to be safeguarded or if it needs to be used as the perimeter barrier itself. Below is an example of electrified fencing fence uprights on an existing perimeter.

Picture 6: Example of electrified fencing fence uprights on an existing perimeter



The example below of an electrified fencing as the perimeter barrier shows a different use from the usual way it is used on top of an existing fence/wall.

Picture 7: Example of electrified fencing as the perimeter



Arming and disarming the fence

This can be done through an input device. A typical input device would be a key switch where a key gets inserted into a slot and either turns the fence energiser on and off.

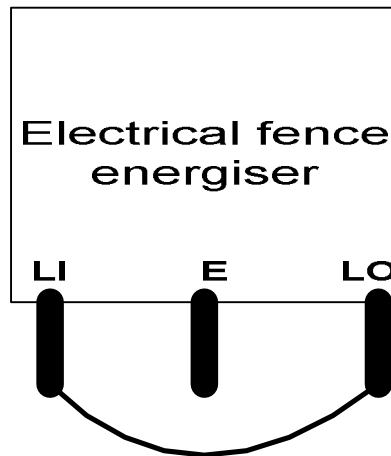
Output device

An alarm violation condition, i.e. activation or breach of the system occurs, can be made known to the homeowner through an output device. This output device can be a siren, radio transmitter, a SMS reporting device (also referred to as a SMS communicator) or a remote keypad, etc.

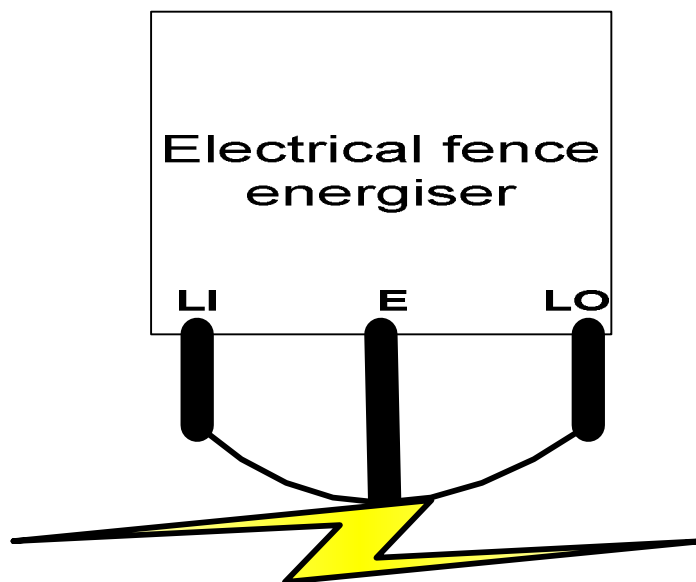
Fence earthing method

The following two drawings are basic illustrations of how the electrical current is transmitted through the fence and back to the electrical fence energiser (Drawing 5) and also how the fence would go into an alarm violation condition (Drawing 6).

Drawing 5: Drawing illustrating normal operation of an electrified fencing fence energiser



Drawing 6: Drawing illustrating alarm violation condition with an electrified fencing fence energiser



When the current goes from the Life In (LI) to Life Out (LO) connection without any earthing interference, we refer to normal fence operation (refer to Drawing 5).

When the current gets interfered by an earth connection, then we refer to this situation as an electrified fencing alarm violation condition (refer to Drawing 6).

For example, if a person touches an electrified fence strand while standing on the ground or connected, for instance, via a ladder, the current makes a deviation through the person and is

'earthed' to the ground. This in effect 'diverts' or 'breaks' the current (normal continuous current flow) and this activates an alarm signal (in the various ways described above).

The earth link can be either an earth spike connected to the electrified fencing strands, earth loops between the live wires, palisade fencing or any metal device on the perimeter touching the electrified fencing wire strands (see Picture 8)

Picture 8: Example of electrified fencing touching palisade fencing resulting in an alarm violation condition



The current needs to be drained through the mentioned earth links to ensure that the energiser will go into an alarm violation condition.

When a person touches the fence and causes life drainage for two to five seconds, which will then restrict the electrical current to complete the fence wire circuit from the energiser and back to the energiser resulting in an alarm violation condition.

The same theory applies when the live wires of the fence are touching the earth wire also for two to three seconds which will have the same effect as a human acting as an earth drainage.

Motorised vehicle perimeter gates

A motorised vehicle gate is a motor vehicle gate that has been automated. The device that automates the vehicle gate is called a vehicle gate motor. (See Picture 9)

Picture 9: Example of a vehicle gate motor



The vehicle gate motor can be either alternative current (AC) driven which means that it is only connected to a 220 volt power source (normal electricity power supply to a house) or it can also be direct current driven which means it is also connected to an uninterrupted power supply (hereafter referred to as UPS).

This UPS will provide the vehicle gate motor with power to open and close in the absence of the alternative current power supply (i.e. when there is a electrical power failure).

Electronic keypads

An electronic keypad is a device with the ability to activate another electronic device. An example would be where the electronic keypad would either open or close the vehicle gate by activating the vehicle gate motor. Another example would be where the electronic keypad would arm or disarm the intruder alarm system or enable or disable the electrified fencing energiser. (See Picture 10 as an example of a typical electronic keypad used to activate a vehicle gate motor to open or close.)

Picture 10: Example of an electronic keypad



Electronic keypads are differentiated from each other through:

- Compatibility with other devices;
- User code capacity; and
- Utilities.

Compatibility with other devices

The keypad might be compatible only with certain manufacturing brand names and devices or compatible with all manufacturing names but only certain devices.

An example would be that an electronic keypad is compatible with all makes of vehicle gate motors, but not compatible with certain intruder alarm systems.

User code capacity

The electronic keypad will have the ability to store one, two, three or more user codes. These user codes would either have the ability to:

- Enabling or switching a device on;
- Disabling or switching a device off; or
- Change the master settings.

One of the user codes will be programmed as the “master code” and will have the ability to make hardware changes, changing other user codes etc.

Utilities

Electronic keypads have various utilities where they have:

- Inputs;
- Outputs; and
- Combination of the above-mentioned.

A typical example of an input would be a tamper switch which will ensure that the keypad shuts down totally (and automatically) if an intruder tries to remove it from the wall in order to manipulate its functions to open the vehicle gate.

An output would be where user code number one will only have the ability to close the vehicle gate and user code number two would be able to open and close the gate and user code number three would have the ability to change user codes one and two and their utilities.

Pedestrian gates and locking mechanisms

A pedestrian gate can be the entry point for persons on foot (usually a smaller gate than a gate for vehicle entry) on the outer perimeter of the property into the property of the homeowner. The pedestrian gate might be a stand alone (separate) gate or be integrated into the vehicular gate. (See pictures 11 and 12 to note the difference in a stand alone and an integrated gate.)

Picture 11: Example of stand alone pedestrian gate



Picture 12: Example of an integrated pedestrian gate

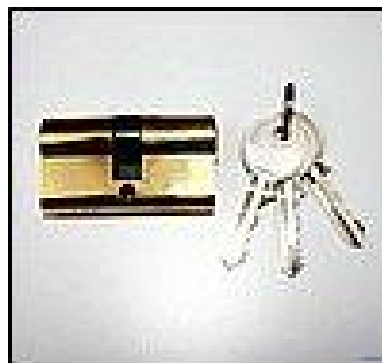


The locking mechanism on such a pedestrian gate can either be a combination of the following:

- Manual lock;
- Electronic magnetic lock;
- Electrical striker lock; or
- No lock.

(Please see pictures 13 to 15 to view the differences these different locking mechanisms.)

Picture 13: Example of a manual lock



Picture 14: Example of an electronic magnetic lock



Picture 15: Example of an electrical striker lock



The pedestrian gate can also be equipped with a gate closer which will close the gate automatically after entry.

(Please refer to picture 16 to view an example of a gate closer)

Picture 16: Example of a gate closer



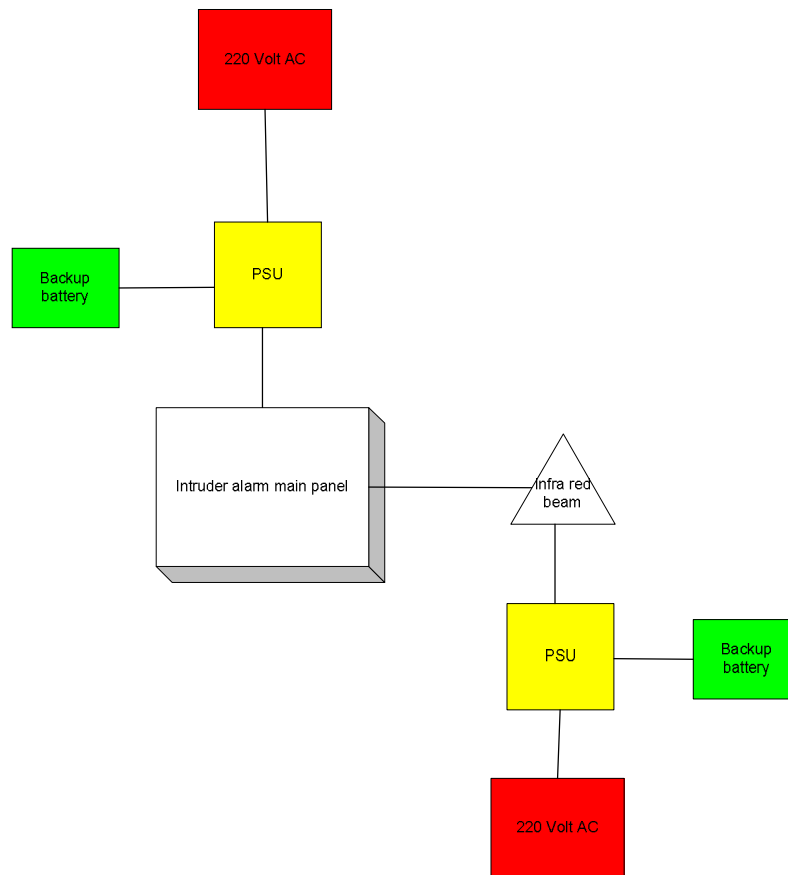
Power supply units (PSUs)

Power supply units (hereafter referred to as PSUs) to devices in the domestic environment can either be powered only by alternative current (AC) or direct current (DC) or have a combination of the two sources.

If only AC is used will mean that the power supply unit will be non-functional since in the case of a general power failure the device it provides power to will be disabled unless the device has an alternative back-up power supply like a battery (DC power).

The following drawing illustrates the integration of a PSU and an intruder alarm system with infrared beams.

Drawing 7: Basic drawing illustrating PSU integration with an intruder alarm and infra-red beams system



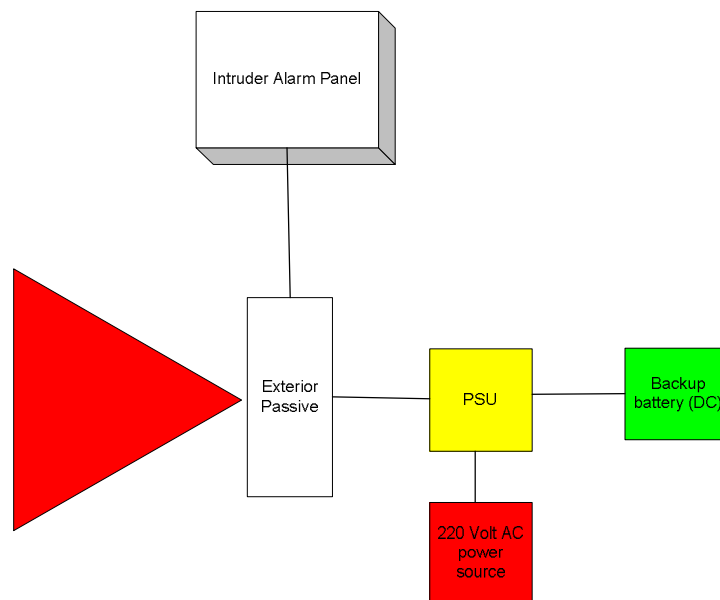
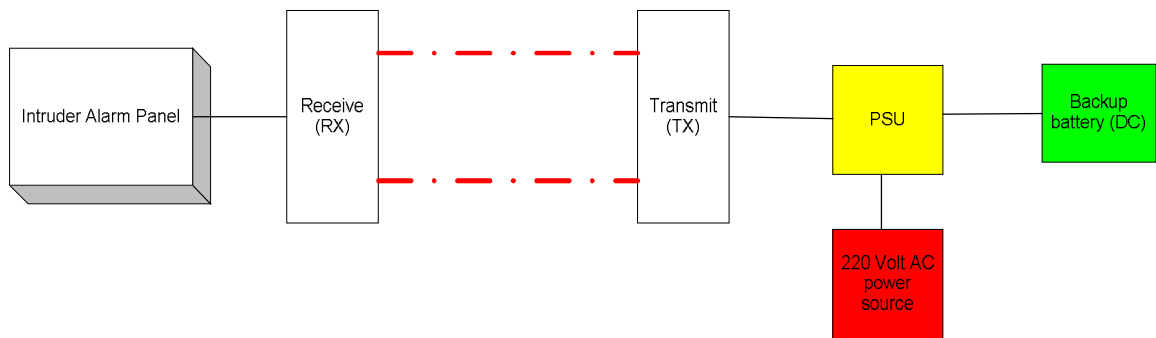
Infrared beams

In this study infrared beams refer to passive or transmitted/received beams in the garden or on the external wall of the immediate house or external building.

The mentioned beams can both transmit and receive a beam or an exterior infrared passive detector.

The following drawing illustrates the differences between a transmit-receive infrared beam and an exterior passive infrared detector (hereafter referred to as exterior passives), and the integration with the intruder alarm system and PSUs.

Drawing 8: Basic drawing illustrating the differences between a transmit-receive external beam and a passive infra-red detector



The transmit and receive infrared beam structure would be activated if an object like a human being passes through both upper and lower beams.²³

Security floodlights

Security floodlights in this research refer to external lights fixed to the immediate house area and providing light within the garden or inner perimeter areas. Security floodlights can also be fixed on the main vehicle gate area providing illumination to the immediate pavement or the insecure side of the outer perimeter.

²³ Transmit and receive beams can have more than just an upper and lower beam and can be sensitised more by the addition of more beams to ensure that only human beings are detected and animals like big birds or dogs are excluded, which are a problem and cause false alarms with older generation beams.

These floodlights can be activated by:

- Manual switch;
- Day/night photo sensor;
- Relay switch supplied by another electronic device; or
- Movement infra-red passive detectors.

Manual switch

The manual switch is the normal “light switch” in the house area that we are all familiar with.

Day/night photo sensor

This is a device which will automatically activate or switch the floodlights on or off depending on the light intensity.

The floodlights will switch on when it is overcast weather or at sunset when it starts to get darker. This is also a useful mechanism which will indicate to the homeowner when the homeowner arrives home that there has been a power failure. This is when the homeowner should call their armed response company to escort them into the property in case the power has been tampered with by possible burglars.

Relay switch supplied by another electronic device

The floodlights can also be activated by the intruder alarm system. This can be done by connecting certain floodlights in the inner perimeter area to the intruder alarm and will switch on when the intruder alarm is either armed, disarmed or if there was an intruder alarm violation signal condition.

Passive infrared motion detector

Floodlights can also be connected to a passive infrared motion detector which will activate certain lights when movement is detected (see Picture 17).

This is also regarded as an energy cost saving device, i.e. to only have floodlights on when they need to be. However, in security measure terms this is in fact the wrong approach since floodlights should be on at all times (when light is poor at night time) in order to ensure early detection and deterrence.

Picture 17: Example of a passive infrared motion detector integrated into a security flood light



Door keys and locks

Door keys and locks refer to doors leading to the external areas (garden, inner perimeter, outer perimeter or garage area). Door locks are differentiated from each other by how many levers there are inside the lock or the kind of key that opens it.

The common locks used in the residential environment are the “CD – Series”, “Y – Series”, “D – Series”, “Flat stamped Yale lock type or cylinder locks” and “mortise locks”.²⁴

The management of the keys includes if the keys were left in the door locks, if there was a backup locking facility, kind of door lock and if locks were changed after the incident was areas of exploration in this research project.

Windows

When windows are referred to in this research the following security features within the immediate window area are being included, namely:

- Burglar proofing;
- Window latch lever; and
- Type of glass.

Burglar proofing

Burglar proofing can be one of the following or different combinations:

- Outside a window fixed to the wall;

²⁴ In this study the researcher focussed more on determining the lock “lever” status being either a normal two lever or four lever lock, whether there were any “night latch locks” - better known as the Yale or Union latch locks - and whether the key cylinder was a traditional “C, D, Y or CD – Series” or the more popular and new-age flat stamped keys or, as generally referred to, mortise locks.

- Integrated within a window frame; or
- Fixed on the inside of the window frame or fixed to the inside of a wall and window sill area.

Pictures 18 to 20 show different types burglar proofing.

Picture 18: Example of burglar proofing on the outside of the window



Picture 19: Example of burglar proofing integrated with the window frame



Picture 20: Example of burglar proofing on the secure (inside) side of the window frame



Window latch lever

The window latch lever refers to the device which will secure the window in the closing position. The latch lever, as its name indicates, secures the window from the outside area, but not from the inside since it can be opened from the inside or the secure side of the window without major difficulty. This will also be the case if the window is broken from the outside and the latch opened merely by putting a hand through the broken window and lifting the latch.

Window latch levers can be made of bronze, cast iron or plastic (the latter common with the latest window frame designs).

Type of glass

The glass in a window can be fitted with protective film or be just plain glass. The latter is the more traditional and common form of glass used in windows. However, window safety film is becoming a popular item in new housing developments.

Intruder alarm system and monitoring devices

Intruder alarms have the ability to function on their own as a separate security system (stand alone). Monitoring devices are the link between the intruder alarm system, the homeowner and the armed reaction company. The latter relies on the intruder alarm to activate in order for the relay device to send a signal to the owner or the armed response company or both simultaneously. Each of the mentioned components will be discussed separately.

Intruder alarm systems

Intruder alarm systems include a main panel component consisting of an electronic circuit board with the ability to report on hardware activities. An example of this is where a passive infra-red detector in the lounge will report back to the alarm panel that there was movement detected. The alarm panel will then go into an alarm violation condition, but only if the system has been armed and an unauthorised person enters the lounge area (see Picture 21).

Picture 21: Example of an interior passive infra-red detection device



The alarm panel will then activate an electrical current pulse and send it to one of the monitoring hardware devices connected to it.

Monitoring devices

A radio frequency device is one of the most commonly used devices implemented by armed reaction companies to report on alarm activities. Such a device will react to the electrical pulse sent from the intruder alarm panel and will transmit a radio frequency signal to the armed reaction response control (radio) room.

SMS units working on the cell phone network can also be used as a monitoring device and have the ability to send a signal directly to the homeowner's cell phone when there is an alarm activation (see Picture 22).

Picture 22: Example of monitoring devices



A standard component of an intruder alarm system will be a siren which will sound when there is an alarm violation condition i.e. activation, and is therefore also regarded as a monitoring device.

CONCLUSION

Describing the various types of residential security hardware, their integration with other security hardware and how they operate can become technically quite complicated. However, this section dealt only with the most commonly used hardware and the way they operate was simplified to a very basic level.

The integration of the different hardware can be effectively undertaken if one can conceptualise the main purpose of each, namely their ability to be compatible with other hardware and whether each is the correct choice of hardware for the given situation at a specific time.

It is important that the various hardware is categorised as:

- Physical;
- Technological; and
- Procedural.

The hardware should provide the homeowner with the following attributes:

- Deterrent;
- Detection; and
- Delay.

Provided that the hardware is correctly categorised and the various attributes²⁵ are known and understood, one can manage it properly through the security risk management model.

The next section will deal with the various types of residential security hardware and how the security risk management model has been adapted to the residential security environment.

²⁵ The attributes are deterred, detect and delay.

Chapter 5

TECHNOLOGICAL, PHYSICAL AND PROCEDURAL RESIDENTIAL SECURITY MEASURES AND THE SECURITY RISK MANAGEMENT MODEL

INTRODUCTION

Security concepts and differentiating between them can be challenging and at times cause problems when misinterpreted. The researcher these problems daily in providing project management for security system's implementation between the front end user, being the client, the consulting engineer and the installer.

Understanding the various residential security concepts, how these systems integrates with other systems and what attributes it can provides, will provide a better understanding towards how it can be properly managed through the use of the security risk management model.

The following sections will provide information to guide the reader on and overview of the various residential security systems and the categorising of the measures.

AN OVERVIEW OF RESIDENTIAL SECURITY MEASURES

The researcher has been very closely involved and associated with project managing various security projects, usually at the early planning stage of such projects. Moreover, the researcher also has experience in giving advice on various security systems and their integration into an overall security measure.

The following key concepts were used by the researcher as a guideline in the planning and recommending of residential security measures:

- Technological security measures;
- Physical security measures; and
- Procedural security measures.

TECHNOLOGICAL SECURITY MEASURES

One should be familiar with the product before making any recommendations on the implementation of the product. This was one of the key issues for the researcher underlying the motivation for undertaking this specific research project.

The technology used in the security industry is very advanced, especially if we look at the various products integrated with our daily management tools like the SMS network.²⁶

Making use of technology in the residential security environment starts with the security initiative in the neighbourhood i.e. the bicycle patrol concept, which as an example can be managed by a patrol reporting system. In other words the use of technology can be incorporated into basic security measures thereby making simple, cost-effective measures like managing a bicycle patrol routine sheet and incident reporting system more efficient, effective, managed and centrally controlled by the integration of the latest technology.

Such a patrol monitoring system is able to immediately report to the private security company, managing such a system, if the bicycle patrol failed to report in as scheduled, i.e. completed a patrol route within a certain time frame, completed the patrol route, but missed clocking in at certain check points etc. This in turn could result in the dispatch to the area where the bicycle patrol was last positioned of an armed response vehicle. However, it must be remembered that such a neighbourhood initiative ends at the perimeter or main gate of the property owner, this is where the homeowner/occupant's own security system would take over.

The average house can have the following security measures/equipment covering its perimeter (Please refer to Chapter four, which explains and describes these concepts):

- Electrified fencing;
- Motorised vehicle gate motor;
- Electrical striker lock or magnetic lock;
- Closed circuit television camera with normal iris or infrared capability;
- Electronic gate opener keypad;

²⁶ Cellsecure is a company based in Pretoria and one of the first companies locally to integrate the remote intruder alarm with the SMS/GSM network. In 2001 the researcher completed the installers' course in using the SMS communicators and integrates it with the various residential security measures other than also assisting the researcher in his own business of integrating SMS communication system into various other business critical units like the Uninterrupted Power Supply Units, Aircon Chiller Units etc.

- Infrared detection beams;
- Magnetic under surface detection loops;
- Security flood light connected to infrared sensitivity sensors; and
- Remote panic buttons.

Furthermore, these and additional measures/equipment can be extended into the property (inside of outer perimeter boundary). On average a residence might also have the following installed in the garden area:

- Infrared motion detection beams;
- Outdoor infrared passives;
- CCTV;
- Security flood light connected to infrared sensitivity sensors; and
- Remote panic buttons.

Moreover, an average house can also have the following security measures covering the immediate house area:

- Door guards/contacts;
- Curtain passives;
- Glass break detectors;
- Infrared motion detectors;
- Remote panic buttons;
- Fixed panic buttons;
- Wired or wireless intruder alarm control panel; and
- Electrical striker lock or magnetic lock on the security gates.

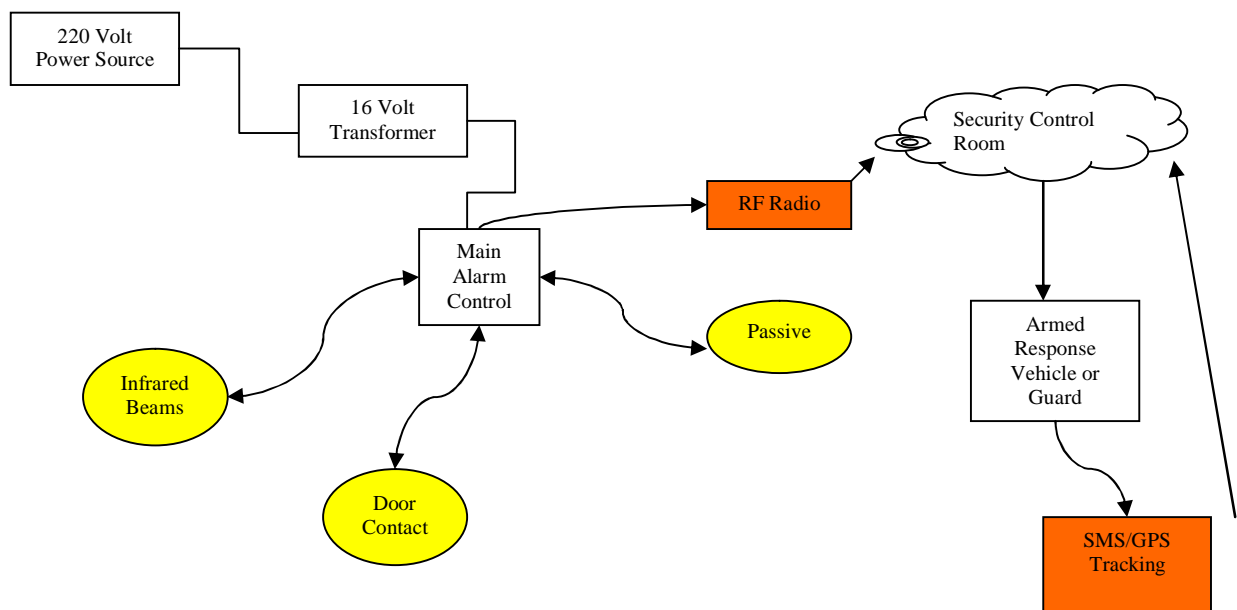
The above-mentioned technological security measures will also further usually be connected to a 220 volt power source via a transformer stepping or converting the 220 volt to a required 12 or 24 volt power supply to the main panel or controller.

The main panel or controller needs then also to be connected to an additional battery backup power source which will ensure that the main panel or controller will have sufficient power supply for at least seven (7) hours during any power failure.

Finally, the controller or main panel needs to be monitored this can be done through a siren facility, RF radio signal to another destination like a security control room, a SMS network to a cell phone - either the owner's cell phone, neighbours, dedicated armed response vehicle etc.

Below is a basic simplified diagrammatic representation of a typical intruder detection alarm system connected to the various detection and monitoring devices.

Drawing 9: Basic drawing of an average intruder detection alarm system linked to detection and monitoring devices



Detection will occur either through a passive, sensitivity loop on an electrified fencing, infrared beam, glass break detector or door contact.

The above-mentioned monitoring devices will then enable the alarm panel to send a common alarm violation condition via the siren and RF radio connection to the homeowner, guards and the armed response company control room. In such a system early detection right on the perimeter becomes doubly important. Therefore, an integrated system, for instance with electrified fencing combined with infra-red detection beams, will play a vital role in this regard.

However, overall technological security is still dependant on the physical and procedural security aspects of any security measure. Accordingly the deterrence factor (or component) is as important as that of detection. In addition, procedural measures/policies form the third component in any effective security measure since they will (or should) ensure that regular maintenance (upkeep) is instituted, and that enhancements (improvements and latest equipment and measures) are also implemented. This will help to combat the latest or new crime trends or changes to criminal modus operandi. As a rule of thumb then, security measures should constantly change in order to combat the latest crime modus operandi.

The researcher had a discussion with a technical manager at a very prominent private security company. According to him in November 2005 the company had experienced a large number of residential burglaries where entry was gained through the roof area and the intruder alarm panels were completely removed.

This modus operandi shows that the traditional approach of just looking at the immediate house interior, shifted to incorporate the ceiling/attic areas within a house as well. Infra-red beams do experience problems in functioning in these areas due to heat fluctuations, dust, insects etc. Dual technology²⁷ has been successful in the researcher's experience accommodating the mentioned variables²⁸.

PHYSICAL SECURITY MEASURES

Physical security measures can be categorized as a typical delay measure, have a deterrent capability or a combination of both.

When giving advise on technological, procedural or physical aspects of security to uncertain clients regarding the installation or implementation of new or additional security measures and equipment, a standard piece of advice has been devised by the researcher, namely along the following broad lines:

²⁷ Dual technology is where both microwave and infra-red technologies are combined in one detection device.

²⁸ The researcher has his own company called 18T Risk Solutions and specializes in designing and project managing security systems for the corporate and security estate environments.

“You want to keep criminals out of your home and not invite them in. By the time a criminal breaks a window, the possibility is greater that it will be too late to detect, stop or apprehend him/her. The average response company will take between five and ten minutes to respond and hopefully will have access to your premises when they arrive.”

Accordingly, an effective security system must look to delay an intruder (barriers), to detect them as early as possible, and to have a quick response, so that they can be apprehended if possible before they even get close to or inside a residence. With these basic security principles in mind an average house can have some, a combination of or even all of the following in terms of perimeter and neighbourhood security:

- Palisade fencing;
- Barbed wire or razor wire;
- Wall spikes;
- Manual vehicle gate lock;
- Anti-lifting devices on a vehicle gate;
- Physical barrel lock on pedestrian gate;
- Dogs;
- Patrol guards;
- Armed response officer and vehicle;
- Boomed-off area;
- Thorn bushes;
- Security floodlights; and
- Security signage.

The average house can have the following physical security measures in the inner perimeter or garden area:

- Dogs;
- Security floodlights; and
- Beams.

The average house can have the following physical security measures in the immediate house area:

- Window burglar proofing;

- Barbed wire inside ceiling void;
- Safety gates;
- Door locks;
- Solid doors; and
- Dead bolts.

Physical security is also dependant on technological and procedural security to ensure their effectiveness. Here an example on the technology side would be where a security gate needs to have a door monitor in order to report via the intruder alarm panel when it has been forced open.

The procedural side of this example will be to have a maintenance plan in place where the intruder alarm will be serviced regularly to ensure that the door contact on the security gate will be functional at all times.

PROCEDURAL SECURITY MEASURES

Procedures guide us in terms of what to do when, where and how. In practical terms, when giving advice to clients the researcher based his procedures and policies largely on his own experience in responding to residential burglary scenes.

Procedural Security can be implemented at any stage of a security project, whether it is at the planning phase, the implementation phase or the maintenance and management phase. It must, however, be remembered that without proper procedures, any security system will not be utilized in a cost effective manner to its fullest potential.

Security is a cost centre to most companies. The outcome is not very visible in comparison, for instance, to sales for the month or clientele served during a week etc.

Lack of maintenance of a security system is of concern to most security practitioners and consultants in the security field. Maintenance is in fact a very important procedural security measure and without this, security systems get neglected and in the majority of the cases and this are experienced by the researcher's own experience in undertaking security audits and providing installation advice for security systems. It was often observed that security systems

were either “switched off” because of “continuous false alarms” occurring and as a result viewed as an “unreliable system” by the home owner in the specific scenarios.

Procedural security measures in general do not cost anything. An example here would be the testing of one’s alarm at least once a week and having the armed response company report on whether their control room had received the RF radio signal.

There are other security procedures for homeowners to implement that are also simple enough in themselves, and take minimal time and effort, such as closing see-through curtains during the day time in order to conceal any routine activities and movement from the view of possible burglars.

Furthermore, regular security audits (i.e. check ups or a review of existing security measures and operations in a house) by a security professional should be part of procedural security, even if only to ensure an independent outside view of one’s security system. Homeowners have a tendency to overlook “unnecessary” aspects such as “we already have a keypad so why do we need another if we can arm and disarm the alarm through this keypad placed at the (conveniently) bottom of the sleeping room passage. However, in such a situation any good security professional should highlight the fact that the entry delay,²⁹ with a keypad, for instance right next to the front door, will be much shorter in relation to the keypad at the main bedroom. The longer your entry/ exit delay, the more time the perpetrator can have in removing appliances and the homeowner’s personal belongings and thereafter still managing to flee the scene without being detected or apprehended. Therefore, a security professional needs to be flexible in what their approach might be and what type of advice will be given according to the individual system since each is adapted and integrated into the local residential security environment, i.e. each system is configured and set up to fit into specific needs and homeowner’s wishes, as well as operating procedure requirements.

The security risk model³⁰, as used by the Department for Security Risk Management at UNISA³¹ has reference to the residential security environment and like with the security

²⁹ ‘Entry Delay’ is the time it will take one to disarm the alarm when entering the house to avoid the alarm going into an alarm violation condition.

³⁰ Unless otherwise stated the information below in this section is based on an extensive interview with Mr. F.C. Rogers, (30/11/2006), currently the acting programme director for the Department Security Risk Management at UNISA, who developed a South African adapted Security risk Management Model, wherein the background to

industry in general. Each aspect of the model will be discussed in relation to the residential security environment and the practical application thereof.

SECURITY RISK MANAGEMENT MODEL INTEGRATED INTO THE RESIDENTIAL SECURITY ENVIRONMENT

Background to the security risk management model

In the interview with Charles Rogers (2006, Nov 30) the background to the security risk management model was explained in detail.

In the late 1980s, Stellenbosch University took it on themselves to present a course in Safety Risk Management. There was a good deal of feedback from security managers at the time, attending the course and also by security managers in their advisory capacities applying the safety risk management model in their various security environments.

It was found that every security manager had their own management style due to their various backgrounds with either law enforcement agencies, intelligence services, the military and commercial private sector. A need for a generic risk management model for the security industry was then identified. This model had to adapt to all these various security management styles.

In the new millennium, the following issues were raised within SAPS, which again highlighted the importance of a generic risk management model for the security industry:

- What are the criteria to management and control crime;
- Crime at the time was unacceptably high according to the annual SAPS statistics; and
- SAPS do not utilize their resources to the maximum in order to combat crime.

The problem of high levels of crime became a facet of everyday life in South Africa, influencing many people's life decisions. At the former Technikon SA, where the Security Management Programme Group – established in 1996, developed a security risk management model. The model was primarily developed to ensure that all National Diploma and BTECH

the security risk management model was outlined and explained in detail. Additionally the description and outline of the model was supplemented by the researcher's own experience as well as attending the UNISA annual BTECH Autumn School where the model is taught in detail.

³¹ Formerly the Programme Group: Security Management, at Technikon SA prior to the merger on 1 January 2004 with UNISA.

degree candidates will be able to adapt the model in the various working environments, after completion of the autumn schools held at UNISA.

The model is developed to assist the security manager in managing and controlling security crime risk with a cost beneficial approach. This needs to be compliant with good and healthy financial principles. It should also be complaint with good security practice providing the following security principles:

- Deter;
- Detection;
- Delay;
- Deflection; and
- Detain.

The risk management model is also based on the following formula:

$$Risk=Probability \times Impact$$

Security risk is prioritized according to the probability that a specific security risk occur, and if it occurs, the impact of it measured in potential losses or damages.

The model is currently viewed as a developing and changing work-in-progress being continually changed adapted due to the various approaches within the Security Risk Management Department at UNISA, on how it is applied, further applications and also further development and research to provide a model which is developed through scientific methodology.

Application of the security risk management model in the residential security environment

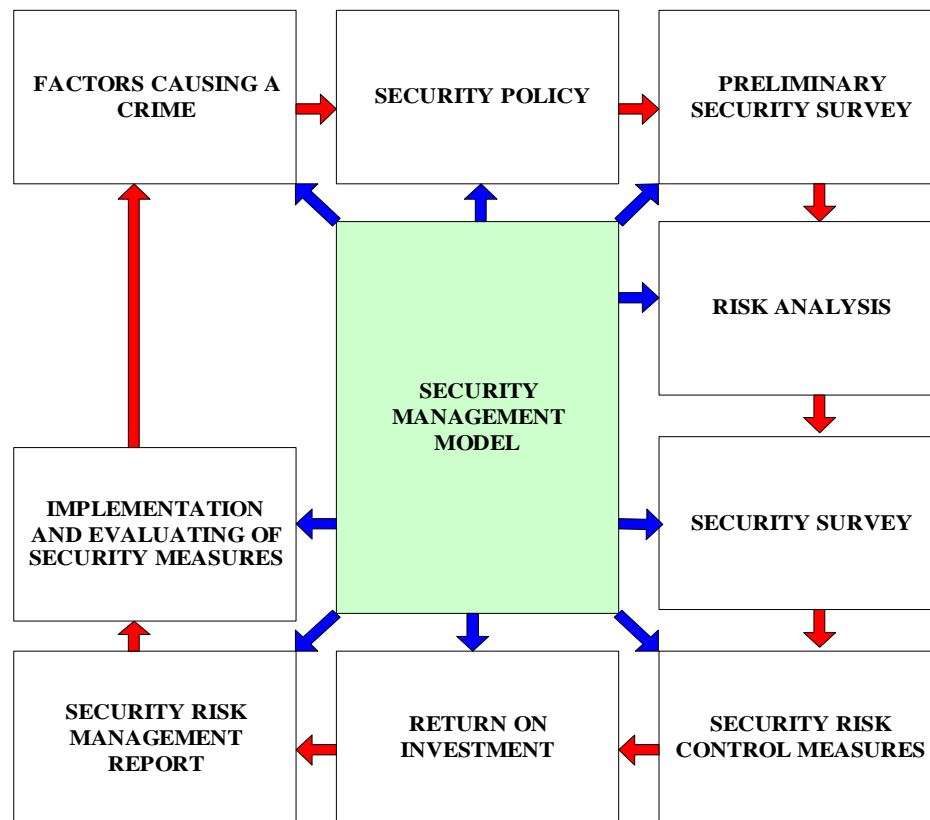
To make more meaningful analyses security professionals can refer to the following security risk management model in order to assist them in their work, particularly in the security risk management environment. This model typically is made up of a number of steps, namely:

- A review of factors causing a crime;
- The provision of a security policy;

- A preliminary review (security survey) of the existing situation at the site (in this study a residential burglary);
- Application of analysis to the observed situation (risk analysis);
- A full security survey (security audit);
- Making recommendations for the implementation of security measures (security risk control);
- Calculating costs and cost-effectiveness of recommended measures (in large projects this can include a return-on-investment exercise);
- The writing of a security report, which all of the above are included) and presenting to client;
- If these are accepted and implemented then the security service provider also needs to evaluate (at a later stage) the effectiveness (and impact – negative or positive) of the implemented measures;

Below is a diagrammatic example of these steps in the security risk management model (developed by the Department of Security Risk Management at UNISA) and often followed by professional security practitioners in South Africa.

Diagram 1: Security risk management model



(Rogers, 2006: 2)

Each of the units in this model will be explained separately in terms of the residential security environment and how each would be important to ensure that any security system will be designed and implemented in a cost effective manner using a holistic approach.

Factors causing crime

The model is premised on an understanding of crime, its causal factors and the consequences, i.e. what happens if it is left unattended. In the residential security environment there are specific factors that contribute to residential burglaries being successfully perpetrated.

These factors can arise particularly when not adhering to generally accepted basic principles of security in that any one security measure, which has not got one of the following values or a combination thereof:

- Serve as a *deterrent*;
- Provides a *delay mechanism*; and
- Provides a *detection* capability.

Furthermore, even if the security system contains (or demonstrates) either one or a combination of the above-mentioned principles it should still adhere to the following criteria (as far as possible):

- Utilise a cost effective design;
- Be implemented as accurately as possible (i.e. stick to the specifications as required by the designed system);
- Have effective and correct use thereof;
- There must be regular maintenance of the security system; and
- Upgrades and enhancements of the security system must occur regularly.

If any or all of the above are not adhered to their absence could well be a factor leading to a residential burglary occurring.

Security policy

A homeowner approaches a private security company to either provide him/her with a security solution and/or monitoring facility to protect a residential property as a whole or in the immediate house area.

The contract between the homeowner and the private security company in essence represents a 'security policy' which is regulated within the law, the guidelines and regulations of the Private Security Industry Regulatory Authority (PSIRA).

This contract also provides the mandate to the private security provider to assist and/or provide the homeowner with one or other combination of the following:

- Recommendation (advice);
- Provision and implementation of the security measures;
- Management (and possibly maintenance as well) of the security measures; and
- Response to security threats.

Risk analysis

The residential burglary then gets analysed in terms of where it originated (the area of entry), the motivation (the reason why it was perpetrated), the consequences or impact (what was

removed from the premises), and the area of termination of the burglary (i.e. where the property was exited, what was used to get away from the property, e.g. mode of transportation or escape route.

(By making use of the security risk management model steps, this specific project hopes to provide insight on such issues as how the crime was perpetrated, how the burglars gained entry and exited, what motivated this specific crime etc. This will be done by using not only a security audit at the site of the burglary but also analysing information gathered by means of the victim interviews and docket analysis on where the crime originated and the motivation. In addition, it is also hoped to provide the reader with information on how the crime was terminated through descriptive mapping.)

Security survey

The residential security audit (survey) at the homes of victims would be beneficial in providing a residential security audit format that can be used to guide the security professional in the following ways:

- Providing cost effective advice on technological, physical and procedural security measures;
- Providing advice which will adhere to the principles of deter, detect and delay; and
- Provide advice which will assist with complying in terms of effective implementation, use and maintenance.

Security risk control measures

The security risk control measures (i.e. the systems and equipment actually installed and implemented) in the residential environment should be able to provide the homeowner with acceptable levels of deterrence, detection and delay.

Residential security measures are a very expensive market and mostly focus on and cater for the upper income market.

Return on investment

The return on investment for the homeowner can be in the form of:

- Having a higher valued property;

- Ensuring a safer environment for the family members and occupants and lesser probability of being exposed to intrusion of one's person space (privacy invasion); and
- Securing property of sentimental and irreplaceable qualities (photo albums, jewellery, family heirlooms etc.)

All the above have merit in that they are probably of primary importance to a homeowner.

Investing in residential security measures can contribute to the above but usually only if the security measures are implemented according to the principles and levels as outlined above.

Security risk management report

The homeowner seeking to install and implement new or additional security measures needs to be provided with a recommendation/s which will be user friendly and will prioritise residential security measures in terms of importance.

The report should focus on providing cost effective recommendations in terms of the following layers of defence:

- Immediate neighbourhood around the residential property;
- Perimeter (outer boundary of property);
- Inner perimeter (between outer boundary and actual residence, often the garden area);
and
- Immediate house area.

The report should also cover the following aspects or dimensions of security measures within each of the layers of defence:

- Technological;
- Physical; and
- Procedural.

The report should be clearly and concisely written in order to provide the homeowner with an understanding of the importance of every security measure in terms of providing levels of deterrence, detection and delay and how each one is integrated with the other.

Implementation and evaluation of the security measures

The evaluation of the implementation of residential security measures can be based on the following already mentioned criteria, namely:

- A cost effective design;
- Accurate (correct) implementation;
- Effective and proper use (of all systems, procedures and components);
- Regular maintenance of the security system; and
- Regular upgrade and enhancements of the security system.

The evaluation of a system implementation should not only confine itself to the planning, implementation and use of it, but also re-evaluate the systems in terms of its level of performance (impact) and effectiveness.

The level of performance can be determined, for example, by activating the intruder alarm in all modes.³²

When an alarm is activated it should only indicate an alarm violation condition if human movement is detected and not for instance by any pet (or small animal like a mouse) movement.

The effectiveness of an alarm can be determined by conducting an audit to establish whether all areas are still covered in terms of passive infra-red detectors and no areas left uncovered (i.e. 'dead' spots) due perhaps to recent renovations done or moving of furniture.

Maintenance and upgrade

In this research study the researcher added an additional step to the security risk management model, namely maintenance and upgrade.

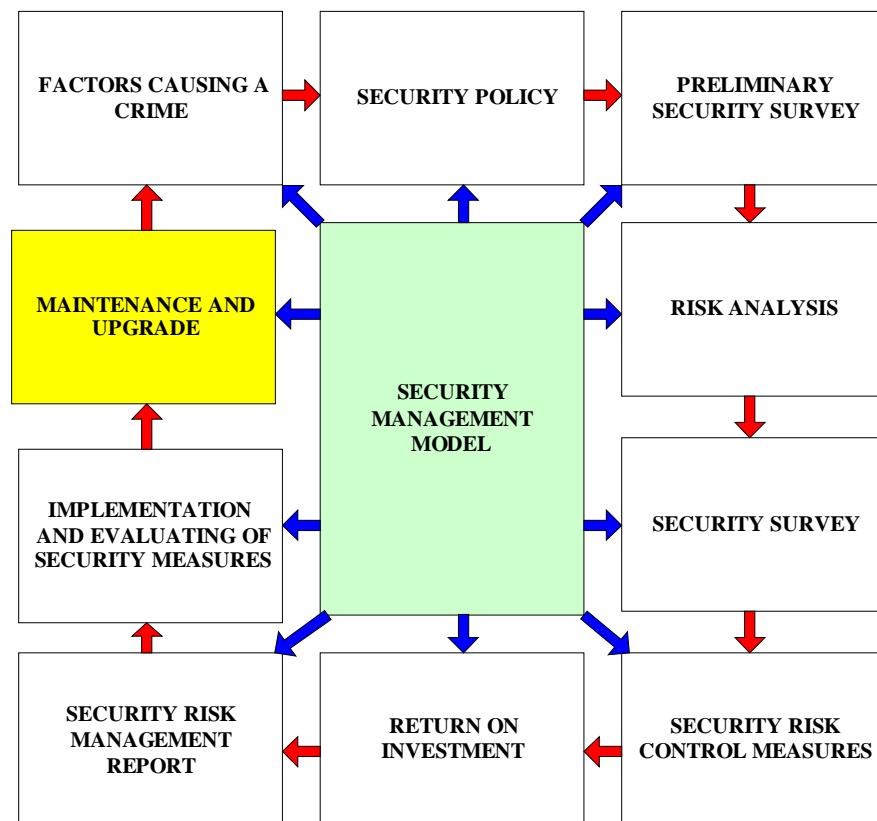
This section is vital to ensure that the audit report from the evaluation will be implemented in terms of recommendations, and that the system continues to perform at those optimal

³² Modes in this context refers to either the 'stay mode' where there will be occupants at home and where all other areas except the sleeping areas will have immediate alarm detection capabilities and the other mode will refer to the 'away mode' where there are no occupants inside, i.e. the house will be empty and all areas within the house will be covered by immediate alarm detection capability.

performance levels as evaluated and specified, i.e. the system does not malfunction or levels fall off.

Below is the adapted Security Risk Management Model – diagram, for the residential security environment, which shows the inclusion of the additional component (or step), namely maintenance and upgrade.

Diagram 2: Security risk management model adapted to the residential security environment



The maintenance of the security system is vital for increasing long-term operation capability and in fact can increase the life cycle considerably. The depreciation on value for the electronic equipment is about 25% per annum which therefore would result in a four-year life cycle prediction. The life cycle can also be increased according to the type of conditions in immediate environment of the system. For example, being sited in a closed dust free room with temperatures below 22 degrees Celsius; or alternately servicing mechanical parts regularly, for instance oiling the gate motor mechanics biannually to increase the life cycle of the vehicle gate motor.

The rate of upgrade (replacement of certain components) of the security system will either be based on the life cycle completed and/or environmental conditions/changes that might impact on the length of this life cycle. For example, in practical terms, because of environmental impact and life cycle the cable infrastructure on an electrified fencing system should be rewired every four to five years to ensure that the resistance on the electrified fencing will be low. This will ensure that an acceptable electrical current will be transferred through the fencing. Low voltage will cause the electrical fencing to go into an alarm violation condition.

In addition, the environment might change quite dramatically i.e. vegetation increase in size, and therefore might result in the security system not providing an effective range of cover as before.

Another example of changes would be home improvements by for example adding additional buildings to the existing home infrastructure; the security system should then also be upgraded in order to cover the additional areas. In such a case the intruder alarm should also be changed to a bigger capacity to accommodate the extra infra-red detection passives that would be needed to be put in.

CONCLUSION

The research project was adapted in order to include a security risk management approach to the analysis of the collected information. The model used was the one outlined above and includes the adaptation by the addition of an extra component (step), namely the aspect of regular maintenance and upgrading of components. This allowed for a more specific focus to the research problems and the results achieved. This research project is arguably the first of its kind in South Africa focusing, as it does, on the impact of residential security measures and not just on residential burglary as a crime problem.

Furthermore, the research methodology is aimed at providing as much as possible information via the findings supported by the formulation of specific and practical recommendations, all of which can be integrated in to the adapted security risk management model thereby adding value to residential security risk audits.

Chapter 6

RESIDENTIAL BURGLARY AND RESIDENTIAL SECURITY MEASURES IN PARKHURST AND WESTCLIFF: CONTEXTUALISATION

INTRODUCTION

Crime has a tremendously negative impact on all aspects of life in South Africa, inter alia the economy, the country's global position on the list of safe countries and more importantly, on the community who would like to create a country where our children can grow together in peace and prosperity.

The extent of crime as revealed by statistics is one way of how one can either form a picture on generalising the situation in the country as a whole, or it can be used to focus on priority crimes and existing contingency plans to manage and counter it.

The researcher has experience in crime statistics and also how they can be used to the benefit of the community.

The approach the researcher uses is to focus on the priority crimes and then plan counter security measures accordingly. This approach has demonstrated that it can also deal indirectly with other less prioritised crimes and results in local crime levels. The Westcliff scenario is an example where the researcher in his daily work,³³ implemented bicycle guarding patrols, focussing on providing visible policing and also allowing home owners to have "eyes and ears" in the immediate residential entry/exit points in the attempt to reduce hijackings and driveway robberies.

The following sections will focus on the latest official crime statistics, the various residential security measures, which can be deployed in combating residential burglary and the two population areas in relation to residential burglary.

³³ The researcher had to focus on the residential environments of top executives, working for same company as the researcher. This would give researcher ability to have monitoring and contributing abilities within the residential area and not only the residential property itself.

THE POLICE AND CRIME DETECTION

The South African Police Service (hereinafter referred to as the SAPS) annual crime report for 2002/3 indicated that there was an increase and decrease of some crimes nationally in the detection and disposal of crimes respectively for the period of April 2002 to March 2003 (SAPS, 2002/3: 12).

Generally it can be stated that any increase in the detection of crime is to a large extent dependant on the actions of the police, particularly with the use of crime intelligence combined with strategic crime awareness and detection operations (SAPS, 2003: 12)

However, crimes such as residential burglaries are to a greater extent dependent on detection through residential security measures, the private and public partnership amongst private security companies, involvement of the Community Police Forums, (hereinafter referred to as CPFs) and, only as the last link in the detection chain, the actions of the South African Police Service, since they are largely reactive (i.e. responding to reported crime) and not proactive/preventative in any true sense of the word.

The SAPS 2002/3 Annual Report clearly states that the police and government cannot on their own effectively deal with or completely reduce crime. For any meaningful reduction of crime to occur all levels of the government and civil society must work together, i.e. fully co-operate, in order to combat, reduce and ultimately prevent crime (SAPS Annual Report, 2002/3: 5).

The descriptive mapping used in this study also aims in providing SAPS, private security companies and CPFs with vital information in strategising on crime prevention initiatives.

However, what then is the current situation regarding the incidence of burglary in the policing precincts, in the area, in the province and nationally?

BURGLARY AND CRIME STATISTICS IN SOUTH AFRICA

According to Welman and Kruger (1999: 15), a research project should be based on a current and practical problem.

Accordingly, the residential burglaries forming the focus of this report are the current and practical problem. Furthermore, the presence of residential security measures and the effective implementation thereof is the phenomena in this report.

The following paragraphs will focus on residential burglary crime statistics within:

- Johannesburg policing area with specific reference to the Parkview policing area;
- Johannesburg policing area in total;
- Gauteng provincial policing area in total; and
- South Africa national totals.

These crime statistics are for the review period from April 2001/March 2002 to April 2006/March 2007 (the latest crime statistics available on the official South African Police Services web page <http://www.saps.gov.za>).

PARKVIEW POLICING AREA CRIME STATISTICS

Burglary at residential premises in the Parkview policing area³⁴ remains the highest (608 cases) categorised crime for this Parkhurst Policing Area in the 2006/7 SAPS crime statistics year with theft of motor vehicles and motor cycles (414 cases) and theft out of or from motor vehicles (534 cases). (Refer to Table 3 in particular see yellow highlighted statistics for these specific frequencies and crime categories). “Theft not mentioned anywhere else” – category, hasn’t been included due to not specifically categorised as with the mentioned three highest category crimes mentioned. The crime category of ‘all theft not mentioned elsewhere’ remains the highest non-categorised crime (806 cases).

³⁴ Westcliff and Parkhurst are two residential areas within the Parkview policing area.

Table 3: Crime statistics for the Parkview policing area: March 2001/April 2002 to March 2006/April 2007

Crime	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07
Murder	8	2	1	3	2	5
Rape	21	8	5	15	8	11
Attempted murder	12	15	15	11	14	17
Assault (GBH) (with intent to inflict grievous bodily harm)	69	55	57	49	47	41
Common assault	108	119	108	101	113	112
Robbery with aggravating circumstances	310	296	283	273	281	411
Common robbery	160	142	98	99	72	109
Indecent assault	2	6	5	2	5	1
Kidnapping	3	0	0	0	0	0
Abduction	1	6	6	2	1	5
Neglect and ill- treatment of children	0	3	2	3	0	1
Culpable homicide	7	9	7	7	4	7
Public violence	0	0	1	0	0	1
Carjacking (Sub Category of Robbery Aggravating)	69	69	49	48	27	25
Truck hijacking (Sub Category of Robbery Aggravating)	7	1	0	0	0	0
Bank robbery (Sub Category of Robbery Aggravating)	2	1	1	0	2	1
Robbery of cash in transit (Sub Category of Robbery)	0	0	0	0	1	0

Aggravating)						
House robbery (Sub Category of Robbery Aggravating)	0	50	51	62	54	110
Business robbery (Sub Category of Robbery Aggravating)	0	24	21	10	15	17
Arson	4	5	1	5	4	3
Malicious damage to property	334	274	188	150	200	240
Crimen Injuria	27	15	15	19	23	15
Burglary at residential premises	723	693	863	849	727	608
Burglary at business premises	106	73	67	82	121	146
Theft of motor vehicle and motorcycle	606	659	717	630	459	414
Theft out of or from motor vehicle	959	1104	888	585	577	534
Stock theft	0	0	0	0	0	0
Illegal possession of firearms and ammunition	18	7	11	14	11	9
Drug related crime	10	23	14	16	30	23
Driving under the influence of alcohol or drugs	18	10	28	19	18	27
All theft not mentioned elsewhere	934	1054	1040	864	903	806
Commercial Crime	127	171	138	110	94	114
Shoplifting	29	16	25	8	17	19
Totals	4674	4910	4705	4036	3830	3832

(SAPS: Crime in the RSA. <http://www.saps.gov.za>. Accessed 28 October 2007)

According to the table above residential burglary remain within the first three highest priority crimes.

According to Supt Nandi Moodley, the station commander at the Parkview police station, the SAPS in the area focus on the priority crimes (for Parkview) such as residential burglary in an attempt to reduce other associated crimes. As a result the Parkview policing area has shown a steady reduction within in three months of 10 – 20% in residential burglary since his appointment in 2005 as the station commander at the Parkview police station (Moodley, 2005).

The immediate question that arises here is whether the residential burglary statistics for the whole of the Johannesburg policing area, for the Gauteng Province and nationally (South Africa) reveal the same results of being in the top three (highest by frequency of incidence) crimes.³⁵

JOHANNESBURG POLICING AREA CRIME STATISTICS

According to the SAPS crime statistics for 2006/7, burglary at residential premises for the whole of the Johannesburg policing area is the third highest (11 668 reported cases) in terms of reported crimes within categorised crimes. (Refer to the yellow highlighted areas in Table 4 in particular see yellow highlighted statistics for these specific frequencies and crime categories).

Table 4: Crime statistics for the Johannesburg Policing Area: April 2001/March 2002 to April 2006/March 2007

Crime	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07
Murder	948	971	729	694	598	611
Rape	1700	1612	1506	1542	1548	1393
Attempted murder	1228	1619	1406	1135	1075	1097
Assault (GBH) (with the intent to inflict grievous bodily harm	8042	8927	8929	9244	9120	8595
Common assault	9503	11089	12594	12659		
Robbery with aggravating circumstances	15506	18530	18721	17310	15505	16608
Common robbery	7512	7896	7215	7289	6134	6369
Indecent assault	238	316	405	384	344	356

³⁵ Parkview SAPS is part of the larger policing area: Johannesburg, which is one of seven policing areas for the whole of the Gauteng Province.

Kidnapping	291	162	196	178	152	199
Abduction	129	274	275	271	267	208
Neglect and ill-treatment of children	87	205	347	321	289	308
Culpable homicide	424	412	384	372	436	439
Public violence	13	35	46	41	46	52
Carjacking (Sub Category of Robbery Aggravating)	2679	2990	2634	2233	2112	2332
Truck hijacking (Sub Category of Robbery Aggravating)	348	51	52	43	47	54
Bank robbery (Sub Category of Robbery Aggravating)	56	8	8	13	12	29
Robbery of cash in transit (Sub Category of Robbery Aggravating)	16	42	18	19	56	44
House robbery (Sub Category of Robbery Aggravating)	0	1472	1450	1508	1615	2211
Business robbery (Sub Category of Robbery Aggravating)	0	1258	1101	929	1203	1634
Arson	226	232	236	254	218	239
Malicious damage to property	9570	9614	9870	9813	9334	8937
Crimen Injuria	1524	1729	1492	1467	1373	1151
Burglary at residential premises	14908	15033	14970	14379	13713	11668
Burglary at business premises	5306	5064	4462	3534	3618	3711
Theft of motor vehicle and motorcycle	13690	12893	12200	12541	12311	12178
Theft out of or from motor vehicle	17449	16709	14556	12766	12132	10170

Stock theft	9	7	9	3	0	3
Illegal possession of firearms and ammunition	826	908	985	691	577	724
Drug related crime	1968	1796	1512	1657	1853	1766
Driving under the influence of alcohol or drugs	789	782	1007	1286	1655	1751
All theft not mentioned elsewhere	42324	44395	46285	43110	35948	32050
Commercial Crime	8669	8576	8982	8526	9624	10244
Shoplifting	5504	5294	5256	4930	5155	4607
Totals	171482	180901	179838	171142	148070	141738

(SAPS: Crime in the RSA. <http://www.saps.gov.za>. Accessed 28 October 2007)

From the table above it is clear that for the Johannesburg policing area the highest categorised crime is robbery with aggravating circumstances (16 608 reported cases) and the highest and theft of motor vehicles and motor cycles (12 178 cases) second highest for the 2006/7 crime statistic year. From the table it is also clear then that residential burglary still remains within the first three highest reported crimes.

“Theft not mentioned anywhere else” – category, hasn’t been included due to not specifically categorised as with the mentioned three highest category crimes mentioned. The crime category of ‘all theft not mentioned elsewhere’ remains the highest non-categorised crime (32 050 cases).

GAUTENG PROVINCIAL CRIME STATISTICS

The SAPS Gauteng provincial crime statistics for the 2006/7 year (refer to Table 5 in particular see yellow highlighted statistics for these specific frequencies and crime categories) indicate that burglary at residential premises is the highest (65 188 reported cases) categorised crime, followed by common assault with 56 971 reported cases and robbery with aggravating circumstances with 52n 924 cases reported.

Table 5: Crime statistics for Gauteng: April 2001/March 2002 to April 2004/March 2005

Crime	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07
Murder	4779	4830	4216	3611	3434	3666
Rape	12576	12091	11926	11923	11562	11114
Attempted murder	7463	9058	7975	6237	5370	5367
Assault with the intent to inflict grievous bodily harm	54962	54872	52996	50563	48205	47033
Common assault	60468	70151	74322	69790	60776	56971
Robbery with aggravating circumstances	54127	58167	60998	55139	49784	52924
Common robbery	28553	31279	30876	29272	24420	24356
Indecent assault	1655	1833	1960	2007	2001	1970
Kidnapping	1575	955	1015	841	784	884
Abduction	902	1448	1445	1332	1134	1054
Neglect and ill-treatment of children	499	1033	1560	1325	1171	1109
Culpable homicide	2463	2454	2436	2568	2758	2979
Public violence	112	185	147	156	211	178

Carjacking (Sub Category of Robbery Aggravating)	9315	9371	8664	6902	6890	6951
Truck hijacking (Sub Category of Robbery Aggravating)	1794	447	466	454	425	532
Bank robbery (Sub Category of Robbery Aggravating)	142	41	17	38	45	76
Robbery of cash in transit (Sub Category of Robbery Aggravating)	94	141	71	82	143	172
House robbery (Sub Category of Robbery Aggravating)	0	4701	5154	5365	5909	7461
Business robbery (Sub Category of Robbery Aggravating)	0	2625	2305	2073	3068	4322

Arson	1733	1867	1875	1868	1904	1997
Malicious damage to property	39072	43194	45825	43728	42696	42048
Crimen Injuria	10011	10757	10244	9398	7831	6518
Burglary at residential premises	82201	83226	81096	73941	72146	65188
Burglary at business premises	19272	16316	14463	12583	12860	14085
Theft of motor vehicle and motorcycle	47008	43424	41072	39251	41170	41608
Theft out of or from motor vehicle	59926	59077	52950	46842	45436	39177
Stock theft	855	769	771	581	497	519
Illegal possession of firearms and ammunition	3674	4017	4621	3665	3155	3652
Drug related crime	8737	8874	8755	9756	13268	11074
Driving under the influence of	6168	5123	6112	6405		7336

alcohol or drugs					7090	
All theft not mentioned elsewhere	166073	179842	186820	165214	132932	127400
Commercial Crime	24074	23420	24424	23076	24062	26515
Shoplifting	16920	16770	17905	17298	17788	18039
Totals	727203	762358	765482	703284	650925	634275

(SAPS: Crime in the RSA. <http://www.saps.gov.za>. Accessed 28 October 2007)

“Theft not mentioned anywhere else” – category, hasn’t been included due to not specifically categorised as with the mentioned three highest category crimes mentioned. The crime category of ‘all theft not mentioned elsewhere’ remains the highest non-categorised crime (172 400 cases).

Again (as for the Parkview policing precinct and Johannesburg policing area) residential burglary is also within the three highest reported crimes on SAPS provincial level in the Gauteng province.

SOUTH AFRICA NATIONAL CRIME STATISTICS

According to the SAPS 2006/7 official crime statistics at national level, for the whole of South Africa burglary at residential premises is the highest (249 665 reported cases) categorised reported crime, followed by assault with grievous bodily harm (218 030 reported cases) and common assault at 210 057 reported cases for the same year at national level. (Refer to Table 6 in particular see yellow highlighted statistics for these specific frequencies and crime categories).

Table 6: Crime statistics for the RSA: April 2001/March 2002 to April 2006/March 2007

Crime	2001/2	2002/03	2003/04	2004/05	2005/06	2006/07
Murder	21405	21553	19824	18793	18545	19202
Rape	54293	52425	52733	55114	54926	52617
Attempted murder	31293	35861	30076	24516	20553	20142
Assault with the intent to inflict grievous bodily harm	264012	266321	260082	249369	226942	218030
Common assault	261886	282526	280942	267857	227553	210057
Robbery with aggravating circumstances	116736	126905	133658	126789	119726	126558
Common robbery	90205	101537	95551	90825	74723	71156
Indecent assault	7683	8815	9302	10123	9805	9367
Kidnapping	4433	3071	3004	2618	2320	2345
Abduction	3132	4210	4044	3880	3345	3217
Neglect and ill-treatment of children	2648	4798	6504	5568	4828	4258
Culpable homicide	10944	11202	11096	11995	12415	12871
Public violence	907	1049	979	974	1044	1023
Carjacking (Sub	15846	14691	13793	12434	12825	13599

Category of Robbery Aggravating)						
Truck hijacking (Sub Category of Robbery Aggravating)	3333	986	901	930	829	892
Bank robbery (Sub Category of Robbery Aggravating)	356	127	54	58	59	129
Robbery of cash in transit (Sub Category of Robbery Aggravating)	238	374	192	220	385	467
House robbery (Sub Category of Robbery Aggravating)	0	9063	9351	9391	10173	12761
Business robbery (Sub Category of Robbery Aggravating)	0	5498	3677	3320	4387	6689
Arson	8739	9186	8806	8184	7622	7858
Malicious damage	145451	157070	158247	150785	144265	143336

to property						
Crimen Injuria	60919	63717	59908	55929	44512	36747
Burglary at residential premises	302657	319984	299290	276164	262535	249665
Burglary at business premises	87114	73975	64629	56048	54367	58438
Theft of motor vehicle and motorcycle	96859	93133	88144	83857	85964	86298
Theft out of or from motor vehicle	199282	195896	171982	148512	139090	124029
Stock theft	41635	46680	41273	32675	28742	28828
Illegal possession of firearms and ammunition	15494	15839	16839	15497	13453	14354
Drug related crime	52900	53810	62689	84001	95690	104689
Driving under the influence of alcohol or drugs	24553	22144	24886	29927	33116	38261
All theft not mentioned elsewhere	576676	620240	606460	536281	432629	415163
Commercial	58462	56232	55869	53931	54214	61690

Crime						
Shoplifting	68404	69005	71888	66525	64491	65489
Totals	2628495	2747923	2666673	2493090	2266073	2220225

(SAPS: Crime in the RSA. <http://www.saps.gov.za>. Accessed 28 October 2007)

Again note that although the listed crime of ‘All theft not mentioned elsewhere’ remains overall the highest (415 163 reported cases) reported crime in South Africa, this is a non-categorised crime. Accordingly for the purposes of this study it is not taken into account for comparative purposes. Therefore residential burglary still remains within the three highest crimes reported at SAPS national level.

Within this context of the comparison of crime statistics residential burglary should be a priority crime, but in many police stations across Gauteng other more violent crimes (e.g. murder, vehicle hijacking, cash-in-transit heists, etc.) are more often the listed priority crimes. In other words, these are crimes to which priority is given in investigating and allocating resources for solving and dealing with them immediately, even though in strict numerical terms (frequency of incidence) they do not statistically top the list of reported crimes.

For this reason, with specific reference to the crime of burglary, residential security measures should and do form a crucial crime preventative and reduction role by assisting in minimising these incidents and reporting them to the SAPS. This is largely a so-called private security crime detection approach.

EXPLORING RESIDENTIAL SECURITY MEASURES

In the context of the wider research the following (in brief) were some of the aspects of domestic security measures that were explored by the researcher in the course of this study.

Neighbourhood watch

Gated communities or better known as ‘boomed-off areas’ locally, have been under scrutiny for at least the past three years where communities have attempted to get these measures legalized with local government.

Within the context of this study the researcher was very interested to establish whether these kinds of security initiatives can contribute towards reducing the incidence of residential burglaries.

In fact in mid-2003 the researcher had started a patrol concept with the Westcliff Security Community Forum, which mainly focused on bicycle patrols. However, these patrols were not implemented in boomed or gated areas.

This concept did lead to a reduction in violent crimes in the patrolled areas and had successes in detecting attempted trespassing and apprehended suspects in residential burglary cases.

In the interview with Snr Supt Moodley from Parkview Police Station, he advised the researcher that for the years of 2004 and 2005, only four cases and one case violent crime incidents respectively were reported in his policing precinct and not one of them occurred in Westcliff (Moodley, 2005).

Close circuit television systems

In the residential environment, Closed Circuit Television (hereafter referred to as CCTV) is regarded as a system where the resident owner wants to know who stands at his/her main gate or pedestrian gate. (This assertion is based on the researcher's own findings when conducting the residential security audits for this study). However, the researcher also found that this need (seeing who is at the gate) is not effective in the long-term since such a system is not crime prevention or crime reduction effective without any recording and storage of movements (persons) detected.

Therefore, again in the context of this study, the researcher was interested in how CCTV would be more cost effective in the near future for the residential environment and not only effective in looking after the gate and perimeter (by recording movement) but also whether it would be cost sufficient for the corporate, retail and industrial environments.

It must be stated here that there are systems available for the residential environment where the CCTV camera will be able to send the homeowner an e-mail to a computer (say in his/her office) or a SMS to a cellphone with a picture taken of the movement (person) detected.

The use of CCTV and the link to private security companies can also be an interesting topic to ensure that armed response will minimise (reduce) the responding to false alarms and such companies would then only have to respond to definite alarm activations.

Closed circuit systems TV have not been implemented in general due to high maintenance and cost, but they are still a factor that the researcher would like to explore in terms of other case studies and in particular whether they can contribute substantially towards the reduction of residential burglaries.

Perimeter types

The use of palisade verses a solid brick wall as your main perimeter in the domestic security environment proved in this study to always be a topic for interesting discussion between the researcher and various other security specialists and residential homeowners.

Issues such as the “acceptable” height of a perimeter boundary were also another interesting topic in these discussions. For instance the question “should one add electrified fencing to a four meter high wall?” was a question that the research sought to answer.

Electrified fencing

The use of electrified fencing is no longer only applicable for business premises and these days are also used in the residential environment.

Generally the researcher found (from the researcher’s own experience in managing security projects within the residential environments and from the actual research – see research findings chapter for detail) that the implementation of electrified fencing somehow provides the homeowner with a sense of security. In many cases this is the first security measure that gets implemented.

Another topic of research in this study regarding electrified fencing was to see whether a main vehicle gate is covered (protected) with electrified fencing (along the top) and if so, whether this section of electrified fencing is connected properly to the rest of the electrified fencing system in order to ensure continuity in the electrical current.

From the residential security audits undertaken in his working environment the researcher found that in some instances the electrified fencing energizer is not connected to the armed response monitoring radio. The main reason found for this was largely due to the fact that armed response companies would not connect this without the electrified fencing initial installer being present (i.e. to validate the action).

Motorised vehicle gates

The use of motorised vehicle gates is not uncommon and is used by many residential owners. In this study the securing of gate motors and the monitoring of them were a crucial security element to be researched.

The researcher therefore aimed to establish whether these additional security measures on the gate automation system were present at the time of the residential burglary incident.

Pedestrian gates

Pedestrian gates and the level of robustness was a further research point in this study. The use of pedestrian gates by burglars to gain access to a house was also investigated in this research either through the victim interviews or the residential security audits. Here the researcher was interested in exploring whether this was a possibility as the modus operandi in the majority of the cases and especially in the Parkhurst area where wooden doors are still widely in use.³⁶

Infrared beams

Infrared beams and the positioning thereof is a very important and integral part of the residential security system in terms of early detection particularly when the perimeter layer has been bridged by an intruder. In this study it was therefore a focus to establish whether this was present at the time of the residential burglary (selected case study) or if it was implemented afterwards (post-incident), In addition, whether this post-incident implementation had any impact on the reduction of burglaries. Moreover, if infrared beams are present as part of the overall security system at a house whether they detected suspects and also if this (detection) contributed towards any arrests. An ancillary issue for the research being the effectiveness of the infra-red beams and whether new technology will in future reduce false alarms.³⁷

Flood lights

Floodlights and the positioning thereof formed another interesting area of exploration for the research.

³⁶ This particular piece of information is gleaned from the researcher's own observations over the last three years where the researcher had personal experience in responding to burglary crime scenes and found that pedestrian gates were a common point of entry and a hard reality since entry through a pedestrian gate is done with minimal disruption to the locking mechanisms.

³⁷ From personal experience in managing residential security systems the researcher has found that false alarms are common especially in the rainy season and also 'activated' by big birds like the Hadedda bird specie.

Door keys and locks

The management of door keys and locks is another area which the researcher explored in order to establish whether that aspect, for example, regarded as mismanagement³⁸ of keys, might be present during the victim interviews and/or residential security audits.

Windows

Windows and more specifically reference to the types of glass, the location of burglar proofing and the kind of burglar proofing are issues that the researcher dealt with on a regular basis in an effort to convince homeowners on their location and the importance thereof. In terms of the research those aspects dealing with whether burglar proofing is on the secure side, insecure side or non-presence thereof, and whether it would have an impact on the reduction and detection of burglaries, and the successful apprehension of suspects were dealt with in the residential security audits and victim interviews.

Intruder detection alarm systems

Security systems form an integral part of today's residential security market. In many households it is the insurance company that ensures (enforces) the installation and implementation of intruder alarms is the responsibility of the homeowner or responsible tenant. Furthermore, the changing technology and the ever-changing and evolving crime modus operandi ensure that this market (for the increased installation of 'total' security systems) is here to stay.

Moreover, the ever changing technology and the integration and compatibility with existing residential security systems was also of interest to the researcher, particularly of how installers adapt and apply the concept of integrating new systems with older (not only time wise but also technologically dated) existing systems. An example here would be how armed response companies integrate an electrified fencing energiser with an intruder alarm RF radio monitoring device.

In this context one of the researcher's concerns was the level of "after service" that a resident gets when signing an agreement with the armed reaction company. The important question in this context was whether 'armed response companies really provide a quick response? If they

³⁸ Leaving of keys in locks was very noticeable (and visible) with many of the residential burglary scenes visited by the researcher.

do respond within five to seven minutes, will they have access (be able to get in, i.e. have keys to open gates and doors) to the residential property in order to investigate any incidence?

TARGET AREAS

The researcher has a personal interest in the Parkview policing area due to his security responsibilities with the company for whom he is currently working.

The company has many employees including expatriates (citizens of other countries) residing within the Parkview residential suburbs and research in this area will not only enhance the researcher's current experience regarding residential security audits, but also assist with the descriptive mapping techniques used in this study, expanding his information network with local police and community members and enhancing residential security measures with reference to the planning and implementation of and the formulation of final recommendations.

(Please refer to Annexure 2: Map 2: Parkview policing area and the Annexure 3: Parkhurst residential area in this regard.)

Furthermore, the researcher has also been involved with the Westcliff Security Community Forum (please refer to Annexure 4: Map 4: Upper Westcliff security forum area) for the last three years.³⁹ In addition, has advised the community on how to minimise their exposure to violent crimes. (Violent crimes in the area were down to zero for the last two years.⁴⁰)

The real test here would be if the security measures approach will still be that effective in the next two years and, further, would the impact be a real decrease in the Parkview area prioritised crime of residential burglary?

RESIDENTIAL BURGLARY AND SECURITY SYSTEMS

From the researcher's practical experience, burglaries have occurred even after recommendations for the installation of additional security have been made. The researcher has found that burglaries also occur after such residential security measures have been implemented and then not in the predicted manner.

³⁹ Since April 2003 the researcher has been involved on the operations side with the Westcliff Security Community Forum.

⁴⁰ Violent crimes down for the time frame 2004 and 2005

An example of this, from one case of repeated burglary that occurred at the same residence, just a few weeks apart where the victim did not install electrified fencing (as recommended) on the newly installed palisade fence (an identified vulnerability), but instead the burglars gained access by forcing the gate motor open and not climbing over the palisade (as predicted).

In any one burglary there are a number of unforeseen circumstances and conditions that can and might be exploited by burglars. Accordingly, with all these unforeseen predictions research in this specialised private security field is therefore of vital and security importance to all homeowners. As a consequence of these concrete findings in the research, results need to be formulated to ensure more accurate recommendations for the securing of one's property.

One of the questions raised in preventing burglaries is whether crime such as burglaries can be better controlled through environmental design?⁴¹

Naudè & Stevens (1988: 187) state that it is accepted in both police and private security circles that an iron palisade fence encircling your property allows for better observation by those responding to a crime in process on the property or an alarm activation in comparison to having a high concrete wall around one's property. Accordingly, for example, the research results emanating from this study would then focus on establishing what type of perimeter was in place at the time of the residential burglary incident and, depending on type of perimeter fencing, make the appropriate recommendation for that situation.

According to Naudè & Stevens (1988: 188) it is also known that security and protection of equipment has specifically been developed to protect people and buildings. Therefore, such equipment is installed and deployed so as to obstruct and impede (deter) the intrusion of unauthorised people. These would then realistically form a physical and symbolic barrier, which can contribute in preventing crime being perpetrated on such a protected property/house.

Again in this context one of the central research questions was whether security system installers implement such security barriers correctly and do security consultants and the homeowner understand the concepts of "physical" and "symbolic" barriers correctly within the

⁴¹ Suburbs need to have one entry to the area, which will assist community security initiatives with planning and to man only one entry point. This can be an example of environmental design.

various environments where installed, and with the requirements of different routines and the effective implementation and use thereof?

A further research question posed was whether the right strategies (as opposed to mere equipment and security measures) are in place in order to counter the incidents of burglary? Strategies relates to an important finding made by Naudè & Stevens (1988: 190), namely that in 98,7% of the households surveyed, household negligence was probably the single most important cause of theft-related crimes.

In this research project the researcher specifically noted whether the non-use of intruder alarm systems and the reasons given for such non-use (non-activation) relate to negligence on the homeowner side or on the part of the armed reaction monitoring company.

To this end use of a practical risk audit (residential security audit and interview with victims) of burgled dwellings and crime analysis/crime descriptive mapping assisted in the primary aim of assessing security measures at dwellings and residents burgled in the target areas.

According to McGuine *et al* (2000: 5), tactical crime analyses involves the pattern of detection, linkage analysis for suspect crime correlation, target profiling and offender movement patterns. This was the researcher's approach in terms of trying to prove by means of the descriptive mapping whether there are any relationships (linkages), for example, between the location of the victim's property in relation to distance from main entry and exit routes.

McGuine further states that the difference between tactical analyses and strategic analyses is the timeliness of the data (McGuine *et al*, 2000: 5). The data collected in this study can in fact be used for strategic crime analysis due to the data covering a time period of more than a year (2001 and 2002). Furthermore, according to McGuine, (2000: 5), strategic crime analyses involves data covering at least one year and more whereas tactical crime analyses uses data collected over several days or as in the researcher's case, two years of data. As a result the SAPS can well make use of this study (and its findings, results and recommendations) as an example for crime prevention strategies within the two target areas⁴² and possibly the general principles can be applied elsewhere as well.

⁴² Westcliff and Parkhurst residential areas

CONCLUSION

In conclusion to this contextualisation of the research field the final research question that arose was: Do residential security measures have an impact on managing the incidence of residential burglaries?

A specific desired outcome from the research (in reporting of the results obtained through the victim interviews, residential security audits, docket analysis and descriptive mapping) would then be the better and more effective managing of the incidence of residential burglary by adding value in preventing this crime and by contributing towards minimising the possibility of the homeowner being exposed to this crime.

All of the above is further encapsulated within the primary premise of the researcher wanting to provide a basic understanding to all on residential security measures in order for the reader to be able to integrate the results and recommendations into practice with a good chance of success.

Overall the challenge still remains to provide the homeowner with cost effective and practical residential security solutions without compromising the basic security measures which should be in place.

The research findings will now be discussed in the next chapter which will attempt to provide the reader with information which will contribute to assist with describing residential security measures.

Chapter 7

A SECURITY RISK ANALYSIS MANAGEMENT APPROACH TO THE IMPROVEMENT OF RESIDENTIAL SECURITY PLANS USING CASE STUDIES OF RESIDENTIAL BURGLARIES

INTRODUCTION

This chapter will focus on the following in terms of research results:

- Descriptive mapping;
- Docket analysis;
- Victim interviews; and
- Residential audit and victim interview additional notes.

Each of these sections will aim to provide detailed information on the following categories, namely:

- Residential security measures that were in place at the time of the incident;
- Security measures which were implemented post incident;
- Variables in the residential area which might have had a direct or indirect relationship with residential burglary; and
- Any other variables not noted through the docket analysis, descriptive mapping or victim interviews.

DESCRIPTIVE MAPPING

The descriptive mapping phase aimed to determine whether there were any other variables within the vicinity of the victim locations.

The following focus areas for analysis and identification of possible variables were examined by means of the descriptive mapping process:

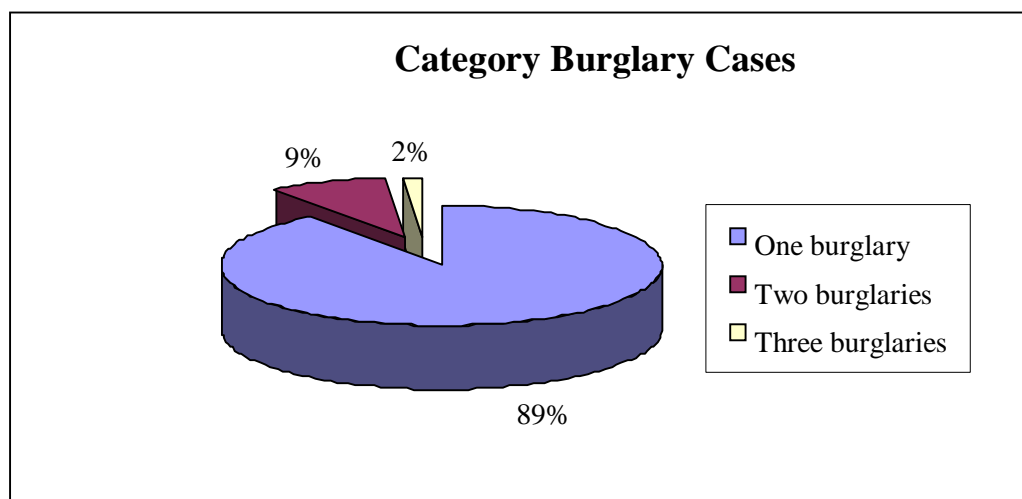
- Quantifying the incidence of burglaries committed at residences of victims within a grid;
- Total number of burglaries committed within a grid;

- Grid location in relation to community entertainment places, business property and open unoccupied property;
- Quantifying victim location in relation to other victims within same grid reference;
- Victim location in relation to main access roads;
- Victim location in relation to dead-end roads;
- Quantification of dead-end road descriptions in the same reference grid where victims were located; and
- Quantifying victim location in relation to street location within a grid.

Quantifying the incidence of burglaries committed at the residences of victims within a grid

The following graph quantifies the burglaries in the various categories of one, two and three burglaries committed at victims’ residences for both the Parkhurst and Westcliff residential areas:

Pie Chart 5: Burglary incidence categories for Parkhurst and Westcliff residential areas



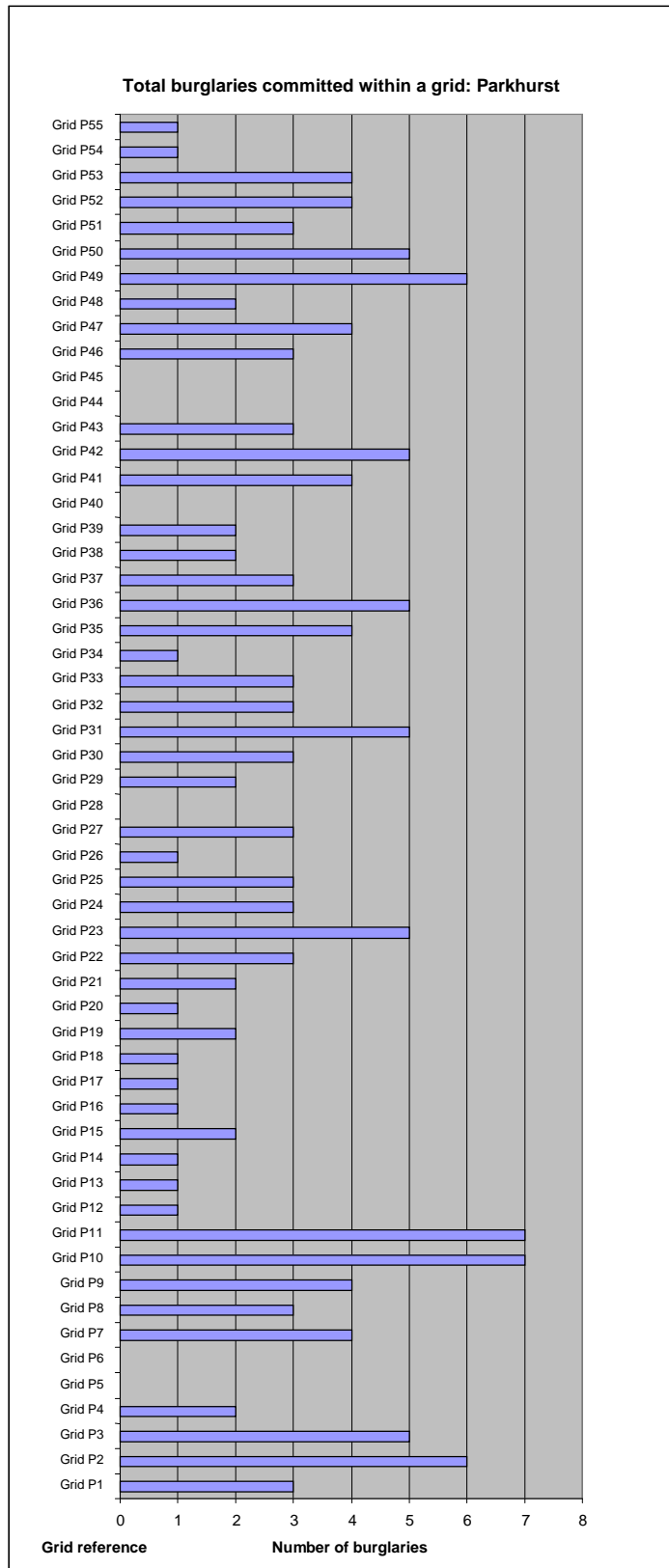
The majority (89%) of the victims in the research sample experienced at least one burglary within the time frame of two years (period covered by the research). Nine percent (9%) of the victims experienced two burglaries within the two-year time frame while 2% experienced three burglaries within the same time frame.

The total number of burglaries committed within a grid reference

The following graphs illustrate the following:

- Total number of burglaries within each grid for Parkhurst
- Total number of burglaries within each grid for Westcliff

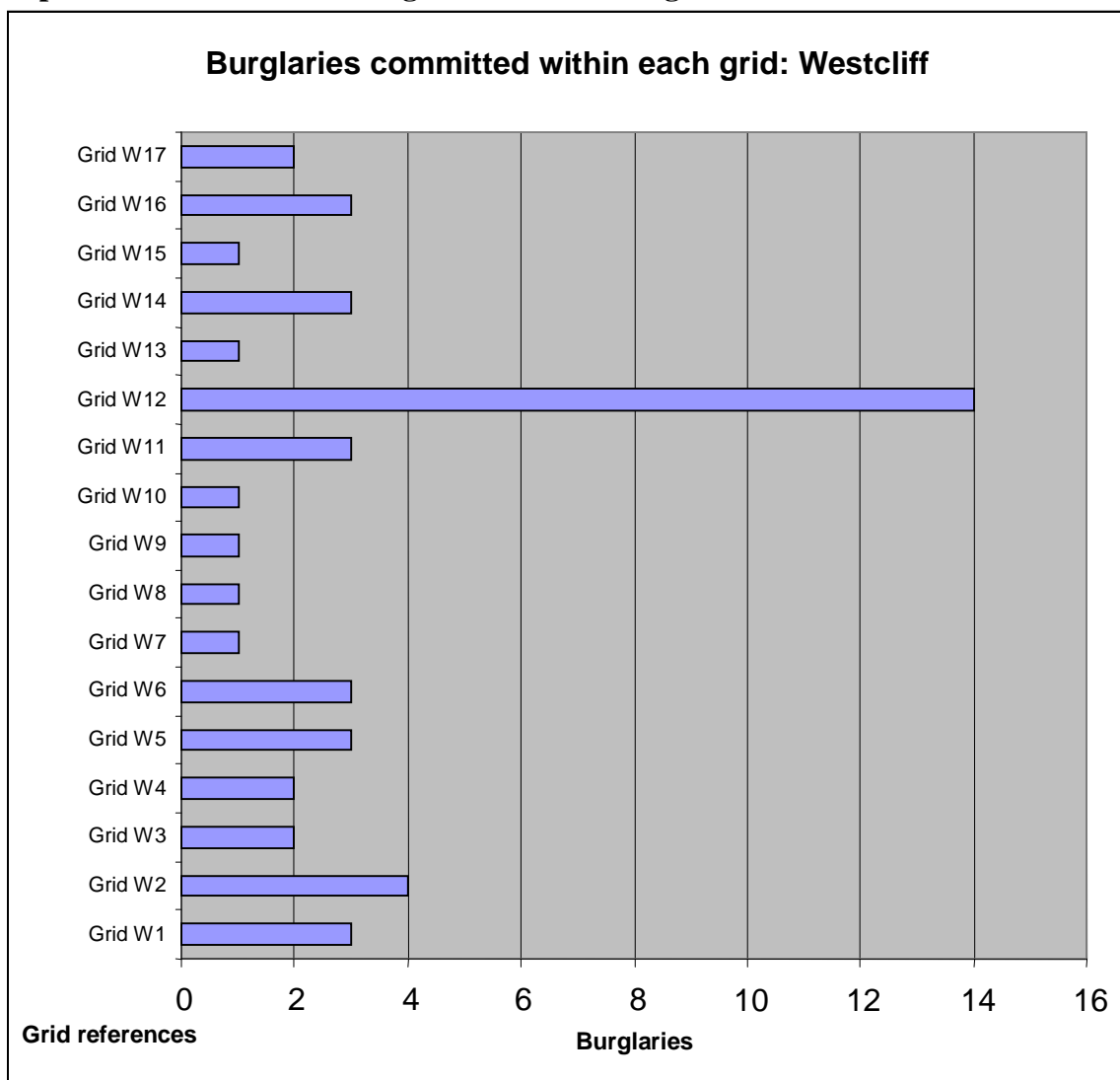
Bar Graph 2: Total number of burglaries within each grid: Parkhurst



Grid 10 and 11 has the most incidents within a grid reference. Grid 11 is situated within same grid where you will find a dead end road closed by an occupied property and also a dead end road closed with a palisade and controlled barrier. The grid is also within same grid reference to the river. Grid 10 is next to Grid 11 and next to river (Not within same grid reference from river, but next to it).

The nature of goods taken is not clear and if it were small items such as jewellery and clothes, possibility that it was executed by foot and not vehicle is possible.

Bar Graph 3: Total number of burglaries within each grid: Westcliff



The majority of the cases were within Grid W12. The grid is situated within one grid reference from one main road and the same grid reference from another main road. The grid also has a dead end area closed with a wall. Access could mainly be by vehicle due to the dead end road

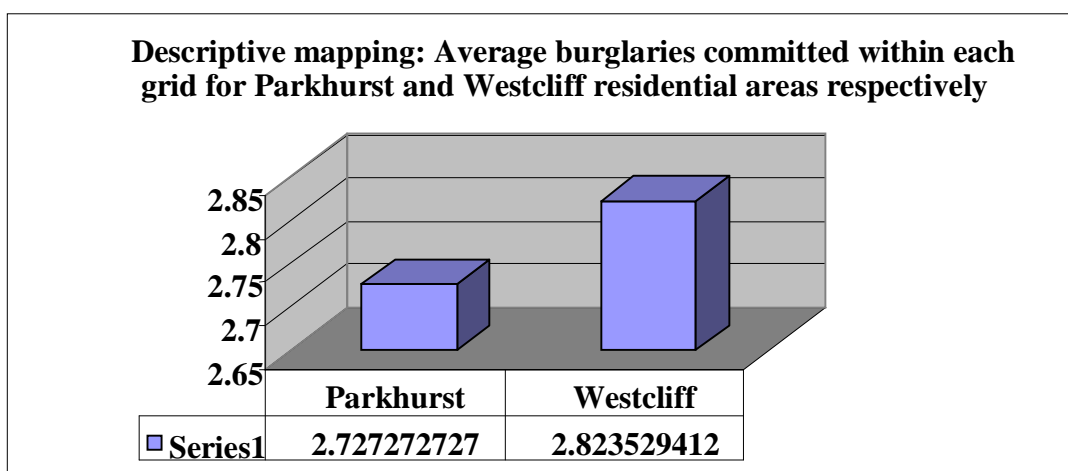
closed with a wall unless the nature of goods removed were small such as jewellery and clothes and removed from the property by foot.

The two areas cannot be compared in terms of total burglaries due to the difference in their respective population sizes.

The grids in Parkhurst included on average two residential blocks which also differ in size compared to the grids used in Westcliff where a residual block is bigger in size than those in Parkhurst.

The following graph illustrates the average number of burglaries committed within each grid for the Parkhurst and Westcliff residential areas respectively:

Bar Graph 4: Average number of burglaries committed within each grid for Parkhurst and Westcliff residential areas



A further comparison can be drawn using the Mann-Whitney U test. This conclusion is based on the fact that the two samples, Parkhurst and Westcliff is not paired, and therefore we can make use of this method.

The test to be done is to determine whether the pattern in burglaries within a grid is the same (H0) or the pattern of burglaries within a grid is not the same (H1).

The results were as follow:

$$Z = -2.17 > \pm 1.96$$

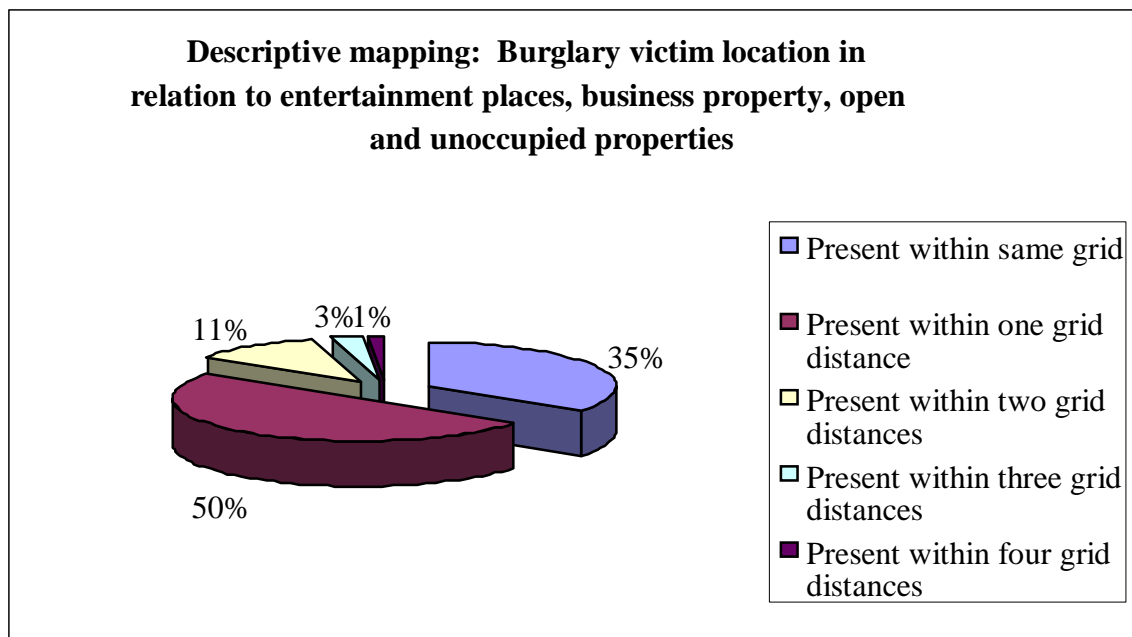
The null hypothesis had to be rejected because Z is greater the 95% confidence level. The changes that the pattern of burglaries within a grid is the same will be at a 70% confidence level as per the calculated Z – value.

Comparing two populations (Westcliff and Parkhurst), the p-value is 0.009 and smaller than 0.05. The H0 and again the patterns in burglaries within a grid is not the same.

Grid location in relation to community entertainment places, business property and unoccupied and open properties

The following chart illustrates victim location in relation to entertainment places, business property, unoccupied and open properties.

Pie Chart 6: Victim location in relation to community entertainment places, business property, unoccupied and open properties

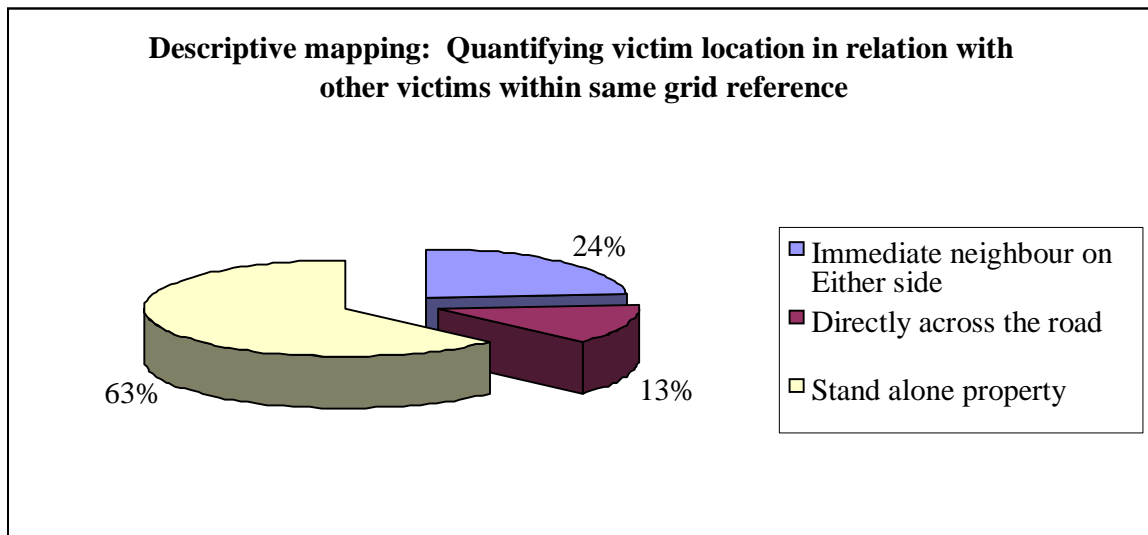


The results of the above analysis indicate that the majority of the victim locations (50%) were within one grid away from entertainment places, business property, unoccupied and open properties while 35% were located within the same grid.

Quantifying victim location in relation to other victims within a grid

The following chart quantifies victim location in relation to other victims within the same grid.

Pie Chart 7: Quantification of victim locations in relation to other victims within the same grid

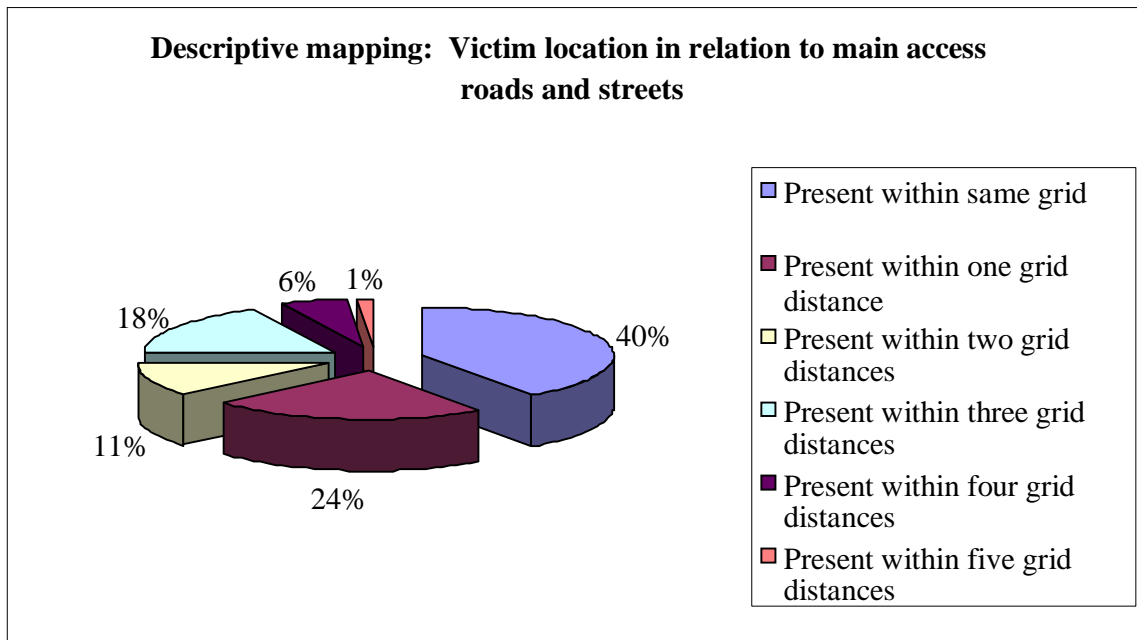


The majority of the victims (63%) were stand alone and not immediately neighbouring on either side or back or directly opposite the road or street area to other victims' locations (residences). A total of 196 victims in [number of] grids were recorded with two of the grids having no victims recorded.

Victim location in relation to main access roads or streets

The pie chart below illustrates victim location in relation to main access roads or streets based on the grid reference system used in the descriptive mapping.

Pie Chart 8: Victim location in relation to main access roads and streets

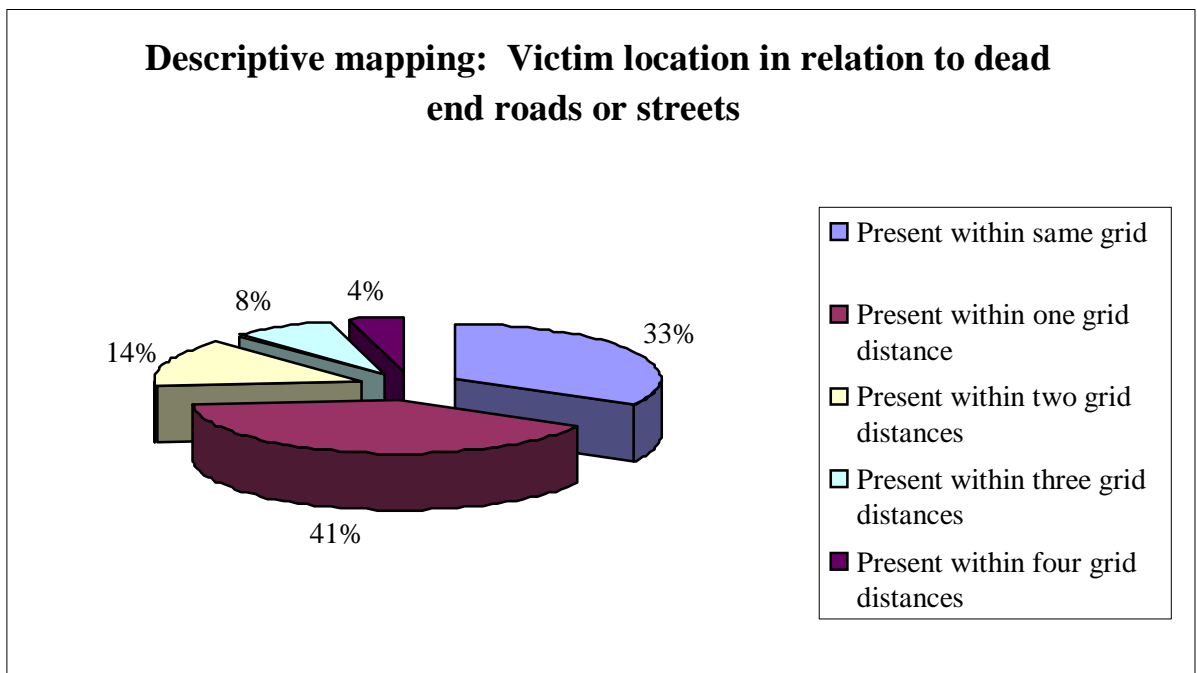


The majority of the victims (40%) were located within the same grid vicinity as the main roads and streets.

Victim location in relation to dead-end roads.

The following chart quantifies the victim location in relation to dead-end roads by using the grid reference system.

Pie Chart 9: Victim location in relation to dead-end roads or streets

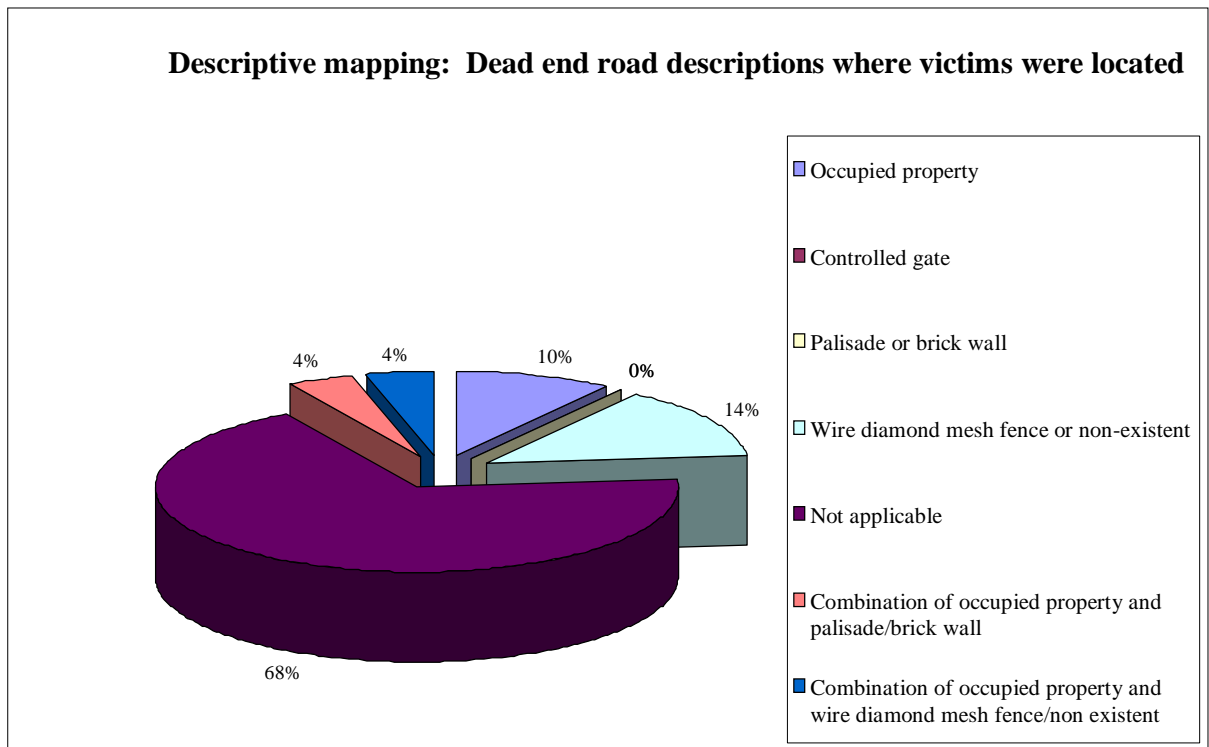


The results indicate that the majority of the victims (41%) were within one reference grid from a dead-end road or street area and 33% were present within same grid reference.

Quantification of dead-end road descriptions in the same grid reference where victims were located

The following chart quantifies the various dead-end road/street descriptions found where victims were located within the same grid.

Pie Chart 10: Dead-end road/street descriptions where victims were located within the same grid



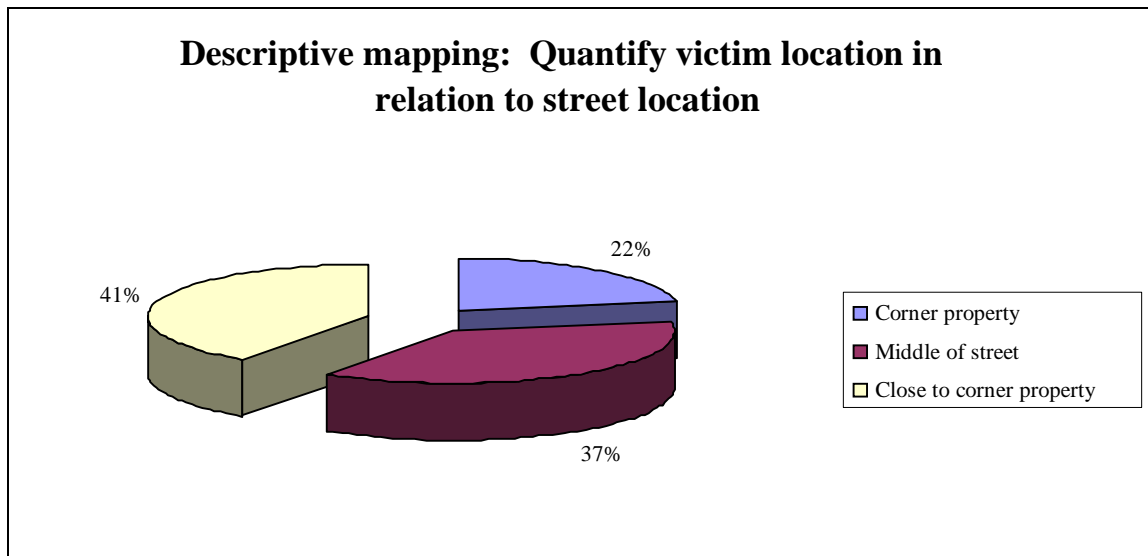
Wire diamond mesh fencing in majority of the areas is non-existent in that they are in a poor condition although they do exist. Poor condition relates to poorly maintained and as a result there are holes in the fence, uprights are not fixed to a base such as concrete etc. In 14% of the cases there were wire diamond mesh fence, which contributes to the possibility of being used as entry and exit points by burglars.

Quantifying victim location in relation to location on a street within a grid

The following chart quantifies the location of a victim's residence in relation to its actual location (where sited) on a street in order to indicate whether the victim was located:

- On a street corner;
- In the middle of a street; [this is two different locations – they should not be combined - split into a third category and apply to analysis results as well]
- Close to a street corner (2 – 3 house away from the corner)

Pie Chart 11: Location of victim's residence in relation to location on a street within a grid



The largest proportion (41%) of the victims was located close to a corner property while 37% of the victims were located in the middle of the street and 22% of the victims were sited on a corner.

Corner properties were less exposed (twenty-two percent)

DOCKET ANALYSIS

The main research aim of the docket analysis was to gather contact information on the victims in order to schedule the victim interviews.

The sample, as previously discussed, consisted of a total of 70 dockets. Each of these was individually analysed.

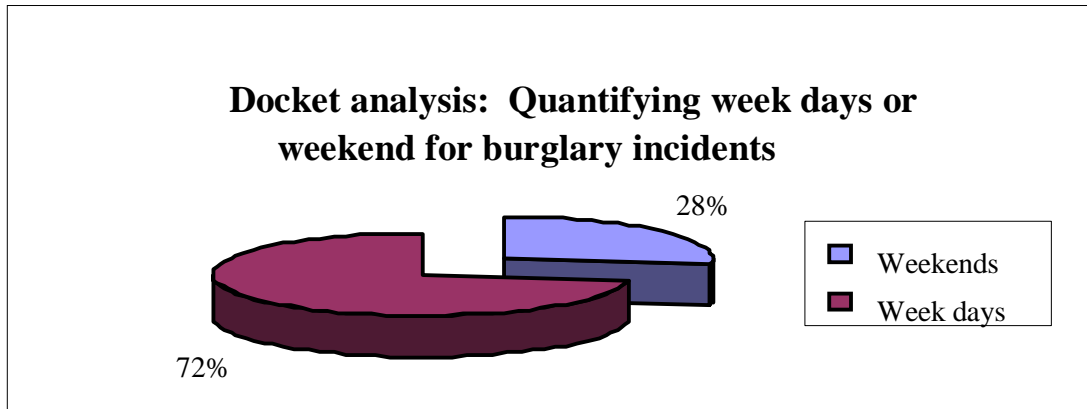
The information from the seventh sampled docket was lost through a possible software problem and therefore the actual number of dockets analysed was 69.

This section contains a discussion of all the secondary results obtained from the docket analysis.

Quantifying the day of the week of occurrence for burglary incidents

The following chart will quantify on which day of the week the burglary occurred and whether there are any significant clustering, e.g. over a weekend.

Pie Chart 12: Day of week for burglary occurrences

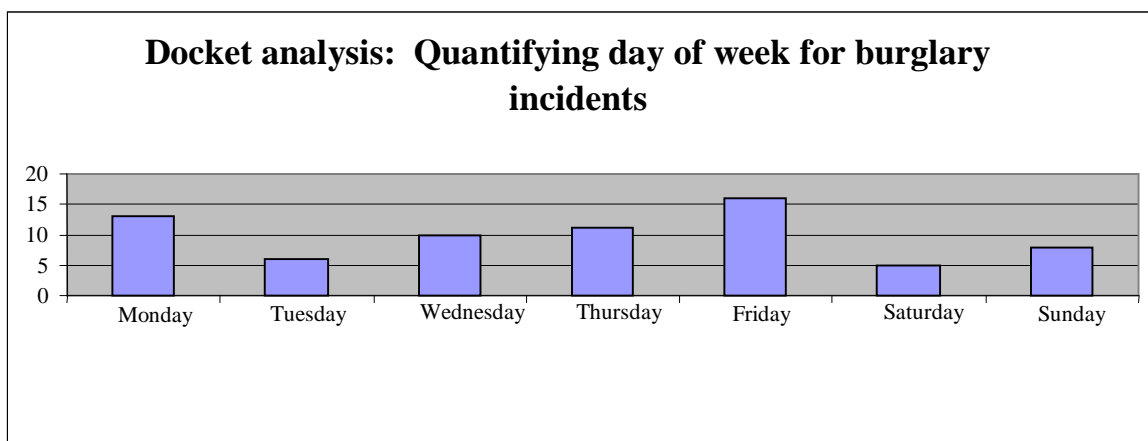


The majority of the burglaries (72%) in the docket sample occurred during the week while only 28% occurred over a weekend (Saturday and Sunday).

Quantifying the day of the week on which burglary occurred

The following chart illustrates which days the burglaries in the docket sample occurred and on which days more burglaries occurred than on others.

Bar Graph 5: Day of week on which burglary occurred



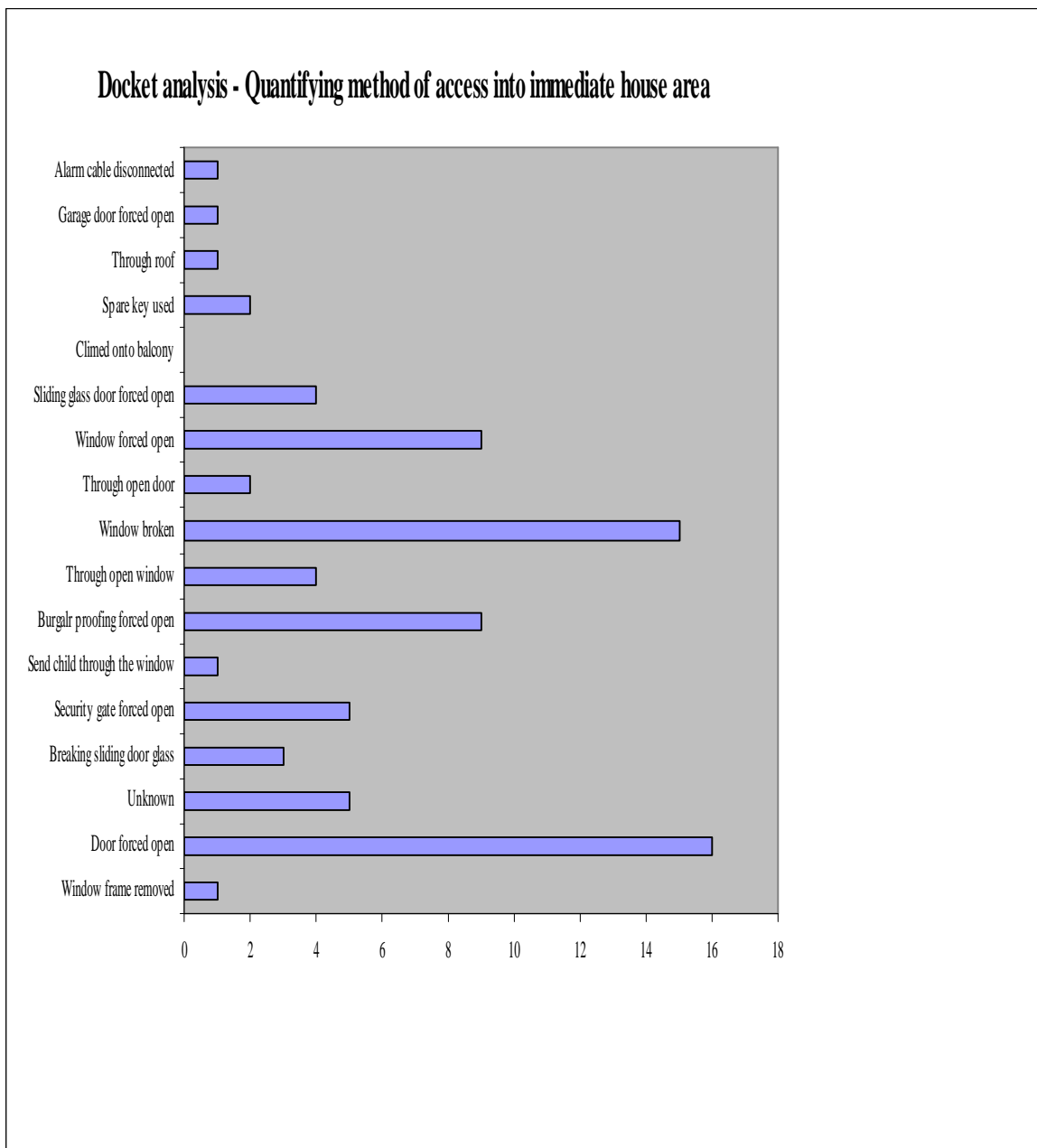
The majority of the burglary incidents (16 out of the 69 sample dockets) occurred on a Friday followed by 13 on a Monday while the weekend (Saturday and Sunday combined) was the

same number as Monday (13). This would indicate that burglaries were not necessarily perpetrated more frequently over weekends.

Quantifying the method of access into the immediate house area

The following chart will illustrate the most popular areas used to intrude the immediate house area.

Bar Graph 6: Intrusion methods used to gain access to the immediate house area



The most popular areas were the window areas and door areas. In 20% of the cases the doors were forced open and in 19% of the cases the windows were broken in an attempt to intrude the immediate house area.

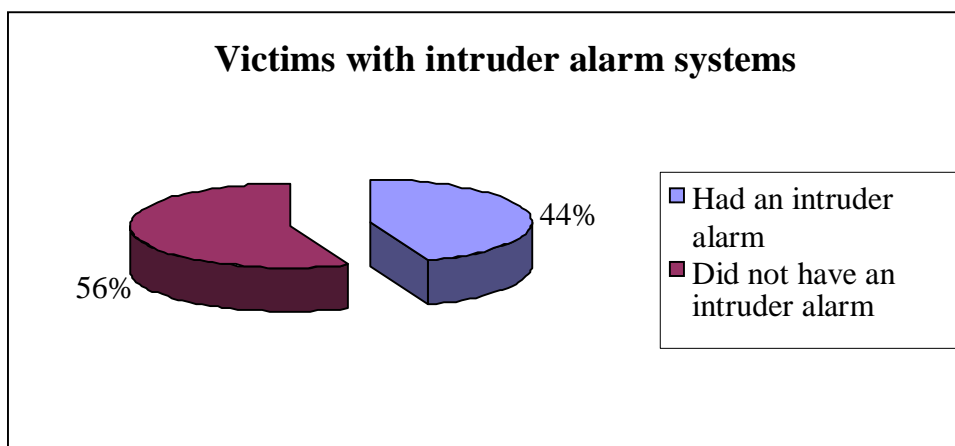
The researcher did not have a consistency in reporting on which particular door or window and could not report on results indicating specific areas due to docket not mentioning the exact location of the specific door or window described.

Intrusion through the roof area was not very popular at the time (one case).

Quantifying the victims with intruder alarm systems

The following chart will quantify victims with and without intruder detection alarm systems.

Pie Chart 13: Victims with and without intruder detection alarm systems



The majority of the victims (56%) did not have an intruder detection alarm system. This explains the possibility of burglaries being detected within a reasonable time frame where it could have been detected.

VICTIM INTERVIEWS

The main aim of the victim interviews was to establish what security measures, if any, were in place, implemented and used, at the time of the residential burglary occurrence.

There were a total of twenty victim interviews as discussed in Chapter 3: Research Methodology.

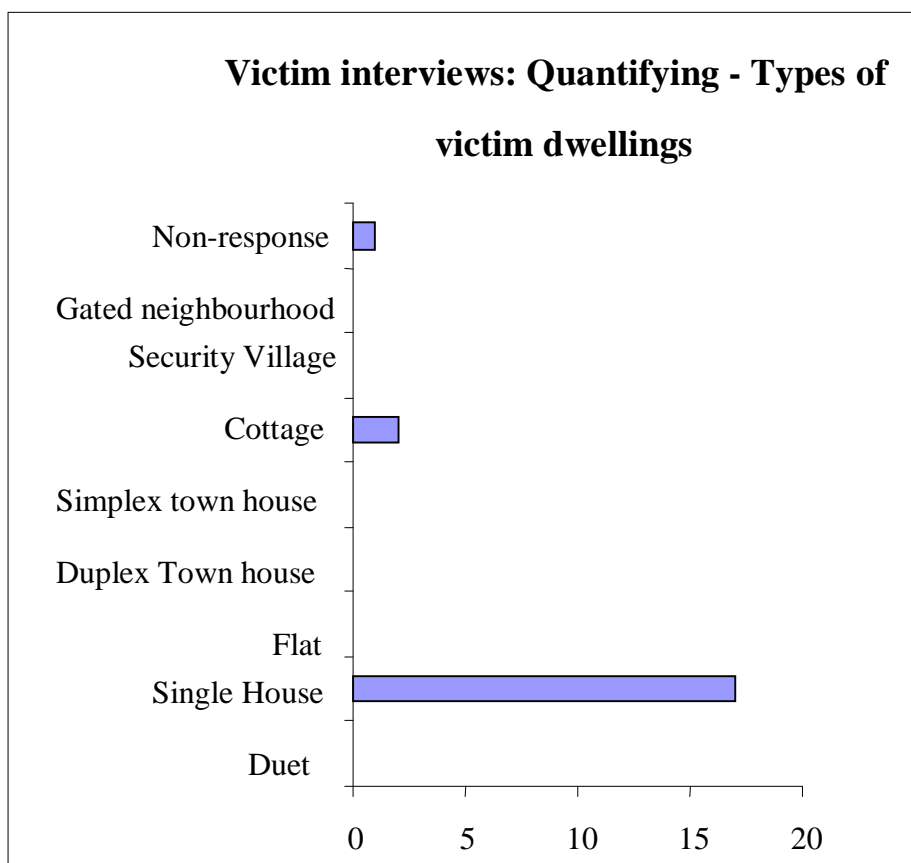
The results from the interviews are presented by means of bar charts and expressed in frequency.

General information on the victims

Types of dwelling

The following bar chart quantifies the types of dwellings as identified during the interviews with victims.

Bar Graph 7: Types of dwelling

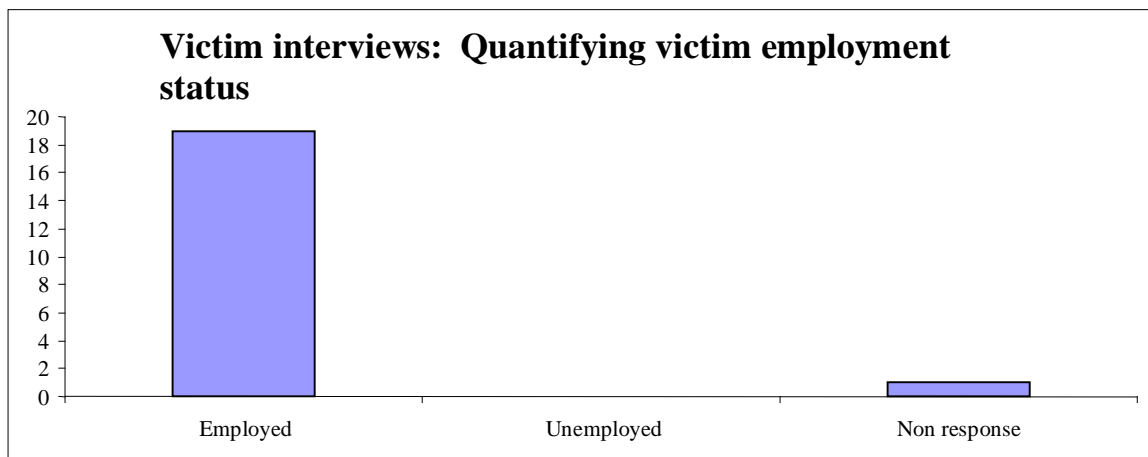


The majority of the victims (17 out of the 20 interviews) resided in single standalone homes.

Employment status

The following bar chart quantifies interviewee (victim) employment status.

Bar Graph 8: Interviewee (victim) employment status

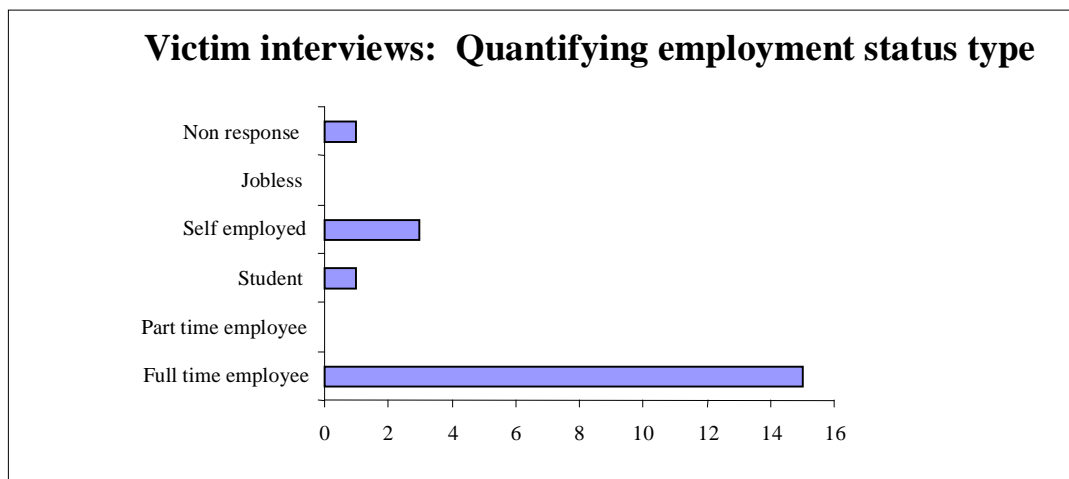


All the victims were employed at the time of the incident and the next two bar charts will describe whether the victims worked away from their homes.

Employment status by type

The following bar chart quantifies the different victim employment status types at the time the burglary occurred.

Bar Graph 9: Employment status by type

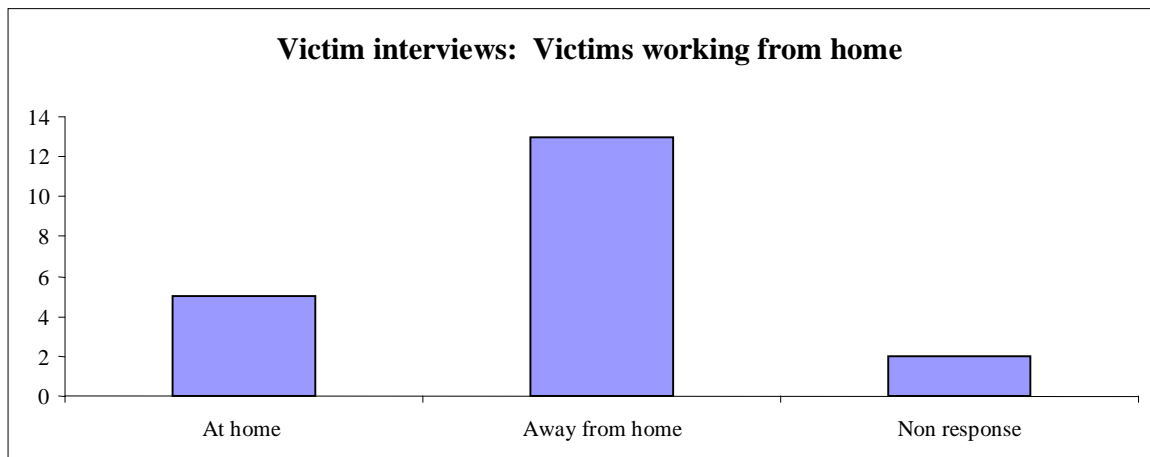


The majority of the victims (15 out of the 20 interviews) were full time employees and all are assumed to have worked a normal eight hour day five days a week (with occasional nine-ten hour longer overtime days).

Victims working from home

The following bar chart (refer to Bar graph 10: Victims working from home) quantifies victims who worked from and away from home.

Bar Graph 10: Victims working from and away from home



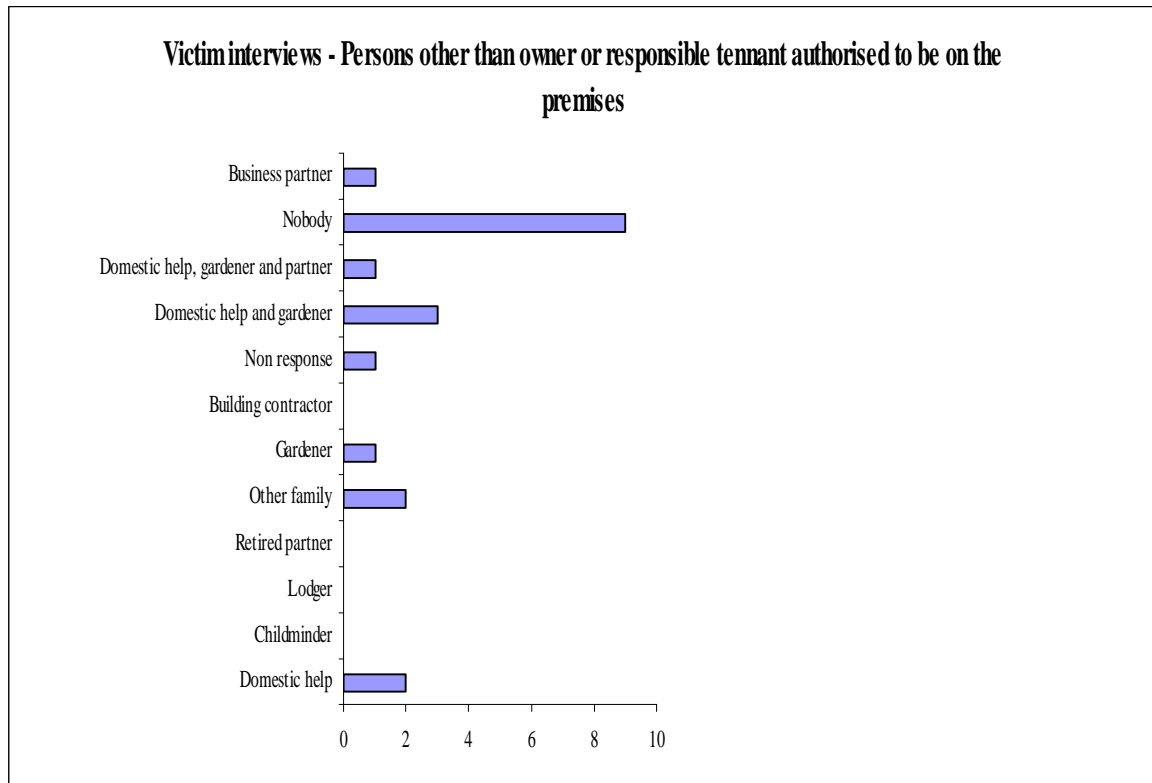
The majority of the victims (13 out of the 20 interviews) worked away from home. The two respondents marked as “not applicable” explains one respondent had a domestic dispute and did not answer this question and the second respondent is a business owner and this question was not applicable to him.

The following results may be of use in indicating whether the presence of persons authorised to be on the property (e.g. garden services or domestic help) have an impact on the incidence of residential burglary and what exact impact these activities might have.

Persons other than owner or responsible tenant authorised to be at the burgled residence site

The following bar chart quantifies, according to victims, whether there should have been anyone at the residence at the time the burglary incident occurred.

Bar Graph 11: Persons other than owner or responsible tenant authorised to be at residence at time of burglary



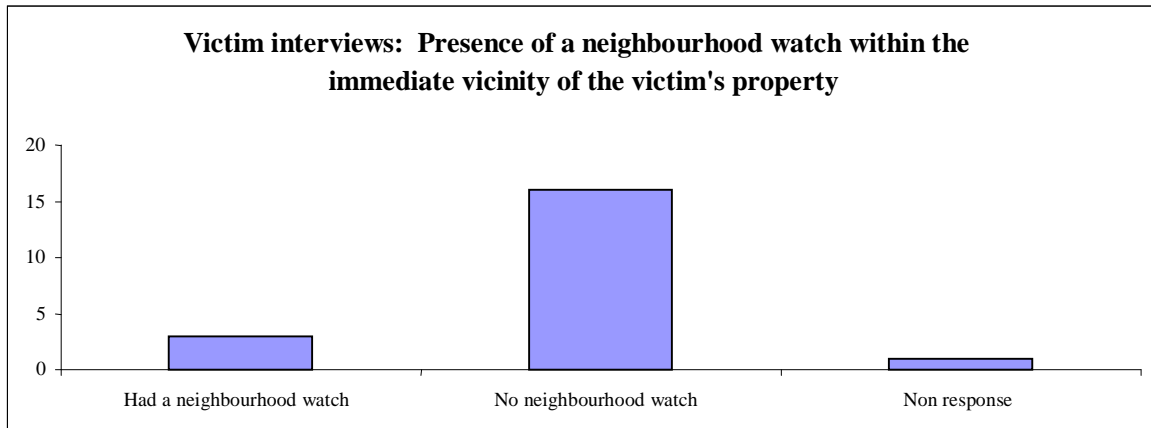
In the majority of the cases (nine out of the 20 interviews) there was nobody supposed to be at the residence or the premises at the time of the burglary incident. In only three cases were either a gardener or domestic help supposed to be present at the residence, while in two cases each it was only domestic help or another family member, and then one case each for gardener, business partner or domestic help, gardener and business partner. Accordingly for this particular study the above results could well point to the assumption that the presence of approved persons at the residence might well have acted as deterrence i.e. lead burglars to choose houses where no-one is present – authorised or otherwise – thereby contributing to homeowners/renters not becoming victims of a burglary.

Neighbourhood

Possible impact of the presence of neighbourhood watches

The following bar chart indicates the number of victims who were subscribing to a neighbourhood watch initiative in their area.

Bar Graph 12: Presence of a neighbourhood watch within the immediate vicinity of the victim's property

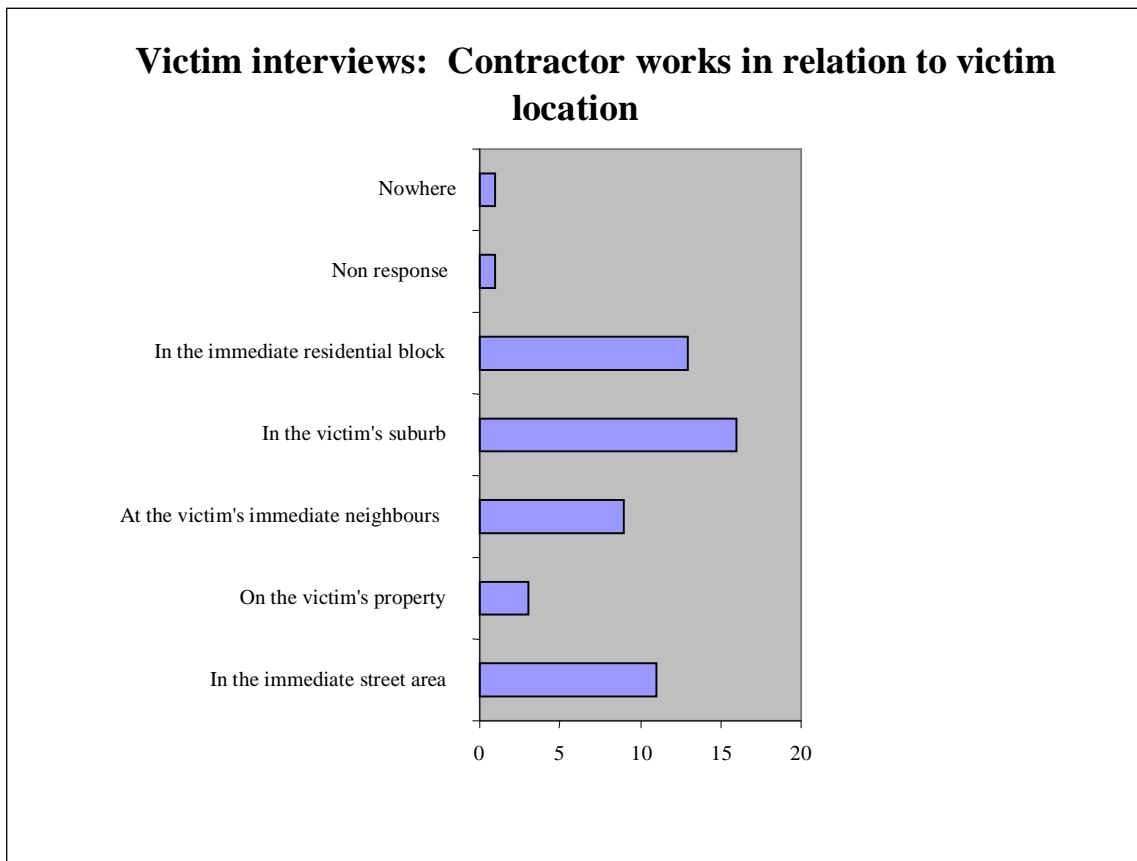


The majority of the victim's (16 out of the 20 interviews) did not subscribe to a neighbourhood watch initiative at the time of the burglary incident.

Contractor works in relation to victim location

The following bar chart indicates the number of contractors working in the area and where they were working in relation to the victim's property.

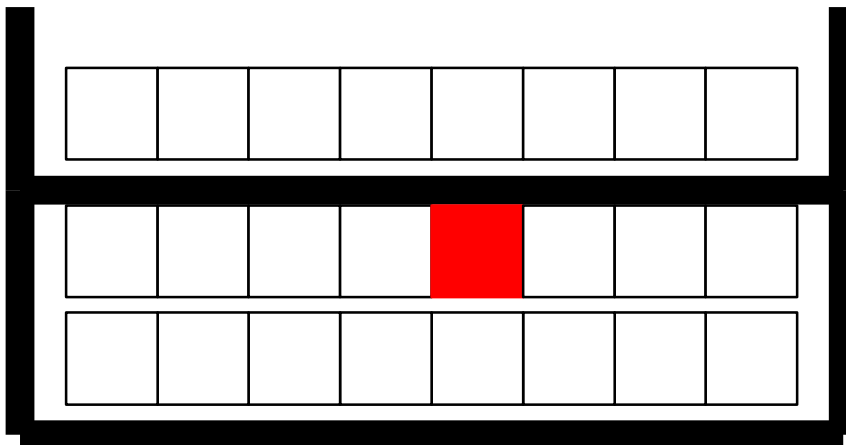
Bar Graph 13: Contractor works in relation to victim location



In the majority of the interviews (16 out of the 20 interviews) there were contractors working in the suburb. Furthermore, in thirteen out of the twenty interviews, there were contractors working within the immediate residential block where the victim resided.

The following drawing will illustrate the immediate residential block where the victim location is indicated by a red square:

Drawing 10: Drawing illustrating an immediate residential block

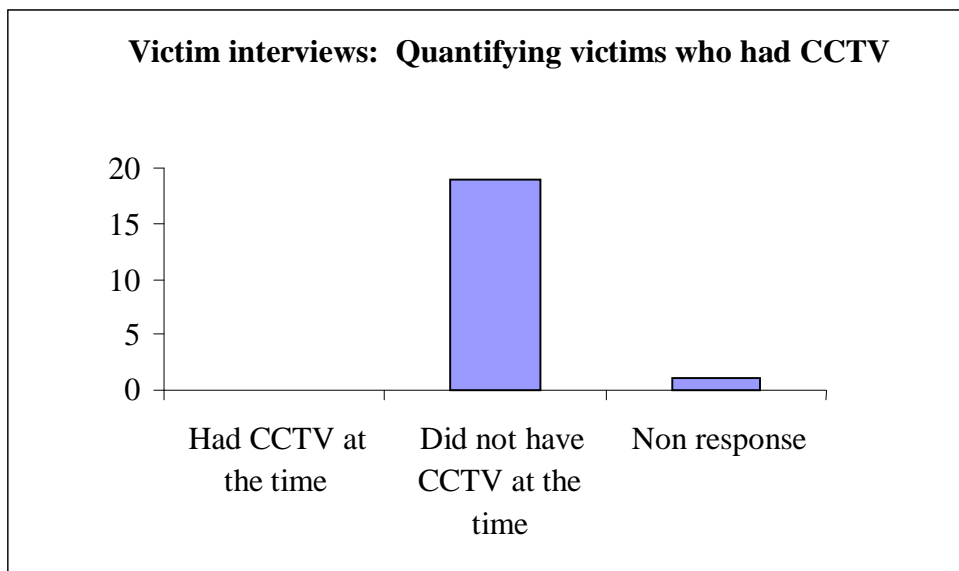


Perimeter and perimeter (barrier) types

CCTV

The following bar chart indicates the number of victims with and without Closed Circuit Television (CCTV) systems at their residences or serving their residential block.

Bar Graph 14: Victims with or without CCTV



None of the victims had any CCTV systems installed at their residences or for their residential block.

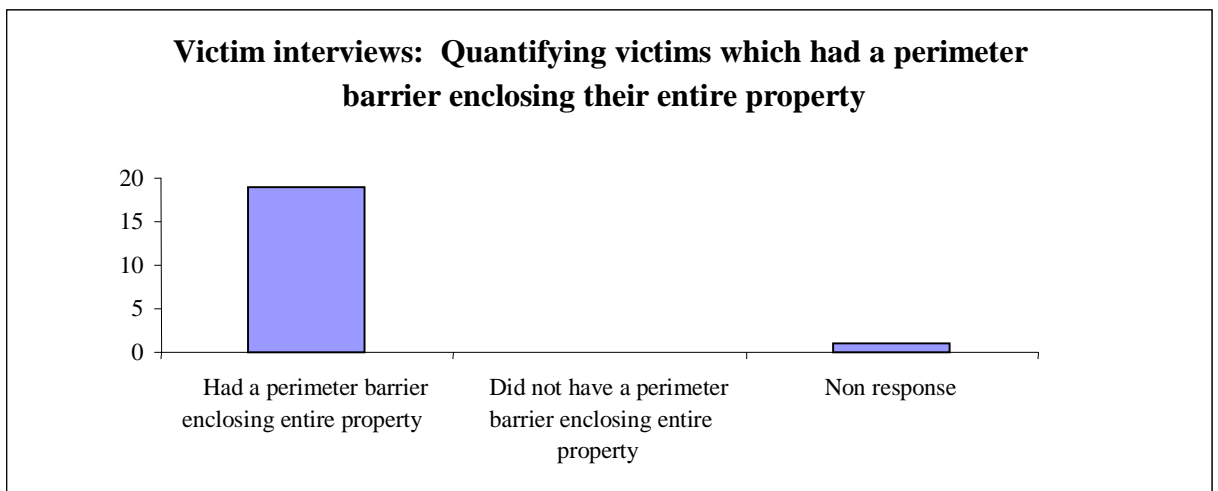
Accordingly no conclusion can be drawn in this study of whether the installation (presence) of CCTV either at their residences or serving the residential block might have increased the

probability of the victim not to be burgled. However, previous studies have indicated that the implementation of CCTV surveillance systems reduce the incidence of all crime in the area being surveyed, although whether this is merely a reduction due to displacement of crime to other areas still has to be established through more in-depth research.

Perimeters enclosed

The following bar chart indicates the number of victims who had their entire perimeter enclosed with some form of a physical barrier.

Bar Graph 15: Victims who had a perimeter barrier enclosing their entire property

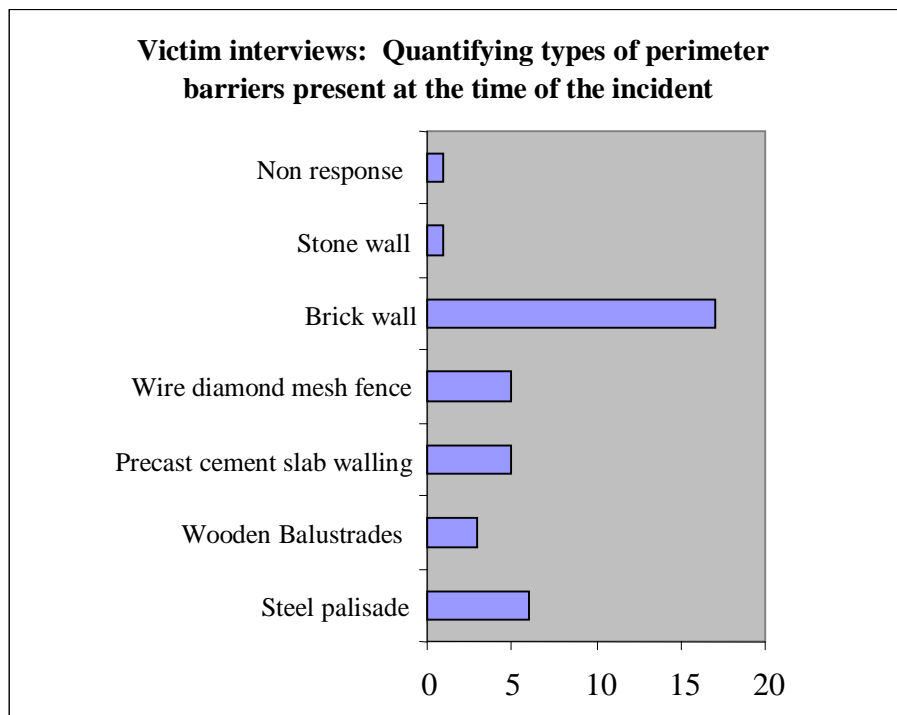


The above clearly indicate that every single one of the victims had a physical perimeter barrier enclosing their property.

The following sections will focus on the different types of perimeter barriers used by victims to enclose their properties.

The following bar indicates the number of different types of perimeter barriers enclosing the property of the victims at the time the burglary occurred.

Bar Graph 16: Types of perimeter barriers present at the time of the burglary incident

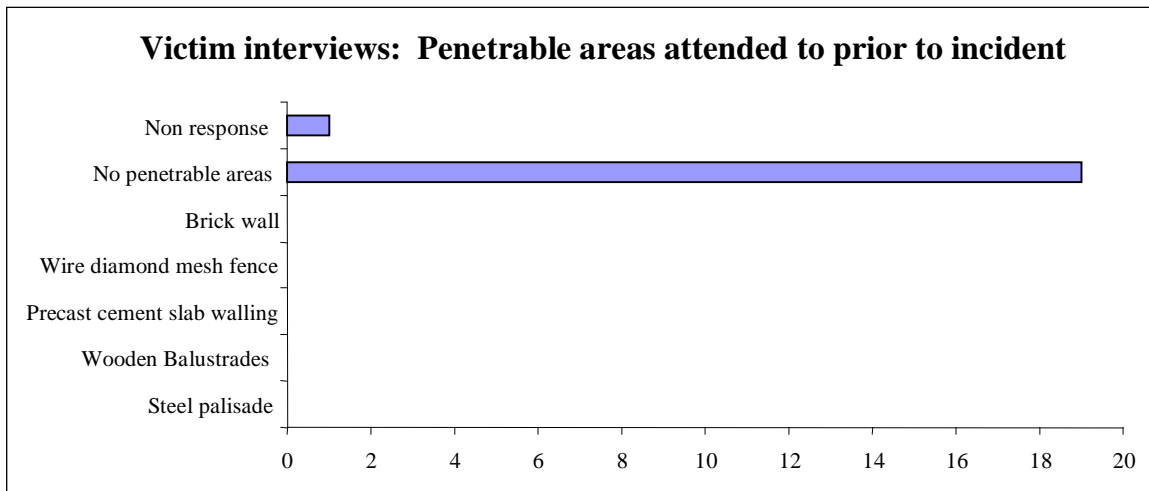


The majority (17 out of the 20 interviews) of the victims had a brick wall enclosing their entire perimeter or only sections of their perimeter. It is interesting to note that from the above results a minority of the victims (five out of the 20 interviews) had palisade fencing. It is not clear from these results whether the better visibility (can see into a property) provided by palisade fencing as opposed to solid brick walls might be a deterrent factor in burglaries (See Recommendation: Future research).

Penetrable areas on the perimeter

The following bar chart indicates the number of possible penetrable areas was non-existent and all the victims stated that there were no penetrable areas according to the various possibilities pointed out to them, during the interviews.

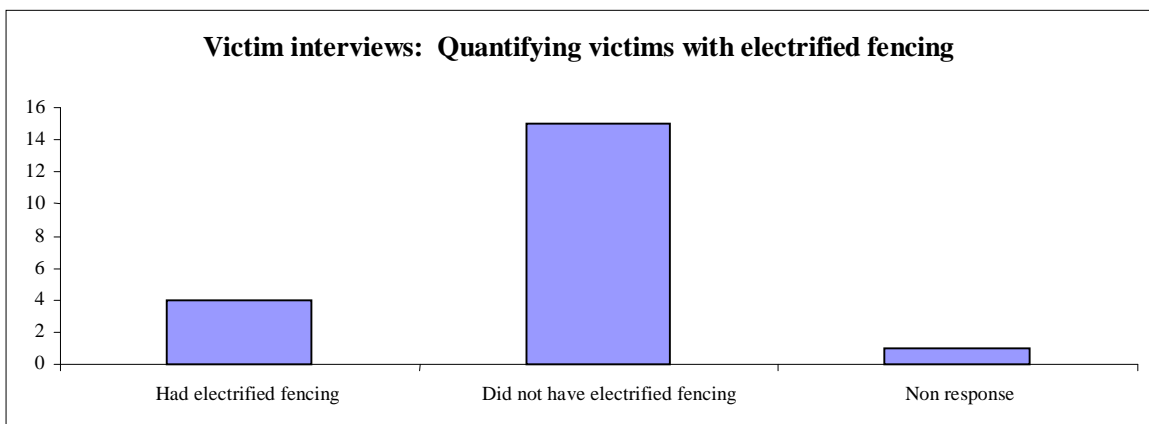
Bar Graph 17: Possible penetrable areas on the perimeter attended/not attended to prior to the incident



Electrified fencing

The following bar chart indicates the number of burglary victims (from the sample) in the Westcliff and Parkhurst areas who either had or did not have electrified fencing at the time of the incident.

Bar Graph 18: Victims with electrified fencing



The majority of the victims (fifteen out of the 20 interviews) did not have electrified fencing installed on their perimeters.

From the interviews and residential audits it was clear that those who did have electrified fencing showed or exhibited the following characteristics:

- It was the neighbour’s fence and not entirely covering the victim’s perimeter;

- The electric fence energiser not connected to the armed response company monitoring unit;
- The electrified fencing energiser not switched; and
- The fence was pulled down and did not have loop detectors.

Methods used to switch the electrified fencing energisers on and off

Four of the twenty victims had electrified fencing and this is how they switched their fencing on and off:

- Two of the victims used a physical key;
- One of the victims used a keypad; and
- One victim did not have control over the electrified fence since it was installed and operated by the neighbour.

The use of physical keys poses a possible problem in that it gets left in the energiser and increases possibility of being switched off and then is neglected to being switched on again.

The victim who did not have any control over the switching on and off of the electrified fencing was faced with the possible problem of the shared perimeter electrified fence not being switched on by the neighbour, the fence being faulty and the victim not being aware of the fence being off. Nor is it legally required of the neighbour to report any of this state of the electrified fence to the victim unless there was a formal or informal agreement to do this.

Monitoring methods used with electrified fencing energisers

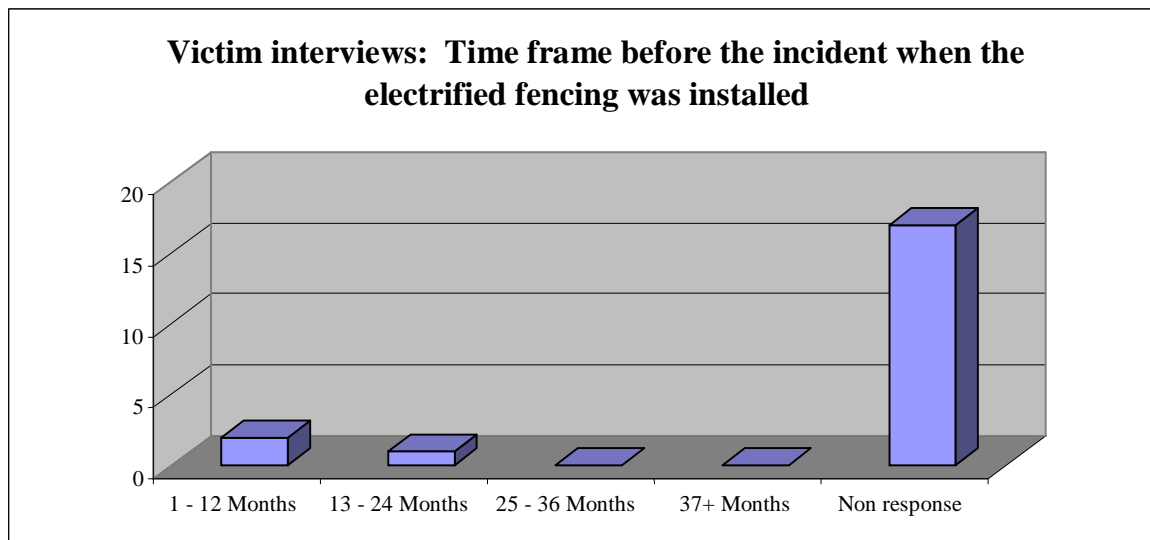
Four of the twenty victims had electrified fencing and below are the reported methods of how their electrified fencing was monitored:

- Two victims had a combination of a siren and link to the contracted armed response company;
- One victim only had a remote keypad. A remote keypad is a keypad managing the electrified fencing energiser from another area within the residential property, i.e. energiser is in the garage and the remote keypad is in the main bedroom; and
- One victim did not have full control over fence due to fence being controlled by neighbour.

Time frame before the incident when the electrified fencing was installed

The following bar chart will illustrate the length of time the electrified fence was installed before the reported burglary occurred.

Bar Graph 19: Length of time the electrified fence installed before the reported burglary occurred



While four out of the twenty victims had electrified fencing the bar chart is applicable only to three of them since the fourth victim did not have control over the fence and was under their neighbour's control.

Two of the victims had their electrified fencing systems installed within twelve months prior to the residential burglary incident and one victim had their system installed within two years prior to the residential burglary incident.

The next question to the victims is no longer applicable (i.e. how long before the incident were the backup battery supplies changed?) since in all three of the cases the fencing was installed within two years prior to the incident and in practical terms such batteries only need to be replaced every two-three years. So in these specific cases above the batteries should still have been acceptable in terms of technical specifications on a battery changing schedule.

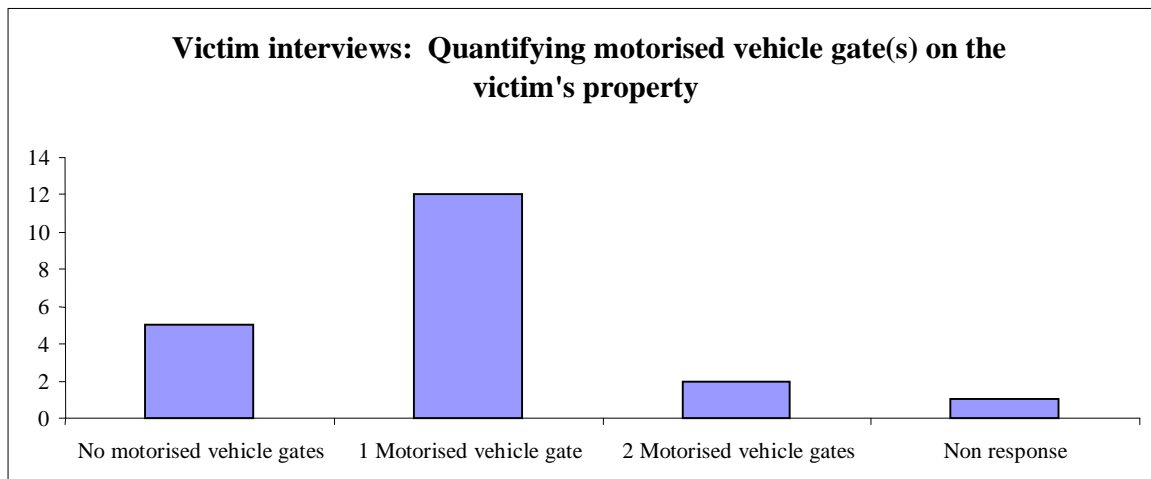
Calls received from armed reaction team/company monitoring alarm signals from the electrified fencing

Two of the three victims who had electrified fencing and full control over their systems and connected to an armed response company, did not receive any calls or a response from any armed response or guarding company to any alarm violation conditions.

Vehicle gate motors

The following bar chart indicates the number of burglary victims (from the sample) in the Westcliff and Parkhurst areas who either had or did not have motorised vehicle gate(s) on victim properties at the time of the incident.

Bar Graph 20: Victims with motorised vehicle gates

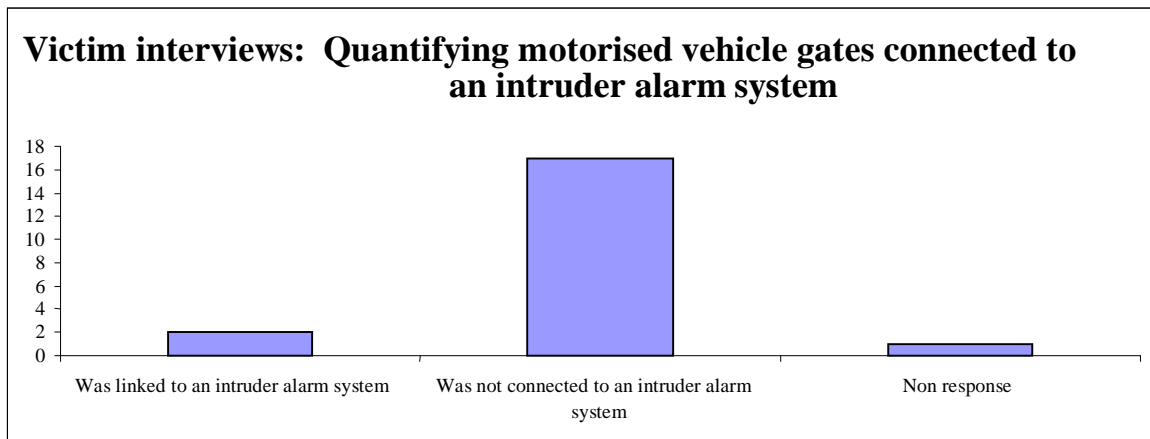


The majority of the victims (fourteen out of the twenty victims) had motorised vehicle gate/s on their properties (twelve having only a single motorised gate).

In this study the researcher was interested in establishing whether the automation system on such motorised gates was safeguarded from possible tampering and intrusion. An example of vehicle gate automation safeguarding would be to lock down the gate motor enclosure with a steel bracket to minimise the electronics being exposed to tampering.

The following bar chart indicates the number of burglary victims (from the sample) in the Westcliff and Parkhurst areas who either had or did not have their vehicle gate(s) connected to an intruder alarm system at the time of the incident.

Bar Graph 21: Victims with motorised vehicle gates connected to an intruder alarm system



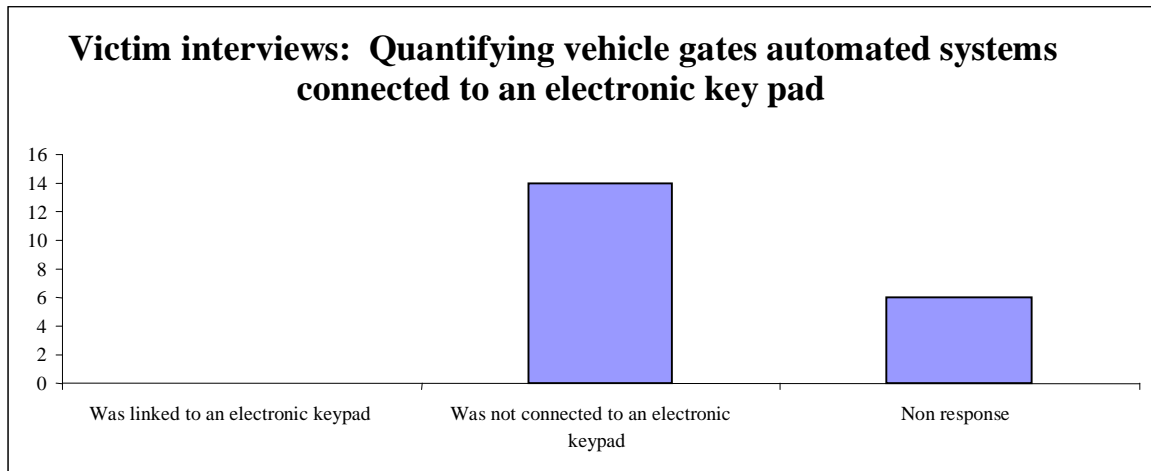
The majority of the victims (seventeen out of the twenty interviews) did not have their vehicle gates connected to an intruder alarm system at the time of the incident.

Connecting the vehicle gate to the intruder alarm system can be done with a heavy duty gate monitor, infra red beam etc. Early detection could have been established with the gate connected to the intruder alarm system and only applicable if the intruder alarm was armed at the time of the incident and the perpetrator(s) used the vehicle gate to gain entry into the victim's property

The following bar chart indicates the number of burglary victims (from the sample) in the Westcliff and Parkhurst areas who either had or did not have their vehicle gate motor(s)/automation connected to an electronic keypad at the time of the incident.

Vehicle gate motors and automation system do refer to the same device in that provides the gate with a mechanism to open and close automatically and not just manually.

Bar Graph 22: Victims with vehicle gate automation systems connected to an electronic keypad

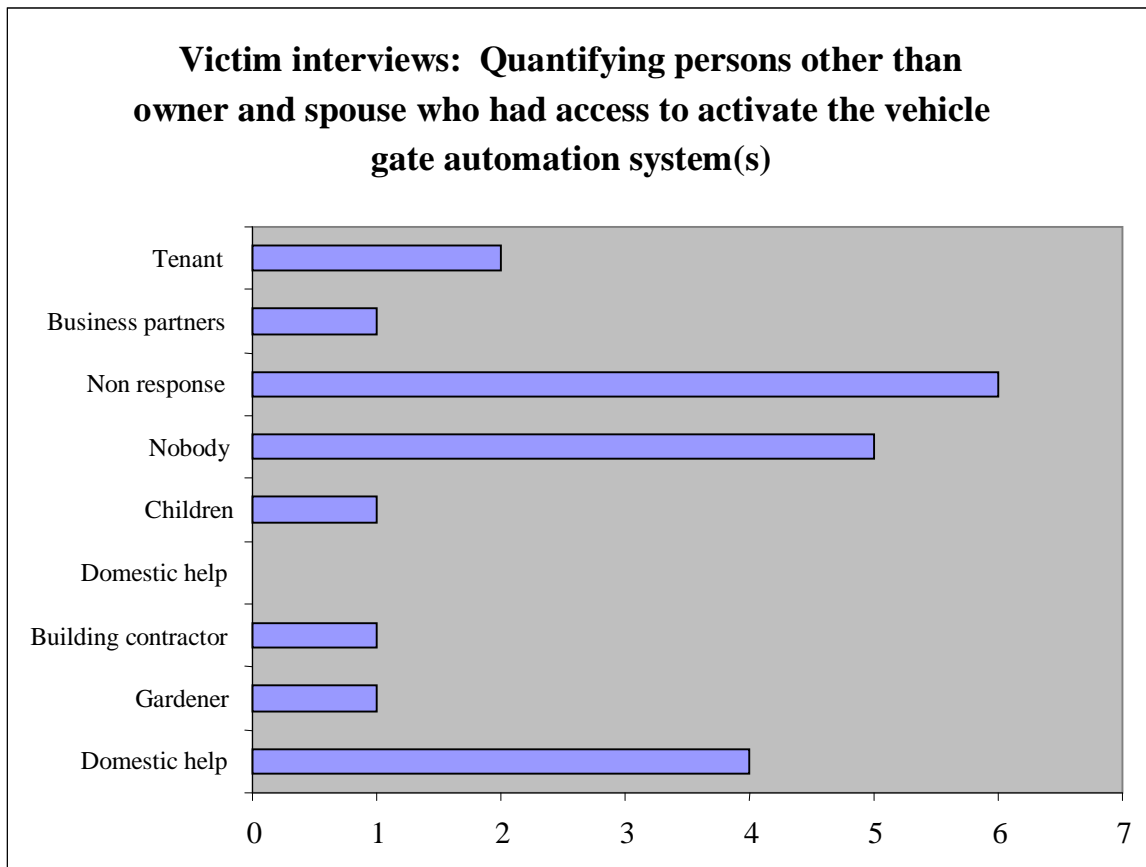


None of the victims had electronic keypads connected to their vehicle gate automation systems.

Electronic keypads can provide armed response companies with access into properties and so do keys to pedestrian gate locks and remotes for gate automation. This can provide armed response companies with the ability to investigate alarm violation conditions more in depth by conducting a physical patrol on the home owner's property and not just from the side walk through the vehicle gate or pedestrian gate.

The following bar chart (refer to Bar graph 23: Persons other than owner or responsible tenant who had access to activating the vehicle gate automation system) indicates persons other than the homeowner or the responsible tenant who had access to opening and closing the vehicle gate on the burgled property at the time of the incident.

Bar Graph 23: Persons other than owner (and family members) or responsible tenant who had access in activating the vehicle gate automation system

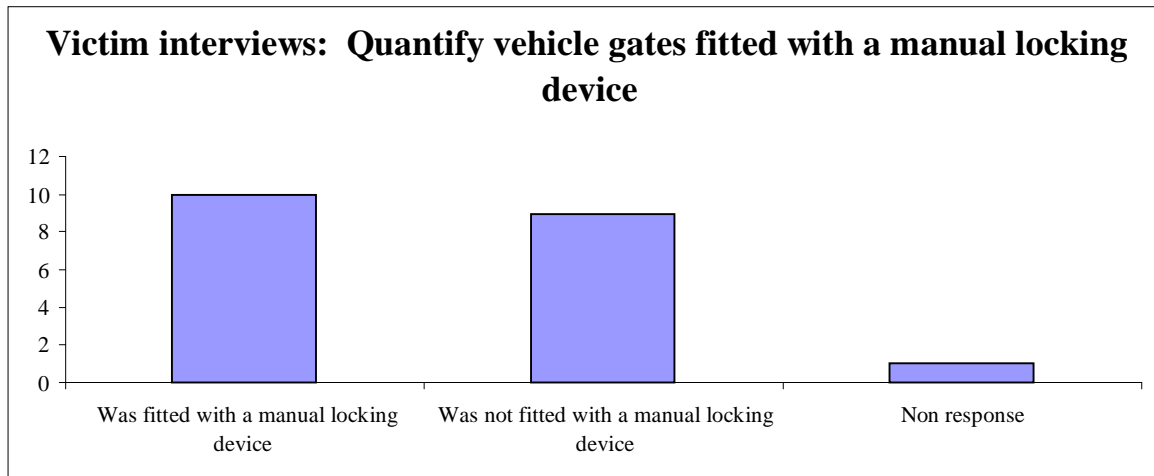


The majority of the victims (nine out of the twenty interviews) said that nobody was supposed to have access to either keypad access codes, remotes or gate keys for opening and closing the vehicle gate or releasing its manual device (the vehicle gate release lever).

Manual locking devices on vehicle gates

The following bar chart indicates the number of burglary victims (from the sample) in the Westcliff and Parkhurst areas who either had or did not have their automated vehicle gates fitted with manual locking devices at the time of the incident.

Bar Graph 24: Victims' motorised vehicle gates fitted with or without manual locking devices

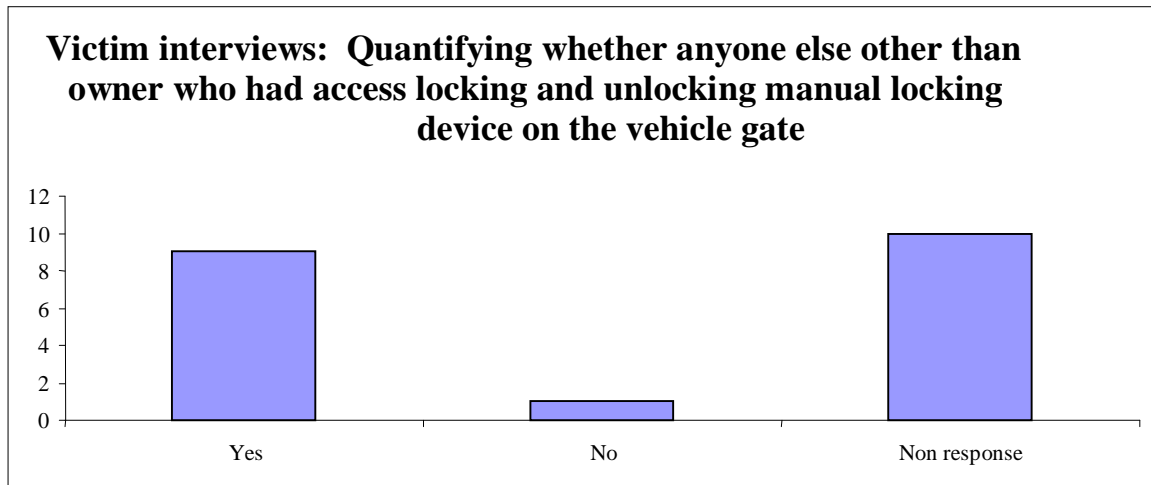


There is no substantial difference between victims who had a manual locking device fitted to their automated vehicle gate and those victims without it. (In this instance a lock and chain can also be considered to be a manual locking device). This has been explored in terms of automation failures where the victim locked the gate manually whilst the automation system was faulty.

The possibility of automation systems in failures state would raise the issue of how was the vehicle gates were locked down.

The following bar chart indicates the number of persons other than the owner, family members or responsible tenant who had access to locking and unlocking the manual locking device on the vehicle gate

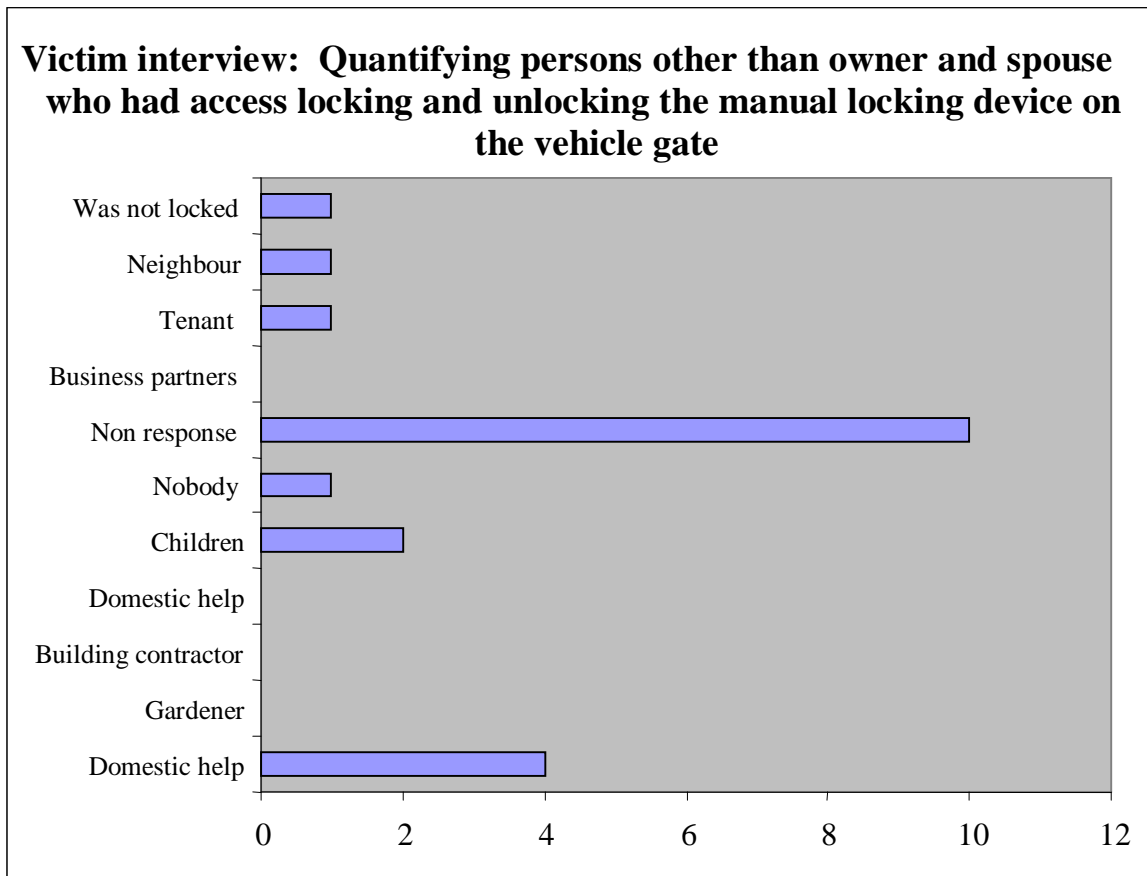
Bar Graph 25: Persons other than owner, family members or responsible tenant who had access to locking and unlocking manual locking device on the vehicle gate



The above results indicate that the majority of the victims who had a manual locking device fitted to their vehicle gates, had someone else other than the owner, family members or responsible tenant having access to locking and unlocking the manual locking device on the vehicle gate.

The following bar chart establishes (identifies) who the persons, other than owner, family members or responsible tenant, were who had access to locking and unlocking the manual locking device on the vehicle gate

Bar Graph 26: Persons other than owner, family members or responsible tenant who had access to the locking and unlocking of the manual locking device on the vehicle gate

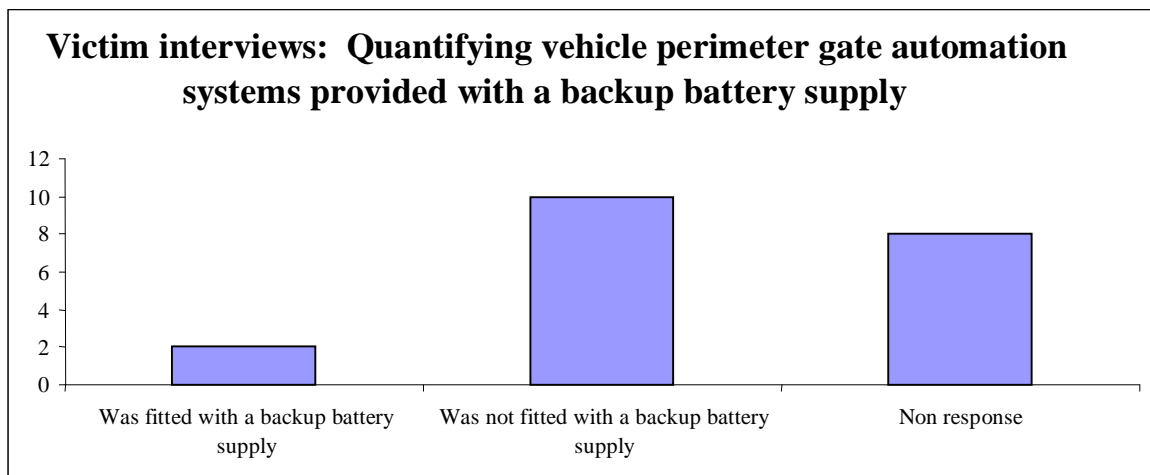


The above chart does not provide any conclusive statistics indicating that either children or personnel of the owner or responsible tenant were in any way responsible for a possible breach (access through vehicle gate by the burglars) in the security system. In other words whether the breach can be ascribed to their possibly neglecting to responsibly control the use of the lock keys to the vehicle gate.

Backup battery supply units

The following bar chart indicates the number of burglary victims (from the sample) in the Westcliff and Parkhurst areas who either had or did not have backup battery supplies connected to the vehicle gate automation systems at the time of the burglary incident. (Such batteries could possibly have an impact on private security companies being able to access or not access a victim’s property via vehicle gates if there is a general power failure at the time of the occurrence of the burglary incident.

Bar Graph 27: Automated vehicle gates with backup battery supply units



The majority of those victims (ten of the twelve victims) who had an automated system connected to their vehicle gates did not have a backup battery supply.

A backup battery supply is crucial if there is an electronic keypad connected to the automation system. Such a backup battery allows the armed response team to gain access to the property even if there is a power failure.

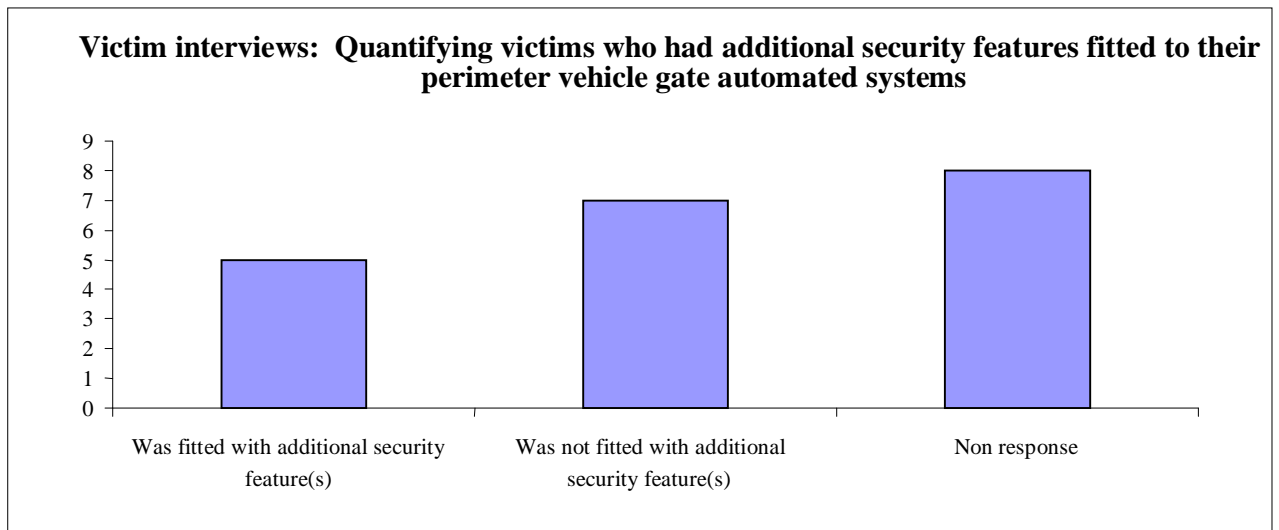
In this study there were no victims with electronic keypads linked to the automated vehicle gate and therefore one cannot conclude that the absence of a backup battery could possibly have contributed to armed response companies not being able to gain access to the victim's properties if there is a power failure at the time of the incident.

It is not common for armed response companies, within the two residential areas (where the research took place), to have access to the remotes activating the vehicle gate automation system and so the above situation would also be applicable to them gaining access to properties at times of incidents occurring.

Additional security features fitted to vehicle gate automation systems

The following bar chart indicates the number of burglary victims (from the sample) in the Westcliff and Parkhurst areas who either had or did not have additional security features fitted to safeguard their vehicle gate automation systems against possible tampering at the time of the burglary incident.

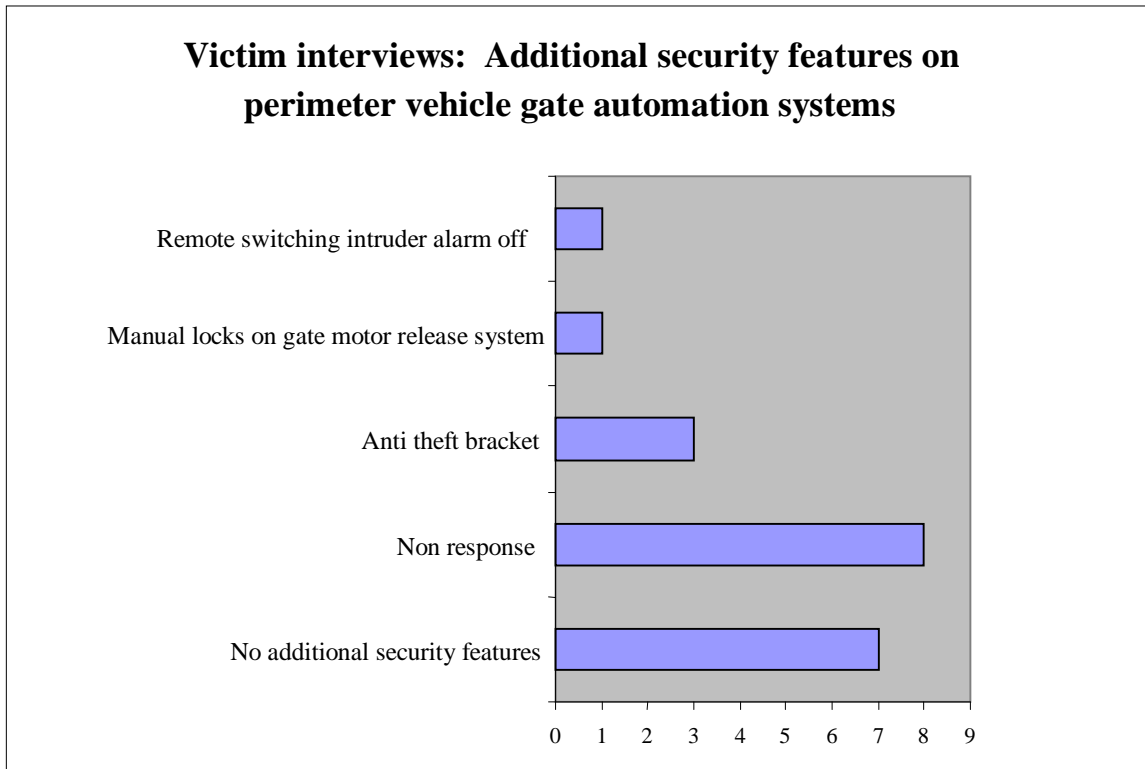
Bar Graph 28: Victims who had additional security features fitted to their vehicle gate automation systems



There is no significant difference between victims who had additional security features (five out of the twelve victims who had a vehicle gate automation system) and victims who did not have any additional security features (seven out of the twelve victims).

The following bar chart indicates the number and specific kind of additional security features fitted to the vehicle gate automation systems at the time of the burglary incident

Bar Graph 29: Specific additional security features fitted to the vehicle gate automation systems



Three of the five victims who had additional security features fitted to their vehicle gate automation systems had anti-theft brackets one had a manual lock securing the manual lever and one had a remote receiver activating the intruder alarm to disarm if an remote transmitter was used to open the vehicle gate motor⁴³.

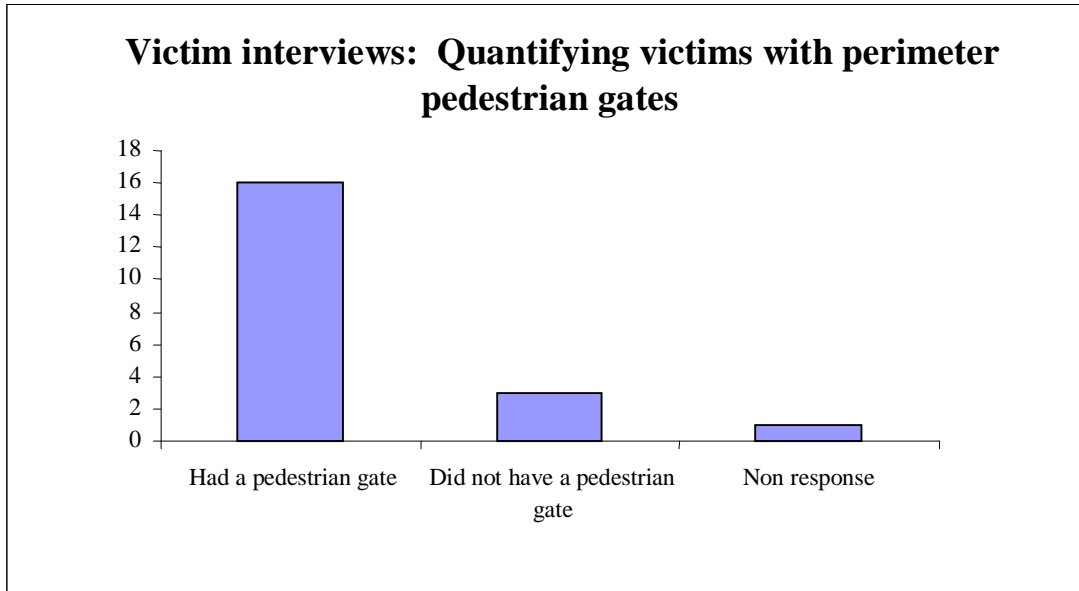
There is not much difference in the number of victims (seven out of the twelve) without any additional security features fitted to their vehicle automation system versus those with (five out of the twelve) and therefore it cannot be concluded in this study that the absence or presence of additional security features to vehicle gate automation systems had any impact on the occurrence or not of a residential burglary

⁴³ The remote receiver switches the intruder alarm off when the remote is pressed to activate the gate motor/automation. This ensures that the intruder alarm at the vehicle gate will remain an instant zone when someone tries to force the gate open and will activate the intruder alarm immediately.

Perimeter pedestrian gates

The following bar chart indicates the number of the victims that had perimeter pedestrian gates at the time of the burglary incident.

Bar Graph 30: Number of victim’s with perimeter pedestrian gates

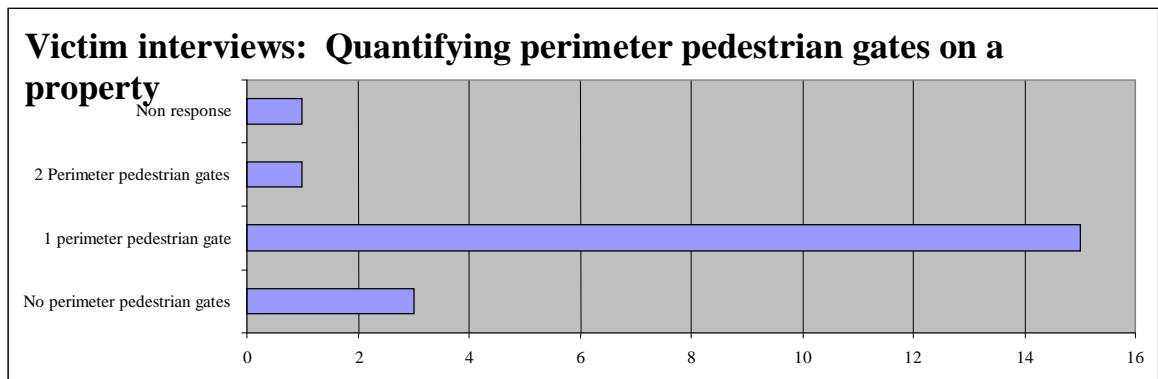


The majority of the victims (sixteen out of twenty victims) had perimeter pedestrian gates. This can only be conclusive to have an impact on the incidence of residential burglary if it can be proven that the perpetrator(s) used the pedestrian gate as entry and exit points.

Number of perimeter pedestrian gates

The following bar chart indicates the number of pedestrian gates on the perimeter of the victim’s property at the time of the burglary incident.

Bar Graph 30: Number of perimeter pedestrian gates at victim’s properties

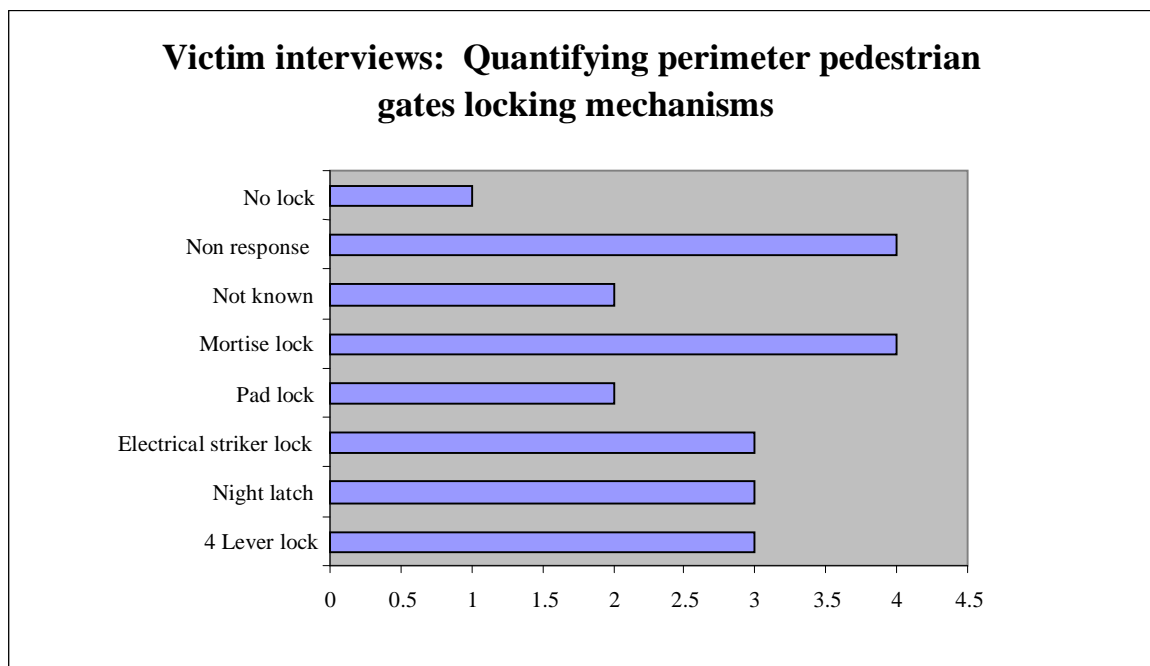


The majority of the victims (fifteen out of the twenty victims) had one perimeter pedestrian gate on their property and one victim had two pedestrian gates.

Perimeter pedestrian gate locking mechanisms

The following bar chart indicates the number of specific locking mechanisms used on the perimeter pedestrian gates of the victim’s property at the time of the burglary incident.

Bar Graph 31: Specific perimeter pedestrian gate locking mechanisms

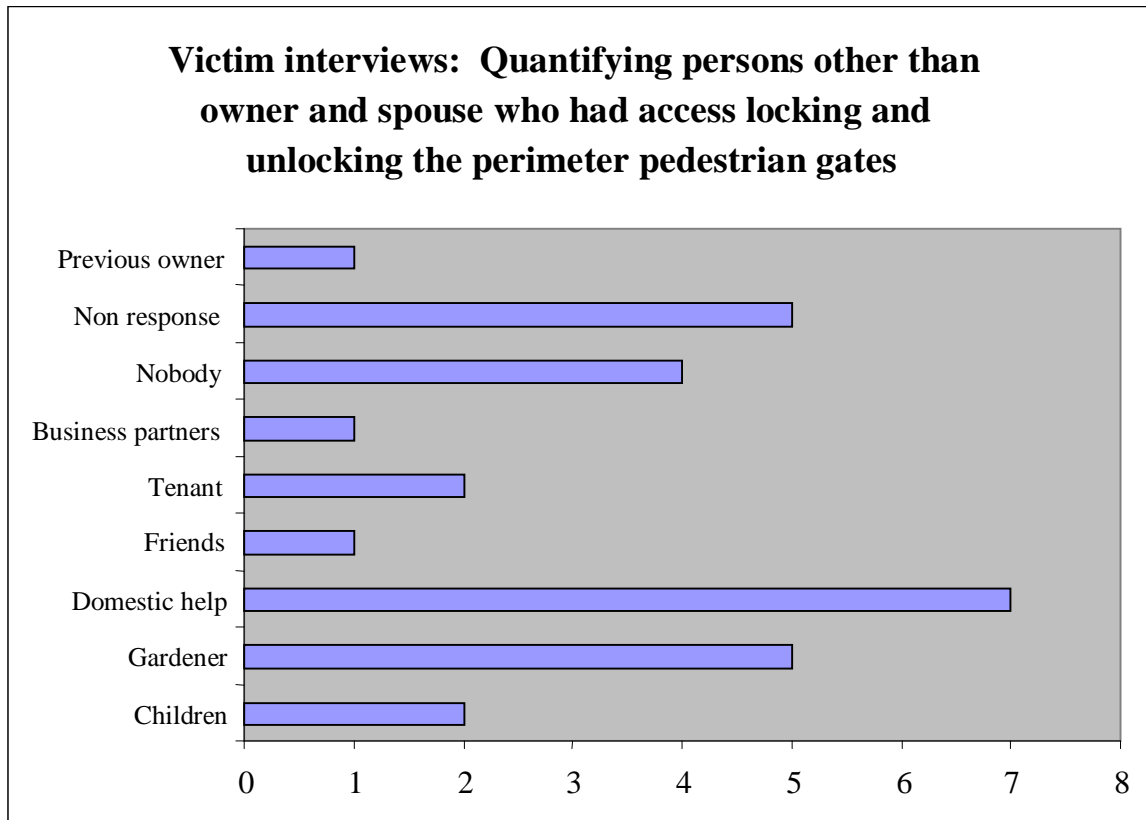


There is no substantial difference in the various specific locking mechanisms used on the perimeter pedestrian gates and therefore it cannot be concluded in this study that the presence of a specific perimeter pedestrian lock possibly increased possibility of a perimeter pedestrian gate used to intrude into the victim’s property.

As stated previously, if there were proof of pedestrian gates used as entry and exit points, one could then extend the research to types of locks and determine if the type of lock and incidence of burglary had a relationship.

The following bar chart indicates the number of specific persons other than the owner or the responsible tenant who had access to the locking and unlocking of the perimeter pedestrian gates of the victim’s property at the time of the burglary incident.

Bar Graph 32: Specific persons other than owner or responsible tenant who had access to the locking and unlocking of the perimeter pedestrian gates

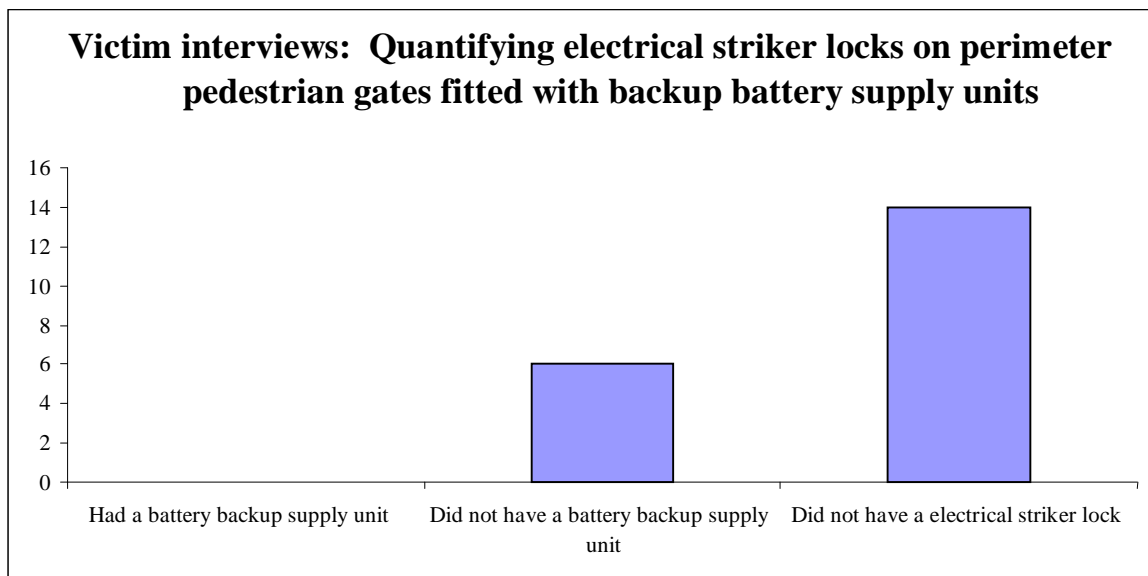


The majority of the victims (seven out of fifteen victims) had allowed their domestic workers to lock and unlock their perimeter pedestrian gates. Furthermore, five out of fifteen and three out of fifteen victims also allowed their gardeners and tenants and children respectively to lock and unlock perimeter pedestrian gates.

Electrical striker locks

The following bar chart indicates the number of victims who had electrical striker locks fitted to their perimeter pedestrian gates at the time of the burglary incident.

Bar Graph 33: Number of electrical striker locks fitted to perimeter pedestrian gates



Three out of the twenty victims had electrical striker locks fitted to their perimeter pedestrian gate(s). However, none of these, three victims had backup battery supply units connected to their electrical striker locks. This shortcoming had the same potential regarding power supply failures and preventing an armed response gaining access through such pedestrian gates as with vehicle gates if such power failures were to occur at the same time as the burglary incident.

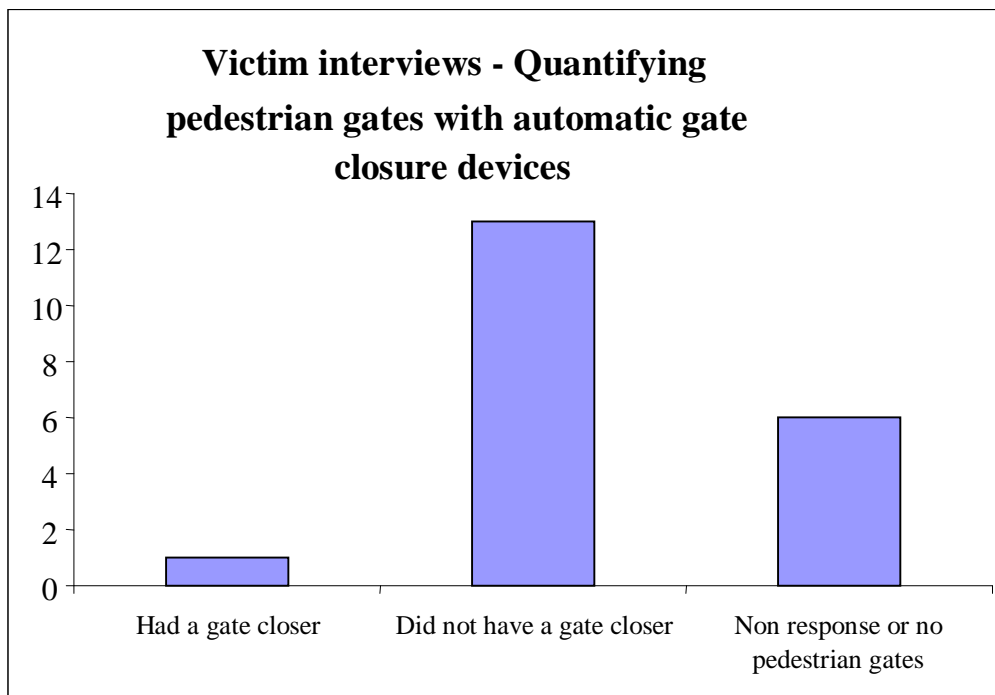
In the case of power failures and where the pedestrian gate is also connected to an electronic keypad to be the entry point for the armed response company, it would then again be impossible for the armed response company to gain access to the property to investigate alarm activation.

However, such a situation was not applicable in this study since none of the twenty victims had an electronic keypad connected to any electronic or electrical locks on the perimeter pedestrian gates.

Automatic gate closure devices

The following bar chart indicates the number of victims who had automatic gate closers fitted to their perimeter pedestrian gates at the time of the burglary incident.

Bar Graph 34: Number of pedestrian gates with automatic gate closure devices



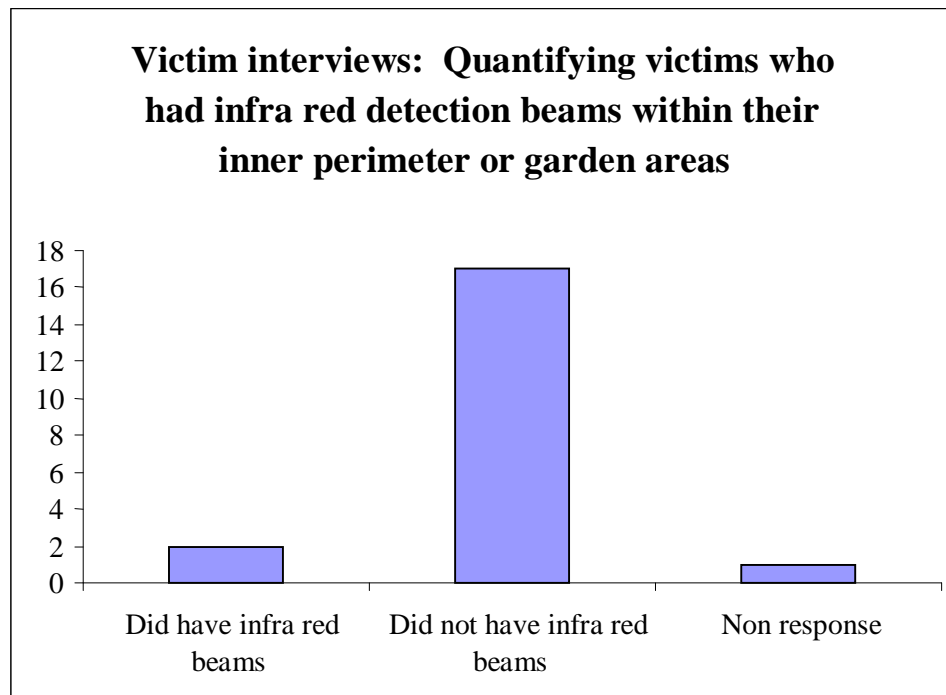
The majority of the victims (thirteen out of nineteen victims) did not have automatic gate closers on their perimeter pedestrian gates. Such automatic gate closers would have an impact on whether such gates close (lock) properly particularly if the gates were fitted with a slam lock, magnetic lock or electrical striker lock.

Inner perimeter and garden areas

Infra-red detection beams

The following bar chart indicates the number of victims who had infra-red detection beams within their inner perimeter or garden areas at the time of the burglary incident.

Bar Graph 35: Number of victims with infra-red detection beams within their inner perimeter and garden areas



Based on the above-mentioned bar chart the majority of the victims (seventeen out of the twenty interviews) did not have infra-red detection beams within their inner perimeter or garden areas. As a consequence it can be postulated that there was no possibility of early detection (by infra-red detection beams) in the incidents of burglary on those victim properties not having any infra-red detection beams installed. Therefore detection would only have occurred where the intruders gained access to the immediate house area. Furthermore, this detection would only have been applicable in those cases where victims had armed (activated) their house intruder alarm systems.

The two victims who had infra-red detection beams within their inner perimeter and garden area had these areas covered as follow:

- One victim had all areas covered; and
- One victim had only one side of the garden or inner perimeter covered by beams.

Only one of the two victims, who had infra-red detection beams, had removed shrubs and other vegetation from the paths of their beams. Such removal is generally undertaken so as to ensure that false alarms will be minimal (i.e. wind moving branches or leaves can set of an infra-red beam).

Both the victims who had infra-red detection beams within their inner perimeter or garden areas did not bypass their infra-red detection beams. Bypassing beams would be done if as an example the beam is faulty, routine changes with new occupants on the property and beams are not accommodating their routine, etc.

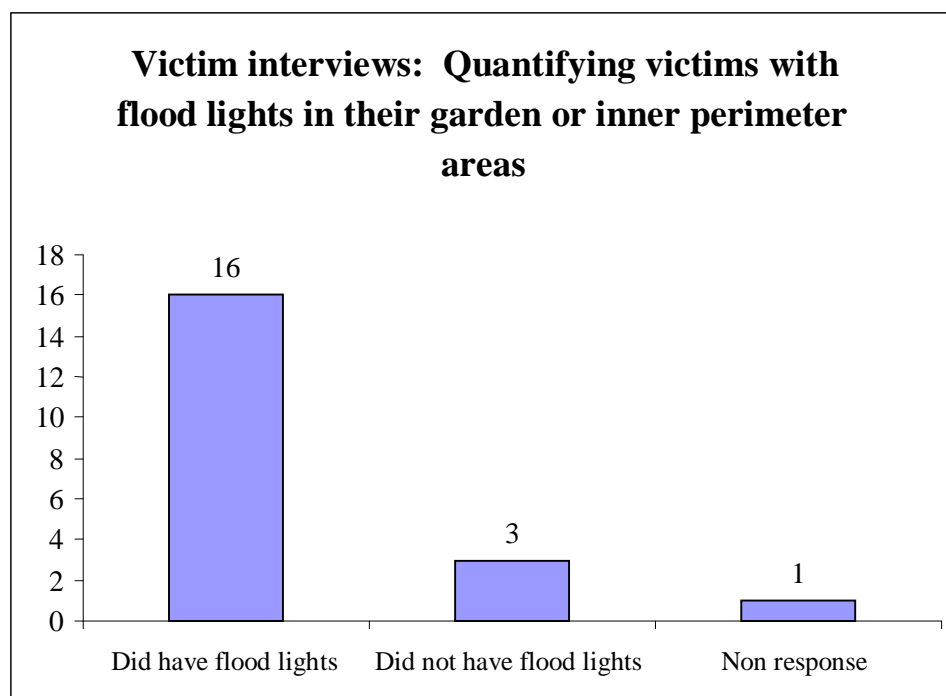
However, one of the victims with installed infra-red beams in the inner perimeter/garden area on occasion would bypass one of their beams due to their children moving in and out of the premises at irregular times which caused false alarms. As a result this one beam was regularly bypassed as a matter of course in an attempt to minimise on false alarms.

The other victim only had one beam installed in the inner perimeter/garden area. Therefore one can make the assumption that the entry point of the perpetrator(s) might well have been planned so as to avoid the beam area.

Security floodlights

The following bar chart indicates the number of victims who had security lights/floodlights within their garden or inner perimeter areas at the time of the burglary incident.

Bar Graph 36: Victims with floodlights in their garden or inner perimeter areas

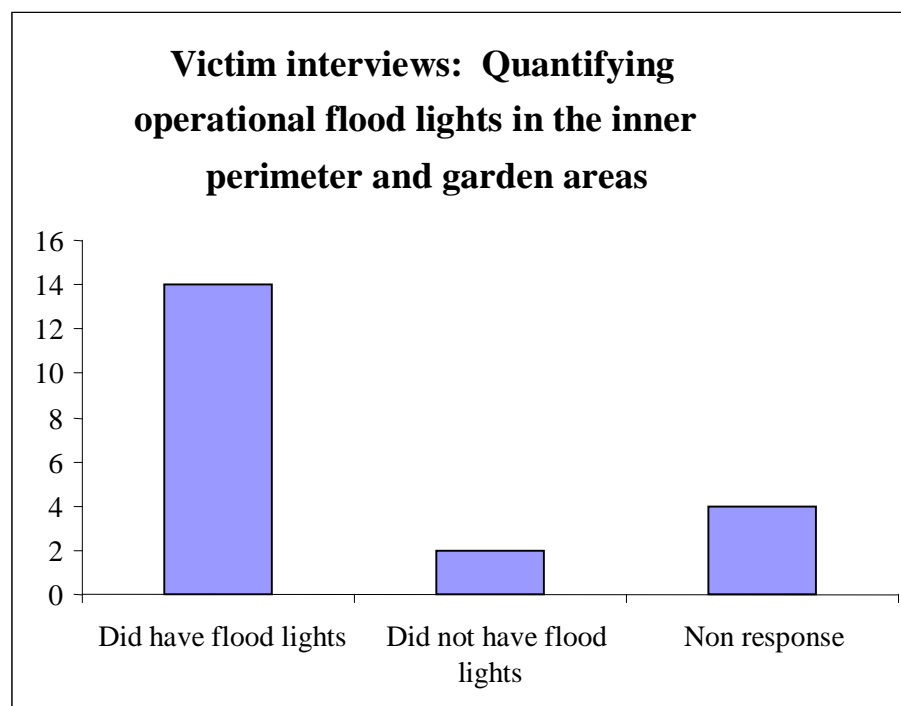


The majority of the victims (sixteen out of the twenty interviews) had floodlights/security lights within their inner perimeter and garden areas. The question here would be how these

lights were managed in terms of switching them on and off. Such management (or mismanagement) can contribute to the variable of either increasing (creating opportunity) or decreasing (deterrence) the possibility of victims being burgled.

The following bar chart indicates the number of victims who had security lights/floodlights within their garden or inner perimeter areas floodlights that were operational at the time of the burglary incident.

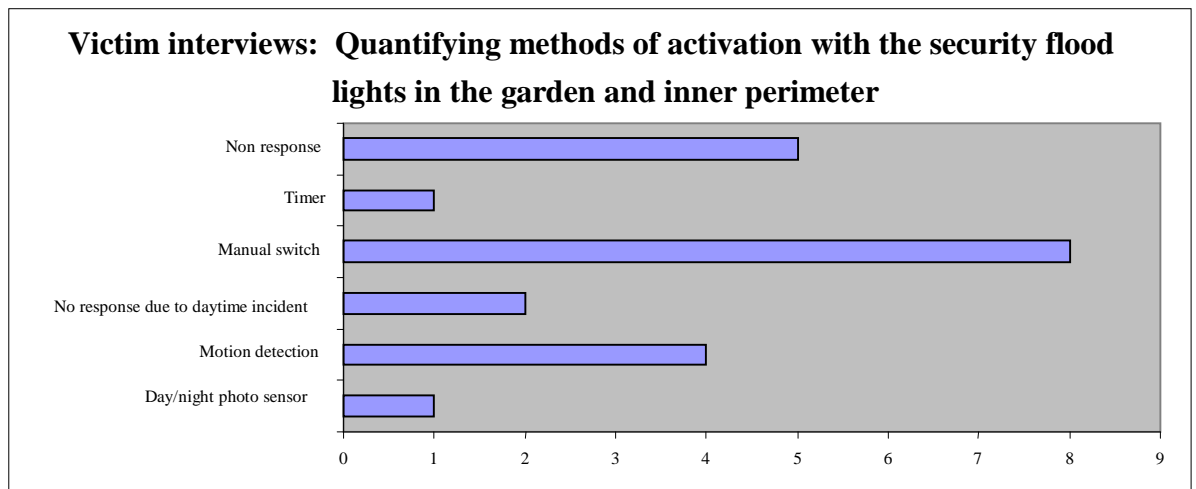
Bar Graph 37: The number of operational floodlights within the garden or inner perimeter areas



The majority of the victims (fourteen out of the sixteen interviews) had floodlights that were operational at the time of the incident. This could have an impact where the burglaries occurred during night time (only two incidents occurred during day time and this would not have an impact) and where the security lights can be a deterrent and detection mechanism with regards to residential burglary.

The following bar chart indicates the various methods used to switch the security floodlights within the garden and inner perimeter areas on and off at the time of the burglary incident.

Bar Graph 38: Methods of activation of the security floodlights within the garden or inner perimeter areas



Only fourteen out of the twenty interviews have reference in this section. Another two victims are classified as not applicable to the security floodlights section due to the fact that the residual burglary incident occurred during the day time. The majority of the victims (eight out of the fourteen interviews) activated their security floodlights with a manual switch.

A manual switch enables the victims to activate their security flood lights when they want to and also to switch it off at anytime. The day night sensor with a manual facility ensures that the security lights are activated when it is dark and switched off when the light lux level has increased to a value regarded as daytime.

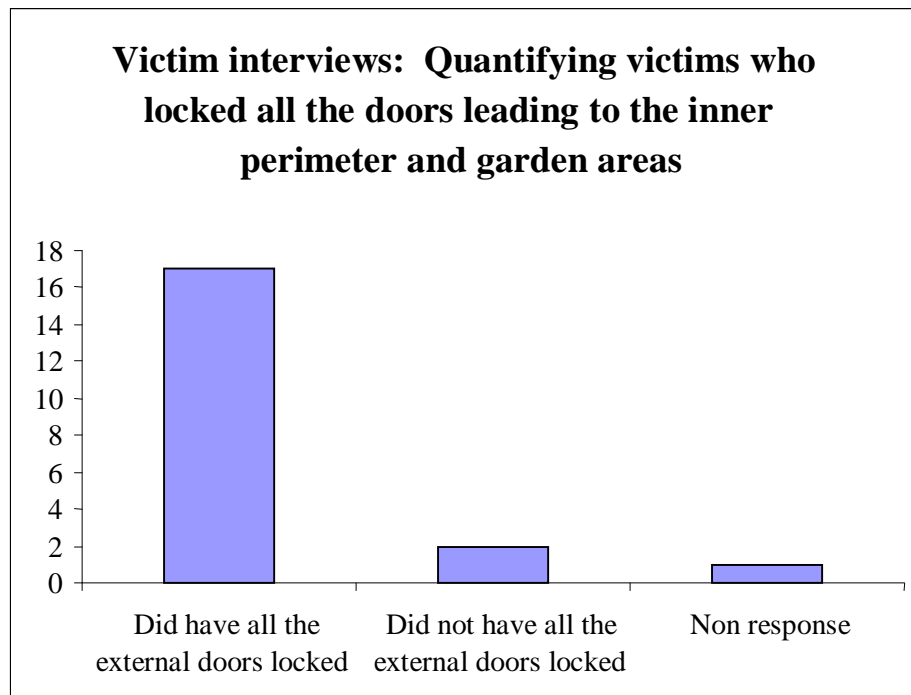
The researcher concludes in this particular research section that there would exist the possibility of human neglect where the security floodlights might not have been switched on (i.e. on a regular basis or consistently all the time).

Immediate house area

Doors

The following bar chart indicates the number of victims who had locked all their external door/s (of the house) leading to the inner perimeter or garden areas at the time of the burglary incident.

Bar Graph 39: The number of victims who had locked all the external doors leading to the inner perimeter or garden areas

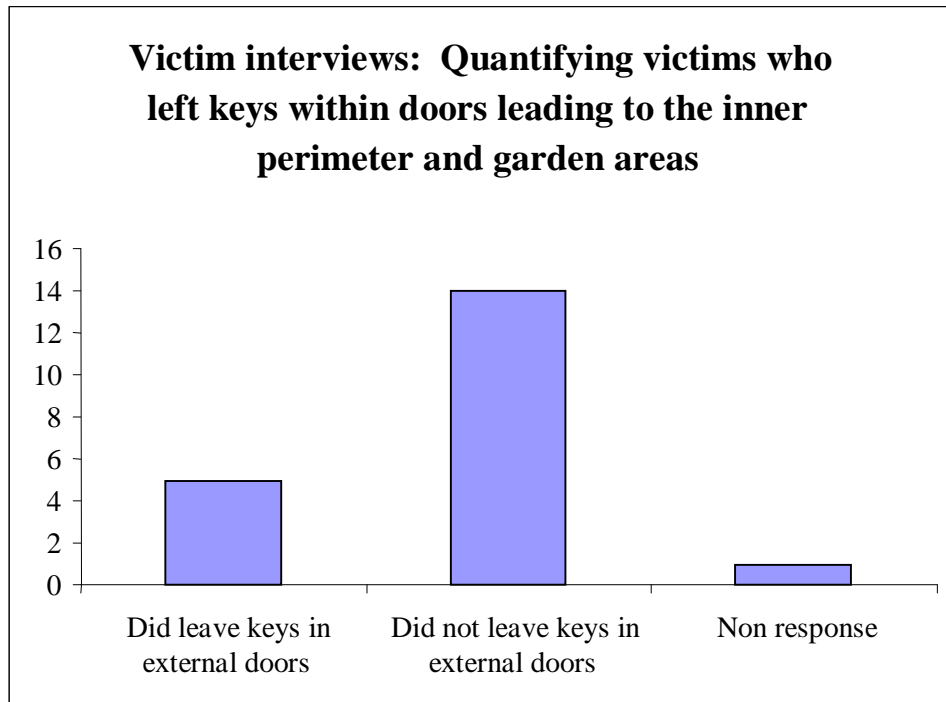


The majority of the victims (seventeen out of the twenty interviews) had all their doors leading to the inner perimeter or garden areas locked at the time of the burglary incident.

The variable of leaving doors unlocked and thereby contributing to residential burglary cannot be concluded here for this research project since other variables such as the managing of the keys for the locking of these doors leading to external areas might well have an impact in terms of either increasing/decreasing the possibility of a person being burgled. Below an attempt is made to examine this variable in order to ascertain whether it might have had an impact (providing an opportunity for burglar entrance directly through an external door) on the occurrence of the actual burglary.

The following bar chart indicates the number of victims who left keys in door locks leading to the inner perimeter or garden areas at the time of the burglary incident.

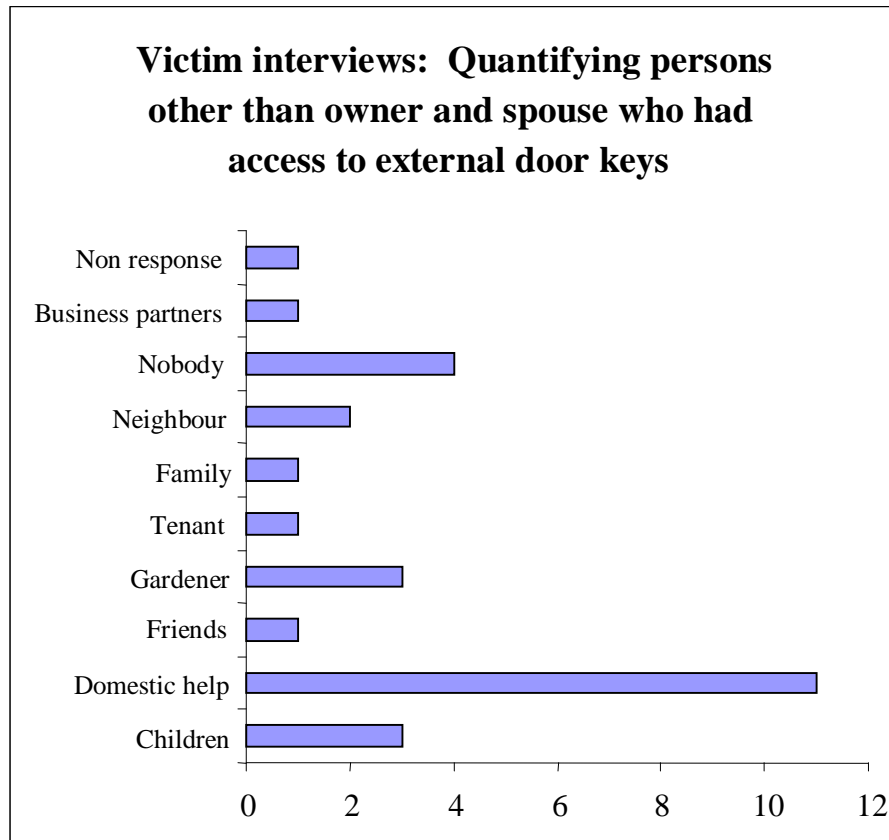
Bar Graph 40: The number of victims who left keys in doors leading to the inner perimeter and garden areas



The majority of the victims (fourteen out of the twenty interviews) did not leave their keys in doors leading to the inner perimeter or garden areas. It can therefore not be concluded in this research that leaving keys in doors contributed to the possibility of being burgled.

The following bar chart indicates the number of persons other than owner or responsible tenant who had access to the keys locking and unlocking the external door/s leading to the inner perimeter or garden areas at the time of the burglary incident.

Bar Graph 41: The number of persons other than owner or responsible tenant who had access to external door keys



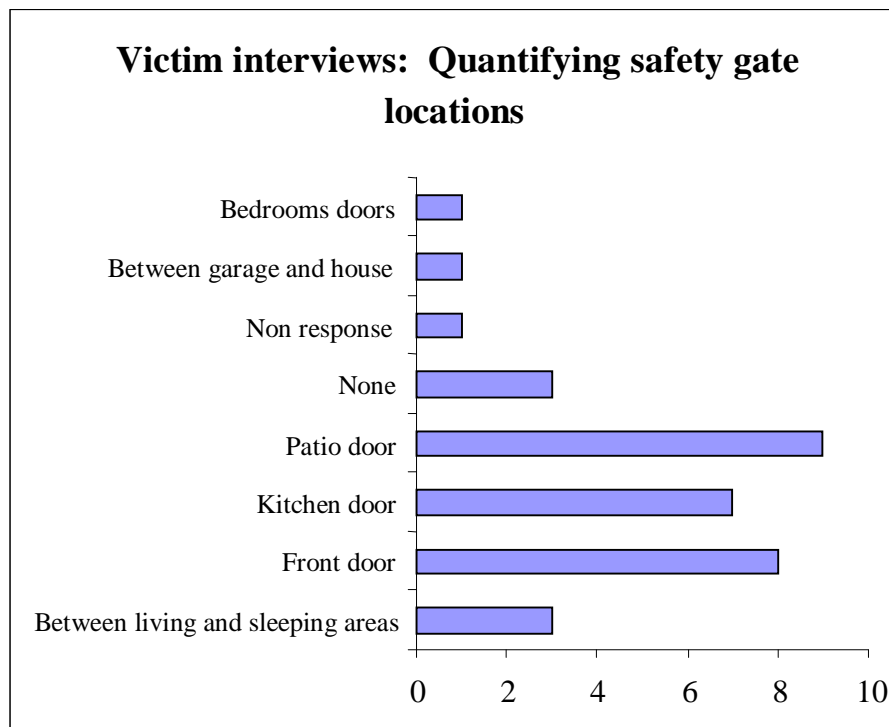
In the majority of the responses, eleven of the victims gave their domestic workers access to (use of) external door keys, while in three cases each use of external door keys was extended to children and gardeners and in one case family. Additionally in only four cases were no-one else but the owner or responsible tenant having use of these keys (i.e. having control of the keys at any one time).

The researcher concludes that in majority of the cases (16 out of possible 19 cases) there was more than the owner or responsible tenant who had access to the keys locking external doors.

Safety/security gates

The following bar chart indicates all the areas in the residence where safety/security gates were installed at the time of the burglary incident.

Bar Graph 42: Areas in residence of safety/security gate locations

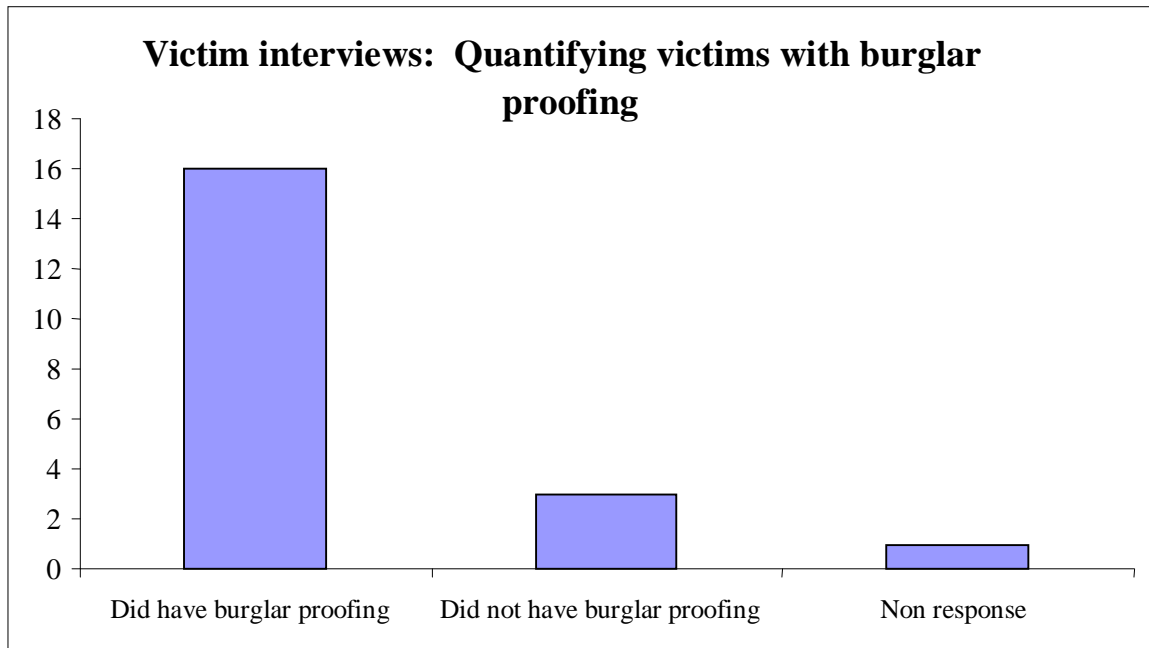


In the majority of the cases (nine of the twenty victims) safety/security doors had been installed to cover patio doors, followed by eight of the twenty victims who had their front doors and seven of the twenty victims who had their kitchen doors covered with safety/security doors at the time of the burglary incident. It can therefore be concluded that the majority of the victims (sixteen out of the twenty interviews) had some or the majority of their external doors secured by a safety/security gate. Three of the victims had none and one had no applicability to this question.

Windows and burglar proofing

The following bar chart indicates the number of victims with burglar proofing on some or all of their windows at the time of the burglary incident.

Bar Graph 43: The number of victims with burglar proofing on all or some of their external windows

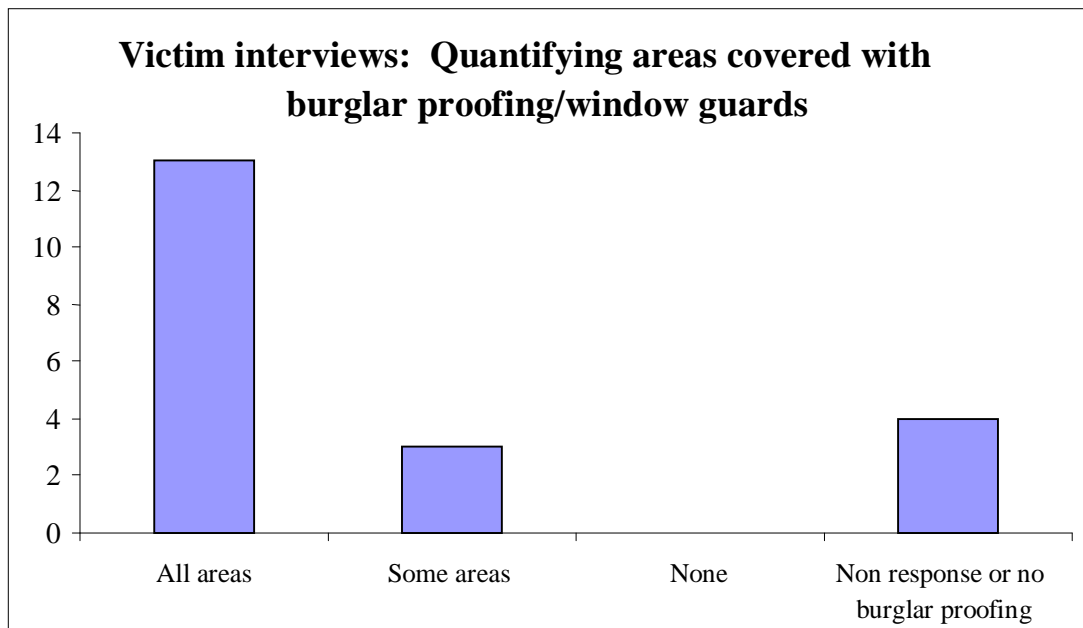


The majority of the victims (sixteen out of the twenty interviews) had burglar proofing securing all or some of their external windows.

The question would be if all the windows were secured with burglar proofing and the outcome would be concluding if this result contributed to the victims being burgled. The following bar chart indicates which of the victims had all their windows covered with burglar proofing, some covered with burglar proofing and none covered with burglar proofing

The following bar chart distinguishes between victims having all or only some windows covered with burglar proofing window guards.

Bar Graph 44: The number of victims with all or some of windows covered with burglar proofing/window guards



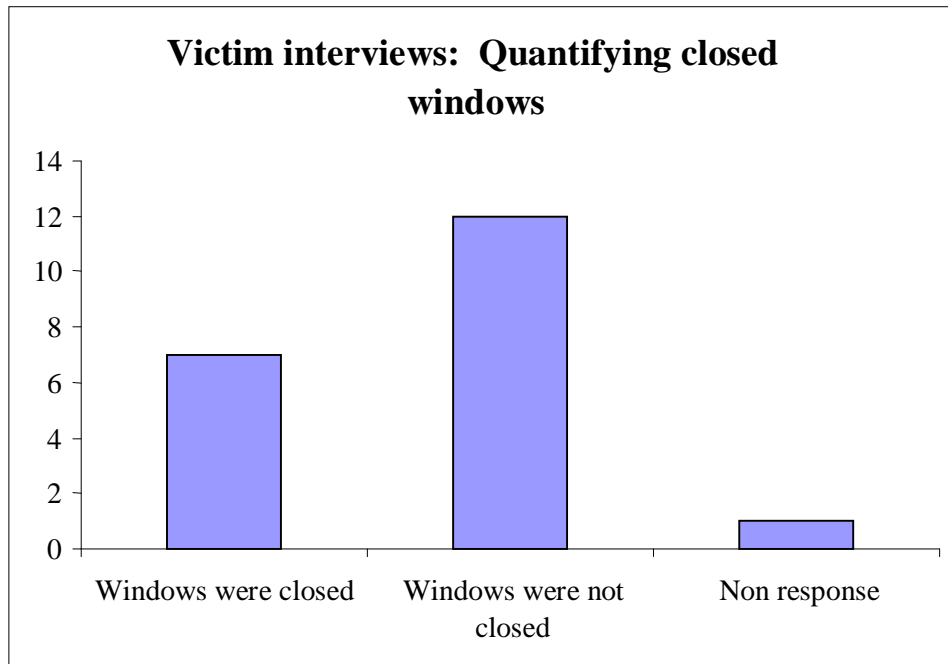
Majority of the victims (thirteen out of the sixteen victims) who had burglar proofing, had all their windows secured in this regard.

In comparison with regard to the docket analysis where the following results were reflected:

- 19% of the cases windows were broken;
- 11% of the cases burglar proofing were forced open;
- 11% of the cases the windows were forced open; and
- and 20% of the cases where the doors were forced open, one could possibly state that just over 50 percent of those who experienced intrusion through windows, had burglar proofing (11% of the 19% of cases). In the majority of the interviews, 16 out of the 20 victims had burglar proofing and 13 of the 16 victims had all areas covered with burglar proofing.

The following bar chart indicates the number of victims who closed their windows prior to the burglary incident.

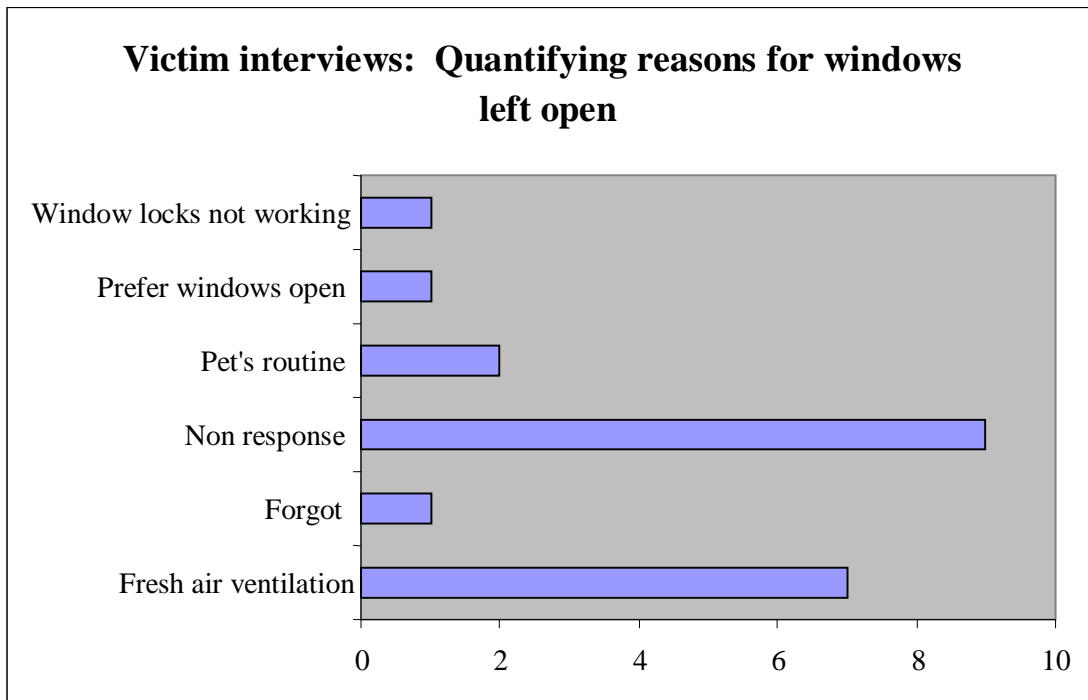
Bar Graph 45: The number of victims who closed their windows prior to the incident



In this study it was found that the majority of the victims (twelve out of the twenty interviews) did not close their windows prior to the burglary incident. Therefore, within the context of possible factors (security shortcomings or security practices (routines) in existing security systems measures) in this study that could have contributed to the burglary incident, it can be concluded that open windows contribute to the possibility of being burgled.

The following bar chart indicates the number of different reasons for windows being left open by victims prior to the burglary incident.

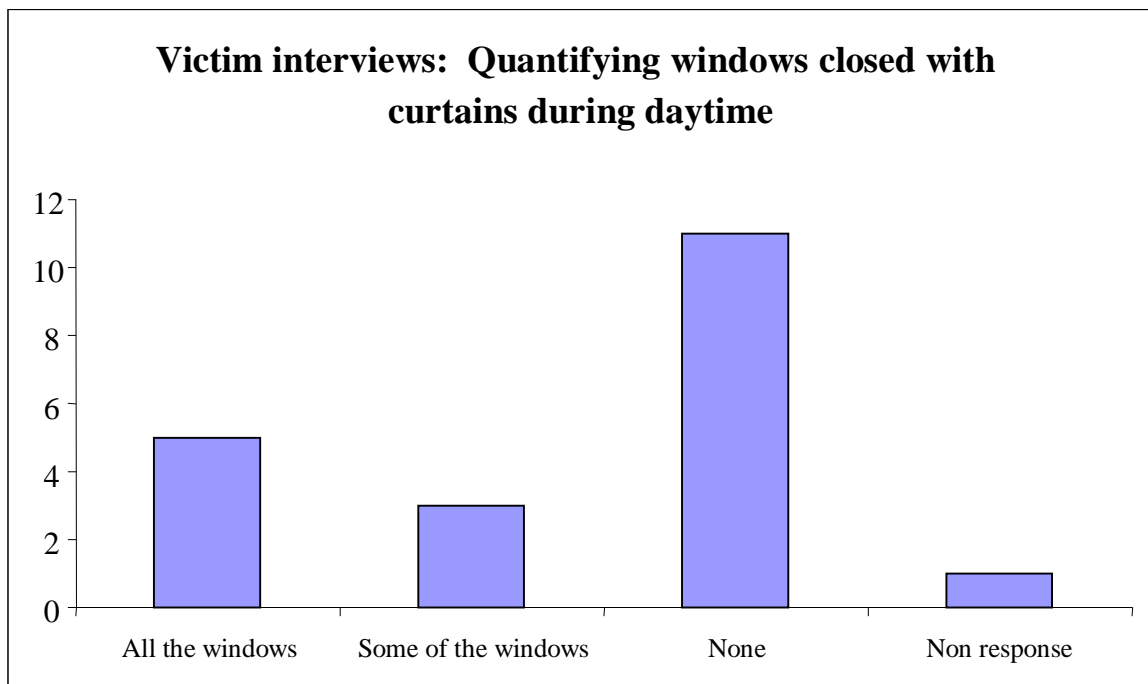
Bar Graph 46: Reasons for leaving windows open



The majority of the victims (seven out of the twelve victims) left their windows open for fresh air ventilation.

The following bar chart indicates the number of window areas that were secured by closed curtains during day time thereby concealing movement within from any possible intruders.

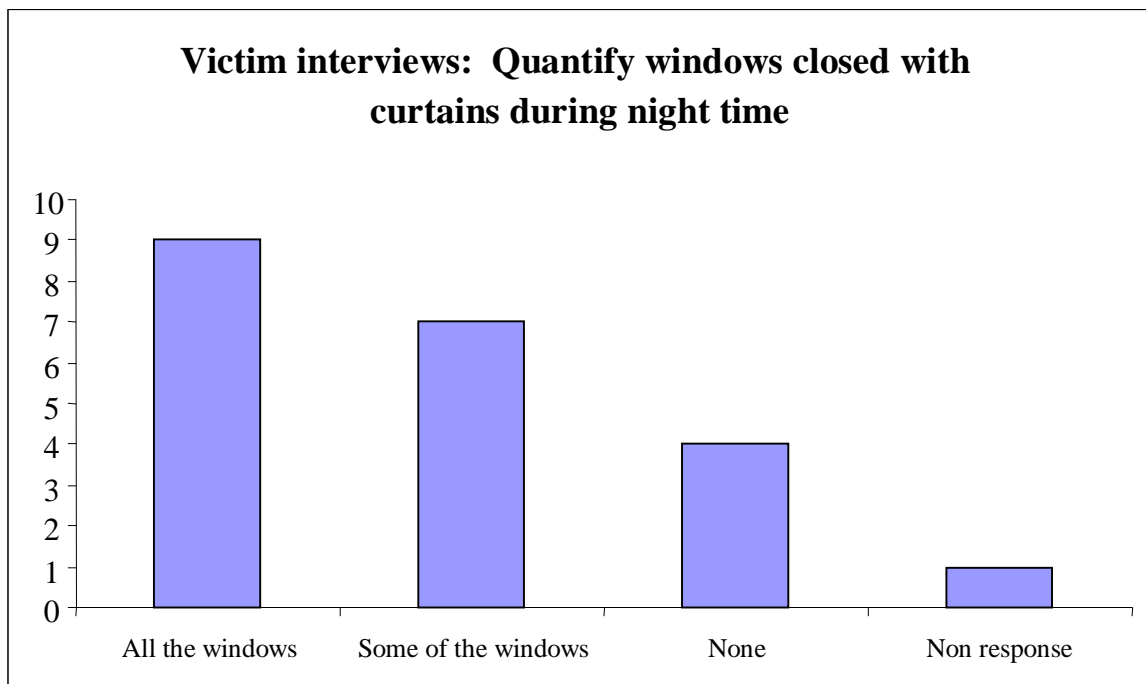
Bar Graph 47: The number of window areas closed with curtains during day time



The majority of the victims (eleven out of the twenty interviews) did not have any of their windows covered with curtains during day time and in three of the cases only some windows closed by curtains. Accordingly, it can be concluded in this study that windows without curtains closed during daytime contributed to the possibility of being burgled since (as a security measure), any internal movement was not concealed from possible intruders (i.e. serves as a deterrent factor). In other words an intruder possibly observing no movement might well conclude that this factor provides an opportunity and a motivation to burgle the house.

The following bar chart indicates the number of window areas that were secured by closed curtains during night time thereby concealing movement within from any possible intruders.

Bar Graph 48: Number of window areas closed with curtains during night time



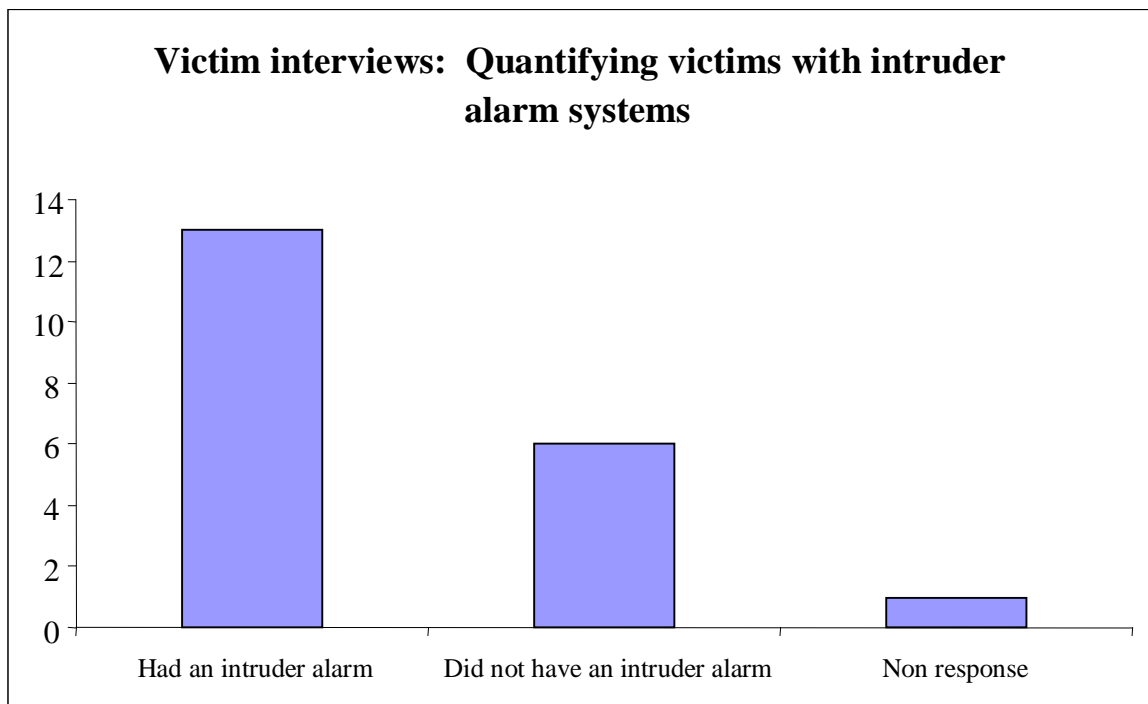
There is no distinct difference between victims who closed all of the windows with curtains during night time (nine of the twenty victims) and those who only closed some of the windows with curtains (seven out of the twenty victims). It cannot therefore be conclusively concluded that windows without curtains contributed to a person being burgled at night time.

If burglaries are committed mostly during night time then one can conclude in this study that the covering of windows with curtains during day time might increase the possibility of not being burgled during the day and vice versa for night.

Intruder alarm systems

The following bar chart indicates the number of victims who had intruder alarms at the time of the burglary incident.

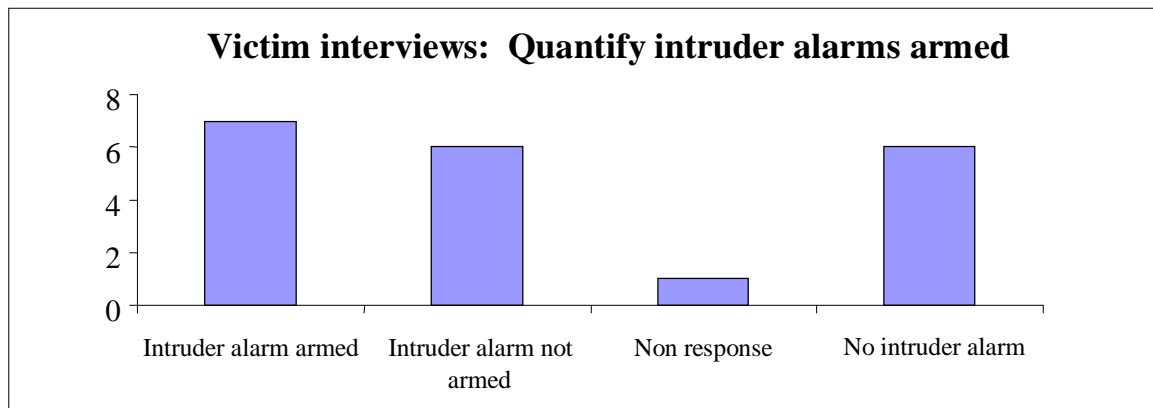
Bar Graph 49: Number of victims with intruder alarm systems



The majority of the victims (thirteen out of the twenty interviews) had intruder alarms. However, one cannot conclude from this result that the presence of intruder alarms increases the possibility of being burgled due to the possibility of other variables such as arming (activation) status of the intruder alarms.

The following bar chart indicates the number of victims who armed their intruder alarm systems prior to the burglary incident.

Bar Graph 50: The number of victims who armed their intruder alarm systems



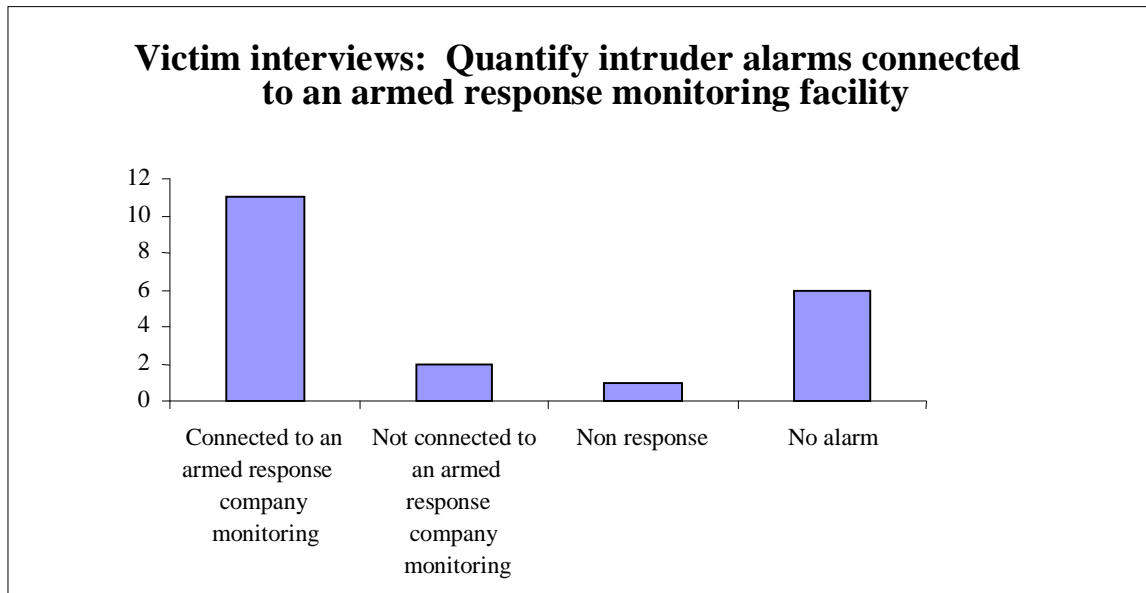
There is almost no distinct difference between victims who armed their intruder alarm systems (seven out of the thirteen victims who had intruder alarms) and victims who did not arm their intruder alarm systems (six out of the thirteen victims who had intruder alarms). It cannot be concluded that the arming status of the intruder alarm can contribute to the possibility of being burgled or not being burgled due to other variables such as whether the intruder alarm was properly setup to cover all possible areas.

The following were reasons for not arming the intruder alarm systems were provided by the respondents:

- Faulty beam;
- Irregular routine of other occupants causing false alarms;
- Just moved into the premises and not familiar with the use of the alarm;
- Not familiar in using the alarm;
- Was at home;
- Faulty alarm and not functional; and
- Only use it when not at home and prefer use of dogs instead.

The following bar chart indicates the number of victims with intruder alarms linked to an armed response monitoring facility prior to the burglary incident.

Bar Graph 51: Number of victims with intruder alarms linked to an armed response monitoring facility



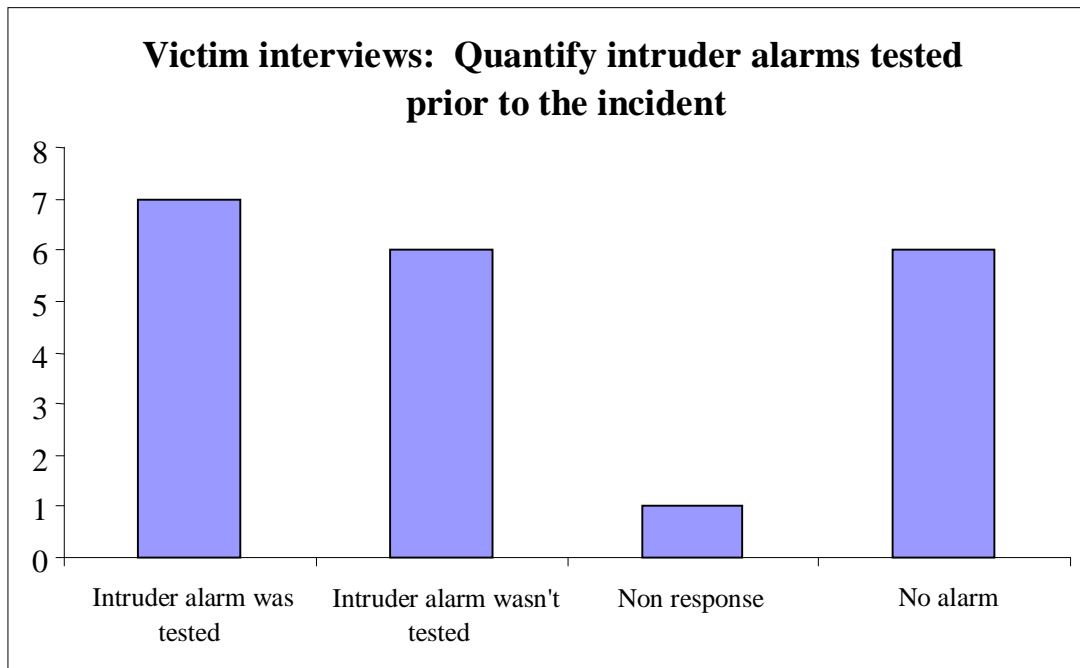
The majority of the victims (eleven out of the thirteen victims who had intruder alarm systems) had intruder alarms linked to an armed response monitoring facility. However, it can not necessarily be concluded that having intruder alarms linked to an armed response facility would increase the likelihood of not being burgled. Again in these circumstances there are such variables as whether the alarm was armed at the time of the burglary incident, or for the armed response officer having access to the property – both of which can have an impact on whether an intruder alarm linked to a response monitoring facility is effective.

Only two reasons for the intruder alarm systems not being linked to an armed response monitoring facility were given, namely:

- Just moved into the house; and
- Alarm was not functional.

The following bar chart indicates the number of victim's intruder alarms that were tested prior to the burglary incident.

Bar Graph 52: The number of victims' intruder alarms tested prior to the incident

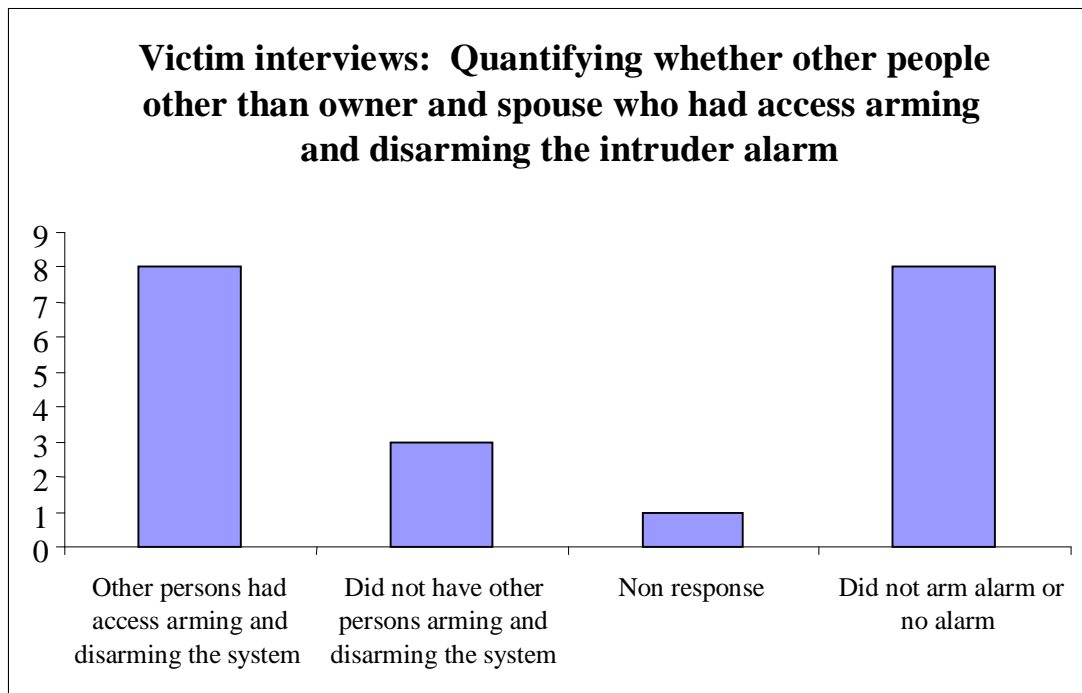


From the above chart there appears to be no significant difference in terms of becoming a victim of a burglary between those victims who tested their alarms prior to the incident (seven out of the thirteen victims who had intruder alarms) and those victims who did not test their intruder alarm systems (six out of the thirteen victims who had intruder alarm systems) before the burglary incident. Therefore it cannot be concluded that the testing of alarms prior to the burglary incident would minimise the possibility of a person being burgled or being exposed to a greater extent to a residential burglar. This assumption is based on variables such as the length of time i.e. how long before the incident the alarm was tested and the placement of hardware (infra-red beams (eyes) inside the house and finally to what extent these cover all possible areas of access.

The time frames (how long) before the residential burglary incident that the intruder alarms were tested by victims ranged from days, weeks, months, annually and never. It can therefore not be concluded what the optimal time frame (i.e. how regularly) should be for testing an alarm system in order to minimise the likelihood of being exposed to a residential burglary incident. Within this context other possible variables such as whether the armed response monitoring device was properly linked to the intruder alarm, did the armed response give accurate feedback to the owner in terms of what alarm signals were received etc. must also be taken into account.

The following bar chart indicates the number of persons other than the owner or responsible tenant who had access to arming (activating) and disarming (putting off) the intruder alarm system.

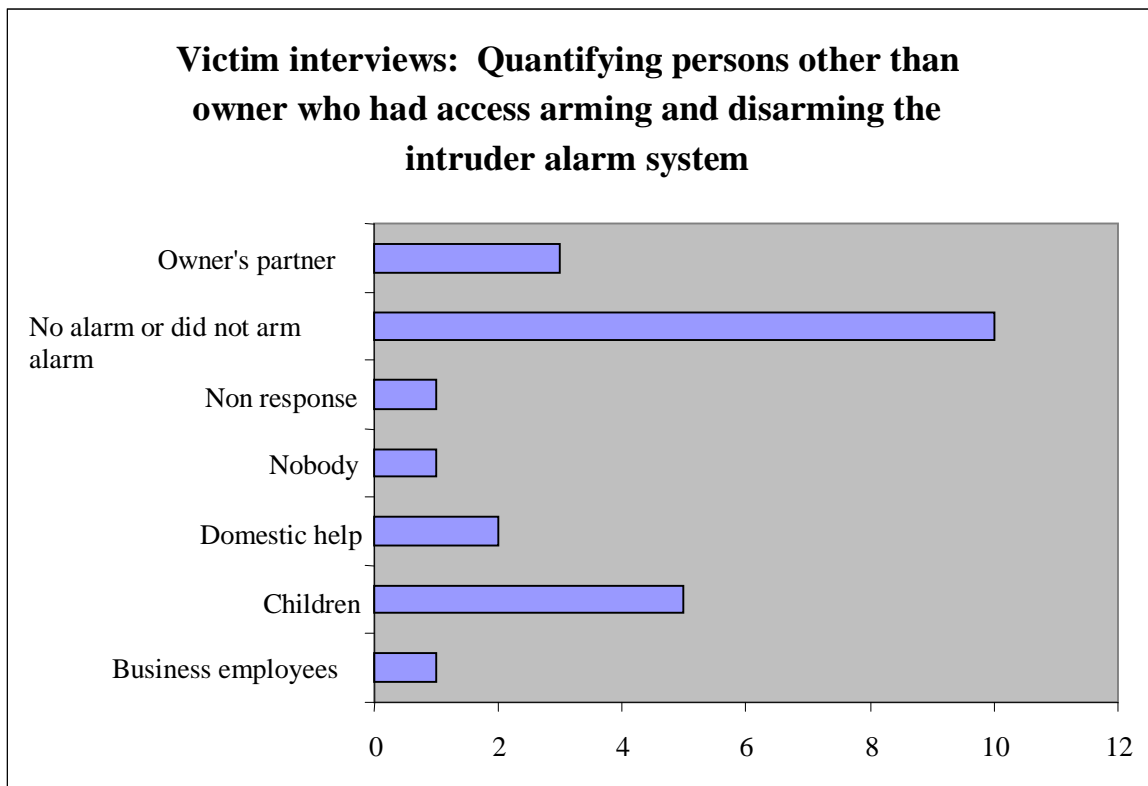
Bar Graph 53: The number of persons other than the owner or responsible tenant who had access to arming and disarming the intruder alarm system



The majority of the alarm systems (eight of the thirteen victims who had intruder alarm systems) had persons other than the owner or responsible tenant who could arm and disarm it. One possible inference here is that there is possibly less control over an alarm system and it's effectiveness the more users there are that have control over its activation and de-activation.

The following bar chart indicates the number of specific persons other than the owner or responsible tenant who had access to the arming or disarming of the intruder alarm system.

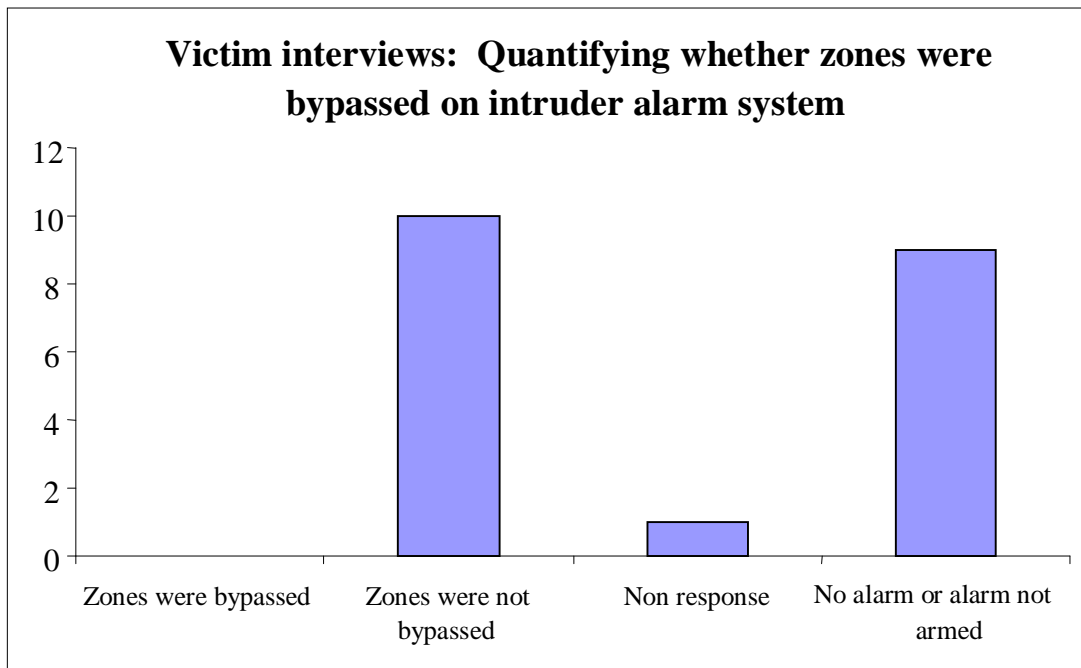
Bar Graph 54: The number of specific persons other than the owner or responsible tenant who had access to the arming and disarming of the intruder alarm system



The children of victims in five of the possible eight cases had access to the arming and disarming of the intruder alarm system.

The following bar chart indicates the number of intruder alarm zones bypassed/isolated prior to the burglary incident.

Bar Graph 54: The number of intruder alarm system zone bypassed/isolated prior to the incident

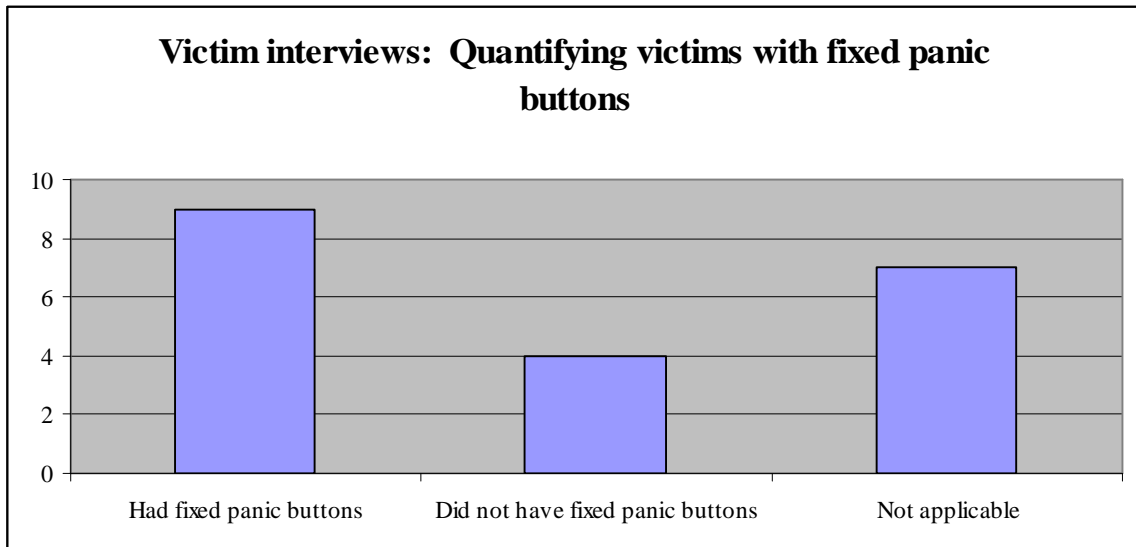


None of the victims (possible seven out of the seven interviews who armed their intruder alarm systems) bypassed any zones on their intruder alarm systems.

Panic buttons

The following bar chart indicates the number of victims with fixed panic buttons connected to their intruder alarm systems prior to the burglary incident.

Bar Graph 55: The number of victims with fixed panic buttons connected to their intruder alarm systems

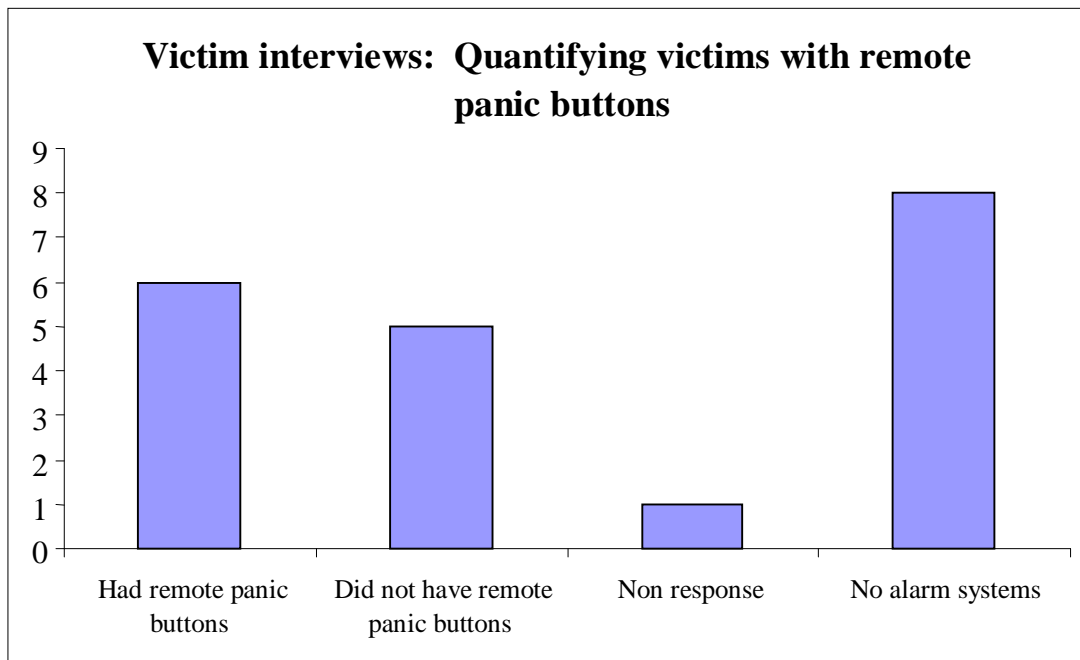


The majority of the victims (nine out of the thirteen victims who had intruder alarm systems) had fixed panic buttons connected to their intruder alarm systems.

Fixed panic buttons as an additional deterrent factor in security systems are again dependent upon a number of variables inter alia detection of perpetrator movement by any of the occupants and quickly pushing of panic button; panic buttons not immediately reachable; location of the panic button not known or possibly not connected to a dedicated panic zone on the intruder alarm and armed response monitoring device. (Radio frequency device transmitting a panic signal back to the armed response control room)

The following bar chart indicates the number of victims who had remote panic buttons.

Bar Graph 56: Indicates number of victims with remote panic buttons

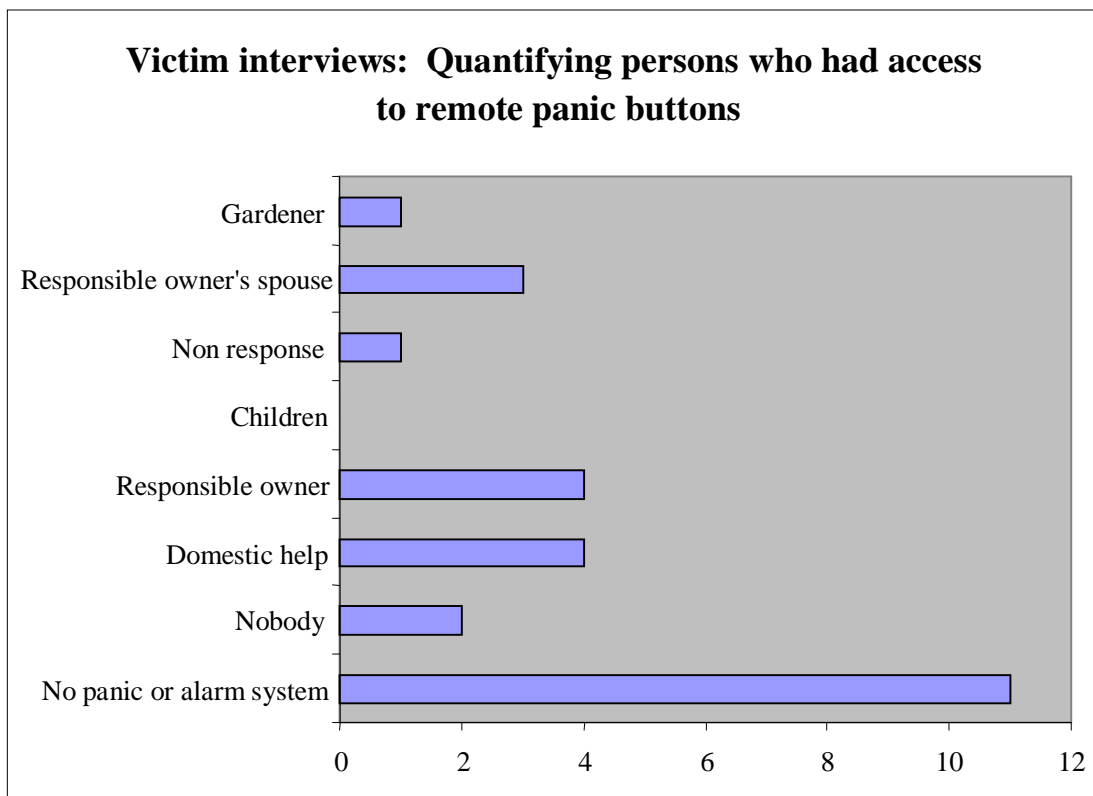


There is no distinct difference between those victims who had remote panic buttons (six of the thirteen victims who had intruder alarm systems connected to an armed response monitoring facility) and those victims who did not have remote panic buttons (seven of the thirteen victims who had intruder alarms linked to an armed response monitoring facility). No real conclusion can therefore be drawn whether the presence of remote panic buttons will minimise the risk of a victim being burgled on the basis of activating the panic on early detection before the perpetrator is able to take anything from the premises over and above the presence of fixed panic buttons.

The presence of fixed of remote panic buttons linked to an armed response company can facilitate quicker reaction for example the domestic help on the property can activate an alarm signal with the armed response company when irregularities are suspected.

The following bar chart indicates the number of specific persons having access to the remote panic buttons.

Bar Graph 57: The number of specific persons who had access to remote panic buttons

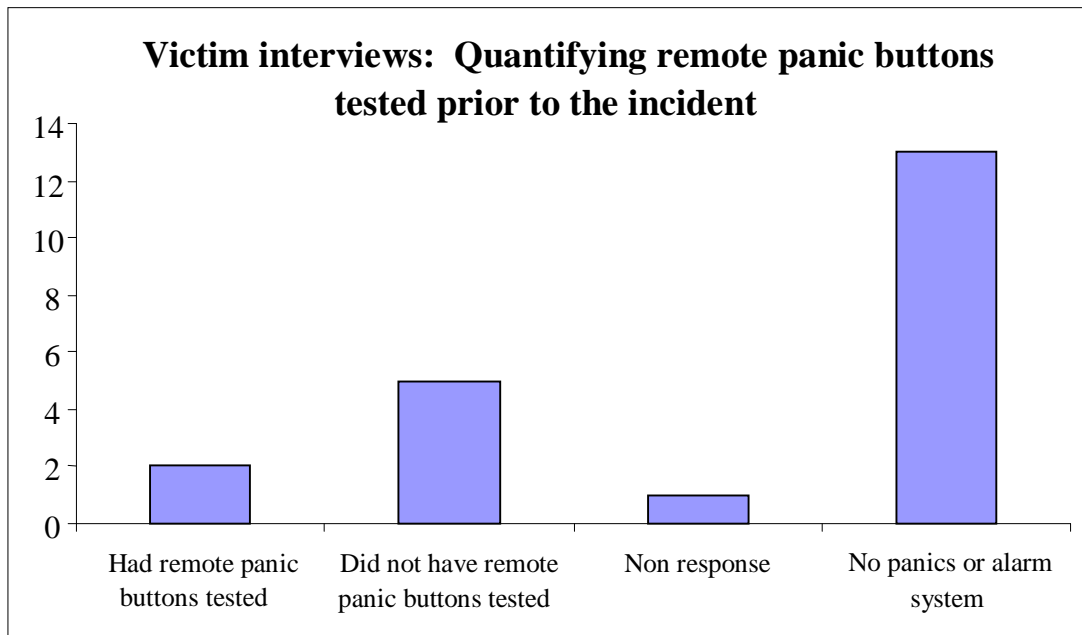


From the above chart there is no distinct evidence that a specific person having access to the remote panic button might have contributed to non response of armed response.

However, the above statement could well not be accurate if, for example, only the responsible owner had access (i.e. on his/her person) to the remote panic buttons and therefore the gardener or domestic worker could not activate the armed response monitoring.

The following bar chart indicates the number of victims who tested their remote panic buttons prior to the burglary incident.

Bar Graph 58: The number of remote panic buttons tested prior to the incident



The majority of the victims who had remote panic buttons (four out of the six interviews) did not test their remote panic buttons prior to the incident compared to the two victims who tested their remote panic buttons.⁴⁴

The two victims who tested their remote panic buttons had respectively tested their buttons months and annually prior to the burglary incident. The testing of the remote panic months or annually (or even more regularly) might well increase the possibility of detecting a variable such as faulty batteries, faulty armed response monitoring devices or faulty panic receivers.

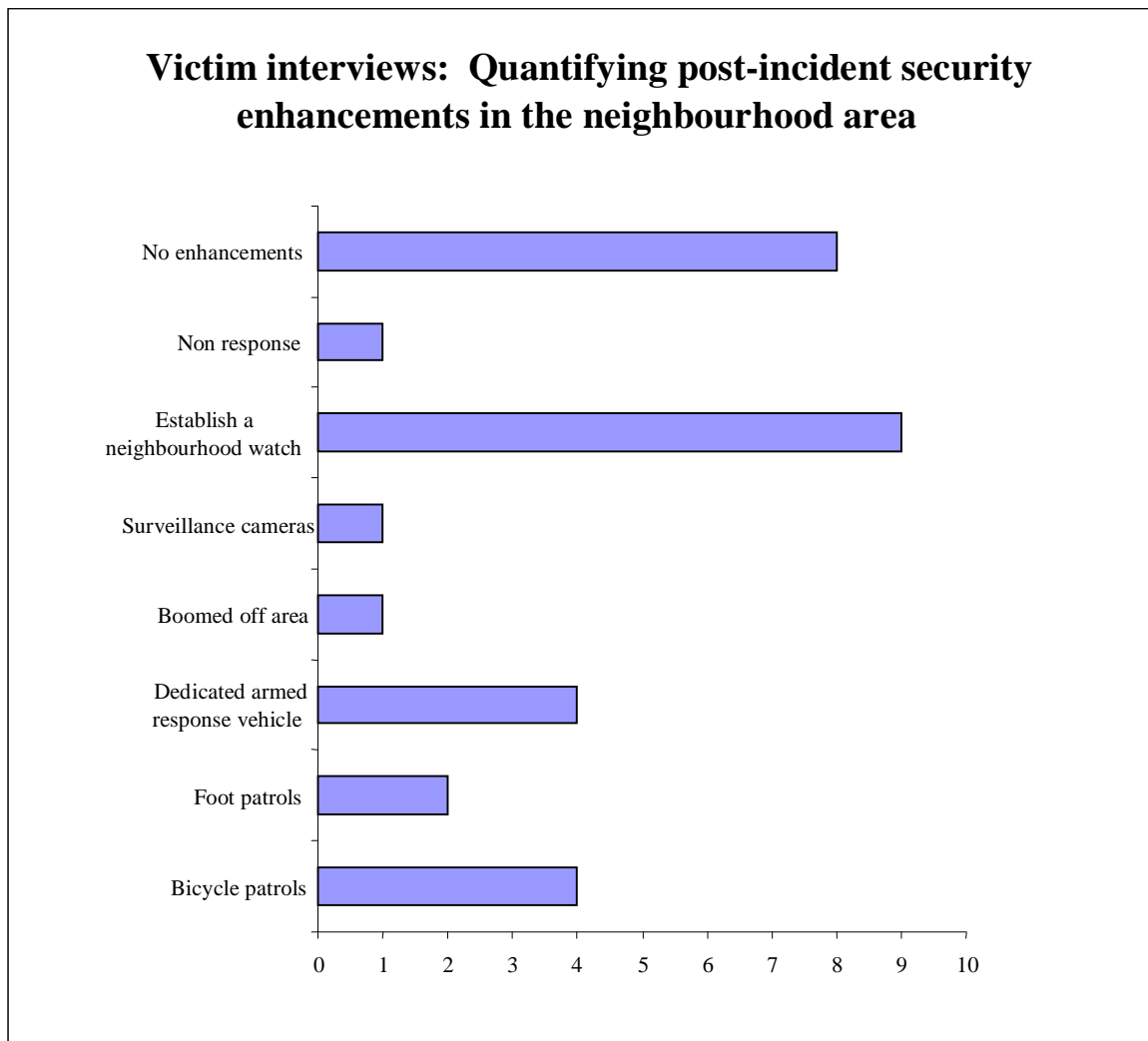
POST-INCIDENT SECURITY ENHANCEMENTS AT RESIDENCES OF VICTIMS

The neighbourhood area

The following bar chart indicates what type of security enhancements were in place or were implemented after the incident in the neighbourhood areas.

⁴⁴ As an aside, in reality the researcher has experienced that the majority of his clients only start complaining about their remotes when they do not work properly to open their vehicle gates and never bother to test the working of such remotes.

Bar graph 59: The type of post-incident security enhancements implemented in the neighbourhood area



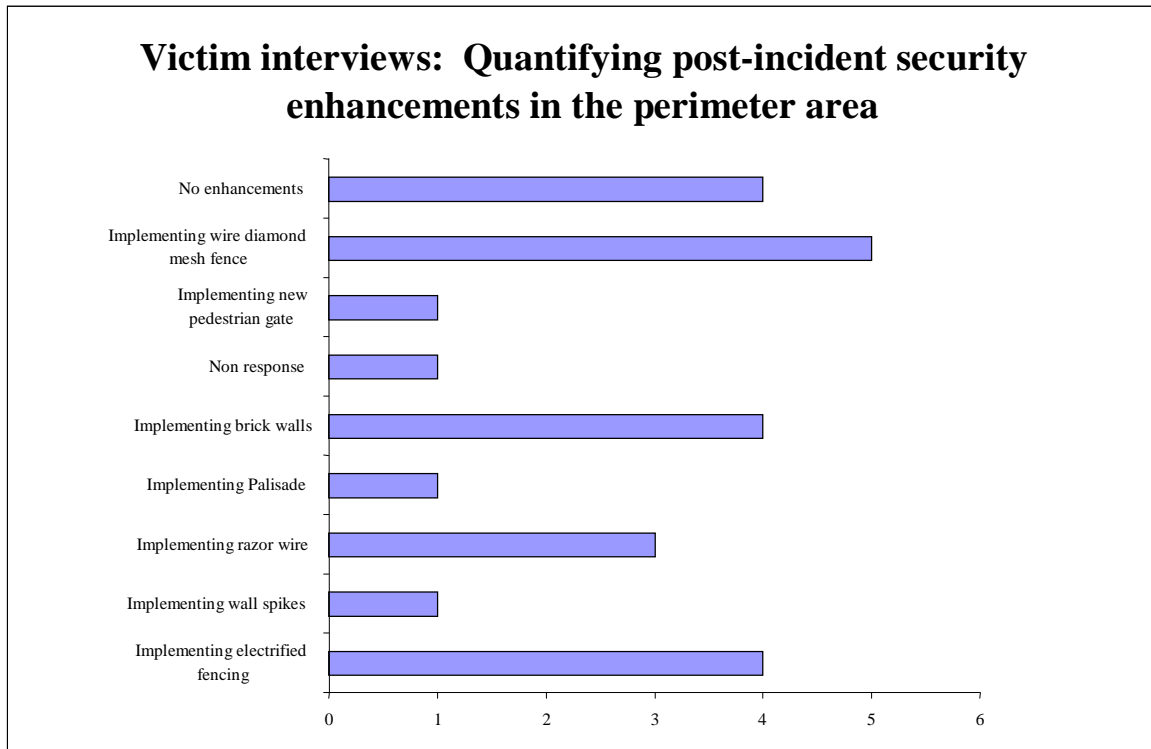
The majority of the responses (nine out of a possible twenty interviews) reported on separate new neighbourhood watch initiatives that were established post-incident, while two reported that a combination of implementing bicycle patrols, foot patrols and dedicated armed response vehicles had occurred (i.e. not separate enhancements on their own).⁴⁵ In comparison eight out of twenty interviews reported that no such enhancements had occurred in their neighbourhood area. The majority, therefore, reported either establishment of a security forum or a security enhancement in their neighbourhood area post-incident.

The above has been implemented over and above what the victims already had in terms of neighbourhood security measures.

⁴⁵ It must be noted here that some of the nine first mentioned responses also reported that a combination of implementing bicycle patrols, foot patrols and dedicated armed response vehicles had occurred in their neighbourhood areas as well.

The following bar chart indicates the post security enhancements implemented by the victim in the perimeter area.

Bar Graph 60: Post-incident security enhancements implemented in the victim's perimeter area



The majority of the victims post incident implemented either of the following security enhancements in their perimeter areas:

- Diamond mesh fence (5);
- Electrified fencing (4);
- Brick walls (4); and
- Razor wire (3).

The above has been implemented over and above what the victims already had in terms of perimeter security.

In only four of the cases were there no enhancements implemented in the perimeter area of a victim's residence.

The minority either implemented the following:

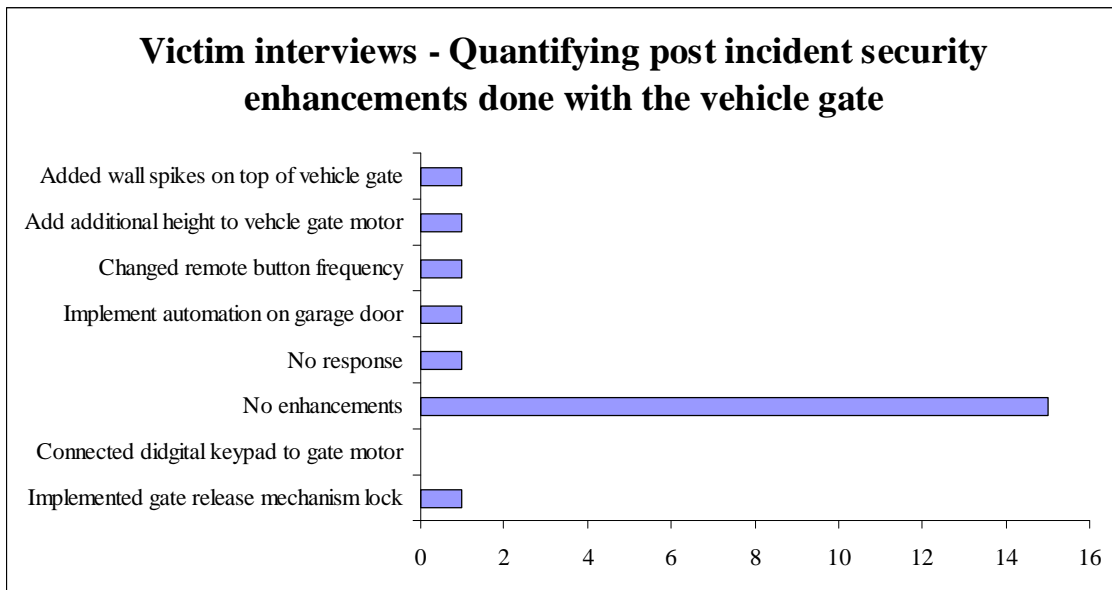
- Palisade (1);
- New pedestrian gate (1); and
- Wall spikes (1).

Based on the above, the majority focused on creating an additional deterrent (by hardening/improving an existing barrier) by utilising electrical fencing, razor wire or spikes, or a delay barrier in terms of a brick wall or diamond mesh fencing.

The vehicle gate

The following bar indicates post-incident security enhancements implemented at/on the vehicle gate.

Bar Graph 61: Post-incident security enhancements at the vehicle gate



The majority (fifteen out of a possible twenty responses) did not implement any changes in the vehicle gate area.

The above has been implemented over and above what the victims already had in terms of their vehicle gate security measures.

The balance either implemented one or a combination of the following security enhancements in the vehicle gate area:

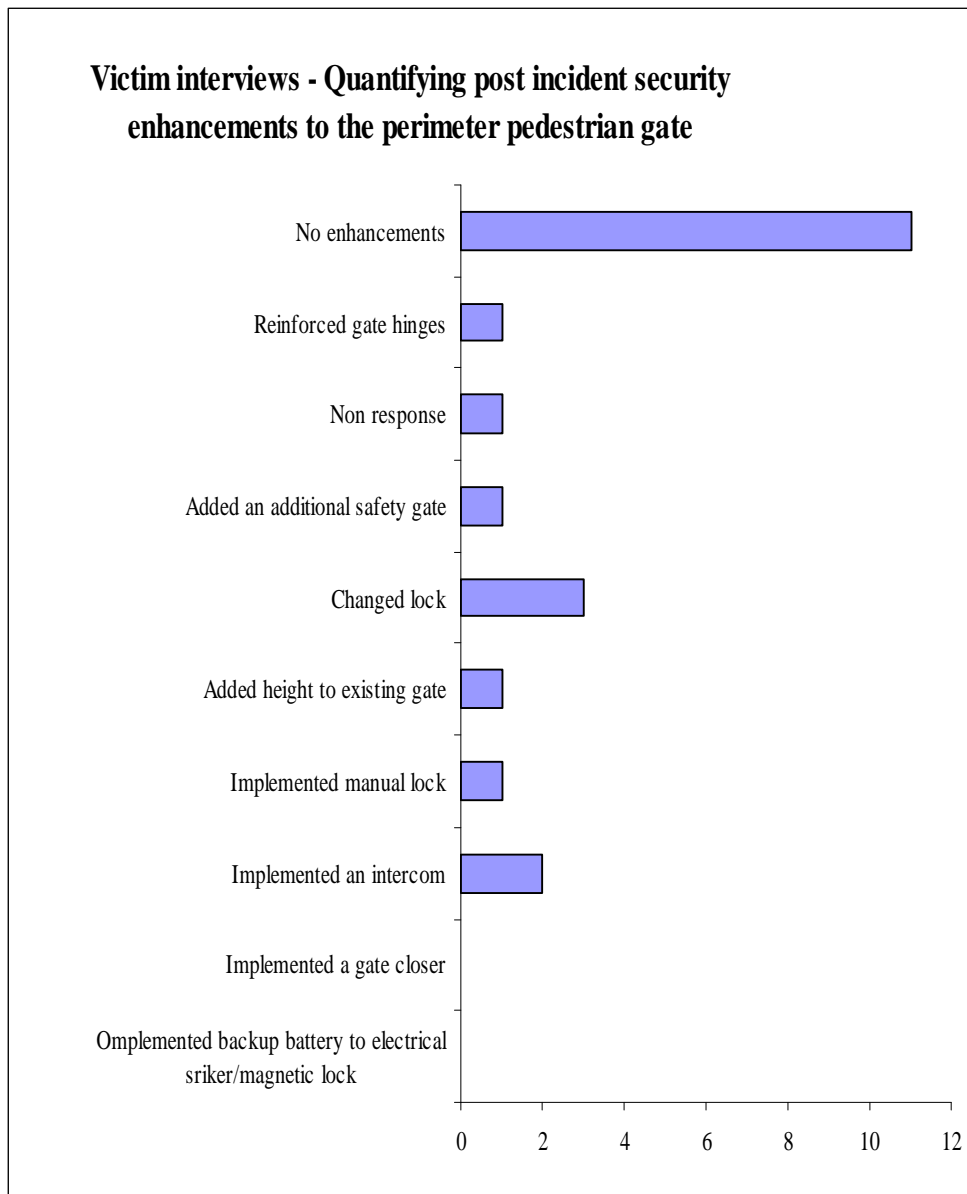
- Installed (1) a lock on the gate motor release lever;
- Installed (1) automation on the garage door ;
- One victim changed the gate remote frequency⁴⁶ ;
- One victim added additional height to the vehicle gate; and
- One victim implemented wall spikes on top of the vehicle gate.

The perimeter pedestrian gate

The following bar chart indicates the post-incident security enhancements implemented by victims on/to the pedestrian gate.

⁴⁶ The receiver frequency should be changed after a burglary when there was no forced entry or when the remote transmitter went missing and in both instances get used by the perpetrators to gain unauthorized access.

Bar Graph 62: Post-incident security enhancements to the perimeter pedestrian gate



The above has been implemented over and above what the victims already had in terms of their pedestrian gate(s) security measures.

The majority of the responses (eleven out of a possible twenty responses) implemented no enhancements to their perimeter pedestrian gates. The remainder of the responses either implemented one or a combination of the following to their perimeter pedestrian gates:

- Implemented an intercom (two of the responses);
- Implemented an additional safety/security gate⁴⁷;

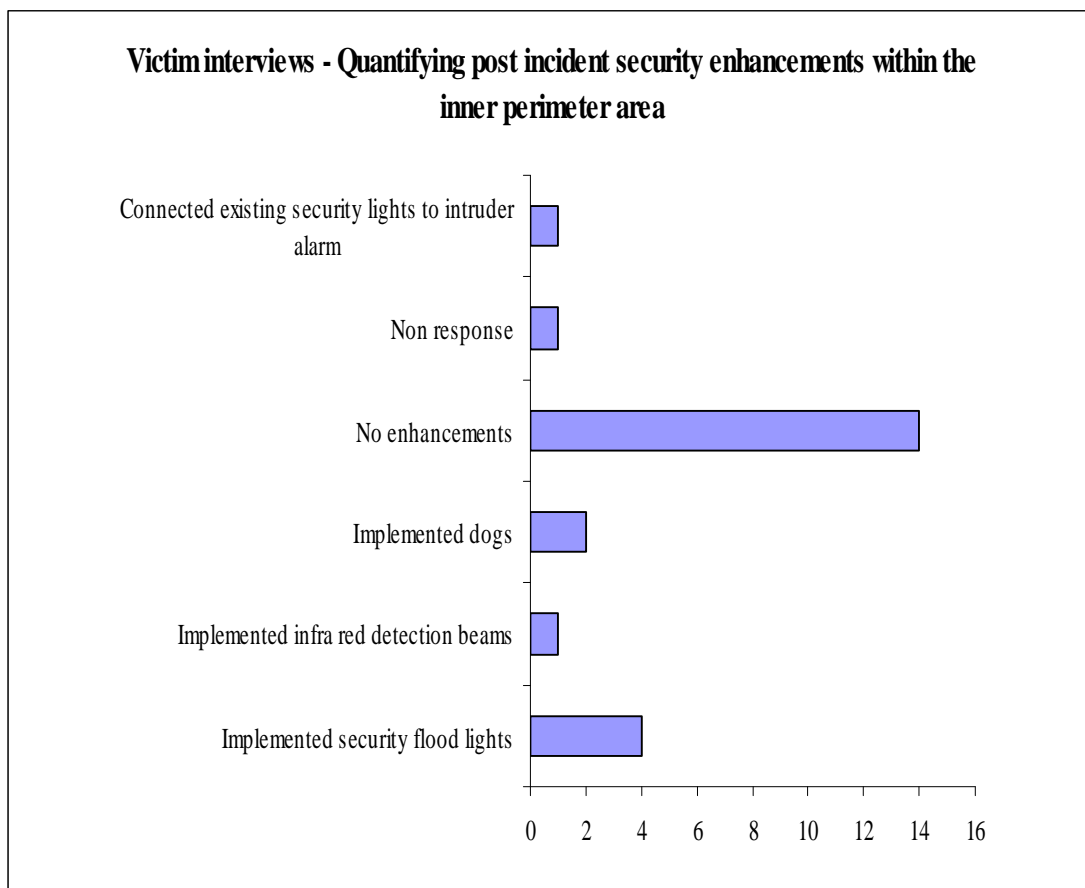
⁴⁷ Where the pedestrian gate was a door and an additional security gate was installed to reinforce the existing pedestrian door.

- Changed the lock (three of the responses); and
- Reinforced the gate hinges.

The inner perimeter or garden areas

The following bar chart indicates the post -incident security enhancements implemented in the inner perimeter or garden area.

Bar Graph 63: Post-incident security enhancements in the inner perimeter or garden areas



The above has been implemented over and above what the victims already had in terms of their inner perimeter/garden areas security measures.

The majority of the responses (fourteen out of a possible twenty responses) implemented no security enhancements in the inner perimeter or garden areas. The remainder of the responses indicated implementing either one or a combination of the following security enhancements in the inner perimeter or garden areas:

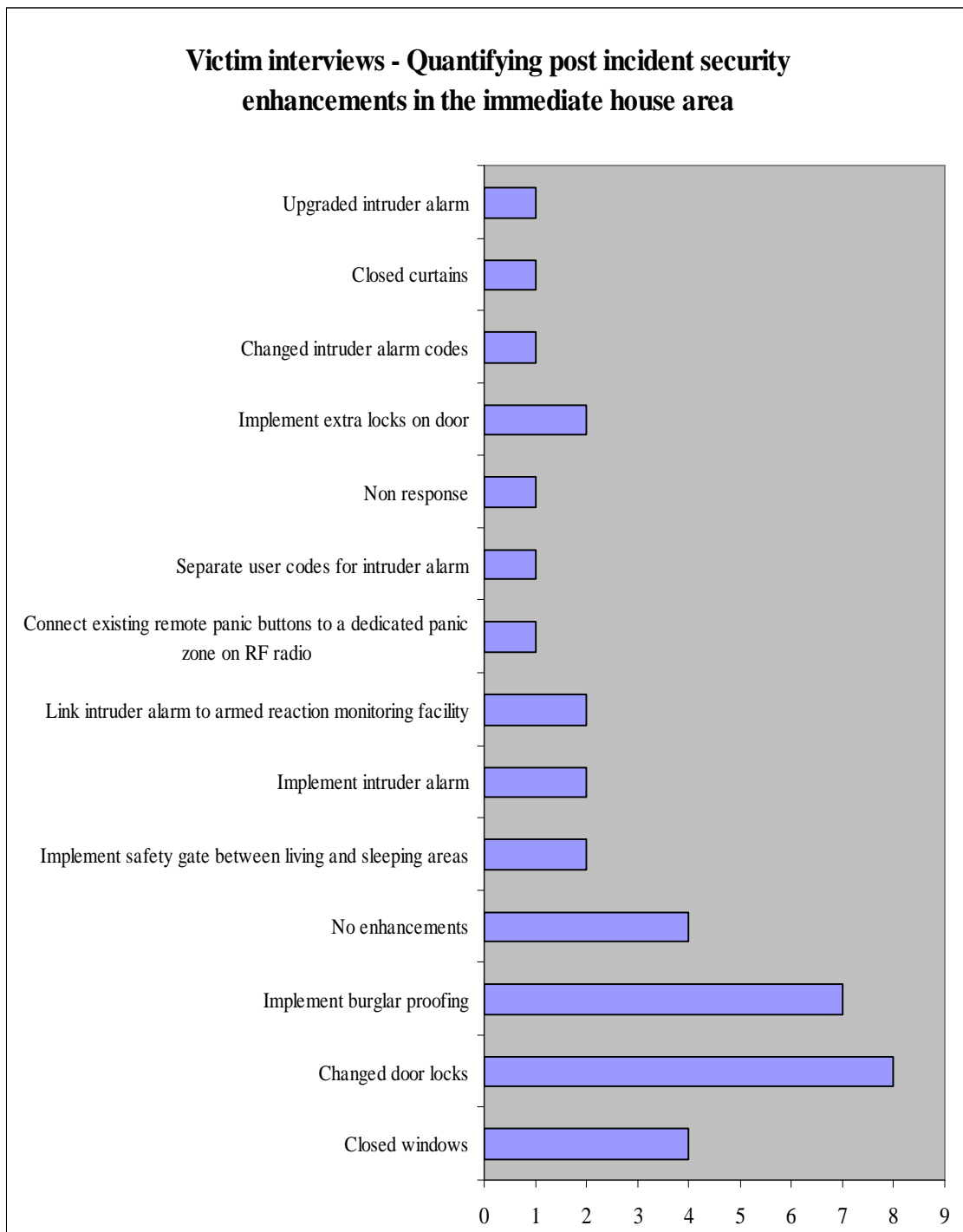
- Installed security floodlights (four of the responses);

- Purchased a new dog/s (two of the responses);
- Installed intruder detection beams; and
- Connected the security floodlights to the intruder alarm system.

The immediate house area

The following bar chart indicates post-incident security enhancements within the immediate house area.

Bar Graph 64: Post-incident security enhancements within the immediate house area



The above has been implemented over and above what the victims already had in terms of their immediate house area security measures.

The majority of the responses (eight out of possible twenty responses) changed door locks followed by the second most responses (seven out of possible twenty responses) who implemented burglar proofing/window guards. Four responses also started to close windows.

Four respondents indicated that no enhancements post-incident were implemented at all. One and/or a combination of the following security enhancements were implemented by victims within the immediate house area:

- Installed (2) a safety gate between the living and sleeping areas. Three victims already had this done prior to the incident which amounts to 25% having this measure post incident;
- Installed (2) an intruder alarm. 13 of the victims already had this prior to the incident, which now amounts to 75% of the victims having intruder alarms post incident;
- Linked (2) the existing intruder alarm to an armed response monitoring facility. 11 of the victims already had their alarms linked to an armed response facility, which now amounts to 65% of the victims having their intruder alarms linked to an armed response company post incident;
- Linked (1) a remote panic receiver to a dedicated panic zone on the armed response monitoring facility. Six of the victims already had their remote panics linked to the armed response company;
- Implemented (1) separate codes for different users of the intruder alarm system. 61% of the victims had other users also having access to their intruder alarm systems with same user code prior to the incident and post incident having only 53% of the victims still having more than one user on the same user code to arm and disarm the alarm system;
- Installed (2) additional door locks;
- Changed (1) alarm codes;
- Closed curtains (1) to conceal movement (inside living area) and belongings. This isn't clear in terms of day and night time and according to the interviews 8 already covered some or all of their windows with curtains during daytime and 16 of the victims already covered some or all of their windows during night time; and
- Upgraded intruder alarm (1). Only one out of the 13 victims, who already had an intruder alarm, upgraded their alarm.

ADDITIONAL NOTES ON RESIDENTIAL SECURITY AUDITS AND VICTIM INTERVIEWS

The following is a summary in the various categories of additional notes taken at the time of undertaking the residential security audits and victim interviews. The notes are a summary and not grouped according to separate interviews, but per category:

Table 7: Additional notes on residential security audits and victim interviews

Series number	Variable	Details
1	Reason for relocation	The victim relocated due to the improved investment return obtained by selling house and purchasing a bigger property (with more space) at a better price.
2	Crime recording	Victim caught perpetrators on site and should be a robbery.
	Crime recording	Was actually an armed robbery. The residents were inside the house and the perpetrators were armed.
	Crime recording	Victim was surprised that his own guard actually reported the incident.
	Crime recording	The victim was at home at the time of the incident and this incident must therefore be regarded as a robbery.
	Crime recording	This was and is a business premise and therefore a business burglary.
	Crime recording	This case was in fact a residential dispute and civil issue in a divorce where one party removed furniture from property and other party reported this to police and incident then recorded as a residential burglary.
3	Entry point	The perimeter boundary was about five feet high and the perpetrators gained access by merely climbing over this wall into the enclosed court yard.
	Entry point	The kitchen window left open was the entry point into the house.
	Entry point	Burglar proofing and window frame ripped out of wall.
	Entry point	Climbed over electrified fencing by pulling it down.
	Entry point	Attackers came through many windows.
	Entry point	Suspect gained access over wall.
	Entry point	Entry through door on the western side which was out of sight.
	Entry point	Pick was used to force sliding door open.

	Entry point	Access was gained via neighbour's property over the boundary wall.
	Entry point	Entry was through diamond mesh fence adjacent to river.
	Entry point	Gained access through corner of northern sliding door glass which was behind a bench and passive did not detect entry.
	Entry point	Entered property through diamond mesh fence. The method of entry not known if it was cut or crossed.
	Entry point	Entry and exit was through perimeter fence (barrier was not electrified) by scaling the fence.
	Entry point	Entry was through northern patio door.
	Entry point	The neighbour's property was used to enter the premises by scaling the boundary wall.
	Entry point	The perpetrators gained access over the shared boundary wall from the neighbour's side.
	Entry point	Entry was gained over front wall by pulling nylon electrical fence back and creating a space for climbing over wall.
	Entry point	Kicked in burglar proofing and wooden window frame to gain access into house.
	Entry point	Both incidents occurred through back window in court yard.
	Entry point	Access gained through diamond mesh fence via the neighbour's property. The method of entry not known.
	Entry point	Entry was through the TV room window.
	Entry point	Entry was through the bath room window on the second floor with the second burglary.
4	Goods taken	Clothes, jewellery and small appliances were removed
	Goods taken	Perpetrators took jewellery, cell phones and cash.
	Goods taken	Took tools in garage.
	Goods taken	TV was removed.
	Goods taken	Clothing, tools, golf clubs and bicycles were removed.
	Goods taken	Computer and sound system removed.
	Goods taken	Furniture was stolen.
	Goods taken	PC equipment close to window was removed. The passive infrared detector did not reach this point and therefore the system was not implemented properly.
5	Reason for non effective	Pushed fixed panic button, but armed response only arrived later when perpetrators had already left.

	security system	
6	Escape route	Escaped through river area.
	Escape route	Wooden balustrades at back of property were used to exit.
	Escape route	Garage door was used to exit where the emergency release was disabled and door was then opened manually.
	Escape route	Gate motor release lever was not locked and vehicle gate was then opened to exit.
7	Suspects	Builders up the road suspected of being involved.
	Suspects	Armed response company suspected of being involved.
	Suspects	Victim's son is suspected by victim.
	Suspects	A previous incident also committed by same person – victim and wife were able to positively identified perpetrator and link to both incidents.
	Suspects	The domestic worker is suspected of being involved since the dogs were locked inside the house and the domestic worker has failed to return to work after incident.
	Suspects	The previous tenant is also suspected since she was conveniently next door using neighbour's phone at the time of the incident, whilst there was a phone in the suspect's house.
	Suspects	Victim suspect a person sitting across the road of copying victim's remote control code. Entry was gained through the diamond mesh fence
	Suspects	Victim's gardener is suspected of being involved.
	Suspects	Victim suspects the building contractors since victim had never had any problems for a period of six years until they got the building contractor onto site. Clothes, tools, golf clubs and bicycles were taken
	Suspects	Two white males were on the premises when victim arrived. The reason for the victim returning home isn't known.
	Suspects	House was a building site at the time of the incident.
	Suspects	Domestic help and gardener had access to key to the kitchen door and the pedestrian gate on the main street.

	Suspects	Contractors next door are suspected.
8	Reason for non effective security system	Landlord was not helpful in getting security enhanced.
	Reason for non effective security system	Pushed fixed panic button, but armed response only arrived later when perpetrators had already left.
	Reason for non effective security system	Alarm not activated at night because it was old fashioned and hard to use and basically only armed when nobody was inside the house.
	Reason for non effective security system	External lights were not on at the time of the incident.
	Reason for non effective security system	There was no security i.e. electrified fencing, in the corner of the property.
	Reason for non-effective security system	Gate motor release lever was not locked and vehicle gate was then opened to exit.
	Reason for non-effective security system	Electrical striker lock was not working on the wooden pedestrian door.
	Reason for non-effective security system	The electrical fencing was not activated at the time because the fence was faulty and it was the older version fence with semiconductor covering the strands of the fence.
	Reason for non-effective security system	Did not clear bushes from path of detector beams although victim had already been staying at residence for four months.
	Reason for non-effective security system	Bypassed front detector beam due to irregular routine of domestic worker staying on the property.

	security system	
	Reason for non effective security system	Victim tended to leave doors open.
	Reason for non-effective security system	Got robbed of cell phone and wallet year prior to incident and still not locking doors
	Reason for non-effective security system	Got robbed of cell phone and wallet a year prior to incident and still not locking doors.
	Reason for non effective security system	Victim was more interested in determining how one can implement security in the street and suburb rather than implementing any on the victim's own property.
	Reason for non effective security system	Only the areas where the intruder came in were enhanced in terms of security measures. The areas referred to has not been mentioned specifically.
	Reason for non-effective security system	Both management and two employees had access to the alarm code and no separate codes. No audit trail in terms of who actually armed and disarmed the alarm can be determined.
	Reason for non effective security system	The window was also far away from passive and the doors had door contacts and possibility that it is inside job because doors were not used as an entry exit point during intrusion. This can also be regarded as an inside job, because who would know that the door had a door monitor and the passive would not reach the specific window.
	Reason for non-effective security system	Client not sure if he armed the alarm but used the remote panic button when noises were heard. Did not activate armed response company.
9	Incident time	Incident occurred 22:00.
	Incident time	Happened during daytime
	Incident time	All incidents occurred between 09:00 and 13:00 whilst victim was working.

	Incident time	Incident occurred during daytime.
	Incident time	The incident occurred at midday.
10	Renovations	Victim was busy with renovations and there were builders on the property.
11	Motive for burglary	Burgled victim to fund his drug abuse problem.
12	Number of incidents	One of the victims had 22 incidents ranging from robberies to residential burglary from 2002 till end of 2004 in the Westcliff area.
	Number of incidents	Was burgled twice (three months apart).
	Number of incidents	Was burgled twice in one year.
13	Modus operandi	Graffiti was left on washing machine.
14	Reason for effective security	Panic button was activated in both instances. The client was not sure if the intruder alarm was armed. The armed response company responded, but only after 20 minutes.
	Reason for effective security	Had razor wire on front wall and due to this wall without any security measures were used to gain access into the property.

There were some variables which did not fall within the research focus framework, i.e. the incident turned out to in fact be a house robbery. In this the victim had to activate his fixed panic button, whereas in an ordinary residential burglary the intruder alarm should have, as a matter of course, been automatically activated.

Variable	Details
Crime recording	Was actually an armed robbery.
Incident time	Incident occurred 22:00.
Entry point	Attackers came through various windows. The cause of entry through windows not known i.e. windows left open.
Renovations	Victim was busy with renovations on their property.
Suspects	The armed response company suspected of being involved.
Goods taken	Perpetrators took jewellery, cell phones and cash
Reason for non-effective security system	Pushed fixed panic button, but armed response only arrived later when perpetrators had already left.

CONCLUSION

The research results were gathered through four different types of measuring instruments, each providing vital information on residential burglary and security measures and other external variables which did or did not have an impact on the incidence of residential burglary.

The four measuring instruments used were:

- Descriptive mapping;
- Docket analysis;
- Victim interviews; and
- Residential security audits.

Descriptive mapping

The descriptive mapping provided information which will be useful to the South African Police Services.

The research findings have been provided to the Parkview Police Station so that they can be used in their crime reduction and detection strategies.⁴⁸

⁴⁸ The information was shared with the Parkview Police early December 2005.

The descriptive mapping exercise aimed to contextualise and place the victim location in perspective with various variables such as the following:

- Burglaries experienced – 89% experienced only one burglary in the time frame of two years;
- Average burglaries in each grid reference for both the residential areas were about three burglaries;
- Distance from shops, parks, business premises and open or unoccupied properties was about one grid reference away as experienced by 50% of the victims;
- Victim location in relation with other victims were mainly standalone and not immediate neighbours as experienced by 63% of the grid references;
- Victim location in relation to main roads were mainly in the same grid reference as experienced by 40% of the victims;
- Victim location in relation to dead-end roads were about one grid reference away in the majority of the grids as experienced in 41% of the cases;
- Dead-end road barriers were mainly diamond wire mesh or chain link fences experienced by 14% of the possible 31% of the victims; and
- Victim location to corner properties was mainly two to four houses away from corner properties and not necessarily corner properties themselves.

In summary the following needs to be considered when planning for neighbourhood watch strategies:

- Proactive measures on possible future incidents needs to be extended beyond the immediate residential block or victim's property;
- Proactive measures should also include areas where there is shops and public areas;
- Proactive measures in and around main roads need to be increased due to possibility of this being used as escape routes;
- Access points to the river ends and dead-end road areas are less vulnerable in terms of burglary, but should be considered with more violent crimes such as robberies where it can be executed by foot and the dead end areas on the river side used as possible escape routes. Barriers need to be planned in terms of deterrent, detection and delay values replacing areas where there are poorly maintained or non existent barriers; and
- Proactive measures in and around residential blocks need to be planned in accordance to areas more vulnerable such as two to four properties from corner properties etc.

Docket analysis

The primary objective of the docket analysis was to provide the researcher with contact information on the victims.

The researcher made use of the opportunity to gather secondary information such as modus operandi in order to provide the South African Police Service with information which can again be used with their crime prevention and detection strategies.

The following is a summary of information gathered from the dockets:

- In 54% of the cases, burglaries were committed on the same day as when the crime was detected by the complainant or a delegate of the complainant;
- In 72% of the cases the burglary was committed on a weekday;
- Mondays (13), Thursdays (11) and Fridays (16) were the days with the three highest days recorded with residential burglary incidents;
- Entry points reported were mainly with the immediate house area and not sequential from the perimeter, inner perimeter and then the immediate house area. Majority of the entry points were either through windows or doors (19% and 20% respectively), but no definite modus operandi of how access was gained through these points was provided in the dockets. The modus operandi of entry through roof areas was only mentioned in one case; and
- 56% of the victims did not have intruder alarms. The question would be whether the 44% who the intruder alarms had used it, was connected to an armed response company and if the armed response company had access to the property to investigate the alarm violation signal.

The following should be considered with regard to proactive security measures within the neighbourhood and immediate residential environment:

- Proactive measures should focus more resources around specific days such as Mondays, Thursdays and Fridays where residential burglaries are more frequent.
- Security measures around the window and door areas should be increased due to these areas are more prone to be attacked.
- Detection of crime should be increased through monitoring devices. The monitoring of signals could also incorporate SAPS integration.

Victim interviews

Not all the victims gave the researcher the opportunity to conduct residential audits due to interviews being conducted at the victim's workplace or the victim had relocated by the time the interviews were undertaken.

The following areas where residential security can exist were evaluated:

- Community;
- Perimeter;
- Inner perimeter; and
- Immediate house area.

The following residential security measures were evaluated for their existence and application:

- Community security initiatives;
- CCTV;
- Perimeter types;
- Electrified fencing;
- Vehicle gates;
- Pedestrian gates;
- Infra red beams;
- Security flood lights;
- Doors locks and keys;
- Safety/security gates;
- Windows and burglar proofing;
- Intruder alarm systems; and
- Fixed and remote panic buttons.

Community

Community security initiatives

13 of the victims worked away from home and not always at home. Community security initiatives can be an early detection and deterrent to burglars and in 16 of the 20 cases, there were not any community security initiatives present.

In 16 of the 20 cases building activities were also to be found within the victim's immediate residential block area and this is where community security forums can play a major roll in managing builder movement through the residential area.

Perimeter

CCTV

None of the victims had CCTV. CCTV can be a deterrent in that burglars identify can be positively identified and CCTV can also be a detection mechanism where CCTV can alert the owner of movement in a specific area and the footage can be immediate provided off site i.e. through e-mail function.

Perimeter types

17 of the 20 cases had solid brick walls, which conceals visibility from the street area. This could be a problem concealing burglar's movements when they gained access into the property.

Electrified fencing

16 of the 20 victims did not have electrified fencing.

Electrified fencing provides a deterrent, detection and delay mechanisms to the owner.

The four victims who had electrified fencing, only two were linked to an armed response company. Only one of the two had their fence switched on, but no signals were received by the armed response company, which can constitute that the fence were not setup properly. The fence was virtually pulled down without activating the alarm.

The two other fences were not fully covering the entire perimeter and the last fence was under the neighbour's control.

In summary fences did not exhibit all the characteristics of covering the entire property, not switched on/activated, setup properly or linked to an armed response company and under the victim's full control.

Vehicle gates

17 of the 20 cases did not have their vehicle gates monitored. Monitoring the vehicle gates through the intruder alarm systems can provide detection already at perimeter level.

Manual locks only existed in 10 of the 20 cases and this should not only be restricted to manual gates, but also to automated gates. Manual lock provides extra security in that when the automation is bridged, the manual lock provides additional security.

12 of the 20 victims had automated vehicle gates. Not one of the victims had an electronic keypad facility connected to their vehicle gates. This feature can be used to let the armed response company have access to their properties to investigate alarms, or restrict keys and remotes to employees and rather allocate a user number which can provide an audit trail to the owner on who had access when. Only nine of the victims said that nobody except themselves had access to remotes and keys opening and closing the vehicle gate and gate automation.

Two of the possible 12 victims had back-up batteries on their vehicle gate automation. This is problematic if there were electronic keypads connected to the vehicle gate automation and the armed response company had to gain access to investigate alarm activities and as a result of the bad battery, could not gain access.

Only three of the possible 12 victims had anti-theft brackets on their gate automation, which should be secured to avoid being tampered with. Only one victim had a manual lock on the gate automation release mechanism and again this should be locked to avoid it being accessed and opened by the perpetrators.

Pedestrian gates

Three of the possible 16 cases had electrical striker locks on their pedestrian gates.

None of the three were connected to an electronic keypad, which as previously explained with automated vehicle gates, could be utilised by employees or the armed response company to minimise keys and remotes being used and as a result being lost, stolen or duplicated. In the majority of the cases other persons other than the owner or responsible tenant had access to the keys for opening of pedestrian gates.

The three victims, who had electrical striker locks on their pedestrian gates, did not have back-up battery supply to the striker locks. As explained previously with vehicle gate automation, the a back-up battery would ensure that the striker lock will still be functional during power failures and where it was connected to an electronic keypad, the armed response officer would have had access in any case to investigate alarm violation signals received.

Six of the possible 16 cases who had pedestrian gates, had gate closers, which close the gate automatically. The gate closer will ensure that locks like the night latch locks and striker locks latch properly. It is possible that gates with these locks did not latch properly due to possible human errors and accordingly the pedestrian gate was used to enter the property.

Inner perimeter

Infrared beams

Two out of the possible 19 cases had infra-red beams in their garden areas. Infra-red beams do act as an early detection mechanism. One had the beam covering all sides of the garden and one only had one section of the garden covered. Early detection in the other 17 cases would not be possible due to the absence of infra-red beams.

Security flood lights

16 of the 20 cases had security flood lights. Only 14 stated that their flood lights were operational at the time. A cause of concern being that was found that eight of the possible 16 had their lights activated (turned on and off) by means of a manual switch. This again would raise the issue of human error when burglaries that might have occurred during night time and the lights were not activated by the manual switch. Lights provide visibility to the owner and occupants and can be a deterrent and detection mechanism if it is setup to minimise view for the perpetrator by facing from the house towards the perimeter and an infra red sensor to activate the lights on movement. Four of the cases had motion detection, one had a timer switch and one had a day/night sensor.

Immediate house

Door locks and keys

Of the possible 20 cases, 17 had their doors leading to the garden and external areas locked. 14 of the possible 20 cases said that they did not leave any keys in door locks and four of the possible 20 cases had only the owner or responsible tenant having access to keys unlocking and locking doors leading to external areas.

There is cause of concern with keys left in door locks due to fact that it can be duplicated, accidentally being unlocked or even used by the perpetrator of the door for instance is a glass door and the keys are visible from outside.

Security/safety gates

Three of the victims did not have safety/security gates on any of their external doors or between the living and sleeping areas.

It was not clear if all the doors were covered with safety gates or only some, due to victims focussed on reporting on specific doors having safety gates.

Safety/security gate can be a delay mechanism to increase the possibility for the armed response to apprehend the perpetrators on the scene. This will only be possible if there were detection mechanisms, i.e. infra-red beams in place, before the perpetrators reached the safety/security gates.

Windows and burglar proofing

Of the possible 20 cases, only 16 had some or all windows covered with burglar proofing. Three of the possible 16 cases had all windows covered with burglar proofing.

In the docket analysis it was found that in 19% of the cases windows were broken and in 11% of the cases, the burglar proofing was forced open. It was not clear in all cases what specific area were used to intrude the immediate house, but with only three victims having all their windows covered with burglar proofing, one could possibly state that intrusion could have been through those windows without burglar proofing. Out of the possible 20 cases, 12 said that they did not close their windows and seven stated that they did this kept open for fresh air required.

Burglar proofing can provide a delay mechanism and the same principle applies as discussed with safety/security gates if there were detection mechanisms, i.e. infra-red beams in place before the perpetrators reached the burglar proofing.

In terms of concealing movement and routine in the house, 11 of the possible 20 cases had all their windows covered with curtains during daytime and three only some of the windows. This

constitutes nine having only some or none of the windows covered with curtains during day time. Nine of the possible 20 cases covered their windows with curtains during night time and seven had some windows covered at night time. This constitutes to 11 victims having only some or none of their windows covered with curtains during night time. A concealing routine could be beneficial to avoid perpetrators from determining whether the victim is at home or not.

Intruder alarm systems

Intruder alarm is there to centralise detection devices such as infra-red passive motion detectors, door monitors and infra-red beams and panics and provide a medium where monitoring devices such as radio frequency (RF radios) can be linked in order to send signals on various alarm activities to an armed response company.

Only 13 of the possible 20 victims had intruder alarms, but only seven armed their alarms and 11 of the possible 13 had their alarms monitored by an armed response company. This constitute to possibly only five of the seven who had their alarms armed, had it monitored by an armed response company. Arming and disarming the system can be done by an electronic keypad. Each user should have its own user code to provide an effective audit trail of who armed and disarmed the alarm. Eight of the possible 13 victims who had alarms, stated that more than one person had access to their alarm system. This constitute that possibly the seven who had alarms, did have someone else who disarmed it knowingly, unknowingly or forgot to really arm the system.

Testing the alarm system is a very important aspect of maintenance. Only seven of the possible 13 done this prior to the incident, which explains that of the possible 13 victims armed their alarm systems.

Fixed and remote panic buttons

Nine of the 13 victims, who had intruder alarm systems, had fixed panic buttons connected to their alarm systems. Six of the nine members who had panic facilities connected to their intruder alarm systems, had remove panic buttons. A panic button can be used by occupants on the property to alert the armed response company of a possible threat or an immediate threat. In the cases where the victims were at home, the panics could have been used to alert the armed response companies and possibly had the armed response companies arriving in time to

apprehend the perpetrators. According to the interviews it was found that there was one armed robbery and six house robberies.

The descriptive mapping can be useful as a tool to South African Police Service and also Community Police Forums in their effort to combat crime. The maps indicated to provide useful information in terms of victim location in relation to environmental variables such as open properties, main roads etc.

The docket analysis did not only provide victim contact details, but also provided information assisting the Police in recording vital crime information i.e. area of intrusion, day of week, time of day etc. The docket analysis is also a useful tool if one needs to establish variables and how they relate to the crime residential burglary. The police can also provide victims with useful tips on securing their properties when arriving at scenes based on the modus operandi and possible security measures⁴⁹ to counter there modus operandi.

In the victim interviews it was noted that majority of the victims did not have much in terms of residential security in place and those who had did either not use or maintained their systems well and the systems they had wasn't setup strategically to provide maximum ability conforming to the attributes of:

- Deterrent;
- Detection; and
- Delay.

The following chapter aims in providing the reader with possible recommendations on how to achieve the maximum capabilities of a residential security system.

⁴⁹ Recommendations will be discussed in Chapter 8 of this research report.

Chapter 8

A SECURITY RISK ANALYSIS MANAGEMENT APPROACH TO THE IMPROVEMENT OF RESIDENTIAL SECURITY PLANS USING CASE STUDIES OF RESIDENTIAL BURGLARIES: RECOMMENDATIONS AND CONTEXTUALISATION OF RESEARCH FINDINGS

INTRODUCTION

The research project does not end when the results are reported and therefore the results need to be put into a meaningful context to report on patterns observed and also to promote conclusions which result in further research to add scientific merit to the project (Rossouw, 2003: 168)

The purpose of these recommendations is to ensure that the research motivation and purpose will be completed and that this will contribute towards existing procedures within the security industry, law enforcement and more importantly, guiding the private homeowner with reference to the improvement of residential security measures.

In implementing any of the security measure recommendations the focus should be to apply the following when implementing them:

- Cost-effective planning;
- Cost-effective implementation;
- Effective use;
- Regular maintenance; and
- Regular upgrading.

Furthermore, any security system should provide the following characteristics:

- Deterrent;
- Detection; and
- Delay.

Moreover, an additional focus should be to implement technological security measures, physical security measures and procedural security measures in the above-mentioned manner in order to provide an holistic, integrated cost-effective system.

Finally, a security system should be planned for each of the following areas:

- Neighbourhood;
- Perimeter;
- Vehicle gates;
- Perimeter pedestrian gates;
- Inner perimeter or garden area; and
- Immediate house area.

The majority of the victims in the study had physical security measures in place such as walls, door locks, burglar proofing and safety gates. All of these security measures provided a form of delay, but did not provide full detection or deterrent value.

JUSTIFYING RESULTS AND CONTEXTUALISING THE RESULTS IN PRACTICAL TERMS

Justifying the results into meaningful recommendations is the core approach of this study.

The recommendations will be discussed in terms of results collected through:

- Docket analysis;
- Victim interviews;
- Victim residential security audits;
- Descriptive mapping; and
- Practical experience of the researcher.

The recommendations should be regarded as a guideline and not accepted as the norm based on the fact that criminal modus operandi is over time getting more sophisticated and so should the security measures.

SUBURB INITIATIVES

Active security patrols are a big deterrent as observed by the researcher through his involvement with this in the upper Westcliff area.

The initiative's success in the opinion of the researcher is primarily successful due to:

- The involvement of law enforcement to guide with initiate these projects to be ;
- The close involvement of the community to contribute to this initiative;
- Focus on violent crimes contributes to the reduction in less violent crimes;
- Accept the opinion of security specialists;
- Managing security companies by independent individuals outside these companies;
- Motivating guard through initiatives;
- Implementation of tamper proof monitoring devices;
- Crime information to community on a regular basis; and
- Implementation of a practical network and communication system.

Involvement of local law enforcement

The research results gathered from the docket analysis and descriptive mapping were introduced to the Parkview police, which might be used in their crime prevention strategies.

Furthermore private security companies should make use of the opportunity to provide their crime statistics to local law enforcement agencies such as the South African police services to identify crime hotspots and also to compare the accuracy of private security crime statistics with those of the South African Police Service.

Involvement of the community

The opinion and acceptance of the community is a very important milestone in establishing a community security initiative.

The initiative's successes will depend on the acceptance of the community and local law enforcement agencies.

The initiative in the upper Westcliff area is operation over three years now and the crime has been reduced drastically from serious and violent crimes to less serious and less incidents.

The survival of this initiative is ensured by the prompt and regular monetary contribution of community members to the initiative and the keep implemented the minimal security requirements⁵⁰.

Focus on violent crimes reducing other crimes

The upper Westcliff initiative was initiated by community members concerned about the violent crimes present at the time.⁵¹

The researcher focussed on hijackings and driveway robberies by implementing a practical, cost effective communications network which can be utilised by both the security provider and the community contributor in using the cell phone⁵²

This communication enables the homeowner has the ability to call a guard on patrol to ensure that the street has been surveyed for possible security risks before the residential property is entered or exit.

The application of initiatives with this approach in other provinces or cities will be a interesting research project to determine the effectiveness of neighbourhood security initiatives.

Accept the advice of security industry qualified professionals

The security initiative in the upper Westcliff had a challenge in that another security opinion was to be heard by community members.

The researcher had to use an approach to get the community to accept this concept of reducing violent crimes and ultimately reduce the other crimes.

The challenges were great in that the researcher had to focus in getting the community to accept the proposal from a professional point of view after the community already had numerous other proposals and initiatives the last couple of years.

⁵⁰ Minimal security requirements is to have electrified fencing, infra-red beams in the garden, safety gates, burglar proofing, an intruder alarm, linked to an armed response company and ensuring all will be managed effectively without giving out alarm codes or leaving keys and remotes unattended.

⁵¹ Violent crimes which were raised at the time in 2003 ranged from rape, driveway robberies, armed robberies and hijackings

⁵² This system was implemented by the researcher in 2003 for it's practical application where the two way radios had restrictions in that only the security company could access this.

In dealing with the community during this initiative it became apparent that members of the public have little knowledge of or are not even aware of the existence of such organisations as the Private Security Industry Regulating Authority (PSIRA), the Security Association of South Africa (SASA), the South African Institute of Security (SAIS) and various other similar professional bodies within the Security Industry and all its various disciplines, should the public be made more aware of their existence and how these organisations promote professionalism in the security sector and promoting equally important role the private security sector plays in the residential security environment.

The researcher is of opinion that the community security initiative's survival is mainly based on contributor participation.

Implementing the same initiative in a low income residential area with all of the challenges involved will be another interesting research topic. Furthermore government involvement getting private security companies to contribute to lower income communities through similar security initiatives could be beneficial towards lowering crime risk South Africa.

Independent management of private security companies

The upper Westcliff security initiative operations are monitored by the independent view of the researcher. The researcher is independent from the private security company, who provides the patrols and armed response.

This enables the researcher to report to the security forum⁵³ from an independent view, providing an independent (external, unbiased and objective) view.

This approach benefited both the security provider and the security forum by:

- Providing both with an independent view; and
- Advising both on potential problem areas from an independent perspective.

Motivating guards by means of incentives

The researcher experienced successes with his guards by motivating them.

⁵³ The forum refers to the Westcliff Community Security forum where the researcher is involved managing the operational reporting to the community forum

Motivating the guards can be done by:

- Giving guards the space to grow and equip them to grow;
- Allowing guards to improvise and to utilise their initiative. They are on average twelve hours a day on duty and observe and experience more than their management;
- Get the community to involve guards in their activities, knowing the guards and to praise the guards where possible. Complaints should be directed to management and not the guards;
- Giving the guards achievable aims to work towards. Number of patrols should be achievable and should allow space for motivating the guard to do a little bit more and not getting guards to observe properly due to demand in patrols which needs to be completed within a certain time frame; and
- Monetary bonuses should be part of the security budget to allow guards to receive more than their normal, low salaries and to be regarded as a site specific bonus – empowering guards only with knowledge will have little effect on a starving unmotivated guard.

Implementing tamper proof monitoring devices

The management of the community security initiative depends a great deal on the monitoring of guards and their safety during their patrols. Technology has now advanced beyond only tracking vehicles to tracking guards. These devices enable the security management to do life monitoring on guards to ensure:

- The guards are safe;
- Guards are providing patrols; and
- Guards have the ability to communicate any potential security risks immediately and will have quick and effective backup.

All the above will provide both management and the contributor with:

- An audit trail on events for investigative purposes and accurate reporting to the contributor (a security forum); and
- Quick backup response if situations where both the guards and the contributor lives can be saved.

Providing regular and accurate crime prevention information

Networking with both private security companies and local law enforcement has its benefits in that security crime risks in areas can be reported to other communities and ensure:

- No repeat of the risk; and
- Promote crime detection and arrest.

While the SAPS to provide annual crime statistics, private security companies should also be involved with this project to contribute to the police crime prevention strategies. (A study comparing private security company crime statistics with the annual police crime statistics will be another interesting research project topic.)

Implementing an effective communications network

The cell phone network has been very efficient in providing crime reporting mediums.

The medium is available to many and affordable cell phone use packages ensure that a simple security alert can reach an entire community within a very short space of time.

The community forum needs to utilise this communication medium in order to provide vital information the community and to gather information for effective planning.

PERIMETER SECURITY

The security circle starts with crime information gathering and implementing strategies to manage the crime information.

The perimeter should provide a medium of being both a deterrent and detector.

The average perimeter's deterrent value can be increased by a combination of:

- Height;
- Razor wire or wall spikes;
- Electrified fencing;
- Double layer perimeter system;
- CCTV;

- Security signage;
- Security lights;
- Automated gates; and
- Type of perimeter.

The average perimeter detection ability can be enhanced through a combination of:

- Electrified fencing;
- Infra-red beams;
- CCTV; and
- Vehicle gate and pedestrian gate monitors.

Perimeter height

The majority of the victims had perimeter ranging between 1,8 meters and two meters in height. However most of the properties were intruded by scaling the perimeter walls. Accordingly, in the researcher's opinion, height of the perimeter in the researcher's opinion should be able to conceal movement observation to a person. Therefore, based on the research findings in this study, a standard height of two metres and more would be advisable.

Razor wire and wall spikes

The presence of razor wire and wall spikes can be both deterrent and delay to criminals. The accurate implementation thereof would be crucial to ensure that that the purpose will be constant throughout (along) the entire perimeter and not just applicable to certain section such as some of the victims who focussed on having this only the front wall and where criminals then came though the neighbour side of the perimeter where there was not razor wire or wall spikes.

Electrified fencing

Electrified fencing was absent with the majority of the interviews (with victims). There was one specific case where there was electrified fencing in place, but forced downwards and the perimeter wall was scaled. In this regard no residential audit was done, but the researcher would recommend the following:

- Proper earthing techniques;
- Effective monitoring techniques; and

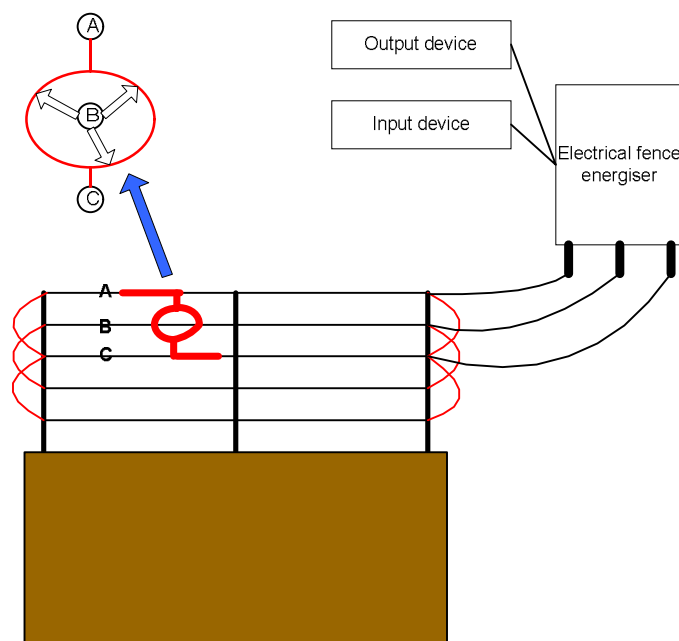
- Regular maintenance.

Proper earthing

This means that the fence needs to be earthed throughout. (The electrified fencing operation has been discussed already in chapter 2 where a normal operation and an alarm condition was illustrated.)

Such an electrified fence will require to be earthed properly to provide an alarm violation condition with any attempt of intrusion. Sensitising the fence with earth loops can be a way of sensitising the fence to possible intrusion. The drawing below explains sensitising the electrified fencing.

Drawing 11: Electrical fencing sensitising example to illustrate how to increase the fence detection ability



The drawing above illustrates how the fence can both the fence wires, indicated by A and C, can activate the alarm when wire B touches any of the sides of the earth loop (indicated with red circle and connected to wires A and C).

Effective monitoring techniques

In one interview it was recorded that the electrified fencing energiser alarm was disconnected according to one of the interview notes. The reason for this was that the neighbour was complaining about the noise factor associated with the electrical fencing alarm violation.

The siren alone does act as a monitoring device to the occupants of the house, visitors, neighbours and the armed response company or security guard.

It is therefore crucial to ensure the electrical fencing energiser is connected to a device which will report to the occupants of the house, the armed response company, security guards or secondary key holder⁵⁴

The device referred to in the previous paragraph can be:

- Cell phone (GSM unit);
- Radio frequency unit (RF Unit); and
- Remote key pad.

The first two devices are units reporting to either to the primary key holders or to a security control room who will advise the primary and secondary key holders on an alarm violation.

The remote keypad is a device installed in the primary key holders house and will report to him/her on an alarm violation.

It is therefore important that these devices will be connected correctly to report on:

- Electrified fencing armed or disarmed;
- Electrified fencing violation alarm;
- Power failure; and
- Electrified fencing energiser tamper signal (applicable if someone attempts to intrude the electrified fencing energiser to tamper with it).

Regular maintenance

Any electronic security device is effective as:

- The accurate planning of the system;
- The effective installation of the system;
- The effective and regular use of the system;
- The regular maintenance of the system; and
- The regular upgrading and enhancements of the system.

⁵⁴ Secondary key holder is a person or organisation which might be included on a call list with the chosen armed response company to be called when the homeowner of primary key holders are not available.

All the abovementioned all rely on each other (linked totally) in order to ensure a reliable security system.

The electrified fencing in particular requires an annual service where the following needs to be done:

- Change damaged bobbins in the fence uprights (This is caused by branches falling on the fence, sun and weather changes);
- Tension the fence wires (Sagging wires are caused by continuous tension on the tensioners, vegetation pulling fences down etc.);
- Change wiring due to corrosion (only applicable if corrosion appears which causes the fence resistance to increase and the current supply to decrease in volts); and
- Backup battery to be changed (The industry requirement is two years, but with our regular power failures we need to do this at least annually).

If all the above contributes to false alarms and possibly result into the electrical fence to be switched off.

Double layer perimeter fence system

The double layer perimeter fence was present with one of the victim interviews in the Westcliff areas.

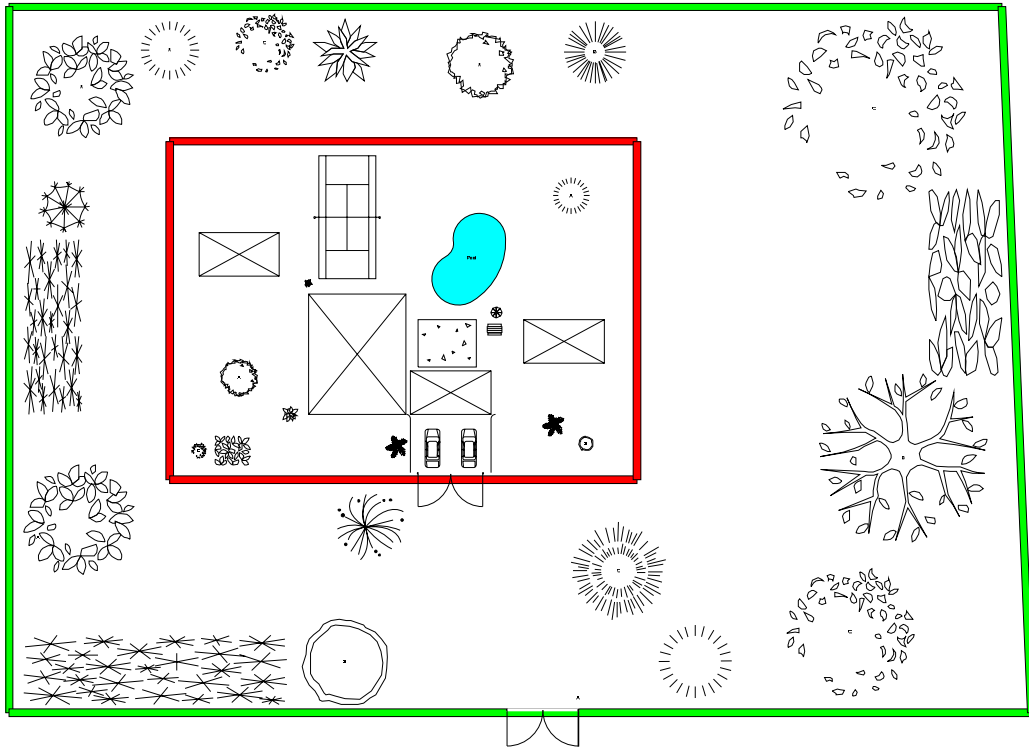
This is practical with large properties where in some cases practical and feasibility of the fence will be much more effective to look after the immediate house and garden area with electrified fencing.

Extending electrified fencing along the entire outer perimeter might have the following implications:

- High cost on maintaining the garden vegetation from not interfering with the proposed electrified fencing;
- High cost in maintaining of an extended (length) electrified fencing; and
- High cost in implementing a proper perimeter i.e. a brick wall, to host the electrified fencing.

The following drawing illustrates the concept of implement a perimeter which will both act as a deterrent and detection and the outer perimeter as a deterrent:

Drawing 12: Double layer perimeter illustration providing a cost effective approach



Closed circuit television system

Closed circuit television systems can be both a deterrent and detection security method.

Not one of the victims had CCTV systems according to the victim interviews.

The following is common problems experienced with CCTV:

- Poor lighting;
- Poor picture quality;
- Non functional with power failures; and
- No recording of footage.

CCTV for the domestic application has emerged from very expensive and commercial to more affordable and user friendly.

The following is guidelines in minimising the above-mentioned problems:

Poor lighting

The homeowner should first request for the potential security installer to measure the light density where the cameras are required. This normally gets measured in LUX and referred to as the LUX level of the lighting. The LUX level determines whether one wants to spend more on a more sophisticated camera and lens or do one want to spend more upgrading and enhancing the existing lighting levels.

Poor picture quality

Poor picture quality can be due to the LUX level of the lighting in the camera vicinity. The poor picture quality can also be due to the type of camera lens used. One should decide on what is required from the camera within a certain area.

For example, is a well defined picture of the visitor or does one want to establish whether or not a person is in a particular area.

The placement angle of the lens will determine the following: small angle with more definition on distance or a wide angle with reduced picture definition, but enables the viewer of more activities over a wider area. For the domestic environment a wide angle would be beneficial on the perimeter to cover as much as possible of the pavement and main gate area and areas across the road from the main vehicle entrance.

A camera inside the intercom would be beneficial if one wants to have a positive identification (good picture definition – close-up) of an expected visitor.

Non functional systems resulting from power failures

Power failures contribute to may security systems not functional and/or getting damaged. A system is non-functional if the systems are not connected to a backup uninterrupted power supply (UPS). The systems also get damaged if the system was not connected to an UPS and the sudden recommissioning of power causes a surge and damage the delicate electronic hardware.

UPS was not affordable a few years ago, but became more affordable for the residential application.

The CCTV cameras and the recording system should be on a UPS to ensure that the homeowner will have continuous (constant) use of the system.

No CCTV footage

The application of CCTV footage is a popular security measure (commodity) in the domestic environment where the homeowner wants to have remote control over activities at home. These days the cell phone (GSM) and internet networks give the homeowner the ability to have application in hand and a phone call away.

Security signage

Security signage is required to be displayed by homeowners who makes use of a private security company and required by the private security service provider. The effectiveness of the signage can not be determined as contributing towards minimising residential burglaries if the victim's alarm, panic or electrical fence was connected to an armed response company. In other words these other responses may have more impact on the reduction than the mere fact of a sign (of an armed response company) outside on an exterior wall. It is not known (and is not within the scope of this study) whether the presence of a sign acts as a deterrent (or influences the decision – target selection – of whether to burgle that house or not).

(Another interesting research topic would be to determine the effectiveness of security signage in minimising crime would be another interesting research topic.)

Security lights

The majority of the victims had security lights and some found the questions on security lights irrelevant where the burglary had occurred during the day.

(Security lights and the effectiveness of being a deterrent would also be another interesting research topic interviewing incarcerated criminals.)

The application of the security lights can either be detection method through:

- Warning the homeowner of an alarm violation by connecting some of the security lights to the alarm system; and

- Warning the homeowner of power failure if the lights are not activated. Therefore the lights should be connected to a day/night photo sensor, which arm automatically at night time.

Security lights can be a deterrent by lighting the perimeter area to expose any possible intrusion or activate when movement detected on the perimeter through motion sensors.

Gate automation

Vehicle gate automation can be a security and convenience application.

The use of vehicle gate motors has its advantages and disadvantages and due to the type of motor and the implementation method.

Any security device should provide the owner with a security application either through detection or being a deterrent. Any security application should also be guarded by another device to ensure backup with system failure or minimising the exposure to possible failure. An example of a vehicle gate motor is to provide the owner with the ability to open and close the gate without getting out of his/her vehicle and exposed to possible hijacking.

In return should be guarded by a backup battery supply to provide the owner of gate automation during a power failure.

The following is important for the gate motor in terms of reliability:

- Backup battery supply during power failures;
- Gate keypad to activate gate motor in case of a remote button failure, for armed response access or can be used by gardener and domestic help without providing access to physical keys which can be misplaced;
- Manual override facility to manually open the gate in a total failure (lightning strike as an example or a major power surge damage); and
- Anti theft bracket to minimise being tampered with or stolen.

Perimeter types

The following is recommended as guiding principles in evaluating a security perimeter:

- Delay ability;
- Deterrent ability; and
- Detection ability.

An existing perimeter might require more of the one principal and less of another.

In the following example the existing perimeter is palisade fencing. Note how the existing palisade fence can be enhanced to comply with the three principles of a security device:

Table 8: An illustration of how a current perimeter type can be enhanced to comply with the three principles of a security system

Current situation			
Perimeter type	Deterrent	Delay	Detection
Palisade	Barbwire	Steel uprights 30mm x 30 mm	Blind and deaf dog
Proposed situation			
Perimeter type	Deterrent	Delay	Detection
Palisade	Barbwire	Steel uprights 30mm x 30 mm	Blind and deaf dog
	Add electrified fencing	Electrify from top to bottom adding game fencing attached to existing palisade infrastructure	Add electrified fencing connected to an armed response RF device

Infra-red beams

Infra-red beams are a detection device and provide an additional backup to the other devices on a secured perimeter in failure. They also provide an additional confirmation to the homeowner

that there is a definite intrusion or bridging of the security perimeter if for example the electrified fencing violation signal was received prior to the infrared beam zone violation.

Below infra-red beams will now be discussed with the inner perimeter security.

INNER PERIMETER SECURITY

Security lights

This was discussed in the perimeter section. The activation of the lights remains a problem area in that majority of the victims activated them with a manual switch. This would raise the question of human error which is highly probable with lights not being switched on.

Infra-red beams

Infra-red beams are more effective during night time when there is no direct sunlight or daily routines such as gardening services or children running around to set them off.

The effective setup of the infra-red beams is important to ensure:

- Minimal false alarms;
- User friendly; and
- Reporting as a dedicated zone.

Minimal false alarms

In the researcher's experience it was found that beams are placed in garden areas that it will have minimal false alarms if:

- There is not shrubs or vegetation close as two meters from these beams; and
- Minimal movement in terms of children, gardening services, big bird types or dogs.

The best approach is to setup the beams to accommodate routine. For example not to bypass the front beam due to irregular teenager behaviour patterns etc. and also the setup the beams close to the immediate hose to avoid beams being triggered by big birds or dogs.

User friendly

One needs to separate the beams from the house hardware, but still have them on the same intruder alarm control panel. This allows an owner to arm beams separately from the internal house and still have a detection capability when using the house apart from the external area.

Reporting as a dedicated partition

Having the beams reporting separately (dedicated zone) from the immediate house alarm and to indicate a chronological sequence of events where there was an example of a beam violation and immediately after it a house violation. This would allow for the armed response can make a more accurate decision in responding to a definite as supposed to and false alarm activation.

IMMEDIATE HOUSE SECURITY

The immediate house security includes the following:

- Doors;
- Safety gates;
- Windows;
- Intruder alarms; and
- Panics.

Doors

The following recommendations in terms of doors will be discussed:

- Key control and management; and
- Lock types.

Key control and management

The management of keys and controlling them are essential to ensure that the keys will not be used by unauthorised persons and will locks will be changed immediately after there is suspicion that the keys were used unlawfully or went missing.

Lock types

Locks need to have a backup in case of failure. The night latch lock is commonly used by homeowners and provides the ability to lock immediately (slam lock) if the owner needs to escape from an intruder. The type of lock will also provide a certain level of delay when it is tampered with. The 'Y', "CD" etc ranges are commonly used by building developers in developments where the homeowner do not have the opportunity to choose the required locks.

A dead bolt on both sides of the door fame (opening and closing side) can also provide a delay to the homeowner from an intruder.

A more expensive and effective approach is a magnetic lock. This would be beneficial where the door would only be opened with an electronic keypad or the latest on finger print recognition. The latter would be more expensive than other traditional physical locks.

Safety gates

The following recommendations in terms of safety gates will be discussed:

- Vital areas; and
- Lock types.

Vital areas

Less than half of the respondents in the victim interviews had safety gates either in the patio doors, kitchen doors or front door areas.

Safety gates are the barrier before the immediate house is entered. A safety gate (second barrier) should provide the homeowner with a delay barrier in case the door is opened and there is a perpetrator. It should also be a barrier which will enable the owner to open doors during day time (when it is hot) so that a cool breeze can flow into the house.

Lock types

The same statements would apply as with doors discussed in the door section.

The lock used should provide a reasonable delay and should not have keys which can be bought over the counter without providing the master key.

Windows

The following recommendations will be discussed in terms of windows:

- Burglar proofing;
- Concealment of movement; and
- Closing window latches

Burglar proofing

The majority of the victims had burglar proofing integrated into their window frames.

Burglar proofing on the secure side of the window would be more beneficial if there the window is closed and the window needs to be broken before an attempt is made on the burglar

proofing. With breaking of the window the victim would be able to hear this unless safety film has the ability to reduce breaking glass – this has the ability to reduce breaking glass sound. In such cases it is recommended that the intruder alarm glass break detectors be installed.

The type of steel used will depend on the aesthetic value the homeowner/resident prefers. If it is more about aesthetics, one can assume that the steel will be very thin in diameter or non-existent. The approach should be to provide advise in using thicker steel and apply this in the design.

Correctly placed burglar proofing provides a delay mechanism which can ensure that the infra-red beam outside the window can ensure detection and the glass break detector inside the house detecting the breaking glass. This all can contribute to early detection and quicker armed response.

Concealment of movement

Less than fifty percent of the victims covered their windows with curtains during day or night time. Covering windows with curtains can:

- Conceal movement inside the house; and
- Conceal valuable and small appliances from observation.

(The impact of closed curtains on the incidence of burglary will be another interesting research project.)

Closing window latches

The majority of the victims did not close their windows which can not have the effect as explained in the above-mentioned section on burglar proofing.

The majority of the victims had the traditional lever latch system on their windows which at times do not latch properly due to mechanism not locking properly. The window designs have now changed to more effective lever latches with less possibility of mechanisms coming loose or not latching properly. The latter is more expensive if window frames need to be changed and should be a procedure checking the tightness of the lever latches regularly.

Intruder alarms

The following recommendations will be discussed in terms of intruder alarms:

- Need for user friendliness;
- Monitoring; and
- Zone description and identification.

Need for friendliness

Half of the victims who had intruder alarms did not use their alarms and the reasons varied from either they were at home at the time and felt not using it; did not know how to use it; the system was not functional or was not sure if they armed their alarms (i.e. may forgotten to arm the alarm system).

The researcher found that intruder alarms in general are not used due to clients not sure how to trouble shoot the system when indicating a fault, open zone or not sure how to bypass/isolate zones when other areas are occupied by visitors, domestics, garden workers, children or pets.

Fundamentally installers or sellers of intruder alarm systems should provide clear guidelines to the user for the following user actions:

- Arming and disarming it in the following conditions:
 - Stay arming;
 - Away arming;
 - Arming partitions separately;
 - Isolating/bypassing zones;
 - Trouble shooting alarm; and
 - Testing sequence or procedures.

The system should also be able to provide the user with alarm violation signals.

Monitoring

An alarm system also provides output devices on the system to report via an armed response monitoring device such as a RF radio and SMS communicator. An alarm system can also be connected to the telephone line and internal alarm communicator to report on specific zone conditions such as zone violations and faulty zones or on the alarm system status quo such as alarm armed or disarmed by a certain user.

The siren inside the house will alert the user or neighbours of alarm violation and also a strobe light close to the main perimeter entrance on approach the house (i.e. can see there has been a violation if been away).

The keypad next to the user's bed or the keypad as the user enter the house area will alert the user of any alarm violation conditions power failures or panics.

The following is important to ensure that both the monitoring system and the intruder alarm system will provide each other with accurate information:

- Required alarm signals need to be planned (i.e. clear indication of what each is for e.g. such as mains failure, keypad panic activation, remote panic button activation, infra-red beam violation, electrified fencing violation, intruder alarm house alarm violation);
- The signals need to be provided through the output devices on the alarm system and these output devices need to be programmed to provide the required signals; and
- The monitoring device need to be provided with enough inputs to accommodate all the required signals received from the intruder alarm system.

The end result should provide both the armed response monitoring control room operator and the homeowner with accurate information on the alarm status.

Zone description and identification

Zone description is important for both the user and the armed response monitoring control room operator to ensure that the user will know where the alarm violation occurred and the movement of the perpetrator and the response officer to know where to expect to find the perpetrator and makes an accurate appreciation how to approach the house area.

The identification of zones can be via the alarm keypad providing zone description with LED's (lights with zone descriptions hard tagged, or LCD display where the zone descriptions appears on a LCD display).

Both will vary according to the user's preference and the one s not regarded to be more popular than the other.

The LED display has a disadvantage in that it cannot display more than 16 zones without looking to “busy” and then becoming “confusing”.

Panic buttons

Effective monitoring

The majority of the victims had fixed panic button, but only six out of the potential thirteen interviews indicated that they also had remote panic buttons.

Panic buttons are applicable to this research in that some of the cases reported were robberies, i.e. occurred when the occupants were inside or on the property at the time of the burglary and needed to activate a panic alarm at the time of the intruder detection.

The following can be used to activate a panic condition on the intruder alarm system:

- Remote panic button and receiver;
- Fixed panic button;
- Keypad panic button facility; and
- Duress user code.

Remote panic button and receiver

Only two of the potential victims who had remote panics, had tested it prior to the incident. The disadvantage of the remote panic buttons is within their batteries not changed regularly or where remotes were changed and only reprogrammed to open the garage and gate motor and not to activate the panic receiver.

Fixed panic button

Fixed panic buttons should be placed strategically throughout the house to provide at least one button for each room.

The researcher experienced in general that intrude alarm systems are not programmed properly to ensure that the alarm system will provide a panic signal output to the armed response monitoring device, SMS communicator or intruder alarm communicator.

An intruder alarm should be programmed to provide an output connected to these fixed panics and provide the output required.

Keypad panic facility

The intruder alarm keypad can provide a panic facility. This is normally the best place to have a panic facility in that this is the first point which the victim will approach to arming, disarming or viewing alarm activities. The intruder alarm system should be programmed to provide an output and reporting on a panic signal.

Duress user code

The keypad should have a user code which will send a signal via the monitoring device(s) on a panic or duress situation. This code will be used when the perpetrator forced the homeowner to deactivate the alarm from an alarm violation condition (i.e. the homeowner can put in a specific code which will deactivate the intruder alarm system, but will still send a silent signal to an armed response company that an emergency is occurring). The majority of the intruder alarm do have this facility and the researcher experienced that the average alarm is not programmed with this feature especially where there is small companies involved and not monitored by regulating authorities and not have proper quality control in place.

Location

The location of panic buttons should be known to all occupants in the house. Remote panics should be either on a person or close to a person. Each room should either have a fixed panic or a remote panic button and all should be aware of the duress code.

CONCLUDING REMARKS

The above recommendations for the homeowner use of an array of security measures were based on the findings from the study and also drawn from the personal work experience the researcher gained over the last seven years being involved with residential security projects, residential security audits and electronic courses in intruder alarm systems and assisting with installations. In addition, involvement with the community security forums in the research area also added to these recommendations.

The research findings indicated poorly implemented, used and maintained outer perimeter security, inner perimeter security and also immediate house area security. The security measures did, in the majority of cases, not comply with the principles/attributes of:

- Deterrent;
- Detection; and
- Delay.

The outcomes (research findings) focussed in providing security solutions in order to manage security crime risks such as residential burglary and adhere to the principles of:

- Determining the best and most cost-effective way of implementing and choosing a security system;
- Enhancing the security system's deterrence value;
- Improving the security system's detection capabilities;
- Enhancing the ability of the security system to delay a threat; and
- Developing efficiency by regular use, continual upgrading, providing effective training and having a constant maintenance plan in place.

Overall these security solutions need to incorporate some of the following basic principles (of security):

- The most effective way of implementing a security system is for it to be properly designed by a security professional, integrating a cost effective system in relation with the latest crime trends and modus operandi, but all to the needs and requirements of the client and front end user;
- The system should have deterrent value to minimise the risk of being exposed to possible unauthorised intrusion of one's property; and
- The system needs to have a detection value warning the homeowner in advance (reducing the probability of the risk being exposed) and the perpetrator being detected and apprehended in time. The latter can also be achieved by increasing physical barriers so as to delay perpetrators (in the commissioning of their crime).

During the victim interviews it was clear that there was a need for communities to get together and establish Community Police Forums. These forums will enable communities, in partnership with the South African Police Service and private security companies, to have proactive measures in place (identifying variables such as builders in areas) and implement them in order to reduce and to detect crime before claiming another victim.

CCTV can also be a deterrent. The challenge would be to get metro councils to speed up regulations regarding implementation of CCTV surveillance systems in public space areas. In the experience of the researcher it is currently problematic where a metro council do not want

to approve power to the CCTV, although the positioning of CCTV has already being approved. The lack of a directive on CCTV implementation leaves no hope for decisions to be made by any metro council member. Crime continues due to lack of cooperation by metro council.

A need sophisticated perimeter and security measures becomes more crucial. If the community initiative failed in detecting, deterring or delaying a crime, the perimeter is the next barrier, which needs to provide values/attributes of deterrent, detection and delay.

Infra-red beams and will be next barrier of detection if the property perimeter was breached by the intruder. Implementing beams and upgrading it to the latest and newer technologies, will not only minimise false alarms, but bring more faith and trust in the effectiveness of beams by the home owner and as a result will be more used to a greater extend than merely either switching them off or bypassing them.

The immediate house area security measures need to be managed more effectively. The control of keys, gate remotes and alarm codes should be allowed to be fragmented control (i.e. diverse users allowed to use the various security measures).

Alarm monitoring needs to be more objective providing as much as possible information to the homeowner and the armed response company on sequence of events in order to draw more accurate conclusions and more accurate decisions on how to react.

The descriptive mapping can be useful as a tool to the South African Police Service and also the Community Police Forums in their effort to combat crime. The maps indicated can provide useful information in terms of victim location in relation to environmental variables such as open properties, main roads etc. Police and community forums should keep these maps up to date to plan in advance for any possibilities in terms of crime risks. Insurance companies should also be more active in communities sharing statistics and resources in managing this tool.

Dockets should have a pre-designed form to assist the police officers recording as much as possible information of the crime. This will ensure that statistical data can be available for analysis and this again, will provide a tool for proactive policing.

Focussing only on one's immediate house has changed dramatically in terms of the latest crime trends and modus operandi. Focussing at macro level should be the focus, starting in your surrounding communities and working towards the immediate house area.

An effort of instituting partnering programmes through public-private partnership is important to engage synergies amongst all stakeholders ranging from private homeowner, insurer, potential property developer and buyer, foreign investor, government and private companies. Without these synergies, the chain of cooperation can not be completed and as a result leaving crime to be the problem of only some of the stakeholders.

LIST OF REFERENCES

PUBLICATIONS

- Bruyns, H., Kriel, J., Minnaar, A., Mistry, D., Pillay, K., & Snyman, R. 2001. *Guidelines for research proposal writing: Masters and Doctoral students*. Faculty of Public Safety and Criminal Justice, TechnikonSA: Florida
- Myerson, L. 1995. *Hijackings Burglaries and Serious Crimes*. Sandton: LAD Publishers
- Naudè, C.M.B., Stevens, R. 1988. *Crime Prevention Strategies*. Pretoria West: Huam Educational Publishers
- Pollard, E. & Liebeck, H. 1994. *The Oxford Paperback Dictionary. 4th Edition*. Great Britain: Oxford University Press
- Rogers, C. 2005. *Security Practice III, Unit 2*. Florida: Technikon SA
- South African Police Service (SAPS). 2005. *Annual Report for the South African Police Service for 2004/2005*. Pretoria: SAPS Strategic Management (Head Office)
- Welman, J.C. & Kruger, S.J. 1999. *Research Methodology for the Business and Administrative Sciences*. Halfway House: Thomson Publishing Co.
- Rossouw, D. 2003. *Intellectual Tools. Skills for the human sciences. 2nd Ed*. Pretoria :Van Schaik Publishers
- Porkess, R. 2004. *Collins Dictionary. Statistics*. Glasgow: Harper Collins Publishers
- Curwin, J. Slater, R. 2002. *Quantitative Methods for Business Decisions*. Singapore : Thomson Learning

INTERNET

- South African Police Service (SAPS). 2007. *Sector Crime Forums*. (Accessed at http://www.saps.gov.za/comm_pol/sector_policing/sector_policing.htm on 26 October 2007).
- South African Police Service (SAPS). 2003. *Annual Report for 2002/3*. (Accessed at <http://www.saps.gov.za/areport03/part7.htm> on 30 June 2003).
- South African Police Services (SAPS). 2005. *Crime in the RSA. April 2001/March 2002 April 2004/March 2005: Parkview policing area*. (Accessed at <http://www.saps.gov.za> on 28 January 2006)
- Beyer, L.R. 1991. *MA Thesis : Community Policing in Victoria: Past lessons – a model for the future*. (Accessed at <http://www.aic.gov.au/research/register/projects.html> on 19 November 2005)
- South African Intruder Detection Association publication. 2005. *Bylaw 25* (Accessed at <http://www.saia-approved.co.za/Forms/SAIDSA-Bylaw.25.pdf> on 19 November 2005)
- Grabosky, P. 1995. *Research record 78: Burglary Prevention*. (Accessed at <http://www.aic.gov.au/research/register/projects/cpr-78.html> and also <http://www.aic.gov.au/publications/tandi/tandi49.html> on 10 December 2005)
- South African Police Services (SAPS). 2003. *Manual on Community Policing Policy, Framework and Guidelines*. (Accessed at http://www.saps.gov.za/6_commpol/download/chapter1.doc on 30 June 2003)
- South African Police Services (SAPS). 2003. *Parkview Police Information*. (Accessed at <http://www.parkviewpolice.co.za/areas.asp> on 30 June 2003)
- South African Police Services (SAPS). 2003. *Parkview Police Information on Parkhurst*. (Accessed at <http://www.parkviewpolice.co.za/areas.asp?Area=Parkhurst> on 30 June 2003)

- South African Police Services (SAPS). 2004. *Parkview Police Information on Westcliff*. (Accessed at <http://www.parkviewpolice.co.za> on 10 January 2004)
- South African Police Services (SAPS). 2005. *Crime in the RSA for April to March 2001/2002 to 2004/2005 on Parkview policing area*. (Accessed at <http://www.saps.gov.za> on 4 October 2005)
- South African Police Services (SAPS). 2005. *Crime in the RSA for April to March 2001/2002 to 2004/2005 on Johannesburg policing area*. (Accessed at <http://www.saps.gov.za> on 4 October 2005)
- South African Police Services (SAPS). 2005. *Crime in the RSA for April to March 2001/2002 to 2004/2005 on Gauteng province*. (Accessed at <http://www.saps.gov.za> on 4 October 2005)
- South African Police Services (SAPS). 2005. *Crime in the RSA for April to March 2001/2002 to 2004/2005 on RSA*. (Accessed at <http://www.saps.gov.za> on 4 October 2005)
- University of Pretoria. 2005. *University of Pretoria Thesis and Dissertations*. (Accessed at <http://up.ac.za/academic/geog/theses.html> on 4 October 2005)
- Wikipedia.co.za. 2007. *Robbery defined*. (Accessed at http://en.wikipedia.org/wiki/Armed_robbery on 26 October 2007)
- Bernasco, W. and Nieuwbeerta, P. 2005. *British Journal of Criminology*. Advanced access. How do residential burglars select target areas? A new approach to the analysis of criminal location choice. UK: Oxford University Press: 296-315. (Accessed at http://bjc.oxfordjournals.org/cgi/rapidpdf/45/3/296?maxtoshow=&HITS=10&hits=10&RESULTFORMAT=&author1=Bernasco&fulltext=burglary&andorexactfulltext=and&searchid=1121025540023_246&stored_search=&FIRSTINDEX=0&sortspec=relevance&resource=1&journalcode=crimin on 4 October 2005)

Tilley, N. Pease, K. Hough, M. Brown, R. 1999. *Burglary Prevention: Early Lessons from the crime reduction programme*. London: Policing and reducing crime unit research, development of statistics directorate Clive House, Petty France (Accessed at <http://www.crimereduction.gov.uk/toolkits/db00.htm> on 4 October 2005)

Henderson, M. 2002. *Preventing Repeat Residential Burglary: A meta evaluation of two Australian projects*. Australia: Commonwealth of Australia (Accessed at <http://www.ag.gov.au/agd/www/ncphome.nsf/Web+Pages/5DCD6884D3A5ACA0CA256BE400172F62?OpenDocument> on 4 October 2005)

Welsh, B.C. and Farrington, D.P. 2004. *Preventing Crime: What works for children, offenders, victims and places*. UK: Wadsworth Press (Accessed at <http://www-staff.lboro.ac.uk/~ssgf/PDFs%5CSystematic%20Review%20of%20Repeat%20Residential%20Burg.pdf> on 5 December 2005)

INTERVIEWS

Moodley, N. Snr. Supt. SAPS, Parkview Police Station. Johannesburg. 24 October 2005.
Proactive policing.

Loubser, I. Snr. Supt. SAPS, Parkview SAPS. Johannesburg. March 2003.
Victim perception a residential burglary incident.

Rogers, F. C. Department of Security Risk Management-UNISA. Florida Campus. 30 November 2006. *Background to the Security Risk Management Model.*

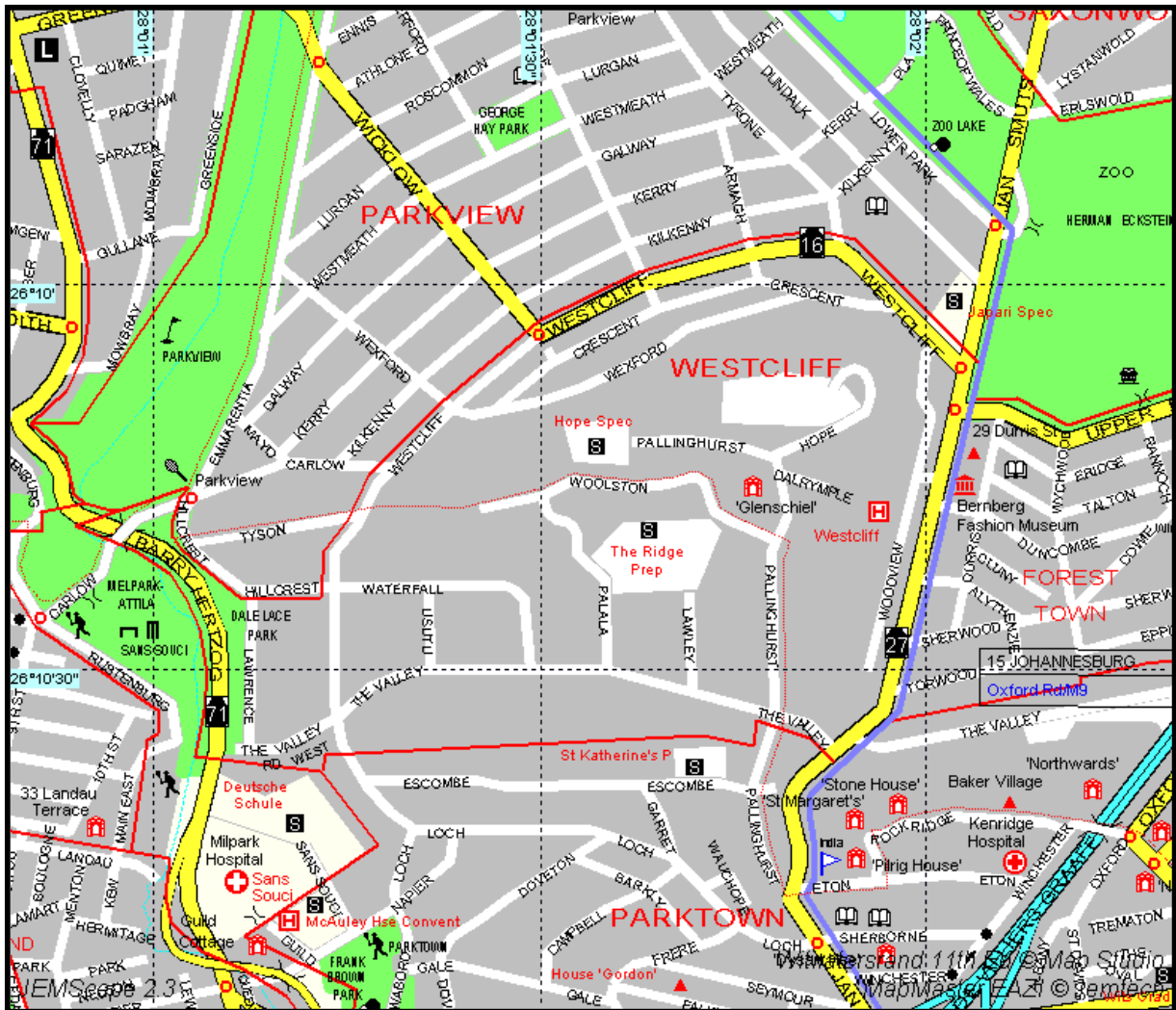
Victim interviews. Johannesburg. January 2005 till September 2005:

Interview number	Date	Reference number	Area
1	06 April 2005	W1	Westcliff
2	07 April 2005	W2	Westcliff
3	12 April 2005	W3	Westcliff
4	14 April 2005	W4	Westcliff
5	18 April 2005	P1	Parkhurst
6	19 April 2005	W5	Westcliff
7	21 April 2005	W6	Westcliff
8	26 April 2005	W7	Westcliff
9	27 April 2005	P2	Parkhurst
10	28 April 2005	P3	Parkhurst
11	04 May 2005	P4	Parkhurst
12	04 May 2005	P5	Parkhurst
13	07 May 2005	P6	Parkhurst
14	07 June 2005	P7	Parkhurst
15	11 July 2005	P8	Parkhurst
16	14 July 2005	P9	Parkhurst
17	19 July 2005	P10	Parkhurst
18	21 July 2005	W8	Westcliff
19	26 July 2005	P11	Parkhurst
20	28 July 2005	P12	Parkhurst

ANNEXURES

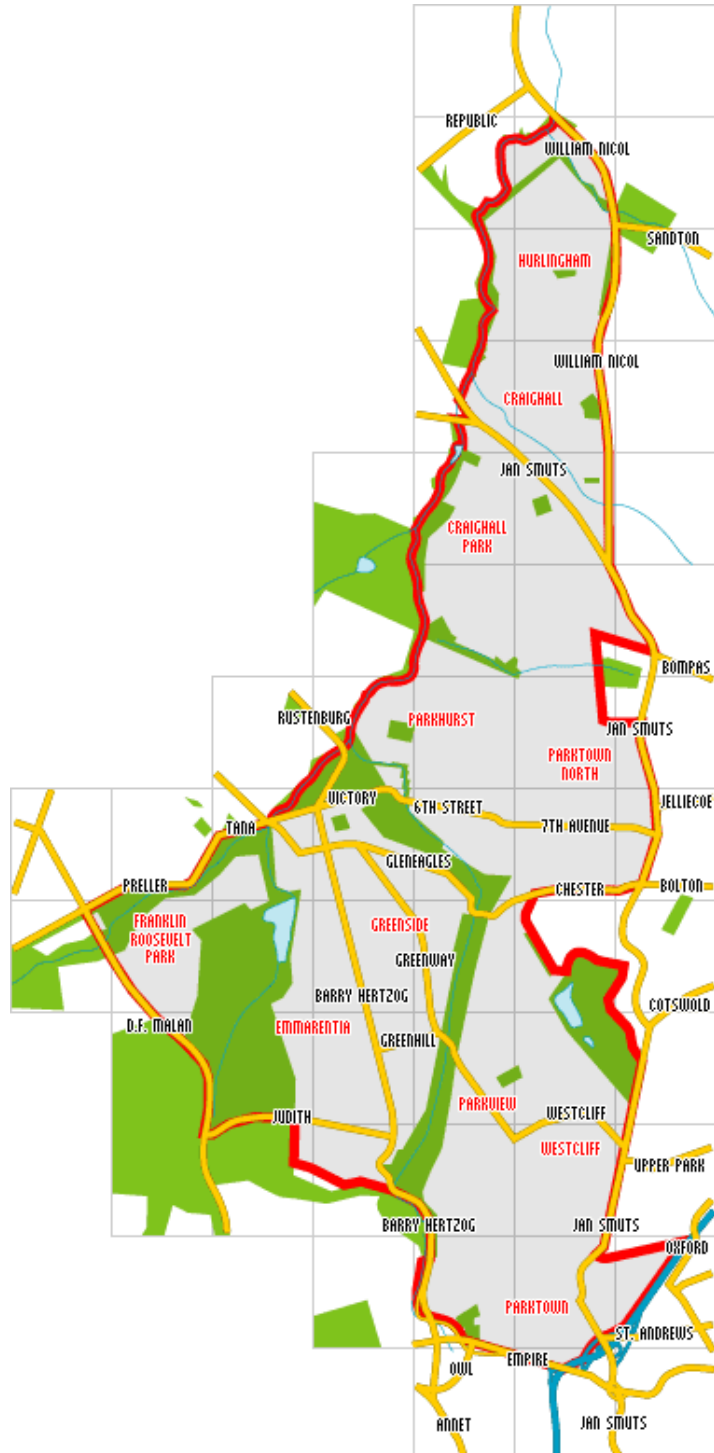
ANNEXURE 1

Map 1: Westcliff Area



ANNEXURE 2

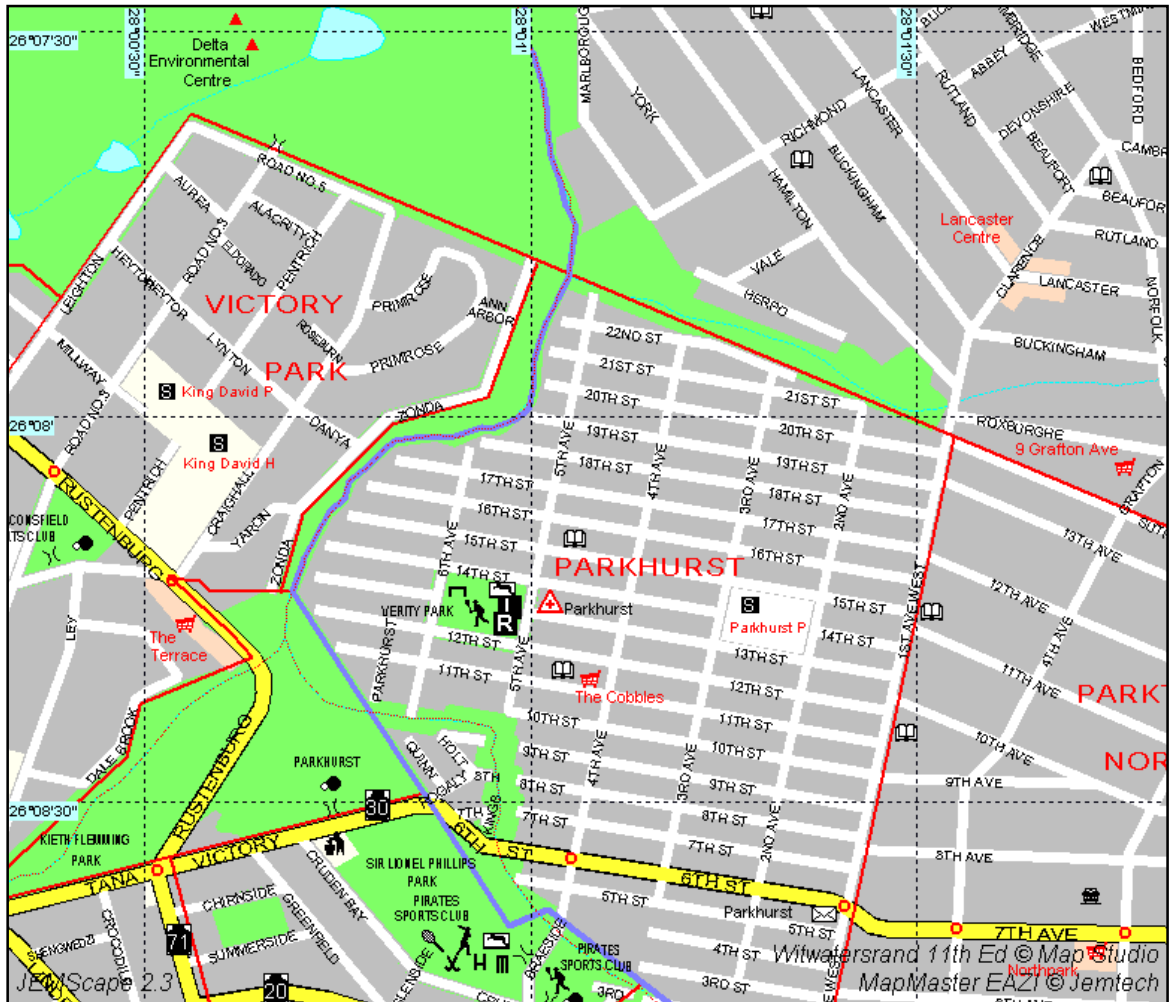
Map 2: Parkview Policing Area



(Adopted from the Parkview Police official web site)

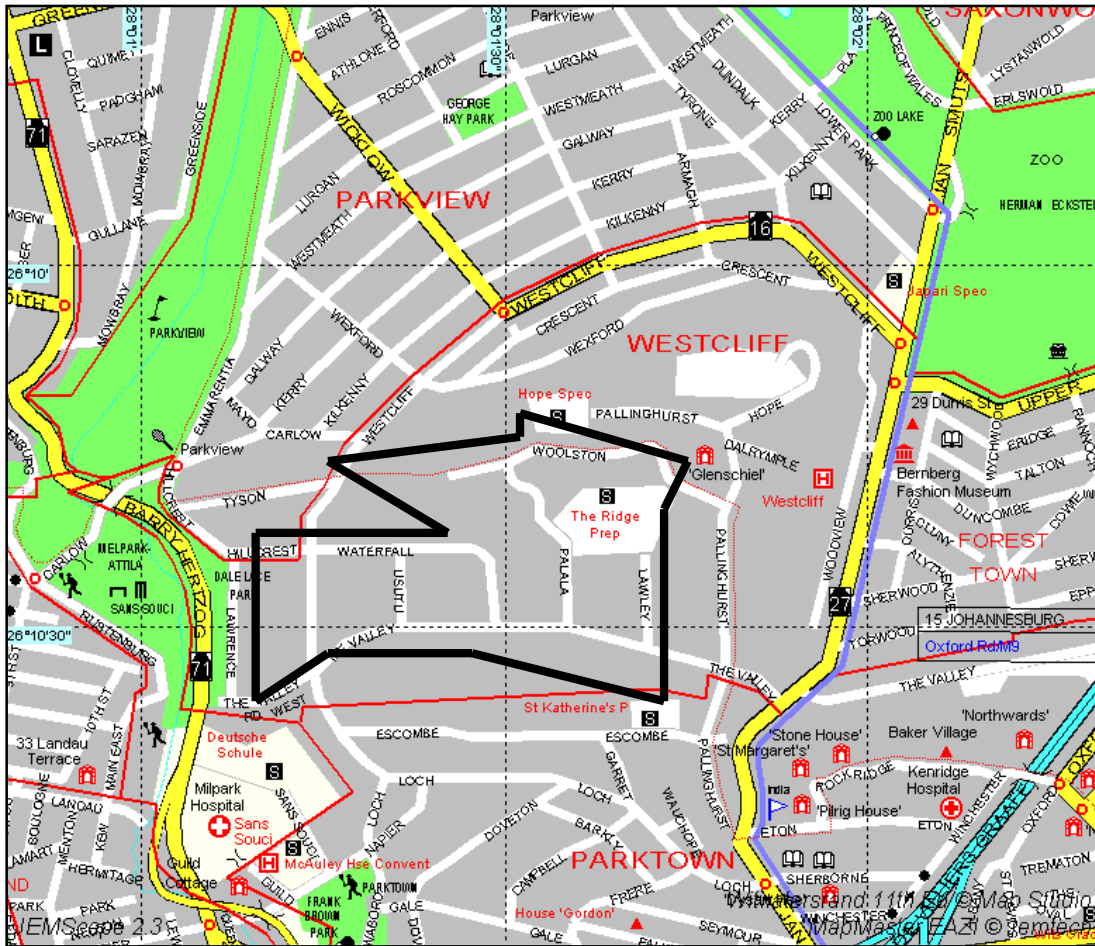
ANNEXURE 3

Map 3: Parkhurst Area



ANNEXURE 4

Map 4: Upper Westcliff Security Forum area



ANNEXURE 5

Docket Digital Survey Form

DOCKET ANALYSES - Digital Survey Form

ID	<input type="text"/>	Complainant Surname	<input type="text"/>	ID Number Of Accused One	<input type="text"/>
Station	Parviam SAPS	Work Number For Complainant	<input type="text"/>	Any Suspects According To Complainant	No
Case Number	<input type="text"/>	Home Number For Complainant	<input type="text"/>	Investigator Notes:	<input type="text"/>
Control Registration Number	<input type="text"/>	Nature And Description Of Offence 1	<input type="text"/>		
Case Registration Number	<input type="text"/>	Nature And Description Of Offence 2	<input type="text"/>		
Case Docket	Yes	Nature And Description Of Offence 3	<input type="text"/>		
Investigator Name	<input type="text"/>	Nature Of Property 1	<input type="text"/>		
Investigator Telephone Number	<input type="text"/>	Nature Of Property 2	<input type="text"/>		
Date Of Offence	<input type="text"/>	Nature Of Property 3	<input type="text"/>		
First Time Of Offence	<input type="text"/>	Nature Of Property 4	<input type="text"/>		
Second Time Of Offence	<input type="text"/>	Nature Of Property 5	<input type="text"/>		
Day Of Week Of Offence	<input type="text"/>	Nature Of Property 6	<input type="text"/>		
Method Used	<input type="text"/>	Nature Of Property 7	<input type="text"/>		
		Nature Of Property 8	<input type="text"/>		
Entrance Gained	<input type="text"/>	Damage Value	R 000		
		Date Of Conviction	<input type="text"/>		
Type Of Instrument Used	<input type="text"/>	Offences Convicted Of	<input type="text"/>		
Complainant Name	<input type="text"/>	Sentences As Per Convictions	<input type="text"/>		
		Name Of Accused 1	<input type="text"/>		
		Surname Of Accused One	<input type="text"/>		

Created by C. Olickers for MTech Project - Capturing Docket Information in Digital Format

Records: 1 of 3

Form View

start | Windo... | Cassie X Ol... | Micro... | Microsoft V... | Parviam S... | Microsoft E... | 2 Micro... | CN | 06:35 PM

Docket Digital Survey Form - Hardcopy

The screenshot displays a Microsoft Access application window titled "Microsoft Access - [tblDocketAnalysis2]". The window contains a form titled "Docket Analysis - Survey Form". The form fields are as follows:

- FormID:
- Reflexion:
- Case Number:
- Control Registration Number:
- Case Registration Number:
- Case Doctor:
- Investigator Name:
- Investigator Telephone Number:
- Date Of Q/A:
- Precedence Of Q/A:
- Length Time Of Q/A:
- Date Of Walk Of Q/A:
- Method Used:
- Session Goal:
- Type Of Document Draft:
- Completion Date:
- Completion Timezone:
- Walk Number For Completion:
- How Often For Completion:
- Title And Description Of Q/A 1:
- Title And Description Of Q/A 2:
- Title And Description Of Q/A 3:
- Title Of Page 1:
- Title Of Page 2:
- Title Of Page 3:
- Title Of Page 4:

At the bottom of the form, it says "Page 1 of 4". The Microsoft Access status bar shows "Ready" and "CAPS NLM". The Windows taskbar at the bottom shows the Start button, several open applications, and the system clock displaying "06:40 PM".

ANNEXURE 6

VICTIM INTERVIEW SCHEDULE

VICTIM INTERVIEW SCHEDULE FORM:

NEW UNISA

INTERVIEW WITH VICTIMS OF RESIDENTIAL BURGLARY RESIDING WITHIN ONE OF THE TWO NORTHERN SUBURBS OF JOHANNESBURG TO DETERMINE THE IMPACT OF RESIDENTIAL SECURITY MEASURES ON THE INCIDENCE OF BURGLARY

Dear Respondent,

This research project is undertaken by the researcher as part of an M Tech Degree in Security Risk Management at New Unisa.

(Notes: Bridging dialogue is in *italics*, but questions are in normal text. Additional questions to clarify answers will be used where applicable. In general, answers will be recorded verbatim as much as far as possible. With the permission of the respondents, all interviews will be recorded either by means of writing and dicta phone recordings done by the researcher.)

SUMMARY OF THE PROJECT

The interview schedule forms part of an attempted research project to determine the impact of residential security measures on residential burglary. In these interviews, only persons who were victims of burglary, in one of two Northern suburbs, Westcliff or Parkhurst as target areas, between 1 January 2001 and 31 December 2002 will be interviewed

CONFIDENTIALITY

The identities of all the persons interviewed will be kept strictly confidential. Only the research results will be made available to interest groups. Your identity will be in no way being detectable from the research results. The location of your house will only be used by the researcher analysing variables on timing, locality, geographical analysis, escape routes etc. and will not be indicated in the descriptive mapping.

The researcher is bound to his assurances and guarantees by the Ethics Code for Research of the New University of South Africa (UNISA).

The information you provide will be used in the research project for a MTECH Degree registered with the Department Security Risk Management, School of Criminal Justice and the College of Law all at the New University of South Africa (UNISA).

DEFINITION

Residential burglary

In this study residential burglary is defined as taking possession of any household appliances, furniture and any other property of the lawful owner (the respondent), in an unlawful manner and/or without the lawful owner's (the respondent's) permission.

Incident

In this study the incident refers to the latest burglary or burglary attempt committed at the residents of the respondent.

The Respondent

In this study the respondent refers to the homeowner or homeowners or both or the responsible tenant at the time of the latest burglary incident and still residing in the same home being burgled and at the time of this interview.

GENERAL

The South African Police gave permission for the researcher to conduct a docket analysis.

The Parkview Police approved the researcher application to do the docket analysis at their Crime Intelligence Centre and to use the information gained from the docket analysis, to get in contact with the respondents in an attempt to arrange interviews and audits.

Your responses will be noted by the interviewer on paper, dicta phone or both. Should any question or statement be unclear to you, please ask the researcher present, to clarify the issue.

The interview schedule has 95 questions that might be all or partially applicable to the each interview.

The interview is scheduled to take approximately 45 minutes.

Only one answer per question is required.

When answering the questions it is very important to give your opinion.

Please feel free to interrupt the researcher to ask for clarification.

The last thing I like to say before we get started is to remind you that you have the right to refuse any answer any particular question, although I would appreciate you telling me why if there is anything you do not want to answer. Do you any questions now?

SECTION A

Let me start with some general information. I would like to know something about your background in general

1. *Type of dwelling:*

<i>Duet</i>	
<i>Single house</i>	
<i>Flat</i>	
<i>Duplex Town House</i>	
<i>Simplex Town House</i>	
<i>Cottage</i>	
<i>Security Village</i>	
<i>Gated Neighbourhood</i>	

2. *Were you employed at the time of the incident?*

<i>Yes</i>	<i>No</i>
------------	-----------

3. *Employment status at the time of the incident?*

<i>Full time</i>	<i>Part time</i>	<i>Student</i>	<i>Self Employed</i>	<i>Unemployed</i>

4. *At the time of the incident, were you working from home?*

<i>Yes</i>	<i>No</i>
------------	-----------

5. *If employed, have any of the following personnel employed or family members or lodgers supposed to be on site at the time of the incident?*

<i>Domestic Help</i>	<i>Child minder</i>	<i>Lodger</i>	<i>Retired Partner</i>	<i>Other Family</i>	<i>Gardener</i>	<i>Building Contractor</i>

Now that you have told me about yourself, let's move on to the actual burglary incident, the crime category you are a victim of.

I would like to ask you questions regarding the incident.

Please remember that what you will say will be treated as confidential. Please remember that the Incident refers to the latest burglary or attempted burglary you were a victim of according to the local police records at the time of this interview.

Premises refer to the place burgled according to the local police records.

SECTION B

All the following questions relate to at the time of the actual burglary.

Suburb

6. *Was there a patrolling neighbourhood watch?*

<i>Yes</i>	<i>No</i>
------------	-----------

7. *Were there any contractors⁵⁵ works in the following areas:*

<i>In your street</i>	
<i>At your house</i>	
<i>At your immediate⁵⁶ neighbours</i>	
<i>In your suburb</i>	
<i>In you immediate residential block³</i>	

⁵⁵ Contractors: Refers to any activities related to installing, erecting or maintaining public services like electricity, plumbing, road works, civil engineering works etc.

⁵⁶ Immediate neighbour refers to your neighbours on either side of you, diagonally on the left and right to the back of your property and neighbour immediately behind the back of your property.

Perimeter

CCTV

8. Did you have CCTV installed?

Yes	No
-----	----

9. If yes, was it recording any footage?

Yes	No
-----	----

Perimeter Fence

10. Have you had a perimeter fence in place which encircled your property?

Yes	No
-----	----

11. If yes, what kind of a fence?

Steel palisade	
Wooden balustrades	
Precast slab walling	
Wired diamond mesh	
Brick wall	
Other (Please specify)	

12. Did you attend to the following possible penetrable areas:

Cracked pre-cast slabs	
Overhanging tree branches	
Missing or loose palisade	
Missing wooden balustrades	
Other (Please specify)	

Electrified fencing

13. Did you have electrified fencing?

Yes	No
-----	----

14. How was your fence energiser switched on/off?

<i>Key</i>	<i>Remote</i>	<i>Keypad</i>
------------	---------------	---------------

15. How was your fence energiser monitored?

<i>Siren</i>	
<i>Armed response (RF) radio link</i>	
<i>Remote Keypad</i>	
<i>SMS</i>	
<i>Other (Please specify)</i>	

16. How long before (In months) the incident did you install your electrified fencing?

<i>1-12</i>	<i>13-24</i>	<i>25-36</i>	<i>37 +</i>
-------------	--------------	--------------	-------------

17. Did you have a back up battery facility to the fence energiser replaced prior to the incident?

<i>Yes</i>	<i>No</i>
------------	-----------

18. If yes, within how many months before the incidents did you had the back up battery replaced?

<i>1-12</i>	<i>13-24</i>	<i>25-36</i>	<i>37 +</i>
-------------	--------------	--------------	-------------

19. Did you receive any calls regarding alarm violation signals, from the armed response control room prior to the incident?

<i>Yes</i>	<i>No</i>
------------	-----------

20. If yes, which of the following signals were they reporting on?

<i>Common alarm violation</i>	
<i>Electrified fencing alarm violation</i>	
<i>Mains failure signal</i>	
<i>Other (Please specify)</i>	

Motorised Vehicle Perimeter Gates

21. How many motorised vehicle perimeter gate areas did you have on the property?

22. Were your vehicle gate(s) linked with your intruder alarm system?

Yes	No
-----	----

23. Did you have an electronic key pad connected to the vehicle gate motor?

Yes	No
-----	----

24. If yes, what is the reason and purpose for this?

Access for the armed response company	
Access for the domestic help	
Access for the gardener	
Access for your children	
Other (Please specify)	

25. Have you ever had the main access code changed at the mentioned keypad?

Yes	No
-----	----

26. If yes, how many months prior to the incident?

1-12	13-24	25-36	37 +	OTHER (Please specify)
------	-------	-------	------	------------------------

27. Did you have the other user codes changed on the vehicle gate motor electronic keypad?

Yes	No
-----	----

28. *If yes, how many months?*

1-12	13-24	25-36	37 +	<i>OTHER</i> (Please specify)
------	-------	-------	------	-------------------------------

29. *Was there anyone else other than yourself, your children and you partner, who else had access to the vehicular perimeter gate?*

.....

30. *Did you have a manual lock fitted to your vehicular gate?*

Yes	No
-----	----

31. *Did anyone else other than yourself had access to the keys locking and unlocking this manual lock.*

Yes	No
-----	----

32. *If yes who had access to these keys?*

.....

33. *Did you have a back up battery supply to the vehicle gate motor?*

Yes	No
-----	----

34. *If yes, within how many months before the incidents did you had the back up battery replaced?*

1-12	13-24	25-36	37 +
------	-------	-------	------

35. *Have you had any other additional security feature(s) fitted to your gate motor that secured your gate motor?*

Yes	No
-----	----

36. Please describe the feature(s).

.....
.....
.....
.....

Pedestrian Gates

37. Did you have any pedestrian gates on your property?

Yes	No
-----	----

38. If yes, how many pedestrian gates?

.....

39. How do you lock or secure these pedestrian gates?

Gate 1	
Gate 2	
Gate 3	
Gate 4	
Gate 5	

40. Which of the following people had access to these locking systems and in what manner?

Children	
Child minder	
Gardener	
Domestic help	
Others: (Please specify)	

41. Did you have a manual locking facility fitted to the pedestrian gate(s)

Yes	No
-----	----

42. If yes, how persons had access to the keys other than yourself and your partner to this manual locking facility?

.....

.....

.....

43. Did you have an electrical striker/magnetic locking facility to the pedestrian gate(s)?

Yes	No
-----	----

44. If yes, did you have a back up battery supply to pedestrian gate striker/magnetic lock?

Yes	No
-----	----

45. Did you replace the back up battery replaced to these electrical/magnetic locks?

Yes	No
-----	----

46. If yes, how many months ago prior to the incident?

1-12	13-24	25-36	37 +
------	-------	-------	------

47. Did you have a gate closer fitted to the pedestrian gate at the time?

Yes	No
-----	----

48. Did you have a digital keypad connected the pedestrian gate striker/magnetic lock?

Yes	No
-----	----

49. If yes, what is the reason and purpose for this?

Access for the armed response company	
Access for the domestic help	
Access for the gardener	
Access for your children	
Other (Please specify)	

50. Did you change the main access code at any stage?

Yes	No
-----	----

51. If yes, how many months prior to the incident?

1-12	13-24	25-36	37 +	<i>OTHER</i> (Please specify)
------	-------	-------	------	-------------------------------

52. Did you have any other user codes changed?

Yes	No
-----	----

53. If yes, how many months prior to the incident?

1-12	13-24	25-36	37 +	<i>OTHER</i> (Please specify)
------	-------	-------	------	-------------------------------

Inner Perimeter (Garden Area)

Infrared Beams

54. Did you have any infrared beams installed in the garden area?

Yes	No
-----	----

55. If yes, please indicate where.

<i>All around the house</i>	
<i>Only the front garden area</i>	
<i>Only in the back garden area</i>	
<i>Other (Please specify)</i>	

56. Have you removed any bushes, shrubs or other vegetation encroaching on the infra-red beam system, before the incident?

Yes	No
-----	----

57. If yes within how many days have you done this?

Full time	1-2	3-4	5-6	7+
-----------	-----	-----	-----	----

58. Did you bypass your beams before the incident?

Yes	No
-----	----

59. If yes, why were the beams bypassed at the time of the incident?

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Floodlights

60. Did you have security floodlights in the garden area?

Yes	No
-----	----

61. If yes, were these lights operational at the time of the incident.

Yes	No
-----	----

62. In what way are the floodlights activated?:

Day/night photo sensor	
Timer	
Manual	
Other (Please specify)	

Immediate House Area

Door Keys and Locks

63. Were all the external doors locked at the time of the incident?

Yes	No
-----	----

64. Were any keys left inside (secure side of the doors at the time of the incident of the external doors)?

Yes	No
-----	----

65. Did any of the following, if any, have access to the keys of any or all external door locks?

<i>Children</i>	
<i>Domestic help</i>	
<i>Gardener</i>	
<i>Other family members other than immediate family</i>	
<i>Other (Please specify)</i>	

66. Did you have any safety gates in the following areas:

<i>Kitchen Door</i>	
<i>Front Door</i>	
<i>Patio door(s)</i>	
<i>Door that leads from garage directly into house</i>	
<i>Door between living and sleeping areas</i>	
<i>Other (Please specify)</i>	

Windows

67. Were there burglar proofing in front of external windows?

Yes	No
-----	----

68. Was the burglar proofing covering all the windows in the following areas or only some windows or none? :

<i>Living area windows</i>	
<i>Sleeping area windows</i>	
<i>Both areas</i>	

69. Were all the external windows closed?

<i>Yes</i>	<i>No</i>
------------	-----------

70. If not, which windows were not closed and why?

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71. Did you have all, some or any or none of the external windows covered with closed curtains during the day?

<i>All of the external windows</i>	
<i>Some of the external windows</i>	
<i>None of the external windows</i>	

72. Did you have all, some or any or none of the external windows covered with closed curtains during the night?

<i>All of the external windows</i>	
<i>Some of the external windows</i>	
<i>None of the external windows</i>	

Intruder Alarm

73. Did you have any intruder alarm?

<i>Yes</i>	<i>No</i>
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74. If yes, did you arm it before the incident?

<i>Yes</i>	<i>No</i>
------------	-----------

75. If no, state your reason for not arming the alarm?

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76. Were the intruder alarm system connected to an armed response (RF) radio link?

Yes	No
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77. If not, please state your reason for this?
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78. Did you have your intruder alarm tested prior to the incident?

Yes	No
-----	----

79. If yes, how long before the incident did you test your alarm?

Days	Weeks	Months	Years	Never	Other (Please specify)

80. Were there any fixed panic buttons inside the residence?

Yes	No
-----	----

81. Were there any remote panic buttons inside the residence?

Yes	No
-----	----

82. If yes, please indicate which member(s) was/were in possession of a remote panic button(s)?

Children	
Domestic Help	
Child Minder	
Homeowner/Responsible tenant's partner	
Homeowner/Responsible tenant	
Other (Please specify)	

83. Did you have your remote panic buttons tested prior to the incident?

Yes	No
-----	----

84. If yes, how long before the incident did you have the remote panic buttons tested?

Days	Weeks	Months	Years	Never	Other (Please specify)

85. Other than yourself and your partner, did anyone else have access to the code which was used to arm and disarm the intruder alarm system?

Yes	No
-----	----

86. If yes, please specify who else had access to the code which was used to arm and disarm the system?

Children	
Domestic Help	
Child Minder	
Homeowner/Responsible tenant's partner	
Homeowner/Responsible tenant	
Other (Please specify)	

87. Was there any zones bypassed?

Yes	No
-----	----

88. If yes, please explain why these/this zone(s) were/was bypassed?

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Post Incident

Security Enhancements

Neighbourhood

89. Since the incident, what in your neighbourhood has been enhanced in terms of security?

	<i>N/A</i>	<i>New</i>	<i>Increased</i>	<i>Decreased</i>
<i>Bicycles patrols</i>				
<i>Walking patrols</i>				
<i>Dedicated armed response car</i>				
<i>Boomed off area</i>				
<i>Visible surveillance cameras</i>				
<i>Establishment of neighbourhood watch</i>				
<i>Other (Please specify)</i>				

Additional Notes

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Perimeter

90. Since the incident, what has been enhanced with your perimeter in terms of security at the perimeter area?

	<i>N/A</i>	<i>New</i>	<i>Increased</i>	<i>Decreased</i>
<i>Erecting electrified fencing</i>				
<i>Erecting wall spikes</i>				
<i>Erecting barbwire</i>				
<i>Erecting palisade</i>				
<i>Building brick walls</i>				
<i>Other (Please specify)</i>				

Additional Notes

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Vehicle Gate

91. Since the incident, what has been enhanced at your vehicle gate in terms of security at the vehicle gate area?

	<i>N/A</i>	<i>New</i>	<i>Increased</i>	<i>Decreased</i>
<i>Gate release clutch lock</i>				
<i>Digital keypad for the armed response</i>				
<i>Other (Please specify)</i>				

Additional Notes

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Pedestrian Gate

92. Since the incident, what has been what has been enhanced at the pedestrian gate(s) in terms of security measures at the pedestrian gate(s) area(s)?

	<i>N/A</i>	<i>New</i>	<i>Increased</i>	<i>Decreased</i>
<i>Backup battery to the electrical striker lock/magnetic lock</i>				
<i>Gate Closer</i>				
<i>Other (Please specify)</i>				

Additional Notes

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Inner perimeter

93. Since the incident, what has been enhanced in the garden area in terms of security measures within the inner perimeter area?

	<i>N/A</i>	<i>New</i>	<i>Increased</i>	<i>Decreased</i>
<i>Floodlights</i>				
<i>Infrared beams</i>				
<i>Dogs</i>				
<i>Other (Please specify)</i>				

Additional Notes

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Immediate home security

94. Since the incident, what has been enhanced within the immediate house area in terms of security measures at the immediate house area?

	<i>N/A</i>	<i>New</i>	<i>Increased</i>	<i>Decreased</i>
<i>Closed windows</i>				
<i>Changed door locks</i>				
<i>Burglar proofing inside windows of sleeping areas</i>				
<i>Safety gate between the living and sleeping areas</i>				
<i>Intruder alarm installed</i>				
<i>Intruder alarm connected to RF radio link to armed response company</i>				
<i>Link Intruder alarm with SMS unit monitored by a centralised armed response company</i>				
<i>Remote panic buttons implemented connected to RF radio dedicated panic zone</i>				
<i>Separate user codes and owner/responsible tenant the master code</i>				
<i>Other (Please specify)</i>				

Additional Notes

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INTERVIEWER COMMENTS

Interview Number.....Identification Code.....

Description of circumstances under which the interview has taken place

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General Impressions (Co-operation, body language and communication)

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Summary of the interview with important aspects

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Adoption of the question and theory

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Proposition: (Conformation, modification, rejection, new understanding, new areas to be researched and explored)

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ANNEXURE 7

VICTIM RESIDENTIAL SECURITY AUDIT SCHEDULE

RESIDENTIAL AUDIT AT VICTIM OF RESIDENTIAL BURGLARY - FORM :

NEW UNISA

RESIDENTIAL SECURITY AUDITS AT THE HOMES OF VICTIMS OF RESIDENTIAL BURGLARY RESIDING WITHIN ONE OF THE TWO NORTHERN SUBURBS OF JOHANNESBURG, WESTCLIFF AND PARKHURST, TO DETERMINE THE IMPACT OF RESIDENTIAL SECURITY MEASURES ON THE INCIDENCE OF BURGLARY COMMITTED BETWEEN 1 JANUARY 2001 AND 31 DECEMBER 2002

This research project is undertaken by the researcher as part of an M Tech Degree in Security Risk Management at New Unisa.

(Notes: Bridging dialogue is in *italics*, but questions are in normal text. Additional questions to clarify answers will be used where applicable. In general, answers will be recorded verbatim as much as possible. The interviews will be recorded in writing, digital pictures and dicta phone recordings by the researcher.)

SUMMARY OF THE PROJECT

The Residential Security Audit forms part of a research project to determine the impact of residential security measures on the incidence of burglary committed between 1 January 2001 and 31 December 2002 in two Northern suburbs, Westcliff and Parkhurst, in Johannesburg. In these audits, only persons who were victims of burglary, in one of the two Northern suburbs, premises will be audited.

The Residential Security Audit Form can be applied:

- *As a proactive security measure;*
- *For the compilation of a future residential security audit template; and*
- *For the compilation of descriptive mapping to determine crime trends and domestic security measures;*

CONFIDENTIALITY

You are not required to give your name in this audit. Your name will also not appear in any other report and the researcher guarantees your anonymity. In addition all other personal information will be kept confidential.

The identities of all the persons properties audited will be kept strictly confidential. Only the research results will be made available to interest groups. Your identity will be in no way being detectable from the research results. The location of your house will only be used by the researcher analysing variables on timing, locality, geographical analysis, escape routes etc. and will not be indicated in the descriptive mapping.

The researcher is bound to his assurances and guarantees by the ethics code for research at the New University of South Africa.

The information you provide will be used in the research project for a Master of Technology Degree registered with the Programme Group Security Risk Management at Technikon SA. The analysed and processed data (statistics and powerful statements will be published in the research project).

DEFINITION

In this study **burglary is defined as theft of any household appliances, furniture and any other property of the victim.**

In this study **the incident** refers to the latest burglary committed at the home of the victim between 1 January 2001 and 31 December 2002 according to the Parkview Police records.

In this study **the victim** refers to the homeowner or homeowners or both or the responsible tenant at the time of the latest burglary incident and still residing in the same home being burgled and at the time of this interview.

In this study **residential security measures** refers to the physical, procedural and technological security measures implemented before the incident and after the incident.

GENERAL

Residential Security Measures and your answers will be noted by the interviewer on paper, dicta phone, laptop PC and digital camera. Should any question or statement be unclear to you, please ask the researcher present, to clarify the issue.

Written permissions have been obtained from the South African Police Service in advance for the interviews and audits to be conducted. This also sole depends on the participation and final approval of the homeowner/responsible tenant.

Given what I'm interested in, you should be able to see why I'm asking most of the questions that follow. If not, you can ask for an explanation, and I will try to explain, although it may be until we have finished the interview because it is very important that we finish in time we have available. Also, if you have other information that you think is important that I do not ask about, please tell me.

The last thing I like to say before we get started is to remind you that you have the right to refuse the researcher access to any area, although I would appreciate you telling me why if there is anything you do not want to answer or deny me access to. Do you any questions now?

SECTION A

Now that we have agreed to the survey process I would like to start with the following in sequence:

- Perimeter
- Inner perimeter (garden area)
- Immediate House

I will then continue with the neighbourhood on my exit and will not need you to accompany me on that part of the survey.

Thank you again for the time.

This section will go in accordance with the Residential Security Audit as agreed prior to this.

PERIMETER

Walls

I will make notes on the following:

- Height;

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.....

Vehicle Gate

I will need to make notes on the following:

- Anti lifting devices;
- Gate motor rack safeguarding;
- Type of gate; and
- Manual locking device.

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Vehicle Gate Motor

I will need to make notes on the following:

- Anti Theft bracket; and
- Connection to intruder alarm system.

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Pedestrian Perimeter Gate

I will need to make notes on the following:

- Penetrability;
- Locking facility; and
- Power supply to magnetic/striker lock.

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Electronic Keypad to Vehicle Gate Motor and/or the Pedestrian Gate Magnetic/Striker Lock

I will need to make notes on the following:

- Controller location; and
- Power supply and back up facility.

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.....
INNER PERIMETER (GARDEN AREA)

Infrared Beams

I will need to make notes on the following:

- Connection to the intruder alarm panel; and
 - Signal strength.
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.....

Floodlights

I will need to make notes on the following:

- Connection;
 - Ignition Facility; and
 - Visibility on inner perimeter and perimeter.
-
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IMMEDIATE HOUSE AREA

Door Locks

I will need to make notes on the following:

- Penetrability; and
 - Backup facility.
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Safety Gates

I will need to make notes on the following:

- Penetrability; and
- Locking Facility.

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Windows

I will need to make notes on the following:

- Locking Facility;
- Burglar Proofing penetrability;
- Type of glass; and
- Penetrability.

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Intruder Alarm System

I will need to make notes on the following:

- Direction of the passives;
- Location of door contacts;
- End of line resistance location;

INTERVIEWER COMMENTS

Interview Number.....Identification Code.....

Description of circumstances under which the interview has taken place

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.....

General Impressions (Co-operation, body language and communication)

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Summary of the interview with important aspects

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Adoption of the question and theory

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Proposition: (Conformation, modification, rejection, new understanding, new areas to be researched and explored)

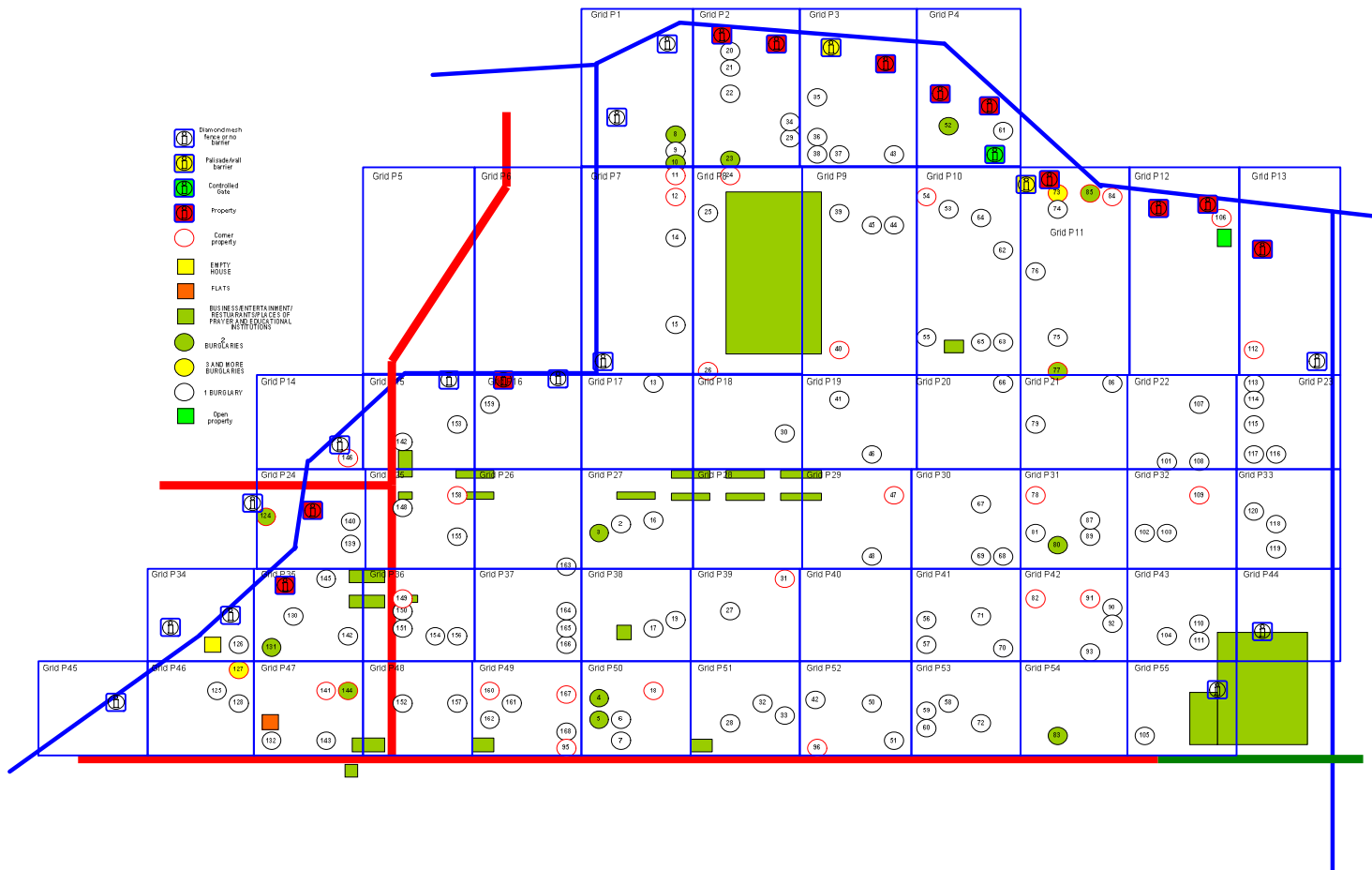
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ANNEXURE 8

DESCRIPTIVE MAPPING – PARKHURST AREA

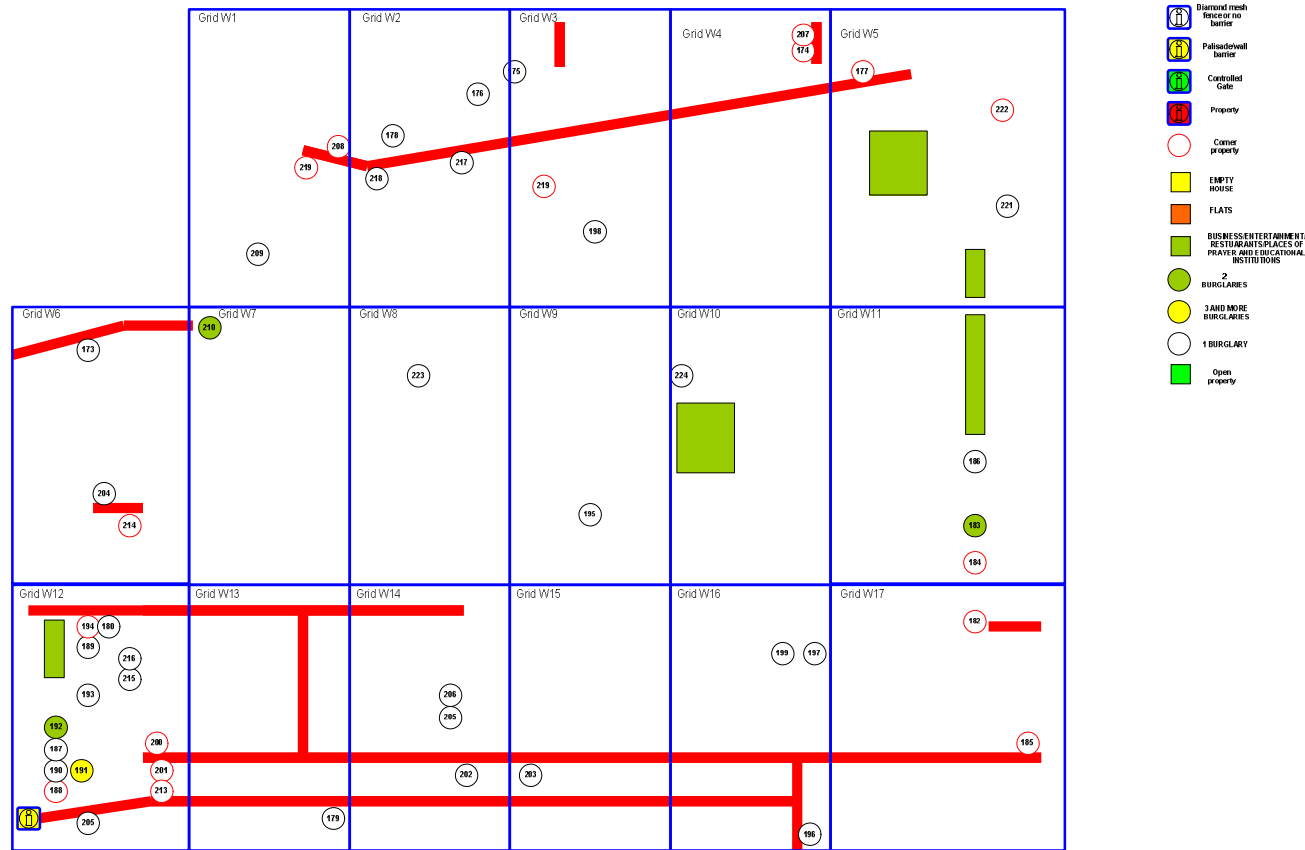
Drawing 4: Descriptive mapping with grid reference on the Parkhurst residential area



ANNEXURE 9

DESCRIPTIVE MAPPING – WESTCLIFF AREA

Drawing 4: Descriptive mapping with grid reference on the Westcliff residential area



ANNEXURE 10

CODING SCHEDULE: DOCKET ANALYSIS

Day of week burglary was committed		Frequency
Day		
Monday		
Tuesday		
Wednesday		
Thursday		
Friday		
Saturday		
Sunday		
Time frame (measured in days) for burglary occurrence		Frequency
Over more than one day		
Same day		
Week days or weekends on burglary occurrence		Frequency
Weekends		
Week days		
Intruder alarm	Coding	Frequency
Had an intruder alarm (True)	01	
Did not have an intruder alarm (False)	02	
Unknown	03	
Method used to get into immediate house		Frequency
Window frame removed		
Door forced open		
Unknown		
Breaking sliding door glass		
Security gate forced open		
Send child through the window		
Burglar proofing forced open		
Through open window		
Window broken		
Through open door		
Window forced open		
Sliding glass door forced open		
Climbed onto balcony		
Spare key used		
Through roof		
Garage door forced open		
Alarm cable disconnected		

ANNEXURE 11

CODING SCHEDULE: VICTIM INTERVIEWS

Question 1

Type of Dwelling:

Theme	Coding
Duet	01
Single house	02
Flat	03
Duplex Town house	04
Simplex town house	05
Cottage	06
Security Village	07
Gated neighbourhood	08
Not applicable	09

Question 2

Were you employed at the time?

Theme	Coding
Employed	01
Unemployed	02
Not applicable	03

Question 3

Employment status at the time of the incident

Theme	Coding
Full time employee	01
Part time employee	02
Student	03
Self employed	04
Jobless	05
Not applicable	06

Question 4

Were you working from home prior to the incident

Theme	Coding
At home	01
Away from home	02
Not applicable	03

Question 5

If employed, have any of the following personnel employed, or family members or lodgers, supposed to be on site at the time of the incident?

Theme	Coding
Domestic help	01
Child minder	02
Lodger	03
Retired partner	04
Other family	05
Gardener	06
Building contractor	07
Not applicable	08
Domestic help and gardener	09
Domestic help, gardener and partner	10
Nobody	11
Business partner	12

Question 6

Was there a patrolling neighbourhood watch?

Theme	Coding
Yes	01
No	02
Not applicable	03

Question 7

Were there any contractor works in the following areas?

Theme	Frequency
In the immediate street area	
On the victim's property	
At your immediate neighbours	
In your suburb	
In your immediate residential block	
Not applicable	
Nowhere	

Question 8

Did you have CCTV installed?

Theme	Coding
Yes	01
No	02
Not applicable	03

Question 9

If yes, was it recording any footage?

Theme	Coding
Yes	01
No	02
Not applicable	03

Question 10

Did you have a perimeter fence which encircled your entire property?

Theme	Coding
Yes	01
No	02
Not applicable	03

Question 11

If yes, what kind of perimeter fence?

Theme	Frequency
Steel palisade	
Wooden Balustrades	
Precast cement slab walling	
Wire diamond mesh fence	
Brick wall	
Stone wall	
Not applicable	

Question 12

Did you attend to the following possible penetrable areas?

Theme	Coding
Steel palisade	01
Wooden Balustrades	02
Precast cement slab walling	03
Wire diamond mesh fence	04
Brick wall	05
No penetrable areas	06
Not applicable	07

Question 13

Did you have electrified fencing?

Theme	Coding
Yes	01
No	02
Not applicable	03

Question 14

How was your fence energiser switched on/off?

Theme	Coding
Key	01
Remote	02
Keypad	03
Neighbour control	04
Not applicable	05

Question 15

How was your fence energiser monitored?

Theme	Frequency
Siren	
Armed response RF radio link	
Remote keypad	
SMS	
Neighbour's fence	
Not applicable	

Question 16

How long before (in months) the incident did you install your electrified fencing?

Theme	Frequency
1 - 12 Months	
13 - 24 Months	
25 - 36 Months	
37+ Months	
Not applicable	

Question 17

Did you have a back up battery facility to the fence energiser replaced prior to the incident?

Theme	Coding
Yes	01
No	02
Not applicable	03

Question 18

If yes, how many months before the incident did you have the back up battery replaced?

Theme	Frequency
1 - 12 Months	01
13 - 24 Months	02
25 - 36 Months	03
37+ Months	04
Never	05
Not applicable	06

Question 19

Did you receive any calls regarding alarm violation signals from the armed response control room prior to the incident?

Theme	Coding
Yes	01
No	02
Not applicable	03

Question 21

How many motorised vehicle perimeter gate areas did you have on the property?

Theme	Coding
No motorised vehicle gates	00
1 Motorised vehicle gate	01
2 Motorised vehicle gates	02
Not applicable	03

Question 22

Were your vehicle gate(s) linked with your intruder alarm system?

Theme	Coding
Yes	01
No	02
Not applicable	03

Question 23

Did you have an electronic key pad connected to the vehicle gate motor?

Theme	Coding
Yes	01
No	02
Not applicable	03

Question 29

Was there anyone else, other than yourself, your children and your partner, who else had access to the vehicle perimeter gate motor in activating it to open and close?

Theme	Frequency
Domestic help	
Gardener	
Building contractor	
Domestic help	
Children	
Nobody	
Not applicable	
Business partners	
Tenant	

Question 30

Did you have a manual lock fitted to your vehicle gate?

Theme	Coding
Yes	01
No	02
Not applicable	03

Question 31

Did anyone else, other than yourself had access to the keys locking and unlocking this manual lock?

Theme	Coding
Yes	01
No	02
Not applicable	03

Question 32

If yes, who had access to these keys?

Theme	Frequency
Domestic help	
Gardener	
Building contractor	
Domestic help	
Children	
Nobody	
Not applicable	
Business partners	
Tenant	
Neighbour	
Was not locked	

Question 33

Did you have a back up battery supply to the vehicle gate motor?

Theme	Coding
Yes	01
No	02
Not applicable	03

Question 34

If yes, how many months prior to the incident did you have the back up battery replaced?

Theme	Frequency
1 - 12 Months	
13 - 24 Months	
25 - 36 Months	
37+ Months	
Never	
Not applicable	

Question 35

Did you have any additional security feature(s) fitted to your vehicle gate motor that secured it?

Theme	Coding
Yes	01
No	02
Not applicable	03

Question 36

If yes, please describe the feature(s).

Theme	Coding
No additional security features	
Not applicable	
Anti theft bracket	
Manual locks on gate motor release system	
Remote switching intruder alarm off	

Question 37

Did you have any pedestrian gates on your property?

Theme	Coding
Yes	01
No	02
Not applicable	03

Question 38

If yes, how many pedestrian gates?

Theme	Coding
No perimeter pedestrian gates	00
1 perimeter pedestrian gate	01
2 Perimeter pedestrian gates	02
Not applicable	03

Question 39

If yes, how did you lock the pedestrian gate(s)?

Theme	Frequency
4 Lever lock	
Night latch	
Electrical striker lock	
Pad lock	
Mortise lock or Cylinder	
Not known	
Not applicable	
No lock	

Question 40

Which of the following people had access to the locking systems on the pedestrian gate(s)?

Theme	Frequency
Children	
Gardener	
Domestic help	
Friends	
Tenant	
Business partners	
Nobody	
Not applicable	
Previous owner	

Question 44

If you had either an electrical sticker lock or magnetic lock, did you have a back up battery supply to the mentioned locks?

Theme	Coding
Yes	01
No	02
Not applicable	03

Question 47

Did you have a gate closer fitted to the pedestrian gate?

Theme	Coding
Yes	01
No	02
Not applicable	03

Question 48

Did you have a digital key pad connected to the electrical striker lock or magnetic lock?

Theme	Coding
Yes	01
No	02
Not applicable	03

Question 54

Did you have any infra-red beams installed in the garden area?

Theme	Coding
Yes	01
No	02
Not applicable	03

Question 55

If yes, please indicate where did you have infra-red beams installed?

Theme	Coding
All sides of the immediate house areas	01
Only one side of the house	02
Not applicable	03

Question 56

Have you removed any bushes, shrubs or other vegetation encroaching on the infra-red beam system, before the incident?

Theme	Coding
Yes	01
No	02
Not applicable	03

Question 57

If yes, within how many days have you done this?

Theme	Frequency
Full time	
1-2 days	
3-4 days	
5-6 days	
7+ days	
Never	
Not applicable	

Question 58

Did you bypass your beams before the incident?

Theme	Coding
Yes	01
No	02
Not applicable	03

Question 60

Did you have security floodlights in the garden area?

Theme	Coding
Yes	01
No	02
Not applicable	03

Question 61

If yes, were these lights operational at the time of the incident?

Theme	Coding
Yes	01
No	02
Not applicable	03

Question 62

In what way were the floodlights activated?

Theme	Frequency
Day/night photo sensor	
Motion detection	
No response due to daytime incident	
Manual switch	
Timer	
Not applicable	

Question 63

Were all the external doors locked at the time of the incident?

Theme	Coding
Yes	01
No	02
Not applicable	03

Question 64

Were any keys left inside (secure side of the doors) at the time of the incident of the external doors?

Theme	Coding
Yes	01
No	02
Not applicable	03

Question 65

Did any of the following, if any, have access to the keys of any or all external door locks?

Theme	Frequency
Children	
Domestic help	
Friends	
Gardener	
Tenant	
Family	
Neighbour	
Nobody	
Business partners	
Not applicable	

Question 66

Did you have any safety gates in the following areas:

Theme	Frequency
Between living and sleeping areas	
Front door	
Kitchen door	
Patio door	
None	
Not applicable	
Between garage and house	
Bedrooms doors	

Question 67

Were there burglar proofing in front of external windows?

Theme	Coding
Yes	01
No	02
Not applicable	03

Question 68

Was the burglar proofing covering all the windows in the following areas or only some windows or none?

Theme	Frequency
All areas	
Some areas	
None	
Not applicable	

Question 69

Were all the external windows closed?

Theme	Coding
Yes	01
No	02
Not applicable	03

Question 70

If not, which windows were not closed and why?

Theme	Frequency
Fresh air ventilation	
Forgot	
Not applicable	
Pet's routine	
Prefer windows open	
Locks not working	

Question 71

Did you have all, some or any or none of the external windows covered with closed curtains during the day?

Theme	Coding
All of the external windows	01
Some of the external windows	02
None of the external windows	03
Not applicable	04

Question 72

Did you have all, some or any or none of the external windows covered with closed curtains during the night?

Theme	Coding
All of the external windows	01
Some of the external windows	02
None of the external windows	03
Not applicable	04

Question 73

Did you have an intruder alarm?

Theme	Coding
Yes	01
No	02
Not applicable	03

Question 74

If yes, did you arm it before the time?

Theme	Coding
Yes	01
No	02
Not applicable	03

Question 75

If no, state your reason for not arming the alarm?

Theme	Frequency
Faulty beam	
Irregular routine of other occupants	
Just into the premises	
Not applicable	
Not familiar with using it	
Was at home at the time	
Was not functional	
Used dogs as an interim	

Question 76

Were the intruder alarm system connected to an armed response RF radio link?

Theme	Coding
Yes	01
No	02
Not applicable	03

Question 77

If no, state your reason for not connecting the alarm to an armed response company?

Theme	Frequency
Just into the premises	
Was still under previous owner's control	
Not applicable	
Intruder alarm not functional and connected	

Question 78

Did you have your intruder alarm tested prior to the incident?

Theme	Coding
Yes	01
No	02
Not applicable	03

Question 79

If yes, how long before the incident did you test your alarm?

Theme	Frequency
Days	
Weeks	
Months	
Years	
Was new	
Not applicable	
Never	
By accident	

Question 80

Were there any fixed panic buttons inside the residence?

Theme	Coding
Yes	01
No	02
Not applicable	03

Question 81

Were there any remote panic buttons inside the residence?

Theme	Coding
Yes	01
No	02
Not applicable	03

Question 82

If yes, please indicate which member(s) was/were in possession of a remote panic button(s)?

Theme	Frequency
Not applicable	
Nobody	
Domestic help	
Responsible owner	
Children	
Responsible owner's spouse	
Gardener	

Question 83

Did you have your remote panic buttons tested prior to the incident?

Theme	Coding
Yes	01
No	02
Not applicable	03

Question 84

If yes, how long before the incident did you test your remote panic buttons?

Theme	Coding
Months	01
Annually	02
Never	03
Not applicable	04

Question 85

Other than yourself and your partner, did anyone else have access to the code which was used to arm and disarm the intruder alarm system?

Theme	Coding
Yes	01
No	02
Not applicable	03

Question 86

If yes, please who else had access to the code which was used to arm and disarm the system?

Theme	Frequency
Business employees	
Children	
Domestic help	
Nobody	
Not applicable	
Owner's partner	

Question 87

Was there any zones bypassed?

Theme	Coding
Yes	01
No	02
Not applicable	03

Question 89

Since the incident, what in your neighbourhood has been enhanced in terms of security?

Theme	Frequency
Bicycle patrols	
Foot patrols	
Dedicated armed response vehicle	
Boomed off area	
Surveillance cameras	
Establish a neighbourhood watch	
Not applicable	
No enhancements	

Question 90

Since the incident, what has been enhanced in terms of security with your perimeter?

Theme	Frequency
Implementing electrified fencing	
Implementing wall spikes	
Implementing razor wire	
Implementing Palisade	
Implementing brick walls	
Not applicable	
Implementing new pedestrian gate	
Implementing wire diamond mesh fence	
No enhancements	

Question 91

Since the incident, what security has been enhanced at your vehicle gate in terms of security measures?

Theme	Frequency
Implemented gate release mechanism lock	
Connected digital keypad to gate motor	
No enhancements	
Not applicable	
Implement automation on garage door	
Changed remote button frequency	
Add additional height to vehicle gate motor	
Added wall spikes on top of vehicle gate	

Question 92

Since the incident, what has been enhanced at the pedestrian gate(s) in terms of security measures at the pedestrian gate(s) area(s)?

Theme	Frequency
Implemented backup battery to electrical striker/magnetic lock	
Implemented a gate closer	
Implemented an intercom	
Implemented manual lock	
Added height to existing gate	
Changed lock	
Added an additional safety gate	
Not applicable	
Reinforced gate hinges	
No enhancements	

Question 93

Since the incident, what has been enhanced in the garden area in terms of security measures within the inner perimeter area?

Theme	Frequency
Implemented security floodlights	
Implemented infra-red detection beams	
Implemented dogs	
No enhancements	
Not applicable	
Connected existing security lights to intruder alarm	

Question 94

Since the incident, what has been enhanced within the immediate house area in terms of security measures at the immediate house area?

Theme	Frequency
Closed windows	
Changed door locks	
Implement burglar proofing	
No enhancements	
Implement safety gate between living and sleeping areas	
Implement intruder alarm	
Link intruder alarm to armed reaction monitoring facility	
Connect existing remote panic buttons to a dedicated panic zone on RF radio	
Separate user codes for intruder alarm	
Not applicable	
Implement extra locks on door	
Changed intruder alarm codes	
Closed curtains	
Upgraded intruder alarm	

ANNEXURE 12

CODING SCHEDULE: DESCRIPTIVE MAPPING

Quantifying burglaries committed at victims within a grid

Theme	Frequency
-------	-----------

One burglary
Two burglaries
Three burglaries

Total burglaries committed within a grid

Theme	Frequency
-------	-----------

Burglaries committed within a grid

Grid location in relation to community entertainment places, business property and open unoccupied property

Theme	Coding
-------	--------

Present within same grid	01
Present within one grid	02
Present within two grids	03
Present within three grids	04
Present within four grids	05
Present within five grids	06

Quantifying victim location in relation to other victims within a grid

Theme	Frequency
-------	-----------

Immediate neighbour on either side
Directly across the road
Stand alone

Grid location in relation to main access roads

Theme	Coding
-------	--------

Present within same grid	01
Present within one grid	02
Present within two grids	03
Present within three grids	04
Present within four grids	05
Present within five grids	06

Grid location in terms of dead-end roads

Theme	Coding
Present within same grid	01
Present within one grid	02
Present within two grids	03
Present within three grids	04
Present within four grids	05
Present within five grids	06

Dead-end road descriptions within grids with dead-end roads

Theme	Coding
Occupied property	01
Controlled gate	02
Palisade or brick wall	03
Wire diamond mesh fence or non existent	04

Quantifying victim location in relation with street location within a grid

Theme	Frequency
On corner	01
In middle of street	02
Close to corner properties	03

ANNEXURE 13

RESIDENTIAL SECURITY AUDIT CHECKLIST

Area	Hardware or procedure name	Security discipline	Security hardware or procedure	Hardware or procedure description	
Neighbourhood	Neighbourhood security initiative	Physical security	Guards	Patrols	
				Management of guards	
				Guarding morale	
Perimeter	Perimeter types	Physical security	Brick walls	No penetrable areas	
				Wall height should be 2 meters and higher	
	CCTV	Electronic security	CCTV cameras	CCTV recording	Day night compatibility
					Backup battery supply on PSU
					Secured and anti tamper facility
					Digital
					30 day footage
					10 to 20 frames per second
					Backup battery supply to recorder
					CCTV coverage
					Main entrances on perimeter
					Face and number plate recognition
Electrified fencing	Electronic security	Electrified fencing energiser	Electrified fencing uprights	Linked to monitoring device	
				Earth loops to sensitize fence	
				Backup battery supply	
				Providing minimum of 6 strands	
				Tensioners tensioned properly	
Vehicle gate	Vehicle gate	Electronic security	Vehicle gate motor	Backup battery supply	

		Electronic security		Electronic keypad
		Procedural security		Keypad code change
				Provided with lockable anti theft bracket
				Electronic keypad controller secured in gate motor housing
				Remote receiver frequency changed regularly and remotes reprogrammed regularly
Pedestrian perimeter gate	Pedestrian gate		Pedestrian gate lock	Provided with backup lock
			Pedestrian gate	Solid gate
				Provided with intercom connected to phone line or cell phone
			Pedestrian gate magnetic lock	Provided with backup battery supply
				Wiring secured and not exposed
				Gate monitor connected to intruder alarm system
				Connected to electronic keypad
			Electronic keypad	Separate user codes
				User codes changed regularly

Area	Hardware or procedure name	Security discipline	Security hardware or procedure	Hardware or procedure description	
Inner perimeter or garden	Infra-red beams		Infra-red beam location	All sides of property	
			Infra-red beams	Minimal false alarms	
				On separate partition from house alarm hardware	
				Report to monitoring device on dedicated beam zone	
			PSU	Provided with own power supply and backup battery	
				Backup battery changed annually	
				Clear from vegetation or foliage	
		Security lights		Security light location	Facing perimeter
					Situated high on immediate house walls
			Switching facility	Day/night sensor	
				Front lights also connected to intruder alarm system	
Immediate house	Doors		Door locks	Provided with backup dead bolt locks	
				Cylinder type locks and not just traditional 4 lever locks	
			Keys	Only owner or responsible tenant have access to keys	
		Safety gates		Safety gate locks	Provided with slam locks
				Safety gate	Fully framed
					Frame bolts applied with anti tamper method
					Reinforced horizontal and vertical bars
		Windows		Glass type	Normal
				Concealment of movement	Covered with curtains during day time

				Covered with curtains during night time
			Monitoring	Monitored by Infra-red beams
				Monitored by glass break detectors
	Intruder alarm		Keypads	Separate user codes
				Key pad panic enabled
				Duress code enabled
				User codes changed regularly
				Zone descriptions clear and accurate
			Interior passives	Positioned from windows towards room
				Cover all areas
				Separately on each zone
				Cleaned every six months
				Remote passive batteries changed every 18 months
				End of line resistance within passive

Area	Hardware or procedure name	Security discipline	Security hardware or procedure	Hardware or procedure description
			Door monitors	Located at each door
				Cover all external doors
				Separately on each zone
				Remote door monitor batteries changed every 18 months
				End of line resistance within door monitor
			Monitoring	Device monitored by a certified 24hr control room
				24HR test reports sent every 24 HRS
				Report on various alarm signals and alarm condition
			Control panel	Backup battery changed annually
				Panel serviced annually
				Endo of line resistance inside detection hardware and not panel
			PSU	Provided with own PSU and backup battery
				Backup battery changed annually
	Panic buttons		Key pads	Connected to monitoring device and intruder alarm panel as dedicated panic
			Remote buttons	Connected to monitoring device and intruder alarm panel as dedicated panic
			Fixed panics	Connected to monitoring device and intruder alarm panel as dedicated panic
			Location	Every room supplied with either one of the above-mentioned
			Remote buttons	Batteries changed every 6 months
			Testing	Every week

ANNEXURE 14

SAPS DOCKET CHECKLIST WITH RESIDENTIAL BURGLARY COMPLAINTS

Area	Event	Event description and details
Complainant details and crime location	Complainant	Complainant name(s)
		Complainant surname
		Complainant maiden name
		Complainant ID Number
		Complainant Passport number
		Complainant nationality
		Complainant gender
		Was the complainant working from home?
		Was the complainant employed?
		Describe employment status?
Crime location	Physical address	Street Name
		Street Number
		Suburb
		Town
		Province
		Country
		Corner property?
Perimeter	Entry point	Is the perimeter suspected to be an entry point and please provide reason in this regard?
	Security measures	What was present as security measures on the perimeter
		Was the security measure(s) monitored by an armed response company?
		Did the armed response company report on any alarm signals from the perimeter? Describe the alarm signals reported by the armed response company

Area	Event	Event description and details
	Perimeter type	Describe the perimeter type
Vehicle gate	Security measures	What security measure(s) was in place with the vehicle gate
	Vehicle gate motor	Was there a vehicle gate motor in place
		How is the vehicle gate motor normally activated
		Any security measures in place with the vehicle gate motor
		Was there a electronic keypad provided to open and close the vehicle gate motor
	Entry point	Is the vehicle suspected as an entry point and why?
Pedestrian gate	Lock	Describe the locks on the pedestrian gate
		Was there any backup battery supply to the electrical pedestrian locks?
Inner perimeter and garden area	Infra-red beams	Were there any infra-red beams?
		Did the infra-red beams cover all areas?
		Describe areas covered with infra-red beams?
		Was the infra-red beams linked to a monitoring device?
		Is the monitoring device connected to an armed response company?
		Did the armed response company report on any alarm signals received from the infra-red beams?
		Describe the signal description from the armed response company

Area	Event	Event description and details
		Was there any infra-red beams bypassed and the reason for this
		Was the infra-red beams armed and if not please provide a reason for this?
	Security floodlights	Was there any security floodlights?
		Were the security floodlights operational?
		Was the security floodlights switched on?
		How was the security floodlights switched on?
		Describe areas covered by the security floodlights
	Dogs	Was there any dogs?
	Entry point	Is the inner perimeter or garden area suspected to be an entry point and why?
Immediate house area	Doors	Were all the external doors locked
		Were all the external doors provided with safety gates
		Describe doors not covered with safety gates
	Keys	Was there any keys left inside door locks?
		Who had access to door keys?
	Windows	Were all the windows closed?
		Were all the windows covered with external or internal or integrated burglar proofing?
		Describe windows covered with burglar proofing
		Was all the windows covered with curtains during day time?
		Was all the windows covered with curtains during night time?
	Entry point	Is the windows or doors suspected to be entry points

Area	Event	Event description and details
		Please provide a reason to the response above on entry point.
	Intruder alarm	Was there an intruder alarm?
		Was the alarm armed?
		Please provide a reason for alarm not armed?
		Were there any zones bypassed/isolated?
		Please provide reason for zones bypassed or isolated
		Which zones were bypassed/isolated?
		Was the alarm linked to an armed response monitoring device?
		Did the armed response company report on any alarm signals received from the intruder alarm?
		Please describe signals received from the armed response company?
		Did the armed response company respond?
		Did the armed response company had access and explain method of access?
	Losses	Please describe property removed illegally from each area eg. TV from Lounge, garden tools from shed and also the value of the property removed.
	Suspects	Please indicate if anyone one is suspected and provide a reason in this regard.
	Date of the incident	When was the last date you left the house and date you returned finding the house intruded
	Time of incident	When was the last time you left the house and time you returned finding the house intruded?

Area	Event	Event description and details
	External weather conditions	What was the weather conditions when you left the house and the weather conditions when you arrived at home?
	Victims	Was anyone at home at the time of the incident?
		Who was at home at the time of the incident?
		Any injuries sustained and describe areas injured?

ANNEXURE 15

PERSONAL EXPERIENCE AS A RESIDENTIAL BURGLARY VICTIM

The following section provides the researcher's own personal experience in 2006 as a victim of residential burglary.

RESIDENTIAL SECURITY MEASURES IMPLEMENTED

The following security measures were implemented at the time of the incident according to the various areas:

- Residential area;
- Immediate residential block;
- Perimeter;
- Inner perimeter; and
- Immediate house area.

Residential area

The residential area does have the visibility of armed response vehicles. There is though no road closures nor and boomed off areas or guarding companies.

Community Policing Forums mainly exists in neighbouring suburbs.

The suburb is surrounded by two major routes leading from the suburb to freeways, taxi ranks and bus terminals.

There are many builder activities in the area and the area is fairly new in development also.

Immediate residential block

The immediate residential block had a group of *concerned residents who wanted to start a security forum*. The forum did not come about due to a lack of interest or commitment.

As mentioned earlier there is no closed off areas nor any boomed off areas or patrolling guards. There are many builder activities within the immediate residential block and neighbouring residential blocks.

There is also open property adjacent to the victim location.

Perimeter

The perimeter consisted of a palisade fence in the front with a motorised vehicle gate. The rest of the perimeter had palisade fencing. The owner, wife and maid have access to the remotes. The motor is not DC and not connected to a keypad. The motor does not have an anti theft bracket. The gate is provided with a manual locking facility but not locked due to day time. The vehicle gate is not connected to the intruder alarm system.

The perimeter also had electrified fencing along all sides of the perimeter and the electrical fencing is active.

The energiser is not connected to an armed response company monitoring radio.

There is no CCTV.

Inner perimeter

The inner perimeter has infra red detection beams covering three of the 4 sides of the house.

Two beams were bypassed due to birds setting it off during day time. The front beam was activated.

There is a security flood light in the back and there are three dogs on the premises.

Immediate house area

The house has door monitors on all the doors except the front door. The front door is covered with the external passive.

All the rooms and areas in the house are covered with infra red passives. The main panel is hidden away in an enclosed area and connected to an armed response company. The intruder alarm was armed at the time of the incident.

There are safety gates on all the doors except the front door which is reinforced with a solid wooden door and 4 lever cylinder lock.

The garage door is motorised and only the owner and wife has access to remotes to this area.

METHOD OF ENTRY AND LOSSES

The victim's neighbour saw the perpetrators when they ran the victim's intercom several times. The neighbour called the victim's wife and the wife called the victim.

The victim called the armed response company to respond immediately.

The perpetrators forced the vehicle gate motor rack of the vehicle motor gear with a metal object through the palisade sections.

The perpetrators left the scene for about five minutes according to the neighbour after forcing the vehicle gate open. The perpetrators returned after the five minutes and entered the front door by forcing the lock area open on the wooden side of the door frame. At the time the external passive already activated the alarm.

The perpetrators removed items such as a PC, DVD player, VCR recorder and player, DVDs, Play station and discs, kettle, cooling fan, vehicle keys, jewelry, pocket knife, TV etc. The perpetrators took apparently 4 minutes and took off in one sedan.

The armed response told the victim they could not gain access into the property due to a keypad. The victim advised the armed response they are not at the correct address if they have to use a keypad. The armed response officer acknowledged to the victim's wife that he passed the perpetrators in the victim's immediate street area and that his objective was to secure the victim's house and not to pursue the perpetrators.

PREVENTATIVE MEASURES

The following security measures were added to the existing security measures according to the following various areas:

- Residential area;
- Immediate residential block;
- Perimeter;
- Inner perimeter; and
- Immediate house area.

Residential area

The victim met up with an armed response company to discuss the losses and proposed security measures that they can assist with.

The victim asked for more visibility of armed response vehicles within the victim's residential area due to the reoccurring residential burglaries prior to the victim's house and also after the victim's house. The victim asked for the control room to be advised that there are two streets within the residential area with the same name.

Immediate residential block

The victim arranges for guards to do patrols randomly at his own expense and inform neighbours if they want to contribute to cost. Their response is not in favour of contributing.

The victim do random visits to the immediate residential blocks within his property and advise the armed response company on any suspicious vehicles or activities.⁵⁸ The victim was already successful identifying vehicles that were used earlier in other incidents in neighbouring suburbs.

Perimeter

No enhancements to the perimeter except that the victim locks the vehicle gate also with a pad lock at the manual locking facility. This has a down side that the victim expose himself to being hijacked every time he needs to get out of his vehicle to unlock his vehicle gate. This is a

⁵⁸ Suspicious vehicles would be vehicles that drive aimlessly around in the suburb or park in street areas with occupants loitering. Suspicious activities would be pedestrians loitering and aimlessly walking around in the suburb, randomly ringing property intercoms.

short term solution where the victim will connect vehicle gate to intruder alarm system, having intercom dialing to Cellphone and having CCTV covering street area.

Inner perimeter

The victim is looking into dual technology beams, prone to birds and minimal false alarms.

Immediate house area

The front door will be changed with a door having a metal frame on the external door frame and also the immediate door itself to reinforce the lock area. The door will be connected to a door monitor.

There is a safety gate now between living and sleeping area and to the areas where there is appliances such as TVs and PCs.